W21: Revisiting What Works and Why in Pelvic Floor Muscle Exercise Prescribing - a Biopsychosocial Integration of Science to Help Achieve Better Behavioural and Health Outcomes

Workshop Chair: Sarah Dean, United Kingdom
25 October 2024 09:00 - 10:30

Start	End	Topic	Speakers
09:00	09:10	Introduction to session & case studies followed by a refresh of exercise science and the principles of muscle strength training	Sarah Dean
09:10	09:20	What does work in PFME prescription? update of clinical trial evidence	Malgorzata Starzec-Proserpio E Jean C Hay-Smith
09:20	09:30	Assessment, planning and progressing of PFME prescriptions in clinical and non-clinical settings	Helena Frawley
09:30	09:40	Behavioural science theory and techniques to promote adherence to PFME	Sarah Dean
09:40	09:50	Widening implementation of PFME - adapting exercise parameters for population and prevention approaches	Victoria Salmon
09:50	10:20	Discussion	Sarah Dean Helena Frawley Victoria Salmon Malgorzata Starzec-Proserpio
10:20	10:30	Summary & evaluation	Sarah Dean

Description

Background Information: The workshop is open to all with an interest in supporting women to do their PFME. It will combine case-based studies and short talks with interactive discussion followed by panel debate, to revisit what works and why. Participants will be invited to rethink their prescribing habits and / or what they might say to support women to do their exercises. There will be opportunity to learn more about how to integrate evidence from exercise science, behavioural science and clinical trials with clinical practice and service implementation to maximise success in supporting women achieve pelvic floor health.

Sarah Dean will chair the session. Time will be given for participants to re-read the clinical vignettes. Sarah will start the session with a revisit of exercise science underpinning the principles of exercise for muscle strengthening (2). The second speaker, Malgorzata Starzec-Proserpio, will cover two aspects of evidence from recent Cochrane reviews (3,4). The first considers what 'type' of PFME is best, for example: direct versus indirect exercising (i.e. pelvic floor muscle exercise versus thigh or stomach 'core' exercises). The second considers the comparison investigating the teaching and supervision of PFMT, i.e., what exercise 'delivery' is best. Here, the results about group versus individual supervision of training will be discussed.

The third speaker, Helena Frawley, will discuss how to launch a PFME programme successfully through good assessment and exercise instruction (5). She will cover variations in prescription when clinic assessment or ongoing clinical supervision is not possible; when there is only one versus multiple contacts or group supervision.

Sarah Dean will then provide a resume of the underpinning behavioural science including the Behaviour Change Technique taxonomy (6). Initially focusing on what change techniques are typically used (goal setting techniques) Sarah will ask participants to consider how well these are used and what could still be done to enhance use, for example are women asked to verbally commit to their exercise goals and do they sign an exercise behavioural contract. Sarah will also introduce less well used techniques, such as credible source (of information) and prompts and cues and explain how these might be used.

The fourth and final speaker, Victoria Salmon, will describe the challenges of implementing PFME services in different social and health care contexts, with a focus on how we might widen access for all women to receive pelvic health care (7). Participants will be asked to consider how their prescriptions may need to be adapted if the purpose is a public health, population-based approach designed to be inclusive for all women without any pelvic floor dysfunction to prevent future problems. Finally, participants will be asked to consider the role of PFME specialists versus other health professionals and support workers, and what can be done to ensure all women receive consistent messages about PFME for pelvic floor health from everyone they encounter.

Throughout the session speakers will invite participants to return to the two clinical vignettes and reconsider their prescription choices. For the discussion panel section of the workshop all the speakers will be available to take questions from participants; panellists will also offer what aspects of PFME prescription still need further research.

To end the workshop Sarah will summarise the key learning points and check that participants are taking away messages that underpin the biopsychosocial approach. There are three messages for participants to consider: is their biological science (exercise physiology) up to date? Are they using psychologically informed behavioural science techniques in the best way possible? and have they considered how the overall evidence base should be adapted for individuals, for differing social contexts and for the different purposes of PFME prescription?

Key learning points: by the end of the workshop, participants will have:

1. Refreshed their understanding of exercise science, in particular the physiological principles of muscle strength training in the context of clinical trial evidence for PFME prescription.
2. Increased their awareness of underpinning behavioural science theory and techniques that have been shown to help optimise exercise adherence.
3. Considered how training parameters may differ for prevention versus treatment versus maintenance PFME regimens.
4. Reflected on their own PFME prescription habits and what else they could do implement scientific evidence and best practice principles into their own clinical practice.

Take home messages: There is more that can be done to maximise the success of PFME for women with common pelvic floor dysfunction such as urinary incontinence and pelvic organ prolapse. Asking clinicians to revisit their knowledge and understanding of muscle strength training is a start for ensuring their clinical practice is up to date with the science of muscle exercise physiology and clinical trial evidence; combining this with increased awareness and use of behavioural science theory and techniques could optimise their success with patients.

Knowing how to adapt exercise parameters according to the primary purpose of the prescription and reflecting on what is considered good practice in exercise prescription are additional take home messages.

Taking part in this workshop will help support all clinicians to take a fully integrated biopsychosocial approach, and for clinicians with differing backgrounds and expertise to give consistent messages, thereby supporting all women in their pelvic floor health.

Additional references

1 Kolb, D.A. (2015) Experiential learning: experience as the source of learning and development. 2nd edn. New Jersey: Pearson Education.

2 American College of Sports Medicine. (2009). Progression Models in Resistance Training for Healthy Adults. Medicine and Science in Sports and Exercise. 41(3) 687-708. doi: 10.1249/MSS.0b013e3181915670

3 Hay-Smith J, Starzec-Proserpio M, Moller B, Vesentini G, Cacciari L, Aldabe D, Dumoulin C, Homsi Jorge C, Frawley H, Morin M, Pitangui A, Wallace S, Weatherall M, Woodley S. (submitted). "What is the most effective pelvic floor muscle training type, dose, and delivery method for females with urinary incontinence? A Cochrane review with meta-analysis".

4 Woodley SJ, Lawrenson P, Boyle R, Cody JD, Mørkved S, Kernohan A, Hay-Smith EJC. (2020). Pelvic floor muscle training for prevention and treatment of urinary and faecal incontinence in antenatal and postnatal women. Cochrane Database Syst. Rev. doi.org/10.1002/14651858.CD007471.pub4

5 Slade, S. C., Morris, M. E., Frawley, H. & Hay-Smith, J. (2021). Comprehensive reporting of pelvic floor muscle training for urinary incontinence: CERT-PFMT. PHYSIOTHERAPY, 112 pp. 103-112.

6 Michie S, Richardson M, Johnston M, et al. (2013). The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions. Ann Behav Med;46(1):81-95. doi: 10.1007/s12160-013-9486-6

7 Salmon VE, Hay-Smith EJC, Jarvie R, Dean S, Terry R, Frawley H, Oborn E, Bayliss SE, Bick D, Davenport C, MacArthur C, Pearson M, and on behalf of the APPEAL study. (2020). Implementing pelvic floor muscle training in women's childbearing years: A Critical Interpretive Synthesis of individual, professional, and service issues. Neurourology and Urodynamics 39; 863-870. DOI: 10.1002/nau.24256

Aims of Workshop

This workshop aims to revisit the science underpinning pelvic floor muscle exercises (PFME) and what may make optimal exercise prescription depending on the target outcomes. Consideration will be given to different pelvic floor dysfunctions (stress, urge and mixed urinary incontinence; mild to moderate pelvic organ prolapse). Material covered will draw from clinical trial evidence; exercise science (physiological principles of muscle training) and from tried and tested behavioural science techniques. In addition, variations in exercise parameters will be discussed for prevention versus treatment versus maintenance regimens, with debate focusing on what else might be done to optimise adherence and outcomes.

