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[Intervention Review]

Comparisons of approaches to pelvic floor muscle training for urinary incontinence in women

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ABSTRACT

Background

Pelvic floor muscle training (PFMT) is a recommended treatment for female stress, urgency, and mixed urinary incontinence. Training varies in exercise type (pelvic floor muscles contracting with and without other muscles), dose, and delivery (e.g. amount and type of supervision).

Objectives

To assess the effects of alternative approaches (exercise type, dose, and delivery) to pelvic floor muscle training (PFMT) in the management of urinary incontinence (stress, urgency, and mixed) in women.

Search methods

We searched the Cochrane Incontinence Specialised Register (searched 27 September 2023; which contains CENTRAL, MEDLINE, ClinicalTrials.gov, and World Health Organization ICTRP), handsearched journals and conference proceedings, and reviewed reference lists of relevant articles.

Selection criteria

Randomised, quasi-randomised, or cluster-randomised trials in female stress, urge, or mixed urinary incontinence where one trial arm included PFMT and another was an alternative approach to PFMT type, dose, or intervention delivery. We excluded studies with participants with neurological conditions or pregnant or recently postpartum.

Data collection and analysis

Two review authors independently assessed trials for eligibility and methodological quality using the Cochrane RoB 1 tool. We extracted and cross-checked data and resolved disagreements by discussion. Data processing was as described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Version 6). Synthesis was completed in intervention subgroups.

Main results

This is a review update. The analysis included 63 trials with 4920 women; the previous version included 21 trials with 1490 women. Samples sizes ranged from 11 to 362. Overall, study participants were mid-age (45 to 65 years) parous women with stress or stress-predominant mixed urinary incontinence (46 trials), who had no prior incontinence treatment or pelvic surgery, or appreciable pelvic floor dysfunction. Trials were conducted in countries around the world, mostly in middle- or high-income settings (53 trials). All trials had one or more arms using 'direct' PFMT, defined as repeated, isolated, voluntary pelvic floor muscle contractions.

Trials were categorised as comparisons of exercise type (27 trials, 3 subgroups), dose (11 trials, 5 subgroups, 1 with no data), and delivery (25 trials, 5 subgroups). Incontinence quality of life data are reported here as the primary outcome. Adverse event data were summarised narratively.

Comparison 1: exercise type

Co-ordinated training (body movements with concurrent pelvic floor muscle contraction) versus direct PFMT

Co-ordinated training may slightly improve quality of life (standardised mean difference (SMD) −0.22, 95% confidence interval (CI) −0.44 to −0.01; I^2 = 81%; 8 trials, 356 women; low-certainty evidence).

Indirect training (exercises that are not contractions of the pelvic floor muscles) versus direct PFMT

Direct PFMT may moderately improve quality of life (SMD 0.70, 95% CI 0.38 to 1.02; I^2 = 78%; 4 trials, 170 women; low-certainty evidence).

Indirect training combined with direct PFMT versus direct PFMT

Combining indirect training with direct PFMT may make little to no difference in quality of life (SMD −0.08, 95% CI −0.26 to 0.10; I^2 = 33; 7 trials, 482 women; low-certainty evidence).

Comparison 2: exercise dose

PFMT with resistance device versus PFMT without resistance device

PFMT without a resistance device may slightly improve incontinence quality of life, but the evidence is very uncertain (SMD 0.22, 95% CI −0.04 to 0.48; I^2 = 32%; 3 trials, 227 women; very low-certainty evidence).

Maximal pelvic floor muscle contractions versus submaximal pelvic floor muscle contractions

No data reported.

PFMT more days per week versus PFMT fewer days per week

PFMT more days per week may greatly improve incontinence quality of life (SMD −1.60, 95% CI −2.15 to −1.05; 1 trial, 68 women; low-certainty evidence).

PFMT in upright body positions versus PFMT when lying down

No data reported.

Comparison 3: exercise intervention delivery

PFMT supervised in clinic versus PFMT at home

Clinic supervision may slightly improve incontinence quality of life, but the evidence is very uncertain (SMD −0.30, 95% CI −0.65 to 0.05; I^2 = 89%; 3 trials, 137 women; very low-certainty evidence).

More clinician contact for PFMT supervision versus less clinician contact

No usable data reported.

Individual supervision of PFMT versus group supervision

Individually supervised PFMT probably results in little to no difference in quality of life (SMD −0.18, 95% CI −0.35 to −0.01; I^2 = 0%; 5 trials, 544 women; moderate-certainty evidence).

PFMT supervised in clinic versus supervision using e-health (mobile app communication with clinicians)

Clinic supervision may make little to no difference in incontinence quality of life, but the evidence is very uncertain (SMD −0.11, 95% CI −0.41 to 0.19; 1 trial, 173 women; very low-certainty evidence).

PFMT instruction delivered via e-health versus written instruction

E-health delivery may slightly improve quality of life (SMD −0.21, 95% CI −0.43 to 0.01; I^2 = 25%; 3 studies, 318 women; low-certainty evidence).

Adverse events

Nine trials collected adverse event data; 66/1083 (6%) women had an adverse event. Almost all events were associated with use of an intravaginal or intrarectal training device. The adverse events were vaginal discharge, spotting, or discomfort.

Limitations in the evidence

Four main factors influenced our certainty in the evidence: 44 trials were at unclear or high risk of selection bias; data were sparse in some subgroups with few trials, trials that did not measure outcomes of interest, or did not report usable data; results were inconsistent; and many trials were small (imprecise).

Authors' conclusions

Although there is low- to moderate-certainty evidence that some approaches to PFMT are better than others, for some there was little or no difference. The 7th International Consultation on Incontinence recommends PFMT as first-line therapy for women with urinary incontinence. Direct PFMT (sets of repeated, isolated, voluntary pelvic floor muscle contractions) may result in a small improvement in incontinence quality of life compared to indirect training. In terms of improved quality of life, PFMT can be supervised individually or in a group because it probably makes little to no difference in achieving this outcome.

Many comparisons had low- or very low-certainty evidence, often because there was only one trial or several small trials with methodological limitations.

More, better designed and reported trials, directly comparing PFMT approaches are needed, especially trials investigating exercise dose.

PLAIN LANGUAGE SUMMARY

Which approaches work best to treat involuntary urine leakage for women?

Key messages

– Some approaches for pelvic floor muscle (muscles supporting the bladder, bowel, and womb) training for women with involuntary (accidental) urine leakage are better than others, and some might be as good as each other.

– We were unsure about many of the approaches, often because there was only one study or several small studies investigating the question.

– More studies are needed that directly compare different approaches to pelvic floor muscle training, especially studies to find out whether different amounts (dose) of training are better than others — for example, exercising more or less often each week.

What is urinary incontinence?

The muscles of the pelvic floor form a sling between the legs from the pubic bone at the front of the pelvis to the tail bone at the back of the pelvis. This sling supports the bladder, bowel, and womb. If these muscles become weak, a woman may not be able to control the flow of urine (wee) from the bladder. This is called urinary incontinence. There are three main types of urinary incontinence. These are leakage with physical exertion (stress urinary incontinence), leakage with an urgent need to empty the bladder (urgency urinary incontinence), and both together (mixed urinary incontinence). This review covers all three types. Urinary incontinence seriously affects women's quality of life.

What is pelvic floor muscle training?

Improving the strength, endurance, and co-ordination of the pelvic floor muscles by training them can decrease urine leakage. Training involves using different approaches (exercises) or different amounts (different doses) of the same approach. Supervision of training can be done differently too (for example, one clinician teaching one woman or one clinician teaching a group of women; or delivering the exercises by the internet, mobile phone, or in a leaflet).

What did we want to find out?

We wanted to find out if:

– one type of exercise was better than another;

– higher exercise dose was better than lower exercise dose;

– more-intensive supervision was better than less-intensive supervision of exercise.

What did we do?

We looked for studies that compared one type of exercise versus another, higher versus lower exercise dose, or more-intensive versus less-intensive supervision. The studies included women with urinary incontinence, but not women with conditions of the nervous system or women who were pregnant or had recently given birth.

We compared and summarised the study results, and rated our confidence in the evidence based on factors such as study methods and sizes. We were most interested in women's quality of life after treatment.

What did we find?

We found 63 studies that involved 4920 women with urinary incontinence. The biggest study included 362 women and the smallest 11 women. While the studies were conducted in countries around the world, most were from middle- to high-income countries (meaning that women had reasonable access to good health care). Most studies lasted three months. Three studies had funding or non-monetary support from a commercial company.

Main results

We were mainly interested in women's quality of life. This was measured using questionnaires about how often the incontinence happened, how much urine leaked, and how much it affected or limited the women.

1. Type of exercise

– Combined training (e.g. using bridging exercises at the same time as pelvic floor muscle contraction) may be slightly better than pelvic floor muscle training alone.

– Pelvic floor muscle training may be better than indirect training (exercises that do not include contractions of the pelvic floor muscles).

- Pelvic floor muscle training combined with indirect training may make little to no difference compared to pelvic floor muscle training alone.

2. Exercise dose

– There was not enough evidence to comment on dose.

3. More-intensive versus less-intensive supervision

– There is probably little or no difference between one-to-one supervision and group classes.

– Delivering training instructions via technology (e.g. internet, mobile phone app) may be slightly better than leaflets.

– There was not enough evidence to comment on other methods of training delivery.

What are the limitations of the evidence?

We are confident that there is little to no difference between one-to-one supervision and group classes. We are less confident that combining indirect training with pelvic floor muscle training compared to pelvic floor muscle training only makes little to no difference, and delivering pelvic floor muscle training instructions via technology is slightly better than the leaflets, or that pelvic floor muscle training is better than indirect training.

Our confidence in the evidence for other comparisons of approaches to these exercises is low to very low, and the results of further research could differ from the results of this review.

We were unsure about the evidence as study methods were not well described, not all the studies provided data about everything that we were interested in or they did not report it in a way we could use, results were inconsistent across different studies, and many studies were very small.

How up to date is this evidence?

This evidence is up to date to 27 September 2023.

SUMMARY OF FINDINGS

Summary of findings 1. Summary of findings table - Co-ordinated pelvic floor muscle training (PFMT) compared to direct PFMT for women with urinary incontinence

Co-ordinated pelvic floor muscle training (PFMT) compared to direct PFMT for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North. 3 trials conducted in lower-middle income countries, with 2 contributing data to the analysis
Intervention: co-ordinated pelvic floor muscle training (PFMT)
Comparison: direct PFMT

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with direct PFMT	Risk with co-ordinated pelvic floor muscle training (PFMT)				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: range 6 weeks to 12 weeks	-	SMD **0.22 SD lower** (0.44 lower to 0.01 lower)	-	356 (8 RCTs)	⊕⊕⊖⊖ Low[a,b,c]	Co-ordinated PFMT may slightly improve incontinence quality of life compared to direct PFMT.
Incontinence episode frequency in 24 hours assessed with: a diary follow-up: range 6 weeks to 12 weeks	The mean incontinence episode frequency in 24 hours ranged from **0.02 to 1.8**	MD **0.12 lower** (0.19 lower to 0.04 lower)	-	172 (5 RCTs)	⊕⊖⊖⊖ Very low[b,d,e]	Co-ordinated PFMT may reduce incontinence episode frequency in 24 hours compared to direct PFMT but the evidence is very uncertain.
Improvement - not measured	None of the 13 trials measured this outcome.			-	-	
Satisfaction - not measured	None of the 13 trials measured this outcome.			-	-	
Adverse events	1 trial collected adverse event data and there were 0 in both groups.			33 (1 RCT)	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453689128115906351.

[a] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[b] Downgraded once for unexplained inconsistency with high I2 values, significant and substantial heterogeneity, and wide variation in point estimates.
[c] Downgraded once for imprecision because, while there is a small effect in favour of co-ordinated PFMT, the 95% CIs are wide (moderate to negligible effect in favour of co-ordinated PFMT).
[d] Downgraded twice for very serious concerns about selection and attrition bias.
[e] Downgraded once for imprecision because, while there is an effect in favour of co-ordinated PFMT, the total number of participants is small.

Summary of findings 2. Summary of findings table - Indirect training compared to direct pelvic floor muscle training (PFMT) for women with urinary incontinence

Indirect training compared to direct pelvic floor muscle training (PFMT) for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North. 2 trials conducted in lower-middle income countries and neither contributed data to the analysis
Intervention: indirect training
Comparison: direct pelvic floor muscle training (PFMT)

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with direct pelvic floor muscle training (PFMT)	Risk with indirect training				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: range 6 weeks to 12 weeks	-	SMD **0.7 higher** (0.38 higher to 1.02 higher)	-	170 (4 RCTs)	⊕⊕⊖⊖ Low[a,b,c]	Direct PFMT may improve incontinence quality of life moderately compared to indirect training.
Incontinence episode frequency in 24 hours assessed with: a diary	The mean incontinence episode fre-	MD **0.2 higher** (0.14 higher to 0.26 higher)	-	100 (2 RCTs)	⊕⊕⊖⊖ Low[d,e,f]	Direct PFMT may reduce incontinence episode frequen-

follow-up: range 6 weeks to 12 weeks	quency in 24 hours was **0.4**			cy in 24 hours compared to indirect training.
Improvement assessed with: a researcher developed question follow-up: mean 6 weeks	12/12 women in the indirect training and 14/15 women in the direct PFMT groups reported improvement in urinary incontinence.	27 (1 RCT)	⊕⊖⊖⊖ Very low[a,g,h]	There may be little to no difference in participant-rated improvement with indirect training compared to direct PFMT, but the evidence is very uncertain.
Satisfaction - not measured	None of the 7 trials reported this outcome.	-	-	
Adverse events - not measured	None of the 7 trials reported this outcome.	-	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the __relative effect__ of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453689115872470826.

[a] Downgraded once for serious concerns about selection bias.
[b] Some concerns about inconsistency but concerns not sufficient to downgrade because the point estimates are consistently in favour of direct PFMT.
[c] Downgraded once for imprecision because, while there is a moderate effect in favour of direct PFMT, the total number of participants is very small.
[d] Some concerns for selection and attrition bias, but potential limitations not sufficient to downgrade.
[e] Downgraded once for unexplained inconsistency with high I2 values, significant and substantial heterogeneity, and wide variation in point estimates.
[f] Downgraded once for imprecision because, while there is some effect in favour of direct PFMT, the total number of participants is small.
[g] Unable to assess inconsistency as a single trial contributed.
[h] Downgraded three times for imprecision because, while there is an effect in favour of indirect training, the 95% CIs are very wide (i.e. implausibly large effect in favour of indirect training to some effect in favour of direct training), and the total number of participants is extremely small.

Summary of findings 3. Summary of findings table - Indirect training combined with direct pelvic floor muscle training (PFMT) compared to direct PFMT for women with urinary incontinence

Indirect training combined with direct pelvic floor muscle training (PFMT) compared to direct PFMT for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North. 1 trial conducted in a lower-middle-income country and contributed data to analysis.
Intervention: indirect training combined with direct pelvic floor muscle training (PFMT)
Comparison: direct PFMT

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with direct PFMT	Risk with indirect training combined with direct pelvic floor muscle training (PFMT)				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: range 5 weeks to 5 months	-	SMD **0.08 lower** (0.26 lower to 0.1 higher)	-	482 (7 RCTs)	⨁⨁◯◯ Low[a,b]	Indirect training combined with direct PFMT may result in little to no difference in incontinence quality of life compared to direct PFMT.
Incontinence episode frequency in 24 hours assessed with: a diary follow-up: range 5 weeks to 10 weeks	The mean incontinence episode frequency in 24 hours ranged from **0.6 to 1.8**	MD **0.07 lower** (0.18 lower to 0.03 higher)	-	76 (2 RCTs)	⨁⨁◯◯ Low[c,d]	Indirect training combined with direct PFMT may result in little to no difference in incontinence episode frequency in 24 hours compared to direct PFMT.
Improvement - not reported	1 trial measured this outcome but the data were reported as median score (same in both groups) without a measure of variability. The authors confirmed the data were no longer available.			-	-	
Satisfaction - not measured	None of the 7 trials measured this outcome.			-	-	
Adverse events	In 2 trials that collected and reported adverse event data, there were 0 adverse events reported.			275 (2 RCTs)	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **SMD:** standardised mean difference

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453689596349654952.

[a] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[b] Downgraded twice for imprecision because the summary estimate of effect suggests little to no difference between interventions, but the 95% CIs do not exclude a small effect in favour of indirect training combined with direct PFMT or a negligible effect in favour of direct PFMT.
[c] Some concerns for selection bias but potential limitations not sufficient to downgrade.
[d] Downgraded twice for imprecision because, while there is some effect in favour of indirect training combined with direct PFMT, the 95% CIs do not exclude an effect in favour direct PFMT, and the number of participants is very small.

Summary of findings 4. Summary of findings table - Pelvic floor muscle training (PFMT) with resistance device compared to PFMT without resistance device for women with urinary incontinence

Pelvic floor muscle training (PFMT) with resistance device compared to PFMT without resistance device for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North. 1 trial conducted in a lower-middle-income country and contributed data to analysis
Intervention: pelvic floor muscle training (PFMT) with resistance device
Comparison: PFMT without resistance device

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with PFMT without resistance device	Risk with pelvic floor muscle training (PFMT) with resistance device				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: range 12 weeks to 16 weeks	-	SMD **0.22 higher** (0.04 lower to 0.48 higher)	-	227 (3 RCTs)	⊕⊖⊖⊖ Very low[a,b]	PFMT without a resistance device may improve incontinence quality of life slightly compared to PFMT with a device, but the evidence is very uncertain.
Incontinence episode frequency in 24 hours assessed with: a diary	The mean incontinence episode fre-	MD **0.68 higher** (0.39 lower to 1.75 higher)	-	41 (1 RCT)	⊕⊖⊖⊖ Very low[c,d,e]	PFMT without a resistance device may reduce incontinence episode frequency in 24 hours compared to

follow-up: mean 12 weeks	quency in 24 hours was **0.67**					training with a device, but the evidence is very uncertain.
Improvement assessed with: a researcher developed question follow-up: range 12 weeks to 20 weeks	598 per 1000	**669 per 1000** (499 to 804)	**OR 1.36** (0.67 to 2.77)	161 (3 RCTs)	⊕⊖⊖⊖ Very low[f,g]	There may be little to no difference in participant-rated improvement for PFMT with a device compared to PFMT without a device, but the evidence is very uncertain.
Satisfaction assessed with: a researcher developed question follow-up: mean 16 weeks	5/15 women using a resistance device and 8/15 women exercising without a device reported they were completely satisfied.			30 (1 RCT)	⊕⊖⊖⊖ Very low[d,h,i]	PFMT with a resistance device may increase participant-rated satisfaction slightly compared to PFMT without a resistance device, but the evidence is very uncertain.
Adverse events assessed with: a researcher developed question follow-up: range 6 weeks to 16 weeks	Data were not pooled because 0 events were common, reducing the reliability of a pooled analysis. From 2 trials, 33/53 women exercising with a resistance device and 0/64 women exercising without a device reported an adverse event.			119 (2 RCTs)	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453690648007682494.

[a] Some concerns for selection, attrition, and selective reporting bias, but potential limitations not sufficient to downgrade
[b] Downgraded three times for imprecision because, while there is an effect in favour of PFMT without a resistance device, the 95% CIs are wide (i.e. moderate effect in favour of PFMT without a device to negligible effect in favour of PFMT with device), and the total number of participants is small.
[c] Some concerns for selective reporting bias, but potential limitations not sufficient to downgrade.
[d] Unable to assess inconsistency as a single trial contributed.
[e] Downgraded three times for imprecision because, while there is an effect in favour of PFMT without a resistance device, the 95% CIs are very wide (i.e. some effect in favour of PFMT with a device to a large effect in favour of PFMT without device), and the number of participants is extremely small.
[f] Downgraded twice for very serious concerns about selection and attrition bias.

[g] Downgraded twice for imprecision because the summary estimate of effect suggests little to no difference between interventions, but the 95% CIs do not exclude some effect in favour of PFMT without a resistance device, and the total number of participants is very small.
[h] Some concerns for attrition and selective reporting bias but potential limitations not sufficient to downgrade.
[i] Downgraded three times for imprecision because, while there is some effect in favour of PFMT without a resistance device, the 95% CIs are wide (i.e. large effect in favour of PFMT without device to some effect in favour of PFMT with device), and the total number of participants is extremely small.

Summary of findings 5. Summary of findings table - Maximal pelvic floor muscle contractions compared to submaximal pelvic floor muscle contractions in pelvic floor muscle training (PFMT) for women with urinary incontinence

Maximal pelvic floor muscle contractions compared to submaximal pelvic floor muscle contractions in pelvic floor muscle training (PFMT) for women with urinary incontinence

Patient or population: pelvic floor muscle training (PFMT) for women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: maximal pelvic floor muscle contractions
Comparison: submaximal pelvic floor muscle contractions

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with submaximal pelvic floor muscle contractions	Risk with maximal pelvic floor muscle contractions				
Incontinence quality of life - not measured	The single trial did not measure this outcome.			-	-	
Incontinence episode frequency in 24 hours assessed with: a diary follow-up: mean 6 weeks	The mean incontinence episode frequency in 24 hours was **1.15**	MD **0.36 lower** (1.85 lower to 1.13 higher)	-	32 (1 RCT)	⊕⊖⊖⊖ Very low[a,b,c]	Maximal PFMT contractions may reduce incontinence episode frequency compared to submaximal contractions, but the evidence is very uncertain.
Improvement - not measured	The single trial did not measure this outcome.			-	-	
Satisfaction - not measured	The single trial did not measure this outcome.			-	-	
Adverse events - not measured	The single trial did not measure this outcome.			-	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453730628894198643.

[a] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[b] Unable to assess inconsistency as a single trial contributed.
[c] Downgraded three times for imprecision because, while there is an effect in favour of maximal PFMT contractions, the 95% CIs are very wide (i.e. a large effect in favour of maximal PFMT contractions to a large effect in favour of submaximal PFMT contractions), and the number of participants is extremely small.

Summary of findings 6. Summary of findings table - More days of pelvic floor muscle training (PFMT) per week compared to fewer days of PFMT per week for women with urinary incontinence

More days of pelvic floor muscle training (PFMT) per week compared to fewer days of PFMT per week for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: more days of pelvic floor muscle training (PFMT) per week
Comparison: fewer days of PFMT per week

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with fewer days of PFMT per week	Risk with more days of pelvic floor muscle training (PFMT) per week				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: mean 12 weeks	-	SMD **1.6 lower** (2.15 lower to 1.05 lower)	-	68 (1 RCT)	⊕⊕⊖⊖ Low[a,b,c]	PFMT more days per week may greatly improve incontinence quality of life compared to PFMT fewer days per week.

Incontinence episode frequency in 24 hours assessed with: a diary follow-up: mean 12 weeks	The mean incontinence episode frequency in 24 hours ranged from **0.002 (mean change, 1 trial), and 0.91 (mean, 1 trial)**	MD **0.18 lower** (0.3 lower to 0.07 lower)	-	96 (2 RCTs)	⊕⊕⊖⊖ Low[a,d,e]	PFMT more days per week may reduce incontinence episode frequency in 24 hours compared to PFMT fewer days per week.
Improvement assessed with: the PGI-I or other researcher developed question follow-up: mean 12 weeks	In 1 trial all women in both groups (19/19 and 21/21) reported improvement and an odds ratio could not be calculated for this trial. In the other trial 33/34 women exercising more days per week reported improvement versus 17/34 exercising fewer days per week.			108 (2 RCTs)	⊕⊖⊖⊖ Very low[b,f]	PFMT more days per week may increase participant-rated improvement compared to PFMT fewer days per week, but the evidence is very uncertain.
Satisfaction - not measured	None of the 3 trials measured this outcome.			-	-	
Adverse events - not measured	None of the 3 trials measured this outcome.			-	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453690806179605062.

[a] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[b] Unable to assess inconsistency as a single trial contributed.
[c] Downgraded twice for imprecision because, while there is a large effect in favour of PFMT more days per week, the estimated 95% CIs are based on an extremely small number of participants.
[d] Some concerns for inconsistency but the point estimates are consistently in favour of PFMT more days per week. Data are post-treatment mean in one trial, and mean change in the other, and it is unclear what effect this might have on the appearance of inconsistency.
[e] Downgraded twice for imprecision because, while there is some effect in favour of PFMT more days per week, the number of participants is very small.
[f] Downgraded three times for imprecision because, while there is an effect in favour of PFMT more days per week, the 95% CIs are very wide (i.e. some to implausibly large effect in favour of PFMT more days per week), and the total number of participants is extremely small.

Summary of findings 7. Summary of findings table - Pelvic floor muscle training (PFMT) in upright body positions compared to PFMT when lying down for women with urinary incontinence

Pelvic floor muscle training (PFMT) in upright body positions compared to PFMT when lying down for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: pelvic floor muscle training (PFMT) in upright body positions
Comparison: PFMT when lying down

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with PFMT when lying down	Risk with pelvic floor muscle training (PFMT) in upright body positions				
Incontinence quality of life - not measured	The single trial did not measure this outcome.			-	-	
Change in incontinence episode frequency assessed with: a diary follow-up: mean 6 weeks	The mean change in incontinence episode frequency was **0.57 lower**	MD **0.2 lower** (0.64 lower to 0.24 higher)	-	36 (1 RCT)	⊕⊖⊖⊖ Very low[a,b,c]	PFMT in upright body positions may reduce incontinence episode frequency in 24 hours compared with PFMT done lying down, but the evidence is very uncertain.
Improvement - not measured	The single trial did not measure this outcome.			-	-	
Satisfaction - not measured	The single trial did not measure this outcome.			-	-	
Adverse events - not measured	The single trial did not measure this outcome.			-	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453731567167344848.

[a] Some concerns for selection bias but potential limitations not sufficient to downgrade.
[b] Unable to assess inconsistency as a single trial contributed.
[c] Downgraded three times for imprecision because, while there is an effect in favour of PFMT in antigravity body positions, the 95% CIs are very wide (i.e. some effect in favour of antigravity body positions to some effect in favour of gravity neutral body positions), and the total number of participants is extremely small.

Summary of findings 8. Summary of findings table - Pelvic floor muscle training (PFMT) supervised in clinic compared to PFMT at home without clinic-based supervision for women with urinary incontinence

Pelvic floor muscle training (PFMT) supervised in clinic compared to PFMT at home without clinic-based supervision for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: pelvic floor muscle training (PFMT) supervised in clinic
Comparison: PFMT at home without clinic-based supervision

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with PFMT at home without clinic-based supervision	Risk with pelvic floor muscle training (PFMT) supervised in clinic				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: range 5 weeks to 24 weeks	-	SMD **0.3 lower** (0.65 lower to 0.05 higher)	-	137 (3 RCTs)	⊕⊖⊖⊖ Very low[a,b,c]	PFMT supervised in clinic may improve quality of life slightly compared to PFMT at home without supervision, but the evidence is very uncertain.
Incontinence episode frequency in 24 hours - not measured	None of the 8 trials measured this outcome with a diary			-	-	

Improvement assessed with: a researcher developed question follow-up: range 6 weeks to 24 weeks	652 per 1000	**870 per 1000** (751 to 937)	**OR 3.56** (1.61 to 7.87)	175 (4 RCTs)	⊕⊖⊖⊖ Very low[d,e]	PFMT supervised in clinic may increase participant-reported improvement compared to PFMT at home without supervision, but the evidence is very uncertain.
Satisfaction assessed with: a researcher developed question follow-up: mean 8 weeks	600 per 1000	**689 per 1000** (433 to 867)	**OR 1.48** (0.51 to 4.33)	59 (1 RCT)	⊕⊖⊖⊖ Very low[f,g,h]	There may be little to no difference in participant-rated satisfaction with PFMT supervised in clinic compared to PFMT at home without supervision, but the evidence is very uncertain.
Adverse events - not measured	None of the 8 trials measured this outcome			-	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the __relative effect__ of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453756267754825232.

[a] Some concerns for selection bias but potential limitations not sufficient to downgrade.
[b] Downgraded twice for unexplained inconsistency, with very high I2 values, statistically significant and substantial heterogeneity with wide variation in point estimates.
[c] Downgraded three times for imprecision because, while there is an small effect in favour of PFMT supervised in clinic, the 95% confidence interval is very wide (i.e. moderate effect in favour of clinic supervision to negligible effect in favour of PFMT at home), and the total number of participants is very small.
[d] Downgraded twice for very serious concerns about selection and attrition bias.
[e] Downgraded once for imprecision because, while there is some effect in favour of PFMT supervised in clinic, the estimated 95% CI is based on an very small number of participants.
[f] Downgraded once for some concerns for selection bias and serious concerns for attrition bias.
[g] Unable to assess inconsistency as a single trial contributed
[h] Downgraded three times for imprecision because the 95% confidence interval is very wide, does not exclude some effect in favour of either intervention, and the total number of participants is extremely small.

Summary of findings 9. Summary of findings table - More clinician contact for pelvic floor muscle training (PFMT) supervision compared to less clinician contact for PFMT supervision for women with urinary incontinence

More clinician contact for pelvic floor muscle training (PFMT) supervision compared to less clinician contact for PFMT supervision for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: more clinician contact for pelvic floor muscle training (PFMT) supervision
Comparison: less clinician contact for PFMT supervision

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with less clinician contact for PFMT supervision	Risk with more clinician contact for pelvic floor muscle training (PFMT) supervision				
Incontinence quality of life - not measured	None of the 5 trials measured this outcome.			-	-	
Incontinence episode frequency in 24 hours assessed with: a diary follow-up: mean 12 weeks	The mean incontinence episode frequency in 24 hours ranged from **0.13 to 1.79**	MD **0.25 lower** (0.32 lower to 0.17 lower)	-	128 (3 RCTs)	⊕⊖⊖⊖ Very low[a,b,c]	More clinician contact for PFMT supervision may reduce incontinence episode frequency compared to less supervision, but the evidence is very uncertain.
Improvement assessed with: a researcher developed question follow-up: range 12 weeks to 24 weeks	481 per 1000	**971 per 1000** (786 to 997)	**OR 35.82** (3.95 to 324.74)	56 (2 RCTs)	⊕⊖⊖⊖ Very low[d,e]	More clinician contact for PFMT supervision may increase participant-reported improvement compared to less supervision, but the evidence is very uncertain.
Satisfaction assessed with: a researcher developed question follow-up: mean 12 weeks	411 per 1000	**706 per 1000** (523 to 840)	**OR 3.45** (1.57 to 7.54)	113 (2 RCTs)	⊕⊕⊕⊖ Moderate[f,g]	More clinician contact for PFMT supervision probably increases participant-reported satisfaction compared to less supervision.
Adverse events	Data were not pooled because 0 events were common, reducing the reliability of a pooled analysis. In 1 trial, 0 women in either trial arm reported an adverse event (0/34, 0/35). The other trial reported			103 (2 RCTs)	-	

	data for only 1 trial arm and there were no adverse event (?/17, 0/17).

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the __relative effect__ of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453691077689748272.

[a] Downgraded twice for very serious concerns about selection and attrition bias.
[b] Some concerns about inconsistency but not sufficient to downgrade because the point estimates consistently favour more clinician contact.
[c] Downgraded once for imprecision because, while there is some effect in favour of more clinician contact, the number of participants is small.
[d] Downgraded twice for very serious concerns about selection bias.
[e] Downgraded three times for imprecision because, while there is an effect in favour of more clinician contact, the 95% CIs are very wide (i.e. large to implausibly large effect in favour of more clinician contact), and the total number of participants is extremely small.
[f] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[g] Downgraded once for imprecision because, while there is some effect in favour of more clinician contact, the estimated 95% CI is based on a very small number of participants.

Summary of findings 10. Summary of findings table - In-person individual supervision of pelvic floor muscle training (PFMT) compared to in-person group supervision of PFMT for women with urinary incontinence

In-person individual supervision of pelvic floor muscle training (PFMT) compared to in-person group supervision of PFMT for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: in-person individual supervision of pelvic floor muscle training (PFMT)
Comparison: in-person group supervision of PFMT

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with in-person group supervision of PFMT	Risk with in-person individual supervision of pelvic				

		floor muscle training (PFMT)				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: range 6 weeks to 12 weeks	-	SMD **0.18 lower** (0.35 lower to 0.01 lower)	-	544 (5 RCTs)	⊕⊕⊕⊖ Moderate[a,b]	Individually supervised PFMT probably results in little to no difference in incontinence quality of life compared to group supervision of PFMT.
Incontinence episode frequency in 24 hours assessed with: a diary follow-up: mean 12 weeks	The mean incontinence episode frequency in 24 hours ranged from **0 to 0.77**	MD **0.01 lower** (0.07 lower to 0.04 higher)	-	486 (3 RCTs)	⊕⊕⊕⊕ High[a]	Individually supervised PFMT results in little to no difference in incontinence episode frequency in 24 hours compared to group supervision of PFMT.
Improvement assessed with: the PGI-I follow-up: mean 12 weeks	964 per 1000	**959 per 1000** (885 to 986)	**OR 0.88** (0.29 to 2.67)	337 (1 RCT)	⊕⊖⊖⊖ Very low[c,d]	There may be little to no difference in participant-rated improvement with in-person group supervised PFMT compared to individually supervised PFMT, but the evidence is very uncertain.
Satisfaction assessed with: a researcher developed question follow-up: mean 12 weeks	857 per 1000	**898 per 1000** (824 to 943)	**OR 1.47** (0.78 to 2.77)	397 (2 RCTs)	⊕⊖⊖⊖ Very low[a,e]	There may be little to no difference in participant-rated satisfaction with in-person group supervision of PFMT compared to individually supervised PFMT, but the evidence is very uncertain.
Adverse events	Data were not pooled because 0 events were common, reducing the reliability of a pooled analysis. 2 trials reported 0 adverse events in either trial arm (0/33, 0/26). A third trial reported minor adverse events in 27/171 women receiving individually supervised PFMT (which included use of a vaginal probe for biofeedback), and 5/164 receiving group supervision.			394 (3 RCTs)	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence

High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453691158870764414.

[a] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[b] Downgraded once for imprecision because the summary estimate of effect suggests little or no difference between interventions, but the 95% CIs do not exclude a small effect in favour of individual supervision.
[c] Unable to assess as a single trial contributed.
[d] Downgraded three times for imprecision because, while the summary estimate of effect suggests little to no difference between interventions, the estimated 95% CIs are based on a small number of participants and do not exclude an effect in favour of either intervention.
[e] Downgraded three times for imprecision because the summary estimate of effect suggests little to no difference between interventions, but the 95% CIs are wide (i.e. from negligible effect in favour of group to some effect in favour of individual supervision), and the total number of participants is small.

Summary of findings 11. Summary of findings table - In-person clinic supervised pelvic floor muscle training (PFMT) compared to remote supervision of PFMT for women with urinary incontinence

In-person clinic supervised pelvic floor muscle training (PFMT) compared to remote supervision of PFMT for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: in-person clinic supervised pelvic floor muscle training (PFMT)
Comparison: remote supervision of PFMT

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with remote supervision of PFMT	Risk with in-person clinic supervised pelvic floor muscle training (PFMT)				
Incontinence quality of life assessed with: a validated questionnaire follow-up: median 12 months	-	SMD **0.11 lower** (0.41 lower to 0.19 higher)	-	173 (1 RCT)	⊕⊖⊖⊖ Very low[a,b,c]	There may be little to no difference in incontinence quality of life between clinic supervised PFMT and remote supervision (mobile app communication with clinician) of PFMT, but the evidence is very uncertain.

Incontinence episode frequency in 24 hours - not measured	The single trial did not measure this outcome.			-	-	
Improvement assessed with: the PGI-I follow-up: mean 12 months	805 per 1000	**793 per 1000** (677 to 874)	**OR 0.93** (0.51 to 1.69)	263 (1 RCT)	⊕⊖⊖⊖ Very low[a,b,d]	There may be little to no difference in participant-rated improvement with clinic supervised PFMT compared to remote supervision of PFMT (mobile app communication with clinician), but the evidence is very uncertain.
Satisfaction - not reported	The single trial apparently collected data on this outcome and did not report them.			-	-	
Adverse events - not measured	The single trial did not measure this outcome.			-	-	

*__The risk in the intervention group__ (and its 95% confidence interval) is based on the assumed risk in the comparison group and the __relative effect__ of the intervention (and its 95% CI).

CI: confidence interval; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.
Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453691228503813002.

[a] Downgraded twice for very serious concerns about selection and attrition bias.
[b] Unable to assess inconsistency as a single trial contributed.
[c] Downgraded three times for imprecision because the summary estimate of effect suggests little to no difference between interventions, but the 95% CIs are wide (i.e. moderate effect in favour of clinic supervision to negligible effect in favour of remote supervision), and the total number of participants is very small.
[d] Downgraded three times for imprecision because, while the summary estimate of effect suggests little or no difference between intervention, the estimated 95% CIs are based on a very small number of participants and do not exclude some effect in favour of either intervention.

Summary of findings 12. Summary of findings table - Pelvic floor muscle training (PFMT) delivered via e-health compared to PFMT written instructions for women with urinary incontinence

Pelvic floor muscle training (PFMT) delivered via e-health compared to PFMT written instructions for women with urinary incontinence

Patient or population: women with urinary incontinence
Setting: principally outpatient clinic settings (e.g. hospital clinics, community-based clinics, or private practices) in the Global North
Intervention: pelvic floor muscle training (PFMT) delivered via e-health
Comparison: PFMT written instructions

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	№ of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with PFMT written instructions	Risk with pelvic floor muscle training (PFMT) delivered via e-health				
Incontinence quality of life assessed with: a validated questionnaire (lower score better) follow-up: mean 12 weeks	-	SMD **0.21 lower** (0.43 lower to 0.01 higher)	-	318 (3 RCTs)	⊕⊕⊖⊖ Low[a,b]	PFMT delivered via e-health may improve incontinence quality of life slightly compared to written instructions for PFMT.
Incontinence episode frequency in 24 hours assessed with: a diary follow-up: mean 12 weeks	The mean incontinence episode frequency in 24 hours was **-061 (mean change)**	MD **0.48 lower** (0.79 lower to 0.17 lower)	-	220 (1 RCT)	⊕⊕⊕⊖ Moderate[c,d]	PFMT delivered via e-health probably reduces incontinence episode frequency in 24 hours compared to written instructions for PFMT.
Improvement assessed with: the PGI-I or other researcher developed question follow-up: mean 12 weeks	320 per 1000	**450 per 1000** (320 to 586)	**OR 1.74** (1.00 to 3.01)	239 (2 RCTs)	⊕⊖⊖⊖ Very low[e,f,g]	PFMT delivered via e-health may increase participant-rated improvement compared to written instructions for PFMT, but the evidence is very uncertain.
Satisfaction - not measured	None of the 2 trials measured this outcome.			-	-	
Adverse events	1 of the 2 trials measured adverse events, with 0/113 in the written instruction group and 1/107 in the remote supervision group.			220 (1 RCT)	-	

***The risk in the intervention group** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: confidence interval; **MD:** mean difference; **OR:** odds ratio; **SMD:** standardised mean difference

GRADE Working Group grades of evidence
High certainty: we are very confident that the true effect lies close to that of the estimate of the effect.

Moderate certainty: we are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
Low certainty: our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect.
Very low certainty: we have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect.

See interactive version of this table: https://gdt.gradepro.org/presentations/#/isof/isof_question_revman_web_453691233307601805.

[a] Some concerns for selection and attrition bias but potential limitations not sufficient to downgrade.
[b] Downgraded twice for imprecision because, while there is a small effect in favour of PFMT delivered by e-health, the 95% CIs do not exclude a negligible effect in favour of written instructions, and the total number of participants is small.
[c] Unable to assess inconsistency as a single trial contributed.
[d] Downgraded once for imprecision because, while there is some effect in favour of PFMT delivered via e-health, the number of participants is small.
[e] Some concerns for attrition bias but potential limitations not sufficient to downgrade.
[f] Downgraded once due to unexplained inconsistency, with high I2 values, significant and substantial heterogeneity, and wide variation in point estimates.
[g] Downgraded twice for imprecision because, while there is some effect in favour of PFMT delivered via e-health, the 95% CIs do not exclude no effect, and the total number of participants is very small.

BACKGROUND

Description of the condition

Urinary incontinence is the symptom of involuntary loss of urine (Haylen 2010). This can be debilitating for women (Abrams 2015). Urinary incontinence is strongly associated with poor quality of life (Bartoli 2010; Pizzol 2021). A meta-ethnography (synthesis of qualitative studies) of the experiences of women and men living with urinary incontinence found the condition profoundly affected sense of self, such as reduced self-esteem and sexual desirability and concern about what these meant for the future (Toye 2020). Living with urinary incontinence was experienced as emotionally distressing and made everyday life more difficult and more tiring (e.g. worrying about how to control leakage and keep it private) (Toye 2020).

Urinary incontinence is commonly experienced by community-dwelling women and even more commonly by women living in residential care (Hunskaar 2002). Milsom and colleagues, in a summary of findings from many epidemiological incontinence studies, reported that estimates of any urinary incontinence in women (i.e. 'ever' experiencing incontinence, or 'at least once in the past 12 months') ranged from 5% to 69%, although most studies documented prevalences of 25% to 45% (Milsom 2023). Differences in study methods, measures, urinary incontinence definitions, and whether women feel comfortable reporting urinary incontinence probably account for varying estimates. A consistent pattern is that urinary incontinence becomes more common with increasing age (Milsom 2023).

Continence is maintained when the pressure inside the bladder outlet (the urethra) is higher than the pressure inside the bladder. Therefore, anatomic or physiological changes in the bladder or urethra, or the structures that support them, can lead to urinary incontinence. Women with the symptom of stress urinary incontinence report involuntary urine leakage with cough, sneeze, and other types of physical exertion (Haylen 2010). Urgency urinary incontinence is the symptom of involuntary urine leakage associated with urgency (i.e. the sudden and compelling need to urinate) (Haylen 2010). Some women have mixed urinary incontinence, experiencing both stress and urgency urinary incontinence (Haylen 2010). The mechanisms underlying involuntary leakage in stress urinary incontinence and urgency urinary incontinence are different.

In stress urinary incontinence, the pressure in the abdomen rises with exertion, thereby increasing pressure in the bladder. If the pressure inside the urethra (intra-urethral pressure, hereafter called urethral pressure) is insufficient, then a rise in bladder pressure results in leakage. Research comparing women with and without stress urinary incontinence shows that women with stress urinary incontinence have lower urethral closure pressure (Finazzi Agrò 2023). Women with stress urinary incontinence probably have some combination of deficits in structure and support of the bladder neck and urethra, and altered innervation and mechanics of the pelvic floor muscles and striated urethral sphincter (Finazzi Agrò 2023). While there is some controversy regarding the role of weak pelvic floor muscles in the development of stress urinary incontinence (Finazzi Agrò 2023), the pelvic floor muscles are part of the continence mechanism. For instance, the shape of the pelvic floor muscles facilitates the 'correct' position of the urethra (by supporting the vagina, which is behind the urethra), and when the pelvic floor muscles contract, the urethra is clamped and 'squeezed' as the muscles lift forward and up (cranio-ventrally) in the pelvis (DeLancey 1988). In population studies, 10% to 39% of women report stress urinary incontinence and this is the most common subtype of urinary incontinence; about half of women who report urinary incontinence will have stress urinary incontinence (Milsom 2023).

Urgency urinary incontinence is one of the symptoms of overactive bladder syndrome. Women with overactive bladder syndrome report urgency, which is the sudden and compelling desire to pass urine that they cannot defer (Haylen 2010). Women with overactive bladder syndrome usually also experience frequent voiding during the day or night and may also have urgency urinary incontinence (Haylen 2010). The symptom of urgency may occur with involuntary contractions of the bladder (detrusor) muscle, called detrusor overactivity. However, some women have detrusor overactivity but do not experience urgency, and some have urgency but do not appear to have detrusor overactivity (Finazzi Agrò 2023). Possible underlying mechanisms of overactive bladder syndrome are that the brain receives abnormally high levels of sensory input from the bladder and urethra; or the brain cannot manage the sensory input it receives from the bladder, urethra, and other structures in the continence mechanism; or both (Finazzi Agrò 2023). However, it is often not clear why some women have these changes in bladder function and others do not (Finazzi Agrò 2023). To have urgency urinary incontinence alone is uncommon. Population studies generally find 1% to 7% of women report urgency urinary incontinence alone (Milsom 2023). It is more common for urgency urinary incontinence to be combined with stress urinary incontinence (i.e. mixed urinary incontinence), which is experienced by 7.5% to 25% of women with urinary incontinence symptoms (Milsom 2023).

Despite differences in the mechanisms of leakage, and biological rationale for pelvic floor muscle training (PFMT) for each urinary incontinence type, PFMT is recommended as initial treatment for all three subtypes of urinary incontinence (Wagg 2023). However, because the mechanisms differ, women may be offered other therapies along with PFMT. For example, women with mixed or urgency urinary incontinence may be offered a drug to decrease detrusor muscle overactivity, or bladder training to slowly increase the voiding interval (the time between urinations). In this review, we only investigated the effect of differences in PFMT and did not consider any other therapy that might be given with PFMT.

Description of the intervention

PFMT is defined as exercise to improve pelvic floor muscle strength, endurance, power, relaxation, or a combination of these parameters (Bø 2017). PFMT requires voluntary contraction of the pelvic floor muscles — the muscles spanning the outlet of the pelvis from side to side and front to back. When contracted correctly, there is cranio-ventral movement that 'lifts and squeezes' around the urethra, vagina, and anus (Ashton-Miller 2007).

Many PFMT programmes ask women to squeeze and lift the pelvic floor muscle. Other types of exercise may also be included. For instance, women may receive advice to contract muscles that appear to 'work with' the pelvic floor muscles at the same time (e.g. abdominal or hip or respiratory (breathing) muscles). In addition, women may include voluntary pelvic floor muscle contractions in an existing exercise routine such as yoga or Pilates or with other

exercises (e.g. bridging, plank, abdominal curl-ups). While PFMT is more effective than no PFMT for treating urinary incontinence in women (Dumoulin 2018), it is not known if any of these approaches to PFMT are better than any other. A research prioritisation exercise involving clinician and patient organisations in the UK identified a list of top 10 clinical uncertainties; the top uncertainty was "what are the optimal pelvic floor muscle training protocols?" (Buckley 2009).

Guidance for exercise protocols based on established exercise science (American College of Sports Medicine 2009; Garber 2011) applied to PFMT suggests that to achieve desired changes in muscle physiology (e.g. muscle hypertrophy), the PFMT programme requires a correct contraction, regular exercise, and a progressive exercise dose (frequency, intensity, duration) (Frawley 2017). When prescribing PFMT, clinicians may individualise the exercises considering factors such as the muscle assessment findings (e.g. choosing a starting exercise dose consistent with existing muscle strength). To gain and retain the benefits of training, a sufficient exercise dose must be continued over time (Frawley 2017).

The context of the woman's life (e.g. urban or rural living, work, parenting) and health setting resources also influences how the PFMT programme is delivered and supervised. Differences in delivery include in-person or telehealth consultations, individual or group supervision of exercise, or frequent or less frequent consultations with a health professional, or support via electronic or mobile health technologies (such as a website or smartphone application).

For this review, we grouped trials into three main comparisons to investigate three characteristics of PFMT.

1. Differences in exercise type
2. Differences in exercise dose
3. Differences in exercise intervention delivery

Each of these is discussed in more detail in Types of interventions.

How the intervention might work

Pelvic floor muscles are integral to the continence mechanism. When the pelvic floor muscles contract, they should move cranio-ventrally to clamp and increase pressure within the urethra to prevent passage of urine (DeLancey 1988). Strong, bulky (hypertrophied) and 'toned' pelvic floor muscles resist downward movement and give better structural and anatomical support to pelvic organs, including the urethra (Bø 2004). For instance, studies comparing continent and incontinent women find that the muscles of incontinent women are weaker, contract more slowly and for shorter duration, produce less intra-urethral closure pressure, and the muscles do not sit as 'high' in the pelvis at rest (Pontbriand-Drolet 2016). Miller 1998 reported that women without enough resistance from the pelvic floor muscles can reduce urine leakage by a conscious pelvic floor muscle contraction before the exertion of a cough, and Bø 1995 reported that a strong, well-timed pelvic floor muscle contraction with rising intra-abdominal pressure will prevent urethral descent. Thus, for women with stress urinary incontinence, intensive PFMT to improve pelvic floor muscle stiffness, strength, endurance, and timing of the contraction may help address the problem of low urethral pressure through reducing muscle descent during rises in intra-abdominal pressure (Madill 2013).

The biological rationale for urgency urinary incontinence is different. Detrusor muscle contraction may be inhibited by electrically stimulated pelvic floor muscle contraction (Godec 1975). Women with urgency can use a voluntary pelvic floor muscle contraction to reduce urgency (Burgio 2002). PFMT to increase the strength, bulk, and tone of the pelvic floor muscles may also help because, if urethral pressure is high, this encourages the bladder to remain in a storage rather than voiding phase — a continence 'guarding reflex' (de Groat 2001).

In practice, while the rationale for PFMT may differ by type of urinary incontinence, the exercise prescription has some similarities. Improvements in timing and strength of contraction, as well as bulk and stiffness of the pelvic floor muscle, may benefit all three urinary incontinence subtypes (Pontbriand-Drolet 2012).

For PFMT to work, a woman must do enough of the exercise to get a training effect and then keep doing enough exercise to maintain effect (Bø 2017). Adherence, the extent to which a woman completes the prescribed exercise, will influence the outcome of training (Dumoulin 2015). Suboptimal adherence can mean that not enough exercise is done to alter muscle function. Exercise adherence in the short and longer term is an acknowledged difficulty for women undertaking PFMT (Hay-Smith 2015). Therefore, PFMT is both physical and behavioural therapy (Frawley 2017).

Why it is important to do this review

PFMT is recommended (Grade A recommendation) by the 7th International Consultation on Incontinence (7th ICI), as initial treatment for women with stress, urgency, and mixed urinary incontinence (Wagg 2023). This recommendation prompts the question, which PFMT programme is most effective?

We also considered whether the review needed updating methodologically and concluded it did (Cumpston 2022). We chose one primary outcome, self-reported health-related quality of life specific to lower urinary tract symptoms. Our previous second primary measure (subjective symptom improvement) moved to the list of secondary outcomes. This reflects what women with urinary incontinence think is important to measure in urinary incontinence research (Dumoulin 2012; Herbison 2009). Further, with more data, we hoped for greater precision in effect estimates and wanted to add the GRADE rating of evidence certainty to improve clarity when interpreting the importance of review findings (GRADEpro GDT 2023).

This review is complementary to other Cochrane reviews addressing the effectiveness of:

1. PFMT versus no treatment or inactive control treatments (Dumoulin 2018);
2. the additional effect of PFMT when added to other treatments (Ayeleke 2015);
3. the additional effect of feedback or biofeedback when added to PFMT (Fernandes 2024);
4. the effectiveness of PFMT for antenatal and postnatal women (Woodley 2020).

OBJECTIVES

To assess the effects of alternative approaches (exercise type, dose, and intervention delivery) to pelvic floor muscle training (PFMT) in the management of urinary incontinence (stress, urgency, and mixed) in women.

METHODS

Criteria for considering studies for this review

Types of studies

We included randomised controlled trials (RCTs), cluster-RCTs, and quasi-RCTs (where randomisation may be predictable, such as allocation to group by an odd or even number birth date). We excluded cross-over RCTs because, for an exercise intervention, the effect in the second period of the study could not be separated from the first period.

Types of participants

We included RCTs that recruited women with a diagnosis of stress, urgency, or mixed urinary incontinence based on symptoms, signs, or urodynamic evaluation. If women had overactive bladder syndrome, then two-thirds (66%) or more must have experienced urgency urinary incontinence.

We excluded RCTs that recruited women with temporary or progressive anatomical, physiological, or cognitive changes that might have substantially altered the causes and prognosis of urinary incontinence and treatment response. Therefore, we excluded trials in women who:

1. had central or peripheral neurological conditions including, but not limited to, stroke, other acquired brain injury, multiple sclerosis, Parkinson's disease, and dementia;
2. lived in residential care; this was a proxy for complex medical morbidity that meant the cause of urinary incontinence could be an interaction of multiple contributors such as constipation, polypharmacy, medication adverse effects, and poor mobility;
3. were pregnant;
4. were postnatal and recruited within three months of childbirth.

Types of interventions

For inclusion, trials had to investigate the effectiveness of two or more exercise-based interventions designed to elicit a training response in the pelvic floor muscles to treat urinary incontinence symptoms. There were some differences between trial arms in the exercise type, or dose, or intervention delivery. The basic comparisons in the review were:

1. one exercise type versus another;
2. one exercise dose versus another;
3. one approach to intervention delivery versus another.

We predefined exercise subtypes, higher and lower exercise doses, and different approaches to intervention delivery. These are described below.

Exercise type

PFMT is "exercise to improve PFM strength, endurance, power, relaxation or a combination of these parameters" (Bø 2017). Given the range of exercise types used in practice, we needed a plausible way to group them for comparison. The four groupings were: direct, functional, co-ordinated, and indirect.

Direct PFMT

This is any programme of repeated isolated voluntary pelvic floor muscle contractions. The definition was adapted from Dumoulin 2018, which defined direct PFMT "as any programme of repeated voluntary PFM contractions". We **added** the word **isolated** because we wanted to exclude from this category any exercise that deliberately contracted synergistic muscles (such as the hip rotators) with the pelvic floor muscle.

Functional PFMT

Functional PFMT is training and exercise that incorporates voluntary pelvic floor muscle contraction into activities of daily living such as lifting, transferring out of bed, or sneezing. A pelvic floor muscle contraction before a rise in intra-abdominal pressure, such as a cough ("the Knack" Miller 1998) is part of functional PFMT. Functional PFMT includes behavioural rehearsal in the clinical environment as well as integrating voluntary pelvic floor muscle contractions in everyday life.

The definition is adapted from Bø 2017, who defined functional PFMT as "training and exercises that incorporate a correct pelvic floor muscle contraction into activities of daily living such as lifting, transferring out of bed, or sneezing." We **deleted** the word **correct** because when the activities of daily living are performed it is difficult to know if the contraction is correct or not. We **added** the word **voluntary** to indicate the woman is self-activating. We also **added** the explanation about **behavioural rehearsal**.

Once data extraction was complete, we experienced uncertainty about classifying trials that included functional training. Pragmatically, if a trial said that "the Knack" (Miller 1998) or precontraction of pelvic floor muscle prior to a cough was advised along with direct PFMT, the trial was classified as direct PFMT. To be classified as a trial of functional training, women had to be asked to integrate a voluntary pelvic floor muscle contraction with multiple activities of daily living (e.g. cough, sneezing, sit/stand, reaching above head, lifting, up and down steps).

Co-ordinated training

For this review, co-ordinated training meant voluntary pelvic floor muscle contraction integrated with training of other muscles or other muscle groups (for instance, hip rotators or abdominals) or exercises (such as bridging, plank, Pilates, yoga). This definition was adapted from Bø 2017 who defined co-ordinated training as "the ability to use different parts of the body together smoothly and efficiently. Related to PFMT, co-ordination training means pelvic floor muscle contraction with other muscles or other muscle groups, e.g. respiratory muscles." We **added** the word **voluntary** to indicate the woman is self-activating to differentiate this from all indirect methods of training. This made a distinction, for example, between Pilates with voluntary pelvic floor muscle contraction versus Pilates where there was no voluntary pelvic floor muscle contraction.

Indirect training

These were defined as exercise approaches to improving pelvic floor muscle function without any voluntary pelvic floor muscle

activation. Indirect training included 'facilitated' PFMT. Facilitated PFMT is "an overflow effect from a strong contraction of a nearby synergistic muscle (e.g. external rotators)" (Bø 2017) to facilitate or recruit pelvic floor muscle contraction without voluntary effort by the woman to contract the pelvic floor muscle.

Bø 2017 said facilitated PFMT is used for non-responding or weak muscle. We **have not** made this restriction. We included facilitated PFMT (i.e. overflow effect from strong contraction) **but not** facilitation techniques (such as muscle tapping or stretching) to encourage/teach a correct contraction.

Choosing direct PFMT as the 'control' condition in comparisons of exercise type

We knew that many combinations of these exercise types were possible and used clinically. Direct PFMT is effective (Dumoulin 2018), has the strongest evidence base, has supporting exercise physiology, is 'standard care', and is recommended as initial treatment for urinary incontinence (Wagg 2023). Therefore, all alternative exercise should be compared with direct PFMT. Accordingly, we limited the comparisons to:

1. other types of training (functional, co-ordinated, indirect) versus direct PFMT;
2. direct PFMT combined with functional or co-ordinated training (or both) versus direct PFMT. All three approaches include voluntary pelvic floor muscle contractions. Functional or co-ordinated training (or both) are often combined with direct PFMT clinically. Therefore, this comparison investigates whether this common combination adds benefit over 'standard care';
3. direct PFMT combined with indirect training versus direct PFMT. Indirect training does not include voluntary pelvic floor muscle contractions. Therefore, we wanted to find out if this combination added benefits separately from combinations based on voluntary contractions (see point 2. above).

Once data extraction was complete, we experienced uncertainty classifying trials that combined indirect training with direct PFMT. In some trials, such as those using the Paula method (Liebergall-Wischnitzer 2009; Liebergall-Wischnitzer 2005), the indirect element far outweighed any direct PFMT component and the direct PFMT components in the trial arms were not necessarily the same. Arguably, such studies could be classified as indirect training, and placed in the comparison of indirect training versus direct PFMT (see point 1. above) rather than our decision to classify them as the combination of indirect training with direct PFMT versus direct PFMT alone (see point 3. above). Our classification was consistent with the definition of indirect training given above.

Exercise dose

" 'Dose' is commonly defined as a product of exercise variables (e.g. exercise intensity, exercise duration, type of exercise), training variables (e.g. frequency of training sessions), and the application of training principles" (Herold 2019, p3). For this review, differences in exercise dose could include variations in exercise or training variables such as (but not limited to):

1. more versus fewer contractions;
2. maximal versus submaximal contractions;
3. contractions with short hold times versus contractions with long hold times;
4. resisted versus non-resisted contractions;
5. more versus fewer training sessions per day or per week;
6. longer versus shorter exercise duration (e.g. 12 weeks' training versus 6 weeks' training).

For comparison of dose, we only considered trials with the same exercise type and the same method of intervention delivery in both trial arms.

Exercise intervention delivery

A series of one-to-one, in-person consultations, where a clinician and patient are in the same physical space, are no longer the only or necessarily the most common way for teaching and supervising PFMT. As the previous review suggested (Hay-Smith 2011), more PFMT supervision might be better than less, we compared effectiveness of different methods of delivery. We agreed that the most important comparisons were the following.

1. In-person versus not-in-person methods, such as clinic visits versus telerehabilitation only
2. One in-person method versus another, especially delivery to individuals versus group
3. One not-in-person method versus another, such as website versus smartphone application
4. Supervised versus unsupervised training, such as regular clinician contact versus home exercise only without clinician contact
5. More supervision versus less supervision, regardless of the form of contact, such as weekly clinic visits versus monthly clinic visits

Categorising PFMT interventions that 'mixed' exercise type, dose, and delivery method

We expected difficulties categorising some trials. For instance, a hypothetical trial with two arms comparing home PFMT supported by smartphone application (instructions for direct PFMT only) versus a physiotherapist-led group exercise class (direct and functional training) once a week for 12 weeks in addition to use of the smartphone app at home. This hypothetical trial compares exercise type (direct PFMT with functional training versus direct PFMT), exercise dose (more versus less training per week), and exercise delivery (not in-person versus in-person delivery).

However, we had decided that each trial could contribute to a single comparison (see Unit of analysis issues). For trials that could contribute to more than one comparison, we allocated according to the trial aim or objective. If not clear, we looked at the trialists emphasis in the report's background or discussion to judge intent. If still uncertain, we decided on the biggest 'difference' between treatment groups that might lead to a difference in intervention effect. For the last two, two review authors reached a consensus on the allocation and our justification is documented in Table 1.

Non-exercise components included as part of PFMT interventions

A conservative intervention such as PFMT is typically delivered in a 'package' of care that includes an educational component such as information about pelvic floor muscle anatomy and function, and some lifestyle advice such as appropriate fluid intake and preventing constipation. Therefore, so long as the non-

exercise component was the **same in both trial arms**, the PFMT intervention could include the following.

1. Educational elements
2. Lifestyle advice (but not lifestyle interventions such as dieting) and physical activity recommendations (but not physical fitness intervention)
3. Frequency strategies such as the recommendation to limit repeat voiding, or 'just-in-case' voids
4. Urgency strategies such as the recommendation to voluntarily contract the pelvic floor muscles to suppress urgency, or to apply perineal pressure

In many places, when teaching a correct pelvic floor muscle contraction, a clinician may offer feedback from digital palpation, biofeedback, or use muscle facilitation techniques such as tapping and stretching, particularly for women with little pelvic floor muscle awareness or a weak contraction. This was acceptable unless the trial objective was to test the benefit of feedback, biofeedback, or muscle facilitation techniques; if so, we excluded the trial.

Local or whole-body vibration may have direct effects on muscle physiology, such as increasing muscle excitability (Krause 2016). This was acceptable if the vibration protocol was the same in both trial arms. If the trial objective was to test the benefits of vibration, we excluded the trial.

Exclusions

When PFMT was combined with any of the following 'stand-alone' interventions, we excluded the trial.

1. Bladder training (either the trialists stated that 'bladder training' was offered, or used any timed voiding regimen)
2. Pharmaceuticals
3. Surgeries
4. Complementary therapies, such as acupuncture
5. Psychological therapies, such as cognitive behavioural therapy
6. Manual therapies, such as myofascial techniques
7. Stimulation, either electrical or magnetic
8. Vaginal cones

And, as noted above, we excluded trials that investigated the effect of adding feedback, biofeedback, or localised or whole body vibration, to PFMT.

Types of outcome measures

All outcomes in the review were participant reported because women with urinary incontinence prioritise outcome measures such as incontinence-specific quality of life, incontinence episode frequency, and symptom questionnaires, in intervention research (Dumoulin 2012; Herbison 2009).

Timing of outcome assessment

We looked for end of treatment data, as defined by the trialists, regardless of treatment duration. However, duration of effect is clearly important. If the treatment effect does not last, then women experience a return of bothersome symptoms and may want further treatment, with all the associated costs and consequences for them and health services. Therefore, we collected all prespecified outcomes with reported data after end of treatment and summarised them descriptively.

Primary outcomes

1. **Lower urinary tract symptom-specific quality of life**, shortened here to 'incontinence quality of life', was the primary outcome of interest. Eight measures are rated grade A or A+ by the 7th ICI (Castro-Diaz 2023a), based on robust psychometric properties, for lower urinary tract symptoms including urinary incontinence. These are (in our ranked order of preference) the following.
   a. Incontinence-specific:
      i. International Consultation on Incontinence – Urinary incontinence short form (ICIQ-UI-SF) (Avery 2004)
      ii. Protection, Amount, Frequency, Adjustment, Body image (PRAFAB) (Hendriks 2007)
      iii. Urinary Incontinence Specific Quality of Life Instrument (I-QoL) (Patrick 1999)
      iv. Urinary Incontinence Severity Score (UISS) (Stach-Lempinen 2001)
      v. Incontinence Impact Questionnaire (IIQ) or Incontinence Impact Questionnaire-Short Form (IIQ-7) (Shumaker 1994; Uebersax 1995)
   b. Lower urinary tract symptom (including urinary incontinence) specific:
      i. King's Health Questionnaire (KHQ) or ICIQ Lower Urinary Tract Symptoms Quality of Life (ICIQ-LUTSqol) (Kelleher 1997)
      ii. Bristol Female Lower Urinary Tract Symptoms or ICIQ -Female Lower Urinary Tract Symptoms (ICIQ-FLUTS) (Brookes 2004)
      iii. Leicester Impact Scale (Shaw 2004)

Ranking placed the incontinence-specific instruments before lower urinary tract symptom instruments. Within each category, instruments with the most robust psychometric properties were ranked higher. In the lower urinary tract symptom category, the ICIQ-FLUTS was placed before Leicester Impact Scale because the former is used more often. If a trial used multiple measures, then we extracted outcome data in the rank order above.