Educational Objectives

Educational value occurs in three ways.

Firstly, it offers interactive learning by using case-based materials to facilitate participant involvement. Using a modified version of educational theory known as Kolb's reflective learning cycle (1) participants will read brief clinical vignettes of women with pelvic floor dysfunction. There will be options for deciding what PFME to prescribe, creating hypothetical but realistic experience for participants to reflect upon as speakers present. Participants refresh their knowledge and understanding of exercise and behavioural science allowing further evaluation of their PFME prescription decisions; this learning cycle stage is known as conceptualisation of better or alternative ways and analysing what could be done differently next time. The final stage in the learning cycle, active experimentation, is modified to become an action plan (of what to do next time). This can be discussed with the panel to help participants decide whether, or how, to update their practice.

Secondly, to facilitate interactive learning, the workshop is led by a team from different disciplines and work settings. All have a background in physiotherapy but bring additional skills and expertise that enable the workshop to have a multidisciplinary focus.

Thirdly, content focuses on biopsychosocial integration of science and evidence with clinical practice. It offers participants the chance to reflect on whether they are up to date with the underpinning science and clinical trial evidence; how they make sense of this evidence (based on an average patient) and then tailor care to an individual.

Learning Objectives

1. To refresh knowledge and understanding of exercise science principles for muscle strength training, including the current clinical trial evidence underpinning PFME prescriptions.

2. To raise further awareness of behavioural science theory and techniques that can be used to support change of behaviour needed for PFME adherence.

3. To reflect upon and discuss the practice of PFME prescription: assessment and exercise instruction for clinical and non-clinical settings and consider what variations in exercise prescription may be needed for treatment versus prevention or population-based approaches, and for different contexts and service settings.

Target Audience

Conservative Management

Advanced/Basic

Intermediate

Suggested Learning before Workshop Attendance

The two clinical vignette 'case studies' (see below) are for prior reading and will be used during the workshop.

Additional prior reading:

Frawley HC, Dean SG, Slade SC, Hay-Smith EJC. (2017). Is pelvic floor muscle training a physical therapy or a behavioral therapy? A call to name and report the physical, cognitive, and behavioral elements. Physical Therapy 97:425–437. PMID: 28499001 DOI: 10.1093/ptj/pzx006

Salmon VE, Hay-Smith EJC, Jarvie R, Dean S, Terry R, Frawley H, Oborn E, Bayliss SE, Bick D, Davenport C, MacArthur C, Pearson M, and on behalf of the APPEAL study. (2020). Implementing pelvic floor muscle training in women's childbearing years: A Critical Interpretive Synthesis of individual, professional, and service issues. Neurourology and Urodynamics 39; 863-870. PMID: 31845393 PMCID: PMC7079154 DOI: 10.1002/nau.24256

Workshop Case A

Maria is a 58-year-old woman (female at birth) and mother of two children (normal vaginal delivery). She has a part time office-based job. She has stress urinary incontinence symptoms, and grade I (posterior compartment) pelvic organ prolapse on examination (asymptomatic). Muscle assessment grade 3 Oxford, no palpable 'detachment' or unequal (left-right) contraction. She is overweight but not obese. She does a yoga class twice a week and joins a walking group with friends on Sunday mornings.

Consider your usual practice. Would your prescription of home pelvic floor muscle exercises (PFME) to treat the stress urinary incontinence (Maria's primary problem) be based on:

a) Repeated, isolated, voluntary pelvic floor muscle (VPFM) contractions (traditional, direct PFME)
b) VPFM contractions before/after other muscle contractions e.g. TrA, hip rotators (combined PFME)
c) VPFM contractions during activities of daily living e.g. cough, sneeze, sit to stand, lifting
d) VPFM contractions during other exercises e.g. plank, bridging, etc (coordinated PFME)
e) A mixture of all of the above
f) Other muscle contractions e.g. exercise classes, hypopressives without any VPFME (indirect PFME)

Would you ask Maria to do PFME at home

a) Twice or more every day
b) Once every day
c) 5 days a week
d) 3 days a week
e) 1 day a week
f) Whenever she remembers

How many contractions would you aim for in a row? (number of reps in a set). Assume you progress to this from an initial starting dose.

a) Don't have an upper limit, depends on re-assessment and progress
b) 30
c) 12
d) 10
e) 8
f) 5

How many sets per 'exercise' session?

a) Don't have an upper limit, depends on re-assessment and progress
b) 4 to 6 sets
c) 2 to 3 sets
d) 2 sets
e) 1 set
f) Cluster sets

Does your exercise prescription typically include

a) Near to full maximal effort contractions, short hold time (up to 10 secs) with rest in between
b) Quickly repeated contractions, no hold or rest time (quick flicks)
c) Near maximal effort contractions, longer hold time (more than 10 secs) with rest in between
d) A and B
e) A and C
f) A and B and C

Anything else?

Workshop Case B

Sophia is a 28-year-old woman (female at birth) who is planning to get pregnant. She has a very busy job with an international company, work involves travel and long hours. She has no symptoms of pelvic floor dysfunction. She is slightly overweight. She likes Pilates, and walks/jogs the local Park Run, but these activities are not easy to fit around her job. She wants an on-line consultation; she heard about pelvic floor muscle exercises but is not sure how to do them.

Consider your usual practice. Would your prescription of home pelvic floor muscle exercises (PFME) to prevent pelvic floor dysfunction (for Sophia before & when she is pregnant) be based on:

g) Repeated, isolated, voluntary pelvic floor muscle (VPFM) contractions (traditional, direct PFME)
h) VPFM contractions before/after other muscle contractions e.g. TrA, hip rotators (combined PFME)
i) VPFM contractions during activities of daily living e.g. cough, sneeze, sit to stand, lifting
j) VPFM contractions during other exercises e.g. plank, bridging, etc (coordinated PFME)
k) A mixture of all of the above
l) Other muscle contractions e.g. exercise classes, hypopressives without any VPFME (indirect PFME)

Would you ask Sophia to do PFME at home

g) Twice or more every day
h) Once every day
i) 5 days a week
j) 3 days a week
k) 1 day a week
l) Whenever she remembers

How many contractions would you aim for in a row? (number of reps in set). Assume you progress to this from an initial starting dose

g) Don't have an upper limit, depends on re-assessment and progress
h) 30
i) 12
j) 10
k) 8
l) 5

How many sets per 'exercise' session?

g) Don't have an upper limit, depends on re-assessment and progress
h) 4 to 6 sets
i) 2 to 3 sets
j) 2 sets
k) 1 set
l) Cluster sets

Does your exercise prescription typically include

g) Near to full maximal effort contractions, short hold time (up to 10 secs) with rest in between
h) Quickly repeated contractions, no hold or rest time (quick flicks)
i) Near maximal effort contractions, longer hold time (more than 10 secs) with rest in between
j) A and B
k) A and C
l) A and B and C

Anything else?