During data extraction, we found reporting of KHQ data was highly variable. Some trialists presented a total score calculated from seven domains (maximum 100) and we used these data if reported. Others reported domain scores (maximum 100 per domain) and no total. In this case, we used the data from the Incontinence Impact domain (question 2 on the KHQ, divided by 100). Yet others reported a total score of more than 100 and we could not use that data.

Secondary outcomes

1. **Incontinence episode frequency**: the number of leakage episodes in a urinary, bladder, or leakage diary per specified time period.
2. **Incontinence symptom severity**: measured using the Incontinence Symptom Severity Index (Grade A, 7th ICI) (Twiss 2009).
3. **Participant-reported improvement**, shortened hereafter to improvement: Patient Global Impression of Improvement (PGI-I) (Yalcin 2003) was the preferred measure. If the PGI-I was not used, we accepted participant-rated symptomatic cure or

symptomatic improvement (as defined by trialists) and any self-reported measure.

4. **Participant-reported satisfaction**, shortened hereafter to satisfaction. We accepted participant-rated satisfaction (as defined by trialists) and any self-reported measure.
5. **Adverse events**: number of participants with one or more adverse events.

Search methods for identification of studies

We did not impose any restrictions, for example, language or publication status, on the searches described below.

Electronic searches

Although this was a review update, because of the revised objectives, the search was done without date restriction, and included all potentially eligible study records predating publication of the previous review.

We identified relevant trials from the Cochrane Incontinence Specialised Register. For more details of the search methods used to build the Specialised Register, see the repository on Open Science Framework where details of the Register's development (from inception) and the most recent searches performed to populate the Register can be found (Wallace 2024). To summarise, the Register contains trials identified from the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, MEDLINE In-Process and In-Data-Review and Other Non-Indexed Citations, MEDLINE Epub Ahead of Print, MEDLINE Daily, ClinicalTrials.gov, WHO ICTRP, and handsearching of journals and conference proceedings. Many of the trials in the Cochrane Incontinence Specialised Register are also contained in CENTRAL.

The terms used to search the Cochrane Incontinence Specialised Register are given in Appendix 1.

The date of the most recent search of the Register for this review was 27 September 2023. At the time of this updated search, the Cochrane Incontinence Specialised Register had been updated to 25 September 2023.

To help gauge the amount of available evidence published since the last search on 27 September 2023, we conducted a search for any (further) publications of studies listed as ongoing studies (found by the 27 September 2023 search or earlier). The further search was conducted in November 2024. We added any relevant reports of these studies to the Characteristics of studies awaiting classification table.

Searching other resources

We checked the reference lists of all the included studies to identify other possible studies.

Data collection and analysis

We conducted data collection and analysis in accordance with the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2023)

Selection of studies

We screened all study reports regardless of publication date, or inclusion or exclusion from the previous review, to determine eligibility in view of revisions in review objectives and methods. All reports were uploaded to Covidence, and after deduplication, two review authors independently screened report titles and abstracts for eligibility. No review author screened a report if they had any involvement in the study under consideration. We resolved any disagreements by discussion, and consulted a third review author if needed to reach consensus.

Using Covidence, we repeated the screening process for the remaining full-text reports. Multiple reports of the same trial were collated because the trial (rather than the report) was the unit of interest for the review. We listed studies excluded at this stage in the Characteristics of excluded studies table with the reason for exclusion.

Our process is reported in the PRISMA flow diagram (Figure 1).

Figure 1. PRISMA flow diagram.

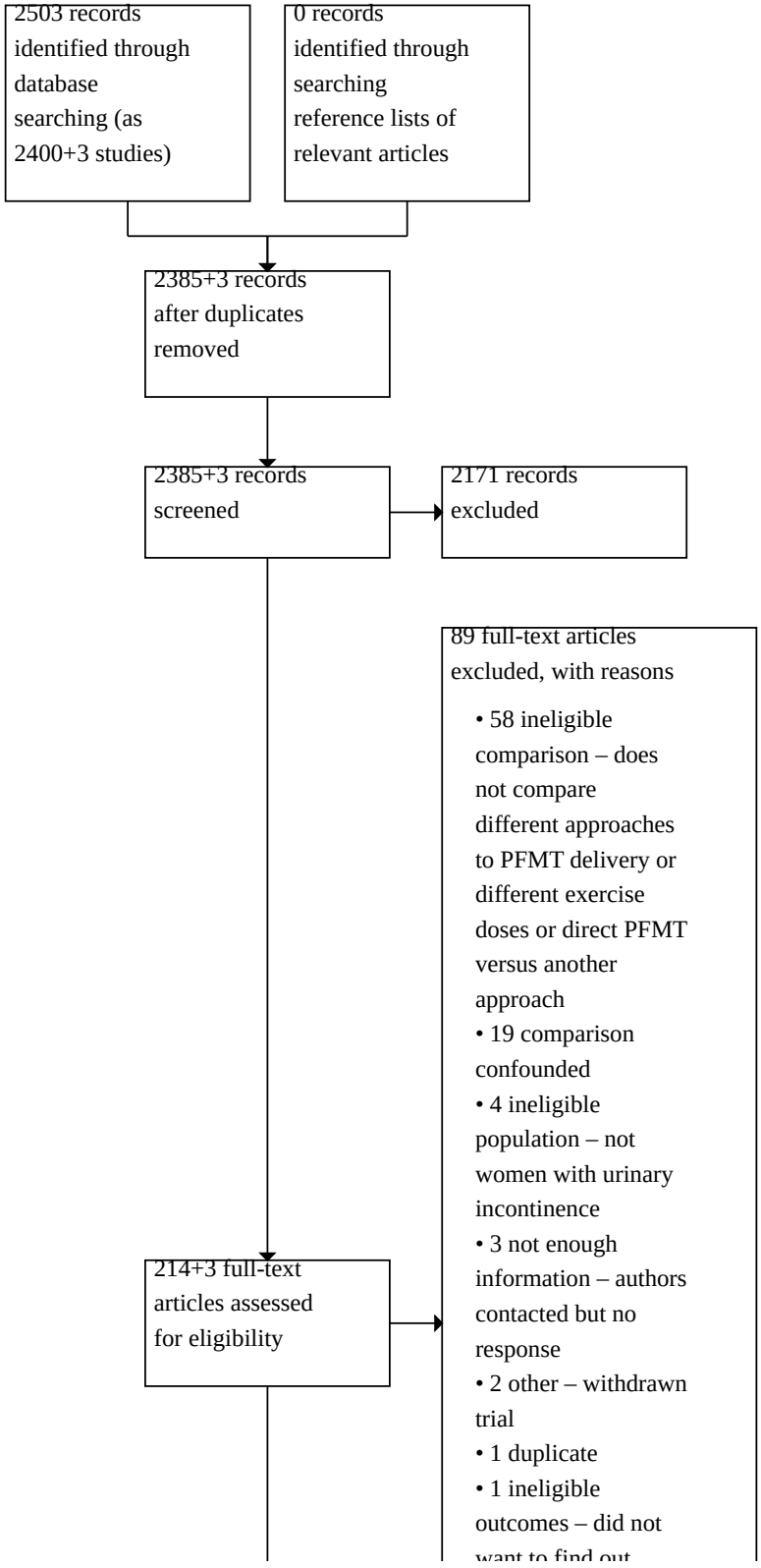
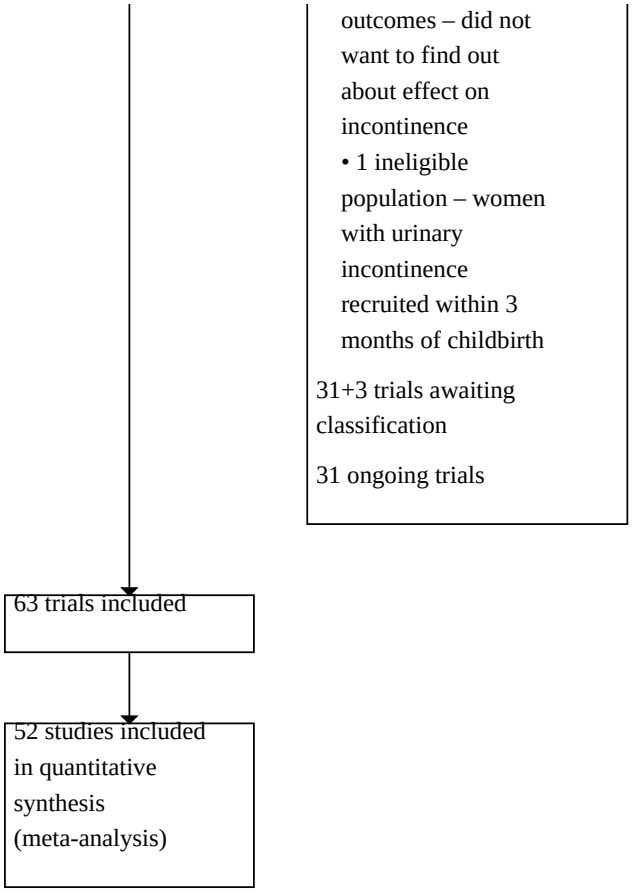


Figure 1. (Continued)



Data extraction and management

Two review authors independently extracted data into a custom Word document template based on the one used in the previous review and updated for current Cochrane methodology expectations. We extracted data describing the study design, study methods, population characteristics (all existing template items), and intervention details (revised, based on items from the Consensus on Exercise Reporting Template for Pelvic Floor Muscle Training (CERT-PFMT)) (Slade 2021). We resolved disagreements by discussion, and involved a third review author if needed, to reach consensus. We transferred data to the Characteristics of included studies table and the description of intervention tables (Table 2; Table 3; Table 4).

If a trial had more than one report (e.g. trial registration, trial protocol, conference abstract, full publication), we extracted data from the full publication first. Then, we checked all other reports for the trial for all possible details of methods and data, including follow-up data.

Assessment of risk of bias in included studies

Two review authors independently assessed the risk of bias using the Cochrane RoB 1 tool (Higgins 2011). We resolved disagreements by discussion, and involved a third review author if needed, to reach consensus. One review author (MSP) reviewed all decisions to check for consistency across review author pairs. We kept a record of disagreements to support consistent decision-making; the decision support matrix is in Appendix 2. No review author assessed the risk of bias for a trial in which they were a researcher.

Risk of bias assessment included: selection bias (random sequence generation, random allocation concealment), performance bias (blinding of participants and providers), detection bias (blinding of outcome assessment), attrition bias (completeness of outcome data), reporting bias (selective outcome reporting), and other potential sources of bias (funding and conflicts of interest).

Before risk of bias assessment, we agreed to rate 'blinding of participants and personnel' and 'blinding of outcome assessors' at unclear risk of bias. As all trials compared two active interventions, the people providing and receiving PFMT would have known the nature of the intervention. Whether there was a systematic bias toward one intervention or the other for intervention providers or recipients was unclear. It is possible there was genuine equipoise, or the provider or recipient preference for one intervention or the other was at random, or there was systematic bias. Therefore, all trials were deemed at unclear risk of performance bias. Detection bias was likely because all outcomes of interest in the review were participant reported and were unblinded; again, all trials might be at similar risk of detection bias, and it is not clear if this is a systematic risk for one active intervention over the other. Overall, as

all trials were rated at 'unclear' risk of performance and detection bias, these types of bias did not help us distinguish better from lesser quality studies. These types of bias do not appear in the risk of bias tables, and were not used as the basis for sensitivity analysis by study quality.

Trials judged at low risk for attrition bias analysed participants in the assigned group and had less than 11% differential loss to follow-up, and could not exclude participants from analysis based on lack of intervention adherence.

Each study was rated low, high, or unclear risk for each type of bias, consistent with use of the Cochrane RoB 1 tool (Higgins 2011). Then, each study was also given an overall risk of bias rating.

1. High risk of bias: trials at high risk for selection bias (i.e. rated high risk for both random sequence generation and random allocation concealment)
2. Low risk of bias: trials that were at low risk for selection, attrition, reporting, and other potential sources of bias
3. Unclear risk of bias: all other combinations of risk

Measures of treatment effect

Two measures were not subject to meta-analysis: adverse events (too few reported for meaningful meta-analysis), and leakage severity (no data reported for the preferred measure).

Dichotomous outcomes – improvement, satisfaction

We measured treatment effect using odds ratios (ORs) with the corresponding 95% confidence intervals (CIs).

Our preferred measure for participant-reported improvement was the PGI-I, a seven-level ordinal rating scale. However, many other unvalidated, trial-specific, Likert-type scales for improvement or satisfaction data are used and the number of levels in the scale and word anchors are not consistent. Further, levels are frequently collapsed for reporting purposes, often at different cut-points.

We had no preferred measure for participant-reported satisfaction. Similar variability in scales and reporting was expected. Further, during data extraction, it was not clear if the concept being measured was satisfaction with treatment received, or satisfaction with treatment outcome, or a more 'generic' measure.

To maximise information available to estimate the treatment effect for these two outcomes, we made a pragmatic choice to measure the effect as follows.

1. Improved (any improvement, or cure) versus no improvement (including worse)
2. Satisfied (any level of satisfaction) versus not satisfied

Continuous outcomes measured using the same scale – incontinence episode frequency

We used either the number of incontinence episodes or change in number of episodes and estimated treatment effect using a mean difference (MD) with the corresponding 95% CI. If a study reported both, we used the change from baseline summary data. As trialists reported incontinence episodes at variable time intervals (e.g. 24 hours, 3 days, 7 days), we calculated the frequency in 24 hours.

Continuous outcomes measured using different scales – incontinence quality of life

We used a standardised mean difference (SMD) and 95% CI as studies used different instruments to collect quality of life data. One prespecified instrument (I-QoL) was reverse-scored for data entry as it was the only instrument in which a higher score meant better quality of life. We used thresholds suggested by Cohen 1988 to interpret SMD as follows.

1. 0.2 to less than 0.5: a small effect
2. 0.5 to less than 0.8: a moderate effect
3. 0.8 and higher: a large effect

Effect sizes less than 0.2 were considered unimportant, even if statistically significant.

Unit of analysis issues

For parallel-group RCTs, with repeated within-treatment measures (e.g. 4 weeks, 8 weeks, and end of treatment at 12 weeks), we used only the end of treatment measure. For continuous outcomes measured on the same scale, we used change from baseline to end of treatment (preferred) or end of treatment.

When a parallel-group RCT had three or more trial arms eligible for inclusion:

1. we allocated the RCT to one comparison based on the trialist's purpose (i.e. was the trial designed as a comparison of type, dose, or delivery?). Therefore, no trial contributed to more than one comparison or the same meta-analysis;
2. so that information was not lost, we agreed which trial arms were combined as experimental intervention and which trial arms were combined as controls; if this was done, we reported it in Included studies.

For cluster-RCTs, we used or sought the effect estimate with the necessary adjustment for correlation. However, none of the cluster-RCTs made this adjustment (Chiu 2018; Kannan 2022; Suraj 2016). Suraj 2016 contributed no data to the review, and we used data from Chiu 2018 and Kannan 2022 knowing the effect estimates were too precise. Where an unadjusted estimate contributed to a meta-analysis, we stated this and discussed the implications.

Dealing with missing data

For each outcome, we sought data for every participant randomised regardless of treatment received, study exclusion or dropout, as an intention-to-treat analysis. If trialists had imputed data, we used that data as reported. If not, we extracted data for participants who completed. We did not impute missing data if studies reported only complete case data.

Some trials reported data for an outcome of interest, but the data were not usable (e.g. mean without standard deviation, or P value only). If trialists did not respond to our request or data were no longer available, we calculated a mean and standard deviation if possible. For instance, calculating a standard error of treatment from a mean difference and an exact P value, or if only median and interquartile range were reported, then estimating the standard deviation using the formula suggested by McGrath 2020. When used, this was noted when the meta-analysis was reported. If it

was not reasonable to take this approach, then the trial did not contribute to the meta-analysis.

Where data were missing, we sent emails, or contacted researchers we knew, seeking additional information and particularly for the full data for all levels of ordinal-scaled variables such as participant-reported improvement and satisfaction. If additional data were provided, or it was confirmed the data were no longer available, we reported this in the results.

Assessment of heterogeneity

We assessed heterogeneity for each subgroup analysis. We began with visual inspection of the forest plots. Next, we assessed statistical heterogeneity by producing forest plots and using the Chi^2 test and I^2 statistic in Review Manager software (RevMan 2023). If there was substantial statistical heterogeneity (I^2 statistic was 50% or more), we conducted a sensitivity analysis to explore plausible explanations for heterogeneity (high/unclear risk for selection bias versus low risk; high/unclear risk for attrition bias versus low risk). Heterogeneity thresholds were those from the *Cochrane Handbook for Systematic Reviews of Interventions* as follows (Higgins 2023).

1. 0% to 40%: might not be important
2. 30% to 60%: may represent moderate heterogeneity
3. 50% to 90%: may represent substantial heterogeneity
4. 75% to 100%: considerable heterogeneity

Assessment of reporting biases

If more than 10 studies were included in a meta-analysis of any subgroup, we planned to investigate publication bias using a funnel plot within Review Manager (RevMan 2023). This was not done because no subgroup meta-analysis contained sufficient trials.

Data synthesis

We used Review Manager to complete the statistical analysis (RevMan 2023). For all analyses, we used the general approach of inverse-variance weighting, with a fixed-effect model, and a summary statistic calculated by subgroup only. When the test for within subgroup heterogeneity was substantial (I^2 = 50% or greater), we also calculated and reported a random-effects estimate. In general terms, we started with the fixed-effect estimates, explored heterogeneity in relation to subgroups (see below) and in sensitivity analysis (selection bias, attrition bias) for the primary outcome variable and the first-named secondary outcome (incontinence episode frequency).

When reading the forest plots, care is needed. For the two continuous outcomes (incontinence quality of life, incontinence episode frequency), a higher value is worse, and for the two dichotomous outcomes (improvement, satisfaction), a higher value is better. Therefore, the labelling of the forest plots is reversed.

Narrative synthesis was planned if multiple studies did not report data in a way that could be combined. We decided adverse events data were best presented as a narrative summary as so few trials reported this outcome.

Subgroup analysis and investigation of heterogeneity

Within each comparison (exercise type, dose, or delivery), the intended and principal heterogeneity was the intervention and comparator. Therefore, each meta-analysis was presented in subgroups (intervention versus comparator) within each main comparison (exercise type, dose, or delivery). A test for **between** subgroup differences was planned in meta-analyses with 10 or more trials, and when heterogeneity was substantial (I^2 statistic of 50% or greater), we summarised plausible biological and clinical explanations for differences based on the interventions being compared.

Sensitivity analysis

When there was important heterogeneity (I^2 statistic of 50% or greater) within a subgroup, we used the following study-level attributes to explore this.

1. Selection bias: trials at low risk in both random sequence generation and random allocation concealment versus unclear or high risk in one or both.
2. Attrition bias: trials at low risk of attrition bias versus unclear or high risk.

Summary of findings and assessment of the certainty of the evidence

We prepared summary of findings tables using GRADEpro GDT software for each comparison by subgroup (GRADEpro GDT 2023), because data were pooled in subgroups but not across subgroups, for the following outcomes.

1. Incontinence-specific quality of life
2. Incontinence episode frequency
3. Improvement
4. Satisfaction
5. Adverse events

A sixth outcome, incontinence severity, was planned but not used because no trial collected and reported data using the prespecified measure.

We used the five GRADE considerations (study limitations, consistency of effect, imprecision, indirectness, and publication bias) to assess the certainty of the evidence as it related to the studies which contributed data to the meta-analyses for the prespecified outcomes (Atkins 2004). We used methods and recommendations described in Chapter 14 of the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2023), and further guidance on assessing inconsistency from Guyatt 2023. We summarised the guidance in a matrix to support consistent decisions (Appendix 3). We justified all decisions to downgrade the certainty of the evidence using footnotes in the summary of findings tables.

RESULTS

Description of studies

Results of the search

We imported 2503 records (as 2400 studies) into Covidence from the literature search, and, after removing 15 duplicates, we screened 2385 studies. We excluded 2171 records based on title and abstract screening, and 214 studies were retrieved for full-text screening. Of these, we excluded 89 study reports (of 62 unique studies), most commonly because the trial did not make an eligible comparison.

See Characteristics of excluded studies for a full description of the reasons for exclusion and Excluded studies for a summary of those reasons. The remaining 128 studies in the review comprised 63 Included studies, 34 Studies awaiting classification, and 31 Ongoing studies. Once the review was completed, we located three further trials (shown as +3 in Figure 1), found through reference list searching of recently published non-Cochrane reviews, that are awaiting assessment.

The PRISMA diagram showing the flow of literature through the search and assessment process can be seen in Figure 1.

To help gauge the amount of available evidence published since the last search on 27 September 2023, we conducted a search for any (further) publications of studies listed as ongoing studies (found by the 27 September 2023 search or earlier) in November 2024. The search found additional reports of 10 studies, suggesting these studies were now completed (CTRI/2020/07/026729; CTRI/2021/09/036247; ISRCTN14126416; NCT03166150; NCT05154760; NCT05293886; NCT05390008; NCT05446792; RBR-106frtzv; TCTR20210202002). We moved them from 'Ongoing studies' to 'Studies awaiting classification'. Figure 1 shows the updated numbers of 'Ongoing studies' and 'Studies awaiting classification'.

Included studies

The Characteristics of included studies table includes 63 trials.

Design

Sixty RCTs were parallel designs with two to four intervention arms, and three trials were described as cluster-RCTs (Chiu 2018; Kannan 2022; Suraj 2016). Only one trial was a non-inferiority design (Dumoulin 2020), and 11 were pilot or feasibility trials (Bech 2021; Chiu 2018; Delgado 2010; Jose 2020; Kannan 2022; Khong 2016; Lausen 2018; Liebergall-Wischnitzer 2005; Nagib 2021; Savage 2005; Toprak 2022), although the sample size in these trials were not appreciably different to other small trials that were not described as pilot or feasibility studies.

Sample size

The smallest study recruited 11 women (two trial arms, Savage 2005), and the largest recruited 362 women (two trial arms, Dumoulin 2020). While the included trials recruited 4920 women, many studies were small. Only 9/63 trials recruited 50 or more women per trial arm (Dumoulin 2020; Kamarudin 2021; Kastelein 2020; Ko 2018; Liebergall-Wischnitzer 2009; Prudencio 2014; Sjöström 2013; Suraj 2016; Wells 1999). The nine larger trials accounted for more than 40% of participants (2090/4920, 42.5%); however, three of these did not contribute data to the review because they did not report any outcomes of interest or usable data (Kamarudin 2021; Ko 2018; Suraj 2016; 526 women).

Setting

None of the 63 trials was conducted in a low-income country. Seven took place in a lower-middle-income country (Egypt: Kamel 2011; India: Jose 2020; Suraj 2016; Iran: Fani 2024; Kashanian 2011; Pakistan: Mushtaq 2019; Saleem 2022) according to the 2022 data from the World Bank Group 2023 classification although three of the seven trials did not contribute any data because they did not report usable data or collect an outcome of interest (Kamel 2011; Saleem 2022; Suraj 2016). Ninety percent of trials were conducted in upper-middle- or high-income countries (Brazil, Canada, China, Denmark, Germany, Greece, Israel, Malaysia, Norway, Portugal, Slovakia, Sweden, Spain, Switzerland, Taiwan, Thailand, Netherlands, Turkey, the UK, the USA). The greatest number of trials took place in Brazil (18 trials), although 16 of them were small and randomised fewer than 100 participants in two or more trial arms.

For in-person treatment delivery, all settings were outpatient (pelvic health, gynaecology, urogynaecology, continence, physiotherapy, or similar) or community health clinics. When there was no in-person contact with participants, treatment delivery was via the internet, smartphone applications, or written instructions.

Participants

The common demographic profile of study participants was mid-age parous women, including pre- and postmenopausal women, with symptoms of stress urinary incontinence or stress-predominant mixed urinary incontinence who had no prior treatment for urinary incontinence or prior pelvic surgery, and no other appreciable pelvic floor dysfunction.

Urinary incontinence

Of 63 trials, 37 recruited women with stress urinary incontinence only, 10 recruited women with stress urinary incontinence or stress-predominant mixed urinary incontinence, and six recruited women with stress or mixed urinary incontinence. The most inclusive samples included all three common subtypes of urinary incontinence (stress, urgency, and mixed urinary incontinence) as reported in seven trials (Bech 2021; Ferla 2022; Fischer Blosfield 2021; Kamarudin 2021; Lausen 2018; Li 2023; Saleem 2022), or one trial where women had 'mixed lower urinary tract symptoms' (Ng 2008). Three trials included women with urinary incontinence, not further defined (Jose 2020; Suraj 2016; Toprak 2022).

Other demographic characteristics that might influence prognosis

Age

Mean or median ages in the 56 trials that reported this demographic ranged from 31.5 years (Saleem 2022) to 74.6 years (Kannan 2022), and in 41 trials the mean or median age was in the range of 45 years to 65 years.

Body mass index

Thirty-six trials reported mean or median body mass index. In two-thirds of trials that reported body mass index, the mean or median value was in the overweight range (25.0 kg/m^2 to 29.9 kg/m^2; 23 trials). In three trials, the mean body mass index was in the obese range (30 kg/m^2 or more; Fitz 2015; Fitz 2020; Kamel 2011); Kamel 2011 specifically recruited women with obesity.

Parity

Mean or median parity ranged from under two (Luginbuehl 2022; Tejero 2008) to four or more (de Oliveira Camargo 2009; Fitz 2015; Zanetti 2007) in 29 trials, and in another seven trials that reported frequencies, the proportion of nulliparous women was under 10%.

Menopause

Nineteen trials reported the proportion of women who were postmenopausal, ranging from 30% (Bø 1990) to 100% (Li 2023) in

sample populations with a mean age of 45.5 years and 64.4 years, respectively.

Non-inclusion criteria

Most studies had non-inclusion criteria that excluded 'complicating' factors or concomitant health concerns that contributed to urinary incontinence causation (e.g. urinary tract infections, or treatment for pelvic cancers) or impaired the ability to understand or complete PFMT (e.g. dementia). Thirty-six trials specifically excluded women who had had current or prior treatments for urinary incontinence, such as incontinence surgery or PFMT. Women with other pelvic floor dysfunction such as vaginal prolapse to or beyond the introitus (34 trials), prior pelvic surgery or radiation, were also commonly excluded (25 trials).

Comparisons

Exercise type

Twenty-seven trials compared exercise type, in three subgroups. In every subgroup, the 'control' comparator was direct PFMT (the 'gold standard').

1. **Co-ordinated training versus direct PFMT**: 13 trials (Chiu 2018; Clark 2008; Fani 2024; Kamarudin 2021; Khong 2016; Konstantinidou 2013; Kucukkaya 2021; Li 2023; Mushtaq 2019; Nipa 2020; Rodrigues 2020; Savage 2005; Suraj 2016)
2. **Indirect training versus direct PFMT**: seven trials (Jordre 2014; Jose-Vaz 2020; Kamel 2011; Kannan 2022; Manfio Marroni 2017; Saleem 2022; Toprak 2022)
3. **Combined indirect training with direct PFMT versus direct PFMT**: seven trials (de Souza Abreu 2017; Jose 2020; Lausen 2018; Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009; Luginbuehl 2022; Marques 2020)

Exercise dose

Eleven trials compared exercise dose, in four subgroups. Each subgroup compared a 'higher' versus a 'lower' exercise dose:

1. **PFMT with resistance device (higher) versus PFMT without resistance device (lower)**: six trials (Delgado 2010; Kashanian 2011; Orhan 2019; Prudencio 2014; Roongsirisangrat 2012; Wells 1999)
2. **Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower)**: one trial (Johnson 2001)
3. **PFMT more days per week (higher) versus PFMT fewer days per week (lower)**: three trials (Borello-France 2008; Hagovská 2020; Sriboonreung 2011)
4. **PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)**: one trial (Borello-France 2006)

Exercise intervention delivery

Twenty-five trials compared deliveries if exercise interventions, in six subgroups. The common element across trials was that the comparisons typically had a trial arm with more 'intensive' supervision (e.g. more contact, or in-person contact), and a trial arm with less 'intensive' supervision (e.g. less contact, or no in-person contact).

1. **In-person clinic supervision (more) versus no clinic supervision (less)**: eight trials (Bø 1990; Felicissimo 2010; Ferla 2022; Marques 2005; Nagib 2021; Tejero 2008; Wilson 1987; Wong 1997)
2. **More clinician contact (more) versus less clinician contact (less)**: five trials (Ferreira 2012; Fitz 2015; Fitz 2020; Konstantinidou 2007; Zanetti 2007)
3. **In-person group supervision (usually more) versus in-person individual supervision (usually less)**: five trials (Bech 2021; de Oliveira Camargo 2009; Dumoulin 2020; Figueiredo 2020; Pereira 2011)
4. **In-person supervision (more) versus e-health supervision (less)**: one trial (Kastelein 2020)
5. **E-health delivery (more) versus written instruction only (less)**: four trials (Araujo 2020; Fischer Blosfield 2021; Sjöström 2013; Sonmezer 2022)
6. **Additional phone calls versus no phone calls**: two trials (Ko 2018; Ng 2008)

Categorising trials that could contribute to more than one comparison

Nine trials had a potentially confounded comparison (Bø 1990; Chiu 2018; de Oliveira Camargo 2009; Lausen 2018; Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009; Marques 2020; Nagib 2021; Suraj 2016). For instance, a comparison of different types of exercise that also had differences in the amount and type of supervision. The potential confounders, and our decision about which comparison to put the trial in, are summarised in Table 1. We also comment on the potential influence of this confounding when reporting the meta-analyses.

We had decided in advance that no trial could contribute to more than one subgroup or comparison (see Unit of analysis issues). Six trials had more than two eligible trial arms, which meant we had to make a decision about assigning them to a single comparison (Bech 2021; Figueiredo 2020; Fischer Blosfield 2021; Kannan 2022; Rodrigues 2020; Sriboonreung 2011). In four of the six trials, we decided to combine data from trial arms (Bech 2021; Figueiredo 2020; Fischer Blosfield 2021; Kannan 2022). In two trials, there was one eligible trial arm that was not used (Rodrigues 2020; Sriboonreung 2011). A brief description of the trial arms and our decisions for each of the six trials is in Table 5.

PFMT interventions

The PFMT interventions are described in detail in by exercise type (Table 2), exercise dose (Table 3), and exercise intervention delivery (Table 4). Before the results of each comparison are presented in the Effects of interventions, the key elements of the interventions are summarised — that is, the difference in exercise type for Comparison 1, the difference in exercise dose for Comparison 2, and the difference in exercise delivery for Comparison 3. Below, we summarise other elements of Consensus on Exercise Reporting Template (CERT) and CERT-PFMT that are indicative of how much we know about:

1. the 'expertise' of those who provided training;
2. whether the providers were trained in the research protocol and whether their fidelity to delivering it as planned was evaluated;
3. whether women had the necessary prerequisite — a correct voluntary pelvic floor muscle contraction — for safe and effective training;

4. exercise adherence, as this may influence treatment response.

Providers

Treatment was most commonly provided by physiotherapists (41 trials). Other health professionals providing treatment included nurses (4 trials), a physician (1 trial), an 'undefined' health professional (2 trials), or 'researchers' (3 trials). In three trials, the provider was not the same in both groups, either because one group was unsupervised and the other was not, or because different disciplines provided different interventions (e.g. PFMT versus yoga). Nine trials did not report who provided the exercise intervention.

Training for providers in the research protocol

Five trials reported some information that suggested that the provider's fidelity to the intervention protocol was considered. The most comprehensive was Dumoulin 2020 with a training workshop, then supervision, and an intervention checklist. Borello-France 2006 and Borello-France 2008 collected data on the amount of exercise prescribed, which enabled comparison with the intended prescription. Figueiredo 2020 reported that "both centres had the same training," and Jordre 2014 that the "less experienced" provider was "trained".

Confirmation of a correct voluntary pelvic floor muscle contraction

Thirty-five trials confirmed a correct voluntary pelvic floor muscle contraction in both (or all) trial arms. Three trials clearly stated a correct voluntary pelvic floor muscle contraction was not confirmed in either comparison group. Five trials confirmed a correct contraction in one trial arm only (e.g. in an individually supervised treatment but not a group treatment), and the remaining trials did not report any details for any trial arm. Methods of confirming a correct voluntary pelvic floor muscle contraction were vaginal palpation, "digital" palpation, perineal palpation, or some form of biofeedback from a vaginal device; some trials used more than one of these. By far the most common method was vaginal palpation (31 trials).

Exercise adherence

Methods of collecting participant exercise adherence were diaries, self-report, attendance, and from a device that captured use (e.g. number of times the exercise protocol was accessed on a mobile phone app). Twelve trials collected exercise adherence data and did not report it. Fifteen trials collected and reported exercise adherence. The typical pattern was similar adherence in both groups — similarly low, similarly moderate, or similarly high. Therefore, it seemed unlikely that exercise adherence was a plausible explanation for any observed difference in effect between groups in the trials that reported this information.

Excluded studies

Sixty-two trials (in 89 reports) were excluded, and the reasons are given in Characteristics of excluded studies. The most common reason was an ineligible comparison. In 39 trials, the comparison was ineligible because it was not another type of training versus direct PFMT, not a higher versus a lower exercise dose, or not one type of exercise intervention delivery versus another. Thirteen trials used another active intervention with PFMT (see list of excluded added active interventions in Types of interventions), and were therefore excluded. Other reasons were that the population was ineligible (four trials), there was insufficient information to assess the trial and we could not contact the trial authors (three trials), the trial was registered but never undertaken (two trials), and one trial was not about the effect of PFMT on urinary incontinence.

Studies awaiting classification

Thirty-four trials are summarised in the Characteristics of studies awaiting classification table. Twelve are studies where we found further publications once the review was completed; 10 of these were registrations of trials we thought were probably eligible and had previously been classified as ongoing (see Results of the search), and two were already awaiting classification pending more information about eligibility (RBR-52qtts; Soni 2013). All other trials are awaiting classification because more information is needed to confirm eligibility, and we are waiting for a full publication to assess eligibility (12 trials), or we have a published trial record and our request for further information from trialists has not been answered as yet (10 trials).

For the 12 trials with further publications, if these trials are assessed as eligible, they will contribute data from approximately 500 women. Nine trials appear to compare different exercise types (CTRI/2020/07/026729; CTRI/2021/09/036247; ISRCTN14126416; NCT03166150; NCT05293886; NCT05390008; NCT05446792; RBR-52qtts; TCTR20210202002), and three different approaches to intervention delivery (NCT05154760; RBR-106frtzv; Soni 2013). None appear to address exercise dose.

Ongoing studies

Thirty-one ongoing trials are recorded in the Characteristics of ongoing studies table. These may add data from approximately another 2400 women with unspecified urinary incontinence (nine trials), urinary incontinence after gynaecological surgery (two trials), urinary incontinence after fistula repair (one trial), stress urinary incontinence (14 trials), stress and mixed urinary incontinence (three trials), stress-predominant mixed urinary incontinence only (one trial), and pelvic floor dysfunction symptoms after childbirth (one trial). Twenty-one trials appear to investigate exercise type and 10 trials appear to investigate exercise intervention delivery; none investigate exercise dose.

Risk of bias in included studies

Summaries of risk of bias assessments are in Figure 2 and Figure 3. Details of the risk of bias assessment for each trial are in the Characteristics of included studies table.

Figure 2. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

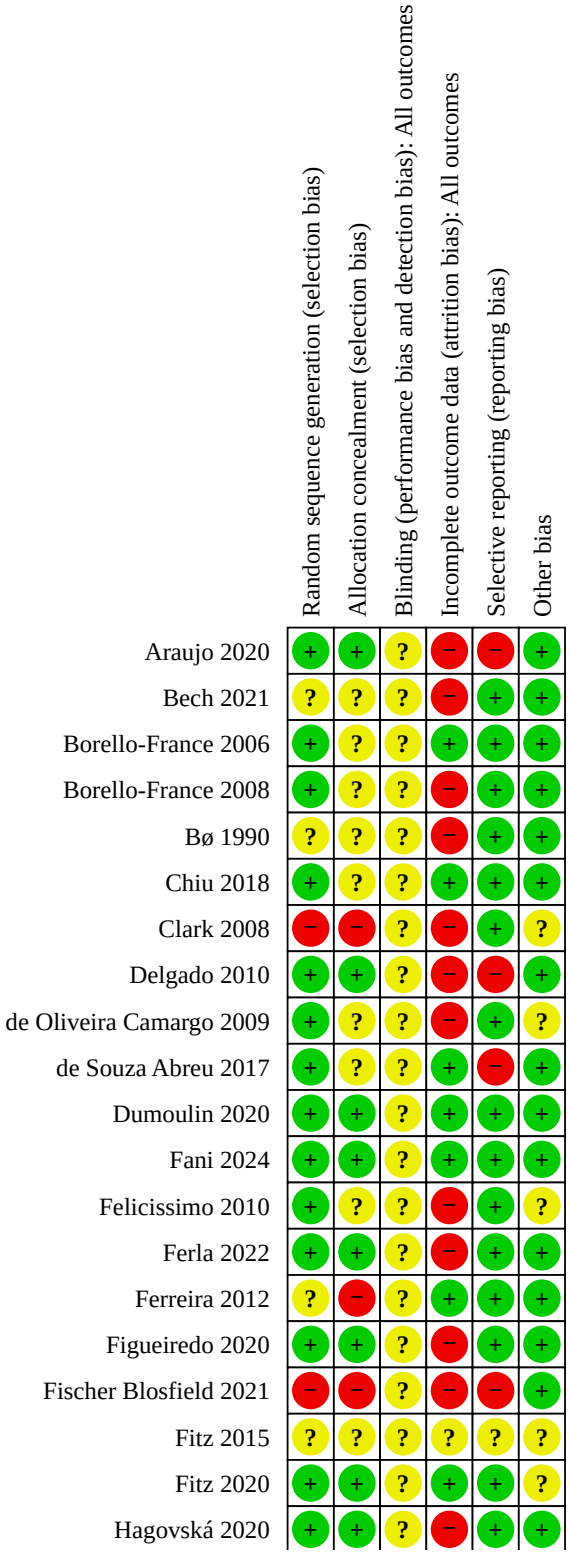


Figure 2. (Continued)

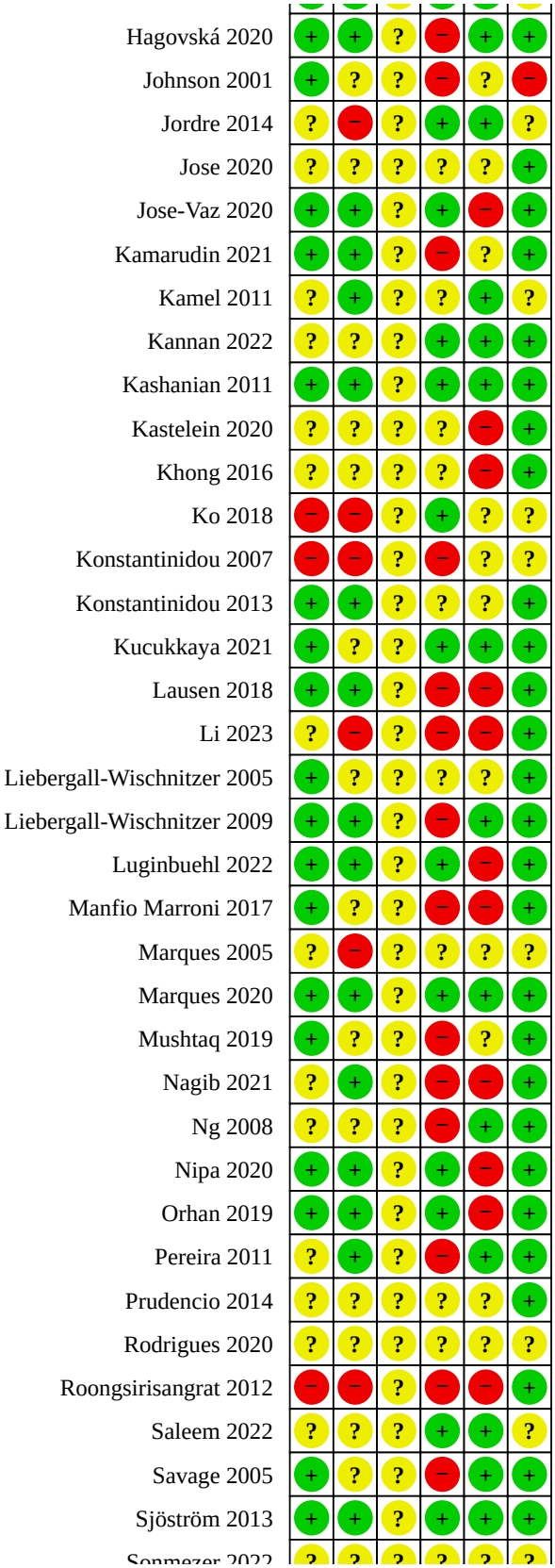


Figure 2. (Continued)

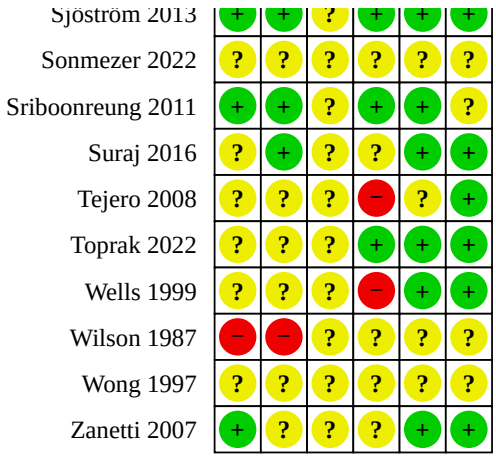
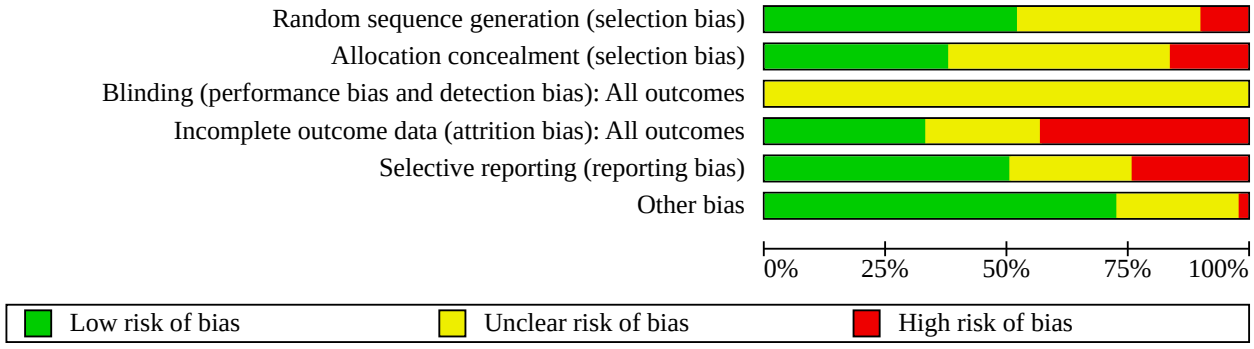


Figure 3. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.



Overall risk of bias assessment per trial

Five studies were at low overall risk of bias (Dumoulin 2020; Fani 2024; Kashanian 2011; Marques 2020; Sjöström 2013), and six at high overall risk (Clark 2008; Fischer Blosfield 2021; Ko 2018; Konstantinidou 2007; Roongsirisangrat 2012; Wilson 1987). The remaining 52 studies were assessed at unclear overall risk of bias.

Allocation

Random sequence generation

Thirty-three trials appeared to use a genuinely equal chance method for generating a random sequence (Araujo 2020; Borello-France 2006; Borello-France 2008; Chiu 2018; de Oliveira Camargo 2009; de Souza Abreu 2017; Delgado 2010; Dumoulin 2020; Fani 2024; Felicissimo 2010; Ferla 2022; Figueiredo 2020; Fitz 2020; Hagovská 2020; Johnson 2001; Jose-Vaz 2020; Kamarudin 2021; Kashanian 2011; Konstantinidou 2013; Kucukkaya 2021; Lausen 2018; Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009; Luginbuehl 2022; Manfio Marroni 2017; Marques 2020; Mushtaq 2019; Nipa 2020; Orhan 2019; Savage 2005; Sjöström 2013; Sriboonreung 2011; Zanetti 2007). These included random number tables, computer-generated random number sequences, block randomisation, or a web-based or other remote randomisation service.

Six trials were assessed at high risk of bias: five used a deterministic method (i.e. assignment according to the order of enrolment) (Clark 2008; Ko 2018; Konstantinidou 2007; Roongsirisangrat 2012; Wilson 1987), and one trial changed the group assignment for some participants after randomisation by the research team (Fischer Blosfield 2021).

The remaining 24 studies were classified at unclear risk of bias, primarily due to inadequate details about the randomisation process (e.g. saying only that the participants were randomly assigned) and using simple manual methods of randomisation (such as drawing lots) without sufficient information to support their robustness and ensure they were not compromised.

Random allocation concealment

Twenty-four trials reported concealed random allocation and were at low risk of bias (Araujo 2020; Delgado 2010; Dumoulin 2020; Fani 2024; Ferla 2022; Figueiredo 2020; Fitz 2020; Hagovská 2020; Jose-Vaz 2020; Kamarudin 2021; Kamel 2011; Kashanian 2011; Konstantinidou 2013; Lausen 2018; Liebergall-Wischnitzer 2009;

Luginbuehl 2022; Marques 2020; Nagib 2021; Nipa 2020; Orhan 2019; Pereira 2011; Sjöström 2013; Sriboonreung 2011; Suraj 2016).

Ten trials were assessed at high risk of bias. Five used a deterministic method of randomisation and allocation was clearly not concealed (Clark 2008; Ko 2018; Konstantinidou 2007; Roongsirisangrat 2012; Wilson 1987), and five used simple, manual methods of randomisation (i.e. drawing lots, coin toss) which cannot be considered a robust method of concealment (Ferreira 2012; Fischer Blosfield 2021; Jordre 2014; Li 2023; Marques 2005).

All remaining 29 trials were at unclear risk of bias, primarily due to inadequate details about the randomisation process.

Blinding

All trials were deemed at unclear risk of performance and detection bias. See explanation in Assessment of risk of bias in included studies. One study did attempt to blind participants in their intervention group to the addition of "reflexive" training — there was no evaluation of the success of this attempt to blind participants to group allocation (Luginbuehl 2022).

Incomplete outcome data

Twenty-one trials were assessed at low risk for attrition bias (Borello-France 2006; Chiu 2018; de Souza Abreu 2017; Dumoulin 2020; Fani 2024; Ferreira 2012; Fitz 2020; Jordre 2014; Jose-Vaz 2020; Kannan 2022; Kashanian 2011; Ko 2018; Kucukkaya 2021; Luginbuehl 2022; Marques 2020; Nipa 2020; Orhan 2019; Saleem 2022; Sjöström 2013; Sriboonreung 2011; Toprak 2022). In these trials, overall attrition was lower than 20%, differential attrition was 10% or less between groups, participants were analysed in assigned groups, and analysis included all available participants.

Twenty-seven trials were judged at high risk of bias (Araujo 2020; Bech 2021; Bø 1990; Borello-France 2008; Clark 2008; de Oliveira Camargo 2009; Delgado 2010; Felicissimo 2010; Ferla 2022; Figueiredo 2020; Fischer Blosfield 2021; Hagovská 2020; Johnson 2001; Kamarudin 2021; Konstantinidou 2007; Lausen 2018; Li 2023; Liebergall-Wischnitzer 2009; Manfio Marroni 2017; Mushtaq 2019; Nagib 2021; Ng 2008; Pereira 2011; Roongsirisangrat 2012; Savage 2005; Tejero 2008; Wells 1999). These trials had 20% or greater attrition overall, 11% or greater difference in attrition between groups, conducted a per-protocol analysis (e.g. excluded participants they deemed "non-compliant"), or combinations of these.

The remaining 15 trials were at unclear risk of bias due to reporting insufficient information about the number of participants with data contributing to analysis, or attrition.

Selective reporting

Thirty-two trials were assessed at low risk of bias for this domain (Bech 2021; Bø 1990; Borello-France 2006; Borello-France 2008; Chiu 2018; Clark 2008; de Oliveira Camargo 2009; Dumoulin 2020; Fani 2024; Felicissimo 2010; Ferla 2022; Ferreira 2012; Figueiredo 2020; Fitz 2020; Hagovská 2020; Jordre 2014; Kamel 2011; Kannan 2022; Kashanian 2011; Kucukkaya 2021; Liebergall-Wischnitzer 2009; Marques 2020; Ng 2008; Pereira 2011; Saleem 2022; Savage 2005; Sjöström 2013; Sriboonreung 2011; Suraj 2016; Toprak 2022; Wells 1999; Zanetti 2007). These trials reported all outcomes as stated in the protocol or trial registration (or both). If the trial did not have a published protocol or trial registration, there was a robust methods and data analysis section in the paper with consistency between methods and results regarding outcomes assessed and data reported.

Fifteen trials were judged at high risk, mainly due to inconsistencies between trial protocol/registration and reported results (Araujo 2020; de Souza Abreu 2017; Delgado 2010; Fischer Blosfield 2021; Jose-Vaz 2020; Kastelein 2020; Khong 2016; Lausen 2018; Li 2023; Luginbuehl 2022; Manfio Marroni 2017; Nagib 2021; Nipa 2020; Orhan 2019; Roongsirisangrat 2012).

The 16 remaining trials were at unclear risk of bias primarily because there was not enough information reported in the methods and results to be sure that the reported analysis was as planned.

Other potential sources of bias

One trial was judged at high risk of bias as they declared industry support, without providing further details about the funder's role in the analysis and reporting of the results (Johnson 2001).

Sixteen trials were assessed at unclear risk of bias (Clark 2008; de Oliveira Camargo 2009; Felicissimo 2010; Fitz 2015; Fitz 2020; Jordre 2014; Kamel 2011; Ko 2018; Konstantinidou 2007; Marques 2005; Rodrigues 2020; Saleem 2022; Sonmezer 2022; Sriboonreung 2011; Wilson 1987; Wong 1997). These trials did not provide a funding declaration.

The funding of the remaining 46 trials raised no concerns, there were no other declared conflicts of interest, and these trials were considered at low risk of bias.

Effects of interventions

See: **Summary of findings 1** Summary of findings table - Co-ordinated pelvic floor muscle training (PFMT) compared to direct PFMT for women with urinary incontinence; **Summary of findings 2** Summary of findings table - Indirect training compared to direct pelvic floor muscle training (PFMT) for women with urinary incontinence; **Summary of findings 3** Summary of findings table - Indirect training combined with direct pelvic floor muscle training (PFMT) compared to direct PFMT for women with urinary incontinence; **Summary of findings 4** Summary of findings table - Pelvic floor muscle training (PFMT) with resistance device compared to PFMT without resistance device for women with urinary incontinence; **Summary of findings 5** Summary of findings table - Maximal pelvic floor muscle contractions compared to submaximal pelvic floor muscle contractions in pelvic floor muscle training (PFMT) for women with urinary incontinence; **Summary of findings 6** Summary of findings table - More days of pelvic floor muscle training (PFMT) per week compared to fewer days of PFMT per week for women with urinary incontinence; **Summary of findings 7** Summary of findings table - Pelvic floor muscle training (PFMT) in upright body positions compared to PFMT when lying down for women with urinary incontinence; **Summary of findings 8** Summary of findings table - Pelvic floor muscle training (PFMT) supervised in clinic compared to PFMT at home without clinic-based supervision for women with urinary incontinence; **Summary of findings 9** Summary of findings table - More clinician contact for pelvic floor muscle training (PFMT) supervision compared to less clinician contact for PFMT supervision for women with urinary incontinence; **Summary of findings 10** Summary of findings table - In-person individual supervision of pelvic floor muscle

training (PFMT) compared to in-person group supervision of PFMT for women with urinary incontinence; **Summary of findings 11** Summary of findings table - In-person clinic supervised pelvic floor muscle training (PFMT) compared to remote supervision of PFMT for women with urinary incontinence; **Summary of findings 12** Summary of findings table - Pelvic floor muscle training (PFMT) delivered via e-health compared to PFMT written instructions for women with urinary incontinence

Comparison 1: exercise type

Twenty-seven trials, in three subgroups, compared 'another' type of exercise versus direct PFMT (the 'gold standard' control). Intervention details are presented in Table 2. Briefly, the other types of training compared with direct PFMT were the following.

1. **Co-ordinated PFMT versus direct PFMT**: 13 trials. Co-ordinated training comprised voluntary pelvic floor muscle contraction incorporated in core stability training (Fani 2024; Jose 2020; Nipa 2020); abdominal training (Chiu 2018; Kucukkaya 2021); transversus abdominis muscle contractions (Clark 2008; Konstantinidou 2013); Salat (prayer steps) (Kamarudin 2021; Khong 2016); Pilates (Mushtaq 2019; Rodrigues 2020; Savage 2005); Tanzberger training (Suraj 2016); or strength training with exercises such as biceps curls, bench press, bridging, and wall squats (Li 2023). Three trials also included functional training in both trial arms (Chiu 2018; Clark 2008; Savage 2005), and in one trial it may have been in the co-ordinated training group only (Suraj 2016). Treatment duration was between six and 12 weeks and most commonly provided by a physiotherapist. A voluntary pelvic floor muscle contraction was confirmed in five trials, not in one trial, and it was unclear in the remainder. Four trials collected adherence data (either exercise diaries or attendance), and only two of them reported the data (similar, high, levels in both groups). The full analysis by outcome is presented below, and in Summary of findings 1.
2. **Indirect training versus direct PFMT**: seven trials. Indirect training used resisted hip movement (Jordre 2014), hypopressive exercise (Jose-Vaz 2020), diaphragmatic breathing (Toprak 2022), transversus abdominis/internal oblique muscles (Kamel 2011), yoga and Pilates (Kannan 2022), or Pilates (Manfio Marroni 2017; Saleem 2022). Treatment duration was between six and 12 weeks and most commonly provided by a physiotherapist. A voluntary pelvic floor muscle contraction was confirmed in two trials, in one trial only in the direct PFMT group, not confirmed in one trial, and it was unclear in the remainder. One trial collected adherence data (diary and attendance), but data were not presented by group (although reported to be similar, and high). The full analysis by outcome is presented below, and in Summary of findings 2.
3. **Indirect training combined with direct PFMT versus direct PFMT**: seven trials. The indirect training combined with direct PFMT comprised resisted hip movement (Marques 2020), lumbo-pelvic stabilisation (de Souza Abreu 2017), modified Pilates (Lausen 2018), reflexive training (Luginbuehl 2022), the Paula method (Liebergall-Wischnitzer 2009; Liebergall-Wischnitzer 2005) and Pallof Press (standing chest press, Jose 2020). Treatment duration was between five and 16 weeks and most commonly provided by a physiotherapist; Lausen 2018 measured outcome at end of treatment and five months postrandomisation, and it was unclear from the trial report which postintervention data were reported. A voluntary pelvic floor muscle contraction was confirmed in five trials, not in one trial, and it was unclear in one trial. Two trials collected adherence data (either exercise diaries or attendance), and both reported the data (similar levels in both groups, high levels in one trial, and low in one trial). The full analysis by outcome is presented below, and in Summary of findings 3.

In six RCTs, the comparison of exercise type was possibly confounded by some other difference between the interventions. Both Chiu 2018 and Suraj 2016 who compared co-ordinated PFMT versus direct PFMT, gave more supervision in the co-ordinated training group. Four of the seven RCTs that compared indirect training combined with direct PFMT versus direct PFMT alone offered more supervision to the combined therapy group (Lausen 2018; Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009; Marques 2020), and also used group supervision for combined therapy and individual supervision of direct PFMT (Lausen 2018; Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009).

Twenty trials contributed data to the analysis and seven did not. Four trials measured no outcome of interest for the review (Kamarudin 2021; Kamel 2011; Khong 2016; Suraj 2016), and three trials collected data on an outcome of interest but did not present usable data (Manfio Marroni 2017; Saleem 2022; Savage 2005).

Primary outcome

Incontinence quality of life (Analysis 1.1)

Nineteen trials had usable data from the following measures: ICIQ-UI-SF (Jose-Vaz 2020; Kannan 2022; Lausen 2018; Li 2023; Luginbuehl 2022; Marques 2020; Rodrigues 2020), I-QoL (Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009; Toprak 2022) IIQ or IIQ-7 (Clark 2008; Jordre 2014; Jose 2020; Kucukkaya 2021; Mushtaq 2019), KHQ or ICIQ-LUTSqol (de Souza Abreu 2017; Fani 2024; Konstantinidou 2013; Nipa 2020) (Analysis 1.1). Three further trials collected data on incontinence quality of life, but the data were not usable as reported (Manfio Marroni 2017; Saleem 2022; Savage 2005).

Co-ordinated PFMT versus direct PFMT

Co-ordinated PFMT may slightly improve incontinence quality of life compared to direct PFMT (SMD −0.22, 95% CI −0.44 to −0.01; I^2 = 81%; 8 trials, 356 women; low-certainty evidence; Analysis 1.1). A random-effects model moved the point estimate to a negligible effect and increased imprecision in the 95% CIs suggesting caution is needed when deciding whether this is a small or negligible improvement in incontinence quality of life for co-ordinated PFMT (SMD −0.19, 95% CI −0.69 to 0.31). Sensitivity analysis (selection bias) reduced the effect size to negligible and the imprecision in the 95% CIs increased (SMD −0.08, 95% CI −0.40 to 0.24; I^2 = 70%; 3 trials, 155 women). Sensitivity analysis (attrition bias) gave a moderate effect size in favour of co-ordinated PFMT (SMD −0.51, 95% CI −0.83 to −0.19; I^2 = 67%; 3 trials, 159 women).

Indirect training versus direct PFMT

Direct PFMT may moderately improve incontinence quality of life compared to indirect training (SMD 0.70, 95% CI 0.38 to 1.02; I^2 = 78%; 4 trials, 170 women; low-certainty evidence; Analysis 1.1). A random-effects model retained a moderate effect size in favour of direct PFMT, but imprecision of the 95% CIs increased and crossed the line of no effect (SMD 0.55, 95% CI −0.14 to 1.25). All trials were

at low risk of attrition bias. Sensitivity analysis for selection bias left one trial with a large effect size in favour of direct PFMT.

This comparison included one, unadjusted cluster trial (Kannan 2022). Removing it from the analysis meant that the point estimate was still in favour of direct PFMT (somewhat less so) and the 95% CIs were wider (SMD 0.82, 95% CI 0.47 to 1.17; I^2 = 82%).

Indirect training combined with direct PFMT versus direct PFMT

Combining indirect training with direct PFMT may result in little to no difference in incontinence quality of life compared to direct PFMT (SMD −0.08, 95% CI −0.26 to 0.10; I^2 = 33; 7 trials, 482 women; low-certainty evidence; Analysis 1.1). Heterogeneity was less than the cut-off for presenting a random-effects model or sensitivity analysis.

Four trials were potentially confounded by offering more supervision in the combined training group (Lausen 2018; Liebergall-Wischnitzer 2005; Liebergall-Wischnitzer 2009; Marques 2020). Removing these trials from the analysis did not change the summary effect estimate (although it reduced precision) and did not appear to have any important effect (visually or with the I^2 statistic) on the consistency of effect.

Test for subgroup differences

There was considerable heterogeneity with a fixed-effect model suggesting subgroups were a likely source of heterogeneity (I^2 = 91.4%; Analysis 1.1). Heterogeneity was not substantial with a random-effects model (Chi^2= 3.13, degrees of freedom (df) = 2 (P = 0.21), I^2 = 36.1%). Visual inspection suggests the heterogeneity (different direction in point estimates across the three subgroups) is what could be expected based on the exercise physiology foundations of PFMT (i.e. direct PFMT is better than indirect training, whereas both other subgroups have direct PFMT in both trial arms and were probably more likely to find little or no difference).

Secondary outcomes

Incontinence episode frequency (24 hours) (Analysis 1.2)

Nine trials reported usable data for incontinence episode frequency at 24 hours (Chiu 2018; Clark 2008; Konstantinidou 2013), three days (de Souza Abreu 2017; Fani 2024; Jordre 2014; Li 2023; Marques 2020), and seven days (Jose-Vaz 2020) (Analysis 1.2). One trial was a cluster-RCT, but the analysis did not appear to correct for non-independence of the data within clusters (Chiu 2018). We entered the data as reported, with the limitation it may be overprecise in estimating effect.

Co-ordinated PFMT versus direct PFMT

Co-ordinated PFMT may reduce incontinence episode frequency, but the evidence is very uncertain (MD −0.12, 95% CI −0.19 to −0.04; I^2 = 93%; 5 trials, 172 women; very low-certainty evidence; Analysis 1.2). A random-effects model moved the point estimate to a more than minimal difference in favour of co-ordinated PFMT and increased imprecision in the 95% CIs (MD −0.16, 95% CI −0.59 to 0.28). Sensitivity analysis (selection bias) gave a greater reduction in incontinence episode frequency with co-ordinated PFMT (point estimate and 95% CIs) (MD −0.57, 95% CI −0.72 to −0.43; I^2 = 67%; 2 trials, 91 women). Sensitivity analysis (attrition bias) still favoured co-ordinated PFMT, although less so, and increased imprecision in the 95% CIs to cross the line of no effect (MD −0.14, 95% CI −0.56 to 0.29; I^2 = 0%; 2 trials, 85 women).

When we removed Chiu 2018 from the analysis (potentially confounded by more supervision in the co-ordinated training group, and a cluster-RCT with unadjusted analysis), there was marked visual inconsistency in the forest plot. Three trials had point estimates in favour of direct PFMT (Clark 2008; Fani 2024; Li 2023), in contrast to Konstantinidou 2013 who showed a large effect in favour of co-ordinated PFMT. Accordingly, our uncertainty was further increased about any difference in effect between co-ordinated and direct PFMT on incontinence episode frequency.

Indirect training versus direct PFMT

Direct PFMT may reduce incontinence episode frequency compared to indirect training (MD 0.20, 95% CI 0.14 to 0.26; I^2 = 71%; 2 trials, 100 women; low-certainty evidence; Analysis 1.2). A random-effects model suggested no difference (MD −0.01, 95% CI −0.50 to −0.53). Both trials were at low risk of attrition bias, but sensitivity analysis for selection bias left a single trial that favoured direct PFMT.

Indirect training combined with direct PFMT versus direct PFMT

Combining indirect training with direct PFMT may result in little to no difference in incontinence episode frequency compared to direct PFMT (MD −0.07, 95% CI −0.18 to 0.03; I^2 = 0%; 2 trials, 76 women; low-certainty evidence; Analysis 1.2). Heterogeneity was less than the cut-off for presenting a random-effects model or sensitivity analysis.

When we removed Marques 2020 from the analysis (potentially confounded by offering more supervision in the combined therapy group), this left a single trial that had similar, more precise findings.

Incontinence symptom severity

No trial reported incontinence severity using the prespecified measure.

Improvement (Analysis 1.3)

Two trials reported data. One used an unvalidated measure (Jordre 2014), and the other used the PGI-I (de Souza Abreu 2017). Presentation of data by de Souza Abreu 2017 precluded analysis (median, P value) and the researchers confirmed the data were no longer available.

Co-ordinated PFMT versus direct PFMT

No data reported.

Indirect training versus direct PFMT

Jordre 2014 invited only women who reported some improvement to rate their improvement on a scale from 0 to 100. All women in the indirect training group (12/12) and nearly all women (14/15) in the direct PFMT group reported some improvement (unpublished data). There may be little to no difference in participant-rated improvement with indirect training compared to direct PFMT, but the evidence is very uncertain (odds ratio 2.59, 95% CI 0.10 to 69.34; 1 trial, 27 women; very low-certainty evidence; Analysis 1.3).

Indirect training combined with direct PFMT versus direct PFMT

The data were unusable.

Satisfaction (Analysis 1.4)

No trial reported satisfaction.

Adverse events

Three trials collected adverse event data (Li 2023; Liebergall-Wischnitzer 2009; Luginbuehl 2022). The fourth trial did not state that they collected adverse event data, but their trial publication said there was "no unintended damage or effects" (de Souza Abreu 2017). Therefore, in three trials, there were no adverse events reported (de Souza Abreu 2017; Li 2023; Liebergall-Wischnitzer 2009). While the methods of Luginbuehl 2022 reported adverse event data collection, none of the associated publications mentioned adverse events.

Follow-up data

Four trials collected data after the end of treatment, two of which did not report any further data for the outcomes of interest (Kamel 2011; Liebergall-Wischnitzer 2009).

Clark 2008 (co-ordinated training versus direct PFMT) remeasured incontinence quality of life (using the IIQ) and incontinence episode frequency (per day) two weeks after treatment ended. In this very small trial (15 women), with very short duration follow-up, there was no difference in IIQ scores or incontinence episode frequency between groups (incontinence quality of life: SMD 0.19, 95% CI −0.85 to 1.22; incontinence episode frequency: MD 0.28, 95% CI −1.14 to 1.70). The finding of no difference between groups was consistent with their end of treatment findings.

de Souza Abreu 2017 (adding indirect training to direct PFMT versus direct PFMT), repeated incontinence quality of life (using the KHQ), incontinence episode frequency (three days converted to 24 hours), and subjective improvement (using the PGI-I) at 90 days. It was unclear if this was 90 days postrandomisation or 90 days after treatment ended. In this small trial (36 women), there were differences in KHQ (question 2 data only as no total score reported) and incontinence episode frequency that favoured combined training (incontinence quality of life: SMD −1.11, 95% CI −1.85 to 10.37; incontinence episode frequency: MD −0.53, 95% CI −0.65 to −10.41). PGI-I data were not available in usable format, although the trialists reported median PGI-I scores were better in the combined training group (P < 0.001). The direction of effect was consistent with their end of treatment findings for all these outcomes.

Comparison 2: exercise dose

Eleven trials, in four subgroups, compared a 'higher' dose of direct PFMT versus a 'lower' dose of direct PFMT. Intervention details are presented in Table 3. Briefly, the interventions (as described by the researchers) were as follows.

1. **PFMT with resistance device (higher) versus PFMT without resistance device (lower)**: six trials. Two trials did not describe the resistance devices (Prudencio 2014; Wells 1999), and the others used spring-loaded devices (Delgado 2010; Kashanian 2011), vaginal tampon (Orhan 2019), or a rectal balloon (Roongsirisangrat 2012). Treatment duration was between six and 20 weeks and most treatment was provided by a physiotherapist, nurse, or an "investigator". Four trials confirmed a voluntary pelvic floor muscle contraction, and it was not clear in two trials. Three trials collected adherence data (diary and attendance), but only one trial presented data (similar high levels in both groups). The full analysis by outcome is presented below, and in Summary of findings 4.
2. **Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower):** one trial. The trial compared exercise at 90% (near maximal) versus exercise at 60% (submaximal) contraction intensity (Johnson 2001). Treatment duration was six weeks and provided by a physiotherapist. A voluntary pelvic floor muscle contraction was confirmed and adherence data collected by the biofeedback device used in the groups; the data were not reported. The full analysis by outcome is presented below, and in Summary of findings 5.
3. **PFMT more days per week (higher) versus PFMT fewer days per week (lower)**: three trials. Higher doses were daily PFMT (Sriboonreung 2011), five times a week (Hagovská 2020), and four times a week (Borello-France 2008). Lower doses were three times a week (Sriboonreung 2011), twice a week (Hagovská 2020), and once a week (Borello-France 2008). In addition, the exercise duration differed in Hagovská 2020 (30 minutes per session for the higher dose versus 15 minutes for the lower dose), and both groups also did co-ordinated training. Borello-France 2008 investigated a maintenance exercise dose after a more intensive supervised treatment period. Treatment duration was 12 weeks and most commonly provided by a physiotherapist. All trials confirmed a voluntary pelvic floor muscle contraction, collected adherence data. One trial excluded one woman in each group for "low adherence" and one trial had adherence levels that were similar in both groups. One trial collected data on the prescribed exercise to see how close this was to the protocol (it was). The full analysis by outcome is presented below, and in Summary of findings 6.
4. **PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)**: one trial. Antigravity positions included sitting and standing. Both groups had direct PFMT and functional training (Borello-France 2006). Treatment duration was six weeks and provided by a physiotherapist. The trial confirmed a voluntary pelvic floor muscle contraction and collected adherence data (attendance) with similar, high levels in both groups. The trial also collected data on the prescribed exercise to see how close this was to the protocol (it was). The full analysis by outcome is presented below, and in Summary of findings 7.

Ten trials contributed data to the analysis. One trial contributed no data to the analyses, but did report adverse event data (Roongsirisangrat 2012).

Primary outcome

Incontinence quality of life (Analysis 2.1)

Four trials had usable data from the following measures: ICIQ-UI-SF (Hagovská 2020), I-QoL (Kashanian 2011), or KHQ (Orhan 2019; Prudencio 2014) (Analysis 2.1). Two trials presented data in ways precluding analysis (Borello-France 2006; Delgado 2010), and contact with these authors confirmed that usable data for ICIQ-UI-SF and IIQ (respectively) were not available.

PFMT with resistance device (higher) versus PFMT without resistance device (lower)

PFMT without a resistance device may slightly improve incontinence quality of life compared to PFMT with a device, but

the evidence is very uncertain (SMD 0.22, 95% CI −0.04 to 0.48; I^2 = 32%; 3 trials, 227 women; very low-certainty evidence; Analysis 2.1). Heterogeneity was less than the cut-off for presenting a random-effects model or sensitivity analysis.

Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower)

No data reported.

PFMT more days per week (higher) versus PFMT fewer days per week (lower)

PFMT more days per week may greatly improve incontinence quality of life compared to PFMT fewer days per week (SMD −1.60, 95% CI −2.15 to −1.05; 1 trial, 68 women; low-certainty evidence; Analysis 2.1).

PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)

No data reported.

Secondary outcomes

Incontinence episode frequency (24 hours) (Analysis 2.2)

Five trials reported usable data for 24 hours (Johnson 2001; Orhan 2019), and seven days (Borello-France 2006; Borello-France 2008; Hagovská 2020). Three trials presented data in ways that precluded analysis (Kashanian 2011: ordered categories; Roongsirisangrat 2012: median and range; Wells 1999: adjusted mean and no measure of variation).

PFMT with resistance device (higher) versus PFMT without resistance device (lower)

PFMT without a resistance device may result in some improvement in incontinence episode frequency compared to PFMT with a resistance device, but the evidence is very uncertain (MD 0.68, 95% CI −0.39 to 1.75; 1 trial, 41 women; very low-certainty evidence; Analysis 2.2).

Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower)

Maximal pelvic floor muscle contractions may result in a reduction in incontinence episode frequency compared to submaximal contractions, but the evidence is very uncertain (MD −0.36, 95% CI −1.85 to 1.13; 1 trial, 32 women; very low-certainty evidence; Analysis 2.2).

PFMT more days per week (higher) versus PFMT fewer days per week (lower)

PFMT more days per week may result in reduced incontinence episode frequency compared to PFMT fewer days per week (MD −0.18, 95% CI −0.30 to −0.07; 2 trials, 95 women; I^2 = 89%; low-certainty evidence; Analysis 2.2). A random-effects model favoured more days per week and increased imprecision in the 95% CIs, which crossed the line of no effect (MD −0.32, 95% CI −0.78 to 0.14). Sensitivity analysis for selection bias removed one trial (Borello-France 2008), leaving one trial that favoured more days per week (Hagovská 2020). Both trials were at high risk of attrition bias.

PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)

PFMT in upright body position may reduce incontinence episode frequency compared to PFMT in lying position, but the evidence is very uncertain (MD −0.20, 95% CI −0.64 to 0.24; 1 trial, 35 women; very low-certainty evidence; Analysis 2.2).

Incontinence symptom severity

No trial reported incontinence severity using the prespecified measure.

Improvement (Analysis 2.3)

Five trials reported usable data from the PGI-I (Delgado 2010; Hagovská 2020), and various unvalidated measures (Orhan 2019; Sriboonreung 2011; Wells 1999) (Analysis 2.3). One trial reported whether women were 'continent' or 'incontinent' but we did not use these data because it was unclear if this was the women's perception or was based on other outcomes such as leakage episode data (Prudencio 2014).

PFMT with resistance device (higher) versus PFMT without resistance device (lower)

There may be little to no difference in participant-rated improvement for PFMT with a device compared to PFMT without a device, but the evidence is very uncertain (OR 1.36, 95% CI 0.67 to 2.77; I^2 = 0%; 3 trials, 161 women; very low-certainty evidence; Analysis 2.3).

Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower)

No data reported.

PFMT more days per week (higher) versus PFMT fewer days per week (lower)

In Sriboonreung 2011, all women in both groups reported improvement and the odds ratio was not estimable. In Hagovská 2020, 33/34 women exercising more days per week reported improvement versus 17/34 exercising fewer days. PFMT more days per week may result in greater participant-reported improvement compared to PFMT fewer days per week, but the evidence is very uncertain (OR 33.00, 95% CI 4.09 to 269.47; 1 trial, 90 women; very low-certainty evidence; Analysis 2.3). If Sriboonreung 2011 had contributed to the analysis, it is likely the evidence would be downgraded further as the findings from the two trials are different (null effect versus large effect).

PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)

No data reported.

Satisfaction (Analysis 2.4)

One trial contributed data, using an unvalidated measure of 'patient satisfaction' (3-item Likert scale) (Delgado 2010).

PFMT with resistance device (higher) versus PFMT without resistance device (lower)

Five of 15 women using a resistance device and 8/15 women exercising without a device reported they were "completely satisfied". PFMT with a resistance device may increase participant-rated satisfaction slightly compared to PFMT without a resistance

device, but the evidence is very uncertain (OR 0.44, 95% CI 0.10 to 1.92; 1 trial, 30 women; very low-certainty evidence; Analysis 2.4).

Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower)

No data reported.

PFMT more days per week (higher) versus PFMT fewer days per week (lower)

No data reported.

PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)

No data reported.

Adverse events

Two trials, both comparing PFMT with a resistance device versus PFMT without a device, reported that they collected adverse event data (Kashanian 2011; Roongsirisangrat 2012). There were no adverse events reported in the non-device groups. In Kashanian 2011, 7/39 women in the device group reported no adverse events, and the remaining 32 women reported vaginal discharge (23/39), spotting (6/39), and pain (3/39). Roongsirisangrat 2012 reported one woman in the rectal balloon training group had rectal discomfort initially, but this disappeared as exercise continued.

Follow-up data

Two trials collected data after the end of treatment, one of which did not report any further data about the outcomes of interest (Delgado 2010).

Kashanian 2011 (PFMT with resistance device versus PFMT without resistance device) reported incontinence quality of life (using the I-QoL) three months after treatment ended and there was no difference between groups (SMD 0.36, 95% CI −0.07 to 0.79; 82 women). The finding of no difference between groups was consistent with their end of treatment findings.

Comparison 3: exercise intervention delivery

Twenty-five trials, in six subgroups, investigated exercise intervention delivery. The common element across trials was that the comparisons typically had one group with more 'intensive' supervision (e.g. more contact, or in-person contact), and one group with less 'intensive' supervision (e.g. less contact, or no in-person contact). Intervention details are presented in Table 4. Briefly, the interventions (as described by the researchers) were the following.

1. **PFMT supervised in clinic (more) versus PFMT at home without clinic supervision (less)**: eight trials. Clinic-based supervision was provided individually (Nagib 2021; Tejero 2008; Wilson 1987; Wong 1997), or in a group (Bø 1990; Felicissimo 2010; Ferla 2022; Marques 2005). Nagib 2021 used game-therapy in a clinic. The PFMT at home groups had an initial visit to teach the PFMT programme then exercised at home without supervision. Treatment duration was between four and 24 weeks, and provided by a physiotherapist. Four trials confirmed a voluntary pelvic floor muscle contraction in both groups, two trials in the clinic supervision group only, and it was not clear in the remainder. Five trials collected adherence data (exercise diaries or attendance), and all reported the data; high and similar in both groups in two trials, moderate and similar in two trials, and low in both trial arms but worse in the home training group in one trial. The full analysis by outcome is presented below, and in Summary of findings 8.
2. **More clinician contact for PFMT supervision (more) versus less clinician contact for PFMT supervision (less)**: five trials (Ferreira 2012; Fitz 2015; Fitz 2020; Konstantinidou 2007; Zanetti 2007). Women in both groups received some clinician contact for supervision. All trials compared weekly or twice-weekly contact versus monthly contact. In Ferreira 2012, the monthly contact was via telephone call rather than a clinic visit. Treatment duration was between 12 and 24 weeks and provided by a physiotherapist. All trials confirmed a voluntary pelvic floor muscle contraction in both groups. Three trials collected adherence data (exercise diaries or attendance), and only one reported the data (high levels of attendance and more than two-thirds of exercise completed in both groups). The full analysis by outcome is presented below, and in Summary of findings 9.
3. **Individual supervision of PFMT (more) versus group supervision of PFMT (less)**: five trials. All five trials compared individual versus group supervision, with similar or the same amount of in-person clinician contact in both trial arms (Bech 2021; de Oliveira Camargo 2009; Dumoulin 2020; Figueiredo 2020; Pereira 2011). However, for the meta-analysis, we categorised individual supervision as 'more' and group supervision as 'less' intensive. Figueiredo 2020 was a three-arm trial, and we combined data from two arms (group supervision only, individual supervision followed by group) to compare it with individual supervision only. In three trials, women did functional and co-ordinated training in addition to direct PFMT in both trial arms (Bech 2021; de Oliveira Camargo 2009; Dumoulin 2020). Treatment duration was between six and 12 weeks and provided by a physiotherapist. Four trials confirmed a voluntary pelvic floor muscle contraction in both groups, and one trial only in the individual training group. Three trials collected adherence data (exercise diaries or attendance), and only one reported the data (high levels of attendance and more than 80% of exercise completed in both groups). The full analysis by outcome is presented below and in Summary of findings 10.
4. **PFMT supervised in clinic (more) versus remote supervision using e-health (less)**: one trial. Women were seen in the clinic or had a smartphone app that allowed remote supervision by a clinician (Kastelein 2020). Treatment duration was 12 weeks and provided by a healthcare professional; the outcome data were collected at 12 months. It was unclear if a voluntary pelvic floor muscle contraction was confirmed in either group. Adherence data were collected and not reported. The full analysis by outcome is presented below, and in Summary of findings 11.
5. **PFMT instruction delivered by e-health (more) versus PFMT written instruction (less)**: four trials. Three trials compared an e-health approach to intervention delivery (Araujo 2020 and Sonmezer 2022: smartphone app; Sjöström 2013: website) versus hardcopy written instructions. Fischer Blosfield 2021 was a four-arm trial and the researchers' intention was to investigate the effectiveness of a smartphone app, with and without additional supervision; we combined data from the two app groups (app plus group exercise, app alone) to compare with data from the two written instruction groups (written instruction and group exercise, written instruction alone). Treatment duration was 12 weeks in all trials. In one trial, the internet group could contact a urotherapist, and in

another the participants saw a physiotherapist initially, with no information in the other two trials about supervision. Two trials confirmed a voluntary pelvic floor muscle contraction in both groups, and two trials provided no information. One trial collected adherence data (app or diary, self-reported) and the app/diary data suggested similarly low exercise adherence in both groups and similarly high self-reported adherence in both groups. The full analysis by outcome is presented below, and in Summary of findings 12.

6. **Additional phone calls for PFMT supervision versus no phone calls**: two trials. Both trials had the same PFMT in both trial arms, with the addition of phone calls in one trial arm only (Ko 2018; Ng 2008). Treatment duration was between eight and 12 weeks and provided by a physician or nurse. There was no information about confirmation of correct voluntary pelvic floor muscle contraction or adherence in either trial. There is no summary of findings table as these trials contributed no data to the review.

In two RCTs, the comparison of exercise intervention delivery was possibly confounded by a higher exercise dose in the group receiving more supervision (de Oliveira Camargo 2009; Nagib 2021). One trial was allocated to the subgroup of in-person clinic supervision (more) versus no clinic supervision (less), although the trial also compared group versus individual delivery (Bø 1990).

Twenty-two trials contributed data to the analysis and four did not. One trial measured no outcome of interest for the review (Wong 1997). Three trials measured one or more outcomes of interest but did not present usable data (Ko 2018; Ng 2008; Sonmezer 2022). As neither trial investigating the effect of phone calls reported usable data, this subgroup is not mentioned in the results below (Ko 2018; Ng 2008).

Primary outcome

Incontinence quality of life (Analysis 3.1)

Eleven of the 19 trials, which applied an eligible measure, had usable data from the following measures: ICIQ-UI-SF (Araujo 2020; Dumoulin 2020; Ferla 2022; Fischer Blosfield 2021; Kastelein 2020; Nagib 2021; Sjöström 2013), IIQ or IIQ-7 (Bech 2021), or KHQ (de Oliveira Camargo 2009; Figueiredo 2020; Pereira 2011) (Analysis 3.1). For one trial, we recalculated the median and interquartile range to mean and standard deviation (Felicissimo 2010). Six trials presented their data in a way that precluded analysis (Fitz 2015 and Fitz 2020: selective reporting of domain rather than total score of I-QoL; Ng 2008: Bristol Female Lower Urinary Tract Symptoms scale by domain but not total score; Marques 2005: per cent change in KHQ score; Tejero 2008: IIQ, P values only; Zanetti 2007: I-QoL, medians and P value). A seventh trial presented no data (Sonmezer 2022: IIQ). Three author teams confirmed the data were no longer available (Fitz 2015; Ng 2008; Zanetti 2007).

PFMT supervised in clinic (more) versus PFMT at home without clinic supervision (less)

Women doing PFMT supervised in clinic may have slightly improved quality of life compared to women doing PFMT at home, but the evidence is very uncertain (SMD −0.30, 95% CI −0.65 to 0.05; I^2 = 89%; 3 trials, 137 women; very low-certainty evidence; Analysis 3.1). A random-effects model gave a similar (moderate) effect for clinic supervision, but there was increased imprecision of the 95% CIs, and this now clearly included the possibility of an effect in favour of home PFMT (SMD −0.41, 95% CI −1.47 to 0.65). All trials were at high risk of attrition bias. Sensitivity analysis for selection bias left one trial that favoured home training.

When we removed Nagib 2021 from the analysis (potentially confounded by a higher exercise dose in the in-person clinic supervision group), the summary point estimate in favour of clinic supervision was changed to a summary point estimate in favour of no supervision, although close to the line of no effect. Accordingly, our uncertainty about any improvement in incontinence quality of life in women receiving clinic supervision compared to PFMT at home without supervision was increased.

More clinician contact for PFMT supervision (more) versus less clinician contact for PFMT supervision (less)

No data reported.

Individual supervision of PFMT (more) versus group supervision of PFMT (less)

Individual supervision probably results in little to no difference in incontinence quality of life compared to group supervised PFMT (SMD −0.18, 95% CI −0.35 to −0.01; I^2 = 0%; 5 trials, 544 women; moderate-certainty evidence; Analysis 3.1). Heterogeneity was less than the cut-off for presenting a random-effects model or sensitivity analysis.

When we removed de Oliveira Camargo 2009 from the analysis (potentially confounded by a higher exercise dose in those receiving group supervision), there was little change in the summary point estimate or 95% CI.

PFMT supervised in clinic (more) versus remote supervision using e-health (less)

There may be little to no difference in incontinence quality of life after clinic supervised PFMT compared to remote supervision (mobile app communication with clinician), but the evidence is very uncertain (SMD −0.11, 95% CI −0.41 to 0.19; 1 trial, 173 women; very low-certainty evidence; Analysis 3.1).

PFMT instruction delivered by e-health (more) versus PFMT written instruction (less)

PFMT instructions delivered by e-health may slightly improve incontinence quality of life compared to written instructions (SMD −0.21, 95% CI −0.43 to 0.01; I^2 = 25%; 3 studies, 318 women; low-certainty evidence; Analysis 3.1). Heterogeneity was less than the cut-off for presenting a random-effects model or sensitivity analysis.

Test for subgroup differences

There was no heterogeneity with a fixed-effect model (I^2 = 0%) (Analysis 3.1).

Secondary outcomes

Incontinence episode frequency (per 24 hours) (Analysis 3.2)

Seven trials reported usable data for incontinence episode frequency at 24 hours (Dumoulin 2020), three (Figueiredo 2020), or seven days (de Oliveira Camargo 2009; Fitz 2015; Fitz 2020; Konstantinidou 2007; Sjöström 2013) (Analysis 3.2). Two trials presented data that precluded analysis (Ferreira 2012: mean % change; Zanetti 2007: data presented graphically that could not be estimated), and both research groups confirmed the data were

no longer available. One trial reported no data from the three-day bladder diary (Sonmezer 2022).

PFMT supervised in clinic (more) versus PFMT at home without clinic supervision (less)

No trial reported this outcome using a diary.

More clinician contact for PFMT supervision (more) versus less clinician contact for PFMT supervision (less)

More clinician contact may reduce incontinence episode frequency compared to less clinician contact (MD −0.25, 95% CI −0.32 to −0.17; I^2 = 95%; 3 trials, 128 women; very low-certainty evidence; Analysis 3.2). A random-effects model favoured more contact and increased imprecision in the 95% CIs (MD −0.58, 95% CI −1.10 to −0.06). Sensitivity analysis for both selection and attrition bias removed the same two trials (Fitz 2015; Konstantinidou 2007), leaving one trial that favoured more contact (Fitz 2020).

Individual supervision of PFMT (more) versus group supervision of PFMT (less)

Individual supervision of PFMT results in little to no difference in incontinence episode frequency compared to group supervision (MD −0.01, 95% CI −0.07 to 0.04; I^2 = 0%; 3 trials, 486 women; high-certainty evidence; Analysis 3.2). Figueiredo 2020 did not contribute data to the analysis as an odds ratio could not be estimated (no leakage episodes reported in one trial arm).

When we removed de Oliveira Camargo 2009 from the analysis (potentially confounded by offering a higher exercise dose for those receiving group supervision), this left a single trial that had similar (but more precise) findings.

PFMT supervised in clinic (more) versus remote supervision using e-health (less)

No data reported.

PFMT instruction delivered by e-health (more) versus PFMT written instruction (less)

PFMT instructions delivered by e-health probably reduce incontinence episode frequency compared to written instructions (MD −0.48, 95% CI −0.79 to −0.17; 1 trial, 220 women; moderate-certainty evidence, Analysis 3.2).

Incontinence symptom severity

No trial reported incontinence severity using the prespecified measure.

Improvement (Analysis 3.3)

Ten trials collected improvement data using the PGI-I (Dumoulin 2020; Kastelein 2020; Sjöström 2013) or an unvalidated measure (Araujo 2020; Bø 1990; Felicissimo 2010; Ferreira 2012; Konstantinidou 2007; Tejero 2008; Wilson 1987). Presentation of data in one trial precluded analysis (Ko 2018: presented for whole sample, not by group) and the authors confirmed these data were no longer available. Sonmezer 2022 collected data using the "patient global recovery scale" and it was unclear if this was the PGI-I or a different measure, and no data were reported.

PFMT supervised in clinic (more) versus PFMT at home without clinic supervision (less)

Clinic supervision may result in greater participant-rated improvement than training at home, but the evidence is very uncertain (OR 3.56, 95% CI 1.61 to 7.87; I^2 = 35%; 4 trials, 175 women; very low-certainty evidence; Analysis 3.3).

When we removed Bø 1990 from the analysis (individual and group supervision versus home training), there was little change in the summary point estimate or 95% CIs.

More clinician contact for PFMT supervision (more) versus less clinician contact for PFMT supervision (less)

Women receiving more contact may have greater participant-rated improvement, but the evidence is very uncertain (OR 35.82, 95% CI 3.95 to 324.74; I^2 = 0%; 2 trials, 56 women; very low-certainty evidence; Analysis 3.3).

Individual supervision of PFMT (more) versus group supervision of PFMT (less)

Individually supervised PFMT may result in little to no difference in participant-rated improvement compared to group supervision, but the evidence is very uncertain (OR 0.88, 95% CI 0.29 to 2.67; 1 trial, 337 women; very low-certainty evidence; Analysis 3.3).

PFMT supervised in clinic (more) versus remote supervision using e-health (less)

There may be little to no difference in participant-rated improvement with clinic supervised PFMT compared to remote supervision of PFMT (mobile app communication with clinician), but the evidence is very uncertain (OR 0.93, 95% CI 0.51 to 1.69; 1 trial, 263 women; very low-certainty evidence; Analysis 3.3).

PFMT instruction delivered by e-health (more) versus PFMT written instruction (less)

PFMT instructions delivered by e-health may increase participant-rated improvement compared to written instructions, but the evidence is very uncertain (OR 1.74, 95% CI 1.00 to 3.01; I^2 = 43%; 2 trials, 239 women; very low-certainty evidence; Analysis 3.3).

Test for subgroup differences

There was substantial heterogeneity using a fixed-effect model (I^2 = 74.8%, Analysis 3.3), suggesting subgroups were a likely source of heterogeneity. With a random-effects model, heterogeneity barely changed and remained substantial (Chi^2 = 14.54, df = 4 (P = 0.006), I^2 = 72.5%). The point estimates did not lie on the same side of the line of no effect. We have no plausible explanation for the observed heterogeneity; it is possible that this unblinded outcome was particularly influenced by what women know was the alternative approach to intervention delivery (e.g. responses may be less influenced when the amount or type of contact is similar, as in the subgroup comparing individual and group supervision, but more influenced when the comparison is clinic supervision versus training at home).

Satisfaction (Analysis 3.4)

Seven trials appeared to collect satisfaction data, although one did not report these data in their conference abstract (Kastelein 2020). One reported a 'quality of life' scale that had satisfaction word anchors; they reported data as a continuous measure, so they were

not usable (Konstantinidou 2007). All the others used a range of unvalidated measures (de Oliveira Camargo 2009; Dumoulin 2020; Felicissimo 2010; Fitz 2020; Zanetti 2007). de Oliveira Camargo 2009 asked women "how they felt about their incontinence problem after treatment". Four trials defined treatment satisfaction as not wanting further or alternative treatment (Dumoulin 2020; Felicissimo 2010; Fitz 2020; Zanetti 2007).

PFMT supervised in clinic (more) versus PFMT at home without clinic supervision (less)

There may be little to no difference in participant-rated satisfaction for women supervised in clinic compared to women training at home, but the evidence is very uncertain (OR 1.48, 95% CI 0.51 to 4.33; 1 trial, 59 women; very low-certainty evidence; Analysis 3.4).

More clinician contact for PFMT supervision (more) versus less clinician contact for PFMT supervision (less)

More clinician contact probably results in greater participant-rated satisfaction compared to less clinician contact (OR 3.45, 95% CI 1.57 to 7.54; I^2 = 47%; 2 trials, 113 women; moderate-certainty evidence; Analysis 3.4).

Individual supervision of PFMT (more) versus group supervision of PFMT (less)

Individually supervised PFMT may result in little to no difference in participant-rated satisfaction compared to group supervision, but the evidence is very uncertain (OR 1.47, 95% CI 0.78 to 2.77; I^2 = 0%; 2 trials, 397 women; very low-certainty evidence; Analysis 3.4).

When we removed de Oliveira Camargo 2009 from the analysis (potentially confounded with a higher exercise dose in those receiving group supervision) this left one large trial, with little change in the summary point estimate, although wider 95% CIs.

PFMT supervised in clinic (more) versus remote supervision using e-health (less)

No data reported.

PFMT instruction delivered by e-health (more) versus PFMT written instruction (less)

No data reported.

Adverse events

Six trials collected adverse event data. Three trials reported no adverse events in either arm (Bech 2021; Fitz 2020; Pereira 2011). Ferreira 2012 reported none in the home exercise arm and did not mention the group receiving monthly phone calls. Sjöström 2013 reported one woman with lower abdominal pain with PFMT who discontinued treatment in the e-health group, with no other events reported in either trial arm. There were no serious adverse events in either trial arm in the largest trial (Dumoulin 2020). Minor adverse events were reported by 27 women doing individually supervised PFMT arm (21 vaginal discomfort with biofeedback, 6 vaginal spotting), and five women in the group supervised PFMT reported vaginal discomfort.

Follow-up data

Seven trials collected data after the end of treatment, one of which did not report any further data about the outcomes of interest (Dumoulin 2020).

Three trials were in the subgroup comparing clinic supervision versus home training (Bø 1990; Ferla 2022; Wilson 1987). Two trials collected incontinence quality of life data using the ICIQ-UI-SF, although neither presented them in a usable form (Bø 1990; Ferla 2022). At 12 weeks after treatment ended, Ferla 2022 reported that the clinic supervision was "most effective", but the graphed data could not be extracted for analysis; their post-treatment data showed no difference between groups. Bø 1990, 15 years after the initial trial, reported that 8/21 women receiving clinic supervision and 14/26 women who had exercised at home had "no interference of urinary incontinence on every life" (a score of 0 to 1 on the ICIQ-UI-SF); the original trial did not use this measure. Wilson 1987 reported subjective improvement (unvalidated scale) six months after treatment, with 9/14 (64%) women supervised in clinic and 4/25 (16%) women exercising at home reporting improvement. This was consistent with their post-treatment findings, when more women in the supervised group reported improvement.

Two trials were in the subgroup comparing individual versus group supervision and both re-evaluated the outcome 12 weeks after treatment ended (Bech 2021; Figueiredo 2020). Figueiredo 2020 also collected data six months after treatment. Figueiredo 2020 was a three-arm trial, and we had combined two arms (group supervision only, individual group progressing to group supervision) to compare with individual supervision only. Both trials collected incontinence quality of life data, using different instruments. Bech 2021 (using IIQ-7) reported that median scores did not change in either group at any time point. Figueiredo 2020 (using KHQ, total score) found no difference between the groups at three or six months (three months: SMD 0.14, 95% CI −0.32 to 0.59; six months: SMD 0.36, 95% CI −0.09 to 0.82; 79 women). It was more difficult to estimate differences for incontinence episode frequency because there were trial arms with no episodes recorded at some time points. At three and six months, the mean incontinence episode frequency in the groups receiving only individual supervision or individual followed by group supervision was either zero or one; the trial arm receiving group supervision only had a mean incontinence episode frequency of zero at both time points.

The remaining trial compared e-health (internet) versus posted instructions for PFMT (Sjöström 2013). This trial presented the most comprehensive follow-up of all trials in the review, and for three outcomes of interest: incontinence quality of life, subjective improvement, and satisfaction. There were differences between those participating in the follow-up and those that did not, with participants being older, with less severe impact of incontinence on quality of life. And, at two years, those who did not participate had more severe leakage at baseline. Incontinence quality of life (using ICIQ-UI-SF) was not different between internet and postal groups at one or two years (1 year: SMD −0.03, 95% CI −0.33 to 0.27; 2 years: SMD 0.03, 95% CI −0.28 to 0.35). For subjective improvement (using PGI-I), the trialists reported there was no difference between the groups after one year (P = 0.82), although there was a difference in favour of the internet group at two years (much or very much improved: 29/74 (39.2%) women in internet group versus 19/80 (23.8%) women in postal group; P = 0.03). However, satisfaction was not different at one or two years (1 year: 60/86 (69.8%) women in internet group versus 46/76 (60.5%) women in postal group; 2 years: 48/74 (64.9%) women in internet group versus 46/79 (58.2%) women in postal group).

Two trials reported how many women had sought other treatment in the follow-up period. Sjöström 2013 reported no difference at one or two years after treatment (1 year: 7/87 (8.0%) women in internet group versus 9/80 (11.3%) women in postal group; 2 years: 9/75 (12.0%) women in internet group versus 10/79 (12.7%) women in postal group). The proportion who had surgery was not (1 year: 2/87 (2.3%) women in internet group versus 3/80 (3.8%) women in postal group; 2 years: 4/75 (5.3%) women in internet group versus 4/79 (5.1%) women in postal group). At 15 years post-treatment, Bø 1990 also found no difference in surgical rates between groups (11/21 (52%) women with clinic supervision versus 13/26 (50%) women with home training).

DISCUSSION

This review considered whether, for women with urinary incontinence, there were any differences in the effects of different approaches to PFMT — one exercise type versus another, a higher versus a lower exercise dose, and one approach to delivery of a PFMT programme versus another.

Summary of main results

There were 63 trials (4920 women), and 52 trials (4097 women) reported usable data for one or more outcomes of interest. Because the intended and principal heterogeneity was the intervention and comparator, we summarised the subgroup findings within the three comparisons: exercise type, exercise dose, and exercise intervention delivery. Adverse event data were sparse, and we present a narrative summary of all data after the main comparisons and subgroups.

Comparison 1: exercise type

Co-ordinated PFMT versus direct PFMT

Two outcomes — incontinence quality of life and incontinence episode frequency — had usable data from multiple trials with small group sizes. Co-ordinated PFMT may slightly improve incontinence quality of life compared to direct PFMT (low-certainty evidence). Consistent with this, co-ordinated PFMT may reduce incontinence episode frequency compared to direct PFMT, but the evidence is very uncertain (very low-certainty evidence). Overall, while co-ordinated PFMT may be more effective than direct PFMT the evidence certainty is low or very low. See Summary of findings 1.

Indirect training versus direct PFMT

Three outcomes — incontinence quality of life, incontinence episode frequency, and improvement — had usable data from multiple trials with small group sizes. Direct PFMT may moderately improve incontinence quality of life compared to indirect training (low-certainty evidence). Consistent with this, direct PFMT may reduce incontinence episode frequency compared to indirect training (low-certainty evidence). Findings from one trial that measured subjective improvement were problematic because only women who reported symptom improvement were then asked to rate the degree of improvement. Overall, while direct PFMT may be more effective than indirect PFMT, the evidence certainty is low or very low. See Summary of findings 2.

Indirect training combined with direct PFMT versus direct PFMT

Two outcomes — incontinence quality of life and incontinence episode frequency — had usable data from multiple trials with small group sizes. Adding indirect training to direct PFMT may result in little to no difference in incontinence quality of life compared to direct PFMT alone (low-certainty evidence). Consistent with this, adding indirect training to direct PFMT may result in little to no difference in incontinence episode frequency compared to direct PFMT alone (low-certainty evidence). While there may be no added benefit for women of combining indirect with direct PFMT, compared to doing direct PFMT alone, the evidence certainty is low. See Summary of findings 3.

Comparison 2: exercise dose

PFMT with resistance device (higher) versus PFMT without resistance device (lower)

Four outcomes — incontinence quality of life, incontinence episode frequency, improvement, and satisfaction — had usable data from multiple trials with small group sizes. PFMT without a resistance device may slightly improve incontinence quality of life compared to PFMT with a resistance device, but the evidence is very uncertain (very low-certainty evidence). Consistent with this, one trial found PFMT without a device may reduce incontinence episode frequency compared to PFMT with a device, but the evidence is very uncertain (very low-certainty evidence). There may be little to no difference in participant-rated improvement between groups, although participant rated satisfaction might be slightly greater for PFMT with a device, but for both outcomes the evidence is very uncertain (very low-certainty evidence). We are uncertain if women benefit from using a resistance device (satisfaction), not using a device (incontinence quality of life, incontinence episode frequency), or it makes little to no difference (improvement) as the evidence certainty is low or very low for all outcomes. See Summary of findings 4.

Maximal pelvic floor muscle contractions (higher) versus submaximal pelvic floor muscle contractions (lower)

One small trial, with a single usable outcome, suggested maximal pelvic floor muscle contraction may reduce incontinence episode frequency compared to submaximal contractions, but the evidence is very uncertain (very low-certainty evidence). See Summary of findings 5.

PFMT more days per week (higher) versus PFMT fewer days per week (lower)

Three outcomes — incontinence quality of life, incontinence episode frequency, and improvement — had usable data from multiple trials with small group sizes. Based on one small trial, PFMT more days per week may result in greatly improved incontinence quality of life compared to fewer days per week (low-certainty evidence). Consistent with this, PFMT more days per week may reduce incontinence episode frequency compared to fewer days per week (low-certainty evidence). Based on one small trial, PFMT more days per week may also result in greater participant-rated improvement compared to fewer days per week, but the evidence is very uncertain (very low-certainty evidence). Overall, it seems that PFMT more days per week rather than fewer, may add some benefit for women, but the evidence certainty is low or very low, and based on one small trial for two of the three outcomes. See Summary of findings 6.

PFMT in upright (antigravity) body position (higher) versus PFMT in lying (gravity neutral) body position (lower)

One small trial had usable data for one outcome — incontinence episode frequency. PFMT in upright body position may reduce incontinence episode frequency compared to PFMT in supine lying, but the evidence is very uncertain (very low-certainty evidence). While doing PFMT when upright may be more effective than in a lying position, this is based on one trial and one outcome, and very low-certainty evidence. See Summary of findings 7.

Comparison 3: exercise intervention delivery

PFMT supervised in clinic (more) versus PFMT at home without clinic supervision (less)

Three outcomes — incontinence quality of life, improvement, and satisfaction — had usable data from multiple trials with small group sizes. Women doing PFMT supervised in clinic may have slightly improved quality of life, but the evidence is very uncertain (very low-certainty evidence). Participant-rated improvement may also be greater in women receiving clinic supervision compared to women training at home, but the evidence is very uncertain (very low-certainty evidence). However, one small trial found there may be little to no difference in satisfaction for women receiving clinic supervision compared to training at home, but the evidence is very uncertain (very low-certainty evidence). While clinic supervision of PFMT may be more effective than PFMT training at home (incontinence quality of life, improvement) there may be little to no difference in satisfaction, but the evidence certainty is very low. See Summary of findings 8.

More clinician contact for PFMT supervision (more) versus less clinician contact for PFMT supervision (less)

Three outcomes — incontinence episode frequency, improvement, and satisfaction — had usable data from multiple trials with small group sizes. Receiving more clinician contact may reduce incontinence episode frequency compared to less clinician contact, but the evidence is very uncertain (very low-certainty evidence). Women who received more clinician contact rated improvement higher than women receiving less contact, but the evidence is very uncertain (very low-certainty evidence). More clinician contact for PFMT supervision probably increases participant-reported satisfaction compared to less supervision (moderate-certainty evidence). Overall, while more in-person clinician contact for PFMT supervision may be more effective than less contact, the evidence certainty is very low for the primary outcome, and very low or moderate for secondary outcomes. See Summary of findings 9.

Individual supervision of PFMT (more) versus group supervision of PFMT (less)

Four outcomes — incontinence quality of life, incontinence episode frequency, improvement, and satisfaction — had usable data from multiple trials with small group sizes along with one larger trial (more than 150 women per trial arm). Individual supervision of PFMT probably results in little to no difference in incontinence quality of life compared to group supervised PFMT (moderate-certainty evidence). Individual supervision results in little to no difference in incontinence episode frequency compared to group supervision (high-certainty evidence). Data from one larger trial found that individually supervised PFMT may result in little to no difference in participant-rated improvement compared to group supervised PFMT, but the evidence is very uncertain (very low-certainty evidence). Individual PFMT may result in little to no difference in satisfaction compared to group PFMT, but the evidence is very uncertain (very low-certainty evidence). Overall, there was a consistent pattern of no difference in outcomes between in-person PFMT supervision delivered individually or in groups, although evidence certainty ranged from very low to high. See Summary of findings 10.

PFMT supervised in clinic (more) versus remote supervision using e-health (less)

One larger trial (more than 100 women per trial arm) had usable data for two outcomes — incontinence quality of life and improvement. There may be little to no difference in incontinence quality of life after clinic supervised PFMT compared to remote supervised PFMT, but the evidence is very uncertain (very low-certainty evidence). Consistent with this, there may be little or no difference in participant-rated improvement for women supervised in clinic compared to women supervised remotely, but the evidence is very uncertain (very low-certainty evidence). While there may be little or no difference in effectiveness of in-person clinic supervision of PFMT compared to remote supervision (communication with clinician via mobile app), this is based on one trial, two outcomes, and very low-certainty evidence. Summary of findings 11

PFMT instruction delivered by e-health (more) versus PFMT written instruction (less)

Three outcomes — incontinence quality of life, incontinence episode frequency, and improvement — had usable data from multiple trials with small group sizes along with one larger trial (more than 100 women per arm). PFMT instruction delivered using e-health may slightly improve incontinence quality of life compared to written instruction (low-certainty evidence). Consistent with this, data from one larger trial found that instructions via e-health probably reduces incontinence episode frequency compared to written instructions (moderate-certainty evidence). PFMT delivered via e-health may increase participant-rated improvement compared to written instructions for PFMT, but the evidence is very uncertain (very low-certainty evidence). Overall, there was a consistent pattern of PFMT instruction via e-health being more effective than written instructions delivered via the post, although evidence ranged from very low to moderate certainty. See Summary of findings 12.

Adverse events

One trial collected, and then did not mention adverse event data. Eight trials collected the data and reported there were no adverse events. In the four remaining trials that reported adverse event data, almost all the events were in trial arms that used an intravaginal or intrarectal training device (60 events from 236 women who used a device, 25%); the adverse events were vaginal discharge, spotting, pain, or discomfort.

Overall completeness and applicability of evidence

This review updates the previous version published in 2011 (Hay-Smith 2011). The number of included trials that were analysed increased from 21 to 63, and number of participants from 1490 to 4920. The update had fewer main comparisons (from 12 down to three), but we captured the variability in interventions and comparators using subgroups (12 subgroups across three main

comparisons) as the alternative to an increasingly large number of comparisons.

A feature of this update was that the search had no date restriction, and we rescreened all study records that were screened for the previous review. We were grateful to 25 researchers (or research groups) who responded to our requests for unpublished data, clarification of published data, or were able to confirm the data we sought were no longer available. We received additional data for incontinence quality of life (11 trials), incontinence episode frequency (four trials), subjective improvement (three trials), and satisfaction (one trial). Therefore, we were able to add appreciably to the number of trials contributing data for the primary outcome of incontinence quality of life.

Twelve of the 34 trials awaiting classification were previously categorised as ongoing and are now awaiting classification because our supplementary search found a publication (see Results of the search). If these 12 trials are assessed as eligible, they may contribute data from approximately 516 women to the comparisons of exercise type (nine trials) or PFMT delivery (three trials). The 31 ongoing trials (31 trial registrations) could add data from approximately 2400 women, contributing to the comparison of exercise type (21 trials) or exercise intervention delivery (10 trials). The lack of investigation of exercise doses continues. The full trials search was undertaken more than 12 months prior to the publication of this review. There may be more eligible studies than we have found, included, and meta-analysed.

Demographic data from the included studies suggest that 'on average' the study participants were mid-age, with stress urinary incontinence (or stress-predominant mixed urinary incontinence), overweight, and parous. Nevertheless, there was variability in these demographic characteristics between and within trials and the findings also represented effectiveness data from women who were older, or had urgency urinary incontinence, or were not overweight, and may have been pre-, peri- or postmenopausal. Investigating differences in effect by any of these demographic characteristics was not possible because data were not typically reported by age or diagnosis.

To date, almost all data in the included trials were from women recruited in upper-middle- and high-income settings. It is difficult to determine how much cultural or linguistic, or even educational diversity, was represented in these samples, because these characteristics were seldom reported.

This review compares approaches to exercising or training pelvic floor muscles. Thus, the experimental intervention and comparator need equal attention when describing the intervention, or we do not know what is being compared with what (Levack 2019). Hay-Smith 2019 found that, in trials comparing one PFMT programme versus another, neither intervention was described well according to Consensus on Exercise Reporting Template (CERT) items (a mean completion of 5.5 of the 19 items). The investigation of reporting by Hay-Smith 2019 was completed on an earlier iteration of this review update. Examination of Table 2, Table 3, and Table 4, which include all CERT items, did not suggest marked improvement of reporting of either interventions or comparators since. A few trials had published a trial protocol (e.g. Dumoulin 2020; Luginbuehl 2022), and this noticeably improved the intervention description. Therefore, the classification of trials into the various subgroups was often based on incomplete reporting of the experimental intervention and comparator, and we may have classified some trials inaccurately. Further, without fully described interventions, it is difficult for clinicians to replicate those for which we have moderate- to high-certainty evidence.

Exercise adherence may be a key determinant of whether PFMT is effective or not (Dumoulin 2015). Adherence was not, therefore, an outcome of training in this review but a potential predictor of training success. If a woman is doing a correct voluntary pelvic floor muscle contraction and is prescribed a sound exercise science-based training protocol, then doing enough of that exercise is a key determinant for changing muscle function; PFMT is both physical and behavioural therapy (Frawley 2017). Table 2, Table 3, and Table 4 show that collecting data on adherence is commonly not done, and the choice of adherence measure and whether and how data are reported is highly variable. Further, documenting the behavioural component of PFMT was essentially absent from most intervention descriptions (CERT item 6 in Table 2; Table 3; Table 4). The lack of attention to documenting the behavioural support for exercise, and adherence data, creates an important limitation for interpreting the review findings, given one of the most commonly advanced reasons for a lack of or loss of PFMT effectiveness is insufficient exercise adherence.

No trial reported the prespecified incontinence severity outcome (see Types of outcome measures). Severity of leakage may be partially represented by incontinence episode frequency (which was an outcome of interest) but this is clearly only part of the severity concept. The preferred severity measure (Incontinence Symptom Severity Index, Twiss 2009) includes eight items covering women's perceptions of emptying, urgency, nocturia, voiding frequency, frequency of leakage (by type of urinary incontinence), and use of containment product. These items are like items in the preferred incontinence quality of life measures, and there is probably some overlap between the quality of life and severity concepts (Castro-Diaz 2023a). Therefore, the absence of the severity data from the prespecified measure may not have an appreciable influence on the applicability of the findings.

Adverse event data are clearly incomplete, with 12/63 trials documenting whether women were asked about adverse events. If all the trials that made no mention of adverse events had none, then that suggests harm is relatively uncommon, but that cannot be assumed based on the absence of reporting or a relatively small number of participants overall. However, trials that used intravaginal or intrarectal devices (e.g. resistance device, biofeedback) that also sought and documented adverse events, suggest that up to 25% of women may report an event (such as vaginal discharge, spotting, or pain), although none are serious.

Incontinence quality of life data from the prespecified measures were combined using an SMD that is not easily interpreted clinically. Therefore, we applied the widely used guidance from Cohen 1988 to interpret negligible (less than 0.2), small (0.2 to less than 4.0), moderate (0.40 to less than 0.60), and large effect (0.6 and above) on quality of life. By subgroup, there was a range of effects — negligible, small, or large effects — that were typically consistent in direction of effect with another measure of a related concept such as incontinence episode frequency.

Difficulties with clinical interpretation of the incontinence quality of life data were also experienced with other outcomes — incontinence episode frequency, improvement, and satisfaction.

For instance, for incontinence episode frequency, when two PFMT interventions are compared, what is a reasonable clinically important difference? Arguably, it might be less than a clinically important difference derived from studies of PFMT versus no PFMT. In addition, it seems likely that how often a woman leaks pretreatment and what her treatment expectations are will influence whether she feels the reduction in incontinence episode frequency matters or not, and this is potentially reflected in her responses to incontinence quality of life measures, or improvement or treatment satisfaction. It is possible that per cent change, which considers change from baseline, is more useful in assessing possible clinical impact than an MD in incontinence episode frequency.

Incomplete or non-standard reporting of outcome data was noticeable. Examples included reporting only a P value, or a measure of central tendency without the measure of dispersion or dichotomising continuous or ordinal variables (such as cured or improved based on the number of leakage episodes documented in a diary). For the primary outcome — incontinence quality of life — 44/63 trials used one or more of the prespecified measures and for 28 the data were unusable as presented. We were able to retrieve data for 11 from the trialists or (in the case of the KHQ) used a single domain of the data reported (five trials), leaving 12 trials whose incontinence quality of life data did not contribute. It is likely the missing data from the primary and secondary outcomes — as all outcomes of interest had unusable data — reduced precision in estimating effect may have influenced the findings in other ways that are not clear, such as direction of effect or statistical heterogeneity.

Quality of the evidence

We made certainty of evidence statements for every subgroup in the three main comparisons. However, almost all were based on low or very low-certainty evidence (28/31 statements), and only three on moderate- or high-certainty evidence. As we did not downgrade for indirectness or publication bias, the overall certainty of evidence and statements were determined based on our assessment of risk of bias, consistency, and precision. More information about our decision rules for consistency and precision is found in Appendix 3. Here we focus on concerns about the quality of trial design and reporting that affected risk of bias assessment.

Risk of bias was evaluated using the trial reports. Included trials that were published only as conference abstracts (nine) typically had limited reporting of methods, even though there is clear guidance on how to report an RCT abstract well (Hopewell 2008). While some trial reports predated the first CONSORT statement (Moher 2001), the variability in quality of reporting RCT methods continues even in full trial reports. Key information needed to assess risk of bias was often not reported or lacked clarity, observed in the frequency of unclear risk of bias ratings (Figure 2).

Five of 63 trials were at low risk of bias overall, six at high risk of bias overall, with the remaining 52 having unclear risk. One area for improvement is attention to design and reporting of both random sequence generation and random allocation concealment. Less than one third of trials (20/63) were at low risk of selection bias (Figure 2). Another consequence of this was that few trials were retained in the sensitivity analyses (low versus unclear/high unclear risk of selection bias); when the amount of data was reduced so much in the sensitivity analysis, this typically decreases the precision of effect estimate and therefore the certainty of evidence.

Certainty of evidence is also influenced by choice of outcome measure. Accordingly, we were clear that only prespecified instruments for incontinence quality of life, with Grade A or A+ ratings of psychometric properties from the 7th ICI (Castro-Diaz 2023a), were acceptable for primary outcome measurement (see Types of outcome measures). Thus, the 'quality' of instruments for the primary outcome was good. However, there were minor to major concerns about the quality of instruments used for other outcomes.

Bladder (or urinary) diaries, leakage diaries, or frequency-volume charts can provide information about incontinence episode frequency, and there are some concerns about how well they do this. Accuracy of completion may depend on how long women are asked to keep the diary for and how much data they are asked to collect (e.g. leakage events in a leakage diary, or information about volumes drunk and voided as well as leakage episodes) (Castro-Diaz 2023b). There is also a concern that these instruments do not accurately reflect leakage if there is less than one leakage episode per day (Castro-Diaz 2023b), and the mean values in 24 hours in many included trials post-treatment suggest this was the case. Most included trials used three- or seven-day diaries, which meant they had the opportunity to pick up fewer than one incontinence episode per day; the bigger concern was that when the incontinence episode frequency data were reported it was often not clear whether the trialists were reporting it for 24 hours, three days, or seven days. Therefore, the data we presented may be relatively 'complete' but overly precise if we have calculated a leakage frequency for 24 hours when the trialists had already done this to report their data.

The quality of instruments used to collect subjective improvement and satisfaction are of major concern. Most included trials used unvalidated, study-specific, Likert-type scales for collecting improvement or satisfaction data. A possible trend toward use of the validated measure of improvement, the PGI-I (Yalcin 2003), in more recently published included trials is encouraging and, if this continues, the quality of subjective improvement data may improve over time. Satisfaction is of most concern, as it is not even clear what sort of satisfaction is being measured by those included trials that reported it — satisfaction with treatment received, treatment outcome, treatment process, or something else. Castro-Diaz 2023b, in their elucidation of participant-reported outcomes for the 7th ICI, report that satisfaction is a complex concept that evaluates "health care based on patient expectations and provider and treatment performance" and in a chronic condition such as incontinence where women have to keep doing PFMT to maintain treatment effect then "patient satisfaction may be the distinguishing outcome amongst treatments with comparable efficacy" (Castro-Diaz 2023b, p453-4). Satisfaction is, therefore, a potentially important outcome for the review and the best quality instruments available should be used to collect these data for analysis in future updates, ideally the Patient Global Impression of Satisfaction (Yalcin 2003).

We observed greater difference in effect between trial arms for improvement and satisfaction than we did for incontinence quality of life, and incontinence episode frequency. This might be an artefact of the former being relative and the latter being absolute measures. Another plausible explanation is that improvement and

satisfaction are more influenced by the lack of blinding of women to group allocation, and more prone to socially desirable responding (van de Mortel 2008). It is possible that multiple item measures (e.g. incontinence quality of life measures) or having to record a physical event (e.g. a leakage episode in a diary) are somewhat less prone to performance bias. This might be important for considering the relative quality of evidence from the different outcomes in this review as they were all self-reported.

Potential biases in the review process

Two review authors independently undertook eligibility screening, data extraction, and risk of bias assessment. No review author was blinded to the authorship of papers at any stage. If a review author had any involvement in a trial being considered at any stage in the review process, they were not involved in screening, assessment, data extraction, data entry, or analysis of that study. The following review authors had trials that were screened for eligibility — Licia Cacciari, Chantale Dumoulin, Helena Frawley, Jean Hay-Smith, Cristine Homsi Jorge (previously Ferreira), Mélanie Morin, and Giovana Vesentini.

Searching was comprehensive with no language or date restrictions. We included reports published as trial registrations, protocols, conference abstracts, theses, and full publications. However, 34 studies are awaiting classification (Characteristics of studies awaiting classification table). Several of these are published in languages other than English.

We sought data from trialists in all cases where the outcome of interest was not reported in usable format, or it seemed data were collected but not reported. Some trialists responded, providing the data, or confirming the data were not available. Others did not respond, or our methods for contacting them were unsuccessful. We do not know what influence this had on missing data bias. There were too few trials in any subgroup analysis to examine publication bias.

Some of our judgements regarding the classification of trials to the various subgroups might be contested, and we have documented our decisions (Table 1; Table 5). These decisions were made post-hoc (i.e. after we had decided on inclusion).

Also, post-hoc, we revised the template for risk of bias assessment (including more examples, and increased clarity of language) and created decision matrices for reaching consensus on risk of bias assessments (Appendix 2) and downgrading certainty of evidence (Appendix 3). We set boundaries for an effect (small or more) for incontinence episode frequency, improvement, and satisfaction after we began grading the certainty of evidence because we needed clearer 'cut-lines' to make judgements about precision. The decision rules for whether to downgrade (and how much) for inconsistency were revised when new guidance was published by Guyatt 2023.

Agreements and disagreements with other studies or reviews

It is difficult to keep up with the burgeoning number of systematic reviews of PFMT interventions (exercise types, doses, and means of delivery). A search of Scopus using words such as "systematic review" and "pelvic floor" and "incontinence" in the title field gives more than 770 records. Examining these suggest that there is no systematic review with the same scope of population, intervention, comparators, or outcomes (PICO) as this review update. For instance, most other reviews have set out to address a PICO that limits the following.

1. Population: for example, limited to a type of urinary incontinence, older women, postmenopausal women, pregnant or immediately postpartum women, or people living with stroke or multiple sclerosis. We did not limit ourselves by type of urinary incontinence or age or menopausal status. We excluded pregnant, postpartum, and neurological populations from our review, and if the reader seeks information about these populations other systematic reviews are published, including in Cochrane (pregnant and postnatal women: Woodley 2020; people living with stroke: Thomas 2019).
2. Intervention: for example, limited to a specific type of exercise (e.g. hypopressive exercises) or one type of intervention delivery (e.g. mobile applications). Our use of three main comparisons (type, dose, delivery) and use of subgroups enables the reader to see more variety in types, dose, or delivery of PFMT in one review. In addition, some reviews included active treatments that potentially confounded the comparison — for example, use of another active treatment such as vaginal cones. We excluded such trials. Another Cochrane review addresses whether the addition of other active treatments to PFMT adds benefit (Ayeleke 2015), or the addition of biofeedback or feedback adds benefit (Fernandes 2024).
3. Comparison: for example, limiting to or including no treatment, or waitlist, or no active treatment, or education-only control conditions. We were interested in whether one approach worked better than another rather than whether PFMT worked compared to no PFMT, which is the review question addressed by another Cochrane review (Dumoulin 2018).
4. Outcome: for example, limited to a single outcome such as quality of life, or pelvic floor muscle strength. We did not include measures such as pelvic floor muscle strength in our review as these are a mechanism of action for the effect of PFMT (changes in pelvic floor muscle function) rather than an outcome that matters to women. Overall, we had a broader range of outcomes that matter to women than most other reviews.

There were also differences in methods in other published reviews, such as inclusion of non-randomised studies, and date or language or type of publication restrictions. In sum, we located two recent systematic reviews (Kharaji 2023; Papanikolaou 2023) that investigated the effectiveness of different approaches to PFMT and had similar criteria for types of population, intervention, comparator, and outcome as our review update. We also carefully read the non-Cochrane systematic review by Paiva 2017 (group versus individual supervision of PFMT) but did not summarise it here. First, because we excluded four of the 10 trials they included (because the trials included bladder training). Second, because there was overlap with the more recent review by Kharaji 2023 for the remainder of the trials. Third, because the outcome used in the meta-analysis was unclear — it was a dichotomous, symptom improvement outcome, but it was not clear if this was comparable to our subjective improvement outcome or something else.

Below, we briefly consider the differences and agreements in findings between:

1. the update and the previous review (Hay-Smith 2011);

2. the update and the findings of the overview of Cochrane systematic reviews of conservative interventions for urinary incontinence in women (Todhunter-Brown 2022);
3. the update and two recent non-Cochrane systematic reviews (Kharaji 2023; Papanikolaou 2023).

In the previous review, there were so few data spread across 11 comparisons, subgrouped by type of urinary incontinence, that caution was advised in making any conclusions about any specific PFMT approach versus another (Hay-Smith 2011). The post-hoc analysis in the previous review — categorising trials according to the relative intensity of the PFMT interventions being compared — suggested that 'more intensive' PFMT interventions were more effective than 'less intensive' interventions for subjective cure, improvement, and incontinence episode frequency. The differences in intensity were in exercise type, dose, or delivery. The comparisons and subgroups of the update were organised differently (Differences between protocol and review). Findings of this update challenge the findings of the previous review; the update suggests a more nuanced understanding of more versus less intensive approaches. For instance, a more intensive approach may be better than a less intensive approach (e.g. direct PFMT may be better than indirect training), or the reverse (e.g. PFMT without a resistance device may be better than PFMT with a resistance device), or there may be no apparent difference between the more and less intensive approach (e.g. combining indirect training with direct PFMT may not be better than PFMT alone).

Some small differences between the previous and current review were a consequence of some changes in methods (see Differences between protocol and review), and we made 'fresh' decisions about inclusion or exclusion of studies, or categorising studies into a comparison or subgroup for analysis. We included a single trial that was previously excluded, but it contributed no data to the analysis, this had no influence on the current review findings (Wong 1997). We excluded seven trials included in the previous review because they were not eligible for one of the three comparisons we addressed. For example, we previously had a comparison addressing the use of devices to prompt PFMT — such as an alarm or chime — but this was not a comparison of interest in the current review. The choice to exclude cross-over RCTs in the current review had no influence because the previous review had not included any. Including cluster-RCTs in the current review added three RCTs (Chiu 2018; Kannan 2022; Suraj 2016), and all were published after the previous review was completed.

The Cochrane overview presented the summary by urinary incontinence type (Todhunter-Brown 2022). Hay-Smith 2011 contributed data to the overview. Findings of the overview were that, for stress urinary incontinence (14 reviews), there was moderate- to high-certainty evidence that intensive PFMT was more beneficial than less-intensive PFMT for cure and improvement, but no moderate- or high-certainty evidence for quality of life. For urgency urinary incontinence (five reviews), there was no moderate- or high-certainty evidence for one approach to PFMT versus another. For all types of urinary incontinence (13 reviews), there was moderate- or high-certainty evidence that PFMT with more individual health professional supervision was more effective than less contact/supervision and more-intensive PFMT was more beneficial than less-intensive PFMT for cure and improvement. For these two findings about more versus less intensive PFMT, our review update (more than 10 years after the data the overview drew on) suggests there is nuance that is not evident in the overview. Comparison 3 in the review update shows generally low- or very low-certainty evidence about more versus less contact, and the certainty of evidence is better (moderate for the primary outcome) for how the contact occurs (e.g. individual versus group supervision).

One non-Cochrane review also investigated supervised versus unsupervised PFMT (Kharaji 2023). The finding from the synthesis, including meta-analysis, of six RCTs (all assessed at high risk of bias) was that there was no difference between supervised and unsupervised PFMT for urinary symptoms (pad test) and incontinence severity (incontinence quality of life). Of the RCTs included in Kharaji 2023, we allocated two of them to the subgroup clinic supervision of PFMT versus PFMT at home (along with six other RCTs in our review) and three RCTs to the subgroup more clinician contact versus less clinician contact (along with another two RCTs). There was one RCT included in Kharaji 2023 that our search did not locate. While our findings suggest that women may report more improvement or satisfaction, we did not have confidence in the findings for either clinic supervision versus home training, or more contact versus less contact comparisons; the certainty of evidence was low to very low for all but one outcome in these comparisons.

Finally, in a second non-Cochrane review, Papanikolaou 2023 investigated 'new' types of intervention delivery (all e-health or m-health) versus home-based PFMT that did not use e-health or m-health. Only trials in women with stress urinary incontinence or stress-predominant mixed urinary incontinence were eligible, and eight RCTs were included. Four of these trials were excluded from our review update (two biofeedback trials, one vibration device, one vaginal cones) and we classified one more as a comparison of exercise dose (resistance versus none). This left two trials that we included and classified as comparisons of different approaches to intervention delivery. While the Papanikolaou 2023 review most closely aligned, in intent, with comparison 3 (intervention delivery) in our review update, it was difficult to compare the findings because of the differences in included RCTs, and our decisions about what individual trials investigated.

AUTHORS' CONCLUSIONS

Implications for practice

1. **When choosing the type of pelvic floor muscle exercise**, there is very low- to low-certainty evidence that direct pelvic floor muscle training (PFMT) — that is, a programme of repeated voluntary pelvic floor muscle contraction that may also include "the Knack" (Types of interventions, see functional PFMT) (Miller 1998) — is better than indirect training, and low-certainty evidence that indirect training combined with direct training adds no benefit for women. Our findings are consistent with recommendations from groups such as the 7th International Consultation on Incontinence (Dumoulin 2023) for direct PFMT as first-line conservative management. Adding additional indirect exercise approaches to direct PFMT potentially adds cost for women and providers without additional benefit, and with the additional risk of reducing attention to the 'primary' PFMT programme. However, voluntary pelvic floor muscle contraction simultaneously integrated with other body movement (e.g. bridging or plank exercises), may have some

effect and this is an area for urgent attention (see Implications for research, co-ordinated training).

2. **When choosing the PFMT exercise dose** sound exercise science and training principles from other large bodies of synthesised evidence (e.g. American College of Sports Medicine 2009; Garber 2011) are important foundations because there are few trials and very low- or low-certainty evidence from PFMT-specific trials. Variable certainty of evidence (very low to moderate) suggests training without a resistance device may be better than with a device, although the evidence is inconsistent and uncertain, and training more days per week may be better than fewer days per week.
3. **When choosing the approach to PFMT intervention delivery**:
   a. **and amount of in-person contact**, then, although outcomes favour more contact over less contact, the evidence certainty is generally low or very low; how much contact will probably be strongly influenced by factors such as cost for women and providers;
   b. **and in-person individual or group supervision**, then there is consistent very low- to high-certainty evidence of little to no difference in outcome for women. Being in-person, these women potentially benefit from confirmation of a correct voluntary pelvic floor muscle contraction at the start of training. This finding is strongly influenced by a large trial that recruited women somewhat older (mean 67.9 years) than the typical demographic of included studies (mean ages of 45 to 65 years);
   c. **using e-health (e.g. web-based) or m-health (e.g. smartphone applications)**, then there is very low- to moderate-certainty evidence that this is better than posting women written instructions. However, it is not clear if remote supervision via m-health is an effective alternative to in-person clinic supervision, and the certainty of evidence is very low.