Revisiting what works and why in pelvic floor muscle exercise prescribing: a biopsychosocial integration of science to help achieve better behavioural and health outcomes

Workshop 21

Sarah Dean, Malgorzata Starzec-Proserpio, Helena Frawley and Victoria Salmon with contribution from Jean Hay-Smith

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Slide 1 – showing at start

Introduction & welcome to workshop 21

Sarah Dean
UNITED KINGDOM

Małgorzata (Gosia) Starzec-Proserpio
CANADA/POLAND

Helena Frawley
AUSTRALIA

Victoria (Tori) Salmon
UNITED KINGDOM

Jean Hay-Smith
NEW ZEALAND

Slide 2: I'm Sarah and I'm pleased to introduce Gosia, Helena and Tori. For family reasons Jean can't be here in person. She's thoroughly enjoyed working with the team to develop this workshop which is full of evidence-based and practical clinical content. She sends her warmest greeting to you all.

We invite you to join us in rethinking your Pelvic Floor Muscle Exercise prescribing and what you might say to women to support them to do these exercises, and we offer an opportunity to learn more about integrating evidence from exercise science, behavioural science, clinical trials and clinical practice with service implementation to maximise your success in helping women achieve pelvic floor health

S Dean[1], M Starzec[2], H Frawley[3], V Salmon[1,4]

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Affiliations to disclose:

[1]University of Exeter, UK
[2]University of Sherbrooke, Canada
[3]University of Melbourne, Royal Women's Hospital, Mercy Hospital for Women, Australia
[1]National Institute of Health Research, UK
[4]Health Innovation Network South-West, UK

Funding for speaker to attend:

- [X] Self-funded Dean, Starzec, Frawley, Salmon
- [X] Institution (non-industry) funded Dean, Starzec, Salmon
- [ ] Sponsored by:

Slide 3 We have no conflicts of interest to declare

Resources for Workshop: case studies

Maria, 58-year-old woman (female at birth), mother of 2 children (normal vaginal delivery)

Stress urinary incontinence symptoms, grade I (posterior compartment) pelvic organ prolapse on examination (asymptomatic), muscle assessment grade 3 Oxford, no palpable 'detachment' or unequal (left-right) contraction

Part time office-based job

Overweight but not obese, yoga class twice a week and walking group with friends on Sunday

Sophia, 28-year-old woman (female at birth) planning to get pregnant

No symptoms of pelvic floor dysfunction

Slightly overweight. Likes Pilates, and walks/jogs the local Park Run, but these activities are not easy to fit around her job

Very busy job with an international company, work involves travel and long hours

Wants an on-line consultation; heard about pelvic floor muscle exercises but not sure how to do them

Slide 4: You should have already received the handout with two case scenarios, one about Maria and one about Sophia. If you haven't already read them it is worth doing so now as we will be referring to them throughout the workshop. You can use this as a worksheet for each case, during the session to reflect on what you might say or do with Maria and Sophia, it is not a quiz or test, and we are not saying there is a right answer but rather an opportunity to reflect on what you do know, what you are learning in the workshop and whether you might consider changing your practice, and to make any notes.

Workshop Programme

- Introduction to session & case studies
- Exercise science and the principles of muscle strength training
- What does work in PFME prescription? Update of clinical trial evidence
- Assessment, planning & progressing of PFME prescriptions in clinical and non-clinical settings
- Behavioural science theory & techniques to promote PFME adherence
- Widening implementation of PFME - adapting exercise parameters for population and prevention approaches
- Panel Discussion
- Summary & evaluation

Slide 5: This is rough outline of the workshop, so let's get started....

Revisiting exercise science

Workshop 21

Sarah Dean

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Slide 6

Exercise science: principles of muscle strength training

Specificity

SAID
Specific Adaptation to Imposed Demand

Graded Progression

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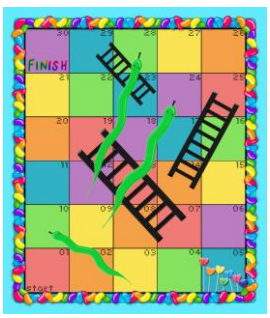
Reversibility

Overload

https://creativecommons.org/publicdomain/mark/1.0/

Individuality



https://www.deviantart.com/mcstacey/art/Snakes-and-Ladders-Board-Game-98920696. https://creativecommons.org/licenses/by-nc-nd/3.0/

On this slide I am capturing five of the basic principles of muscle strength training

First is **Specificity** – which can be remembered by using 'specific adaptation to imposed demands' or SAID – if this is the only principle you remember following this session then you will probably be able to work out the rest
The second is **Overload** – to get the adaptation, the demand needs to overload or 'tire' muscle, this is the training stimulus. However, it does not need to be overload to complete muscle failure but rather to sensation of fatigue
And the third one is **Graded progression** – once adaptation begins to happen the overload, or demand, needs to be increased, doing this as a graded progression maintains safe training stimulus as the adaptation occurs

Over time muscles respond with:
Neurogenic changes – improved timing, numbers and rate of fibres recruited
Myogenic changes – increased size/number of fibres (muscle bulk increases)

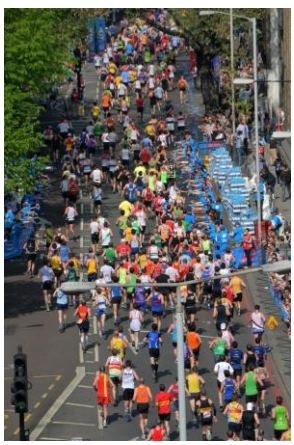
Other factors do need to be taken into consideration when setting the parameters of the exercise prescription: the fourth principle is **Individuality** – age, genetics, novice v trained, baseline strength

And sadly, the snakes and ladders picture depicts the 5th principle covered here, that of **Reversibility** – if you stop, you detrain

https://www.acsm.org/blog-detail/acsm-certified-blog/2019/07/31/acsm-guidelines-for-strength-training-featured-download

Exercise science: muscle training physiology

Marathon = stamina
Type I fibres



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100m sprint = power
Type IIA fibres

https://upload.wikimedia.org/wikipedia/commons/d/d2/London_2012_Olympic_100m_final_start.

400m sprint = speed endurance
Type IIB fibres

https://upload.wikimedia.org/wikipedia/commons/9/98/400m_finish_olympics_2000

When we are considering the parameters of our exercise prescription we do also need to think about the way muscles work, their physiology, and what we are aiming to achieve from the exercise training programme:

Skeletal muscles can be split into three main types;
Type I fibres: these are slow twitch, using oxygen as their energy source – also known as aerobic work. These fibres are designed for 'stamina'/'endurance', to work at low percentage of max effort (e.g. 30%) for many hours. The analogy here is with marathon runners, the picture on the left. To improve the function of these muscle fibres we would need to prescribe stamina training – many hours of low-level workouts, not strength training which targets the Type II fibres

Type II fibres are divided into two groups
Type IIA fibres: are fast twitch, they do not use oxygen and do not produce lactic acid – known as a-lactic anaerobic work. They work at a very high percentage of maximum effort for very short periods of time, about 10 seconds. The analogy is the 100m sprinter, who can complete their race without getting out of breath or feeling like their legs are going through treacle (if they can do 100m in 10 secs of course!), importantly these fibres, once worked, need quite a bit of rest before being able to fire again. These fibres are really designed for power (where power =

speed x strength), and we need to prescribe one-off as near to maximal efforts as possible to optimally train them

Type IIB fibres: are also fast twitch, they also do not use oxygen but do produce lactic acid – known as anaerobic work. They work at high percentage of max effort for short periods of time, about 45 seconds. The analogy is the 400m sprinter; who is likely to find the last 50m to 100m of their race being like running through treacle (unless they are world elite level!). If fully depleted these fibres will also need quite a bit of time to recharge their fuel supply, hence we break up the training into sets and prescribe sub-maximal efforts. In athletics this type of training is known as speed endurance – although the better term would be power endurance, as we are aiming to maintain top speed and maximum strength....