Implications for research

It is imperative that trialists meet, in full, the current standards of reporting for trial abstracts, trials, and intervention descriptions and that publishers of trials require this to be done. Too many trials, including recently published trials, leave out or do not clearly explain all CONSORT (Boutron 2008; CONSORT 2010; Hopewell 2008) and Consensus on Exercise Reporting Template for Pelvic Floor Muscle Training (CERT-PFMT) (Slade 2021) items, or fail to follow CONSORT guidance on how to report trial data. Consequently, risk of bias ratings and evidence certainty are compromised, and data may also be unusable — this is a form of research waste (Glasziou 2018) and not a good return on investment for women who take part in these studies, the clinicians who provide the interventions hoping they will learn something to inform their practice, or trial funders. Further, if the intervention and comparison are not fully described, then trials may be misclassified in or excluded from systematic reviews, the degree of intervention and comparator heterogeneity is unknown, and when shown to be effective the intervention cannot be replicated clinically. The use of protocol papers, or supplementary online materials can help researchers report necessary details.

It is, perhaps, tempting to expect that 'more' is better than 'less', although the review update suggests this is not necessarily the case (see Summary of main results and Agreements and disagreements with other studies or reviews). It seems it is a false expectation that adding one type of training to another, or that a higher exercise dose is necessarily better than a lower sufficient dose, or more intensive intervention delivery (more contact, more in-person contact) will be better. It is possible, for instance, that adding an indirect approach to direct PFMT dilutes the effect of direct PFMT or there is an unexpected and non-beneficial interaction effect. Research is needed to examine the assumption that more is better than less.

Based on findings from the review comparisons, when researchers are choosing their research question, we observe the following.

1. Questions that need addressing urgently, because these reflect current clinical practices not underpinned by randomised controlled trial (RCT) evidence, are:
   a. whether functional training, more than "the Knack" alone (Miller 1998), is better than direct PFMT alone;
   b. whether co-ordinated PFMT is better than direct PFMT alone;
   c. all investigations of exercise dose, such as held and quick contractions versus held contractions alone, more versus fewer exercise sets per day, more versus fewer exercise days per week, etc. Dose is a much under-researched area despite this being an expressed priority of women and clinicians (Buckley 2009);
   d. e- or m-health delivery (without any clinician contact) versus in-person contact with a clinician.
2. Questions for which further higher quality RCTs would elucidate the review findings in further updates are:
   a. the use of resistance devices for training, and a further review update could consider devices that have more than one mechanism of action (e.g. resistance and vibration);
   b. clear differences in the amount of in-person supervision — **not** comparisons of in-person individual versus in-person group unless in a sample of younger women (e.g. mean age under 50 years) — but more versus less in-person supervision or clinic supervision versus home training;
   c. e- or m-health delivery (with clinician contact via the technology) versus in-person contact with a clinician.

Based on what we discovered about the type and quality of data in PFMT trials, when researchers are designing their study, then we suggest the following.

1. Researchers **always** include incontinence quality of life, measured using a Grade A or A+ instrument recommended by the 7th International Consultation on Incontinence (Castro-Diaz 2023a), and report it fully (i.e. measure of central tendency and dispersion, total scores and not domain scores only or selected domains, not P values only).
2. If collecting data on incontinence episode frequency, the 7th International Consultation on Incontinence recommends a three-day diary (Castro-Diaz 2023b). Remember to state the time period data are collected for, **and** the time period for which it is reported (e.g. if collected over three days but reported for 24 hours, then make this clear). In contrast to a clinical assessment, for research, the most important data are how many leakages (not fluid volumes, voiding frequency, etc.) and this offers the opportunity to pursue ways to record minimal data that add less burden to women.
3. If collecting data on incontinence episode frequency, consider reporting per cent change. There is some indication of a

minimally important difference in per cent change (Yalcin 2010). The average incontinence episode frequency at baseline varies considerably by study and per cent change accounts for this. It is also possible that per cent change may mean more to women than average incontinence episode frequency.

4. For improvement, use a robust measure, ideally the Patient Global Impression of Improvement (PGI-I) (Yalcin 2003). Report the PGI-I by category. Do not use mean or median to report the PGI-I as these measures of central tendency obscure the distribution of responses by category, and the proportion of women who report being very much better, that is potentially the outcome of most interest.
5. For satisfaction, use a robust measure, ideally the Patient Global Impression of Satisfaction (Yalcin 2003). Report as for PGI-I, by response category.
6. Exercise adherence — and exercise adherence rather than attendance — is measured and reported for both intervention and comparator as an important potential explanator of heterogeneity of effect within and between trials. One measure is the six-item self-reported Exercise Adherence Rating Scale (EARS) (Newman-Beinart 2017) which was developed and tested in English. Brazilian (de Lira 2020), Danish (Jacobsen 2022), Japanese (Takasaki 2021), Nepalese (Adhikari 2020), and Persian (Ghaderi 2023) versions have since been developed and tested. This measure is starting to appear in PFMT trials, although none are included in this review update.

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Editorial and peer-reviewer contributions

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1. Sign-off Editor (final editorial decision): Prof Catherine Sherrington, University of Sydney
2. Managing Editor (selected peer reviewers, provided editorial guidance to authors, edited the article): Anupa Shah, Central Editorial Service
3. Editorial Assistant (conducted editorial policy checks, collated peer-reviewer comments and supported editorial team): Sara Hales-Brittain, Central Editorial Service
4. Copy Editor (copy editing and production): Anne Lawson, Cochrane Central Production Service
5. Peer-reviewers (provided comments and recommended an editorial decision): Ling Chen, Shenzhen Hospital, Southern Medical University (clinical/content review); Michael Samarinas, MD PhD, Urology Consultant, Head of the Urology Department, General Hospital of Larissa, Greece (clinical/content review); L Searson (consumer review); Jennifer Hilgart, Cochrane Evidence Production and Methods Directorate (methods review); Steve McDonald, Cochrane Australia (search review)

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* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Araujo 2020

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 33 **UI diagnosis (n/N (%)):** SUI or stress-predominant MUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 50.2 (11.7), n = 33 **BMI (kg/m^2,mean (SD)):** 28.2 (4.8), n = 33 **Parity (number of pregnancies, mean (SD)):** 3.0 (1.7), n = 33

Araujo 2020 *(Continued)*

	Menopausal status: NI **Education:** NI **Non-inclusions:** previous pelvic floor surgeries, urinary infection, neurological impairment that affects comprehension, symptoms suggestive of neurogenic bladder, alterations in PFM contraction (hyperactivity or complete inability to contract) after initial vaginal palpation, previous PFMT, pelvic organ prolapse (greater than stage I by Pelvic Organ Prolapse Quantification).
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** intervention delivery via smartphone app with no clinician contact, n = 17 **Exercise intervention delivery 2 (less 'intensive' supervision):** intervention delivery via printed instruction with no clinician contact, n = 16
Outcomes	**Of interest for the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (yes), subjective cure or improvement (yes) **Measured at:** 1 and 2 months (within treatment) and 3 months (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, full publication **Funding:** stated that app developers did not support the study

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated; block sequenced.
Allocation concealment (selection bias)	Low risk	Sealed opaque envelopes, block sequenced, with 1 researcher involved in randomisation (not involved in treatment)
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could be blinded to allocated group, and, as all outcomes were participant-reported, none could be blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Total attrition of 36.4%, differential attrition of 14.4%, per protocol analysis.
Selective reporting (reporting bias)	High risk	Meaningful differences between protocol and published paper.
Other bias	Low risk	Funding declared with a statement that app developers did not support the study.

Bech 2021

Study characteristics

Bech 2021 *(Continued)*

Methods	Randomised, parallel, 4-arm, pilot trial
Participants	**Number:** 46 (but baseline data provided for n = 31) **UI diagnosis (n/N (%)):** SUI 9/31 (29%), UUI 11/31 (35.5%), MUI 11/31 (35.5%) **Symptom duration (years, mean (SD)):** 18.32 (12.34), n = 31 **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD))**: 70.00 (10.02), n = 31 **BMI (kg/m^2, mean (SD)):** 28.01 (5.30), n = 31 **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** neurological or psychiatric diseases, congenital impairment, faecal incontinence or use of disposable catheters.
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** supervision in a group (1 hour, 10 sessions), n = 16 **Exercise intervention delivery 2 (less 'intensive' supervision):** supervision individually (45 minutes, 10 sessions), n = 12 **Exercise intervention delivery 3 (more 'intensive' supervision):** supervision individually that included ultrasound biofeedback (45 minutes), n = 12 **Group 4 (data not used):** not clear, offered group intervention at trial end, n = 6 Note: we combined data from Groups 2 and 3 for analysis.
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** IIQ-7 (yes, data provided by trialists). **Measured at:** 12 weeks (end of treatment), 24 weeks (follow-up).
Notes	**Country:** Denmark **Publication:** trial registration, full publication **Funding:** Aalborg Municipality Innovation Pool

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information. Although author's stated they did block randomisation, they did not clearly state how the allocation sequence was generated, only that it was random. Also, potential for deterministic methodology (randomisation with consideration of where the participants wished to be for exercise, unclear what this involved).

Bech 2021 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	32.6% total attrition rate.
Selective reporting (reporting bias)	Low risk	Outcomes reported on protocol were the same as trial except for the pad test which was added to the trial.
Other bias	Low risk	No concerns regarding funding statement (Aalborg Municipality Innovation Pool).

Borello-France 2006

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 44 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency (per week, mean (SD)):** 7.0 (6.2), n = 44 **Incontinence severity (g/1 hour pad test, mean (SD)):** 6.6 (18.6), n = 44 **Age (years, mean (SD)):** 52.6 (8.5), n = 44 **BMI:** NI **Parity (number of pregnancies, median):** 2 **Menopausal status (postmenopausal n/N (%)):** 25/44 (57%) **Education:** NI **Non-inclusions:** concurrent or previous treatment for UI or PFD; musculoskeletal conditions that would interfere with PFM exercises (not ambulatory, inability to tolerate the supine position, lumbosacral or pelvic pain or dysfunction); having a pacemaker; metabolic disorders likely to impair bladder or sphincter function; inability to demonstrate a palpable PFM contraction; atrophic vaginitis or skin breakdown around the perineum (preventing the use of a vaginal electromyographic sensor); vaginal wall prolapse beyond the vaginal introitus; using an intrauterine device; medical history of pelvic cancer; severe endometriosis; UUI episodes or < 1 SUI episode (7-day bladder diary); detrusor instability or abdominal leak point pressure < 60 cmH_2O (urodynamics)
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT in a supine to upright exercise progression (supine, sitting, and standing), n = 22

Borello-France 2006 *(Continued)*

	PFMT 2 (loser dose): PFMT in supine position, n = 22
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** IIQ-7 (no, not usable, trialists confirmed no longer available), incontinence episode frequency (yes) **Measured at:** 9–12 weeks (end of treatment)
Notes	**Country:** USA **Publication:** full publication **Funding:** National Institutes of Health/National Institute on Aging

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Block randomisation with 10 participants, random number table.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could be blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	< 20% total attrition rate, < 11% difference between groups, the study applied ITT.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Low risk	Funding source did not raise any concerns (National Institutes of Health/National Institute on Aging grant).

Borello-France 2008

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 36 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency (per week, mean (SD)):** 1.2 (2.0), n = 28 **Incontinence severity (g, mean (SD)):** 0.3 (0.6), n = 28 **Age (years, mean (SD)):** 52.8 (8.4), n = 28 **BMI (kg/m^2):** NI

Borello-France 2008 *(Continued)*

	Parity: NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** pregnancy, UUI or detrusor instability, pelvic cancer, severe endometriosis, use of an intrauterine device, or pacemaker; neurological or metabolic disorders associated with bladder or sphincter dysfunction; previous medical/surgical treatments for SUI; or prior instruction in PFM exercise or a prescribed PFM exercise regimen from a physician, nurse, physical therapist, or other healthcare professional, vaginal wall prolapse beyond the vaginal introitus, an inability to demonstrate a palpable PFM contraction, sensory loss below the L4 dermatome, atrophic vaginitis or skin breakdown around the perineum, lumbosacral or pelvic pain or dysfunction that would interfere with PFM exercises, or an inability to tolerate the supine position for exercise.
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** maintenance exercises 4 times per week, n = 18 **PFMT 2 (lower dose):** maintenance exercises once per week, n = 18
Outcomes	**Of interest to the review and contributing to the meta-analysis (yes/no):** IIQ (no, unusable data and trialists confirmed no longer available), incontinence episode frequency (yes) **Measured at:** 3 months (after 3 months of maintenance exercise)
Notes	**Country:** USA **Publication:** full publication **Funding:** National Institutes of Health, National Institute on Aging

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number table, a block randomisation (4 blocks with 12 assignments each).
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Overall attrition > 20% and differential loss between the groups > 11%.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Low risk	Funding source raised no concerns (National Institutes of Health, National Institute on Aging).

Bø 1990

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 57 (baseline data available for n = 52) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration (years, mean (range)):** 9.65 (1 to 30), n = 52 **Incontinence episode frequency:** NI **Leakage amount:** NI **Age (years, mean (range))**: 45.46 (24–64), n = 52 **BMI (kg/m^2, mean (range)):** 23.25 (18.6–32.5), n = 52 **Parity (mean (range)):** 2.5 (0–7), n = 52 **Menopausal status (postmenopausal, n/N (%)):** 14/52 (27%) **Education:** NI **Non-inclusions:** urinary tract infection, detrusor instability
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** Supervised in a group once per week, n = 28 **Exercise intervention delivery 2 (less 'intensive' supervision):** Unsupervised at home, n = 29
Outcomes	**Of interest to the review and contributing to meta-analysis:** subjective cure or improvement (yes) **Measured at:** 6 months (end of treatment), 5 years (follow-up 1, data for Group 1 only), 15 years (follow-up 2)
Notes	**Country:** Norway **Publication:** conference abstracts, full publications **Funding:** Foundation for Education and Research in Physical Therapy and The Research Council for Science and the Humanities

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Stated "randomized" but with no further details.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.

Bø 1990 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	High risk	Data excluded for participant with low attendance rate.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Low risk	Funding source raised no concerns (Foundation for Education and Research in Physical Therapy and The Research Council for Science and the Humanities).

Chiu 2018

Study characteristics	
Methods	Cluster randomised, 2-arm, pilot trial
Participants	**Number:** 47 (baseline data available for n = 40) **UI diagnosis (n/N (%)):** SUI or MUI presumed 100% based on inclusion criteria **Symptom duration (n/N (%)):** < 3 years 27/40 (68%), ≥ 3 years: 13/40 (32%) **Incontinence episode frequency (n/N (%)):** ≥ 1 month to < 1 week 22/40 (55%); 1 per week to < 1 per day 10/40 (25%); ≥ 1 day: 8/40 (20%) **Incontinence severity (ISI, n/N (%)):** slight 28/40 (70%); moderate 10/20 (25%); severe 2/20 (5%) **Age (years, mean (SD)):** 60.9 (7.5), n = 40 **BMI (kg/m^2, mean (SD)):** 25.5 (4.4), n = 40 **Parity (number of pregnancies, mean (SD)):** 3.0 (0.9), n = 40 **Menopausal status (postmenopausal, n/N (%)):** 31/40 (77.5%) **Education:** NI **Non-inclusions:** recent urinary tract infection; severe obstructive pulmonary disease; radical hysterectomy; solely UUI
Interventions	See Table 2: exercise type **Other training (Co-ordinated):** VPFMC contraction with concomitant abdominal muscle contractions, n = 23 **Direct PFMT:** n = 24
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** incontinence episode frequency (yes, usable data provided by trialists) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Taiwan **Publication:** full publication **Funding:** Ministry of Science and Technology of the Republic of China (Taiwan)
Risk of bias	

Chiu 2018 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised with random numbers method. Clusters with 3–5 participants.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Low risk	Funding source raised no concerns (Ministry of Science and Technology of the Republic of China, Taiwan).

Clark 2008

Study characteristics	
Methods	Quasi-randomised, parallel, 2-arm trial
Participants	**Number:** 17 (baseline data available for n = 15) **UI diagnosis (n/N (%)):** SUI 15/15 (100%). Note: some participants with symptoms characteristic of UUI but below threshold for MUI diagnosis **Symptom duration (years, mean (SD)):** 9.52 (10.61), n = 15 **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 54.6 (12.51), n = 15 **BMI:** NI **Parity:** NI **Menopausal status (postmenopausal, n/N (%)):** 8/15 (53.3%) **Education:** NI **Non-inclusions**: aged < 25 years or > 80 years, not physically capable of performing all required exercises, a primary language other than English, low back pain, history of urogynaecological surgeries
Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC with concomitant transversus abdominis contraction, n = 9

Clark 2008 *(Continued)*

	Direct PFMT: n = 8
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** IIQ (yes), incontinence episode frequency (yes) **Measured at:** 6 weeks (within treatment), 8 weeks (end of treatment)
Notes	**Country:** USA **Publication:** dissertation **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Deterministic method – odd and even numbers.
Allocation concealment (selection bias)	High risk	Deterministic method as above.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	> 10% difference in attrition between groups.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Unclear risk	Insufficient information about funding.

Delgado 2010

Study characteristics

Methods	Randomised, parallel, 2-arm, pilot trial
Participants	**Number:** 52 **UI diagnosis (n/N (%)):** SUI or stress-predominant MUI presumed 100% based on inclusion criteria **Symptom duration (years, mean (range)):** 5 (0.5–30), n = 52 **Incontinence episode frequency (SUI episodes per day, mean (range)):** 7 (3 to 20), n = 52 **Incontinence severity:** NI **Age (years, mean (range)):** 49.6 (36 to 68), n = 52 **BMI:** NI **Parity (number of pregnancies, median):** 2

Delgado 2010 *(Continued)*

	Menopausal status: NI **Education:** NI **Non-inclusions:** recent or recurrent UTI, taking duloxetine hydrochloride, postvoid residual > 100 mL, significant pelvic organ prolapse, unable to perform or very weak PFM contraction
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT with resistance device, n = 28 **PFMT 2 (lower dose):** PFMT without resistance device, n = 24
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (no, unusable data), PGI-I (yes), satisfaction (yes, provided by trialists) **Measured at:** 16 weeks (end of treatment), 6 months (follow-up)
Notes	**Country:** UK **Publication:** conference abstract, full publication **Funding:** Solution Project Management, UK with research design, data collection and reporting independent of funder.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	The computer randomisation sequence was generated independently of the investigators.
Allocation concealment (selection bias)	Low risk	Randomisation slips placed into opaque, sequentially numbered envelopes, which were sealed until interventions were assigned.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Overall attrition rate: 23%.
Selective reporting (reporting bias)	High risk	Inconsistencies between trial reports, not all stated outcomes/outcome measures were addressed in the results, no trial registration protocol to verify.
Other bias	Low risk	Funding source raised no concerns of bias. Commercial funding well explained.

de Oliveira Camargo 2009

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 61 (but baseline data provided for 60)

de Oliveira Camargo 2009 *(Continued)*

	UI diagnosis (n/N (%)): SUI or stress-predominant MUI presumed 100% based on inclusion criteria **Symptom duration (not clear if years or months, mean (SD)):** 4.95 (3.45), n = 60 **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 50.95 (9.08), n = 60 **BMI (kg/m^2, mean (SD)):** 26.15 (4.56), n = 30 **Parity (number of deliveries, mean (SD)):** 4.1 (2.24), n = 30 **Menopausal status (n (%)):** data reported as "hormonal status" but not defined **Education:** NI **Non-inclusions:** active genitourinary tract infections; postmenopausal women received topical hormonal therapy for ≥ 3 months before the beginning of the protocol; Abnormal genital bleeding, uterine prolapse, advanced genital prolapse, pregnancy or vaginal atrophy; people with intrinsic sphincter deficiencies as identified by Valsalva leak point pressure ≤ 60 cmH_2O measured in the sitting position with a volume of 250 mL in the bladder or by urethral closure pressure ≤ 20 cmH_2O in the sitting position at maximum cystometric capacity (or both).
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** supervised in a group (twice per week, 45 min), n = 30 **Exercise intervention delivery 2 (less 'intensive' supervision):** supervised individually (twice per week, 30 min), n = 30
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** KHQ (yes), incontinence episode frequency (yes), satisfaction (yes) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random number generator.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias)	High risk	Participant excluded due to non-compliance.

de Oliveira Camargo 2009 *(Continued)*
All outcomes

Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Unclear risk	Insufficient information – no funding declaration.

de Souza Abreu 2017

Study characteristics	
Methods	Randomised, parallel 2-arm trial
Participants	**Number:** 40 (baseline data available for n = 33) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration (more than 24 months, n/N (%)):** 28/33 (70%) **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 54.1 (11.3), n = 33 **BMI (kg/m^2, mean (SD)):** 29 (5.1), n = 33 **Parity (mean (SD)):** 2.1 (1.7), n = 33 **Menopausal status (postmenopausal, n/N (%)):** 21/33 (64%) **Education:** NI **Non-inclusions:** undergoing treatment for SUI, ongoing urinary or vaginal infection, musculoskeletal or neurological (or both) dysfunction that compromised the performance or understanding of the exercises, pregnant or breastfeeding women, absence of losses during the cough provocation test, genital prolapse beyond the vaginal opening, use of anti-cholinergic drugs or hormone replacement therapy, undergoing treatment for pelvic floor dysfunction and for changes in spine alignment.
Interventions	See Table 2: exercise type **Other training (Indirect training with direct PFMT):** lumbopelvic stabilisation and direct PFMT, n = 20 **Direct PFMT:** n = 20
Outcomes	**Of interest to the review and contributing to the meta-analysis (yes/no):** KHQ (yes), PGI-I (no, unusable data and trialists confirm not available), incontinence episode frequency (yes) **Measured at:** 5 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, full publication **Funding:** Universidade Federaal de Juiz de Fora

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

de Souza Abreu 2017 *(Continued)*

Random sequence generation (selection bias)	Low risk	Random assignment using EpiData version 3.1 program.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. Nothing to suggest analysis in different groups that assigned, all available participants at the end of the treatment were analysed.
Selective reporting (reporting bias)	High risk	Meaningful differences between trial protocol and report.
Other bias	Low risk	Funding source raised no concerns (university funding).

Dumoulin 2020

Study characteristics	
Methods	Randomised, parallel, 2-arm, non-inferiority trial
Participants	**Number:** 362 **UI diagnosis (n/N (%)):** SUI 62/362 (17%), MUI 300/362 (83%) **Symptom duration (years, mean (SD)):** 9.76 (9.83), n = 362 **Incontinence episode frequency (per day, median (IQR)):** group 1: 1.43 (0.86 to 2.14), n = 177; group 2: 1.57 (0.86 to 2.71), n = 183 **Incontinence severity (g, per 24 hour, median (IQR)):** group 1: 5.71 (2.52 to 17.66), n = 171; group 2: 6.67 (2.42 to 16.05), n = 180 **Age (years, mean (SD)):** 67.9 (5.79), n = 362 **BMI (kg/m^2, mean (SD)):** 27.10 (4.55), n = 362 **Parity (median (IQR)):** group 1 (1–3); group 2 (1–2) **Menopausal status:** NI **Education:** NI **Non-inclusions:** physiotherapy treatment or surgery for UI or POP in past year; urinary tract infection within the last 3 months; < 3 episodes of involuntary urine loss during the preceding 3 months; solely UUI; reduced mobility (requiring a mobility aid); use of medications for UI or affecting skeletal muscles; change in hormonal replacement therapy in the past 6 months; FI (any leakage of stool or mucus), any active vaginal infection (in past 3 months); comorbidities or risk factors interfering with the study
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** supervision in a group (once per week, 1 hour), n = 178

Dumoulin 2020 *(Continued)*

	Exercise intervention delivery 2 (less 'intensive' supervision): supervision individually (once per week, 1 hour), n = 184 Note: the notation of more versus less is for consistency with other trials comparing group versus individual supervision, but does not reflect the balanced supervisory intensity in the 2 groups
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (yes, provided by trialists in usable form); incontinence episode frequency (yes, provided by trialists in usable form), PGI-I (yes); treatment satisfaction (yes); adverse events **Measured at:** 12 weeks (post-treatment); 1 year (follow-up)
Notes	**Country:** Canada **Publication:** trial registration, published protocol, conference abstracts, full publications (including economic analysis) **Funding:** Canadian Institutes of Health Research (grant MSH-258993) and statistical analyses were partly supported by the Canadian Institutes of Health Research (grant PJT-148946). Dr Dumoulin received a salary award from the Canadian Research Chair Tier II program. Drs Morin and Mayrand received salary awards from the Fonds de la Recherche du Québec–Santé. The laboratory infrastructures were funded by the Canadian Foundation for Innovation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated list for each of the 4 resulting strata (centre by type of urinary incontinence) to create random permuted blocks of varying sizes (4–6).
Allocation concealment (selection bias)	Low risk	Concealed randomisation lists were used by an independent individual to assign eligible participants to 1 of the 2 trial arms (1:1). Research assistants (1 in each centre) contacted the independent party to obtain the next sequential randomisation and informed participants of their treatment randomisation.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. Nothing to suggest that participants were excluded from analysis by trialists and nothing to suggest they were analysed in different groups than assigned.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Low risk	Funding source raised no concerns (Canadian Institutes of Health Research).

Fani 2024

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 46 (baseline data available for n = 45)

Fani 2024 *(Continued)*

	UI diagnosis (n/N (%)): SUI presumed 100% based on inclusion criteria **Symptom duration (years, mean (SD)):** 6.0 (7.7), n = 45 **Incontinence episode frequency (day diary, mean (SD)):** 4.2 (3.8), n = 45 **Incontinence severity (unknown severity index, mean (SD)):** 0 (3.1), n = 45 **Age (years, mean (SD)):** 43.1 (8.4), n = 45 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** aged < 20 and > 55 years, history of surgery or recent rehabilitation for UI, concomitant treatment for UI or LBP, severe LBP or pelvic pain, history of systemic or neuromuscular or neurological disease, pregnancy, hysterectomy, medications that exacerbate or alleviate the symptoms of UI; trial registration also states "episiotomy"
Interventions	See Table 2 Exercise type **Other training (co-ordinated):** trunk stability exercise, n = 23 **Direct PFMT:** n = 23
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-LUTS-QoL (yes), incontinence episode frequency (yes) **Measured at:** 8 weeks (end of treatment)
Notes	**Country:** Iran **Publication:** trial registration, full publication **Funding:** University of Medical Sciences (grant number: PHT-9729)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer generated block randomisation.
Allocation concealment (selection bias)	Low risk	Sealed, opaque envelopes.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low differential and overall attrition, nothing to suggest that participants were excluded or analysed in different groups that initially assigned.
Selective reporting (reporting bias)	Low risk	All outcomes in registration reported in paper; no multiple reporting of same data.

Fani 2024 *(Continued)*

Other bias	Low risk	Funding source raised no concerns (university funding).

Felicissimo 2010

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 62 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration (months, median (IQR)):** supervised: 60.0 (12–120), n = 31; unsupervised: 60.0 (30–120), n = 31 **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 49.65 (8.52), n = 62 **BMI (kg/m^2, by group, mean (SD)):** 27.55 (4.13), n = 62 **Parity (number of deliveries, median (IQR)):** supervised 1: 3 (2 to 5), n = 31; unsupervised: 3 (2 to 3), n = 31 **Menopausal status:** NI **Education (years, median (IQR)):** supervised: 3.2 (1.2–8.0), n = 31; unsupervised: 2.8 (1.5–8.5), n = 31 **Non-inclusions:** active genitourinary tract infections, chronic muscular diseases, chronic neurological disease, abnormal genital bleeding, genital prolapse at stage ≥ 2 of POP-Q, pregnancy, women who preferred surgery, people with intrinsic sphincter deficiencies as identified by Valsalva leak point pressure ≤ 60 cmH_2O measured in the sitting position with a volume of 250 mL in the bladder, unable to perform correct pelvic floor contraction or were graded < 2 by the Modified Oxford Scale
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** supervision in clinic, n = 31 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised at home, n = 31
Outcomes	**Of interest for the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (no, unusable data); subjective cure/improvement (yes), satisfaction (yes) **Measured at:** 8 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random number generator.

Felicissimo 2010 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Women who were unable to comply with the treatment or return visits were subsequently excluded.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Unclear risk	No funding declaration.

Ferla 2022

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 64 **UI diagnosis (n/N (%)):** SUI 26/64 (41%), stress-predominant MUI 23/64 (36%), urge-predominant MUI 13/64 (20%), UUI 2/64 (3%) **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 50.39 (8.60), n = 64 **BMI (kg/m^2):** 28.75 (4.37), n = 64 **Parity (parturitions, median (95% CI)):** 2.00 (1.74 to 2.42), n = 64 **Menopausal status (postmenopausal, n/N (%)):** 55/64 (86%) **Education:** NI **Non-inclusions:** grade 0 PFM contraction; PFMT in last 6 months (trial registration); latex allergy; aged < 30 and > 70 years; pelvic radiotherapy or chemotherapy; < 12 months postpartum; no sexual intercourse in last 6 months
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** group supervision (12 weeks) then unsupervised at home (12 weeks), n = 32 **Exercise intervention delivery 2 (less 'intensive' supervision):** individual supervision (once) then training at home (24 weeks), n = 32
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (yes)

Ferla 2022 *(Continued)*

	Measured at: 12 weeks (end of treatment), 24 weeks (follow-up)
Notes	**Country:** Brazil **Publication:** registration, full publication **Funding:** "no funding sources"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random list generated by the software WinPepi, version 4.0.
Allocation concealment (selection bias)	Low risk	The allocation sequence was concealed using numerically sequenced, opaque sealed envelopes opened after inclusion of participants in the study.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Overall attrition > 20%.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Low risk	The authors declared no funding – presumably self-funded.

Ferreira 2012

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 38 (baseline data available for n = 34) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration (years, mean (SD)):** 9.6 (8.3), n = 34 **Incontinence episode frequency (per week, mean (SD)):** 11.3 (5.3), n = 34 **Incontinence severity (g/1-hour pad test, mean (SD)):** 3.7 (2.5), n = 34 **Age (years, mean (SD)):** 52.3 (8.9), n = 34 **BMI (kg/m^2, mean (SD)):** 28.2 (4.3), n = 34 **Parity (number of pregnancies, mean (SD)):** 2.4 (1.1), n = 34 **Menopausal status (postmenopausal, n/N (%)):** 21/34 (61.8%) **Education:** NI

Ferreira 2012 *(Continued)*

	Non-inclusions: previous surgeries for SUI; psychiatric diseases; inability to contract the PFM; other diseases or medication that would interfere with the outcomes of the study
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** weekly clinic supervision, n = 17 **Exercise intervention delivery 2 (less 'intensive' supervision):** training at home (after initial visit + monthly calls), n = 17
Outcomes	**Of interest to the review and contributing to meta-analysis:** subjective improvement (yes); incontinence episode frequency (no, data not usable and trialists confirmed not available) **Measured at:** 6 months (end of treatment)
Notes	**Country:** Portugal **Publication:** conference abstracts, full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Reportedly used a lottery, but no further details available.
Allocation concealment (selection bias)	High risk	Lottery technique cannot be considered a robust method of concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. Nothing to suggest that the participants were not analysed in groups to which assigned.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective outcome reporting.
Other bias	Low risk	No funding statement in the trial report, but statement of 'no funding' available in the poster.

Figueiredo 2020

Study characteristics

Methods	Randomised, parallel, 3-arm trial
Participants	**Number:** 120 (baseline data available for n = 90) **UI diagnosis (n/N (%)):** SUI 40/90 (44%); MUI 50/90 (56%)

Figueiredo 2020 *(Continued)*

	Symptom duration (n/N (%)): < 6 months 9/90 (10%); 6 months to < 1 year 12/90 (13%); 1–5 years: 48/90 (53%); > 5 years: 21/90 (23%) **Incontinence episode frequency:** NI **Incontinence severity (pre-treatment KHQ, mean (SD)):** 33.9 (21.9), n = 90 **Age (years, mean (SD)):** 53 (12.5), n = 90 **BMI (kg/m^2, n/N (%)):** healthy: 26/90 (29%); overweight: 24/90 (27%); obese: 40/90 (44%) **Parity (n/N (%)):** nulliparous: 7/90 (8%); primiparous: 14/90 (16%); multiparous (2–3): 53/90 (59%); multiparous (4–8): 16/90 (18%) **Menopausal status (postmenopausal, n/N (%)):** 54/90 (60%) **Education (n/N (%)):** < 9 years: 41/90 (46%); 9–12 years: 26/90 (29%); > 12 years: 23/90 (26%) **Non-inclusions:** diagnosis of urgency incontinence, absence of pelvic floor muscle contraction (grade 0) verified by the modified Oxford scale, pregnancy, visible prolapse in vaginal opening
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** group supervision (weekly, 12 weeks), n = 30 **Exercise intervention delivery 2 (less 'intensive' supervision):** individual supervision (4 weeks) progressing to group (8 weeks), n = 30 **Exercise intervention delivery 3 (less 'intensive' supervision):** individual supervision (12 weeks), n = 30 Notes: we combined data from groups 2 and 3 for analysis. The notation of more versus less supervision is for consistency with other trials comparing group versus individual supervision, but does not reflect the balanced supervisory intensity in the 3 groups.
Outcomes	**Outcome of interest for the review and contributing to meta-analysis (yes/no):** KHQ (yes), incontinence episode frequency (yes) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, full publication **Funding:** Foundation for Support in Scientific and Technological Development of Ceará (FUNCAP, Fortaleza, CE, Brazil), Grant/Award Number: nº BDS-0017-00071.01.11/15; Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – Brasil (CAPES), Grant/Award Number: Finance Code 001; São Paulo Research Foundation (FAPESP), Grant/Award Number: project number 2016/0638-4.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random numbers generated by the website.
Allocation concealment (selection bias)	Low risk	Randomisation list kept in an opaque envelope.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear

Figueiredo 2020 *(Continued)*

		risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	High overall attrition, per protocol analysis.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Low risk	Funding source raises no concerns (Foundation for Support in Scientific and Technological Development of Ceará).

Fischer Blosfield 2021

Study characteristics	
Methods	Randomised, parallel, 4-arm trial
Participants	**Number:** 138 (baseline data available for n = 77) **UI diagnosis (n/N (%)):** SUI 3773 (43%); UUI 377 (4%); MUI 41/77 (53%) **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity (ICIQ score, mean (SD)):** 11.4 (5.0), n = 77 **Age (years, mean (SD)):** 48.3 (7.7), n = 77 **BMI (kg/m^2, mean (SD)):** 27.7 (4.3), n = 77 **Parity:** NI **Menopausal status:** NI **Education (n/N (%)):** 1–5 years: 6/77 (8%); 6–10 years: 33/77 (43%); > 10 years: 38/77 (49%) **Non-inclusions:** prior UI or other surgery for PFD; UTI; pacemaker; women with prolapse equal or greater than Stage III according to the POP-Q, intrapelvic tumours, pelvic pain that prevented the performance of the available therapies, intrauterine devices. In addition, participants who missed physiotherapy twice in a row were also excluded.
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1:** home training with smartphone app, and additional group supervision, n = 19 **Exercise intervention delivery 2:** home training with smartphone app, n = 19 **Exercise intervention delivery 2:** home training with written instructions, and additional group supervision, n = 22 **Exercise intervention delivery 4:** home training with written instructions, n = 17 Note: for analysis, we combined data from groups 1 and 2 (smartphone application 'e-health' delivery) versus groups 3 and 4 (written instructions)
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (yes)

Fischer Blosfield 2021 *(Continued)*

	Measured at: 12 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, full publication **Funding:** "no funding support"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Randomisation using balls with different colours corresponding to given groups. Some participants were moved to a different group after randomisation because they did not have a compatible mobile phone to use the app.
Allocation concealment (selection bias)	High risk	Drawing balls, which is a manual method that cannot be considered a robust method of concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Overall attrition > 20%, and differential attrition > 10%
Selective reporting (reporting bias)	High risk	Meaningful differences between trial registration and trial report.
Other bias	Low risk	No concerns – the authors declared that this study received no financial support.

Fitz 2015

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 63 **UI diagnosis (n/N (%)):** SUI, or SUI predominant UI, presumed 100% based on inclusion criteria **Symptom duration (months, mean (SD)):** 94.6 (85.7), n = 50 **Incontinence episode frequency:** NI **Incontinence severity (g, mean (SD)):** 16.8 (22.1), n = 50 **Age (years, mean (SD)):** 56.9 (11.4), n = 50 **BMI (kg/m^2, mean (SD)):** 32.6 (6.7), n = 50 **Parity (pregnancies, mean (SD)):** 4.0 (2.3), n = 50 **Menopausal status:** NI

Fitz 2015 *(Continued)*

	Education: NI **Non-inclusions:** previously undergone PF re-education programmes, chronic degenerative diseases, neurological disease, psychiatric disease
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision (24 visits), n = 25 **Exercise intervention delivery 2 (less 'intensive' supervision):** clinic supervision (3 visits), n = 25
Outcomes	**Of interest to the review and contributing to the meta-analysis (yes/no):** I-QoL (no, unusable data and trialists confirm no longer available), incontinence episode frequency (yes) **Measured at:** 3 months (end of treatment)
Notes	**Country:** Brazil **Publication:** conference abstract **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No other information than: "the patients were randomized and divided in two groups."
Allocation concealment (selection bias)	Unclear risk	Insufficient information (reported only "randomized").
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information – no information about how many women were randomised, only information about women included.
Selective reporting (reporting bias)	Unclear risk	No trial registration number, insufficient information (abstract).
Other bias	Unclear risk	Insufficient information – no funding declaration.

Fitz 2020

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 69 **UI diagnosis (n/N (%)):** SUI or stress-predominant MUI presumed 100% based on inclusion criteria **Symptom duration (months, mean (SD)):** 86.6 (77.0), n = 69

Fitz 2020 *(Continued)*

	Incontinence episode frequency (per week, mean (SD)): 1.7 (1.7), n = 69 **Incontinence severity (g, mean (SD)):** 20.4 (31.3), n = 69 **Age (years, mean (SD)):** 56.8 (11.0), n = 69 **BMI (kg/m^2, mean (SD)):** 32.2 (6.6), n = 69 **Parity (number of pregnancies, mean (SD)):** 3.9 (2.2), n = 69 **Menopausal status:** NI **Education:** NI **Non-inclusions:** previous pelvic floor surgeries; pelvic organ prolapse greater than stage I by the POP-Q; participated in previous pelvic floor re-education programmes; chronic degenerative diseases; psychiatric diseases; aged < 18 years; inability to contract the PFM
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision (24 visits), n = 34 **Exercise intervention delivery 2 (less 'intensive' supervision):** clinic supervision (3 visits), n = 35
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** I-QoL (no, unusable data); incontinence episode frequency (yes), satisfaction (yes) **Measured at:** 3 months (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, conference abstract, full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence was generated by a research assistant using a computer-generated random number table.
Allocation concealment (selection bias)	Low risk	Allocation sequence was concealed in sealed and opaque envelopes that were sequentially numbered.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups, analysis by ITT.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Unclear risk	Insufficient information – no funding declaration.

Hagovská 2020

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 71 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration (months, mean (SD)):** 23.6 (22.8), n = 71 **Incontinence episode frequency (per week, mean (SD)):** 9.7 (5.9), n = 71 **Incontinence severity (ICIQ-UI-SF score, mean (SD)):** 9.8 (3.1), n = 71 **Age (years, mean (SD)):** 40.4 (9.0), n = 71 **BMI (kg/m^2, mean (SD)):** 24.1 (3.8), n = 71 **Parity:** NI **Menopausal status (premenopausal, n/N (%)):** 59/71 (83%) **Education (n/N (%)):** university 36/71 (51%) **Non-inclusions:** symptom duration < 3 consecutive months, ICIQ-UI score < 6, aged < 18 years, prolapse > stage II, history of pelvic floor surgery or physiotherapy in the past 12 months, urinary tract infection, urinary incontinence medication, history of interstitial cystitis/bladder pain syndrome, inability to correctly activate pelvic floor, clinically significant heart, renal or hepatic conditions, chronic constipation
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** 5 times per week, 30 minutes per day, n = 35 **PFMT 2 (lower dose):** 2 times per week, 15 minutes per day, n = 36
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** I-QoL (yes), incontinence episode frequency (yes), PGI-I (yes, usable data provided by trialists) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Slovakia **Publication:** trial registration, published protocol, full publication **Funding:** internal grant from the Ministry of Education and Slovak Academy of Sciences

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Simple software randomisation.
Allocation concealment (selection bias)	Low risk	Generated numbers were placed in sealed envelopes.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear

Hagovská 2020 *(Continued)*

		risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Although they claim ITT, they excluded people due to low adherence.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Low risk	Funding source raised no concerns (publicly funded).

Johnson 2001

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 37 (baseline data available for n = 32) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration (months, mean (SD)):** 123.8 (144.2), n = 32 **Incontinence episode frequency (per day, mean (SD)):** 3.6 (2. 6), n = 32 **Incontinence severity (10-hour pad test (g), mean (SD)):** 12.9 (21.3), n = 32 **Age (years, mean (SD)):** 50.3 (10.5), n = 32 **BMI:** NI **Parity (n (%)):** parous 28/32 (87.5%), nulliparous 4/32 (12.5%) **Menopausal status:** NI **Education:** NI **Non-inclusions:** mean leakages per day < 2 for the previous 3 months, non-English speaking, with history of urethral collagen injection therapy, radical pelvic/perineal surgical intervention; currently taking medications for SUI, current bladder or vaginal infection, serious psychological problems, inadequate "estrogenation" of the vaginal mucosa
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** "near-maximal" VPFMC, n = 16 **PFMT 2 (lower dose): "**sub-maximal" VPFMC, n = 16
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** incontinence episode frequency (yes) **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** USA **Publication:** dissertation, full publication **Funding:** research supported in part by a seed grant and research award from TTUHSC School of Nursing, a research award from the E. A. Franklin Foundation, a research award from Iota Mu Chapter of Sig-

Johnson 2001 *(Continued)*

ma Theta Tai International, and support-in-kind from InCare Medical Products (no further detail provided).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Table of random numbers.
Allocation concealment (selection bias)	Unclear risk	No information on whether the list of random numbers was concealed or not.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Participant was excluded due to "non-compliance with the study protocol."
Selective reporting (reporting bias)	Unclear risk	No registration or trial protocol, publication had brief statistical analysis plan.
Other bias	High risk	Non-monetary support from the commercial founder whose products were used in the study (most probably the company provided the equipment). No information about potential conflict of interest or the funder's role.

Jordre 2014

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 30 (baseline data available for n = 27) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency (3 days, mean (SD)):** 4.1 (4.8), n = 27 **Incontinence severity (IIQ, mean (SD)):** 145.4 (71.5), n = 27 **Age (years, mean (SD)):** 51.5 (12.5), n = 27 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI

Jordre 2014 *(Continued)*

	Non-inclusions: concurrent medications known to impact bladder function, current treatment for urinary incontinence, history of total hip arthroplasty, MMSE score < 24, aged < 18 and > 88 years old, pregnant or postpartum, non-English speaking
Interventions	See Table 2: exercise type **Other training (indirect):** resisted hip rotation exercise, n = 15 **Direct PFMT:** n = 15
Outcomes	**Outcome of interest to the review and contribution to meta-analysis (yes/no):** IIQ (yes), subjective improvement (yes), incontinence episode frequency (yes) **Measured at:** 6 (end of treatment)
Notes	**Country:** USA **Publication:** full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "All subjects were randomly assigned to either group." No further information.
Allocation concealment (selection bias)	High risk	Coin toss used for group allocation (information received from the authors) – manual method; therefore, changed to high risk.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and modified ITT analysis, with < 10% differential loss.
Selective reporting (reporting bias)	Low risk	All outcome measures described in the methods had data in the results.
Other bias	Unclear risk	No funding declaration.

Jose 2020

Study characteristics

Methods	Randomised, parallel, 2-arm, pilot trial
Participants	**Number:** 30 **UI diagnosis (n/N (%)):** UI (type not further specified) **Symptom duration:** NI

Jose 2020 *(Continued)*

	Incontinence episode frequency: NI **Incontinence severity:** NI **Age (years, mean (SD)):** 35.2 (3.0) **BMI (kg/m^2):** NI **Parity:** all "multigravid" **Menopausal status:** menopause unlikely as all participants within some months of giving birth **Education:** NI **Non-inclusions:** multigravid women
Interventions	See Table 2: exercise type **Other training (indirect training with PFMT):** Palloff press and direct PFMT, n = 15 **Direct PFMT:** n = 15
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** IIQ (yes) **Measured at:** 8 weeks (end of treatment)
Notes	**Country:** India **Publication:** full publication **Funding:** "self"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "The participants were randomly grouped into group A and B." No further information provided.
Allocation concealment (selection bias)	Unclear risk	Quote: "The participants were randomly grouped into group A and B." No further information provided.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No mention of losses to follow-up, and while the data suggested there might be none, this was not clearly stated.
Selective reporting (reporting bias)	Unclear risk	No trial registration. Very brief and insufficiently detailed statistical analysis section is embedded in the results section.
Other bias	Low risk	Funding source raises no concerns (self-funded).

Jose-Vaz 2020

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 90 (baseline data available for n = 73) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 55.1 (11.5), n = 73 **BMI (kg/m^2, mean (SD)):** 26.9 (3.9), n = 73 **Parity (number of pregnancies, median (range)):** indirect PFMT 2 (0–8), n = 36; direct PFMT 2.0 (1–4), n = 37 **Menopausal status (postmenopausal, n/N (%)):** 50/73 (68.5%) **Education:** NI **Non-inclusions:** aged < 18 years; answered yes to a question about urgency; previous physical therapy for UI; grade 0 VPFMC; previous pelvic floor surgery; stage II or greater POP; vaginal or UTIs; muscular tissue disease; nerve tissue disease; pregnancy; uncontrolled diabetes
Interventions	See Table 2: exercise type **Other training (indirect training):** abdominal hypopressive technique, n = 45 **Direct PFMT:** n = 45
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-UI-SF (yes, usable data provided by trialists); incontinence episode frequency (yes, data provided by trialists) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, full publication **Funding:** "university"

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random-number computer-based generator.
Allocation concealment (selection bias)	Low risk	Random-number computer-based generator, 'independent' person 'performing' the allocation.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.

Jose-Vaz 2020 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition overall and ≤ 11% differential attrition between the groups. Appeared the women were analysed in assigned groups, and all available participants were analysed at the end of the treatment.
Selective reporting (reporting bias)	High risk	Substantial differences between protocol and report.
Other bias	Low risk	No concerns regarding the funding (university funding).

Kamarudin 2021

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 180 (baseline data for n = 159) **UI diagnosis (n/N (%)):** SUI 46/159 (29%), UUI 42/159 (26%), MUI 71/159 (45%) **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 65.8 (6.3), n = 159 **BMI (kg/m^2, mean (SD)):** 25.2 (4.9), n = 159 **Parity (mean (SD)):** 2.6 (1.5), n = 159 **Menopausal status (age at menopause, years, mean (SD)):** 50.5 (3.8), n = 159 **Education:** NI **Non-inclusions:** aged < 55 years; stage 3 and 4 POP; women who previously participated in other therapies; women with physical weakness and who are unable to do PFMT plus exercises
Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC with Hyacinth/Salat prayer steps, n = 90 **Direct PFMT:** n = 90
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** none **Measured at:** 2 months (within treatment), 6 months (end of treatment)
Notes	**Country:** Malaysia **Publication:** trial registration, full publication **Funding:** Department of Obstetrics and Gynecology, University of Malaya

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Kamarudin 2021 *(Continued)*

Random sequence generation (selection bias)	Low risk	Computer generated random sequence.
Allocation concealment (selection bias)	Low risk	Sealed and opaque envelopes were used.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	20% overall attrition at 6 months.
Selective reporting (reporting bias)	Unclear risk	Very brief statistical section.
Other bias	Low risk	This research was internally funded by the Department of Obstetrics and Gynecology, University of Malaya.

Kamel 2011

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 30 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 39.8 (3.5), n = 30 **BMI (kg/m^2, mean (SD)):** 32.2 (0.87), n = 30 **Parity:** ≤ 3 **Menopausal status:** NI **Education:** NI **Non-inclusions:** aged < 30 or > 40 years (note: demographic data show max age in both groups was 45 years), BMI < 30 kg/m^2 and > 34 kg/m^2, waist/hip ratio < 0.8, parity ≥ 4, pregnancy, lower UTI, neurological problems, pelvic tumour, diabetes, smoking, chronic chest diseases, other types of urinary incontinence, any medications or medical/surgical interventions for SUI
Interventions	See Table 2: exercise type **Other training (Indirect training):** transversus abdominus and internal oblique muscle exercise, n = 15

Kamel 2011 *(Continued)*

	Direct PFMT: n = 15
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** none **Measured at:** 12 weeks (end of treatment), 6 months (follow-up)
Notes	**Country:** Egypt **Publication:** full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No further information other than "simple random method."
Allocation concealment (selection bias)	Low risk	Quote: "Concealed papers picked by a third parity to pick patient's name for each group at a time."
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information. 2011 paper: numbers assessed at each time point not stated. 2013 paper: numbers assessed at each time point appeared identical to baseline.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Unclear risk	No funding declaration.

Kannan 2022

Study characteristics

Methods	Randomised, cluster, 3-arm trial
Participants	**Number:** 30 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 74.57 (6.42), n = 30 **BMI (kg/m^2):** NI

Kannan 2022 *(Continued)*

	Parity (number of births, mean (SD)): 2.9 (1.3), n = 30 **Menopausal status:** NI **Education:** no school 5/30 (17%), primary 17/30 (57%), secondary 6/30 (20%) **Non-inclusions:** aged < 60 years, ICIQ-SF score < 6/21, UTI or haematuria, participation in other urinary incontinence research, prolapse stage III or IV graded by the POP-Q, pelvic cancer, being bedridden
Interventions	See Table 2: exercise type **Other training 1 (indirect):** yoga, n = 10 **Other training 2 (indirect):** Pilates, n = 10 **Direct PFMT:** n = 10 Note: for analysis, we combined data from groups 1 and 2 (indirect training)
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-UI-SF (yes) **Measured at:** 4 weeks (within treatment), 12 weeks (end of treatment)
Notes	**Country:** China **Publication:** trial registration, conference abstracts, full publication **Funding:** start-up fund (1-ZE8G), Hong Kong Polytechnic University

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient details about the randomisation process; reported "simultaneous randomisation technique."
Allocation concealment (selection bias)	Unclear risk	No information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups.
Selective reporting (reporting bias)	Low risk	Based on the trial registration or protocol, all outcomes were reported as prespecified.
Other bias	Low risk	Funding source raises no concerns (start-up fund provided for early-career academics).

Kashanian 2011

Study characteristics

Kashanian 2011 *(Continued)*

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 91 (baseline data for n = 85) **UI diagnosis (n/N (%)):** SUI or MUI presumed 100% based on inclusion criteria **Symptom duration (years, mean (SD)):** 3.1 (2.6), n = 85 **Incontinence episode frequency (n/N (%)):** ≤ 2 per month 16/85 (19%), 1–3 per week 17/85 (20%), 1–4 per day 44/85 (52%), ≥ 5 per day 8/85 (9%) **Incontinence severity (VAS, n/N (%)):** mild 9/85 (11%), moderate 47/85 (55%), severe 29/85 (34%) **Age (years, mean (SD)):** 39.9 (6.1), n = 85 **BMI (kg/m^2, mean (SD)):** 28.0 (3.8), n = 85 **Parity (mean (SD)):** 3.4 (1.6), n = 85 **Menopausal status:** see non-inclusion **Education:** NI **Non-inclusions:** post-menopause, pregnancy or postpartum period (6 weeks after delivery), any drug use or surgery for UI, any urogenital infection, any systemic disorders or drug use including chronic, degenerative disorders, neuromuscular disorders, rapid progressive POP, other forms of UI.
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT with resistance device, n = 41 **PFMT 2 (lower dose):** PFMT without resistance device, n = 50
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** I-QoL (yes), incontinence episode frequency (no, data not usable as ordered categories), adverse events **Measured at:** 4 months (1 month after end of treatment), 6 months (follow-up)
Notes	**Country:** Iran **Publication:** trial registration, full publication **Funding:** Iran University of Medical Sciences, Deputy of Research and Technology, Project No. 816

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Block randomisation by investigator's college.
Allocation concealment (selection bias)	Low risk	Sealed, sequentially distributed envelopes.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias)	Low risk	Low overall attrition and similar attrition in both treatment groups. Participants who finished the study were analysed.

Kashanian 2011 *(Continued)*
All outcomes

Selective reporting (reporting bias)	Low risk	Outcomes match the trial registry description.
Other bias	Low risk	No concerns. This work was supported by Iran University of Medical Sciences.

Kastelein 2020

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 263 **UI diagnosis (n/N (%)):** SUI or stress-predominant MUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years):** NI **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** concurrent or previous (past 12 months) treatment for UI or PFD; recurrent lower urinary tract infection (> 4 times/year); history or current major psychiatric illness; urgency predominant MUI; POP-Q stage ≥ 3; insufficient knowledge or understanding of the Dutch/Spanish/Finnish language; insufficient score on the IT-knowledge questionnaire; inability to contract PFM (palpation or EMG).
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision, n = 133 **Exercise intervention delivery 2 (less 'intensive' supervision):** remote supervision (contact via smartphone app), n = 130
Outcomes	**Of interest to the review and contribution to meta-analysis**: ICIQ-UI-SF (yes, usable data provided by trialists); PGI-I (yes), satisfaction (no) **Measured at**: 12 months (follow-up after 12 weeks' treatment)
Notes	**Country:** Netherlands **Publication:** trial registration, conference abstract **Funding:** European Union's Horizon 2020 Research and Innovation Programme (grant agreement no. 643535).
Risk of bias	

Bias	**Authors' judgement**	**Support for judgement**

Kastelein 2020 *(Continued)*

Random sequence generation (selection bias)	Unclear risk	No further information other than randomised controlled trial.
Allocation concealment (selection bias)	Unclear risk	No further information other than randomised controlled trial.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Abstract; therefore, no way to verify dropouts or number of participants analysed in the groups post-treatment.
Selective reporting (reporting bias)	High risk	Differences between outcomes reported in registry and abstract.
Other bias	Low risk	No concerns regarding the funding source (European Union's Horizon Research and Innovation Programme).

Khong 2016

Study characteristics	
Methods	Randomised, parallel, 2-arm, pilot trial
Participants	**Number:** 31 (baseline data on n = 30) **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean):** 50.0, n = 30 **BMI (kg/m^2):** NI **Parity (parous, n (%)):** 27 (90%), n = 30 **Menopausal status:** NI **Education:** NI **Non-inclusions:** NI
Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC with Salat prayer steps, n = 16 **Direct PFMT:** n = 15
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** none **Measured at:** 1 month (within treatment), 2 months (end of treatment)

Khong 2016 *(Continued)*

Notes	**Country:** Malaysia **Publication:** conference abstract **Funding:** Special Grant given by Malaysia Prime Minister's Department

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No further information other than randomised controlled study.
Allocation concealment (selection bias)	Unclear risk	No further information other than randomised controlled study.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	1 participant was excluded from the analysis because she got pregnant. As she was excluded by the researchers, it cannot be low risk. But is it a legitimate reason to exclude the data and we classify it as unclear risk.
Selective reporting (reporting bias)	High risk	EMG is reported as improved or not improved rather than microvolts. Also, unclear what EMG measures taken (e.g. only EMG of maximal voluntary contraction?) and if multiple measures combined.
Other bias	Low risk	No concerns: Special Grant given by Malaysia Prime Minister's Department.

Ko 2018

Study characteristics

Methods	Quasi-randomised, parallel, 2-arm trial
Participants	**Number:** 100 **UI diagnosis (n/N (%)):** SUI presumed 100% based on inclusion criteria **Symptom duration:** NI **Leakage frequency:** NI **Incontinence severity:** NI **Age (years):** NI **BMI (kg/m^2):** NI **Menopausal status:** NI **Other:** NI **Non-inclusions:** NI

Ko 2018 *(Continued)*

Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** more clinician contact (weekly phone calls by clinician), n = 50 **Exercise intervention delivery 2 (less 'intensive' supervision):** less clinician contact (no phone calls from clinician), n = 50
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** subjective cure/improvement (no, unusable data and trialists confirm data not available) **Measured at:** 8 weeks (end of treatment)
Notes	**Country:** Taiwan **Publication:** conference abstract **Funding:** no declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Participants divided alternatively, according to the order of enrollment.
Allocation concealment (selection bias)	High risk	Participants divided alternatively, according to the order of enrollment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Seems low overall attrition and similar attrition in both treatment groups. Seems all available participants were analysed.
Selective reporting (reporting bias)	Unclear risk	Insufficient information – abstract.
Other bias	Unclear risk	No funding declaration.

Konstantinidou 2007

Study characteristics

Methods	Quasi-randomised, parallel, 2-arm trial
Participants	**Number:** 30 **UI diagnosis:** SUI – presumed 100% based on inclusion criteria **Symptom duration (years, mean (range)):** 6.1 (1–15), n = ? **Incontinence episode frequency (per week, mean (range)):** 13.5 (3–25), n = ?

Konstantinidou 2007 *(Continued)*

	Incontinence severity: NI **Age (years, mean (range)):** 47.8 (34–60), n = ? **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** < 3 months of symptom duration, < 7 incontinence episodes per week, aged < 18 years and daytime frequency of < 8 micturition episodes, nocturia of < 3 episodes, not a positive stress test (urine leakage with coughing and with a bladder capacity of 400 mL), not a positive pad test, < 3 on the Oxford scale, history of surgical or pharmaceutical treatment of SUI, symptoms of urgency and urge incontinence, presence of any degree of pelvic organ prolapse, pregnancy, chronic debilitating disease such as renal failure, comorbidities from or affecting the lower urinary tract, use of medication affecting micturition
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** group supervision (weekly) and individual supervision (monthly), n = 15 **Exercise intervention delivery 2 (less 'intensive' supervision):** individual supervision monthly, n = 15
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** subjective cure or improvement (yes), incontinence episode frequency (yes) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Greece **Publication:** conference abstract, full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Deterministic method: study participants were randomised by the recruiting physician in either group in a consecutive alternate fashion according to their hospital administration sequence.
Allocation concealment (selection bias)	High risk	Deterministic method: study participants were randomised by the recruiting physician in either group in a consecutive alternate fashion according to their hospital administration sequence.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	≥ 20% attrition overall; and ≥ 11% difference in attrition rate between groups.

Konstantinidou 2007 *(Continued)*

Selective reporting (reporting bias)	Unclear risk	No registration or trial protocol, inconsistencies in outcome reporting – more outcomes in the results than stated in methods.
Other bias	Unclear risk	No funding declaration.

Konstantinidou 2013

Study characteristics	
Methods	Quasi-randomised, parallel, 3-arm trial (control arm was non-randomised continent volunteers)
Participants	**Number:** 46 (note: this may be an interim report of an ongoing study: data provided by trialists suggested final sample size may be n = 60) **UI diagnosis (n/N (%)):** SUI 32/46 (70%), stress-predominant MUI 14/46 (30%) **Symptom duration:** NI **Incontinence episode frequency (per day, mean (SD)):** 3.9 (0.5), n = 46 **Incontinence severity:** NI **Age (years, mean):** 43.9, n = 46 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** < 7 incontinence episodes in weekly bladder diary, not a positive cough or Valsalva text, < 3 on Oxford Scale
Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC with transversus abdominis contractions, n = 20? **Direct PFMT:** n = 20? **Controls:** continent volunteers, n = 10 (data not used)
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** KHQ (yes, usable data provided by trialists), incontinence episode frequency (yes) **Measured at:** 3 months (end of treatment)
Notes	**Country:** Greece **Publication:** conference abstract **Funding:** "none"

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Konstantinidou 2013 *(Continued)*

Random sequence generation (selection bias)	Low risk	Randomisation process was performed on a single sequence of random assignments, i.e. a simple randomisation. SPSS 19.0 was used (information received from the authors).
Allocation concealment (selection bias)	Low risk	Used opaque sealed envelopes – information received from the authors.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Allocating as an unclear risk: while the first abstract would indicate a high risk, the later abstracts indicate a higher number of participants completing the trial. While the high attrition rate could have been maintained, we have decided there is insufficient information for this. We know how many completed the study, but have no further details.
Selective reporting (reporting bias)	Unclear risk	Insufficient information. Too little information to be certain in these abstracts. There are also some differences in outcomes reported between the abstracts.
Other bias	Low risk	Authors disclosed no funding source (likely self-funded).

Kucukkaya 2021

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 64 **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 38.6 (9.5), n = 64 **BMI (kg/m^2, mean (SD)):** 28.2 (6.3), n = 64 **Parity (mean (SD)):** 2.1 (0.8), n = 64 **Menopausal status:** NI **Education (school years, number (%)):** ≤ 8 years: 36/64 (56%); > 8 years: 28/64 (44%), n = 64 **Non-inclusions:** aged > 49 years; UI or pelvic floor operations, UTI, BMI ≥ 30 kg/m^2, chronic health problem (liver, kidney, etc.), UUI, MUI, overflow urinary incontinence, SUI severity ≥ 2
Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC with abdominal training, n = 32 **Direct PFMT:** n = 32

Kucukkaya 2021 *(Continued)*

Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** IIQ-7 (yes) **Measured at:** 8 weeks (end of treatment)
Notes	**Country:** Turkey **Publication:** trial registration, full publication **Funding:** Trakya University Research Foundation (TUBAP 2016-159)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-based randomisation.
Allocation concealment (selection bias)	Unclear risk	Unclear if it was computer-generated random sequence, or a computer-based complete randomisation situation.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups.
Selective reporting (reporting bias)	Low risk	All stated outcome measures were the same and reported as stated.
Other bias	Low risk	No concerns. Study was supported as a research project by Trakya University Research Foundation.

Lausen 2018

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 73 **UI diagnosis:** SUI, UUI or MUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity (ICIQ-UI-SF, mean (SD)):** 12.2 (4.8), n = 71 **Age (years, mean (SD)):** 50.1 (13.1), n = 73 **BMI (kg/m^2, mean (SD)):** 28.7 (4.7), n = 73 **Parity:** NI

Lausen 2018 *(Continued)*

	Menopausal status: NI **Education:** NI **Non-inclusions:** gynaecological surgery in the previous 6 months; history of pelvic malignancy, faecal incontinence
Interventions	See Table 2: exercise type **Other training (indirect training with PFMT):** modified Pilates + direct PFMT, n = 36 **Direct PFMT:** n = 37
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (yes) **Measured at:** 5 months (end of treatment)
Notes	**Country:** UK **Publication:** trial registration, full publication **Funding:** National Institute for Health Research (NIHR), Research for Patient Benefit (RfPB) Programme

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was by computer allocation using the web-based randomisation service of the Norwich Clinical Trials Unit.
Allocation concealment (selection bias)	Low risk	Randomisation was by computer allocation using the web-based randomisation service of the Norwich Clinical Trials Unit.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	≥ 20% attrition overall; and ≥ 11% difference in attrition rate between groups.
Selective reporting (reporting bias)	High risk	Data were acquired at 3 time points, but just 2 were reported.
Other bias	Low risk	Research funded by the National Institute for Health Research (NIHR) under its Research for Patient Benefit (RfPB) Programme.

Li 2023

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 33 **UI diagnosis (n/N (%)):** SUI, UUI, MUI – presumed 100% based on inclusion criteria

Li 2023 *(Continued)*

	Symptom duration: NI **Leakage frequency (3-day bladder diary, mean (SD)):** 0.23 (0.45), n = 33 **Incontinence severity (ICIQ-UI-SF, number (%)):** mild 4/29 (13.79%), moderate 21/29 (72.41%), severe 4/29 (13.79%) **Age (mean (SD)):** 64.36 (8.13), n = 33 **BMI (kg/m^2, mean (SD)):** 23.66 (5.12), n = 33 **Parity (mean (SD)):** 2.1 (1.1), n = 33 **Menopausal status (postmenopausal n/N (%)):** 33/33 (100%) **Education (number (%)):** bachelor's degree and above 11/29 (37.93%), junior college or below 18/29 (62.07%) **Non-inclusions:** being premenopausal, aged > 80 years, having concurrent UI treatment, musculoskeletal conditions that would interfere with participation in the study, malignancy of pelvic organs, overflow incontinence or voiding dysfunction, hormone therapy
Interventions	See Table 2: exercise type **Other training (co-ordinated):** strengthening exercises and direct PFMT, n = 18 **Direct PFMT:** n = 15
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ISIQ-UI-SF (yes), incontinence episode frequency (yes), satisfaction (no, data not usable as not reported by group), adverse events **Measured at:** 8 weeks
Notes	**Country:** China **Publication:** trial registration, full publication **Funding:** National Cheng Kung University Hospital, Taiwan, Taiwan

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Manual methods (drawing lots), not enough details to ensure robustness.
Allocation concealment (selection bias)	High risk	Manual method (drawing lots); could not be considered a robust method of concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	High differential and overall attrition.
Selective reporting (reporting bias)	High risk	Differences between the protocol and trial report.

Li 2023 *(Continued)*

Other bias	Low risk	No concerns regarding the funding source (National Cheng Kung University Hospital, Tainan, Taiwan).

Liebergall-Wischnitzer 2005

Study characteristics	
Methods	Randomised, parallel, 2-arm, pilot trial
Participants	**Number:** 63 (baseline data available for fewer) **UI diagnosis (n/N (%)):** SUI or MUI – presumed 100% based on inclusion criterion **Symptom duration:** NI **Incontinence episode frequency (in last week, n/N (%)):** 0: 9/58 (15%), 1: 15/58 (25%), 2: 13/58 (22%), ≥ 3 21/58 (36%) **Incontinence severity:** NI **Age (years, n (%)):** 20–30: 2/59 (3%), 31–40: 8/59 (14%), 41–50: 19/59 (32%), 51–60: 26/59 (44%), 61–65: 4/59 (7%) **BMI (kg/m^2):** NI **Parity (n (%)):** 1 or 2: 16/55 (32%), 3: 26/55 (44%), ≥ 4: 13/55 (22%) **Menopausal status:** NI **Education:** NI **Non-inclusions:** non-ambulatory, aged < 20 years or > 65 years, severe cardiac or respiratory diseases, pelvic surgery in past 6 months, pregnancy, grade 3 and 4 cystocoele, previous pelvic radiation, active mucosal lesion in the perineum or vagina
Interventions	See Table 2: exercise type **Other training (indirect training with PFMT):** Paula method and PFMT, n = 32 **Direct PFMT:** n = 31
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** I-QoL (yes, usable data provided by trialists) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Israel **Publication:** full publication **Funding:** Internal Grant for Paramedical Personnel at Hadassah; Lillian Silverstein Fund

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Randomisation was performed according to a random number table in blocks of 4.

Liebergall-Wischnitzer 2005 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	It was unclear whether some participants were not excluded. Quote: "Of these [randomized], two women stopped exercising after 1 week (one from each group) and two randomized women did not start exercising (one from each group). Those four women were not evaluable for outcome assessments and therefore were not included in the study results."
Selective reporting (reporting bias)	Unclear risk	Incomplete reporting of outcomes listed.
Other bias	Low risk	Funding stated in acknowledgments: "This work was supported by an Internal Grant for Paramedical Personnel at Hadassah and the Lillian Silverstein Fund."

Liebergall-Wischnitzer 2009

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 245 (baseline data available for n = 177) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency (n/N (%)):** daily to weekly: 166/177 (94%), monthly or less: 11/177 (6%) **Incontinence severity (n/N (%)):** small amounts: 83/177 (47%), moderate to large amounts: 94/177 (53%) **Age (years, mean (SD)):** 47.6 (8.4), n = 177 **BMI (kg/m^2):** NI **Parity:** (quote): "Most subjects had previously been pregnant and >30% in both arms had had more than five deliveries" **Menopausal status:** NI **Education (years, mean (SD)):** 15.2 (2.9), n = 177 **Non-inclusions:** inability to understand instructions in Hebrew or English, aged < 20 years and > 65 years, within 6 months of pelvic surgery, previous surgery for urinary incontinence, pregnant or breastfeeding women; those within 12 weeks of delivery, 6 weeks of abortion; symptomatic women without a demonstrated leakage of ≥ 1 g or with grade 3 or higher uterovaginal prolapse; or previous pelvic radiotherapy; neurological, psychiatric, cardiac, or respiratory illness that limit physical activity
Interventions	See Table 2: exercise type

Liebergall-Wischnitzer 2009 *(Continued)*

	Other training (Indirect training with PFMT): Paula method and PFMT, n = 119 **Direct PFMT:** n = 126
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** I-QoL (yes) **Measured at:** 12 weeks (end of treatment), 6 months (follow-up)
Notes	**Country:** Israel **Publication:** trial registration, conference abstracts, full publications **Funding:** The Hadassah Women's Health Research Fund; Berman Family Foundation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Table of random numbers prepared by a biostatistician, with a block size of 4.
Allocation concealment (selection bias)	Low risk	Eligible women were given the research co-ordinator's telephone number from whom they would obtain their assignment after informing her of their study number. The research co-ordinator was blinded to the baseline status of the participants and was informed only of place of residence and age of the woman.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Prior to trial starting: overall attrition of 28.16%.
Selective reporting (reporting bias)	Low risk	No concerns, outcomes as reported in trial registration.
Other bias	Low risk	Funding described in acknowledgement. The study was partially funded by The Hadassah Women's Health Research Fund and the Berman Family Foundation.

Luginbuehl 2022

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 96 **UI diagnosis (n/N (%)):** SUI or stress-predominant MUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI

Luginbuehl 2022 *(Continued)*

	Incontinence severity (g, mean (SD)): 11.6 (20.1), n = 96 **Age (years, mean (SD)):** 51.42 (9.87), n = 96 **BMI (kg/m^2, mean (SD)):** 24.76 (3.78), n = 96 **Parity (mean (SD)):** 1.95 (1.10), n = 96 **Menopausal status:** NI **Education:** NI **Non-inclusions:** aged < 18 years or > 70 years, BMI < 18 kg/m^2 or > 30 kg/m^2, pelvic organ prolapse > stage I by the POP-Q, PFM strength grading of 0 by the Oxford Grading Scale, lactation period not yet finished, de novo systemic or local oestrogen treatment (< 3 months), de novo drug treatment with anticholinergics or other bladder active substances (tricyclic antidepressants, selective serotonin re-uptake inhibitors), menstruation on the day of examination, physical fitness not sufficient to perform therapeutic exercises (jumping, running), current UTI or vaginal infection
Interventions	See Table 2: exercise type **Other training (indirect training with PFMT):** reflexive training and direct PFMT, n = 48 **Direct PFMT:** n = 48
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-UI-SF (yes, usable data provided by trialists) **Measured at:** 16 weeks (end of treatment)
Notes	**Country:** Switzerland **Publication:** trial registration, published protocol, conference abstracts, full publication **Funding:** Swiss National Science Foundation

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Allocation sequence generated by the independent urogynaecology secretariat using online randomisation software.
Allocation concealment (selection bias)	Low risk	Allocation concealed in sealed, opaque, sequentially numbered envelopes.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups, ITT applied.
Selective reporting (reporting bias)	High risk	While there was a trial registration and protocol available for this trial, not all outcomes were reported, specifically regarding the EMG.

Luginbuehl 2022 *(Continued)*

		EMG results obtained through running have been published (Koenig); however, there was no mention of the other EMG data that was measured at other points as specified in the registration.
Other bias	Low risk	Funding disclosed and no concerns regarding funding source (Swiss National Science Foundation).

Manfio Marroni 2017

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 55 (baseline data available for n = 50) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Leakage frequency:** NI **Incontinence severity:** NI **Age (years, mean):** 51.5, n = 50 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** urinary tract surgeries; UTI, cystitis; genital prolapse, being pregnant, and having already undergone physiotherapeutic treatment with perineal contraction; giving up on collecting research data; having > 25% of consecutive absences
Interventions	See Table 2: exercise type **Other training (indirect training):** mat Pilates, n = 27 **Direct PFMT:** n = 28
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** IIQ-UI-SF (no, not usable) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, thesis **Funding:** "own resources"

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Block randomisation with table of random numbers.

Manfio Marroni 2017 *(Continued)*

Allocation concealment (selection bias)	Unclear risk	No information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Per protocol analysis – participants were excluded due to not adhering to the appointment times.
Selective reporting (reporting bias)	High risk	Differences between protocol and trial reporting.
Other bias	Low risk	Funded from own resources.

Marques 2005

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 40 **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration (years, n/N (%)):** 4–5 years 13/40 (32.5%) **Incontinence episode frequency (n/N (%)):** 2 times per day 22/40 (55%) **Incontinence severity (n/N (%)):** leakage with minimal effort 12/40 (30%), moderate effort 18/40 (45%), severe effort 10/40 (25%) **Age (years):** NI **BMI (kg/m^2):** NI **Parity (parous, n (%)):** 35/40 (87.5%) **Menopausal status:** see non-inclusions **Education:** NI **Non-inclusions:** postmenopausal women, walking difficulties
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision (30 visits), n = 20 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised home training, n = 20
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** KHQ (no, unusable data) **Measured at:** 15 weeks? (end of treatment)
Notes	**Country:** Brazil

Marques 2005 *(Continued)*

Publication: full publication

Funding: not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Participants were randomised by drawing lots. No further information available.
Allocation concealment (selection bias)	High risk	Drawing lots could not be considered a robust method of concealment; therefore, high risk.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information provided.
Selective reporting (reporting bias)	Unclear risk	No trial registration, very brief statistical analysis, they did not present numbers, only percentages of change that are not complete.
Other bias	Unclear risk	No funding declaration.

Marques 2020

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 47 (baseline data available for n = 43) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 50.02 (8.40), n = 43 **BMI (kg/m^2, mean (SD)):** 27.49 (3.95), n = 43 **Parity (mean (SD)):** 2.80 (1.44), n = 43 **Menopausal status (postmenopausal, n/N (%)):** 19/43 (44%) **Education:** NI **Non-inclusions:** aged < 30 years and > 70 years, gynaecological surgery for correction of urinary incontinence, active or recurrent infection of the genitourinary tract, neurological or muscular disease that interferes with the function of urinary continence, non-inhibited contraction of the detrusor or urinary incontinence owing to sphincter deficiency verified by urodynamic examination, overactive bladder

Marques 2020 *(Continued)*

	and urge incontinence or mixed urinary incontinence, 0 or 1 classification on the Functional Evaluation of the Pelvic Floor (Ortiz scale), grade 2 or higher genital prolapse, current hormone replacement therapy, pregnancy
Interventions	See Table 2: exercise type **Other training (indirect training and PFMT):** resisted hip exercise, and direct PFMT, n = 24 **Direct PFMT:** n = 23
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-UI-SF (yes, usable data provided by trialists), Incontinence episode frequency (yes, usable data provided by trialists) **Measured at:** 10 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, conference abstract, full publication **Funding:** no "specific grant" for the research. The first author received an institutional scholarship from CAPES (Coordination for the Improvement of Higher Education Personnel)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated block randomisation.
Allocation concealment (selection bias)	Low risk	A different researcher was in charge of the allocation; therefore, the investigator and the blind evaluator did not have access to the randomisation list generated by the computer.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. All participants with outcome data were analysed in the group to which they were assigned.
Selective reporting (reporting bias)	Low risk	Nothing to suggest selective reporting.
Other bias	Low risk	Self-funded. Quote: "This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors."

Mushtaq 2019

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 54 **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria

Mushtaq 2019 *(Continued)*

	Symptom duration (years, mean (SD)): 5.1 (5.8), n = 54 **Leakage frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 41.3 (9.9), n = 54 **BMI (kg/m^2):** NI **Parity (median (range)):** co-ordinated 4 (1–10), n = 23; PFMT 3 (0–8), n = 24 **Menopausal status:** NI **Education:** NI **Non-inclusions:** active vaginal infection or UTI; pregnant, females having pelvic prolapse ≥ stage II or those having medications that may impact bladder function; formally educated about PFMT or Pilates/Pilates techniques by a physiotherapist or a Pilates instructor.
Interventions	See Table 2: exercise type **Other training (co-ordinated):** Pilates exercise with VPFMC, n = 23 **Direct PFMT:** n = 24
Outcomes	**Of interest to the review (yes/no):** IIQ-7 (yes) **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** Pakistan **Publication:** full publication **Funding:** "none"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Simple randomisation with random number table.
Allocation concealment (selection bias)	Unclear risk	No information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Overall attrition 26%.
Selective reporting (reporting bias)	Unclear risk	No trial protocol, very brief statistical plan.
Other bias	Low risk	The authors declared no funding, presumably self-funded.

Nagib 2021

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 40 **UI diagnosis (n/N (%)):** SUI or stress-predominant UI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Leakage frequency:** NI **Incontinence severity:** NI **Age (years, median (IQR)):** group 1: 57.0 (51.5–61.0), n = 20; group 2: 49.5 (41.0–61.0), n = 20 **BMI (kg/m^2, median (IQR)):** group 1: 24.6 (22.0–29.2), n = 20; group 2: 25.4 (21.7–30.5), n = 20 **Parity (pregnancies; n/N (%)):** 0: 4/40 (10%), 1: 5/40 (12.5%), 2: 11/40 (27.5%), 3: 20/40 (50%) **Menopausal status (postmenopausal, n/N (%)):** 28/40 (70%) **Education (n/N (%)):** elementary 18/39 (45%), high school 12/39 (30%), higher education 9/39 (22.5%) **Non-inclusions:** aged < 45 years; cognitive or physical disorders (or both) that could hinder participation; current UTI; cognitive and physical disorders that could hinder participation; history of instrumental delivery; SUI or surgical POP (or both); oncology treatment, previous PFMT; inability to perform PFM contraction; POP > grade 2; inability to complete initial assessment process
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision, n = 20 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised home training, n = 20
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-UI-SF (yes, usable data provided by trialists) **Measured at:** 5 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** trial registration, full publication **Funding:** co-ordination for the Improvement of Higher Education Personnel (CAPES) – Finance Code 001, through the Postgraduate Program in Surgical Sciences of the Universidade Statel University of Campinas (UNICAMP), with support of the Federal University of Alfenas – UNIFAL-MG, the Research Support Foundation of the state of Minas Gerais – FAPEMIG (PPM-00471–18) and the University Center of Associated Colleges (UNIFAE), São João da Boa Vista/SP, Brazil

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No other information than "simple randomization process."
Allocation concealment (selection bias)	Low risk	The allocation of participants was hidden by sequentially numbered, opaque, and sealed envelopes.

Nagib 2021 *(Continued)*

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	> 11% attrition between groups.
Selective reporting (reporting bias)	High risk	Differences in the *secondary outcome measures* between the trial registration and published paper.
Other bias	Low risk	No concerns about the funding statement (university).

Ng 2008

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 88 (baseline data available for n = 68) **UI diagnosis (n (%)):** "mixed LUTS" (includes SUI and MUI) – presumed 100% based on inclusion criteria **Symptom duration:** NI **Leakage frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 53.15 (13.7), n = 68 **BMI (kg/m^2, mean (SD)):** 24.4 (3.4), n = 68 **Parity (median):** 3, n = 68 **Menopausal status (? unit, mean (SD)):** time since menopause 7.4 (9.7), n = 68 **Education:** see non-inclusions **Non-inclusions:** no educational background; not independent in daily activities or non-ambulatory; not interested in behavioural training
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** supervision via phone call, n = 44 **Exercise intervention delivery 2 (less 'intensive' supervision):** no supervisory phone call, n = 44
Outcomes	**Of interest to the review and contribution to meta-analysis:** B-FLUTS (no, unusable data and trialists confirm data were not available) **Measured at:** 3 months? (post-treatment); 6 months? (follow-up)
Notes	**Country:** Taiwan **Publication:** conference abstract, full publication

Ng 2008 *(Continued)*

Funding: The National Science Council, Taiwan

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information about the randomisation process (no further information other than "randomized").
Allocation concealment (selection bias)	Unclear risk	Insufficient information about the randomisation process (no further information other than "randomized").
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	≥ 20% attrition overall (23%).
Selective reporting (reporting bias)	Low risk	Although there is no trial protocol, there was nothing to suggest selective reporting – seemed to report data for every measure mentioned.
Other bias	Low risk	No concerns regarding funding source (The National Science Council in Taiwan).

Nipa 2020

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 50 **UI diagnosis (n (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence frequency (ISI frequency, mean (SD)):** 2.74 (1.02), n = 50 **Incontinence severity (g, mean (SD)):** 10.36 (4.07), n = 50 **Incontinence Severity (ISI amount, mean (SD)):** 2.18 (0.59), n = 50 **Age (years, mean (SD)):** 40.92 (8.85), n = 50 **BMI (kg/m^2,mean (SD)):** 28.05 (6.36), n = 50 **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** pelvic floor surgery, UTI, musculoskeletal condition other than non-specific low back pain, neurogenic bladder symptoms, unable to do the exercise properly, pregnant or in the postpartum period, smokers or alcoholics

Nipa 2020 *(Continued)*

Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC and low load core stability, n = 25 **Direct PFMT:** n = 25
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** KHQ (yes) **Measured at:** 12 weeks (post-treatment)
Notes	**Country:** Bangladesh **Publication:** trial registration, full publication **Funding:** Chiang Mai University, Thailand

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated random numbers.
Allocation concealment (selection bias)	Low risk	Used "opaque sealed envelopes" for concealment. Quote: "A researcher who was not involved in the data collection process and treatment created a list of computer-generated random numbers."
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. ITT used.
Selective reporting (reporting bias)	High risk	Differences between the protocol and study report. Additionally, the pressure biofeedback and bladder diary are not reported in the results section.
Other bias	Low risk	No concerns regarding funding source (Chiang Mai University, Thailand).

Orhan 2019

Study characteristics

Methods	Randomised, parallel, 2-arm trial.
Participants	**Number:** 48 (baseline data available for n = 41) **UI diagnosis (n/N (%)):** pure SUI and stress-predominant UI – presumed 100% based on inclusion criteria **Symptom duration (years, mean (SD)):** 5.14 (4.11), n = 41 **Incontinence episode frequency:** NI

Orhan 2019 *(Continued)*

	Incontinence severity (categorised pad test, n/N (%)): mild 26/41 (63%), moderate 11/41 (27%), severe 4/41 (10%) **Age (years, mean (SD)):** 48.31 (6.76), n = 41 **BMI (kg/m^2, mean (SD)):** 28.28 (3.44), n = 41 **Parity (median (IQR)):** PFMT 1: 2.0 (2.0–3.0), n = 20; PFMT 2: 2.0 (2.0–3.5), n = 21 **Menopausal status:** NI **Education (years, median (IQR)):** PFMT 1: 15 (11–15), n = 20; PFMT 2: 11 (8–15) PFMT, n = 21 **Non-inclusions:** previous surgery for incontinence, currently taking medications for UI, recent or recurrent UTIs, neurological disorders, POP stage ≥ 3 according to the POP-Q system, pregnancy or in a postnatal period (< 6 months), prior physiotherapy, women using psychological or diuretic medications, with complaints of chronic constipation, chronic cough, or voiding dysfunction were also assessed.
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT with resistance device, n = 24 **PFMT 2 (lower dose):** PFMT without resistance device, n = 24
Outcomes	**Of interest to the review and contribution to meta-analysis:** KHQ (yes, usable data provided by trialists), subjective cure or improvement (yes) **Measured at:** weeks 4 and 8 (within treatment) and 12 weeks (end of treatment)
Notes	**Country:** Turkey **Publication:** trial registration, conference abstract, full publication **Funding:** The Scientific and Technological Research Council of Turkey

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-based block randomisation.
Allocation concealment (selection bias)	Low risk	Computer-based block randomisation prepared by an independent researcher, allocation sequence placed into opaque envelopes.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups, all participants seemed to be analysed in the group to which they were assigned.
Selective reporting (reporting bias)	High risk	Differences between protocol and trial report (among the outcomes in the published article there is pad test. However, the pad test was not mentioned in the protocol).
Other bias	Low risk	No concerns regarding funding source (The Scientific and Technological Research Council of Turkey).

Pereira 2011

Study characteristics	
Methods	Randomised, parallel, 3-arm trial
Participants	**Number:** 49 (baseline data available for n = 45) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Leakage frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 60.8 (10.3), n = 45 **BMI (kg/m^2, mean (SD)):** 26.1 (2.7), n = 45 **Parity (number of deliveries, mean (SD)):** 2.3 (1.4), n = 45 **Menopausal status:** NI **Education:** NI **Non-inclusions:** UTI; previous physiotherapy for UI, UUI, and MUI; latex allergies; POP > grade II on Baden–Walker classification system; uncontrolled hypertension; and inability to carry out the evaluation or treatment
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** group supervision, 2 × 1-hour sessions per week, n = 17 **Exercise intervention delivery 2 (less 'intensive' supervision):** individual supervision, 2 × 1-hour sessions per week, n = 17 **Control (data not used):** no treatment, n = 15 Note: the notation of more versus less is for consistency with other trials comparing group versus individual supervision, but does not reflect the balanced supervisory intensity in the 2 intervention groups.
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** KHQ (yes), adverse events **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** full publication **Funding:** Brazilian National Research Council

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Insufficient information – only says randomised.
Allocation concealment (selection bias)	Low risk	Participants blindly drew 1 of 49 preprinted cards in opaque sealed envelopes.

Pereira 2011 *(Continued)*

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	≥ 11% difference in attrition rate between groups.
Selective reporting (reporting bias)	Low risk	No protocol but outcomes seemed to be consistent across methods and results; statistical analysis seemed sufficiently detailed.
Other bias	Low risk	No concerns regarding funding source (Brazilian National Research Council). Funding mentioned in acknowledgements.

Prudencio 2014

Study characteristics	
Methods	Randomised, parallel, 3-arm trial
Participants	**Number:** 156 **UI diagnosis (n (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years):** NI **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** NI
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT with resistance device, n = 50 **PFMT 2 (lower dose):** PFMT without resistance device, n = 51 **Arm 3 (data not used):** vaginal cones, n = 55
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** KHQ (yes) **Measured at:** 3 months? (end of treatment)
Notes	**Country:** Brazil **Publication:** conference abstract

Prudencio 2014 *(Continued)*

Funding: "no"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Simple randomisation – no further information.
Allocation concealment (selection bias)	Unclear risk	Simple randomisation – no further information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information (attrition could have been 0, or they could have only reported number of participants after dropouts).
Selective reporting (reporting bias)	Unclear risk	No trial registration. Conference abstract only, so very limited reporting in every respect.
Other bias	Low risk	Presumably self-funded (reported "no" in the funding declaration).

Rodrigues 2020

Study characteristics

Methods	Randomised, parallel, 3-arm trial
Participants	**Number:** 69 **UI diagnosis (n (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age:** NI **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** no SUI, aged < 18 years, previous physiotherapy for SUI, previous pelvic floor surgery, POP > stage II, UTI, diseases affecting neuromuscular tissues, diabetes
Interventions	See Table 2: exercise type

Rodrigues 2020 *(Continued)*

	Other training (co-ordinated): VPFMC with Pilates, n = 23 **Direct PFMT:** n = 23 **Arm 3 (data not used):** Pilates, n = 23
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** ICIQ-UI-SF (yes, usable data provided by trialists) **Measured at:** after 12 sessions – number of weeks not specified (end of treatment)
Notes	**Country:** Brazil **Publication:** conference abstract **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information; stated "randomized" in the title, with no further details.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information (no participants flow, etc.).
Selective reporting (reporting bias)	Unclear risk	No registration or protocol, very brief statistical analysis.
Other bias	Unclear risk	No funding declaration.

Roongsirisangrat 2012

Study characteristics

Methods	Quasi-randomised, parallel, 2-arm trial
Participants	**Number:** 28 (baseline data available for n = 26) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration (months, median (range)):** 24 (1–240), n = 26 **Incontinence episode frequency:** NI **Incontinence severity (wearing protection, n/N (%)):** 14/26 (54%) **Age (years, mean (SD)):** 49.55 (8.47), n = 26

Roongsirisangrat 2012 *(Continued)*

	BMI (kg/m^2, mean (SD)): 24.45 (4.14), n = 26 **Parity:** NI **Menopausal status (postmenopausal, n/N (%)):** 10/26 (39%) **Education:** NI **Non-inclusions:** aged < 25 years and > 70 years, previous surgical treatment of SUI, medication alleviating symptoms within the last 3 weeks, UTI, previous pelvic trauma, non-ability to participate in the protocol
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT with resistance device, n = 14 **PFMT 2 (lower dose):** PFMT without resistance device, n = 14
Outcomes	**Of interest to the review and contributing to meta-analysis:** incontinence episode frequency (no, not usable), adverse events **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** Thailand **Publication:** trial registration, conference abstract, full publication **Funding:** Ratchadapiseksompotch Fund, Faculty of Medicine, Chulalongkorn University and King Chulalongkorn Memorial Hospital, Thai Red Cross Society

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Deterministic method: quasi-randomisation determined by order of sign in protocol was generated to allocate participants into 2 groups.
Allocation concealment (selection bias)	High risk	Deterministic method as above.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	Strict criteria implying no ITT (participants with attendance < 80% were considered lost to follow-up).
Selective reporting (reporting bias)	High risk	Outcomes vaguely specified in protocol, could be analysed in multiple ways.
Other bias	Low risk	No concerns regarding the funding source (university and hospital).

Saleem 2022

Study characteristics

Saleem 2022 *(Continued)*

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 56 **UI diagnosis (n/N (%)):** SUI, MUI or UUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity (unspecified symptom severity index, mean (SD)):** 21.6 (4.8), n = 56 **Age (years, mean (SD)):** 31.5 (7.3), n = 56 **BMI (kg/m^2 mean (SD)):** 28.9 (3.1), n = 56 **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** aged < 20 years and > 45 years, BMI > 25 kg/m^2, Symptom Severity Index score ≤ 4, CNS disorders (e.g. Bell's palsy, Alzheimer's disease), history of pelvic malignancy, faecal incontinence, previous gynaecological surgery in 6 months (e.g. hysterectomy, tubal ligation) or had given birth in previous 3 months
Interventions	See Table 2: exercise type **Other training (indirect training with direct PFMT):** 'modified Pilates' + 'standard physical therapy', n = 28 **Direct PFMT:** 'standard physical therapy', n = 28
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** incontinence quality of life (no, measure not named and no data presented), incontinence episode frequency (no, unusable data presented in graph form) **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** Pakistan **Publication:** full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No further information apart from "randomized controlled trial."
Allocation concealment (selection bias)	Unclear risk	No information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.

Saleem 2022 *(Continued)*

Incomplete outcome data (attrition bias) All outcomes	Low risk	Low differential and overall attrition, nothing to suggest that participants were excluded by trialist or analysed in different groups.
Selective reporting (reporting bias)	Low risk	No trial protocol but statistical analysis although brief seems sufficiently detailed.
Other bias	Unclear risk	Insufficient information – no funding declaration.

Savage 2005

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 11 **UI diagnosis (n (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration (years, mean (range)):** 6.7 (1–14), n = 11 **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (range)):** 51.1 (37–70), n = 11 **BMI (kg/m^2, mean (range)):** 22.4 (22–30), n = 11 **Parity (mean (range)):** 2 (1–3) **Menopausal status (postmenopausal, n/N (%)):** 4/11 (36%) **Education:** NI **Non-inclusions:** micturition frequency ≥ 8/day; nocturia ≥ 2; PFM strength of grade < 2, had given birth or gynaecological surgery within the previous 6 months, UTI, pathology affecting ability to exercise (e.g. acute back pain and severe rheumatoid arthritis), concurrent neurological or psychiatric disease, physiotherapy treatment for this condition within the past 2 years (e.g. specialist physiotherapy training of PFMTs, biofeedback and stimulation), incontinence symptoms other than UI (urgency, urge incontinence and faecal incontinence), dominant symptoms suggestive of prolapse, pregnancy, women unable to attend regular training sessions, women already practising lumbopelvic stability or Pilates exercises.
Interventions	See Table 2: exercise type **Other training (co-ordinated):** VPFMC with modified Pilates, n = 6 **Direct PFMT:** n = 5
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** KHQ (no, unusable data) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** UK **Publication:** full publication **Funding:** Department of Health; Cambridge Consortium

Savage 2005 *(Continued)*

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Block randomisation method.
Allocation concealment (selection bias)	Unclear risk	No information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	> 11% differential in loss to follow-up.
Selective reporting (reporting bias)	Low risk	All outcomes were reported as prespecified.
Other bias	Low risk	No concerns regarding funding source (publicly funded).

Sjöström 2013

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 250 **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity (ICIQ-UI-SF baseline, mean (SD)):** 10.4 (3.3), n = 250 **Age (years, mean (SD)):** 48.7 (10.2), n = 250 **BMI (kg/m^2, mean (SD)):** 24.6 (3.9), n = 250 **Parity (n/N (%)):** nulliparous 16/250 (6%) **Menopausal status (postmenopausal, n/N (%)):** 91/250 (36%) **Education (n/N (%)):** < 3 years university level education 53/250 (21%) **Non-inclusions:** pregnancy, difficulties passing urine, macroscopic haematuria, known malignancy in the lower abdomen, intermenstrual bleeding, previous UI surgery, severe psychiatric disorders or depression or anxiety (HADS > 15), neurological disease affecting lower abdominal or leg sensation
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** E-health delivery (internet), n = 124

Sjöström 2013 *(Continued)*

	Exercise intervention delivery 2 (less 'intensive' supervision): posted, written instructions, n = 126
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** ICIQ-UI-SF (yes), PGI-I (yes), incontinence episode frequency (yes) **Measured at:** 3 months (end of treatment)
Notes	**Country:** Sweden **Publication:** trial registration, conference abstracts, full publications (including formal economic analysis) **Funding:** Swedish Council for Working Life and Social Research, The Swedish Society of Medicine, the Jämtland County Council, the Västerbotten County Council (ALF), and Visare Norr, Northern County Councils, Sweden

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation was computer-generated in blocks of 8.
Allocation concealment (selection bias)	Low risk	An independent administrator performed allocation.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. All available participants seemed to be analysed in groups to which assigned.
Selective reporting (reporting bias)	Low risk	Outcomes were reported as stated in the trial registration.
Other bias	Low risk	No concerns regarding funding source (Swedish Council for Working Life and Social Research, The Swedish Society of Medicine, the Jämtland County Council, the Västerbotten County Council (ALF), and Visare Norr, Northern County Councils, Sweden).

Sonmezer 2022

Study characteristics

Methods	Randomised, presumed parallel, 2-arm trial
Participants	**Number:** 26 **UI diagnosis (n (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI

Sonmezer 2022 *(Continued)*

	Incontinence severity: NI **Age (years):** NI **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** NI
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** mobile application, n = ? **Exercise intervention delivery 2 (less 'intensive' supervision):** written instructions, n = ?
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** IIQ (no, no data presented), possibly PGI-I (no, not data presented), incontinence episode frequency (no, no data presented) **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** Turkey **Publication:** conference abstract **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	"Randomized"/"randomly assigned" but with no further details.
Allocation concealment (selection bias)	Unclear risk	No information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information to make judgement.
Selective reporting (reporting bias)	Unclear risk	No trial registration, insufficient information to make judgement – abstract.
Other bias	Unclear risk	No funding declaration.

Sriboonreung 2011

Study characteristics	
Methods	Randomised, parallel 3-arm trial
Participants	**Number:** 68 (baseline data available for n = 60) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 52.27 (5.99), n = 60 **BMI (kg/m^2, mean (SD)):** 23.81 (2.53), n = 60 **Parity (n/N (%)):** nulliparous: 7/60 (12%), 1: 11/60 (18%), 2: 32/60 (53%), ≥ 3: 10/60 (17%) **Menopausal status (postmenopausal, n/N (%)):** postmenopausal 51/60 (85%) **Education:** NI **Non-inclusions:** aged > 35 years and > 65 years, previous SUI surgery, UTI, uncontrolled metabolic condition (e.g. diabetes), residual urine > 100 mL, genitourinary fistula, inability to correctly perform a pelvic floor muscle contraction on digital palpation, prolapsed uterus, reversible cause of urinary incontinence (e.g. faecal impaction, drug effect)
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT every day, n = 23 **PFMT 2 (lower dose):** PFMT 3 times per week, n = 22 **Arm 3 (data not used):** co-ordinated training 3 times per week, n = 23
Outcomes	**Of interest to the review and contributing to meta-analysis:** subjective cure or improvement (yes) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Thailand **Publication:** full publication **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "The subjects were randomly allocated into each of three treatment arms using block randomized allocation with block sizes of 3, 6 and 9 enclosed in envelopes."
Allocation concealment (selection bias)	Low risk	Quote: "The subjects were randomly allocated into each of three treatment arms using block randomized allocation with block sizes of 3, 6 and 9 enclosed in envelopes."
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear

Sriboonreung 2011 *(Continued)*

		risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups, ITT applied.
Selective reporting (reporting bias)	Low risk	Outcomes could be measured and reported only 1 way, and all were reported. Statistics section seemed sufficient.
Other bias	Unclear risk	No funding declaration.

Suraj 2016

Study characteristics	
Methods	Cluster randomised, 2-arm trial
Participants	**Number:** 246 **UI diagnosis:** UI (not further specified) **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 44.6 (1.2), n = 246 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** aged < 18 years, not married, currently pregnant or postnatal, musculoskeletal issues which impeded day-to-day activity; impaired activities of daily living, neurological conditions (e.g. spinal cord injury, cerebral palsy), cognitive impairment, acute illness, recent abdominal surgery
Interventions	See Table 2: exercise type **Other training (co-ordinated):** Tanzenberger approach – integrating function of 'entire abdominal compartment', n = 123 **Direct PFMT:** n = 123
Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** none **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** India **Publication:** trial registration, full publication **Funding:** Indian Council of Medical Research (ICMR)
Risk of bias	

Suraj 2016 *(Continued)*

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Unclear whether participants were randomised with stratified block randomisation or cluster randomisation (conflicting information).
Allocation concealment (selection bias)	Low risk	Prenumbered or coded identical containers.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information regarding attrition.
Selective reporting (reporting bias)	Low risk	Reporting seemed consistent with protocol (poorly reported but not selectively).
Other bias	Low risk	No concerns regarding funding source (Indian Council of Medical Research).

Tejero 2008

Study characteristics	
Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 62 (baseline data available for n = 56) **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration (n/N (%)):** < 1 year 2/56 (4%), 1–5 years 28/56 (50%), > 5 years 26/56 (46%) **Incontinence episode frequency:** NI **Incontinence severity (measure? n/N (%)):** mild 27/56 (48%), moderate 22/56 (39%), severe 5/56 (9%) **Age (years, mean (SD)):** 55 (11), n = 56 **BMI (kg/m^2, mean (SD)):** 27.7 (4.3), n = 56 **Parity (mean (SD)):** 1.9 (1.1), n = 56 **Menopausal status:** NI **Education:** NI **Non-inclusions:** aged < 18 years, nocturnal enuresis, pregnancy and postpartum, vaginal prolapse
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision (12 visits), n = 31 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised training at home (home training after first visit), n = 31

Tejero 2008 *(Continued)*

Outcomes	**Of interest to the review and contribution to meta-analysis (yes/no):** IIQ (no, unusable data), subjective cure or improvement (yes) **Measured at:** ?
Notes	**Country:** Spain **Publication:** full publication **Funding:** (quote) "The authors have not received any financial assistance to carry out this work."

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information (stated only "randomized").
Allocation concealment (selection bias)	Unclear risk	Insufficient information (stated only "randomized").
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	≥ 11% difference in attrition rate between groups.
Selective reporting (reporting bias)	Unclear risk	Apart of lack of trial registration, the outcomes were not clearly specified – the variables regarding group characteristics and treatment outcomes were grouped and at the methods level it was unclear whether "EVA" was a treatment outcome or variable characterising the group.
Other bias	Low risk	No concerns regarding funding source (self-funded).

Toprak 2022

Study characteristics

Methods	Randomised, parallel, 2-arm, pilot trial
Participants	**Number:** 40 **UI diagnosis:** UI – not further specified **Symptom duration:** NI **Leakage frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 39.3 (6.8), n = 40 **BMI (kg/m^2, mean (SD)):** 27.4 (5.3), n = 40

Toprak 2022 *(Continued)*

	Parity (mean (SD)): 2.4 (0.9), n = 40 **Menopausal status:** NI **Education (n/N (%)):** primary 9/40 (23%), secondary 6/40 (15%), high school 11/40 (28%), university 14/40 (35%) **Non-inclusions:** symptoms < 3 months' duration; not aged between 19 and 45 years; previous physiotherapy for UI; prior pelvic surgery; pregnant or postpartum (6 weeks) women; menopausal or receiving hormone therapy; detrusor hyperreflexia, active vaginal lesion or infection; organ prolapse, chronic pelvic pain; sexual disorders
Interventions	See Table 2: exercise type **Other training (indirect):** diaphragmatic breathing, n = 20 **Direct PFMT:** n = 20
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** I-QoL (yes) **Measured at:** 6 weeks (end of treatment)
Notes	**Country:** Turkey **Publication:** trial registration; full publication **Funding:** "This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information (stated only "randomized").
Allocation concealment (selection bias)	Unclear risk	Insufficient information (stated only "randomized").
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Low overall attrition and similar attrition in both treatment groups. All available participants seemed to have been analysed in groups to which assigned.
Selective reporting (reporting bias)	Low risk	No or probably no – all outcomes reported in the paper and these matched what was in the trial registration. Statistically brief but seemed appropriate.
Other bias	Low risk	No concerns regarding funding declaration (quote: "This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.")

Wells 1999

Study characteristics	
Methods	Randomised, parallel, 4-arm trial
Participants	**Number:** 286 **UI diagnosis (n/N (%)):** SUI 217/286 (76%), MUI 69/286 (24%) **Symptom duration:** NI **Incontinence episode frequency (10-point VAS where 1 = none, 10 = a lot, mean (SD)):** 4.6 (2.6), n = 286 **Incontinence severity:** NI **Age (years, mean (SD)):** 56 (12.8), n = 286 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education (n (%)):** college or higher 203/286 (71%) **Non-inclusions:** aged < 21 years; not independent in self-care; unable to speak and hear conversation in English adequately over the telephone; positive urinalysis; unable to contract the pelvic muscles as demonstrated on physical examination; degenerative neurological disorder; pregnancy; high risk of infection flowing urological instrumentation
Interventions	See Table 3: exercise dose **PFMT 1 (higher dose):** PFMT with resistance device, n = 71 **PFMT 2 (lower dose):** PFMT without resistance device, n = 71 **Arm 3 (data not used):** health promotion, n = 72 **Arm 4 (data not used):** self-insight, n = 72
Outcomes	**Of interest to the review and contributing to meta-analysis:** self-reported cure or improvement (yes), incontinence episode frequency (no, data not usable and trialists confirm not available) **Measured at:** 5 months? (end of treatment)
Notes	**Country:** USA **Publication:** unpublished manuscript **Funding:** National Institute for Nursing Research (grant NRO1917)

Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Insufficient information (stated only "randomly assigned").
Allocation concealment (selection bias)	Unclear risk	Insufficient information (stated only "randomly assigned").

Wells 1999 *(Continued)*

Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	High risk	≥ 20% attrition overall (44%).
Selective reporting (reporting bias)	Low risk	Statistics seemed sufficient. Clearly reported measures used. Gave a priori criteria for the composite measure.
Other bias	Low risk	No concerns regarding funding source (the National Institute for Nursing Research).

Wilson 1987

Study characteristics	
Methods	Quasi-randomised, parallel, 4-arm trial
Participants	**Number**: 60 **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity (number pad changes 24 hours, mean (SD)):** 2.7 (2.0), n = 60 **Age (years, mean (range)):** 46.8 (19–79) **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** NI
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision, n = 15 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised at home, n = 15 **Arm 3 (data not used):** PFMT + faradism, n = 15 **Arm 4 (data not used):** PFMT + interferential, n = 15
Outcomes	**Of interest to the review and contributing to meta-analysis**: subject cure or improvement (yes) **Measured at**: 6 weeks (end of treatment); 6 months (follow-up)
Notes	**Country**: UK

Wilson 1987 *(Continued)*

Publication: full publication

Funding: not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Deterministic method (quote: "Patients were assigned consecutively to one of four therapy groups").
Allocation concealment (selection bias)	High risk	Deterministic method (quote: "Patients were assigned consecutively to one of four therapy groups").
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information – no explicit reporting of attrition.
Selective reporting (reporting bias)	Unclear risk	Very difficult to determine. No trial registration. Very brief statistical reporting. Some data presented more than 1 way (e.g. raw data and % change in perioneometry).
Other bias	Unclear risk	No funding declaration.

Wong 1997

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 47 **UI diagnosis (n/N (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration:** NI **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, mean (SD)):** 48.8 (9.4), n = 47 **BMI (kg/m^2):** NI **Parity:** NI **Menopausal status:** NI **Education:** NI **Non-inclusions:** lack of SUI confirmation in urodynamic assessment
Interventions	See Table 4: exercise intervention delivery

Wong 1997 *(Continued)*

	Exercise intervention delivery 1 (more 'intensive' supervision): clinic supervision, n = 21 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised home PFMT, n = 26
Outcomes	**Of interest to the review and contributing to meta-analysis:** none **Measured at:** 4 weeks (end of treatment)
Notes	**Country:** China (Hong Kong) **Publication:** conference abstract **Funding:** not declared

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Insufficient information.
Allocation concealment (selection bias)	Unclear risk	Insufficient information.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information.
Selective reporting (reporting bias)	Unclear risk	No registration, no protocol, NI on statistics.
Other bias	Unclear risk	No funding declaration.

Zanetti 2007

Study characteristics

Methods	Randomised, parallel, 2-arm trial
Participants	**Number:** 44 **UI diagnosis (n (%)):** SUI – presumed 100% based on inclusion criteria **Symptom duration (years, median):** 5, n = 44 **Incontinence episode frequency:** NI **Incontinence severity:** NI **Age (years, median):** 55, n = 44 **BMI (kg/m^2, median):** 25, n = 44

Zanetti 2007 *(Continued)*

	Parity (median): 4 **Menopausal status (postmenopausal, n/N (%)):** 24/44 (55%) **Education:** NI **Non-inclusions:** no urinary leakage observed during assessment, topical hormonal replacement therapy < 3 months, POP beyond the hymen, atrophic aginitis, cardiac pacemaker, genital bleeding, vulvovaginitis
Interventions	See Table 4: exercise intervention delivery **Exercise intervention delivery 1 (more 'intensive' supervision):** clinic supervision, n = 23 **Exercise intervention delivery 2 (less 'intensive' supervision):** unsupervised home PFMT, n = 21
Outcomes	**Of interest to the review and contributing to meta-analysis (yes/no):** I-QoL (no, unusable data and trialists confirm no longer available), incontinence episode frequency (no, unusable data and trialists confirm no longer available), satisfaction (yes) **Measured at:** 12 weeks (end of treatment)
Notes	**Country:** Brazil **Publication:** full publication **Funding:** "none"

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Participants were divided into 2 groups, in a stratified randomised manner, using a computer-generated random number table.
Allocation concealment (selection bias)	Unclear risk	Insufficient information about concealment.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Unlikely that clinicians providing and participants receiving the intervention could have been blinded to allocated group, and as all outcomes were participant-reported, none could have been blinded. Changed from high to unclear risk as both arms were active interventions and treatment preference or expectations may have been randomly distributed.
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Insufficient information – appeared there were no losses to follow-up, but not clearly stated.
Selective reporting (reporting bias)	Low risk	No trial protocol to refer to, but most outcome measures reported as stated.
Other bias	Low risk	No concerns about funding source (no funding, presumably self-funded).

ADL: activities of daily living; BFLUTS: Bristol Female Lower Urinary Tract Symptoms questionnaire; BMI: body mass index; EMG: electromyography; HADS: Hospital Anxiety and Depression Score; ICIQ-FLUTS: International Consultation on Incontinence-Female Lower Urinary Tract symptoms; ICIQ-LUTSqol: International Consultation on Incontinence-Lower Urinary Tract symptoms quality of life; ICIQ-SF International Consultation on Incontinence Questionnaire – Short Form; ICIQ-UI-SF: International Consultation on Incontinence-Urinary Incontinence Short Form; IIQ: Incontinence Impact Questionnaire; IIQ-7: Incontinence Impact Questionnaire Short Form; I-QoL: Incontinence Quality of Life; IQR: interquartile range; ISI: Incontinence Severity Index; ITT: intention-to-treat; KHQ: King's Health Questionnaire; LUT: lower urinary tract; min(s): minutes(s); MMSE: Mini Mental State Examination; MUI: mixed urinary incontinence;

n: number; NI: no information; OAB: overactive bladder; PERFECT: power or pressure, endurance, repetitions, fast contractions, every contraction timed; PFM: pelvic floor muscle(s); PFMT: pelvic floor muscle training; PGI-I: Patient Global Impression of Improvement; POP: pelvic organ prolapse; POP-Q: Pelvic Organ Prolapse – Quantification; RCT: randomised controlled trial; SD: standard deviation; sec(s): second(s); SUI: stress urinary incontinence; UTI: urinary tract infection; UI: urinary incontinence; UUI: urgency urinary incontinence; VAS: visual analogue scale; VPFMC: voluntary pelvic floor muscle contraction.

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Alihosseini 2016	Ineligible outcomes: did not examine the effect on UI.
Alves 2016	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
An 2017	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Bezerra 2021	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Carrión Pérez 2015	Ineligible comparison: did not compare 1 type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Chao 2022	Ineligible population: not women with UI.
De Gregorio 1993	Ineligible comparison: another active intervention included with PFMT that confounded comparison.
de Jong 2006	Ineligible comparison: another active intervention included with PFMT that confounded comparison.
Donahoe-Fillmore 2012	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Due 2019	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Dumoulin 2004	Ineligible comparison: another active intervention included with PFMT that confounds comparison.
Farzinmehr 2015	Ineligible comparison: another active intervention included with PFMT that confounds comparison.
Ferreira 2014	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Fu 2020	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Fuentes-Aparicio 2023	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Ghaderi 2016	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Ghoniem 2005	Ineligible comparison: not to compare 1 type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.

Study	Reason for exclusion
Golmakani 2012	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Goode 2003	Ineligible comparison: another active intervention included with PFMT that confounded comparison.
Gordon 2020	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Haukeland-Parker 2021	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Hay-Smith 2002	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Hui 2006	Ineligible comparison: another active intervention included with PFMT that confounded comparison.
Hung 2010	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
IRCT201012285486N1	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Jeslin 2022	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Jórasz 2022	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
JPRN-UMIN000030107	Insufficient information available to assess eligibility and unable to contact authors.
Kamali 2023	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Lange 2024	Ineligible population: women with UI but recruited within first 3 postpartum months.
Mane 2020	Ineligible comparison: another active intervention included with PFMT that confounded comparison.
Martinho 2016	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Mason 1999	Insufficient information available to assess eligibility and unable to contact authors.
McLean 2015	Ineligible comparison: another active intervention included with PFMT that confounds comparison.
Miller 2020	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Nakib 2020	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Navarro-Brazález 2020	Ineligible comparison: another active intervention included with PFMT that confounds comparison.

Study	Reason for exclusion
NCT01763957	Trial registered but did not proceed.
NCT01811602	Trial registered but did not proceed.
NCT03194789	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
NCT04336150	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
NCT04339010	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Nie 2021	Ineligible population: not women with UI.
Oliveira 2020	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Öz Yildirim 2023	Ineligible population: not women with UI.
Philips 1992	Ineligible population: not women with UI.
Ptak 2017	Ineligible comparison: another active intervention included with PFMT that confounded comparison.
Rajalaxmi 2019	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Ramsay 1990	Ineligible comparison: not to compare 1 type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
RBR-27fvry	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
RBR-7yn9h7	Ineligible comparison: another active intervention included with PFMT that confounds comparison.
Santiago 2023	Ineligible comparison: another active intervention included with PFMT that confounds comparison.
Seckin 2011	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Sousa Farias 2021	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Stüpp 2011	Ineligible comparison: another active intervention included with PFMT that confounds comparison.
Tang 2022	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Virtuoso 2019	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.

Study	Reason for exclusion
von der Heide 2003	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Wang 2023a	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Wilson 1998	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.
Yoon 1999	Insufficient information available to assess eligibility and unable to contact authors.
Yuvarani 2018	Ineligible comparison: not another type of training versus direct PFMT, or not a higher versus a lower exercise dose, or not 1 type of exercise intervention delivery versus another.

PFMT: pelvic floor muscle training; RCT: randomised controlled trial; UI: urinary incontinence.

Characteristics of studies awaiting classification *[ordered by study ID]*

Carnero 2021

Methods	Randomised, parallel, 2-arm trial
Participants	n = 12 Women with SUI after vaginal delivery.
Interventions	PFMT at home with smartphone application versus PFMT at home without smartphone application
Outcomes	ICIQ-UI-SF, ICIQ-LUTSqol
Notes	Conference abstract. Unclear if eligible population (> 3 months from delivery?). No response to email to authors. Assess when full publication available.

ChiCTR2300071673

Methods	Quote: "a mixed study"
Participants	n = 80 Women with SUI **Inclusion criteria:** women aged > 18 years and < 70 years; mild-to-moderate SUI as diagnosed by a physician (using the Ingelman-Sundberg indexing method); person agrees not to use any treatment (drug or other form) known to affect lower urinary tract function throughout treatment and follow-up; voluntary participation in this study and signed informed consent form **Exclusion criteria:** within 3 months after pelvic surgery; severe SUI (Ingelman-Sundberg scale method); people who cannot use smart phones and have disabilities in listening, speaking, reading, and writing; history of UI surgery or pelvic floor surgery within 6 months before the trial; diagnosed with vesicoureteral reflux, pelvic organ, or vaginal prolapse stage II or above; presence of malformations that cause UI; with acute reproductive and urinary system infection within 1 week and not cured; used midodine hydrochloride, tolterodine, vaginal local oestrogen, and other drugs for UI within 1 week before the test; uncontrolled diabetes, multiple sclerosis, stroke, Parkinson's disease, spinal cord injury, cauda equina nerve injury, multisystem atrophy, mental disorders (depression, anxiety, etc.), and other systemic diseases that may affect the function of the lower uri-

ChiCTR2300071673 *(Continued)*

	nary tract; participated in other drug clinical trials or device clinical trials and used test drugs or devices within 3 months before the test; diagnosed with cervical cancer and precancerous lesions; history of drug use and drug abuse; considered unsuitable for the study by the researcher
Interventions	Self-management measures based on the 5E rehabilitation model (intervention) versus routine care measures (control)
Outcomes	Amount of urine leakage, ICIQ-UI-SF, BPMSES; SUI Knowledge Questionnaire; PFMT Compliance Questionnaire; IIQ-7; Urinary Incontinence Impact Questionnaire Short Form
Notes	Unclear if randomised or if interventions are eligible. Trial registration. Assess when published.

ChiCTR2300074915

Methods	Randomised, parallel, 3-arm trial
Participants	n = 60 Women with UI **Inclusion criteria:** meet the relevant diagnostic criteria in the Guidelines for Diagnosis and Treatment of Female SUI (2017); women age 20–60 years; voluntary participation in this study and signing of informed consent; no cognitive impairment and mental illness **Exclusion criteria:** combined vaginal, pelvic, and urinary tract infections; severe pelvic floor pain and vaginal bleeding; intrauterine implantation of metal sterilisers, and pacemakers; combined liver and kidney dysfunction, malignant tumours, serious cardiopulmonary dysfunction, epilepsy
Interventions	Physical therapy gymnastics group (daily workout following a videotape) versus classical Kegel training versus biofeedback group
Outcomes	Degree of urinary incontinence, quality of life, PFM contractility, anxiety, and depression
Notes	Unclear if physical therapy gymnastics includes PFMT. If not, then ineligible. Trial registration, assess when full publication is available.

CTRI/2019/05/019299

Methods	Randomised, 2-arm, parallel trial
Participants	n = 60 Women with SUI postpartum **Inclusion criteria:** age: 18–35 years; prediagnosed case of postpartum SUI by gynaecologist; able to squat, cough, run, sit to stand, and pick objects from the ground; healthy women, with no medical or obstetric complaints **Exclusion criteria:** neurological involvement; previous gynaecological surgery; urinary tract infection; concurrent treatment; uterine, vaginal, or rectal prolapse
Interventions	Kegel exercise versus bridge with ball and balloon: indirect contraction of PFM with active contraction of the diaphragm and abdominal muscles
Outcomes	Pad test, KHQ

CTRI/2019/05/019299 *(Continued)*

Notes	Unclear how long postpartum – ≥ 3 months for eligibility. Retrospective trial registration. No email response from authors. Recruitment status: completed. Publication details: not yet

CTRI/2020/07/026729

Methods	Randomised, parallel, 2-arm trial
Participants	n = 100 Women with LBP and UI **Inclusion criteria:** women with LBP with UI; age 40–60 years; LBP ≥ 3 months **Exclusion criteria:** women with any neurological involvement, with hearing impairments, who received treatment for pelvic organ dysfunction
Interventions	McKenzie method and pelvic floor strengthening versus McKenzie protocol (McKenzie method soft tissue mobilisation and abdominal muscle training)
Outcomes	Quality of life, episodes of incontinence
Notes	Unclear if McKenzie method is indirect training. If not, then ineligible. Trial registration. Await full publication for assessment.

CTRI/2021/09/036247

Methods	Randomised, parallel group, active controlled trial
Participants	n = 90 (target) **Inclusion criteria:** age 18–40 years; women; married; diagnosed cases of SUI; have mild-to-moderate SUI (based on the women's history and ISI); 1-year postpartum, parous, nulliparous; body mass index 18–30 kg/m^2; medically and physically fit for the measurement and therapeutic exercises (running, jumps) **Exclusion criteria:** continuous urinary leakage; current UI drug therapy; > stage 1 pelvic organ prolapse; pregnancy; current urinary tract or vaginal infection; menstruation on the day of examination; contraindications for measurements or interventions, e.g. acute inflammatory or infectious disease, tumour, fracture; de novo systemic or local oestrogen treatment (< 3 months); de novo drug treatment with anticholinergics or other bladder active substances (tricyclic antidepressants, selective serotonin reuptake inhibitors).
Interventions	Dynamic neuromuscular stabilisation exercise versus Kegels exercises
Outcomes	Perineometer; pressure biofeedback; EMG; QUID; ISI; UDI; Urinary Impact Questionnaire
Notes	Trial registration. Assess when trial completed and published.

CTRI/2022/09/045290

Methods	Randomised, parallel, 2-arm trial

CTRI/2022/09/045290 *(Continued)*

Participants	n = ? Women with SUI **Inclusion criteria:** women with incontinence while doing any physical activity, e.g. coughing, sneezing, jumping, etc.; an episode of urinary leakage at least twice monthly; willing to participate; nulliparous women; ICIQ-UI-SF score 1–21; responses to items 4, 5, and 6 must be 0 in the QUID **Exclusion criteria:** incontinence due to any cause other than SUI; undergoing treatment for incontinence
Interventions	Co-contraction of transverse abdominis and PFM versus Knack principle
Outcomes	ICIQ-UI-SF, QUID, KHQ
Notes	Might be co-ordinated training versus functional training, which is not an eligible comparison. Trial registration. Assess when published.

ISRCTN14126416

Methods	Single-blind randomised controlled study
Participants	n = 64 **Inclusion criteria:** women aged ≥ 18 years; ≥ 3-month history of SUI or MUI with a predominant stress component; ≥ 7 incontinence episodes per week, as recorded in a 3-day bladder diary; enrolled women should have a positive cough stress test and grade 3 or 4 PFM contraction based on the PERFECT Assessment Scheme **Exclusion criteria:** daytime frequency (> 8 micturitions/day) or nocturia (> 1 voiding/night); neurogenic incontinence or systemic diseases such as diabetes mellitus or chronic kidney disease; previously received medications for incontinence or had undergone any type of continence surgery; pregnancy
Interventions	PFMT versus PFMT plus abdominis muscle training
Outcomes	Primary outcome: incontinence episodes measured using a 3-day bladder dairy Secondary outcomes: overall health status measured using the King's Health Questionnaire (KHQ); participant's impression of improvement measured using the Patient Global Impression of Improvement (PGI-I) scoring; quality of life measured using the Quality of Life (QoL) scoring; sexual function measured using the Female Sexual Function Index (FSFI) scoring; change in strength of pelvic floor muscles measured using the PERFECT assessment scheme. Primary and secondary outcome measures assessed at baseline and week 12 (end of the study)
Notes	Trial registration. Assess when trial completed and published.

Jia 2018

Methods	Randomised, parallel, 2-arm trial
Participants	n = 105 Participants with SUI

Jia 2018 *(Continued)*

Interventions	Mobile home care intervention based on conventional discharge care versus conventional discharge guidance
Outcomes	ICIQ-UI-SF
Notes	Abstract; no access to full text. Unclear what exactly was involved in both interventions (PFMT is likely since pelvic floor muscle strength was measured and incontinence assessed, but further information is necessary).

Li 2021

Methods	Randomised, parallel, 2-arm trial
Participants	n = 80 Postpartum SUI
Interventions	PFM neurorehabilitation versus routine guidance and education
Outcomes	NI
Notes	Abstract, no access to full text. Unclear if the population (how long postpartum?) and interventions are eligible. No email response from authors.

Liu 2009

Methods	Randomised, parallel, 2-arm trial
Participants	n = 104 Women with incontinence
Interventions	Direct PFM versus conventional oral advocacy
Outcomes	Quality of life (scale)
Notes	Full publication. Non-English language publication and no translation available. Put on Task Exchange but no response. Unclear what "conventional oral advocacy" included. Might be ineligible based comparison.

Mishra 2022

Methods	"Block-randomized", parallel, 2-arm trial
Participants	n = 49 Women with urinary incontinence
Interventions	Supervised PFMT vs unsupervised (home-based) PFMT (pamphlet)
Outcomes	Incontinence quality of life (IIQ-7 Short Form)

Mishra 2022 *(Continued)*

Notes	The 'block randomization' involved a block of 2 villages (not participants), suggesting an unadjusted cluster trial. The study was designed as a 2-arm parallel study; however, some participants refused to participate, resulting in a third group with no intervention; The IIQ-7 presented as a percentage score and it is unclear if these data are usable as reported. Contact with authors needed.

NCT03166150

Methods	Randomised, parallel assignment
Participants	n = 56 **Inclusion criteria:** women aged ≥ 65 years; symptomatic UI; symptoms ≥ 3 months; episodes of UI on 3-day bladder diary; stress, urgency, and mixed UI **Exclusion criteria:** women unable to have functional assessment or complete bladder diary (or both); impaired mental status (Mini Mental State Examination < 25); postvoid residual ≥ 150 mL; non-ambulatory (wheelchair user), unable to complete mobility assessments; haematuria; urinary tract infection; continuous incontinence; pelvic organ prolapse > stage 2; faecal impaction (no bowel movement within 1 week), severe congestive heart failure (leg swelling oedema 2+), uncontrolled diabetes (positive urine glucose dipstick test); significant neurological or musculoskeletal conditions that compromise mobility (stroke, multiple sclerosis, amyotrophic atrophic lateral sclerosis, severe rheumatoid arthritis); contraindications to undergo magnetic resonance imaging including claustrophobia.
Interventions	Multimodal rehabilitation programme versus PFMT
Outcomes	Reduction in urinary incontinence episodes, muscle strength and muscle quality
Notes	Trial registration. Assess when trial completed and published.

NCT03514147

Methods	Randomised, parallel, 2-arm trial
Participants	n = ? Women with UI **Inclusion criteria:** women with urinary incontinence; age 35–70 years; have sexual intercourse in the last 6 months; understand the instruments used in the research; accept to participate in the study and sign the terms of free and informed consent **Exclusion criteria:** latex allergy; have had or are undergoing pelvic radiotherapy; receiving chemotherapy treatment; 12 months postpartum; participated in individual or group MAP training in the last 6 months; have contraction of the pelvic floor muscles grade zero (0).
Interventions	PFMT in group (supervised) versus PFMT at home (unsupervised). However, some concern this is a trial registration for studies
Outcomes	ICIQ-SF
Notes	Unclear if this is a trial registration for an already included study, or a different study. No response from authors.

NCT04390204

Methods	Randomised, parallel, 2-arm trial
Participants	n = 116 (estimated) Women with UI **Inclusion criteria:** aged ≥ 18 years; women with urinary incontinence according to the International Continence Society criteria; affiliated to social security; read and understood the information letter and signed the consent form; woman of childbearing age with effective contraception or menopausal status **Exclusion criteria:** neurological, psychiatric, and digestive pathology that induces stress urinary incontinence; pregnant or parturient or lactating woman; person deprived of liberty by administrative or judicial decision or a person placed under the safeguard of justice, or guardianship or curatorship; anticholinergic treatment initiated < 3 months ago; unable to complete the 15 planned visits to the physiotherapist; participating in another clinical trial; unable to perform the first stress test pad No urinary leakage noted during the stress pad test (difference of weight before and after protection pad test = 0 g)
Interventions	"Postural control" programme on a foam surface vs control (motor control exercises with biofeedback and home exercise programme)
Outcomes	ICIQ-SF, MOS 36-item short-form health survey (SF-36 questionnaire), pad test, USP, Patient Global Impression of Improvement scale (PGI I), Oswestry Disability Index questionnaire, compliance and acceptance questionnaire, PFID-20
Notes	Unclear if postural control programme includes intention to train PFM. If not, then ineligible comparison. Trial registration. Assess when published.

NCT04587895

Methods	Randomised, 4-arm, trial
Participants	n = 80 (32–52 seniors with mobility impairments and 8–28 older adults with UI) **Inclusion criteria** Both (mobility impairments and UI): aged 60+ years; live independently, in a residency dwelling, or with care; standing straight for a minimum 10 minutes without aids; visual acuity with correction sufficient to work on a television screen; signed informed consent Only mobility impairments: Short Physical Performance Battery < 10 (only for the study group with mobility impairments) Only UI: female; diagnosed with mixed urinary incontinence (MUI) or urge urinary incontinence (UUI) according to the QUID; moderate symptoms of UI (have reported ≥ 3 episodes of involuntary urine loss per week during the preceding 3 months); correct contraction of PFM must be possible; must be able to undergo a gynaecological examination **Exclusion criteria** Both (mobility impairments and UI): mobility impairments that do not allow to play the exergame; heavy noticeable cognitive impairments according to Thomman et al.; acute or unstable chronic diseases (e.g. recent cardiac infarction, uncontrolled high blood pressure or cardiovascular disease, uncontrolled diabetes); orthopaedic or neurological diseases that inhibit exergame training;

NCT04587895 *(Continued)*

	rapidly progressive or terminal illness; insufficient knowledge of German; chronic respiratory disease; condition or therapy that weakens the immune system; cancer; serious obesity (body mass index > 40 kg/m^2) Only UI: untreated chronic constipation; important pelvic organ prolapse; physiotherapy treatment or surgery for UI or pelvic organ prolapse in the past year; use of medications for UI or affecting skeletal muscles; change in hormonal replacement therapy in the last 6 months; having an active urinary or vaginal infection in the past 3 months
Interventions	Intervention group mobility impairments: VITAAL exergame intervention (PFMT with vaginal probe + corporal movements/exercises) Intervention group UI: VITAAL exergame intervention (PFMT with vaginal probe + corporal movements/exercises) – PFM exercises and education according to a training booklet at home and education Control group mobility impairments: on-individualised conventional training including walking exercises and strength, balance, and cognitive-motor exercises (at the therapy centre or home) Control group UI: walking, PFM exercises (booklet at home), and education related to UI at home.
Outcomes	Only measured in the UI group – Urinary Sensation Scale (USS), bladder diary, ICIQ-UI, manual muscle testing, vaginal pressure device, and EMG All groups: feasibility survey (recruitment, adherence, attrition rate, safety survey, safety protocol), single- and dual-task, maximal gait speed over ≥ 4 m, Short Physical Performance Battery, 1-minute Sit to Stand Test, Trail Making Test, Color Word Interference Test, Wechsler-Memory-Scale-Revised, Montreal Cognitive Assessment
Notes	Complex trial with uncertainty about eligibility of intervention (e.g. is this intended as a biofeedback trial) and the population. Trial registration. Assess when published.