Principles of muscle strength training

SAID
Specific Adaptation to Imposed Demand

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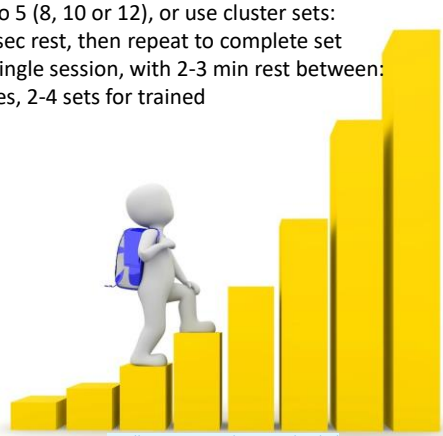
Specificity:
The right anatomy
The right motor unit recruitment
Learn the technique
Then build the muscle

Overload:
Build repetitions to 5 (8, 10 or 12), or use cluster sets:
2-3 reps, then 15 sec rest, then repeat to complete set
Build sets within single session, with 2-3 min rest between:
1 set OK for novices, 2-4 sets for trained



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Graded Progression: may take up to 16 weeks
Graded Progression: 2-4 'quality' sessions per week, 1 OK for novices

Lets now put some of the information from the last two slides together and start applying the principles to pelvic floor muscle training

The SAID principle includes making sure you are using the correct anatomical target - the pelvic floor muscles not thigh muscles or back or abdominal 'core' muscles
Then there is a need for the person to learn the technique for neurogenic changes – to get the motor unit recruitment happening and for this to become an optimally synchronised recruitment

Someone with stress incontinence will need to learn how to quickly recruit their muscles (to create power) so we aim to train the Type IIA fibres – the rate of force production is important, as smaller motor units are recruited first (mainly slow twitch fibres) then the larger motor units will start firing (these have the fast twitch fibres). However, patients also need a sustained near maximal hold for duration of cough, sneeze, lift etc so our training programme should not be just about quick fires of Type IIA fibres but also to ensure we are training the Type IIB fibres, hence our prescriptions include sets of repetitions. Remember the Type IIA fibres tire very quickly if they have produced a very near maximum force, so a series of quick fires without any rest between a repetition is unlikely to be the

optimal training regimen for them.

Overload means a quality session that tires muscles. Note tire is not complete failure. It is no longer recommended to train to muscle failure. Use the point of feeling the muscles fatigue to decide the number of repetitions to start with as may need to build up to the optimal number of repetitions, this is known as conditioning work. Can rest between reps (a few secs) or use 'cluster sets' which is doing 2-3 reps continuously then 15 sec rest, then another cluster of 2-3 reps to complete a full set of 4 or 6 etc
Aim for 2 to 4 sets within one session. Starting with one set is OK for novices. Have a 2-3 min rest intervals between sets. More sets, up to 4, is better in well-trained people providing no drop in training intensity.
If you think Type I 'stamina' training is needed then don't forget that they do get used in the initial part of the force generation that occurs in strength training, plus they operate at a low level of effort throughout a day when upright, if you want to train these fibres then lower level intensity (under 50% effort) for more repetitions (15-20) will help improve muscular endurance.

Progression builds over weeks, to optimise the myogenic changes (muscle fibres bulk up / more fibres overall) this may take 12 to 16 weeks.....
2 'quality' sessions a week as minimum to get therapeutic benefits, up to 4 per week is optimal (note for strength training daily sessions is not optimal!)
For complete novices even 1 session a week will still see some progress. ACSM guidance states at least 48 hours between sessions!

Progression Models in Resistance Training for Healthy Adults. Medicine & Science in Sports & Exercise 41(3):p 687-708, March 2009. | DOI: 10.1249/MSS.0b013e3181915670

Garber, Carol Ewing Ph.D., FACSM, (Chair); Blissmer, Bryan Ph.D.; Deschenes, Michael R. PhD, FACSM; Franklin, Barry A. Ph.D., FACSM; Lamonte, Michael J. Ph.D., FACSM; Lee, I-Min M.D., Sc.D., FACSM; Nieman, David C. Ph.D., FACSM; Swain, David P. Ph.D., FACSM. Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory, Musculoskeletal, and Neuromotor Fitness in Apparently Healthy Adults: Guidance for Prescribing Exercise. Medicine & Science in Sports & Exercise 43(7):p 1334-1359, July 2011. | DOI: 10.1249/MSS.0b013e318213fefb

Learning:

- Teach correct technique involving the specific anatomy
- Teach timing of contraction with hold for when it is needed
- Do regularly / when needed

Strengthening:

- Do quick, one-off near to maximal recruitment with hold (Type IIa – up to 10secs)
- Do repeated near-maximal recruitment in sets (Type IIb – up to 45 secs overall)
- Establish when fatigue starts, use to guide progression of reps, holds & sets
- Do 2 to 4 ‘quality’ sessions a week (1 session would be OK)

Decide if this refresh of the exercise science and clinical trial evidence has helped you decide what exercise parameters you would select for Maria, our Case A scenario.

Here are some ideas about what will help her to learn the technique in a way that helps her condition, and what strength training regimen could be best for her

What does work in PFME prescription: update of cliniucal evidence

Workshop 21

Malgorzata Starzec-Proserpio
with contribution from Jean Hay-Smith

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PELVIC FLOOR MUSCLE TRAINING (PFMT): WHAT DOES WORK?

Update of clinical trial evidence

Jean Hay-Smith PhD

Rehabilitation Teaching and Research Unit,
Department of Medicine, University of Otago,
Wellington, NEW ZEALAND

Małgorzata Starzec-Proserpio PT PhD

Centre Hospitalier Universitaire de Sherbrooke
Faculty of Medicine and Health Sciences
University of Sherbrooke, CANADA

Department of Midwifery
Centre of Postgraduate Medical Education
Warsaw, POLAND

Thank you Sarah.

We know that PFMT (repeated PFM contractions and relaxation), is an effective treatment for urinary incontinence. However, in the PT world and especially on social media, there is debate about the best way to do the PFM exercises. These conflicting opinions are often based on personal experience or small, attention-grabbing studies, rather than robust research.

So, several big questions persist.

There is now robust evidence to address these questions in an updated Cochrane review. This review took 2 years of hard work and was conducted by an outstanding team of 14 specialists, and on their behalf, I am thrilled to share the results with you today.

Comparisons of approaches to PFMT for UI in women

[in review/submitted]

- Trials: 64 completed randomised trials
- Typical participant: middle aged, overweight, parous, SUI or stress-predominant MUI
- Comparisons: different **exercise types** (27 trials), dose (11 trials) or **delivery** (26 trials)
- Outcomes: **incontinence quality of life** (primary), incontinence episode frequency, improvement, satisfaction
- Cochrane methods and Grading of Recommendations, Assessment, Development and Evaluation (GRADE)

We screened almost 2,500 records to include 64 randomized trials, providing data from almost 5,000 women!