NCT05154760

Methods	Randomised, parallel assignment
Participants	n = 28 **Inclusion criteria:** aged 18–65 years; body mass index 18–30 kg/m^2; diagnosed with stress incontinence or mixed incontinence (dominantly SUI); mild or moderate incontinence (mild SUI; urinary incontinence with coughing, sneezing, laughing, or any strenuous activity; moderate; urinary incontinence with carrying, pushing, lifting, walking, and any light physical activity) **Exclusion criteria:** pregnancy; ongoing vulvovaginitis or urinary tract infection or malignancy; pelvic floor muscle strength 0–1 according to the Modified Oxford Scale; previous surgery for SUI; problems with vision or inability to understand given commands; conservative therapy in the last 6 months
Interventions	Individual PFMT versus group video conference PFMT
Outcomes	Pelvic floor muscle strength (at baseline), pelvic floor muscle strength change (end of the 4th week), pelvic floor muscle strength (end of the 8th week), pelvic floor muscle strength change (at baseline), pelvic floor muscle strength change (end of the 4th week), pelvic floor muscle strength change (end of the 8th week).
Notes	Trial registration. Assess when trial completed and published.

NCT05193435

Methods	Randomised, parallel, 2-arm trial
Participants	n = ? **Inclusion criteria:** women aged 18–65 years with symptoms of stress or stress-dominant mixed urinary incontinence, who volunteered to participate in the study **Exclusion criteria:** pregnant, have communication and co-operation problems, have a concomitant neurological or rheumatological disease, history of surgery involving the abdominal and pelvic regions in the last year, have undergone spine surgery, those diagnosed with pure urge urinary incontinence or mixed type incontinence, those with advanced pelvic organ prolapse, those with a spinal deformity (such as scoliosis), the presence of orthopaedic problems in the lower extremities (such as lower extremity shortness, presence of deformity, etc.) and vestibular system disorder
Interventions	PFMT versus stabilisation exercises – lumbar spinal stabilisation exercises
Outcomes	1-hour pad test, ICIQ-UI-SF, KHQ, EMG-biofeedback device, Modified Oxford Scale, Sahrmann Test, Biodex Balance System, Spinal Mouse device, Perception of improvement – 4-point Likert scale
Notes	Unclear if stabilisation exercise intended to train PFM directly or indirectly. Trial registration. Assess when published.

NCT05253898

Methods	Randomised, parallel, 2-arm trial
Participants	n = 32 **Inclusion criteria:** women aged 18–50 years; have SUI ≥ 45 days after giving birth; accept to join the group sessions and will participate regularly in the treatment programme **Exclusion criteria:** have pelvic organ prolapsus and faecal incontinence; have undergone surgery for the lower urinary system; have received medication treatment for incontinence in the last 3 months; with acute infection and bladder stones or tumours will not be included in the study
Interventions	Pelvic floor physical therapy versus therapeutic yoga training
Outcomes	Incontinence Questionary-3 (3IQ), ISI, I-QoL, Global Perception of Improvement (GPI), PERFECT, Pad test, State-Trait Anxiety Inventory (STAI), lower urinary tract symptoms
Notes	Population includes women who are not eligible (< 3 months postpartum) and women who are eligible. Will need to see study characteristics of completed trial to assess eligibility. Trial registration. Assess when published.

NCT05293886

Methods	Randomised, parallel assignment
Participants	n = 44 **Inclusion criteria:** women with stress urinary incontinence or SUI-predominant mixed urinary incontinence according to the 3 Incontinence Questionnaire (3IQ); body mass index < 35 kg/m^2; aged 18 years (with a Mini Mental Test score ≥ 24 for individuals age > 65 years)

NCT05293886 *(Continued)*

	Exclusion criteria: women with pure urge incontinence, urge predominant mixed urinary incontinence or neurogenic bladder; pregnancy or suspected of pregnancy; given birth in the last 1 year; being a virgin; have had abdomino-pelvic surgery in the last 6 months or have received abdomino-pelvic radiotherapy (or both); have urinary tract infection, recurrent urinary tract infection, diagnosis of interstitial cystitis; any orthopaedic problem that will hinder exercise; aged > 65 years with a Mini Mental State Examination score < 24; with pelvic organ prolapse grade ≥ stage 2; have received treatment for urinary incontinence in the last 6 months; have uncontrolled diabetes and hypertension, severe systemic disease; have a neurological disease that will affect the urinary system; have started a new drug that will affect bladder function in the last 1 month; strength of the pelvic floor muscles in digital examination is < 2 according to the Modified Oxford Scale score.
Interventions	PFMT versus functional PFMT
Outcomes	Primary outcome: change in symptom severity and impact of incontinence on life by International Urinary Incontinence Consultation Questionnaire Short Form Secondary outcomes: incontinence severity using 1-hour pad test (no minimum and maximum values but lower scores mean a better outcome); impact of incontinence on quality of life using KHQ; change in KHQ score from baseline to end of 8th week; participant's perception of symptom severity using Patient Global Impression of Severity Scale (score range 1–4 – lower scores mean a better outcome); participant's perception of recovery using Patient Global Impression of Change Scale.
Notes	Trial registration. Assess when trial completed and published.

NCT05390008

Methods	Randomised, parallel trial
Participants	n = 30 **Inclusion criteria:** volunteers to participate in study; woman aged > 65 years; diagnosis of SUI; scored ≥ 24 on the Mini Mental State Examination **Exclusion criteria:** having a neurological disease; having PFM which cannot contract; having urinary tract infection; having stage 2 or higher pelvic organ prolapse; received a SUI treatment in the last year
Interventions	PFMT versus modified Pilates exercises.
Outcomes	SUI frequency change using ISI; SUI frequency and explosure from symptoms change using Urogenital Distress Inventory-Short Form (UDI-6); SUI frequency and explosure from symptoms using Urogenital Distress Inventory-Short Form (UDI-6) at before and after 12 weeks of treatment; SUI frequency and explosure from symptoms change using IIQ-7; SUI frequency and explosure from symptoms using IIQ-7 at before and after 12 weeks of treatment; PFM activation change using MyoPlus4Puro-EMG device; strength of lumbar stabilising muscle change using stabiliser pressure biofeedback
Notes	Trial registration. Appears to be completed.

NCT05437666

Methods	Randomised, parallel, 2-arm trial
Participants	n = ?

NCT05437666 *(Continued)*

	Women with SUI **Inclusion criteria:** aged 18–65 years; with stress urinary incontinence; volunteered to participate in the study; being literate **Exclusion criteria:** having advanced pelvic organ prolapse; having a malignancy; having urinary tract infection; have a problem that interferes with co-operation and understanding
Interventions	Educational presentation + booklet PF (pelvic floor) health versus booklet PF health
Outcomes	ICIQ-LUTSqol, Pelvic Floor Health Knowledge Quiz, KHQ, compliance using 10-cm visual analogue scale
Notes	Interventions may not include PFMT. Trial registration. Assess when published.

NCT05446792

Methods	Randomised, parallel assignment trial
Participants	n = 40 **Inclusion criteria:** being naturally postmenopause (≥ 1 year without menstruating); demonstrate independence to carry out activities of daily living; have a report of urinary loss when performing physical exertion **Exclusion criteria:** had hysterectomy or oophorectomy surgery; underwent cancer treatment with hormone therapy; present cognitive deficits or neurological diseases; practice any type of physical activity regularly in the last 6 months; present inability to hire PFM (Oxford Scale < 1); report pain or discomfort in the vulva or vagina; present dyspareunia, vaginismus, or pelvic organ prolapse > grade 2 in the Baden-Walker classification; present symptoms of urinary infection at the time of evaluation; have participated in previous pelvic floor re-education programmes
Interventions	PFMT versus Pilates exercises
Outcomes	**Primary outcomes:** ICIQ-UI-SF; pad-test; voiding diary; manometric assessment of muscle strength and PFM endurance; PERFECT test **Secondary outcomes:** Female Sexual Function Index; Feeling Scale – pleasure and displeasure during exercise
Notes	Trial seems to be completed. Wait for publication.

NCT05463172

Methods	Randomised, parallel, 2-arm trial
Participants	n = ? Women with UI **Inclusion criteria:** women aged 25–45 years; with abdominal muscle weakness; with pelvic floor muscle weakness; with urinary incontinence **Exclusion criteria:** pregnant women; history of trauma; any neurological disorders affecting the bowel or bladder; any malignancy in the lower abdominal area

NCT05463172 *(Continued)*

Interventions	PFM strengthening exercises versus abdominal strengthening exercises
Outcomes	UDI-6, Cough Stress Test, vaginal ultrasonography
Notes	Unclear if the abdominal strengthening exercise is intended to be an indirect form of training PFM. Trial registration. Assess when published.

RBR-106frtzv

Methods	Randomised clinical trial.
Participants	n = 62 **Inclusion criteria:** women with symptoms of stress urinary incontinence or mixed (or both); aged > 18 years; literate; with preserved cognitive ability; with access to the internet; who have a mobile device with Android system; with understanding of the functioning of the application developed by the team of researchers **Exclusion criteria:** women with symptoms of urinary incontinence only emergencies; pregnant; puerperal, with urinary tract infection; presence of bone deformities and muscular dysfunctions; with neurological impairment that causes urinary incontinence; underwent treatment or previous training of the PFM (or both)
Interventions	PFMT guided by app versus PFMT by booklet
Outcomes	ICIQ-SF; KHQ
Notes	Trial registration. Assess when trial completed and published.

RBR-10scxbgv

Methods	Randomised, parallel, 3-arm, trial
Participants	n = 45 **Inclusion criteria:** women aged ≥ 18 years, having had a caesarean or vaginal delivery at the Hospital Materno Infantil de Ponta Grossa; present discomfort related to pelvic floor dysfunctions; present a medical certificate, if necessary **Exclusion criteria:** women with acute or chronic physical conditions that result in loss of motor, physiological, or cognitive abilities, e.g. spinal cord injuries and neurodegenerative diseases
Interventions	PFMT versus hypopressive abdominal training versus active muscle stretching exercises, n = 15 per group
Outcomes	Pelvic Floor Bother Questionnaire (PFBQ), WHOQOL-Bref
Notes	Women are recruited after birth (note: inclusion criteria are women having had a caesarean or vaginal delivery, not specified how long) and not clear how long after. Population may be ineligible. Trial registration. Assess when published.

RBR-52qtts

Methods	Randomised, parallel, 2-arm trial
Participants	n = 48 (estimate) **Inclusion criteria:** women who complain of SUI and answer questions 3 or 6 (or both) of the ICIQ-SF questionnaire positively, and women who do not have urinary incontinence and who answer question 3 of the ICIQ-SF negatively **Exclusion criteria:** presence of neuromuscular diseases, inability to contract MAP (Oxford Scale < 1), and having already undergone physiotherapeutic treatment for SUI
Interventions	Group PFMT versus group mat Pilates method: transverse abdominal muscle
Outcomes	Voiding diary, ICIQ-SF
Notes	Unclear if randomised or if interventions are eligible. Trial registration. Assess when published.

RBR-8rcfp6

Methods	Randomised, 3-arm trial
Participants	n = ? **Inclusion criteria:** female aged 60–75 years; without cognitive impairment; without pelvic dysfunction; with functional assessment of the pelvic floor (AFA) ≥ 2 (presence of contraction of small intensity, but that sustains itself) **Exclusion criteria:** present self-reported clinical restraint for the practice of resisted exercise; with cardiovascular, osteoarticular, or neurological activities, being or practicing resistance exercises in the last 3 months
Interventions	No intervention versus resistance exercise versus resistance exercise with stimulus of contraction of the PFM
Outcomes	Increase in pubovisceral muscle thickness (3-dimensional ultrasound), digital perineometer, PFDI-20
Notes	Unclear if randomised or if only 1 of 3 interventions are eligible. Trial registration. Assess when published.

RBR-9mh6p6

Methods	Randomized, parallel, 2-arm trial
Participants	n = 96 Women with SUI **Inclusion criteria:** women aged 18–85 years; diagnosed with SUI; referred for evaluation and treatment at the Urinary Dysfunctions Clinic Urology Discipline – UNIFESP; who agree to participate in the study and sign the free consent form and enlightened **Exclusion criteria:** women diagnosed with overactive bladder; pregnant woman; neurological disease; with severe cognitive impairment; psychiatric diagnoses; urethral vesicle fistula; stage III prolapse; renal and bladder stones; urethral cysts and diverticula; bladder cancer

RBR-9mh6p6 *(Continued)*

Interventions	PFMT + behavioural therapy versus "Knack" manoeuvre (PFMT) + behavioural therapy, n = 48 per group
Outcomes	Pad-test, satisfaction questionnaire, World Health Organization Quality of Life instrument, adherence
Notes	Unclear if behavioural therapy includes scheduled voiding. If so, then ineligible. Trial registration. Assess when published.

Rinaldi 2018

Methods	Randomised, 2-arm trial
Participants	n = 20 (ongoing) Urinary complaint due to effort incontinence
Interventions	Kinesiotherapy protocol (PFMT) versus kinesiotherapy associated with virtual reality (PFMT with body movements guided by virtual reality)
Outcomes	Voiding diary; adherence; health quality questionnaire
Notes	Unable to assess if interventions eligible based on detail in conference abstract. No response from authors. Assess when full publication is available.

Soni 2013

Methods	Parallel, 2-arm, randomised trial
Participants	n = 40 **Inclusion criteria:** history of 2–5 years of genuine stress urinary incontinence with positive cough test; aged 30–55 years; parous, and ≥ 1 full-term vaginal deliveries **Exclusion criteria:** pregnancy; physiotherapy for UI in past 12 months; neurological disorder, acute mental illness, or dementia; history of pelvic malignancy or pelvic surgery; grade 2 or higher vaginal or bladder prolapse
Interventions	Exercise intervention delivery in a group (10 women per group, 9 × 1 hour, over 3 weeks or 3 months?), n = 20 Exercise intervention delivery to individuals (9 sessions of 30 minutes, 1 per week, over 3 weeks or 3 months?), n = 20 Same PFMT programme both groups Education (anatomy and function of PFM and bladder) Exercise variables: 10 × contractions (20-sec hold), 10 fast contractions; use "stress strategy"; added VPFMC with other body movements Training variables: 3 sets per day Training principles: progression of body postures; progression of number of repetitions per set (starting with 3–5), and sets per day (starting with 1 set)

Soni 2013 *(Continued)*

Outcomes	VAS (unclear what this measured); KHQ
Notes	Appears eligible based on Population, Intervention, Comparator, and Outcome. Found in reference list of systematic review after review completed. Add at next update. Could add incontinence quality of life data in Comparison 3 (subgroup comparing group supervision versus individual supervision). A very small trial in a comparison with other larger trials, and data suggesting little or no difference between groups (consistent with the findings in the subgroup), it may not alter findings much or at all other than increasing precision.

TCTR20210202002

Methods	Randomised control trial
Participants	n = 24 **Inclusion criteria:** postnatal women with SUI evaluated by 3 Incontinence Questionnaire; mild and moderate severity in SUI evaluated by ISI score 1–6; 3–12 months after vaginal delivery; body mass index < 30 kg/m^2; < 3 vaginal deliveries **Exclusion criteria:** depression score ≥ 11 using Hospital Anxiety and Depression Scale; recent spinal, pelvic, or abdominal surgery; confirmed serious pathologies (musculoskeletal problems such as contracture and deformities, lumbar or pelvic fracture, cancer, infectious diseases of the spine, neurological disorders, malignant condition); any urinary tract or vaginal infections; SUI present before pregnancy; doing pelvic floor muscle exercise or experience of doing it
Interventions	PFMT versus functional approach
Outcomes	**Primary outcome:** KHQ Secondary outcomes: severity of incontinence, leakage volume; frequency of micturition; sagittal stabilisation
Notes	Trial seems to be completed. Wait for publication.

Torkzadeh 2016

Methods	Randomised, 2- or 3-arm trial
Participants	n = 41 Women with SUI **Inclusion criteria:** women with mild, moderate, and severe SUI aged 20–65 years **Exclusion criteria:** pregnant or a period of 6 weeks postpartum (after delivery); receiving treatment or operation for SUI; presence of neuromuscular disease; presence of any urogenital infections and progressive pelvic prolapse
Interventions	Based on a trial registration for different study, by the same authors, we think this might be a 3-arm trial: PFMT with biofeedback versus PFMT with electrical stimulation versus PFMT with hip rotator/abdominal muscle exercise. However, the initial assessment of this paper suggested it might be a 2-arm trial that investigated the effect of biofeedback.
Outcomes	I-QoL, Oxford Scale grade, severity of incontinence

Torkzadeh 2016 *(Continued)*

Notes	Non-English language publication. Awaiting confirmation if the interventions are eligible.

Wang 2023b

Methods	Randomised, 3-arm, trial
Participants	n = 49 Women with postpartum SUI **Inclusion criteria:** women had to come to the hospital for regular follow-up, had postpartum symptoms of SUI, had urine leakage > 2 g in the 1-hour pad test; no diseases of the urinary system or the pelvic floor **Exclusion criteria:** could not complete or refused the experiment; history of neurological, urinary, or gynaecological disease; had a surgical history; had symptoms of severe postpartum depression
Interventions	Kegel training (instructions were given through oral and written expression) versus internet plus Kegel (guided by therapists through the WeChat video function) versus internet plus guided Pilates training through WeChat
Outcomes	1-hour pad test, episodes of incontinence, the number of pads used, Oxford Scale, ICIQ-SF
Notes	Unclear how long after delivery. If < 3 months, population were ineligible. No response from authors.

BPMSES: Broome Pelvic Muscle Self-Efficacy Scale; EMG: electromyography; I-QoL: Incontinence Quality of Life; ICIQ-UI-SF: International Consultation on Incontinence Questionnaire, Urinary Incontinence Short Form; ICIQ-LUTSqol: International Consultation on Incontinence Questionnaire Lower Urinary Tract Symptoms Quality of Life; ICIQ-SF International Consultation on Incontinence Questionnaire – Short Form; IIQ-7: Incontinence Impact Questionnaire Short Form; ISI: Incontinence Severity Index: LBP: low back pain; n: number; NI: no information; PFID-20: Pelvic Floor Distress Inventory; PFM: pelvic floor muscle; PFMT: pelvic floor muscle training; SUI: stress urinary incontinence; KHQ: King's Health Questionnaire; QUID: Questionnaire for female Urinary Incontinence Diagnosis; UDI-6: Urinary Distress Inventory Short Form; UI: urinary incontinence; USP: Urinary Symptom Profile questionnaire; VPFMC: voluntary pelvic floor muscle contraction.

Characteristics of ongoing studies *[ordered by study ID]*

Aliyu 2021

Study name	Effect of Paula exercise method on functional outcomes of women with post fistula repair incontinence: a protocol for randomized controlled trial
Methods	Randomised, parallel, 2-arm trial
Participants	n = 182 Inclusion criteria: post-fistula repair incontinence of > 3 months; 1 g gain in weight following a pad test; consent to participate through a written informed consent; aged < 50 years; no faecal leakage; no previous rectal surgery; not receiving any other alternative PFM rehabilitation at the point of recruitment; urinary infection is ruled out
Interventions	Paula exercise method (intervention group) versus PFMT (control group)
Outcomes	1 hour clinic pad test, pelvic floor strength (manometry), I-QoL, HADS, FSFI
Starting date	26 August 2019

Aliyu 2021 *(Continued)*

Contact information	Saratu Umar Aliyu. Place: No 10 Gandu New Layout, Kano, Nigeria. Phone: 0092347031136763. Email: sualiyu@yahoo.com
Notes	Trial registration. Trial protocol. Appears eligible. Assess when published.

CTRI/2021/05/033437

Study name	Feasibility, efficacy, and safety of yoga therapy in women with urinary incontinence (a prospective randomized control trial)
Methods	Randomised, parallel, 2-arm trial
Participants	n = 200 (target) and recruited 152 Inclusion criteria: women aged 25–60 years, including postmenopausal women; ambulatory women with urinary incontinence for ≥ 3 months; given informed written consent; well motivated to participate in yoga sessions conducted twice weekly for 3 months Exclusion criteria: pregnancy and postpartum (3 months); current urinary tract infection or history of > 3 urinary tract infections/year; major neurological diseases (multiple sclerosis, Parkinson's disease, stroke, etc.); incontinence due to fistula (bladder or rectum); pelvic cancer or radiation; interstitial cystitis or chronic pelvic pain; symptomatic pelvic organ prolapse; body mass index > 35 kg/m^2; medical management for incontinence in the last 3 months; congenital defects leading to incontinence; already engaged in prior yoga therapy; prior anti-incontinence treatment or urethral surgery or pelvic surgery in the past 3 months
Interventions	PFMT and yoga therapy (incontinent specific yoga poses) versus PFMT
Outcomes	States ICIQ-QOL which could be ICIQ-LUTSqoL or ICIQ-UI-SF or another ICIQ questionnaire, SF-36 questionnaire, alteration in the values of C-reactive protein and interleukin-6 after the yoga therapy (unknown abbreviations), adverse effects
Starting date	2 June 2021. Completion date: 19 August 2022
Contact information	Dr Rajesh Kumari; room no 3082 A, Department of Obstetrics and Gynaecology, Gynae Office, New Delhi, DELHI 110049, India; phone: 9911226176. Email: drrajeshkumari@yahoo.com
Notes	Trial registration. Appears to be completed. Emailed authors. No response. Assess if full publication becomes available.

CTRI/2023/01/048731

Study name	Efficacy of pelvic floor, diaphragm and transversus abdominis muscle training in individuals with urinary incontinence: a randomized controlled trial
Methods	Randomised, parallel group, multiple arm
Participants	n = 42 (target) Inclusion criteria: women with stress urinary incontinence (ICIQ-UI-SF score > 1); pressure > 68 mmHg assessed using pressure biofeedback unit; forced vital capacity predicted < 70%; aged 30–70 years

CTRI/2023/01/048731 *(Continued)*

	Exclusion criteria: with neurological deficits; pregnant; with organ prolapse; with urogenital dysfunction such as cystocoele, fistula of bladder; pelvic cancer
Interventions	PFMT versus diaphragm muscle training versus transversus abdominis muscle training Duration of treatment 6 weeks
Outcomes	Primary outcome: ICIQ-UI-SF Questionnaire (at baseline and after 6 weeks of intervention) Secondary outcomes: EMG; pulmonary function test; pressure biofeedback (at baseline and after 6 weeks of intervention)
Starting date	27 August 2022
Contact information	Name: Preety Kumari JHA Address: AMAR JYOTI Institute of physiotherapy, Karkarduma Vikas Marg, Delhi, 110092 110092 East, Delhi, India Telephone: 9560896941 Email: preety1995jha@gmail.com Affiliation: AMAR JYOTI Institute of physiotherapy
Notes	Trial registration. Assess when trial completed and published.

CTRI/2023/03/050779

Study name	Effectiveness of hip muscles strengthening with Kegels exercise in treatment of stress urinary incontinence among postmenopausal women: a randomized controlled trial
Methods	Randomised, parallel group
Participants	n = 70 (target) Inclusion criteria: women with medical diagnosis of SUI among postmenopausal women; last menstrual period ≥ 12 months ago Exclusion criteria: anti-incontinence or pelvic organ prolapse surgery history; active urinary tract or vaginal infection; postpartum incontinence issues to 1 year; pregnancy, postvoid residual volume > 100 mL; pelvic organ prolapse > Grade 2; presence of comorbidities that affect the lower urinary tract, such as neurological disease, diabetes mellitus, psychiatric disease, or renal failure; current hormone replacement therapy
Interventions	Hip muscles strengthening with Kegels exercise versus Kegels exercises
Outcomes	Primary outcomes: symptom and quality of life Secondary outcomes: evaluation of pelvic floor function and muscle strength
Starting date	12 August 2022
Contact information	Name: Dr Doss Prakash S Address: Department of Community Physiotherapy, MGM Institute of Physiotherapy, 3rd Floor, C Building, MGM Campus, N6 CIDCO, Aurangabad, Maharashtra, India, 431003 431003 Aurangabad, Maharashtra, India

CTRI/2023/03/050779 *(Continued)*

	Telephone: 09886386726 Email: dossprakashs@gmail.com Affiliation: MGM Institute of Physiotherapy
Notes	Trial registration. Assess when trial completed and published.

CTRI/2023/05/052395

Study name	Effectiveness of pelvic floor muscle training and progressive resisted exercises of hip muscles in stress urinary incontinence – a randomized controlled trial
Methods	Randomised, parallel group trial
Participants	n = 68 (target) Inclusion criteria: women with stress urinary incontinence; aged 35–60 years; medical diagnosis of SUI by Obstetrics and Gynaecology Department; willing to participate in the study; able to understand the commands Exclusion criteria: diagnosis of neurological or muscular disease that interferes with the function of urinary incontinence; active or recurrent infection of the genitourinary tract; gynaecological surgery for correction of urinary incontinence; current hormone replacement therapy; pregnancy
Interventions	PFMT and progressive resisted exercises of hip muscles versus PFMT
Outcomes	Primary outcome: assessment of the PFM strength (at baseline week 0 and week 8) Secondary outcome: KHQ (at baseline week 0 and week 8)
Starting date	21 February 2023
Contact information	Name: Dr Deepali Hande Address: Dr APJ Abdul Kalam, College of Physiotherapy Pravara Institute of Medical Sciences Loni. Community Physiotherapy Department, 404 413736 Ahmadnagar, Maharashtra, India Telephone: 8275034001 Email: deepalihande28@gmail.com Affiliation: Pravara Institute Of Medical Sciences
Notes	Trial registration. Assess when trial completed and published.

Fitz 2021

Study name	Effects of voluntary pre-contraction of the pelvic floor muscles (theKnack) on female stress urinary incontinence—a study protocol for a RCT
Methods	Single-centre, double-blind (investigator and outcome assessor) randomised controlled trial
Participants	n = 210

Fitz 2021 *(Continued)*

	Inclusion criteria: mild to moderate SUI or mixed urinary incontinence (with predominance of SUI) as assessed by means of the 1-hour pad test (leakage ≥ 2 g). Mild SUI defined as leakage up to 10 g and moderate SUI as leakage of 11–50 g; able to have a gynaecological examination Exclusion criteria: symptoms of overactive bladder alone; chronic degenerative, uncontrolled metabolic, neurological, or psychiatric diseases; previous participation in a pelvic floor re-education programme or previous pelvic floor surgery or currently receiving other treatment for urinary incontinence, or combinations of these; pelvic organ prolapse greater than stage II according to the Pelvic Organ Prolapse Quantification system; use of medication for urinary incontinence or medication that interferes with the musculoskeletal system; loss of stools or mucous; active urinary or vaginal infection in the past 3 months; body mass index ≥ 35 kg/m^2
Interventions	Knack exercises versus PFMT versus Knack plus PFMT
Outcomes	Primary outcome measures: 1-hour pad test Secondary outcome measures: 3-day bladder diary; 1-hour pad test; International Consultation on Incontinence Questionnaire – Short Form; Incontinence Quality of Life Questionnaire; subjective cure of SUI; frequency of the outpatient sessions; self-efficacy/outcome expectation to pelvic floor muscle exercises; pelvic floor muscle function; pelvic floor muscle morphometry; pelvic floor muscle strength; vaginal squeeze pressure
Starting date	1 November 2018
Contact information	Name: Fátima F Fitz, PhD Phone number: +5511999651084 Email: fanifitz@yahoo.com.br
Notes	Trial registration and trial protocol. Assess when trial completed and published.

IRCT20090301001722N30

Study name	Comparison of the effects of pelvic floor muscle strengthening exercise, pelvic floor muscle strengthening exercise plus hip rotator muscle exercise, and pelvic floor muscle strengthening exercise plus electrical stimulation on the symptoms of women with stress and mixed urinary incontinence
Methods	Parallel randomised clinical trial
Participants	n = 60 (target) Inclusion criteria: women diagnosed with stress and mixed incontinence by a urologist; mean age 30–65 years; absence of pregnancy and a 1-year postpartum period; no previous medical or surgical treatment for incontinence; absence of genital area disease; absence of neuromuscular diseases; absence of severe pelvic prolapse Exclusion criteria: any problem that may interfere with the continuation of the treatment; lack of consent to continue the treatment
Interventions	PFMT with biofeedback versus PFMT with biofeedback plus strengthening of the hip external rotators
Outcomes	Primary outcome: quality of life using I-QoL (at beginning of study, after 6 weeks in the last session); unwanted leakage of urine in 1 day using questionnaire (at beginning of study, after 6 weeks in the last session)

IRCT20090301001722N30 *(Continued)*

	Secondary outcome: pelvic floor muscle strength using EMG (at beginning of study, after 6 weeks in the last session)
Starting date	25 June 2023
Contact information	Name: Anahita Torkzadeh Address: Faculty of Rehabilitation, Pich Shamiran, Enghelab St 1148965111 Faculty of Rehabilitation, Corner of Safi Alishah St, Pich Shamiran, Enghelab St Iran (Islamic Republic of) Telephone: +98 21 6649 2271 Email: Anahitatkz@yahoo.com Affiliation: Tehran University of Medical Sciences
Notes	Trial registration. Assess when trial completed and published.

IRCT20210219050410N1

Study name	Comparing the effectiveness of Kegel exercises and Paula method on the severity of stress urinary incontinence in aged women in virtual training: a parallel randomized clinical trial
Methods	Randomised clinical trial, with parallel groups, without blinding
Participants	n = 114 Inclusion criteria: women aged > 60 years; moderate-to-severe score of SUI based on the ICIQ-UI-SF questionnaire; leakage of urine ≥ 1 g over 1 hour with pad test; Mini Mental State Examination score > 12 Exclusion criteria: treatment with other similar exercises in a recent year; taking medications that have adverse effects that affect bladder function; history of previous surgery for urinary incontinence; history of pelvic radiotherapy during the last 5 years; uterine prolapse or cystocoele ≥ grade 3; history of pelvic surgery; heart or respiratory disease or movement disorders; hysterectomy; neurological diseases such as multiple sclerosis, Parkinson's, brain tumour, stroke, or spinal cord injury; urinary tract or urinary stones; chronic constipation
Interventions	Paula method versus Kegel exercises versus control
Outcomes	ICIQUI-SF Score; pad weight; bladder neck descent; amount of Valsalva leak point pressure
Starting date	4 April 2023
Contact information	Name: Haniye Ezatmoghadam Country: Iran (Islamic Republic of) Phone: +98 21 7780 7784 Email address: h.moghadam@shmu.ac.ir
Notes	Trial registration. Assess when trial completed and published

IRCT20210702051761N1

Study name	Extraction of Muscle Synergies to Investigate Changes in Biomechanical Parameters after the Addition of Abdominal Hypopressive Technique to Pelvic Floor Muscle Training in Women with Urinary Incontinence
Methods	Randomised controlled clinical trial with 2 parallel intervention groups
Participants	n = 78 (target) Inclusion criteria: women with SUI; aged 25–50 years; married: leak ≥ 3 times a week; ICIQ-UI-SF questionnaire score ≥ 5 Exclusion criteria: pregnancy; menopause; pelvic organ prolapse > 2; Oxford scale < 3; residual > 50 mL; history of cancer; pelvic surgery; overactive bladder; hormone therapy; urinary tract infection; low back pain in the last 3 months, or other diagnosed neurological diseases
Interventions	PFMT versus PFMT plus low abdominal training
Outcomes	Time and frequency – domain parameters of the pelvic floor and abdominal muscles' EMG; muscular synergy matrices; intra-abdominal and vaginal pressures; scores of ICIQ-UI-SF, ICIQ-LUTS-QOL, and Broome Pelvic Muscle Self-Efficacy Scale questionnaires
Starting date	23 July 2021
Contact information	Name: Masumeh Babayi Name of organisation/entity: Sahand University of Technology Country: Iran (Islamic Republic of) Phone: +98 41 3345 8417 Email address: m_babayi@sut.ac.ir
Notes	Trial registration. Assess when trial completed and published.

IRCT20210928052626N1

Study name	Evaluation of the efficacy of using the pelvic floor muscle training application in comparison with physiotherapy in patients with urinary incontinence.
Methods	Parallel randomised clinical trial
Participants	n = 70 (target) Inclusion criteria: women age 18–70 years; urinary incontinence for at least once a week; diagnosed stress or mixed incontinence; vaginal prolapse grade 1 or 2; body mass index 20–30 km/m^2 Exclusion criteria: difficulty urinating; pregnancy; macroscopic haematuria; urinary symptoms related to grade 3 or 4 of pelvic organ prolapse
Interventions	Kegel exercises in group setting versus PFMT individual physiotherapy sessions
Outcomes	ICIQ-LUTS-QOL questionnaire (at beginning of study (before start of intervention) and 3 months after its start); ICIQ-SF questionnaire (at beginning of study (before start of intervention) and 3 months after its start)
Starting date	19 October 2022

IRCT20210928052626N1 *(Continued)*

Contact information	Name: Maede Safari Address: No 46, Shadab Alley, West Sharif Avenue, Ghadir Blvd, Kharazmi 3, Sepahanshahr 8179975514 Isfahan Iran (Islamic Republic of) Telephone: +98 31 3650 7377 Email: safari.maede@yahoo.com Affiliation: Esfahan University of Medical Sciences
Notes	Trial registration. Assess when trial completed and published.

IRCT20211121053129N1

Study name	Effectiveness of tele-rehabilitation for supervised pelvic floor motor learning exercise with biofeedback in subjects with stress urinary incontinence (SUI)
Methods	2-arm, parallel group randomised trial with block randomisation
Participants	n = 40 (target) Inclusion criteria: women aged 20–50 years; able to use laptops or computer; diagnosed with SUI only Exclusion criteria: pregnancy; delivery within past 6 months; immobility; pelvic organ prolapse grades 3 and 4; diagnosed with any neurological condition; received other treatments for SUI
Interventions	In-person PFMT versus not in-person PFMT
Outcomes	Pelvic floor muscle strength, endurance and neuromuscular co-ordination; quality of life using I-QoL and ICIQ-SF questionnaires; participant satisfaction using Measuring Patient Satisfaction With Physical Therapy Care questionnaire; number of urine leakage
Starting date	11 December 2021
Contact information	Name: Zahra Tajbakhsh Country: Iran (Islamic Republic of) Phone: +98 21 7749 6433 Email address: zah.tajbakhsh@uswr.ac.ir
Notes	Trial registration. Assess when trial completed and published.

NCT03296462

Study name	Hip External Rotation Physical Therapy Trial (HER-Physio)
Methods	Randomised, parallel assignment
Participants	n = 31

NCT03296462 *(Continued)*

	Inclusion criteria: SUI; attending Lois Hole Hospital for Women Urogynecology Clinic; referred for physiotherapy for SUI; able to toilet independently; able to undertake hip rotation exercises; able to speak and read English Exclusion criteria: urge urinary incontinence; using a pessary; neurological or cognitive impairment; using other treatment for incontinence; unable to complete study forms; unable to understand educational instruction
Interventions	Hip external rotation exercises versus hip external rotation exercises plus PFMT versus PFMT
Outcomes	Pelvic floor muscle strength, external hip rotator muscle strength, diary-reported urinary incontinence, incontinence-related quality of life (distress), incontinence-related quality of life (impact), patient mobility (walking)
Starting date	3 November 2016
Contact information	Lois Hole Hospital for Women, Royal Alexandra Hospital
Notes	Trial registration. Assess when trial completed and published.

NCT03727269

Study name	Wii Fit game based abdomino-pelvic training In urinary incontinence
Methods	Randomised, parallel assignment trial
Participants	n = 20 Inclusion criteria: women with only SUI Exclusion criteria: urinary tract infection; myopathy, neurological abnormalities, cognitive or physical disorder that could hinder in training and assessment; pelvic floor muscle strength 0 on Modified Oxford grading scale and pelvic organ prolapse ≥ 3 on Pelvic Organ Quantification system
Interventions	Wii Fit-based abdomino-pelvic training versus PFMT (conventional)
Outcomes	EMG biofeedback and Michigan Incontinence Symptoms Index
Starting date	15 November 2018
Contact information	RiphahIU Mizna Saleh Riphah International University
Notes	Trial registration says completed.

NCT03911362

Study name	A comparison of lumbopelvic stabilisation and pelvic floor exercises on stress incontinence
Methods	Randomised, parallel trial
Participants	n = 2

NCT03911362 *(Continued)*

	Inclusion criteria: aged ≥ 35 years; body mass index < 29 kg/m^2; willing to participate in the research; premenopausal; able to self-report urine loss; educational level of at least primary school; positive cough provocation test (stress test); positive Q-tip test; no complaints of constipation Exclusion criteria: musculoskeletal system disorder; neurological dysfunction; genital prolapse > stage 2; hormone replacement therapy use; postmenopausal; anticholinergic drug use; urge and mixed incontinence; diuretic drug use; antidepressant drugs use; caffeine intake > 4 cups/day; diabetes insipidus; urinary infection; vaginal infection; history of urinary or genital surgery; malignancy; pelvic floor trauma; lumbar disc hernia; pregnancy; breastfeeding; diabetes mellitus; hypertension; body mass index > 30 kg/m^2; chronic obstructive sleep apnoea; chronic lung disease
Interventions	PFMT versus lumbopelvic stabilisation
Outcomes	Urogenital Distress Inventory; Incontinence Impact Questionnaire; Bladder Diary; Incontinence Quality of Life Questionnaire
Starting date	1 December 2018
Contact information	Meryem Kurek eken, Aydin Adnan Menderes University (Responsible Party)
Notes	Trial registration. Assess when trial completed and published.

NCT04237753

Study name	Remote access to urinary incontinence treatment for women veterans (PRACTICAL)
Methods	Randomised, parallel trial
Participants	n = 286 Inclusion criteria: women veterans; urinary incontinence occurring at least monthly for 3 months; able to access daily internet via computer or mobile device; access to personal email for MyHealtheBladder and VA Video Connect visit initiation and reminder Exclusion criteria: unstable medical conditions that could contribute to incontinence (e.g. recent major hospitalisation, planned major surgery, conditions that affect urine volume – haemoglobin A1c of 9.0, chronic kidney disease with planned dialysis within 3 months, as assessed by principle investigator or site principle investigator); unstable psychiatric conditions (e.g. psychosis, suicidal, active alcohol/substance abuse based on history and medical records); unstable housing situation; genitourinary cancer undergoing active treatment with chemotherapy or radiation; neurological conditions known to contribute to incontinence (multiple sclerosis, Parkinson's disease, traumatic brain injury, dementia, and stroke survivors with limited mobility); new treatments for incontinence started in the prior 3 months or planned during the 6-month study duration, includes medications or surgery (or both); 3 months postpartum
Interventions	Mobile app group versus telehealth visits with continence provider
Outcomes	Primary outcome: urinary incontinence severity questionnaire (range 0–21, higher scores represent greater symptom severity) Secondary outcomes: Overactive Bladder Symptom Severity Questionnaire (range 0–12, higher scores represent greater symptoms severity); Patient Satisfaction Questionnaire (3 categories of response (highly satisfied, satisfied, not satisfied)); adherence to pelvic floor muscle exercises reported as exercises per day completed over each week (defined as 80% of days with exercises completed over 12-week intervention period); Urinary Incontinence Severity Questionnaire (range 0–21, higher scores represent greater symptom severity); longer term outcome

NCT04237753 *(Continued)*

	Measured at baseline to 12 weeks
Starting date	6 April 2020
Contact information	Alayne D Markland, DO MSc, Birmingham VA Medical Center, Birmingham, Alabama Elizabeth Camille Vaughan, MD MS, Atlanta VA Medical and Rehab Center, Decatur, Georgia Susan N. Hastings, MD MHSc, Durham VA Medical Center, Durham, North Carolina
Notes	Trial registration. Assess when trial completed and published.

NCT04994041

Study name	Adductor strengthening and pelvic floor muscle strengthening exercises on stress incontinence in gym females
Methods	Randomised, parallel trial
Participants	n = 60 Inclusion criteria: women aged 25–45 years; engaged in gym exercises; fulfilling signs and symptoms of stress incontinence Exclusion criteria: pregnant; any history of trauma; any neurological disorders affecting bowel and bladder; any malignancy in lower abdominal area
Interventions	PFMT versus PFMT plus adductor strengthening
Outcomes	Urinary Distress Inventory (UDI-6); Revised Urinary Incontinence Scale (RUIS)
Starting date	10 January 2021
Contact information	Riphah International University
Notes	Trial registration. Assess when trial completed and published.

NCT05443074

Study name	Efficacy of a face to face versus a remote physiotherapy instruction session about pelvic floor in women with urinary incontinence.
Methods	Randomised, parallel trial
Participants	n = 90 Inclusion criteria: women who are unable to contract their PFM (Modified Oxford Scale ≤ 2); cognitive ability, hearing and visual acuity preserved (through 10-point cognitive screener and Snellen test, respectively); non-neurogenic urinary incontinence; no history of neurological disorders; no symptoms of a vaginal or urinary tract infection; pelvic organ prolapse ≤ stage 2 (according to the Baden and Walker scale); who have not already been instructed on how to perform PFM contraction or who is not already performing PFM training; no suspected or confirmed pregnancy. Exclusion criteria: intolerance to physical examination or latex allergy; withdraws from participating in the study

NCT05443074 *(Continued)*

Interventions	1 face-to-face physiotherapy instruction session versus 1 remote physiotherapy instruction session
Outcomes	Change in contraction capacity; change in self-perception of the PFM
Starting date	12 April 2023
Contact information	Name: Caroline C Pena Phone number: +5519995017000 Email: carolinecpena@hotmail.com
Notes	Trial registration. Assess when trial completed and published

NCT05610761

Study name	Efficacy of core stabilization exercises in women with stress and mixed urinary incontinence
Methods	Parallel randomised controlled trial
Participants	n = 60 Inclusion criteria: women aged 18–55 years; diagnosis of stress and stress-predominant mixed urinary incontinence; pelvic floor muscle strength ≥ 3; body mass index ≤ 35 kg/m^2; ≥ 1 complaint of urinary incontinence in the last month Exclusion criteria: pregnancy and postpartum first 6 weeks; other types of incontinence and stress type 3 incontinence; urinary tract infection; pelvic organ prolapse advanced stage (stage ≥ 2); history of pelvic surgery or pelvic tumour; surgical treatment for urinary incontinence; history of serious systemic or neurological disease (severe cardiovascular disease, advanced chronic obstructive pulmonary disease, central vein occlusion, cancer, Parkinson's disease, etc.); severe low back or pelvic pain (or both)
Interventions	PFMT with core stabilisation exercises versus PFMT
Outcomes	Primary outcomes: change in vaginal pressure measurement with perineometer; change in Incontinence Severity Index Secondary outcomes: change in muscle strength examination with digital palpation; change in pad test (24 hours); change in bladder diary (3 days); change in Incontinence Impact Questionnaire-7; change in Urogenital Distress Inventory-6; change in King's Health Questionnaire
Starting date	8 July 2019
Contact information	Istanbul University Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation
Notes	Trial seems to be completed. Wait for publication.

NCT05618886

Study name	The effect of pelvic floor muscle training for urinary incontinence in Nepalese women
Methods	Randomised, parallel trial

NCT05618886 *(Continued)*

Participants	n = 136 Inclusion criteria: aged 18–45 years; ICIQ grading > 3; understand Nepali language; willing to be included in the study; phone availability Exclusion criteria: pregnant; planning for pregnancy within 6 months; waiting for gynaecological surgery; history of bladder, renal, or uterine cancer; menopause; stage IV pelvic organ prolapse; cognitive or mental disorders; illness to mother or family members, not making exercising possible
Interventions	PFMT plus education versus education only
Outcomes	Primary outcome: ICIQ-UI-SF Secondary outcomes: Self-Efficacy Scale for Practicing Pelvic Floor Exercises The presence of contraction will be determined through the Rating Scale of contraction and also with a manometer from Camtech AS (Norway)
Starting date	15 June 2023
Contact information	Name: Bimika Khadgi, MPT Phone number: +9779849264211 Email: bimikakhadgi@kusms.edu.np
Notes	Trial registration. Assess when trial completed and published.

NCT05635175

Study name	Effectiveness of a hip abductor training in women with stress urinary incontinence (PROTOGLUT)
Methods	Randomised, parallel trial
Participants	n = 78 Inclusion criteria: women aged ≥ 18 years; with urinary incontinence according to the ICS criteria; having received a prescription for perineal rehabilitation; affiliated to French healthcare insurance; having read and understood the information letter and signed the consent form; effective contraception in women of childbearing age (negative urine pregnancy test); postmenopausal women must obtain a confirmatory diagnosis (amenorrhoea for ≥ 12 months before the inclusion visit) Exclusion criteria: bladder pathologies (cyst, tumour, interstitial cystitis); neurological pathologies (multiple sclerosis, Parkinson's disease, etc.); pregnant or parturient or breastfeeding woman or absence of proven contraception; person deprived of liberty by administrative or judicial decision or a person placed under the safeguard of justice, or guardianship or curatorship; physical inability to perform hip abductors exercises (unable to walk or stand independently); women having scheduled continence surgery before the end of physiotherapy sessions at the time of randomisation; women having ≥ 1 of the continence-specific anticholinergic treatments prescribed before the end of the physiotherapy sessions at the time of randomisation
Interventions	PFMT versus PFMT plus hip abductors self-training programme
Outcomes	Primary outcome: ICIQ-SF Secondary outcomes: measurement of offset in the frontal plane of the postero-superior iliac spines during a 1-leg stance (in centimetres); mean force of the hip abductors during a maximum manual resistance test repeated 3 times using a dynamometer (in Newton); mean hip abductors

NCT05635175 *(Continued)*	
	resistance during a manual resistance test repeated 10 times (in seconds); strength of PFMs according to Modified Oxford Grading Scale testing (rated 1–5); overall score and subscores of urinary symptoms from the International Consultation on Incontinence Questionnaire; overall score and subscores of urinary symptoms of the Prolapse Quality of Life Questionnaire; 36-item Short Form overall score and subscores; overall score and subscores of physical inactivity and physical abilities from the Ricci & Gagnon questionnaire; overall score and subscores of the therapeutic observance and adherence questionnaire (only at the end of treatment); Patient Global Impression of Improvement questionnaire score (only at end of treatment)
Starting date	May 2023
Contact information	Name: Benoit STEENSTRUP, physiotherapist Phone number: +33 2 32 88 89 90 Email: benoit.stennstrup@chu-rouen.fr
Notes	Trial registration. Assess when trial completed and published.

NCT05666427	
Study name	Investigation of the effects of stabilization exercises and pelvic floor muscle training on pain and urinary parameters in individuals with chronic low back pain with urinary incontinence
Methods	Randomised cross-over trial
Participants	n = 50 Inclusion criteria: low back pain for ≥ 3 months (at least once a week with low back pain); with urinary incontinence; ≥ 4 according to Numerical Pains Rating Scale; ≥ 20% according to the Oswestry Disability Index; body mass index ≤ 30 kg/m^2 Exclusion criteria: have undergone lumbar or pelvic surgery in the last 6 months; received PFMT in the last 3 months; systemic, inflammatory, rheumatic, malignant, osseous pathologies, etc. that may cause low back pain; other diseases; pregnant; stage 3–4 pelvic organ prolapse
Interventions	PFMT versus PFMT plus stabilisation exercises
Outcomes	Primary outcomes: Numerical Pain Rating Scale; Euro Quality of Life 5D-3L; Incontinence Severity Index Secondary outcomes: Modified Oxford Scale; Tampa Kinesiophobia Scale; Oswestry Disability Index; Pain Catastrophizing Scale; State-Trait Anxiety Inventory; Incontinence Quality of Life Instrument; Urinary Distress Inventory
Starting date	1 January 2023
Contact information	Name: Ibrahim Kucukcan, PhD Phone number: +905300351105 Email: pt.kucukcan@gmail.com
Notes	Trial registration. Assess when trial completed and published.

NCT05751213

Study name	Knack technique in post-menopausal women with stress urinary incontinence
Methods	Randomised, parallel trial
Participants	n = 22 Inclusion criteria: postmenopausal women; multiparous; history of vaginal deliveries; mild-to-moderate stress or mixed incontinence (with predominance of SUI) via the 3 Incontinence Questions (3IQ); able to have a gynaecological examination Exclusion criteria: symptoms of overactive bladder alone; previous participation in a pelvic floor re-education programme or previous pelvic floor surgery (or both) or currently receiving other treatment for urinary incontinence; loss of stools or mucous; active urinary or vaginal infection in the past 3 months
Interventions	PFMT versus PFMT plus Knack
Outcomes	Primary outcome measures: 3-day bladder diary Secondary outcome measures: PERFECT Scheme; I-QoL
Starting date	1 October 2022
Contact information	Name: Imran Amjad, PhD Phone number: 03324390125 Email: imran.amjad@riphah.edu.pk
Notes	Trial registration. Assess when trial completed and published.

NCT05916820

Study name	Effects of Tanzberger versus pelvic floor muscle exercises on urinary incontinence
Methods	Randomised, parallel trial
Participants	n = 34 Inclusion criteria: aged 45–60 years; postmenopausal women; diagnosed with urinary incontinence Exclusion criteria: delivery with any complication; history of diabetes, hypertension, neurological, or any chronic illness; any pelvic or abdominal surgery; disc herniation or spine fracture
Interventions	Tanzberger exercises versus PFMT
Outcomes	I-QoL Questionnaire
Starting date	25 December 2022
Contact information	Name: Adeela Arif, MS Phone number: 03320845723 Email: adeela.arif@riphah.edu.pk
Notes	Trial registration. Assess when trial completed and published.

NCT05970796

Study name	A telehealth-delivered physical therapy program for postmenopausal women with urinary incontinence
Methods	Randomised, parallel trial
Participants	n = 30 Inclusion criteria: women aged > 40 years; postmenopausal: amenorrhea for > 12 months; having symptomatic UI (defined as having the Questionnaire for Urinary Incontinence Diagnosis score > 0 point); able to answer the questionnaire correctly (no language barrier or cognitive problems); no other physical or psychological problem that would interfere participation in the study; access to a mobile video conference device with internet access Exclusion criteria: aged > 85 years; receiving hormone therapy; having neurological conditions, malignancy of pelvic organ, overflow incontinence or voiding dysfunction; received radical surgery for pelvis, sling, or prolapse surgery
Interventions	Telehealth PFMT versus in-person PFMT
Outcomes	Primary outcomes: number of participants consented to participate; number of intervention sessions attended; number of participants who remain in the study 3 months after baseline assessment; number of participants who withdrew from the trial; number of completed training sessions in relation to the scheduled sessions; number of participants with intervention-related adverse events as assessed by Common Terminology Criteria for Adverse Events v4.0; adverse events; satisfaction scale; acceptability scale Secondary outcomes: weight; height; body mass index; body fat percentage; visceral fat level; skeletal muscle percentage; handgrip strength; functional exercise capacity; pelvic floor muscle strength; bladder neck descent; anteroposterior diameter of the urogenital levator hiatus; anorectal angle; severity of urinary incontinence; physical activity levels
Starting date	1 December 2023
Contact information	Name: Kuan-Yin Lin, PhD Phone number: 0965581178 Email: idoruyin0808@gmail.com
Notes	Trial registration. Assess when trial completed and published.

RBR-3b2g2y

Study name	Different semantic frequencies of pelvic floor muscle training for women with stress urinary incontinence
Methods	Randomised, controlled, single-blind, parallel trial
Participants	n = 99 Inclusion criteria: woman (biological); age ≥ 18 years; SUI determined by the affirmative response to involuntary urine loss associated with coughing, sneezing, exercise, or weight lifting in the last month

RBR-3b2g2y *(Continued)*

	Exclusion criteria: latex allergy; vaginal or urinary tract infection; virginity; being in the gestational period; being in the puerperal period; has neurological disease
Interventions	PFMT once a week versus PFMT twice a week versus home-based PFMT
Outcomes	Primary outcomes: SF-6D; King's Health Questionnaire; health costs Secondary outcomes: function of the pelvic floor musculature; 24-hour voiding diary
Starting date	12 January 2019
Contact information	Full name: Departamento de Fisioterapia Address: Rod. Washington Luis, KM 235 City: São Carlos, Brazil Zip code: 13565-905 Phone: +55 16 3351-8448 Email: rodrigues.anarocha@gmail.com Affiliation: Universidade Federal de São Carlos
Notes	Trial registration. Assess when trial completed and published.

RBR-3fgwc7

Study name	Treatment through electrical stimulation and exercises for urinary incontinence
Methods	Randomised, controlled, parallel trial
Participants	n = 90 Inclusion criteria: women with urinary incontinence Exclusion criteria: with severe lung disease, severe heart disease, neurological diseases, oncological diseases; using antidepressant medications in general; have pelvic organ prolapse > stage 2 by POP-Q classification; pacemaker users; undergone surgical intervention for correction of urinary incontinence; any type of physical activity structured and planned in addition to those provided for in the protocol
Interventions	PFMT plus Pilates, in-person supervision versus 1 class, to learn how to do PFMT and home-based exercises
Outcomes	Primary outcome: EMG response of the pelvic muscles' electrical activity Secondary outcomes: King's Health Questionnaire; ICIQ-SF; Beck Depression Inventory; urinary loss; pad use; urinary loss
Starting date	7 January 2015
Contact information	Full name: Mara Regina Knorst Address: Av. Ipiranga, 6681 City: Porto Alegre / Brazil Zip code: 90619-900

RBR-3fgwc7 *(Continued)*

	Phone: 55 (51) 3320 3646 Email: mknorst@pucrs.br Affiliation: Pontifícia Universidade católica do Rio Grande do Sul
Notes	Include as ongoing. Reassess next update.

RBR-64n2g5h

Study name	Effects of the Pilates method with floor activation pelvic and perineal exercises in the treatment of dysfunctions of the pelvic floor in postpartum women: a randomized clinical trial
Methods	Randomised clinical trial
Participants	n = 40 Inclusion criteria: women who have given birth within 1 year; aged 18–50 years; gynaecological complaints arising from pelvic floor dysfunctions; who answer yes to ≥ 2 of the 9 questions asked in the questionnaire during the assessment; resided in the city of Quixeré CE Exclusion criteria: do not have full mental health to answer the form or questionnaire; performed any surgical procedure involving the pelvic floor area as well as total or partial hysterectomy or perineal surgery (or both); present pathologies that interfere with the muscle health of the pelvic floor; pelvic muscle strength ≤ grade 1 in the assessment; women who have passed or are going through climacteric; already or who have been in any type of treatment related to floor dysfunctions
Interventions	Pilates plus PFMT versus PFMT
Outcomes	Force of contraction of the pelvic floor using biofeedback and the perfect scale
Starting date	22 July 2022
Contact information	Larissa de Deus Rodrigues larissadeus@alu.uern.br +55 (88) 9 88028088
Notes	Trial registration. Assess when trial completed and published.

RBR-6vymyxs

Study name	Training of the muscles of the pelvic floor for the treatment of stress urinary incontinence in the modality of teleconsultation and telemonitoring
Methods	Randomised clinical trial
Participants	n = 30 Inclusion criteria: access to the internet and a device (mobile phone, computer, tablet); ability to use the device; have a headset to use during calls; private space for the sessions Exclusion criteria: do not meet the inclusion criteria; reporting chronic degenerative diseases, pelvic organ prolapse > grade 2 (according to the participant's report); urinary tract infection, neu-

RBR-6vymyxs *(Continued)*

	rological or psychiatric disease; who underwent pelvic floor muscle training or treatment of urinary incontinence previously (or both); with inability to answer the questionnaires properly
Interventions	In-person PFMT versus Telehealth PFMT
Outcomes	Primary outcome: reduction of symptoms Secondary outcomes: ICIQ-SF; Subjective Healing question; Self-Efficacy Scale for Practicing Pelvic Floor Exercises; Incontinence Quality of Life questionnaire; adherence
Starting date	25 January 2023
Contact information	Name: Fátima Faní Fitz Address: Rua Raul Pompéia, 144 05.025-010 São Paulo Brazil Telephone: +55 (11) 999651084 Email: fanifitz@yahoo.com.br Affiliation: Centro Universitário São Camilo
Notes	Trial registration. Assess when trial completed and published.

RBR-8ht5nqq

Study name	Tele rehabilitation for women with urinary incontinence after gynecological pelvic cancer treatment
Methods	Randomised, controlled, parallel single-blind trial
Participants	n = 32 Inclusion criteria: aged > 18 years; clinical staging I to III of pelvic gynaecological cancer; having undergone surgery, radiotherapy, brachytherapy, or combinations of these; have urinary incontinence; do not present any orthopaedic or neurological limitations that prevent the practice of the rehabilitation programme; not being under physiotherapeutic treatment Exclusion criteria: withdrawal of the informed consent form
Interventions	PFMT Telerehabilitation programme versus in-person programme PFMT
Outcomes	Primary outcomes: prevalence of urinary incontinence; ICIQ-SF Secondary outcomes: sexual function, IPAQ – short version; PFM strength; vaginal manometry; treatment satisfaction; adherence
Starting date	3 October 2022
Contact information	Full name: Cristine Homsi Jorge Ferreira Address: R. Miguel Covian, 120 Campus da Usp City: Ribeirão Preto / Brazil Zip code: 14.049-900 Phone: +55(16)996217919

RBR-8ht5nqq *(Continued)*

	Email: cristine@fmrp.usp.br
Notes	Trial registration. Assess when trial completed and published.

RBR-97rb5wk

Study name	Physiotherapy for women after gynecologic pelvic cancer treatment
Methods	Single-blind randomised, controlled, parallel trial
Participants	n = 36 Inclusion criteria: age > 18 years; clinical staging 1–3 pelvic gynaecological cancer; having undergone surgery, radiotherapy, brachytherapy, or combinations of these; have urinary incontinence; do not present any orthopaedic or neurological limitations that prevent the practice of the rehabilitation programme; not being under physiotherapeutic treatment Exclusion criteria: withdrawal of the informed consent form
Interventions	Online PFMT versus in-person PFMT
Outcomes	Primary outcomes: prevalence of urinary incontinence; ICIQ-SF Secondary outcomes: sexual function, IPAQ – Short version; PFM strength; vaginal manometry; treatment satisfaction; adherence
Starting date	2 January 2022
Contact information	Full name: Cristine Homsi Jorge Ferreira Address: R. Miguel Covian, 120 – Campus da Usp City: Ribeirão Preto / Brazil Zip code: 14.049-900 Phone: +55(16)996217919 Email: cristine@fmrp.usp.br
Notes	Trial registration. Assess when trial completed and published.

RBR-9gf79b

Study name	Muscular training of the pelvic floor versus hyphopressive abdominal gymnastics (GAH) in urinary symptoms, sexual function and quality of life of climate women: randomized clinical trial
Methods	Randomised controlled trial
Participants	n = 35 Inclusion criteria: women with clinical climacteric symptoms, such as decreased or terminated menses; diagnosed with urinary incontinence or who have ≥ 3 of the symptoms of urinary incontinence such as nocturia, urgency, urge incontinence, high voiding frequency and enuresis; aged 45–65 years; have had ≥ 1 sexual intercourse during the last 30 days

RBR-9gf79b *(Continued)*

	Exclusion criteria: allergic to latex; with neurological diseases or with sensory alterations; use of medications for the treatment of lower urinary tract dysfunctions; history of pelvic floor exercises; history of abdominal surgeries in the last 6 months; obstructive or restrictive respiratory disease; no attendance at the evaluation or have > 25% of absences to the treatment
Interventions	PFMT versus PFMT plus Pilates
Outcomes	Primary outcomes: ICIQ-SF; strength of the pelvic floor muscles Secondary outcomes: FSFI questionnaire; King's Health Questionnaire
Starting date	19 April 2018
Contact information	Full name: Ana Beatriz Gomes de Souza Pegorare Address: Av. Costa e Silva, s/n – Cidade Universitária City: Campo Grande, Brazil Zip code: 79070-900 Phone: +55 (67)33457836 Email: anabegs@gmail.com Affiliation: Universidade Federal de Mato Grosso do Sul
Notes	Trial registration. Assess when trial completed and published.

BF: biofeedback; EMG: electromyography; FSFI: Female Sexual Function Index; HADS: Hospital Anxiety and Depression Score; I-QoL: Incontinence Quality of Life questionnaire; ICIQ: International Consultation on Incontinence Questionnaire; ICIQ-FLUTS: International Consultation on Incontinence-Female Lower Urinary Tract Symptom score; ICS: International Continence Society; MRC: Medical Research Council (UK); MUI: mixed urinary incontinence; n: number; PFM: pelvic floor muscle; PFMT: pelvic floor muscle training; POP-Q: Pelvic Organ Prolapse – Quantification; RCT; randomised controlled trial; SF-36: 36-item Short Form; SUI: stress urinary incontinence; USI: urodynamic stress incontinence; VAS: visual analogue scale; VPFMC: voluntary pelvic floor muscle contraction.

DATA AND ANALYSES

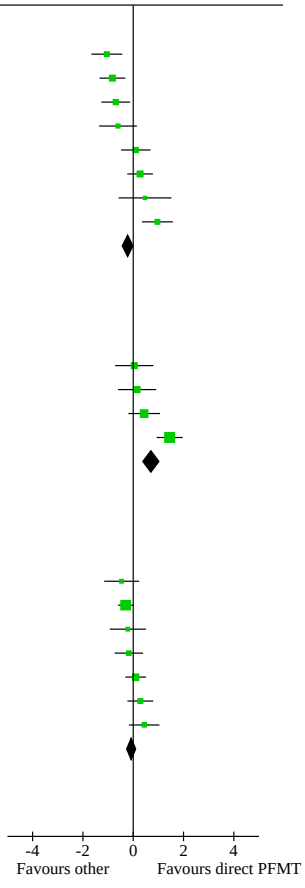
Comparison 1. Exercise type: other types versus direct pelvic floor muscle training (PFMT)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Incontinence quality of life	19		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.1.1 Co-ordinated PFMT versus direct PFMT	8	356	Std. Mean Difference (IV, Fixed, 95% CI)	-0.22 [-0.44, -0.01]
1.1.2 Indirect training versus direct PFMT	4	170	Std. Mean Difference (IV, Fixed, 95% CI)	0.70 [0.38, 1.02]
1.1.3 Combined indirect training with direct PFMT versus direct PFMT	7	482	Std. Mean Difference (IV, Fixed, 95% CI)	-0.08 [-0.26, 0.10]

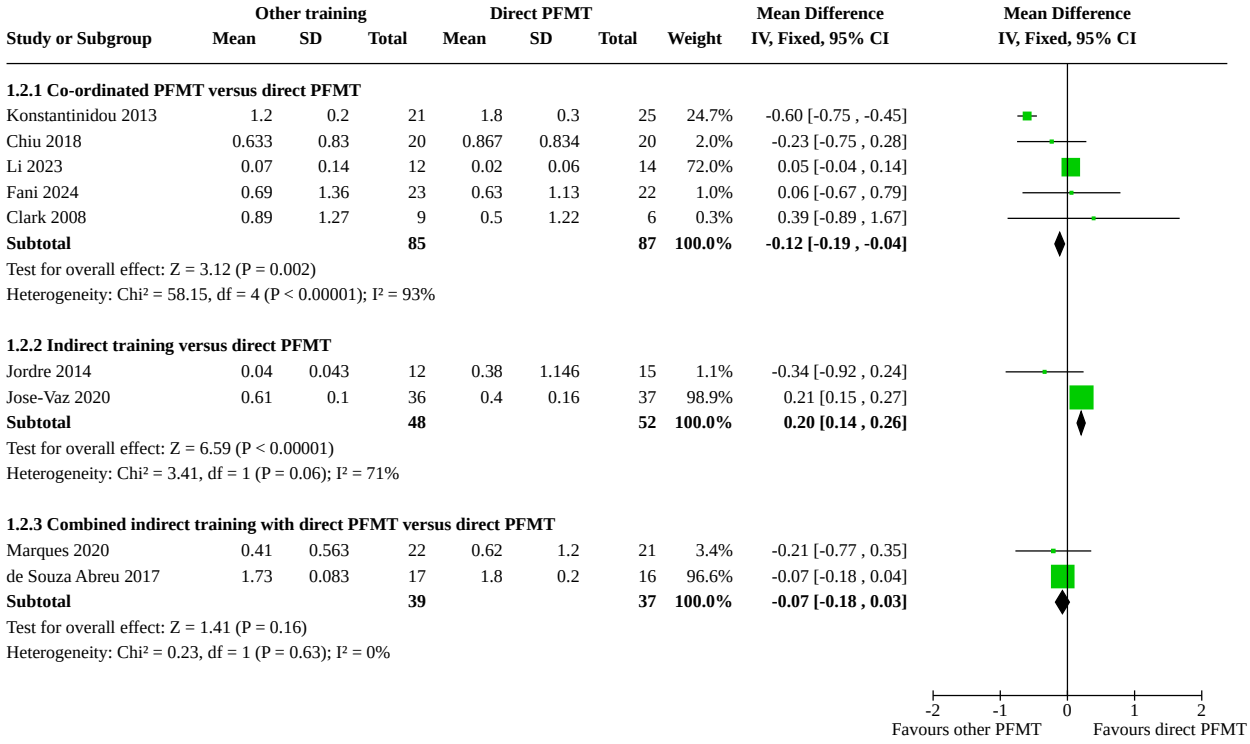
Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.2 Incontinence episodes	9		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
1.2.1 Co-ordinated PFMT versus direct PFMT	5	172	Mean Difference (IV, Fixed, 95% CI)	-0.12 [-0.19, -0.04]
1.2.2 Indirect training versus direct PFMT	2	100	Mean Difference (IV, Fixed, 95% CI)	0.20 [0.14, 0.26]
1.2.3 Combined indirect training with direct PFMT versus direct PFMT	2	76	Mean Difference (IV, Fixed, 95% CI)	-0.07 [-0.18, 0.03]
1.3 Subjective cure/improvement	1		Odds Ratio (M-H, Fixed, 95% CI)	Totals not selected
1.3.1 Indirect training versus direct PFMT	1		Odds Ratio (M-H, Fixed, 95% CI)	Totals not selected

Analysis 1.1. Comparison 1: Exercise type: other types versus direct pelvic floor muscle training (PFMT), Outcome 1: Incontinence quality of life

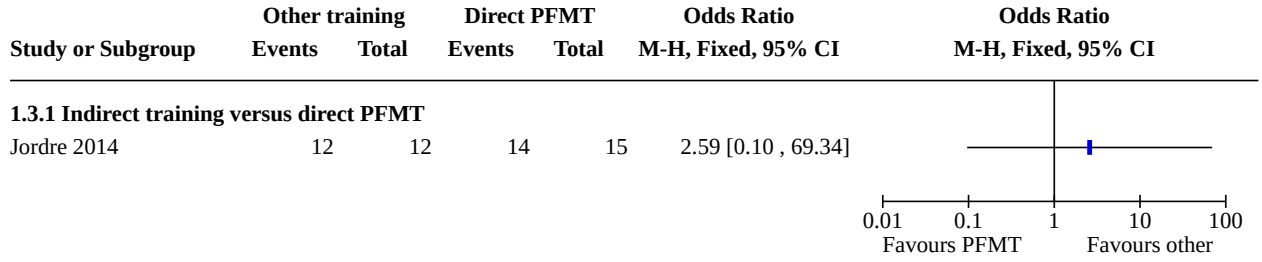
Study or Subgroup	Other training Mean	SD	Total	Direct PFMT Mean	SD	Total	Weight	Std. Mean Difference IV, Fixed, 95% CI
1.1.1 Co-ordinated PFMT versus direct PFMT								
Mushtaq 2019	32.3	6.2	23	41.1	9.8	24	12.3%	-1.05 [-1.66 , -0.44]
Kucukkaya 2021	0.6	2.7	32	5.1	7.1	32	17.6%	-0.83 [-1.34 , -0.32]
Nipa 2020	14.52	16.71	25	29.04	23.94	25	14.1%	-0.69 [-1.26 , -0.12]
Li 2023	4.92	3.67	13	7.31	3.96	16	8.2%	-0.61 [-1.36 , 0.14]
Fani 2024	33.04	11.76	23	31.95	8.48	22	13.5%	0.10 [-0.48 , 0.69]
Konstantinidou 2013	46.67	27.12	30	38.89	29.14	30	17.9%	0.27 [-0.24 , 0.78]
Clark 2008	40.22	6.6	9	37.33	4.3	6	4.2%	0.47 [-0.58 , 1.52]
Rodrigues 2020	7.2	3.6	23	4.6	1.1	23	12.3%	0.96 [0.35 , 1.57]
Subtotal			**178**			**178**	**100.0%**	**-0.22 [-0.44 , -0.01]**
Test for overall effect: Z = 2.02 (P = 0.04)								
Heterogeneity: Chi² = 36.73, df = 7 (P < 0.00001); I² = 81%								
1.1.2 Indirect training versus direct PFMT								
Jordre 2014	122.5	68.2	12	119.8	59.6	15	17.8%	0.04 [-0.72 , 0.80]
Kannan 2022	4.095	3.265	20	3.6	2.84	10	17.8%	0.15 [-0.61 , 0.91]
Toprak 2022	-16.9	18.2	20	-26.5	24.7	20	26.1%	0.43 [-0.19 , 1.06]
Jose-Vaz 2020	9.8	2.3	36	5.1	3.9	37	38.3%	1.45 [0.93 , 1.97]
Subtotal			**88**			**82**	**100.0%**	**0.70 [0.38 , 1.02]**
Test for overall effect: Z = 4.29 (P < 0.0001)								
Heterogeneity: Chi² = 13.55, df = 3 (P = 0.004); I² = 78%								
1.1.3 Combined indirect training with direct PFMT versus direct PFMT								
de Souza Abreu 2017	37.2	28.6	17	52.1	34.3	16	6.7%	-0.46 [-1.15 , 0.23]
Liebergall-Wischnitzer 2009	-83.1	15.1	92	-78.1	17.6	84	36.5%	-0.30 [-0.60 , -0.01]
Jose 2020	4.66	0.61	15	4.8	0.67	15	6.3%	-0.21 [-0.93 , 0.51]
Lausen 2018	11.68	5.29	22	12.56	4.68	27	10.2%	-0.17 [-0.74 , 0.39]
Luginbuehl 2022	7.36	3.932	45	7.01	3.284	47	19.3%	0.10 [-0.31 , 0.51]
Liebergall-Wischnitzer 2005	-83.5606	17.6321	30	-87.5784	8.86973	29	12.3%	0.28 [-0.23 , 0.80]
Marques 2020	7.41	5.24	22	5.24	4.49	21	8.8%	0.44 [-0.17 , 1.04]
Subtotal			**243**			**239**	**100.0%**	**-0.08 [-0.26 , 0.10]**
Test for overall effect: Z = 0.89 (P = 0.37)								
Heterogeneity: Chi² = 9.01, df = 6 (P = 0.17); I² = 33%								
Test for subgroup differences: Chi² = 23.27, df = 2 (P < 0.00001), I² = 91.4%								



Analysis 1.2. Comparison 1: Exercise type: other types versus direct pelvic floor muscle training (PFMT), Outcome 2: Incontinence episodes



Analysis 1.3. Comparison 1: Exercise type: other types versus direct pelvic floor muscle training (PFMT), Outcome 3: Subjective cure/improvement



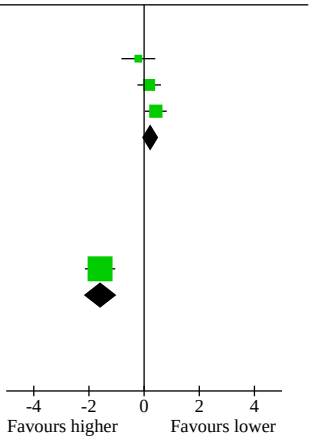
Comparison 2. Exercise dose: higher versus lower

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1 Incontinence quality of life	4		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.1.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)	3	227	Std. Mean Difference (IV, Fixed, 95% CI)	0.22 [-0.04, 0.48]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2.1.2 PFMT more days per week (higher) versus PFMT fewer days per week (lower)	1	68	Std. Mean Difference (IV, Fixed, 95% CI)	-1.60 [-2.15, -1.05]
2.2 Incontinence episodes	5		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
2.2.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)	1	41	Mean Difference (IV, Fixed, 95% CI)	0.68 [-0.39, 1.75]
2.2.2 Maximal PFM contractions (higher) versus sub-maximal PFM contractions (lower)	1	32	Mean Difference (IV, Fixed, 95% CI)	-0.36 [-1.85, 1.13]
2.2.3 PFMT more days per week (higher) versus PFMT fewer days per week (lower)	2	96	Mean Difference (IV, Fixed, 95% CI)	-0.18 [-0.30, -0.07]
2.2.4 PFMT in antigravity body positions (higher) versus PFMT in supine (lower)	1	36	Mean Difference (IV, Fixed, 95% CI)	-0.20 [-0.64, 0.24]
2.3 Subjective cure/improvement	5		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
2.3.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)	3	161	Odds Ratio (M-H, Fixed, 95% CI)	1.36 [0.67, 2.77]
2.3.2 PFMT more days per week (higher) versus PFMT fewer days per week (lower)	2	108	Odds Ratio (M-H, Fixed, 95% CI)	33.00 [4.04, 269.47]
2.4 Satisfaction	1		Odds Ratio (M-H, Fixed, 95% CI)	Totals not selected
2.4.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)	1		Odds Ratio (M-H, Fixed, 95% CI)	Totals not selected

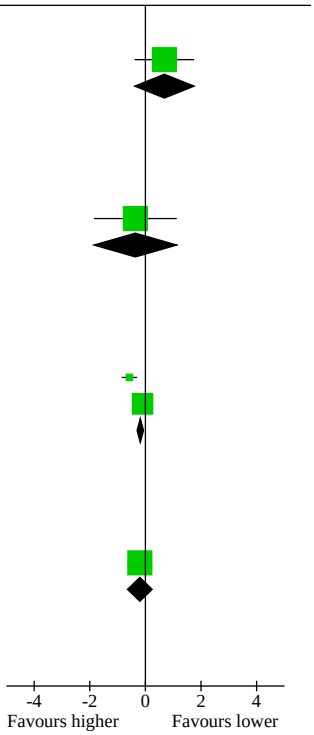
Analysis 2.1. Comparison 2: Exercise dose: higher versus lower, Outcome 1: Incontinence quality of life

Study or Subgroup	Higher dose Mean	SD	Total	Lower dose Mean	SD	Total	Weight	Std. Mean Difference IV, Fixed, 95% CI
2.1.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)								
Orhan 2019	29.999	23.939	20	34.94	22.301	21	18.2%	-0.21 [-0.82 , 0.40]
Kashanian 2011	-62.81	8.28	39	-65.51	18.16	46	37.6%	0.18 [-0.24 , 0.61]
Prudencio 2014	50.2	15.6	50	43.1	17.4	51	44.2%	0.43 [0.03 , 0.82]
Subtotal			**109**			**118**	**100.0%**	**0.22 [-0.04 , 0.48]**
Test for overall effect: Z = 1.64 (P = 0.10)								
Heterogeneity: Chi² = 2.95, df = 2 (P = 0.23); I² = 32%								
2.1.2 PFMT more days per week (higher) versus PFMT fewer days per week (lower)								
Hagovská 2020	3.71	3.68	34	9.47	3.45	34	100.0%	-1.60 [-2.15 , -1.05]
Subtotal			**34**			**34**	**100.0%**	**-1.60 [-2.15 , -1.05]**
Test for overall effect: Z = 5.69 (P < 0.00001)								
Heterogeneity: Not applicable								



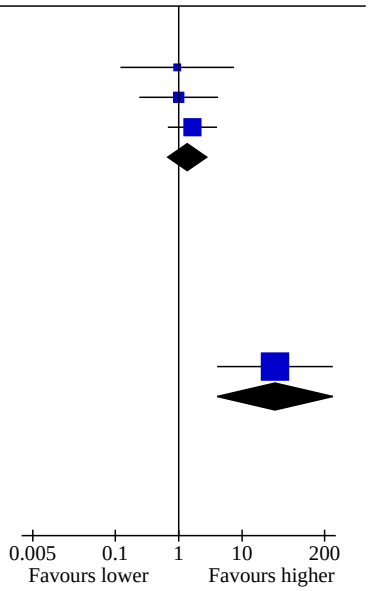
Analysis 2.2. Comparison 2: Exercise dose: higher versus lower, Outcome 2: Incontinence episodes

Study or Subgroup	Higher dose Mean	SD	Total	Lower dose Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
2.2.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)								
Orhan 2019	1.349	2.241	20	0.665	0.988	21	100.0%	0.68 [-0.39 , 1.75]
Subtotal			**20**			**21**	**100.0%**	**0.68 [-0.39 , 1.75]**
Test for overall effect: Z = 1.25 (P = 0.21)								
Heterogeneity: Not applicable								
2.2.2 Maximal PFM contractions (higher) versus sub-maximal PFM contractions (lower)								
Johnson 2001	0.79	1.65	16	1.15	2.55	16	100.0%	-0.36 [-1.85 , 1.13]
Subtotal			**16**			**16**	**100.0%**	**-0.36 [-1.85 , 1.13]**
Test for overall effect: Z = 0.47 (P = 0.64)								
Heterogeneity: Not applicable								
2.2.3 PFMT more days per week (higher) versus PFMT fewer days per week (lower)								
Hagovská 2020	0.3357	0.4343	34	0.9114	0.71	34	17.2%	-0.58 [-0.86 , -0.30]
Borello-France 2008	-0.1	0.21	15	0.002	0.129	13	82.8%	-0.10 [-0.23 , 0.03]
Subtotal			**49**			**47**	**100.0%**	**-0.18 [-0.30 , -0.07]**
Test for overall effect: Z = 3.10 (P = 0.002)								
Heterogeneity: Chi² = 9.12, df = 1 (P = 0.003); I² = 89%								
2.2.4 PFMT in antigravity body positions (higher) versus PFMT in supine (lower)								
Borello-France 2006	-0.7714	0.6857	19	-0.5714	0.6714	17	100.0%	-0.20 [-0.64 , 0.24]
Subtotal			**19**			**17**	**100.0%**	**-0.20 [-0.64 , 0.24]**
Test for overall effect: Z = 0.88 (P = 0.38)								
Heterogeneity: Not applicable								



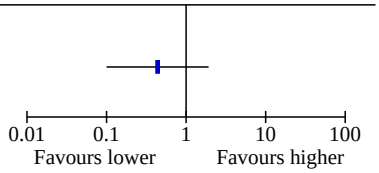
Analysis 2.3. Comparison 2: Exercise dose: higher versus lower, Outcome 3: Subjective cure/improvement

Study or Subgroup	Higher dose Events	Total	Lower dose Events	Total	Weight	Odds Ratio M-H, Fixed, 95% CI
2.3.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)						
Orhan 2019	18	20	19	21	14.1%	0.95 [0.12 , 7.46]
Delgado 2010	15	20	15	20	28.6%	1.00 [0.24 , 4.18]
Wells 1999	19	39	15	41	57.2%	1.65 [0.67 , 4.02]
Subtotal		**79**		**82**	**100.0%**	**1.36 [0.67 , 2.77]**
Total events:	52		49			
Test for overall effect: Z = 0.86 (P = 0.39)						
Heterogeneity: Chi² = 0.47, df = 2 (P = 0.79); I² = 0%						
2.3.2 PFMT more days per week (higher) versus PFMT fewer days per week (lower)						
Sriboonreung 2011	19	19	21	21		Not estimable
Hagovská 2020	33	34	17	34	100.0%	33.00 [4.04 , 269.47]
Subtotal		**53**		**55**	**100.0%**	**33.00 [4.04 , 269.47]**
Total events:	52		38			
Test for overall effect: Z = 3.26 (P = 0.001)						
Heterogeneity: Not applicable						



Analysis 2.4. Comparison 2: Exercise dose: higher versus lower, Outcome 4: Satisfaction

Study or Subgroup	Higher dose Events	Total	Lower dose Events	Total	Odds Ratio M-H, Fixed, 95% CI
2.4.1 PFMT with resistance device (higher) versus PFMT without resistance device (lower)					
Delgado 2010	5	15	8	15	0.44 [0.10 , 1.92]



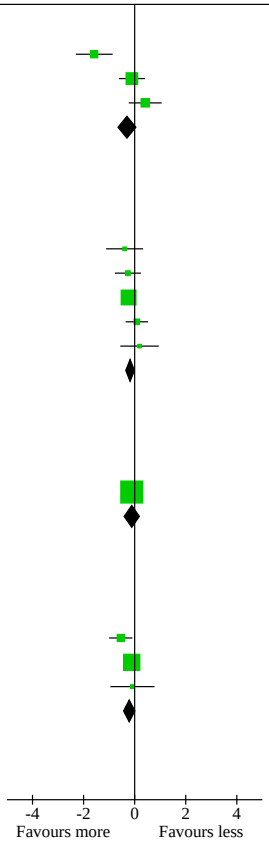
Comparison 3. Exercise intervention delivery: more 'intensive' supervision' versus less 'intensive' supervision

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1 Incontinence quality of life	12		Std. Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.1.1 In-person clinic supervision (more) versus no clinic supervision (less)	3	137	Std. Mean Difference (IV, Fixed, 95% CI)	-0.30 [-0.65, 0.05]
3.1.2 In-person individual supervision versus in-person group supervision	5	544	Std. Mean Difference (IV, Fixed, 95% CI)	-0.18 [-0.35, -0.01]
3.1.3 In-person clinic supervision (more) versus e-health supervision (less)	1	173	Std. Mean Difference (IV, Fixed, 95% CI)	-0.11 [-0.41, 0.19]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
3.1.4 PFMT delivered via technology (more) versus PFMT delivered via written instruction only (less)	3	318	Std. Mean Difference (IV, Fixed, 95% CI)	-0.21 [-0.43, 0.01]
3.2 Incontinence episode frequency	7		Mean Difference (IV, Fixed, 95% CI)	Subtotals only
3.2.1 More clinician contact (more) versus less clinician contact (less)	3	128	Mean Difference (IV, Fixed, 95% CI)	-0.25 [-0.32, -0.17]
3.2.2 In-person individual supervision versus in-person group supervision	3	486	Mean Difference (IV, Fixed, 95% CI)	-0.01 [-0.07, 0.04]
3.2.3 PFMT delivered via technology (more) versus PFMT delivered via written instruction only (less)	1	220	Mean Difference (IV, Fixed, 95% CI)	-0.48 [-0.79, -0.17]
3.3 Subjective cure/improvement	10		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.3.1 In-person clinic supervision (more) versus no clinic supervision (less)	4	175	Odds Ratio (M-H, Fixed, 95% CI)	3.56 [1.61, 7.87]
3.3.2 More clinician contact (more) versus less clinician contact (less)	2	56	Odds Ratio (M-H, Fixed, 95% CI)	35.82 [3.95, 324.74]
3.3.3 In-person individual supervision versus in-person group supervision	1	337	Odds Ratio (M-H, Fixed, 95% CI)	0.88 [0.29, 2.67]
3.3.4 In-person clinic supervision (more) versus e-health supervision (less)	1	263	Odds Ratio (M-H, Fixed, 95% CI)	0.93 [0.51, 1.69]
3.3.5 PFMT delivered via technology (more) versus PFMT delivered via written instruction only (less)	2	239	Odds Ratio (M-H, Fixed, 95% CI)	1.74 [1.00, 3.01]
3.4 Satisfaction	5		Odds Ratio (M-H, Fixed, 95% CI)	Subtotals only
3.4.1 PFMT with clinic visits (more) versus PFMT at home (less)	1	59	Odds Ratio (M-H, Fixed, 95% CI)	1.48 [0.51, 4.33]
3.4.2 PFMT with more clinician contact (more) versus PFMT with less clinician contact (less)	2	113	Odds Ratio (M-H, Fixed, 95% CI)	3.45 [1.57, 7.54]
3.4.3 In-person individual supervision versus in-person group supervision of PFMT	2	397	Odds Ratio (M-H, Fixed, 95% CI)	1.47 [0.78, 2.77]

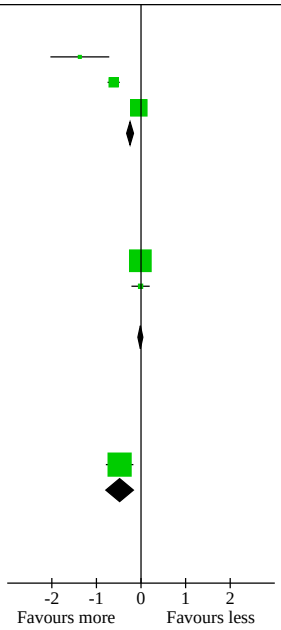
Analysis 3.1. Comparison 3: Exercise intervention delivery: more 'intensive' supervision' versus less 'intensive' supervision, Outcome 1: Incontinence quality of life

Study or Subgroup	More intensive Mean	SD	Total	Less intensive Mean	SD	Total	Weight	Std. Mean Difference IV, Fixed, 95% CI
3.1.1 In-person clinic supervision (more) versus no clinic supervision (less)								
Nagib 2021	2.25	3.81	20	9.2	4.74	20	23.6%	-1.58 [-2.30 , -0.86]
Felicissimo 2010	9.57	5.5	29	10.35	8.41	30	46.9%	-0.11 [-0.62 , 0.40]
Ferla 2022	11	3.147068	18	9.5	3.888769	20	29.5%	0.41 [-0.23 , 1.06]
Subtotal			**67**			**70**	**100.0%**	**-0.30 [-0.65 , 0.05]**
Test for overall effect: Z = 1.70 (P = 0.09)								
Heterogeneity: Chi² = 17.48, df = 2 (P = 0.0002); I² = 89%								
3.1.2 In-person individual supervision versus in-person group supervision								
Pereira 2011	17.6	24.75	15	28.84	30.54	15	5.6%	-0.39 [-1.12 , 0.33]
de Oliveira Camargo 2009	13.3	24.1	30	20	25.7	30	11.2%	-0.27 [-0.77 , 0.24]
Dumoulin 2020	6.37	3.73	171	7.28	3.89	164	62.9%	-0.24 [-0.45 , -0.02]
Figueiredo 2020	24.9	19.9	30	23.1	21.630616	60	15.1%	0.08 [-0.35 , 0.52]
Bech 2021	6.5	4.95	18	5.5	5.4	11	5.1%	0.19 [-0.56 , 0.94]
Subtotal			**264**			**280**	**100.0%**	**-0.18 [-0.35 , -0.01]**
Test for overall effect: Z = 2.06 (P = 0.04)								
Heterogeneity: Chi² = 3.05, df = 4 (P = 0.55); I² = 0%								
3.1.3 In-person clinic supervision (more) versus e-health supervision (less)								
Kastelein 2020	6.4	3.1	79	6.8	3.8	94	100.0%	-0.11 [-0.41 , 0.19]
Subtotal			**79**			**94**	**100.0%**	**-0.11 [-0.41 , 0.19]**
Test for overall effect: Z = 0.75 (P = 0.46)								
Heterogeneity: Not applicable								
3.1.4 PFMT delivered via technology (more) versus PFMT delivered via written instruction only (less)								
Fischer Blosfield 2021	6.26	5.018123	38	9.150513	5.491877	39	23.6%	-0.54 [-1.00 , -0.09]
Sjöström 2013	6.9	3.1	107	7.3	3.9	113	69.9%	-0.11 [-0.38 , 0.15]
Araujo 2020	9.1	6.6	12	9.7	6.6	9	6.5%	-0.09 [-0.95 , 0.78]
Subtotal			**157**			**161**	**100.0%**	**-0.21 [-0.43 , 0.01]**
Test for overall effect: Z = 1.89 (P = 0.06)								
Heterogeneity: Chi² = 2.66, df = 2 (P = 0.26); I² = 25%								
Test for subgroup differences: Chi² = 0.71, df = 3 (P = 0.87), I² = 0%								



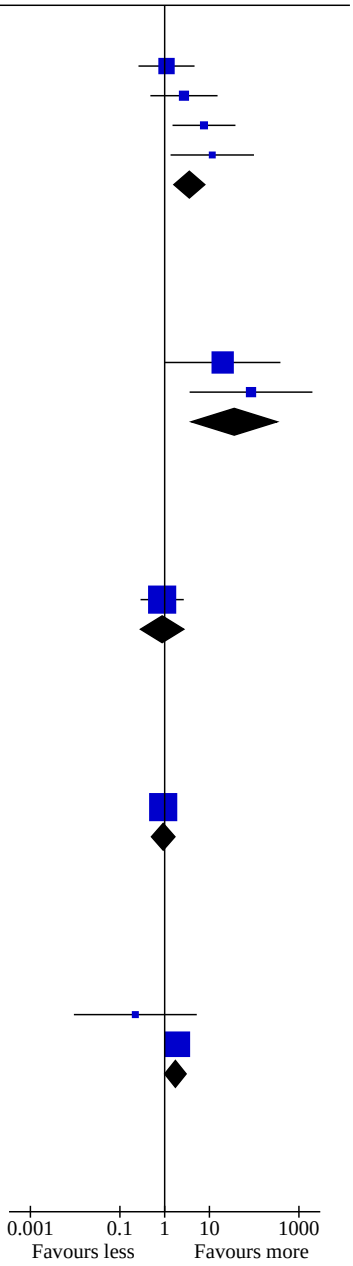
Analysis 3.2. Comparison 3: Exercise intervention delivery: more 'intensive' supervision' versus less 'intensive' supervision, Outcome 2: Incontinence episode frequency

Study or Subgroup	More intensive Mean	SD	Total	Less intensive Mean	SD	Total	Weight	Mean Difference IV, Fixed, 95% CI
3.2.1 More clinician contact (more) versus less clinician contact (less)								
Konstantinidou 2007	0.414	0.4	12	1.786	1	10	1.3%	-1.37 [-2.03 , -0.71]
Fitz 2020	0.086	0.129	28	0.7	0.343	28	31.7%	-0.61 [-0.75 , -0.48]
Fitz 2015	0.08	0.129	25	0.129	0.2	25	67.0%	-0.05 [-0.14 , 0.04]
Subtotal			**65**			**63**	**100.0%**	**-0.25 [-0.32 , -0.17]**
Test for overall effect: Z = 6.30 (P < 0.00001)								
Heterogeneity: Chi² = 56.55, df = 2 (P < 0.00001); I² = 96%								
3.2.2 In-person individual supervision versus in-person group supervision								
de Oliveira Camargo 2009	0.014	0.057	30	0.029	0.15	30	92.7%	-0.02 [-0.07 , 0.04]
Dumoulin 2020	0.76	1.01	171	0.77	0.9	165	7.3%	-0.01 [-0.21 , 0.19]
Figueiredo 2020	0.33	0.5	60	0	0	30		Not estimable
Subtotal			**261**			**225**	**100.0%**	**-0.01 [-0.07 , 0.04]**
Test for overall effect: Z = 0.52 (P = 0.60)								
Heterogeneity: Chi² = 0.00, df = 1 (P = 0.96); I² = 0%								
3.2.3 PFMT delivered via technology (more) versus PFMT delivered via written instruction only (less)								
Sjöström 2013	-1.09	1.3	107	-0.61	1.01	113	100.0%	-0.48 [-0.79 , -0.17]
Subtotal			**107**			**113**	**100.0%**	**-0.48 [-0.79 , -0.17]**
Test for overall effect: Z = 3.05 (P = 0.002)								
Heterogeneity: Not applicable								

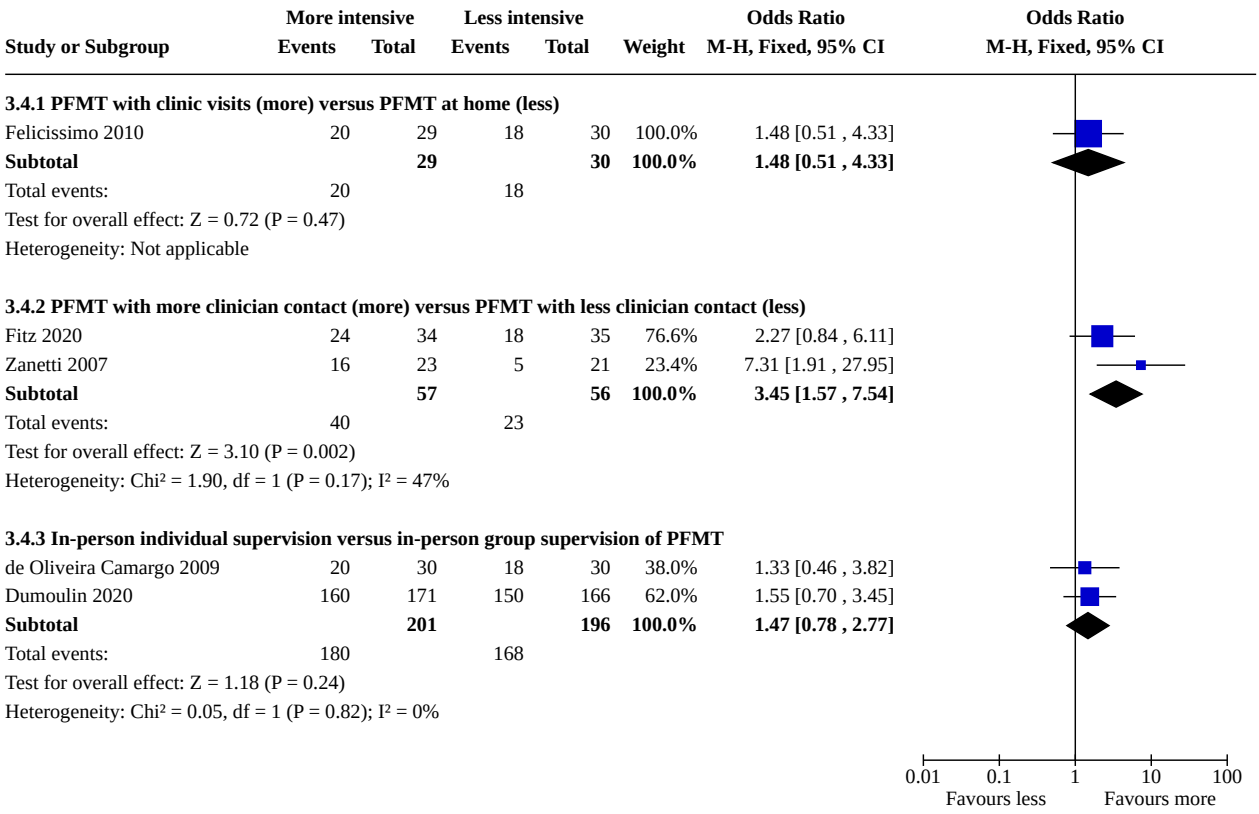


Analysis 3.3. Comparison 3: Exercise intervention delivery: more 'intensive' supervision' versus less 'intensive' supervision, Outcome 3: Subjective cure/improvement

Study or Subgroup	More intensive Events	More intensive Total	Less intensive Events	Less intensive Total	Weight	Odds Ratio M-H, Fixed, 95% CI
3.3.1 In-person clinic supervision (more) versus no clinic supervision (less)						
Tejero 2008	11	16	12	18	50.3%	1.10 [0.26 , 4.65]
Felicissimo 2010	27	29	25	30	24.1%	2.70 [0.48 , 15.19]
Wilson 1987	11	15	4	15	15.2%	7.56 [1.50 , 38.15]
Bø 1990	22	23	19	29	10.4%	11.58 [1.36 , 98.94]
Subtotal		**83**		**92**	**100.0%**	**3.56 [1.61 , 7.87]**
Total events:	71		60			
Test for overall effect: Z = 3.13 (P = 0.002)						
Heterogeneity: Chi² = 4.64, df = 3 (P = 0.20); I² = 35%						
3.3.2 More clinician contact (more) versus less clinician contact (less)						
Ferreira 2012	17	17	11	17	75.4%	19.78 [1.01 , 386.03]
Konstantinidou 2007	12	12	2	10	24.6%	85.00 [3.61 , 2001.33]
Subtotal		**29**		**27**	**100.0%**	**35.82 [3.95 , 324.74]**
Total events:	29		13			
Test for overall effect: Z = 3.18 (P = 0.001)						
Heterogeneity: Chi² = 0.44, df = 1 (P = 0.51); I² = 0%						
3.3.3 In-person individual supervision versus in-person group supervision						
Dumoulin 2020	164	171	160	166	100.0%	0.88 [0.29 , 2.67]
Subtotal		**171**		**166**	**100.0%**	**0.88 [0.29 , 2.67]**
Total events:	164		160			
Test for overall effect: Z = 0.23 (P = 0.82)						
Heterogeneity: Not applicable						
3.3.4 In-person clinic supervision (more) versus e-health supervision (less)						
Kastelein 2020	103	130	107	133	100.0%	0.93 [0.51 , 1.69]
Subtotal		**130**		**133**	**100.0%**	**0.93 [0.51 , 1.69]**
Total events:	103		107			
Test for overall effect: Z = 0.25 (P = 0.81)						
Heterogeneity: Not applicable						
3.3.5 PFMT delivered via technology (more) versus PFMT delivered via written instruction only (less)						
Araujo 2020	10	12	9	9	10.8%	0.22 [0.01 , 5.21]
Sjöström 2013	43	105	30	113	89.2%	1.92 [1.08 , 3.40]
Subtotal		**117**		**122**	**100.0%**	**1.74 [1.00 , 3.01]**
Total events:	53		39			
Test for overall effect: Z = 1.96 (P = 0.05)						
Heterogeneity: Chi² = 1.75, df = 1 (P = 0.19); I² = 43%						
Test for subgroup differences: Chi² = 15.87, df = 4 (P = 0.003), I² = 74.8%						



Analysis 3.4. Comparison 3: Exercise intervention delivery: more 'intensive' supervision' versus less 'intensive' supervision, Outcome 4: Satisfaction



ADDITIONAL TABLES

Table 1. Categorising PFMT interventions that 'mixed' exercise type, dose, and delivery method

Study	Intervention	Allocated to	Possible 'confounder'	Reason
Bø 1990	**More**: individual supervision and weekly group supervision for 6 months **Less**: single clinic visit for individual supervision	Comparison 3.1: in-person clinic (more) versus no clinic supervision (less)	Group versus individual supervision (Comparison 3.3)	Trialist's intention was to compare "two different degrees" of PFMT. We interpreted this as 2 different degrees of supervision (more versus less).
Chiu 2018	**Co-ordinated training**: co-ordinated training with 6 contacts (50–60 minutes each, in weeks 1, 2, 4, 6, 8, 10) **Direct PFMT**: direct PFMT, with 2 clinician contacts (50–60 minutes each, weeks 1 and 6)	Comparison 1.1: co-ordinated training versus direct PFMT	More versus less supervision (Comparison 3)	Trialist's intention was to compare abdominal muscle training versus conventional training.
de Oliveira Camargo 2009	**More**: group exercise 45 minutes twice per week for 12 weeks; exercise variables suggest higher dose	Comparison 3.3: in-person group supervision (usually more) versus in-person individual	Higher versus lower exercise dose (Comparison 2)	Trialist's intention was to compare group versus individual delivery.

Table 1. Categorising PFMT interventions that 'mixed' exercise type, dose, and delivery method *(Continued)*

	Less: individual supervision, 30 minutes, twice per week for 12 weeks; exercise variables suggest lower dose	supervision (usually less)		
Lausen 2018	**Direct PFMT + indirect training**: individual PFMT and group Pilates (60 minutes once per week, 6 weeks) **Direct PFMT**: in-person, 3–6 sessions over 3–6 months	Comparison 1.3: direct PFMT with indirect training versus direct PFMT	More versus less supervision (Comparison 3.2) and Group versus individual supervision (Comparison 3)	Trialist's intention was to assess the effectiveness of the additional Pilates exercise as an adjunct to usual physiotherapy care.
Liebergall-Wischnitzer 2005	**Direct PFMT + indirect training**: individual, 45 minutes, once per week for 12 weeks **Direct PFMT**: groups of 1–5 women, 30 minutes, 6 times over 12 weeks	Comparison 1.3 Direct PFMT with indirect training versus direct PFMT	More versus less supervision (Comparison 3.2) and Group versus individual supervision (Comparison 3)	Trialist's intention was to assess efficacy of the Paula method (direct and indirect training).
Liebergall-Wischnitzer 2009	**Direct PFMT + indirect training**: individual, 45 minutes, once per week for 12 weeks **Direct PFMT**: groups of 1–5 women, 30 minutes, 6 times over 12 weeks	Comparison 1.3 Direct PFMT with indirect training versus direct PFMT	More versus less supervision (Comparison 3.2) and Group versus individual supervision (Comparison 3)	Trialist's intention was to assess effectiveness of the Paula method (direct and indirect training).
Nagib 2021	**More**: supervised game therapy exercises, and home exercise programme **Less**: home exercise programme only	Comparison 3.1 In-person clinic (more) versus no clinic supervision (less)	Higher versus lower exercise dose (Comparison 2)	Trialist's intention was to compare a supervised and an unsupervised protocol.
Marques 2020	**Direct PFMT + indirect training**: individual, 60 minutes, twice per week, 10 weeks **Direct PFMT**: individual, 40 minutes, twice per week, 10 weeks	Comparison 1.3 Direct PFMT with indirect training vs direct PFMT	More versus less supervision (Comparison 3)	Trialist's intention was to assess effect of combined direct and indirect training.
Suraj 2016	**Co-ordinated training**: co-ordinated training with 1 contact per week for 3 months **Direct PFMT:** direct PFMT with 1 clinician contact	Comparison 1.1 Co-ordinated training versus direct PFMT	More versus less supervision (Comparison 3)	Trialist's intention was to assess impact of co-ordinated training

PFMT: pelvic floor muscle training.

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description

Study	Delivery (CERT 2, 3, 4, 12)		Exercise (CERT 1, 7, 8, 9, 14, 15)		As planned (CERT 5, 16)		Other components (CERT 6, 10)	Adverse events (CERT 11)
	Direct	Other	Direct	Other	Direct	Other	Both (must be the same for eligibility)	Both
Subgroup 1. Direct PFMT versus co-ordinated PFMT								
Clark 2008	**Provider:** physiotherapist **Location:** clinic for the first 6 weeks, home PFMT for the next 2 weeks **Individual or group:** individual (clinic and home) **Supervision:** 6 sessions, 60-min duration, 6 weeks Note: pre-intervention, each group participated in 2 training sessions over 2 weeks. Based on exercise group as-	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation; each participant received a teaching session **Exercise teaching prompts/cues:** NI **Exercise variables:** individualised, isolated VPFMC (number of reps, hold times and rest times) according to results of PFM assessment (PERFECT scheme). Started in supine, progressed to sitting, standing, and functional activities **Training variables:** unknown sets per day, daily, 8 weeks **Training principles:** progression: increasing number of reps by ≥ 2 for fast- and slow-twitch exercises; increasing duration of VPFMC by ≥ 2 sec. Maximum rep up to 30; maximum hold time up to 10 sec	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same and co-activation of TrA **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** exercise daily log (for home exercises), reviewed weekly by the therapist; results not reported	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** aetiology and causes of SUI, PFM function **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Co-ordinated:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

		signment, they were trained to either contract or relax the TrA during a VPFMC using ultrasound feedback						
Chiu 2018	**Provider:** registered nurse (PhD) **Location:** citizen activity centre, and home **Individual or group:** NI **Supervision:** 2 sessions, 50–60 minutes' duration, weeks 1 and 6	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** 6 sessions, 50–60 minutes' duration, weeks 1, 2, 4, 6, 8, 10	**Correct VPFMC confirmed:** no **Exercise teaching prompts/cues:** asked not to perform excessive abdominal muscle contractions when doing PFMT **Exercise variables:** VPFMC over 5–10 seconds, ≥ 10 reps; sitting, lying, standing, during activities of daily living **Training variables:** 3–5 times per day (30–50 contractions), 12 weeks **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** written instructions **Exercise variables:** diaphragmatic breathing, TrA and PFM activation — tonic activation, muscle strengthening, functional expiratory patterns, impact activities **Training variables:** NI **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** verbal instructions about PFM anatomy and physiological mechanisms of continence **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** bladder hygiene **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Co-ordinated:** NI
Fani 2024	**Provider:** physiotherapist **Location:** clinic and home	**Provider:** same **Location:** same **Individual or group:** same	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/cues:** NI **Exercise variables:** max VPFMC: 4 sec hold/4 sec relax, 8 reps. Progress to 5 sec	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/cues:** NI **Exercise variables:** trunk-stabilisation based on Sapsford's (2004) pro-	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** yes **Lifestyle advice:** NI **Frequency strategies:** NI	**Direct:** NI **Co-ordinated:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Individual or group: individual **Supervision:** in-person, 1 per week	**Supervision:** same	hold/5 sec relax, 8 reps in week 8. Submax VPFMC: 10 sec hold/10 sec relax, 12 reps. Progress to 20 sec hold/20 sec relax, 12 reps in week 8 **Training variables**: 2–3 sessions per day, daily over 8 weeks, except in weeks 7–8 (twice a day) **Training principles**: crook lying: weeks 1, 4 and 7; sitting: weeks 2 and 5; standing: weeks 3, 6, and 8	tocol, incorporating VPFMC with diaphragmatic breathing or abdominal muscle contraction (or both). Generally 5–6 reps, varied hold/relax times depending on the exercise **Training variables:** 2–5 sessions per day, daily over 8 weeks **Training principles:** variable training positions including crook lying, standing, walking, functional activities			**Urgency strategies:** NI **General exercises:** no **Exercise behaviour support:** written exercises	
Kamarudin 2021	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** individual **Supervision:** 1 in-person direct contact at clinic with regular follow-up (not specified)	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed**: intravaginal EMG **Exercise teaching prompts/cues:** NI **Exercise variables:** slow contractions: 1–10 sec hold/10 sec relax, 20 reps. Progress to 20 sec hold; Fast contractions: 1 sec hold/1 sec relax, 30 reps; Progress to 60 reps slow contractions and 90 reps fast contractions in session 3 **Training variables:** 3 sessions per day, length of programme NI **Training principles:** tailored according to woman's ability to contract muscles	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** NI **Exercise variables:** same plus Hyacinth (Salat steps), repetition of 4 movements that mimic Muslim prayer steps. Plus flexibility **Training variables:** same plus Salat steps 3 times a day **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** exercise diary, compliance defined as "fulfilling > 75% of the prescribed exercise" Yes: 63/79 (79.7%) No: 16/79 (20.3%)	**Intervention fidelity:** NI **Exercise adherence:** same Yes: 57/80 (71.3%) No: 23/80 (28.8%)	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** exercise diary	**Direct:** NI **Co-ordinated:** NI
Khong 2016	**Provider:** physiotherapist	**Provider:** same	**Correct VPFMC confirmed**: NI	**Correct VPFMC confirmed:** same	**Intervention fidelity:** NI	**Intervention fidelity:** same	**Education:** NI **Lifestyle advice:** NI	**Direct:** NI **Co-ordinated:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Location: in person? clinic and home? **Individual or group:** individual? **Supervision:** NI	**Location:** same **Individual or group:** same **Supervision:** same	**Exercise teaching prompts/cues:** NI **Exercise variables:** "pelvic floor exercises" and "slow moderate exercises adapted from Salat" (Muslim prayer steps) **Training variables**: 2 months? **Training principles**: "standardised"	**Exercise teaching prompts/cues:** same **Exercise variables:** "pelvic floor exercises" **Training variables:** same **Training principles:** same	**Exercise adherence:** NI	**Exercise adherence:** same	**Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	
Konstantinidou 2013	**Provider:** physiotherapist **Location:** urology outpatient clinic; home? **Individual or group:** NI **Supervision:** NI	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Exercise variables:** NI **Training variables:** NI, PFMT monotherapy, 3 months **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** NI **Training variables:** NI, TrA + PFMT, 3 months **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Co-ordinated:** NI
Kucukkaya 2021	**Provider:** researchers **Location:** outpatient clinic and home **Individual or group:** individual **Supervision:** 1 in-person di-	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** taught by researchers and provided with a brochure provided **Exercise variables:** empty bladder prior to exercise. Supine or sitting position, 10 sec hold, 10 reps	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same and combined TrA training **Training variables:** same **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** follow-up chart (3 times a day); results not reported	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** yes **Lifestyle advice:** the brochure included healthy lifestyle behaviours **Frequency strategies:** NI **Urgency strategies:** NI	**Direct:** NI **Co-ordinated:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	rect contact clinic visit followed by telephone motivation once a week; follow-up clinic visits in weeks 4 and 8		**Training variables:** 3 sets of 10 contractions 3 times daily for 8 weeks **Training principles:** NI				**General exercises:** NI **Exercise behaviour support:** NI	
Li 2023	**Provider:** physiotherapist **Location:** outpatient clinic? and home **Individual or group:** individual **Supervision:** in-person, 2 per week, 8 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/cues:** NI other than participants were instructed to contract PFM correctly **Exercise variables:** VPFMC 6–8 sec hold, followed by 3–10 fast contractions, 8–12 reps; 6–8 sec rest; supine, sitting and standing positions **Training variables:** 3 sets, 60 sec rest between sets, 20-min in-person session, 2 per week, 8 weeks; home PFMT was also encouraged (no further details) **Training principles:** all sessions were individualised (no further information)	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same during direct PFMT; during resistance exercises, participants instructed to contract PFM before each movement **Exercise variables:** same. In addition, resistance exercise of other muscle groups (40–85% 1-rep max); 4 exercises for upper and lower extremities; aerobic exercises (cyclo-ergometer, 40–59% heart rate reserve) **Training variables:** same. For the additional resistance exercises: 8–12 reps, 1-min rest, 2–3 sets; 20–30 min aerobic exercises per session; each in-person training session ranged from 60 to 90 min; 2 per week, 8 weeks; home PFMT was also encouraged (no further details)	**Intervention fidelity:** NI **Exercise adherence:** clinic visits (the number of sessions attended out of 16) Attendance was 100%	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** pelvic floor anatomy and function, principles of correct PFM contraction **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** no adverse events reported **Combined:** same

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

				Training principles: same. Intensity of additional resistance and aerobic exercises monitored and adjusted on an individual basis				
Mushtaq 2019	**Provider:** physiotherapist **Location:** clinic **Individual or group:** NI **Supervision:** in-person, 60 min, 2 per week, 6 weeks	**Provider:** same **Location:** same **Individual or group:** NI **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/cues:** taught how to contract PFM **Exercise variables:** weeks 1–2: 15–20 reps, 2 sets, 30–60 contractions daily; weeks 3–4: 30–40 reps, 2 sets, 60–120 contractions daily; weeks 5–6: 40–50 reps, 3 sets, 120–150 contractions daily **Training variables:** 60 min, 12 sessions (2 per week, 6 weeks) **Training principles:** weeks 1–2: lying and sitting; weeks 3–6: lying and sitting and standing	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** same **Exercise variables:** Pilates exercises to activate hip adductors, TrA and gluteals, while simultaneously doing max VPFMC. Week 1: butterfly: 3–5 sec hold, 5 pulses, 5 reps, 3 sets; week 2: butterfly/lunge: 5–8/ 3–5 sec hold, 5 pulses, 5 reps, 2 sets; week 3: butterfly/lunge/squat: 8–10/ 5–8/ 3–5 sec hold, 5–10 pulses, 5–10 reps, 2 sets; week 4: butterfly/lunge/squat: 10/10/ 5–8 sec hold, 8–10 pulses, 8–10 reps, 2 sets; week 5: butterfly/lunge/squat: 10 sec hold, 10–12 pulses, 10–12 reps, 2 sets; week 6: butterfly/lunge/squat: 10 sec hold, 10–15 pulses, 10–12 reps, 2 sets **Training variables:** same **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Combined:** NI
Nipa 2020	**Provider:** physiotherapist	**Provider:** same	**Correct VPFMC confirmed:** NI	**Correct VPFMC confirmed:** same	**Intervention fidelity:** NI	**Intervention fidelity:** same	**Education:** NI	**Direct:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Location: outpatient clinic and home **Individual or group:** individual **Supervision:** once per month for 12 weeks	**Location:** same **Individual or group:** same **Supervision:** same	**Exercise teaching prompts/cues:** NI **Exercise variables:** 4 sec hold, 8–12 contractions, in supine, sitting, kneeling and standing **Training variables:** 3 times a day, 12 weeks **Training principles:** increased up to 30–40 sec hold, and 20 contractions	**Exercise teaching prompts/cues:** instructed to "imagine that they were trying to discontinue urine flow and contract to prevent passing gas" **Exercise variables:** same + core exercises **Training variables:** same + TrA exercises (TrA contraction with leg slides and leg lifts in supine), 10–20 reps each leg, 2–3 sets, 30–60 sec rest between sets, 2 sessions per day **Training principles:** same, progression NI for TrA exercises	**Exercise adherence:** NI	**Exercise adherence:** same	**Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** telephone calls, feasible appointments, and counselling of family members each week to encourage compliance	**Co-ordinated:** NI
Rodrigues 2020	**Provider:** NI **Location:** NI **Individual or group:** group (4 women) **Supervision:** in-person, 12 sessions (NI how many weeks)	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** presumably yes (vaginal palpation and manometric assessment at baseline) **Exercise teaching prompts/cues:** **Exercise variables:** 8 reps, 3 sets, lying and sitting; 10 reps, 3 sets, sitting or kneeling (or both) positions; 12 reps, 3 sets, kneeling or standing (or both); 1 min rest between sets **Training variables:** 12 sessions (NI how many weeks, how many per week) **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same but participants were instructed to perform VPFMC every expiration **Exercise variables:** same, but practised on reformer, cadilac, chair, and mat **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** warming up and stretching **Exercise behaviour support:** NI	**Direct:** NI **Co-ordinated:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

Savage 2005	**Provider:** physiotherapist **Location:** physiotherapy outpatient clinic and home **Individual or group:** individual **Supervision:** 30–45 min, 6 in-person sessions over 12 weeks	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/cues:** yes, taught to perform VPFMC **Exercise variables:** max VPFMC (fast contractions): 1–2 sec hold ('fast' contractions); submax VPFMC (slow contractions): hold while breathing; staged contractions: gradually tighten PFM to max, then release slowly. Contractions taught in different positions **Training variables:** practice PFMT several times per day **Training principles:** At each review, new goals set for the following week (i.e. number of reps, length of hold, rest time, sets per day)	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** NI **Exercise variables:** lumbopelvic stability training using a modified Pilates method. Stage 1: co-contraction of deep abdominal and PFM, during exhalation. Stage 2: co-contraction in antigravity positions. Stage 3: low load applied through limb movement patterns and during activities of daily living. **Training variables:** 30–45 min, 6 physiotherapy sessions, 12 weeks. At home, a series of the enjoyable or challenging exercises for 10–15 min at least every other day **Training principles:** performed in different positions progressing to antigravity positions	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Education:** anatomy and function of the PFM and bladder with the use of models and pictures **Lifestyle advice:** instructed how to use a similar co-contraction with breathing during activities of daily living and in situations which cause bladder leakage **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** encouraged to go on with their usual activities or exercises **Exercise behaviour support:** NI	**Direct:** NI **Co-ordinated:** NI
Suraj 2016	**Provider:** NI **Location:** clinic and home **Individual or group:** NI	**Provider:** NI **Location:** same **Individual or group:** NI **Supervision:**	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Exercise variables:** NI. PFMT alone **Training variables:**	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Exercise variables:** Tanzberger approach included PFMT, diaphrag-	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** education on PFMT and ergonomics modification in home and work place	**Direct:** NI **Co-ordinated:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Supervision: 1 session, duration NI	1 per week for 3 months	12 weeks **Training principles:** NI	matic breathing, bridging, pelvic rotation, static abdominal exercise. Progressed to dynamic abdominal exercise and synchronisation of PFMT with activities of daily living **Training variables:** once a week, 3 months **Training principles:** progressed each week			**Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** only in PFMT and Tanzberger approach group **Exercise behaviour support:** NI	
Subgroup 2. Direct PFMT versus indirect PFMT								
Jordre 2014	**Provider:** physiotherapist (> 10 years' experience) or a student (Doctor of Physiotherapy) trained and supervised by the physiotherapist **Location:** clinic and home **Individual or group:** individual **Supervision:** 1 per week, 6 weeks; 4 in-	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** no **Exercise teaching prompts/cues:** contract PFM with a squeeze and lift, up and in as if attempting to stop urine flow midstream. Individualised verbal cues provided with additional explanation as needed. The PFMT group were told that VPFMC are often performed incorrectly, and were provided of behaviour to avoid (e.g. bearing down, pushing). Practice stopping urine flow when on the toilet before first attempting exercise protocol, for the purposes of finding and feeling the PFM **Exercise variables:** 1. 5 sec hold/5 sec rest, 20 reps, 1	**Correct VPFMC confirmed:** no **Exercise teaching prompts/cues:** NI **Exercise variables:** 1. hip external and internal rotation with diaphragmatic breathing, 10 breaths; 2. hip external rotation with green resistance band, 5 sec hold/5 sec rest, 10 reps; 3. hip internal rotation/adduction, squeezing a 9" soft ball, 5 sec hold/5 sec rest, 10 reps **Training variables:** same **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** PFM anatomy, basic bladder health information, constipation, and avoiding caffeine **Lifestyle advice:** NI **Frequency strategies:** normal voiding frequency **Urgency strategies:** importance of hydration **General exercises:** NI	**Direct:** NI **Indirect:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	person, 4 by phone		set; 2. 20 quick flicks hold 1–2 sec, 1 set **Training variables:** approximately 5 min, twice per day **Training principles:** NI				**Exercise behaviour support:** NI	
Jose-Vaz 2020	**Provider:** trained physiotherapists **Location:** clinic and home? **Individual or group:** group (2–3 women) **Supervision:** 50 min, 2 per week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Exercise variables:** close to max VPFMC: 6 sec hold, 8–12 reps with 3–4 contractions "added on top" **Training variables:** 3 sets per group session, 50 min twice per week, 12 weeks; unclear if home PFMT programme **Training principles:** progression of repetitions (8 in weeks 1–4, 10 in weeks 5–8, 12 in weeks 9–12) and body position (lying, to sitting, to standing). Fast contractions progress from 3 to 4	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** NI; instructed in abdominal hypopressive technique (AHT) in which PFM activation believed to occur with diaphragmatic aspiration (i.e. breath-hold with full ribcage expansion) **Exercise variables:** 8–12 reps, 3 sets, in different body and arm positions; 3 min interval between sets **Training variables:** 50 min twice per week, 12 weeks; not clear if home PFMT programme **Training principles:** progression of repetitions (8 in weeks 1–4, 10 in weeks 5–8, 12 in weeks 9–12) and body position (lying, to sitting, to kneeling and standing)	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Indirect:** NI
Kamel 2011	**Provider:** therapist **Location:** physiotherapy outpatient clinic and home	**Provider:** same **Location:** same	**Correct VPFMC confirmed:** perineal palpation **Exercise teaching prompts/cues:** verbal instruction	**Correct VPFMC confirmed:** no **Exercise teaching prompts/cues:** verbal instruction	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Education:** appropriate way of doing exercises **Lifestyle advice:** amount and timing of	**Direct:** NI **Indirect:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Individual or group: NI **Supervision:** in-person, 3 per week, 12 weeks	**Individual or group:** same **Supervision:** same	**Exercise variables:** pubovaginalis: 10 sec hold/20 sec rest, 15 reps, rest for 5 min. Puborectalis: 10 sec hold/20 sec rest, 15 reps, rest for 5 min. Pubococcygeus: 10 sec hold/20 sec rest, 15 reps **Training variables:** 3 sessions/week, 12 weeks. Home training not specified **Training principles**: NI	**Exercise variables:** no (indirect PFMT). TrA and internal oblique muscle exercises **Training variables:** same **Training principles:** no			fluid intake per day, voiding and dietary modification **Frequency strategies:** voiding frequency **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	
Kannan 2022	**Provider:** perineal rehabilitation specialist (> 5 years' experience) **Location:** elderly care centre and home **Individual or group:** group **Supervision:** 45–60 min, 1 per week, 4 weeks	**Provider:** yoga group: certified yoga trainer (500 hours of yoga training); Pilates group: Pilates trainer (> 10 years' experience) **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed**: NI **Exercise teaching prompts/cues: depending on exercise "**contract the urethra", "control the bowel action (or the passage of wind)", "contract the urethral orifice, control the bowel action, and draw the vagina upwards" **Exercise variables:** 8 contractions performed for each of the 3 PFM exercises (24 in total per session); 5–6 sec hold/10 sec rest **Training variables**: supervised, group classes once per weeks, 45–60 min per session, 4 weeks and then unsupervised, home, CD-guided exercises, 30–45 min, 5 per week, 8 weeks	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** **Exercise variables:** the Virabhadrasana and Parsvakonasana poses (squeezing the heels toward the midline, which creates a lifting sensation in the PFM) in addition to the hatha yoga style, 8 postures: Tadasana, Utkatasana, Trikonasana, Malasana, Viparita Karani Variation, Salamba Setu Bandhasana, Supta Baddha Konasana and Savasana (yoga group); Pilates exercises targeting PFM and core muscles included Pilates breathing, knee sways, heel slides, pelvic clock, coccyx curl, pelvic lift, roll down, leg	**Intervention fidelity:** NI **Exercise adherence:** clinic visits and diary for home exercises Adherence of the 3 groups to the supervised sessions was 100%; adherence of the 3 groups to the unsupervised home exercise sessions was 90%; results	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** weekly telephone calls to optimise adherence to home exercise; all participants received a CD that contained videos, a booklet with	**Direct:** NI **Indirect:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

			Training principles: side lying, supine, prone or kneeling on all fours	springs, circles, single leg stretch, scissors, spinal stretch, and swan prep **Training variables:** same **Training principles:** same	not reported by group		photos and instructions	
Manfio Marroni 2017	**Provider:** physiotherapist **Location:** clinic **Individual or group:** group **Supervision:** 60 min, 1 per week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** manual vaginal examination **Exercise teaching prompts/cues:** yes **Exercise variables:** fast fibres: 10 reps, 3 sets, 20 sec interval between sets. Slow fibres: 10 sustained contractions, 3 sets, 20 sec interval between sets. At least 9 exercise series were performed **Training variables:** 60 min, once a week, 12 weeks **Training principles:** degree of difficulty varied according to the patient's position: supine, side lying, prone, sitting and standing	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** yes **Exercise variables:** Mat Pilates group: 10 reps of each posture – diaphragm breathing, pelvic mobilisation, knee stretch hound; spine stretch forward, the hundred, single leg stretch, double straight leg stretch, 1 leg up-down, side kicks: front and back, side kicks: up and down, criss cross, bridging, leg raise, hip circles, modified press ups, rolling-over, swimming, saw **Training variables:** same **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Combined:** NI
Saleem 2022	**Provider:** NI **Location:** hospital outpatient and home **Individual or group:** NI	**Provider:** same **Location:** same **Individual or group:** NI **Supervision:** NI	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** yes (at baseline). No further details provided **Exercise variables:** 6 weeks	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** Pilates exercises, no description provided	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** **Lifestyle advice:** yes **Frequency strategies:** no **Urgency strategies:** no	**Direct:** NI **Combined:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Supervision: NI		**Training variables:** standard PFMT **Training principles:** NI	**Training principles:** NI			**General exercises:** no **Exercise behaviour support:** no	
Toprak 2022	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** individual **Supervision:** 1 in-person contact at first visit	**Provider:** Same **Location:** Same **Individual or group:** individual **Supervision:** same	**Correct VPFMC confirmed:** vaginal digital palpation **Exercise teaching prompts/cues:** asked to imagine stopping the flow of urine. Abdominal region: no movement, no contraction. Pelvic region: PFM contraction **Exercise variables: m**ax VPFMC 5–10 sec hold/ 5–10 sec relax, 30 reps. Participants counted from 1 to 10 aloud to prevent them from holding their breath or forming abnormal breathing patterns **Training variables:** 1 set per day, 6 weeks **Training principles:** NI	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** breathe through nose; imagine the abdominopelvic cavity as a balloon that inflates when inhaling (while the pelvis tilts anteriorly). When exhaling, return to original position without contracting PFM or abdominals, imagine the balloon deflating. 1 hand placed on the abdomen at umbilicus level and the other on the pubic symphysis **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Education:** purpose of programme, relevant anatomy (PFM or diaphragm and abdominal wall) **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Indirect:** NI
Subgroup 3. Direct PFMT versus direct plus indirect PFMT								
de Souza Abreu 2017	**Provider:** physiotherapist with training in motor control exercises **Location:** public gynaecological care ser-	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** same	**Correct VPFMC confirmed:** vaginal digital examination, once a month, by the same physiotherapist **Exercise teaching prompts/cues:** NI **Exercise variables:** 5 sec hold/5 sec, 10 reps; 2 sec hold/2 sec recovery, 20 reps; 1 sec hold/ 1 sec recovery,	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** NI **Exercise variables:** same **Training variables:** NI **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI	**Direct:** not clear, but seems there were none **Combined:** not clear, but seems there were none

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	vice and home **Individual or group:** individual **Supervision:** 30 min, 2 per week, 5 weeks		20 reps; 10 sec hold/10 sec recovery, 5 reps followed by 5 reps of strong contractions together with a cough, 1 min intervals between each set **Training variables:** 30 min, 2 per week for 5 weeks, totalling 10 sessions **Training principles:** NI				**General exercises:** NI **Exercise behaviour support:** NI	
Jose 2020	**Provider:** NI **Location:** clinic and home **Individual or group:** NI **Supervision:** NI	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Exercise variables:** 3–5 sec hold/3–5 relax, 10 reps, supine **Training variables:** 3 sets daily for 8 weeks **Training principles:** NI	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Exercise variables:** same direct PFMT protocol, followed by the 'Pallof press' using a resistance band. Stand perpendicular to the resistance band with the band centred on the chest. Push the band out straight in front of the body, keeping the body straight; 3 sec hold, then return band to chest, 10 reps each side **Training variables:** same direct PFMT protocol, with 3 sets daily for 8 weeks. **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Combined:** NI
Lausen 2018	**Provider:** physiotherapist **Location:** clinic and home	**Provider:** physiotherapist specialist in Pilates	**Correct VPFMC confirmed:** vaginal digital palpation **Exercise teaching prompts/cues:** NI **Exercise variables:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** NI **Exercise variables:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** anatomy and physiology of lower urinary tract and pelvic floor	**Direct:** NI **Combined:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

	Individual or group: individual **Supervision:** in-person, 3–6 sessions over 3–6 months Note: outcome measured after treatment and 5 months after randomisation. It is not clear from the trial report if the data in tables is end of treatment or 5 months.	**Location:** same **Individual or group:** individual PFMT and group Pilates classes (6–8 women) **Supervision:** 60 min, 1 per week, 6 weeks	**Training variables:** NI **Training principles:** NI	**Training variables:** additional progressive modified Pilates (vertical) and mat work relaxation **Training principles:** NI			**Lifestyle advice:** caffeine reduction for women with overactive bladder and unspecified lifestyle advice **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** motivation from physiotherapist	
Lieber-gall-Wischnitzer 2005	**Provider:** 2 physiotherapists **Location:** gynaecological clinic and home **Individual or group:** group (1–5 women) **Supervision:** 30 min, 6 sessions over 12 weeks	**Provider:** 3 registered instructors **Location:** same **Individual or group:** individual **Supervision:** 45 min, 1 per week, 12 weeks	**Correct VPFMC confirmed:** vaginal digital palpation and perineometry **Exercise variables:** NI **Training variables:** 30 min, weekly for 4 weeks followed by 2 more sessions 4 weeks apart. Daily practice daily at home for 15 min **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** contract and relax the pubococcygeal muscles (front sphincter), anal sphincter, eye and eyelids, lips and fingers (press all fingers of both hands to thumb and hold) **Exercise variables:** pubococcygeal muscles in supine, knees bent up to chest (gradually); anal sphincter (regular rhythm), eye and eyelid,	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** NI **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** NI **Combined:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

				crook lying; mouth, standing; fingers, sitting **Training variables:** 45 min, 1 per week, 12 weeks. Daily practice at home for 45 min **Training principles:** NI				
Lieber-gall-Wischnitzer 2009	**Provider:** 10 physiotherapists **Location:** clinic and home **Individual or group:** group (1–10 women) **Supervision:** 30 min, 6 sessions over 12 weeks	**Provider:** 3 registered instructors in the Paula method **Location:** same **Individual or group:** individual **Supervision:** 45 min, 1 per week, 12 weeks	**Correct VPFMC confirmed:** no **Exercise teaching prompts/cues:** 1. identify anal sphincter/ feel anus, try to raise it from chair (without contracting surrounding muscles); 2. identify levator ani try to raise vagina from chair (without contracting surrounding muscles); 3. contract levator ani; 4. contract anal sphincter **Exercise variables:** from the example exercises prompts provided, 1. sitting, walking on the spot, walking; 2. sitting bent forward with elbows on knees; 3, 4. prolonged contractions/rapid contractions/gradual contractions, 10 sec between contractions, 1–2 min apart in sitting, lying, standing **Training variables:** 30 min, weekly for 4 weeks followed by 2 more sessions 4 weeks apart. Daily practice daily at home for 15 min **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** contact and relax 1. pubococcygeal muscles; 2. anal sphincter; 3. eyelid; 4. open and close mouth; 5. press each finger of both hands to thumb and hold **Exercise variables:** from the example exercise prompts provided, 1. rhythmical contractions or with gradual intensity in standing/sitting/lying supine with knees bent up to chest; 2. and 3. contractions in regular rhythm, with double contractions or rapid contractions without relaxation, in lying or crook lying; 4. crook lying or standing; 5. sitting **Training variables:** 45 min, 1 per week, 12 weeks. Daily practice at home for 45 min **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** number of sessions participants attended and daily reports of home exercises. Attended > 50% of sessions: 68 (55.2%); did not attend any sessions: 14 (11.4%), home exercises: 23/123 (18.7%). At 6-month follow-up, 57% answered questions regarding adherence to exercise	**Intervention fidelity:** same **Exercise adherence:** same Attended > 50% of sessions: 86 (73.5%); did not attend any sessions: 12 (10.2%); home exercises: 31/117 (26.5%). At 6-month follow-up, 54% answered questions regarding adherence to exercise	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Direct:** no adverse events were reported **Combined:** no adverse events were reported

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

Luginbuehl 2022	**Provider:** physiotherapists specialised and experienced in PFM rehabilitation **Location:** clinic and home **Individual or group:** individual **Supervision:** 9 sessions for 16 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** digital vaginal examination **Exercise teaching prompts/cues:** "squeeze around pelvic openings and inward (cranial) lift" **Exercise variables:** VPFMC performed at 60–70% of MVC; isometric, concentric contractions, performed with moderate or quick speed in supine, lying, standing, squat position; the Knack. Home exercise examples: week 1: 8 concentric (slow-moderate) reps, 1 set; week 4: 10 reps, 3 sets, 60 sec rest; week 7: 5 sec hold (concentric-isometric, moderate), 3 reps, 120 sec rest; week 12: 8 sec hold/60 sec rest, 8 reps, 2 sets **Training variables:** 9 physiotherapy sessions over 16 weeks, 78 home training sessions of approximately 15 min (week 1–5: 3 per week, 3 per day; week 6–16: 3 per week, 1 per day) **Training principles:** week 1–5: motor learning; week 6–9: strength and hypertrophy; week 10–16: strength, hypertrophy and power	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** VPFMC, performed at 90–100% and 60–85% of MVC; isometric, concentric, eccentric, and eccentric-concentric contractions performed with explosive speed in supine, lying, standing, squat position. Indirect (reflexive) portion included running, squat jumps, drop jumps, countermovement jumps promoting reflexive PFM activation. Varying repetitions, depending on exercise and week. Home exercise examples: week 1: 2–3 sec hold (concentric-isometric, explosive), 3 reps, 60 sec rest; week 7: 5 concentric (explosive), 3 reps, 15 sec rest; week 12: 10 explosive, 4 reps, 60 sec rest **Training variables:** same **Training principles:** week 1–5: motor learning and power; week 6–9: strength, hypertrophy and power; week 10–16: power	**Intervention fidelity:** NI **Exercise adherence:** training diary, number of training sessions and home sessions Mean: in-person sessions: 8.3 (SD 2.0)/9; home training sessions: 68.4 (SD 16.9)/78	**Intervention fidelity:** same **Exercise adherence:** same Mean in-person sessions: 8.8 (SD 1.1)/9; home training sessions: 73.3 (SD 8.1)/78	**Education:** pathophysiological aspects of SUI **Lifestyle advice:** micturition and defecation behaviour, fluid intake, posture **Frequency strategies:** instruction on amount of micturition per day and night **Urgency strategies:** NI **General exercises:** training of voluntary contraction of lower abdominal muscles, breathing exercises for the purpose of postural control and adequate trunk stabilisation **Exercise behaviour support:** NI	**Direct:** measured, not reported **Combined:** same
Marques 2020	**Provider:** physiotherapist **Location:** outpatient	**Provider:** same **Location:** same	**Correct VPFMC confirmed:** vaginal digital palpation, first 8 sessions **Exercise teaching prompts/cues:** verbal in-	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same	**Intervention fidelity:** NI	**Intervention fidelity:** same	**Education:** instructions about VPFMC **Lifestyle advice:** NI	**Direct:** NI **Combined:** NI

Table 2. Exercise type: 'other' type of training versus direct PFMT – intervention description *(Continued)*

clinic and home **Individual or group:** individual **Supervision:** 40 min, 2 per week, 10 weeks	**Individual or group:** same **Supervision:** 60 min, 2 per week, 10 weeks	structions about correct contraction – should be in a cranial direction and performed without contracting adjacent muscles **Exercise variables:** 5 sec hold/5 sec rest, 10 reps; 3 sec hold/3 sec rest, 15 reps; 2 sec hold/2 sec rest, 20 reps; 1 sec hold/1 sec rest, 20 reps; MVC, 5 reps, 1 min rest while coughing **Training variables:** 40 min, 2 per week, 10 weeks (20 sessions in total) **Training principles:** All the participants followed the same protocol. Level of difficulty determined by the participant's position, progressing from supine to a sitting and standing	**Exercise variables:** same **Training variables:** same plus 20 min additional exercises for isolated strengthening the hip adductor, gluteus medius, and gluteus maximus muscles. Isometric without load: 20 sec hold/20 sec rest, 10 reps; concentric, 3 × 10 reps, 1 min rest; with 1 kg, 2 kg, and 3 kg **Training principles:** same for PFMT. Hip muscle strengthening, load increased every 5 sessions (as above)	**Exercise adherence:** NI	**Exercise adherence:** same	**Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	

CERT: Consensus on Exercise Reporting Template; EMG: electromyography; min: minute(s); max: maximum; MVC: maximal voluntary contraction; NI: no information; PFM: pelvic floor muscle(s); PFMT: pelvic floor muscle(s) training; rep: repetition; sec: second(s); SD: standard deviation; SUI: stress urinary incontinence; TrA: transversus abdominis muscle; VPFMC: voluntary pelvic floor muscle contraction.