We were primarily interested in the quality of life related to incontinence, and these are the results I will present today.

We used stringent Cochrane methods, and we applied the GRADE certainty of evidence process for deriving the evidence summary statements.

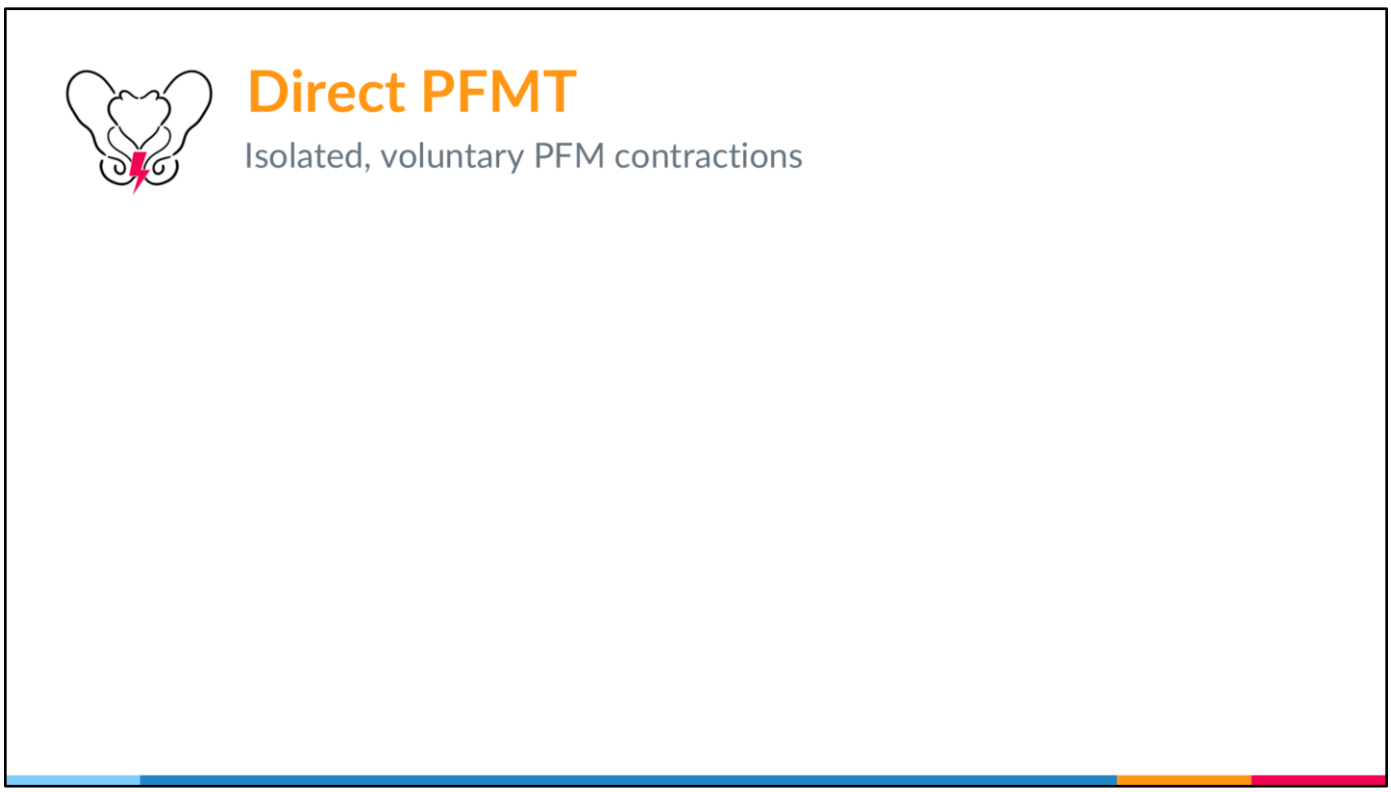
For this workshop, we are focusing on the two most hotly debated questions:
What type of PFM exercises are most effective?
And what about group exercises? Hot or not? ;)

1.

Exercise type

Other PFMT versus 'standard' PFMT

To investigate EXERCISE TYPE we distinguished several different approaches.



First, there is ‘standard’ PFMT which we called Direct PFMT. This means isolated, voluntary PFM contractions. Commonly known as "Kegels," they are currently our gold standard.

We compared all other approaches to exercises to direct PFMT because in order to recommend another type of exercise it needs to be better than this gold standard approach.

Direct PFMT

Isolated, voluntary PFM contractions

Coordinated PFMT

Voluntary PFM contraction coordinated with other body movement (e.g., Pilates with voluntary PFM contraction)

The next is COORDINATED PFMT. These are approaches that incorporate voluntary PFM contraction into other exercise. An example of this would be Pilates with the instruction to voluntarily contract the PFM during different Pilates positions.

Direct PFMT

Isolated, voluntary PFM contractions

Coordinated PFMT

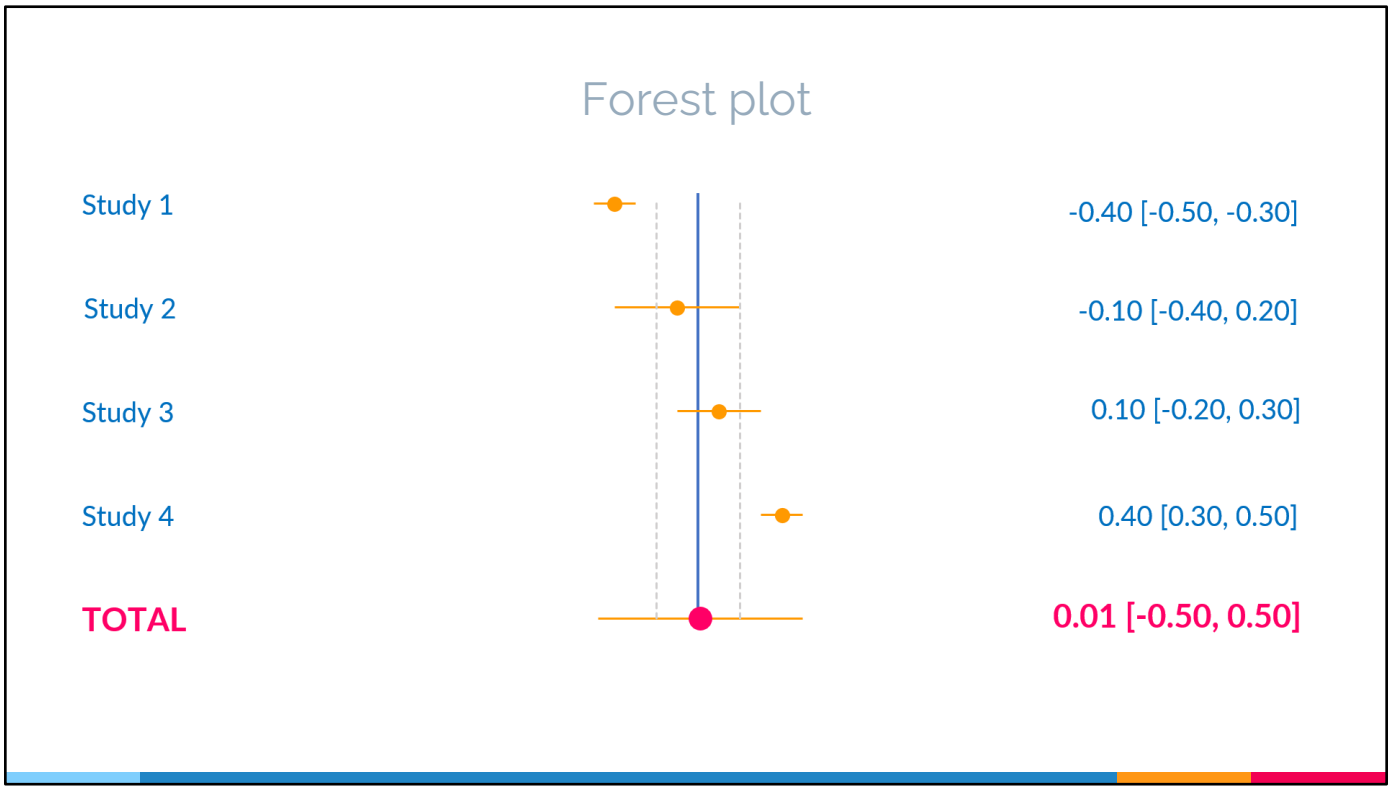
Voluntary PFM contraction coordinated with other body movement (e.g., Pilates with voluntary PFM contraction)