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description

Study	Delivery (CERT 2, 3, 4, 12)		Exercise (CERT 1, 7, 8, 9, 14, 15)		As planned (CERT 5, 16)		Other components (CERT 6, 10)	Adverse events (CERT 11)
	Higher	Lower	Higher	Lower	Higher	Lower	Both (must be the same for eligibility)	Both
Subgroup 1. PFMT with resistance device (higher) versus PFMT without resistance device (lower)								

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

Delgado 2010	**Provider:** urology research nurse **Location:** secondary care facility and home **Individual or group:** individual **Supervision:** 1 in-person direct contact clinic visit followed by telephone consultation in week 2; follow-up clinic visits in weeks 8 and 16, 16 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** perineometry **Exercise teaching prompts/cues:** NI **Equipment:** PelvicToner device **Exercise variables:** 5 fast and 5 slow (sustained) high intensity VPFMC, rest for an equivalent time, supine **Training variables:** daily, 16 weeks **Training principles:** lower resistance spring, instructed to use it in the first (i.e. weakest) position of resistance; no progression	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** 1 hour session, information about PFM anatomy and function **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Higher:** NI **Lower:** NI
Kashanian 2011	**Provider:** the investigator **Location:** hospital presumably outpatient clinic and home **Individual or group:** NI **Supervision:** either contacted by telephone twice per week or attended in-person once a week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Equipment:** resistance device, the Golden Kegel (Iranian version of Kegelmaster) **Exercise variables:** 6–8 sec hold/6 sec rest, 15 min **Training variables:** twice daily, 12 weeks **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Higher:** vaginal discharge (23/39; 59%), pain (3/39, 7.7%), spotting (6/39, 15.4%), **Lower:** none reported

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

Orhan 2019	**Provider:** physiotherapists specialised in PFMT **Location:** outpatient gynaecology clinic and home **Individual or group:** individual **Supervision:** 2 days per week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** bi-weekly (not clear if 2 days per week or every 2 weeks), 12 weeks	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/cues:** taught how to perform VPGMC and how to avoid co-contraction of surrounding muscles **Equipment:** vaginal tampon **Exercise variables:** 10 fast, 10 sustained VPMFC **Training variables:** PFMT: week 1–2: 2 sets; week 3–4: 2–4 sets; week 5–6: 6 sets; week 7–8: 8 sets; week 9 – 12: 10 sets; daily. Different positions: supine, sitting, standing, semi-squatting Vaginal tampon training: 15 reps, 2 sets, 5 days a week, 12 weeks **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same PFMT **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** outpatient sessions, exercise diaries (compliance assessed using 100 mm VAS) Attendance, mean 21.1 (SD 2.1). Appeared to be both groups. VAS, mean 83.8 (SD ?)	**Intervention fidelity:** same **Exercise adherence:** same VAS, mean (SD) = 84.0 (?)	**Education:** location and function of PFM, lower urinary tract, and continence mechanisms **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** information sheet about vaginal tampon or PFMT (or both)	**Higher:** NI **Lower:** NI
Prudencio 2014	**Provider:** physiotherapists **Location:** outpatient clinic **Individual or group:** individual **Supervision:** 2 per week, 3 months	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/cues:** NI **Equipment:** NI other than perineometer **Exercise variables:** stretching, isolated rapid and sustained VPFMC followed by functional exercises **Training variables:** 45 min, 20 sessions, twice a week, 3 months **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Higher:** NI **Lower:** NI
Roongsirisangrat 2012	**Provider:** NI	**Provider:** same	**Correct VPFMC confirmed:** NI	**Correct VPFMC confirmed:** same	**Intervention fidelity:** NI	**Intervention fidelity:** same	**Education:** information about SUI	**Higher:** uncomfortable feeling in

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

	Location: hospital, presumably outpatient clinic and home **Individual or group:** individual **Supervision:** in the first session	**Location:** same **Individual or group:** same **Supervision:** not clear whether the first session was supervised	**Exercise teaching prompts/cues:** "vaginal squeezing" (concomitant with abdominal muscle contraction) **Equipment:** rectal balloon (self-inserted Foley catheter) **Exercise variables:** max VPFMC 5 sec hold, 15 reps; fast contractions, 15 reps – 3 reps of this cycle, 10 sec rest between cycles; standing **Training variables:** 3 per day, daily, 6 weeks **Training principles:** balloon volume: week 1–2: 10 mL; week 3–4: 15 mL; week 5–6: 20 mL	**Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** NI	**Exercise adherence:** daily exercise log (date, frequency, duration and amount of exercise) Compliance > 80% in both groups	**Exercise adherence:** same	and PFM anatomy **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	rectal area at the beginning of exercises that disappeared in later sessions (1/14, 7.1%) **Lower:** none reported (0/14)
Wells 1999	**Provider:** nurse practitioner **Location:** outpatient clinic and home **Individual or group:** individual **Supervision:** monthly, 5 months	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** yes **Exercise teaching prompts/cues:** NI; written materials **Equipment:** polyethylene vaginal dilator fitted (4 sizes: 13 mm, 22 mm, 29 mm, and 35 mm diameter) **Exercise variables:** 10 sec hold/10 sec relax; 80 contract/relax units "distributed on an individual pattern throughout the day" **Training variables:** daily, 5 months **Training principles:** initially focused on awareness, progressed to muscle control	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** exercise diary, no data reported	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** caffeine, smoking, and weight reduction; relaxation therapy **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** "coaching and encouragement"	**Higher:** NI **Lower:** NI
Subgroup 2. Maximal PFM contraction (higher) versus submaximal contraction (lower)								
Johnson 2001	**Provider:** the investigator	**Provider:** same	**Correct VPFMC confirmed:** EMG biofeedback, instruction on correct VPFMC	**Correct VPFMC confirmed:** same	**Intervention fidelity:** NI	**Intervention fidelity:** same	**Education:** NI **Lifestyle advice:** NI	**Higher:** NI **Lower:** NI

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

	Location: clinic and home **Individual or group:** individual **Supervision:** 1 session	**Location:** same **Individual or group:** same **Supervision:** same	**Exercise teaching prompts/cues:** NI, verbal and written **Equipment:** Contimed II home training device **Exercise variables:** 90% MVC, 10 min **Training variables:** 3 x day, 6 weeks **Training principles:** tailored workload based on daily MVC and baseline pressure-time index	**Exercise teaching prompts/cues:** same **Equipment:** same **Exercise variables:** 15-min exercises at 60% MVC **Training variables:** 3 times a day, 6 weeks **Training principles:** same	**Exercise adherence:** home exercise information was recorded by the device to determine compliance; no data reported	**Exercise adherence:** same	**Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** phone calls to the investigators, for any questions	
Subgroup 3. More PFMT days per week (higher) versus fewer (lower)								
Borello-France 2008	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** individual **Supervision:** 1 per week, for the first 9–12 weeks (as per Borello-France 2006), followed by unsupervised PFMT at home up to 6 months	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation (as per Borello-France 2006) **Exercise teaching prompts/cues:** as per Borello-France 2006 for clinic sessions **Exercise variables: clinic:** as per Borello-France 2006; home: max of 3-sec MVC, 3 sets of 20 reps and 12-sec MVC, 3 sets of 10 reps **Training variables:** clinic: as per Borello-France 2006; home: 1 session, 4 times per week; commencing from week 9–12, up to 6 months **Training principles**: clinic: as per Borello-France 2006; home: PFMT prescription dependent on the max exercise prescription in last clinic visit	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** clinic: as per Borello-France 2006; home: 1 session, once per week; commencing from week 9–12, up to 6 months	**Intervention fidelity:** number of exercises prescribed, mean fast 81 (SD 32); sustained 50 (SD 14.7) **Exercise adherence:** sessions attended, mean 8.9/12 (SD 3)	**Intervention fidelity:** number of exercises prescribed, mean fast 75 (SD 32.5); sustained 50 (SD 16.3) **Exercise adherence:** sessions attended, mean 8.4/12 (SD 2.8)	**Education:** PFM anatomy and physiology **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** weekly feedback of exercise diaries to identify barriers and provide recommenda-	**Higher:** NI **Lower:** NI

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

				Training principles: same			tions to minimise those barriers	
Hagovská 2020	**Provider:** physiotherapist **Location:** gynaecology and urology outpatient clinic and home **Individual or group:** individual **Supervision:** 5 sessions over 12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** vaginal digital palpation **Exercise teaching prompts/cues:** NI **Exercise variables:** Endurance: medium VPFMC, 10 sec hold/10 sec relax. Strength: very strong VPFMC with PFM lift, 5 sec hold/5 sec relax. Supine, prone lying, kneeling, sitting, standing, walking **Training variables:** 30 min a day, 5 times a week, 12 weeks; total 900 contractions per week **Training principles:** also trained PFM with static and dynamic stabilisation (diaphragmatic breathing and activation of TrA, stabilisation during bridge, diagonal stabilisation in prone kneeling with opposite arm and leg lifted, and stabilisation in push up, during a squat and side bridge)	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** NI **Exercise variables:** same **Training variables:** 15 min a day, twice a week, 12 weeks; total 180 contractions per week **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI, but "excluded" 1 woman from this group for low adherence	**Intervention fidelity:** same **Exercise adherence:** same, but "excluded" 2 women from this group for low adherence	**Education:** education about PFM and PFMT **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**Higher:** NI **Lower:** NI
Sriboonreung 2011	**Provider:** NI **Location:** outpatient clinic and home **Individual or group:** individual **Supervision:** first session	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** vaginal digital palpation **Exercise teaching prompts/cues:** NI **Exercise variables:** max VPFMC, 6–8 sec hold, 1 set; then add 6–8 fast contractions; rest period 6–8 sec **Training variables:** 3 per day, daily, 12 weeks **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** 3 per day, 3 per week, 12 weeks	**Intervention fidelity:** NI **Exercise adherence:** exercise log (returned in-person, once a month); data not reported	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** participants ad-	**Higher:** NI **Lower:** NI

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

				Training principles: same			vised to place the log sheet in a location where they can see it every day or find a symbol that reminds them to exercise. To increase compliance, participants took their completed exercise log to the hospital every month, and got a new one	
Subgroup 4: PFMT in upright (antigravity) body positions (higher) versus PFMT in lying (gravity neutral) body position (lower)								
Borello-France 2006	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** individual **Supervision:** 1 per week, 9–12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** palpation **Exercise teaching prompts/cues:** MVPMC: "contract your PFMs as quickly and as hard as you can; try to hold the contraction for the entire 3 or 12 [depending on the exercise] seconds" **Exercise variables:** week 1: 3 sec hold/6 sec rest, 10 reps, max 2 sets; week 2–3: add 12 sec hold/24 sec rest, 10 reps, 2 sets; week 4: max was 3 sets of 10 reps (for 3 and 12 sec hold); week 12: max was 3 sets of 20 reps (3 sec hold), 3 sets of 10 reps (12 sec hold). The Knack, when needed and integrate PFMT into ADLs **Training variables:** twice daily for 9–12 weeks **Training principles:** progressive and tailored according to the onset of fatigue. PFMT performed in a combined supine-upright position	**Correct VPFMC confirmed:** same **Exercise teaching prompts/cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same but with PFMT done only in supine	**Intervention fidelity:** prescribed exercises, 3 sec hold mean 81 (SD 32); 12 sec hold mean 50 (SD 15) **Exercise adherence:** visits attended, mean 9 (SD 3)	**Intervention fidelity:** prescribed exercises, 3 sec hold mean 75 (SD 33); 12 sec hold mean 50 (SD 16) **Exercise adherence:** visits attended, mean 8 (SD 3)	**Education:** strategies to prevent future SUI, PFM anatomy and physiology **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** therapist recommended linking exercise to another well-established behaviour, such as brushing	**Higher:** NI **Lower:** NI

Table 3. Exercise dose: Higher versus lower exercise dose – intervention description *(Continued)*

							teeth or watching the evening news	

CERT: Consensus on Exercise Reporting Template; min: minute(s); max: maximum NI: no information; PFM: pelvic floor muscle(s); rep: repetitions; sec: second(s); SD: standard deviation; SUI: stress urinary incontinence VPFMC: voluntary pelvic floor muscle contraction; VAS: visual analogue scale.

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description

Study	Delivery (CERT 2, 3, 4, 12)		Exercise (CERT 1, 7, 8, 9, 14, 15)		As planned (CERT 5, 16)		Other components (CERT 6, 10)	Adverse events (CERT 11)
	More	Less	More	Less	More	Less	Both (must be the same for eligibility)	Both
Subgroup 1. In-person clinic supervision (more) versus no clinic supervision (less)								
Bø 1990	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** group (clinic); individual (home) **Supervision:** 45 min, once a week, 6 months	**Provider:** same **Location:** home **Individual or group:** individual (home) **Supervision:** none, other than initial consultation to ensure correct VPFMC	**Correct VPFMC confirmed:** vaginal and perineal palpation **Exercise teaching prompts/ cues:** to contract as hard as possible and hold the contraction (group portion), to perform strong contractions (home portion) **Exercise variables:** max VPFMC 6–8 sec, followed by 3–4 fast contractions, 8–12 reps in each position: standing, sitting, lying, kneeling (clinic); strong VPFMC, 8–12 reps (home) **Training variables:** 45 min, once a week (clinic); once a day, every day (home), 6 months **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** NI **Exercise variables:** same as the home PFMT **Training variables:** same as the home PFMT **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** diary, clinic visits Attendance rate for both groups to home programme and group exercise was close to 100%	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** PFM anatomy **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

Felicissimo 2010	**Provider:** urogynaecology physiotherapist **Location:** clinic and home **Individual or group:** group (clinic); individual (home) **Supervision:** 50 min, 2 per week, 8 weeks	**Provider:** same **Location:** home **Individual or group:** individual (home) **Supervision:** none, other than initial consultation to ensure correct VPFMC	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/ cues:** NI **Exercise variables:** strong VPFMC, 6 sec hold/12 sec, 10 reps. Supine, side lying, sitting, and standing **Training variables:** week 1: 90 contractions a day; following 7 weeks: 180 contractions a day, 8 weeks **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** training diary Weekly exercise "compliance" home PFMT, median 4.0/7.0 (IQR 2.0–6.5). No difference between groups	**Intervention fidelity:** same **Exercise adherence:** same Weekly exercise "compliance" home PFMT, median 5.0/7.0 (IQR 2.0–6.0)	**Education:** PFM anatomy and function **Lifestyle advice:** NI **Frequency strategies:** first session **Urgency strategies:** in the first session **General exercises:** no **Exercise behaviour support:** handout showing the exercise positions and dosage	**More:** data collected, but not reported **Less:** data collected, but not reported
Ferla 2022	**Provider:** physiotherapist **Location:** in person, clinic (12 weeks) then home (12 weeks) **Individual or group:** group (12 weeks); individual (12 weeks) **Supervision:** 1 hour, once a week, 12 weeks. Followed by 12	**Provider:** same **Location:** home **Individual or group:** individual **Supervision:** none, 24 weeks home exercise	**Correct VPFMC confirmed:** vaginal palpation, pressure biofeedback **Exercise teaching prompts/ cues:** NI **Exercise variables:** 5 sec hold/ 10 sec rest, 10 reps; 1–3 sec hold/10 sec rest, 10 reps; alternating lying, sitting, standing. Group class also included VPFMC with other exercises (e.g. bridging) and ADL (e.g. stair climb) **Training variables:** NI **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	weeks unsupervised at home							
Marques 2005	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** individual **Supervision:** 2 per week, 4 months (total of 30 sessions)	**Provider:** same **Location:** home **Individual or group:** same **Supervision:** none	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI, PFMT performed in supine, crook lying, side lying, sitting, and standing; the "Knack" **Training variables:** 2 per week (clinic); 3 x day (home), 4 months **Training principles:** started with PFMT to facilitate the PFM, evolving to strengthening and endurance training, as per Bø 2003	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** same **Training variables:** same as home PFMT **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** attendance at clinic sessions = 55% Home PFMT = 50% did not completely comply with the protocol	**Intervention fidelity:** same **Exercise adherence:** home PFMT = 75% did not completely comply with the protocol	**Education:** instructions about PFM contraction **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** information booklet, instructed to perform the protocol exercises	**More:** NI **Less:** NI
Nagib 2021	**Provider:** physiotherapist researcher, specialised in women's health **Location:** NI and home **Individual or group:** individual? **Supervision:** supervised game therapy: 30 min, twice per week, 5 weeks	**Provider:** same **Location:** home **Individual or group:** individual **Supervision:** none	**Correct VPFMC confirmed:** digital palpation **Equipment:** Wii console with Wii fit plus CD (lotus focus, penguin slide, table tilt, balance bubble games) **Exercise teaching prompts/ cues:** verbal commands for VPFMC during game therapy; NI (home) **Exercise variables:** game therapy: 30 min; exercises 2, 3 and 4 = 5 min. Reps NI for exercises 1 and 5; 90 sec rest between each exercise. Home: max VPFMC, 10 reps, 1 min rest; mod-	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same for home PFMT **Exercise variables:** same for home PFMT **Training variables:** same for home PFMT **Training principles:** same for home PFMT	**Intervention fidelity:** NI **Exercise adherence:** women "had to perform 10 PFMT sessions"; calculated frequency of exercises Adherence 20/20 (100%)	**Intervention fidelity:** same **Exercise adherence:** same Adherence 16/20 (90%)	**Education:** PFM and contraction **Lifestyle advice:** booklet about PFM control during daily activities **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

			erate VPFMC, 8 sec hold/16 sec rest, 10 reps; 10 quick contractions, 20 sec rest in between. The "Knack" **Training variables:** game therapy: twice a week, 5 weeks home: 3 reps, twice a week, 5 weeks **Training principles:** exercises performed seated on Wii Balance Board platform. Home: PFMT in crook lying, sitting, and squatting					
Tejero 2008	**Provider:** physiotherapist **Location:** outpatient clinic; home **Individual or group:** individual **Supervision:** 40 min, 12 sessions	**Provider:** same **Location:** outpatient clinic and home **Individual or group:** individual **Supervision:** none, other than initial 40 min session	**Correct VPFMC confirmed:** NI (but likely yes as part of the biofeedback therapy) **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI **Training variables:** PFMT using a biofeedback system, 40 min, 12 consecutive sessions **Training principles:** NI	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues: NI** **Exercise variables:** NI **Training variables:** NI **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** self-report of compliance with the PFMT after 4 months Did the exercises 16/16 (100%). Frequency, daily 9/14 (64.3%); > 4 × week 3/14 (21.4%); < 3 × week 2/14 (14.3%); never 0. Note: data did not	**Intervention fidelity:** same **Exercise adherence:** same Did the exercises 16/18 (88%). Frequency, daily 10/18 (55.6%); > 4 × week 2/18 (11.1%); < 3 × week 4/18 (22.2%); never 2/18 (11.1%)	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

					seem to add up correctly			
Wilson 1987	**Provider:** physiotherapist **Location:** hospital clinic and home **Individual or group:** individual **Supervision:** clinic: twice per week, 6 weeks (12 sessions)	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** 1 clinic visit then written instructions for home PFMT	**Correct VPFMC confirmed:** presumed yes, perineometry **Exercise teaching prompts/ cues:** "relax completely" then "tighten the muscles that stop you passing urine, making sure that all other muscles are relaxed. Hold the contraction for a few seconds then relax completely." **Exercise variables:** once before rising then 10 times. Clinic supervision included biofeedback from perineometer **Training variables**: every half hour, 6 weeks **Training principles**: progress from 5 times per half hour to 10 times per half hour; progress from lying to sitting to standing	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI
Wong 1997	**Provider:** NI **Location:** clinic and home **Individual or group:** NI, presumably individual **Supervision:** 8 sessions over 4 weeks	**Provider:** same **Location:** home **Individual or group:** individual **Supervision:** none, other than during initial consult to teach the	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI **Training variables:** 8 sessions over 4 weeks and daily home PFMT **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same for home PFMT **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

		exercise programme						
Subgroup 2. More clinician contact (more) versus less contact (less)								
Ferreira 2012	**Provider:** physiotherapist **Location:** hospital clinic and home **Individual or group:** NI **Supervision:** initial 60 min education + 15 min PFMT. Followed by 45 min, weekly, 6 months	**Provider:** same **Location:** same **Individual or group:** individual (home) **Supervision:** initial 60 min education + 15 min PFMT. Followed by monthly phone calls	**Correct VPFMC confirmed:** probably yes **Exercise teaching prompts/ cues:** NI, written (leaflet) **Exercise variables:** VPFMC, 10 sec hold, followed by 4 quick contractions (2 sec), 8–10 sec relax (clinic); 8–10 reps (home) in various postures **Training variables:** 10 sets per session, once a week (clinic); 3 sets per day (home), for 6 months **Training principles**: progression (position, contraction time, number of sets, functional training with the Knack technique)	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same as the home PFMT **Training variables:** same as the home PFMT **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** PFM anatomy and physiology **Lifestyle advice:** hygiene habits and behaviour modifications **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** relaxation, stretching, breathing exercises and strength training for abdominal and lumbar muscles (clinic) **Exercise behaviour support:** monthly encouragement phone calls, not clear if for both groups	**More:** NI **Less:** NI
Fitz 2015	**Provider:** physiotherapist **Location:** outpatient clinic and home **Individual or group:** NI	**Provider:** physiotherapist **Location:** home **Individual or group:** NI	**Correct VPFMC confirmed:** vaginal palpation (PERFECT) **Exercise teaching prompts/ cues:** diary of exercises **Exercise variables:** 30 slow contractions (hold time dependent	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same	**Intervention fidelity:** NI **Exercise adherence:** exercise diary	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	Supervision: 2 per week, 3 months (total of 24 sessions)	**Supervision:** 1 per month, 3 months	on baseline assessment), and 3 fast contractions **Training variables:** 2 per week (clinic); home NI **Training principles:** NI	**Exercise variables:** same **Training variables:** NI **Training principles:** exercises adjusted each month			**Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	
Fitz 2020	**Provider:** physiotherapist with postgraduate training in pelvic health **Location:** clinic and home **Individual or group:** individual **Supervision:** 1 hour, twice per week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** 1 hour, once per month, 12 weeks	**Correct VPFMC confirmed:** vaginal palpation and perineal observation **Exercise teaching prompts/ cues:** "squeeze and lift around your front, middle, and back passages"; received illustrated exercise diary **Exercise variables:** 10 max VPFMC (6–10 sec hold; double-time rest) followed by 3–5 fast contractions in standing **Training variables:** 3 sets daily, 7 days per week, 12 weeks **Training principles:** progression of repetitions in 3 phases of 4 weeks each (starting dose = 6 sec hold, 3 fast) and body position (supine to standing)	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** exercise sets per month, mean (82 sets = 100% adherence); 76.4 (SD 8.8), 74.6 (SD 11.1), 75.6 (SD 9.4) months 1 to 3, respectively Attendance, mean (max 24) 20 (SD 2.9)	**Intervention fidelity:** same **Exercise adherence:** exercise sets per month, mean (89 sets = 100% adherence): 64.8 (SD 18.5), 62.5 (SD 22.4), 68.7 (SD 19.8) months 1 to 3, respectively Attendance, mean (max 3) = 3 (SD 0)	**Education:** PFM, precontraction, normal bladder and voiding **Lifestyle advice:** fluids, fluid management, toilet positions and voiding **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** exercise diary to motivate adherence	**More:** 0/28 **Less:** 0/28
Konstantinidou 2007	**Provider:** physiotherapist **Location:** outpatient clinic and home **Individual or group:** group	**Provider:** same **Location:** same **Individual or group:** group (first	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/ cues: NI** **Exercise variables:** 3 sets fast contractions; 3–4 sets slow con-	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same	**Intervention fidelity:** NI **Exercise adherence:** completion of prescribed ex-	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** 1 hour demonstration of PFMT **Lifestyle advice:** NI **Frequency strategies:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	(weekly), individual (monthly) **Supervision:** weekly for 12 weeks	visit), individual (monthly) **Supervision:** monthly	tractions in lying, sitting and standing **Training variables:** daily **Training principles:** repetitions individualised based on first assessment; PFMT adjusted according to progress	**Exercise variables:** same **Training variables:** same **Training principles:** same	ercise, attendance. No data reported		**Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	
Zanetti 2007	**Provider:** physiotherapist **Location:** clinic and home **Individual or group:** individual or group? **Supervision:** 45 min, twice per week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** monthly for PFM strength evaluation	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/ cues:** NI **Exercise variables:** 1 min rest between each of the following 'sets'—10 – 5 sec hold/5 sec rest, 10 reps; 2 sec hold/2 sec rest, 20 reps; 1 sec hold/1 sec rest, 20 reps; 10 sec hold/10 sec rest, 20 reps; followed by 5 strong contractions with cough. Repeated in supine, sitting, standing. **Training variables:** daily, 12 weeks **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same for home PFMT **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** **General exercises:** general joint warm-up exercises before PFMT and stretching at the end **Exercise behaviour support:** participants were "informed of their progress and encouraged to continue the treatment" once per month	Not measured?
Subgroup 3. In-person group supervision versus in-person individual supervision (note: presented as if group = more, and individual = less, so that order of data presentation consistent even if amount of supervision was balanced between groups)								
Bech 2021	**Provider:** experienced continence nurses (educa-	**Provider:** same **Location:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI	**Correct VPFMC confirmed:** NI	**Intervention fidelity:** NI	**Intervention fidelity:** same	**Education:** anatomy and physiology of PFM; cause of UI and risk factors	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	tion), physiotherapist (education and exercise) **Location:** clinic, community centres, and home **Individual or group:** group (clinic); individual (home) **Supervision:** 60 min, 10 sessions, over 12 weeks	**Individual or group:** individual **Supervision:** 45 min, 6 sessions, over 12 weeks	**Exercise variables:** fast contractions and short maximal contractions, equal length hold and relaxation, determined by assessment. In supine, sitting and standing. Additional functional contractions (e.g. with cough, walking, sit to stand, walking with load) **Training variables:** home: 10–15 min, 2–3 times, daily **Training principles:** progression: add 3 fast and 1 slow contraction each month, and add 2 sec to hold time of slow contraction; different positions	**Exercise teaching prompts/ cues:** NI **Exercise variables:** same, although potential to individualise as needed **Training variables:** same **Training principles:** same Note: a third trial arm was as above with addition of ultrasound biofeedback (which included confirmation of correct VPFMC). The 2 individual supervision groups were combined for analysis	**Exercise adherence:** NI	**Exercise adherence:** same	**Lifestyle advice:** fluids, diet, nutrition, sex and UI **Frequency strategies:** voiding habits **Urgency strategies:** NI **General exercises:** warm-up exercises; stretching and relaxation at end of each session **Exercise behaviour support:** exercise diary	
de Oliveira Camargo 2009	**Provider:** urogynaecology physiotherapists **Location:** clinic **Individual or group:** group **Supervision:** 45 min, twice a week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** 30 min twice a week, 12 weeks	**Correct VPFMC confirmed:** vaginal palpation **Exercise teaching prompts/ cues:** NI **Exercise variables:** 5 sec hold/5 sec relax, 10 reps; 1 sec hold/1 sec relax, 20 reps; 10 sec hold/ 5 sec relax, 3 reps; 5 strong contractions with cough. In standing, 1 min interval between sets **Training variables:** 45 min, twice a week (group). Home PFMT NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** NI **Exercise variables:** 10 slow contractions/ 10 sec relax; 10 fast contractions/10 sec relax; 10 alternat-	**Intervention fidelity:** NI **Exercise adherence:** training diary updated by physiotherapist at each clinic visit Mean compliance =	**Intervention fidelity:** same **Exercise adherence:** same Mean compliance 90% (compliance not defined)	**Education:** anatomy and physiology of PFM muscles and UI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI	**More:** data collected, but not reported **Less:** data collected, but not reported

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

			Training principles: NI	ing 5 fast and 5 slow contractions, all with cough. **Training variables:** 30 min, twice a week. Home PFMT NI **Training principles:** individualised (including length of VPFMC hold), based on assessment	95% (compliance not defined)		**General exercises:** NI **Exercise behaviour support:** NI	
Dumoulin 2020	**Provider:** physiotherapist with postgraduate training in PFM rehabilitation **Location:** clinic and home **Individual or group:** group (6–8 women) and individual (3 optional sessions) **Supervision:** 1 hour, once a week, 12 weeks	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** 1 hour, once a week, 12 weeks Note: arguably this group receives 'more' intensive supervision as they are seen individually. We have reported the indi-	**Correct VPFMC confirmed:** vaginal digital palpation **Exercise teaching prompts/ cues:** NI **Exercise variables:** 3 phases of 4 weeks each. Warm up exercises, then PFMT (Phase 3). VPFMC 10 sec hold/10 sec rest, 10 reps; fast contractions, 1 sec hold/1 sec rest, 2 sets of 10 reps; the 'Knack' (3 coughs); 'podium' exercises (moderate, max, moderate contraction) 3 contractions with 10 sec per step. Also included core stability exercises, then dancing (2 leg dance steps and VPFMC) **Training variables:** home exercise 3 sets daily, 5 days week. Maintenance 3 days week for 9 months **Training principles:** starting level standardised, progression (3 phases, 1 per month) of number	**Correct VPFMC confirmed**: same **Exercise teaching prompts/ cues:** NI **Exercise variables:** same PFMT, included use of BF **Training variables:** same **Training principles:** same	**Intervention fidelity:** 4 hour training workshop; written treatment protocol checklist; individual supervision for 3–6 treatments. Intervention delivered as planned **Exercise adherence:** attendance, home exercise diary, 2 phone calls during maintenance phase for women's	**Intervention fidelity:** same **Exercise adherence:** same measures Attendance, mean 11.7 (SD 0.6) PFMT 4–5 times/week 152/171 (89%) At 1 year, PFMT at least once/week 110/165 (67%)	**Education:** PFM and bladder anatomy and function **Lifestyle advice:** fluids and voiding **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** warm up and core stability **Exercise behaviour support:** motivational prompts included in exercise diary	**More:** 27 in total. 6 vaginal spotting; 21 vaginal discomfort while using intravaginal BF **Less:** 5 vaginal discomfort Occurred primarily in first 2 sessions, resolved without treatment

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

		vidual supervision as 'less' not because it is but it means that it is consistent to read 'group' followed by 'individual' as for all other studies in this category	of contractions, hold duration, body positions, and complexity of dance moves; progression of home exercise then maintenance programme		perception of exercise frequency Attendance, mean 11.4 (SD 1.0) PFMT 4–5 times/week 142/166 (86%) At 1 year, PFMT at least once/week 107/154 (69%)			
Figueiredo 2020	**Provider:** physiotherapist **Location:** presumed clinic and home **Individual or group:** group (clinic) **Supervision:** 30 min, once per week, 12 weeks Note: a third trial arm was individual supervision (4 sessions) followed by group supervision. We combined 2 trial arms (group supervision,	**Provider:** physiotherapist **Location:** same **Individual or group:** individual (clinic) **Supervision:** same	**Correct VPFMC confirmed:** no **Exercise teaching prompts/ cues:** NI **Exercise variables:** week 1: 2 sec hold/4 sec rest, 6 reps; 5 fast contractions. Progressed each week to week 12: 10 sec hold/10 sec rest, 10 reps; 50 fast contractions (at 12 weeks). Lying down, sitting, and standing **Training variables:** week 1–2, 2 sets; week 3–6, 3 sets; week 7–12: 4 sets of sustained contractions. Fast contractions increased in reps from week 1–6; week 7–12, 50 reps. Daily at home, 12 weeks **Training principles:** progression in number of reps and sets as per protocol	**Correct VPFMC confirmed:** vaginal palpation and perineometry **Exercise teaching prompts/ cues:** "Now please squeeze the muscles in the vagina and hold like you are holding urine" **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** "physiotherapists at both centres received the same training" **Exercise adherence:** exercise diary, attendance Exercise diary return: 59/90 (65%) at assessment 3; 62/90 (69%) at assessment 4	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** yes, (PFM anatomy and function) **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	and individual progressing to group) for analysis				No adherence data reported			
Pereira 2011	**Provider:** physiotherapist **Location:** outpatient clinic **Individual or group:** group (8–10 women) **Supervision:** 1 hour, twice a week, 6 weeks	**Provider:** same **Location:** same **Individual or group:** individual **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation and perineometry **Exercise teaching prompts/ cues:** NI **Exercise variables:** average of 100 contractions per session: fast contractions 3 sec hold/6 sec rest; slow contractions 10 sec hold/20 sec rest. In supine, sitting and standing **Training variables:** 1 hour, twice a week, 6 weeks. Home PFMT NI **Training principles:** slow contractions progressed 1 sec per week (starting dose = 5 sec hold/10 sec rest)	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** NI **Exercise variables:** same **Training variables:** NI **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** PFM anatomy and continence mechanisms **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** 0/15 **Less:** 0/15
Subgroup 4. In-person clinic supervision (usually more) versus e-health supervision (usually less)								
Kastelein 2020	**Provider:** healthcare professional **Location:** clinical setting **Individual or group:** presumed individual **Supervision:** weekly, 12 weeks Note: primary outcome	**Provider:** same **Location:** remote, web-platform **Individual or group:** individual **Supervision:** same Note: this group had a wireless	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI **Training variables:** NI **Training principles:** NI	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI **Training variables:** NI **Training principles:** NI	**Intervention fidelity:** NI **Exercise adherence:** yes, no data reported	**Intervention fidelity:** same **Exercise adherence:** yes, no data reported	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	Not measured?

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	measured at 12 months	vaginal and abdominal BF device, connected to a smartphone/web-platform, that gave information to the supervising clinician						
Subgroup 5. PFMT delivered via technology (considered more) versus PFMT delivered via written instruction only (considered less)								
Araujo 2020	**Provider:** physiotherapist **Location:** home (with mobile phone app) **Individual or group:** individual **Supervision:** 4 clinic visits (for evaluation), 3 months	**Provider:** same **Location:** home (written instructions) **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** vaginal palpation and EMG BF **Exercise teaching prompts/ cues:** animated sequence of images on the app (with music) **Exercise variables:** 8 sec hold/8-sec rest followed by 3 fast contractions, 32 reps. Supine, sitting and lying **Training variables:** twice a day, 3 months **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** printed image of muscle contraction **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** app data (number of exercise protocol reps) and self-reported adherence score (0–10; 0 = no exercise, 10 = max adherence) Number of reps at 3 months, mean 43.8 (SD 8.7). Significantly higher than other group at 1 and 2 months	**Intervention fidelity:** same **Exercise adherence:** exercise diary, and self-reported adherence score (0–10; 0 = no exercise, 10 = max adherence) Number of reps at 3 months, mean 17.7 (SD 6.3) Self-reported adherence at 3 months, mean 8.67 (SD 1.3)	**Education:** NI **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** app group only-alarm reminder to exercise	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

					Self-reported adherence at 3 months, mean 9.9 (SD 0.2)			
Fischer Blosfield 2021	**Provider:** NI **Location:** clinic (physiotherapy) and home (mobile phone app) **Individual or group:** group (physiotherapy), individual (app) **Supervision:** if receiving physiotherapy then once per week for 12 weeks. If app only, then none Note: a 4-arm trial of mobile phone app with physiotherapy group, written instructions and physiotherapy group, mobile phone app only, written instructions only. We combined the 2 mobile phone app groups and the 2 written instruc-	**Provider:** NI **Location:** clinic (physiotherapy), home (written instructions) **Individual or group:** group (physiotherapy), individual (written instruction) **Supervision:** if receiving physiotherapy then once per week for 12 weeks. If app only, then none	**Correct VPFMC confirmed:** probably yes, anyone with difficulty at baseline had vaginal palpation **Exercise teaching prompts/ cues:** dynamic images and sound **Exercise variables:** NI **Training variables:** NI regarding home PFMT. 12 weeks **Training principles:** 6 phases of 15 days each	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** NI **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** NI **Lifestyle advice:** life hygiene tips **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	tion groups for analysis							
Sjöström 2013	**Provider:** urotherapist **Location:** home (Internet-based with email support) **Individual or group:** individual **Supervision:** no contact other than by email if participant initiated	**Provider:** no contact **Location:** home (written instructions) **Individual or group:** same **Supervision:** none	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Equipment:** NI (internet) **Exercise variables:** max VPFMC 8–10 contractions (8 sec hold); 1 submax contraction (15–90 sec hold), 8–10 fast contractions (3 sec hold); the "Knack" **Training variables:** 3 sets daily, 8 escalating levels available every 2 weeks, 3 months **Training principles:** progress was self-monitored, with individually tailored support by a urotherapist. Intensity of the PFMT training gradually increased	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** same **Training variables:** 3 sets daily, 3 months **Training principles:** encouraged to progress training but sent all exercises at the start	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** yes (about SUI) **Lifestyle advice:** yes, with cognitive behavioural support for lifestyle change in internet group **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** in internet group completed weekly training report; postal instruction group had training report but collected only once	**More:** lower abdominal pain and ceased treatment (1 woman) **Less:** NI
Sonmezer 2022	**Provider:** NI **Location:** home (mobile phone app) **Individual or group:** individual **Supervision:** NI	**Provider:** same **Location:** home (booklet) **Individual or group:** same **Supervision:** same	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI **Training variables:** NI **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** **Lifestyle advice:** lifestyle changes recommendations sent via app to app group **Frequency strategies:** NI **Urgency strategies:** NI	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

				Training principles: same			**General exercises:** NI **Exercise behaviour support:** app has notification system to prompt exercise (app group only)	
Subgroup 6. Extra phone calls (more) versus none (less) (note: no data contributed to analysis from either trial)								
Ko 2018	**Provider:** physician? **Location:** outpatient clinic and home **Individual or group:** individual **Supervision:** once every 4 weeks and weekly telephone, 8 weeks	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** once every 4 weeks, 8 weeks	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** NI **Training variables:** NI **Training principles:** NI	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same **Training principles:** same	**Intervention fidelity:** NI **Exercise adherence:** frequency of performing PFMT (≥ 3 days every week = adherent) Adherent = 45/50 (90%)	**Intervention fidelity:** same **Exercise adherence:** same Adherent = 21/50 (42%)	**Education:** video explaining SUI and how to perform PFMT **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** NI **General exercises:** NI **Exercise behaviour support:** NI	**More:** NI **Less:** NI
Ng 2008	**Provider:** nurse? **Location:** home **Individual or group:** individual **Supervision:** twice weekly phone call, 3 months	**Provider:** same **Location:** same **Individual or group:** same **Supervision:** none, unless they initiated	**Correct VPFMC confirmed:** NI **Exercise teaching prompts/ cues:** NI **Exercise variables:** 50–75 contractions **Training variables:** 3 times daily, 3 months **Training principles:** "identical" home programme for all women,	**Correct VPFMC confirmed:** same **Exercise teaching prompts/ cues:** same **Exercise variables:** same **Training variables:** same	**Intervention fidelity:** NI **Exercise adherence:** NI	**Intervention fidelity:** same **Exercise adherence:** same	**Education:** information about UI, PFM, PFMT **Lifestyle advice:** NI **Frequency strategies:** NI **Urgency strategies:** yes	**More:** NI **Less:** NI

Table 4. Exercise intervention delivery: one type of delivery (usually more supervision) versus another (usually less supervision) – intervention description *(Continued)*

	Note: prerandomisation both groups had supervised PFMT for 1 hour, twice per week, 4 weeks	phone call with nurse Note: prerandomisation both groups had supervised PFMT for 1 hour, twice per week, 4 weeks	progression from 50 to 75 contractions	**Training principles:** same	**General exercises:** NI **Exercise behaviour support:** NI

ADL: activities of daily living; BF: biofeedback; CERT: Consensus on Exercise Reporting Template; min: minute(s); EMG: electromyography; max: maximum; HEP: home exercise programme; NI: no information; PFM: pelvic floor muscle(s); rep: repetitions; sec: second(s); SD: standard deviation; VPFMC: voluntary pelvic floor muscle contraction.

Table 5. Categorising trials with more than two eligible trial arms

Study	Brief intervention description	Decision	Comparison
Bech 2021	Arm 1: individually supervised PFMT with ultrasound biofeedback Arm 2: individually supervised PFMT Arm 3: group supervised PFMT Arm 4: wait-list controls	Combine arms 1 and 2 (individual supervision) to compare with arm 3 (group supervision) Did not use arm 4	Comparison 3: exercise intervention delivery Subgroup: group supervision versus individual supervision
Figueiredo 2020	Arm 1: individually supervised PFMT throughout treatment Arm 2: individually supervised PFMT followed by group supervision Arm 3: group supervised PFMT throughout treatment	Combine arms 2 and 3 (group supervision) to compare with arm 1 (Individual supervision)	Comparison 3: exercise intervention delivery Subgroup: group supervision versus individual supervision
Fischer Blosfield 2021	Arm 1: smartphone app and individual supervision of PFMT Arm 2: written instructions and individual supervision of PFMT Arm 3: smartphone app only Arm 4: written instructions only	Combine arms 1 and 3 (use of smartphone application) to compare with arms 2 and 4 (written instructions)	Comparison 3: exercise intervention delivery Subgroup: delivered via technology versus delivered via written instruction
Kannan 2022	Arm 1: direct PFMT Arm 2: indirect training (yoga) Arm 3: indirect training (Pilates)	Combined arms 2 and 3 (indirect training) to compare with arm 1 (direct PFMT)	Comparison 1: exercise type Subgroup: indirect training versus direct PFMT
Rodrigues 2020	Arm 1: co-ordinated training (Pilates and VPFMC) Arm 2: direct PFMT Arm 3: Pilates	Chose arms 1 (co-ordinated training) and 2 (direct PFMT) Little information about the intervention was described — the study report is a conference abstract. It was not clear if arm 3 was intended as indirect PFMT or as a "postural" intervention; therefore, we chose not to use this arm	Comparison 1: exercise type Subgroup: co-ordinated training versus direct PFMT
Sriboonreung 2011	Arm 1: daily PFMT Arm 2: PFMT 3 times a week Arm 3: co-ordinated training 3 times a week	Chose arms 1 (higher exercise dose) and 2 (lower exercise dose) Arms 1 and 2 had the same PFMT intervention apart from the exercise frequency, so this was a less confounded comparison of dose	Comparison 2: exercise dose Subgroup: more days per week versus fewer days per week

PFMT: pelvic floor muscle training; VPFMC: voluntary pelvic floor muscle contraction.

APPENDICES

Appendix 1. Cochrane Incontinence Specialised Register search strategy

The terms used to search the Cochrane Incontinence Specialised Register are given below:

((design.cct*) OR (design.rct*))
AND
((topic.urin.incon*) OR (topic.urine.overactive*))
AND
(intvent.phys.pfe*)
All searches were of the keywords field of EndNote 21.

The Cochrane Incontinence Specialised Register search does not include a search of Embase as the Cochrane Centralised Search Service includes Embase in its search for records to be included in CENTRAL. During informal testing for a number of our Cochrane reviews we have found that additional searches of Embase do not locate additional relevant records for our Cochrane reviews. The searches for the Cochrane Incontinence Specialised Register used to include direct searches of CINAHL – however since the RCTs and quasi-RCTs in CINAHL have been, and continue to be, added to the Cochrane CENTRAL database (with the permission of EBSCO), via the Cochrane Centralised Search Service, CINAHL is no longer searched directly to avoid duplication of effort (at January 2023 there are approximately 26,500 RCTs/quasi-RCTs in CENTRAL from CINAHL).

Appendix 2. Decision matrix: risk of bias assessment

All review authors used a standardised template for risk of bias assessment (including guidance notes) and where there were disagreements the review authors reached consensus through discussion. However, we noticed not all review author pairs reached the same decisions for similar issues. The following guide helped one review check consistency of all agreed risk of bias ratings by review author pairs.

Domain 1: random sequence generation (selection bias)

Question	Decision support
Was allocation sequence adequately generated?	High risk: all non-equal chance methods Low risk: any equal chance method (simple or more complex). For simple methods, downgrade to unclear risk unless explanation suggests it was done in robust way Unclear risk: insufficient information

Domain 2: allocation concealment (selection bias)

Question	Decision support
Was allocation adequately concealed?	High risk: all non-equal chance methods and all simple (manual) methods of randomisation (unless clear explanation that means we are sure concealed) Low risk: envelopes (with sufficient detail) and central methods Unclear risk: insufficient information

Domain 3: blinding (performance and detection bias)

Question	Decision support
3.1 Were participants aware of intervention received?	Not needed (see methods)
3.2 Were clinicians aware of the intervention they provided?	Not needed (see methods)

Domain 4: incomplete outcome data (attrition bias)

Question	Decision support
4.1 Was the attrition rate (overall, or by group) a concern?	High risk: high overall (20% or greater), *and/or* difference in attrition between the treatment groups (11% or greater) Low risk: less than cut-offs for high (see above) Unclear risk: insufficient information
4.2 Was analysis by intention to treat?	High risk: data presented for subset of all women randomised (i.e. excluded participants who did not 'adhere' to intervention from analysis); does not include trials where analysis included all women for whom data were available. Low risk: assumed intention to treat unless clear reason to suggest not, and not differential attrition (see above) unless robust method of imputation used Unclear risk: not clearly high or low risk, but some concerns

For an **overall rating** in this domain (attrition bias) if:

- both 4.1 and 4.2 are low risk then rate as low risk,
- either or both 4.1 and 4.2 are unclear risk then rate as unclear risk,
- either or both 4.1 or 4.2 is high risk then rate as high risk.

Domain 5: selective reporting (reporting bias)

Question	Decision support
Was there any suggestion of selective outcome reporting?	High risk: concerning changes between trial registration (or protocol) and the published study (e.g. primary outcome has changed) *and/or* the same outcome is presented in multiple ways (e.g. VAS for subjective improvement presented as (a) cured or not cured, (b) more than 50% improvement or not, and (c) post treatment mean (SD)). Low risk: consistent trial registration (or protocol) and publication *or* if a thorough methods and analysis section if trial predates expectation of registration. Unclear risk: not clearly at high or low risk, but some concerns

Domain 6: other bias – funding

Question	Decision support
Does the funding source raise any concerns of bias?	High risk: commercial funder without or insufficient explanation of funders role, *or* self-funded but clear conflict of interest for one or more authors Low risk: publicly funded (funder declared) *or* not funded Unclear risk: insufficient information *or* generic statement of 'no conflicts of interest' without statement about funding source

Overall risk of bias from all domains

High risk overall: domain 1 and 2 high risk.

Low risk overall: domain 1 and 2 low risk, domains 4 to 6 low risk.

Unclear risk: all other combinations

SD: standard deviation; VAS: Visual Analogue Scale.

Appendix 3. Decision matrix: GRADE certainty of evidence

Risk of bias	Downgrade 1	Downgrade 2
If multiple trials contributing to analysis	One third or more of the weight is from trials at high risk of selection bias *or* Half or more of the weight is from trials that are at high or unclear risk of selection bias	Either of the previous criteria are met and attrition bias is high risk *or* Two thirds or more of the weight is from trials that have high and unclear risk combinations for selection and attrition bias
If a single trial	High risk for selection bias	High and unclear risk combinations for selection and attrition bias

Inconsistency[a]	Downgrade 1	Downgrade 2
If multiple trials contributing to analysis (note, no decision needed for a single trial)	Point estimates (with their 95% CI) lie wholly on either side of the line of no effect, BUT other trials with effect sizes between the two 'extremes' (with 95% CI that have appreciable overlap with the CIs of the 'extremes'), AND the I^2 is 50% or more *or* Point estimates are on either side of the line of no effect, BUT the confidence intervals of all point estimates appreciably overlap AND the I^2 is under 50%. If I^2 is 50% or more consider downgrading 2	Point estimates lie on either side of the line of no effect AND there is appreciable non overlap of CIs of the point estimates AND the I^2 is 50% or more

[a] Begin with visual inspection. Then use I^2 if needed to decide whether to downgrade or not.

Indirectness	Downgrade 1	Downgrade 2
No decision needed (see methods)	—	—

Imprecision: incontinence quality of life (SMD)[b]	
No downgrade	95% CI less than 0.2 and more than −0.2, more than 0 and less than 0.2 (more than −0.2 and less than 0), 0.2 to less than 0.8 (−0.2 to more than −0.8) AND 400+ participants.
Downgrade 1	As for no downgrade, but fewer than 400 participants *or* Point estimate suggests negligible effect, but 95% CI does not exclude small effect AND 400+ participants *or* Point estimate suggests small or greater effect but 95% CI crosses one other threshold of effect AND 400+ participants
Downgrade 2	Point estimate suggests negligible effect, but 95% CI does not exclude small effect AND fewer than 400 participants *or* Point estimate suggests small or greater effect but 95% CI crosses one other threshold of effect AND fewer than 400 participants
Downgrade 3	Point estimate may suggest negligible effect but 95% CI does not exclude small or greater effect in favour of either intervention *or* Point estimate suggests small or greater effect in favour of one intervention but 95% CI does not exclude negligible or greater effect in favour of the other intervention

[b] Uses typical cut-offs for effect size as per Cohen (1998)

Imprecision: incontinence episode frequency (MD)[c]	
No downgrade	Point estimate and 95% CI wholly on one side of the line of no effect AND 400+ participants *or* Point estimate in favour of one intervention but the 95% CI crosses the line of no effect AND 400+ participants
Downgrade 1	Point estimate and 95% CI wholly on one side of the line of no effect, 100 to 399 participants *or*

(Continued)

	Point estimate in favour of one intervention but the 95% CI crosses the line of no effect, 240 to 399 participants
Downgrade 2	Point estimate and 95% CI wholly on one side of the line of no effect, under 100 participants *or* Point estimate in favour of one intervention but the 95% CI crosses the line of no effect, 100 to 239 participants
Downgrade 3	Point estimate in favour of one intervention but the 95% CI crosses the line of no effect, under 100 participants.

[c] We had no robust evidence of cut-offs for effect size for this outcome, and considered only whether the 95% CI crossed the line of no effect.

Imprecision: improvement (OR), satisfaction (OR)	
No downgrade	95% CI less than 1.5 and more than 0.66, more than 1 to less than 1.5, 1.5 to less than 9.0 AND sufficient participants.[d]
Downgrade 1	As for no downgrade, but insufficient participants *or* Point estimate suggests negligible effect, but 95% CI does not exclude small effect AND sufficient participants *or* Point estimate suggests small or greater effect but 95% CI crosses one other threshold of effect AND sufficient participants
Downgrade 2	Point estimate suggests negligible effect, but 95% CI does not exclude small effect AND insufficient participants *or* Point estimate suggests small or greater effect but 95% CI crosses one other threshold of effect AND insufficient participants
Downgrade 3	Point estimate may suggest negligible effect but 95% CI does not exclude small or greater effect in favour of either intervention *or* Point estimate suggests small or greater effect in favour of one intervention but 95% CI does not exclude negligible or greater effect in favour of the other intervention

[d] If the ratio of the upper to lower boundary of 95% CI is 2.5 or more than the number of participants is insufficient for precision.

Publication bias	**Downgrade 1**	**Downgrade 2**

(Continued)

No decision needed (see methods)	—	—

WHAT'S NEW

Date	Event	Description
20 December 2024	New search has been performed	Update of previous version from 2011. Updated review methods (search, eligibility criteria for interventions, use of GRADE certainty of evidence, organisation of comparisons and subgroups), results, discussion, and conclusions. Previously, 574 records screened and 21 trials included (1490 women) in 11 comparisons. Update screened 2400 studies with 63 trials (4920 women) included in three comparisons: exercise type (27 trials, 3 subgroups), exercise dose (11 trials, 5 subgroups), exercise intervention delivery (25 trials, 5 subgroups).
20 December 2024	New citation required and conclusions have changed	The previous review concluded that the evidence was insufficient to make any strong recommendations about the best approach to pelvic floor muscle training (PFMT), although we suggested that more supervision was better than little to no supervision. The review update took a more nuanced approach to examining PFMT supervision as approaches to supervision have changed (e.g. greater use of group supervision, remote methods). In the review update, we conclude that, for exercise intervention delivery, there is consistent, very low- to high-certainty evidence, of little to no difference in outcomes for women between in-person group supervision and in-person individual supervision (evidence from trials recruiting older women). And there is consistent, very low- to moderate-certainty evidence that e-health (e.g. web-based) or m-health (e.g. smartphone applications) approaches are better than posting written instructions for PFMT. For exercise type, the review update concludes there is low- or very low-certainty evidence that co-ordinated PFMT may be better than direct PFMT and that direct PFMT may be better than indirect training. There is also low-certainty evidence that there may be no benefit in combining indirect training with direct PFMT compared with direct PFMT alone. For exercise dose, the evidence remains insufficient (few trials, low-certainty evidence) to make strong statements about the implications for practice.

HISTORY

Review first published: Issue 12, 2011

CONTRIBUTIONS OF AUTHORS

EHS: conceptualisation, formal analysis, investigation, methodology, project administration, supervision, validation, visualisation, writing-original draft, writing-review and editing.

MSP: conceptualisation, formal analysis, investigation, methodology, validation, visualisation, writing-original draft, writing-review and editing.

BM: conceptualisation, investigation, writing-original draft, writing-review and editing.

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LC: conceptualisation, investigation, writing-original draft, writing-review and editing.

AP: conceptualisation, investigation, writing-original draft, writing-review and editing.

GV: conceptualisation, investigation, writing-original draft, writing-review and editing.

SW: conceptualisation, investigation, writing-original draft, writing-review and editing.

CD: conceptualisation, investigation, writing-review and editing.

HF: conceptualisation, investigation, writing-review and editing.

CJ: conceptualisation, investigation, writing-review and editing.

MM: conceptualisation, investigation, writing-review and editing.

SW: conceptualisation, investigation, writing-review and editing.

MW: conceptualisation, formal analysis, methodology, writing-original draft, writing-review and editing.

DECLARATIONS OF INTEREST

Chantale Dumoulin, Licia Cacciari, Mélanie Morin (Dumoulin 2020) and Cristine Homsi Jorge (previously Ferreira) (Figueiredo 2020) were authors of trials included in the review. They had no direct involvement in study eligibility decisions, data extraction, risk of bias assessment, or GRADE assessment of any trial for which they were an author.

Chantale Dumoulin (current), Jean Hay-Smith (past) and Sheila Wallace (past) are or were Cochrane Editors. None had any involvement in the editorial process for this review.

The following review authors disclose no other relevant interests: Daniela Aldabe, Licia Cacciari, Helena Frawley, Brittany Moller, Mélanie Morin, Ana Carolina Pitangui, Giovana Vesentini, Sheila Wallace, Mark Weatherall, Stephanie Woodley.

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DIFFERENCES BETWEEN PROTOCOL AND REVIEW

As this was an updated Cochrane review, the previous review was the protocol (Hay-Smith 2011). We made the following changes.

Background

Re-written to update information and supporting references.

Objectives

The review objective was unchanged, although to address the objective we chose three comparisons (with subgroups) rather than 12 comparisons as previously. The comparisons were revised to focus on three main clinical uncertainties. We used subgroups within the three main comparisons, rather than many comparisons, in an effort to make the review more clinically relevant.

Methods

Criteria for considering studies for the review

We included cluster-randomised controlled trials where previously we had excluded them. We made this change because, pragmatically, in some research settings, a cluster-RCT is the only reasonable design (e.g. randomisation of whole villages in remote rural settings). It is important that as many trials as possible are included that reflect the range of settings that reflects where PFMT programmes are delivered.

Types of interventions were more clearly defined in the update. This was necessary for the new structure of comparisons and subgroups, and alignment with current terminology on conservative management of pelvic floor muscle dysfunction (Bø 2017).

For outcome measures, we chose a single primary outcome measure (previously two measures) and selected the one (incontinence quality of life) that matters to women (Dumoulin 2012; Herbison 2009), and for which there is evidence of robust psychometric properties (Castro-Diaz 2023a). We also reduced the number of outcome measures overall from 13 to six. All outcomes could then be used in a summary of findings tables (see below).

Data collection and analysis

Data extraction and management

The data extraction template was updated to ensure we covered all aspects of the Consensus on Exercise Reporting Template-Pelvic Floor Muscle Training (CERT-PFMT; Slade 2021).

Measures of treatment effect

For dichotomous outcomes (improvement, satisfaction), we changed from a risk ratio to an odds ratio.

In the update, there was sufficient data from continuous outcomes measured using different scales (incontinence quality of life) that meta-analysis was possible and done using a standardised mean difference.

Unit of analysis issues

Previously, we included a single trial in more than one comparison if: 1. the interventions being compared would 'fit' more than one comparison, or 2. the trial had more than two eligible interventions arms. In the update, each trial was allocated to a single comparison.

With the inclusion of cluster trials, we planned to use the adjusted effect estimate for analysis.

Dealing with missing data

In the update, if we were unable to source the data from the trialists, we did estimate a mean and standard deviation from a median and interquartile range if these were reported (McGrath 2020).

Summary of findings and assessment of certainty of the evidence

The previous review predated summary of findings tables and certainty of evidence statements. These were included in the update, consistent with methods and recommendations described in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2023).

INDEX TERMS

Medical Subject Headings (MeSH)

Bias; *Exercise Therapy [methods]; Muscle Contraction [physiology]; *Pelvic Floor; Quality of Life; *Randomized Controlled Trials as Topic; *Urinary Incontinence [rehabilitation] [therapy]; *Urinary Incontinence, Stress [rehabilitation] [therapy]; Urinary Incontinence, Urge [rehabilitation] [therapy]

MeSH check words

Female; Humans; Middle Aged