Indirect exercises

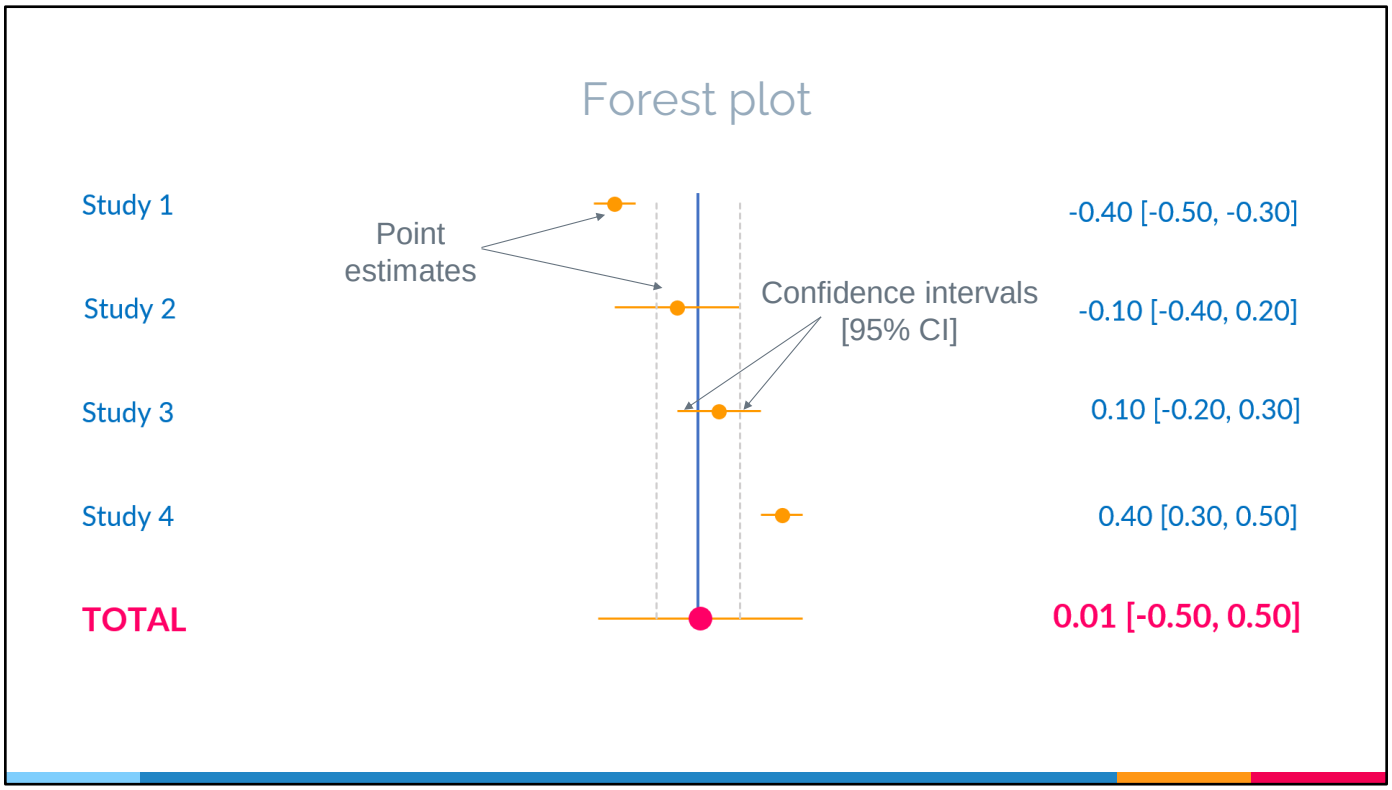
Exercises aiming to improve PFM function without any voluntary PFM contraction (e.g., Pilates)

And finally we have INDIRECT EXERCISES. These are all the exercise approaches WITHOUT VPMC. They are claimed to improve PFM function (and thus UI) through reflexive PFM activation. An example of this would be Pilates exercises with no instruction to voluntarily contract the PFMs.

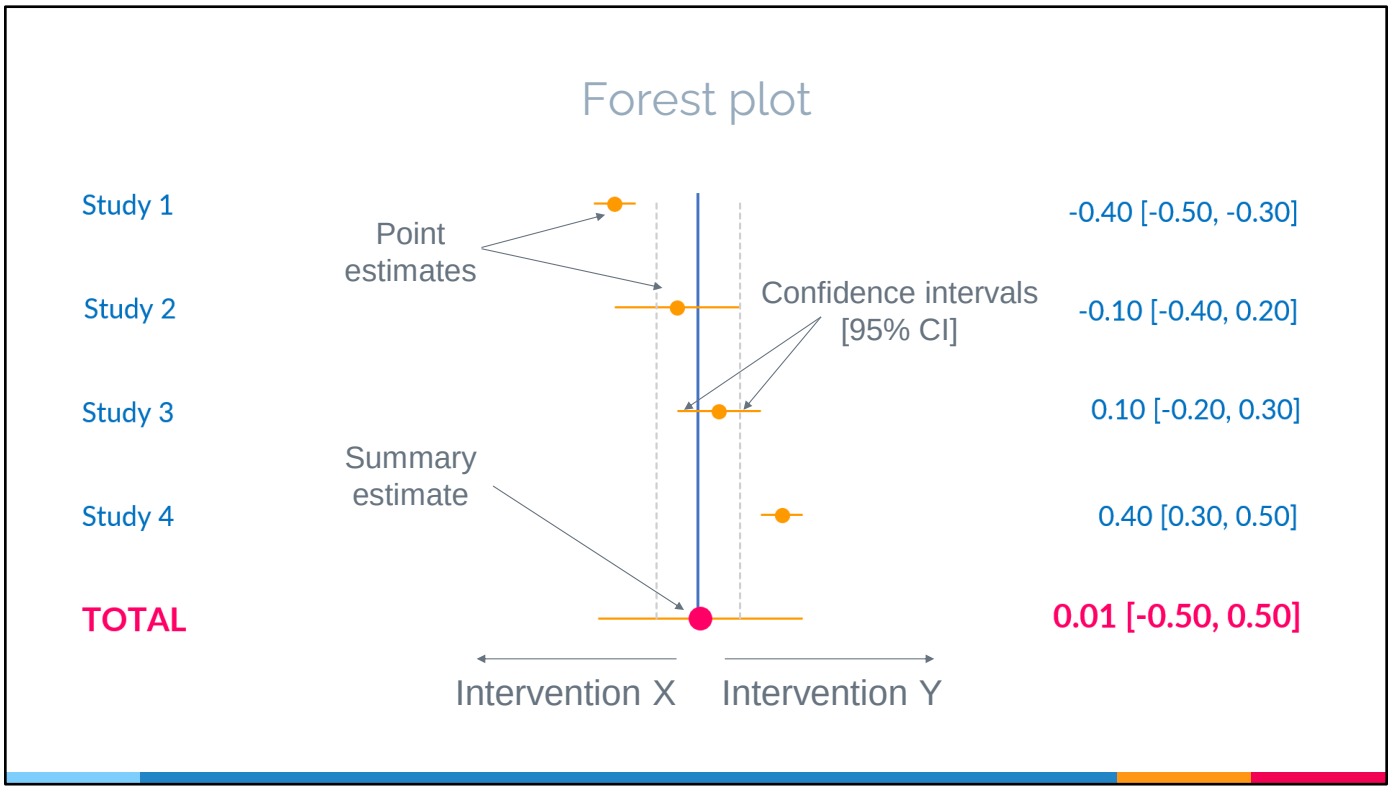
Functional PFM exercises (such as „the Knack" where voluntary contraction is incorporated into ADL) is missing from this list because we found no trial directly comparing only functional PFM exercises versus only direct PFMT.



I'll show you our results using forest plots.



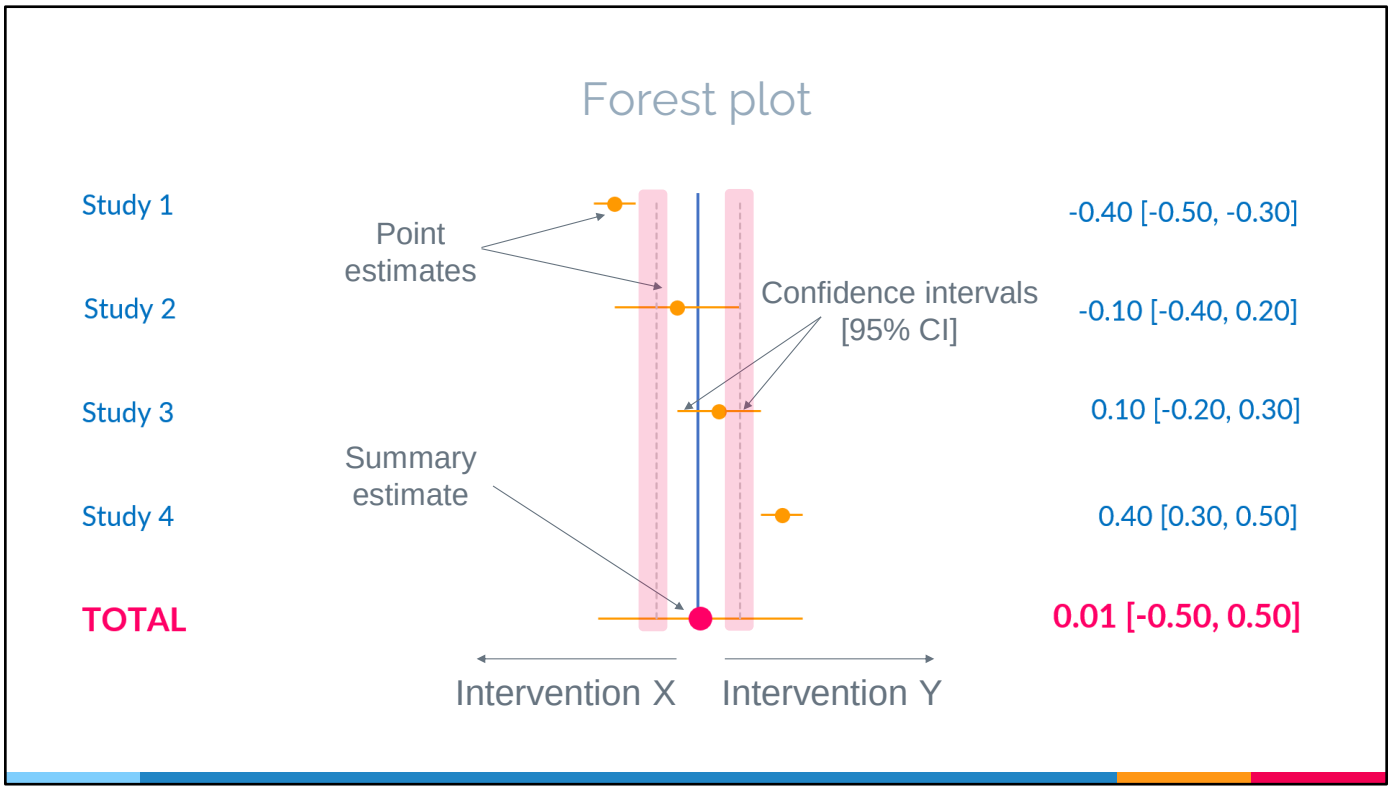
Each trial has a round orange dot, and a line, to show the result of that trial.



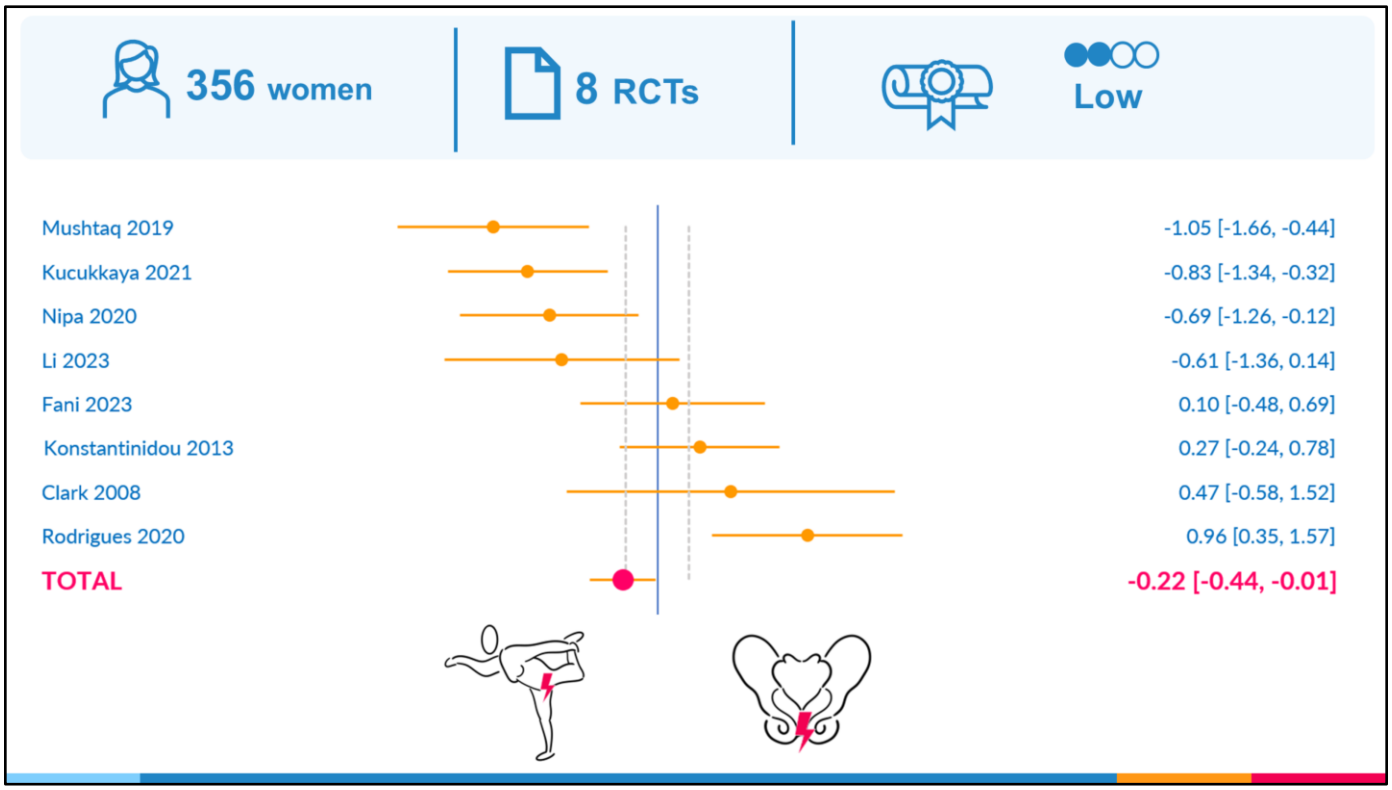
The overall result is the pink dot.

If the pink dot is on the solid blue vertical line, which we call **the line of no effect**, that means no important difference between the two exercise approaches.

If the pink dot moves to the left or to the right, then it favours one type of exercise or the other.

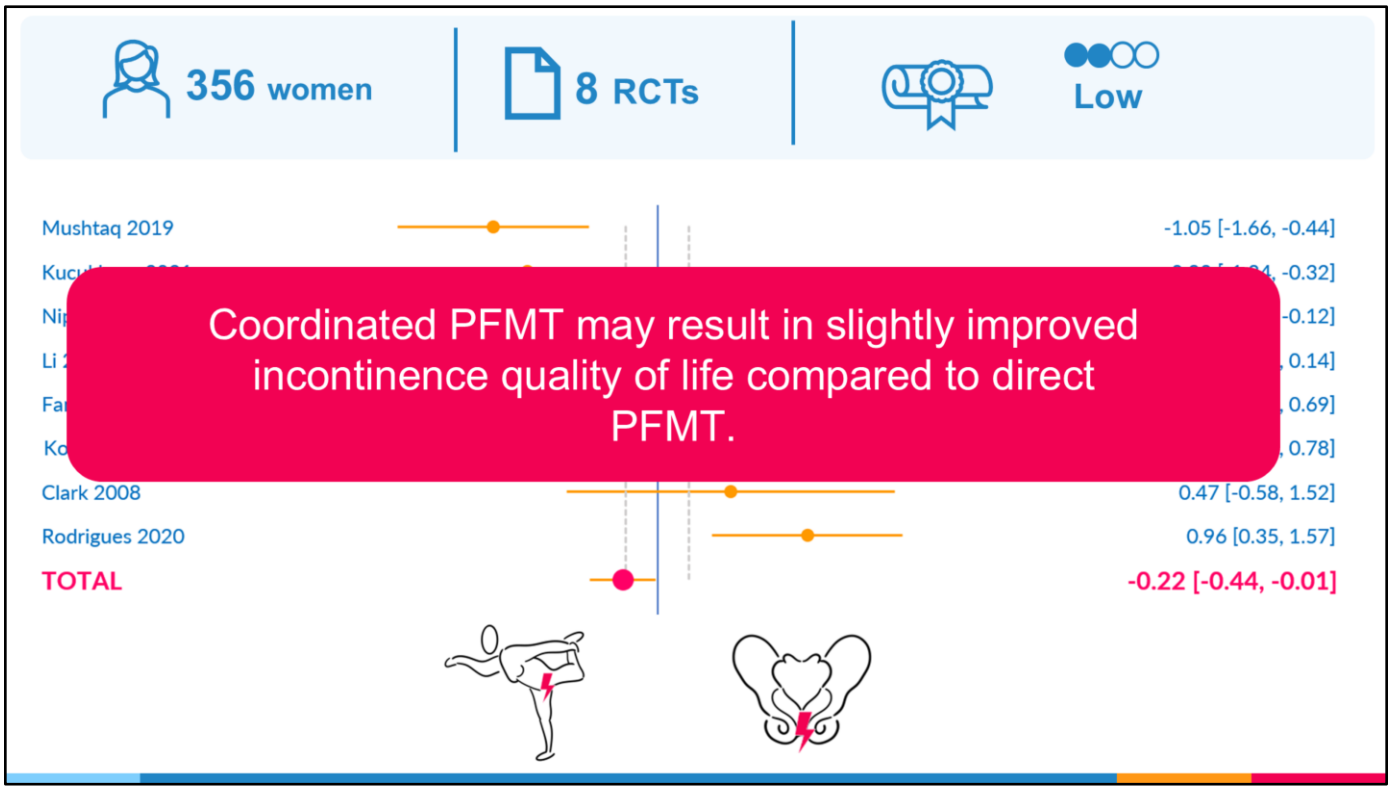


- The gray dashed lines reflect the thresholds for an important clinical effect.
- Therefore, for an important clinical effect, the pink dot needs to be more to the left of the dashed line on the left, or more to the right of the dashed line on the right.
- And that includes also the orange lines (confidence interval) – if they cross one or more of the vertical lines, then that decreases our confidence in the estimated effect.



Let's move to the first comparison and the result of coordinated vs. direct PFMT.
The coordinated training involved VPFM contraction during exercises such as Pilates, core stability, and general strengthening.
We can see a wide inconsistency in where the individual orange dots are.
Although the summary estimate – the pink dot - suggests coordinated training is better by a clinically important amount, the confidence interval (orange arms) cross a dotted line. This make us less confident about whether this is an important effect or not.

Pilates Mushtaq 2019
Abdominal training Kucukkaya 2021
Core stability Nipa 2020
Strenghtening Li 2023
CORE STABILITY Fani 2023
TrA Konstantinidou 2013
TrA Clark 2008
Pilates Rodrigues 2020



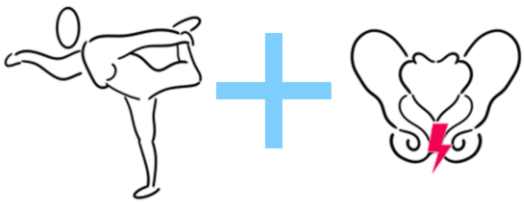
Therefore the certainty of evidence statement is that coordinated PFMT may result in improved incontinence quality of life compared to direct PFMT **but** the current certainty of evidence is low.

Indirect vs Direct

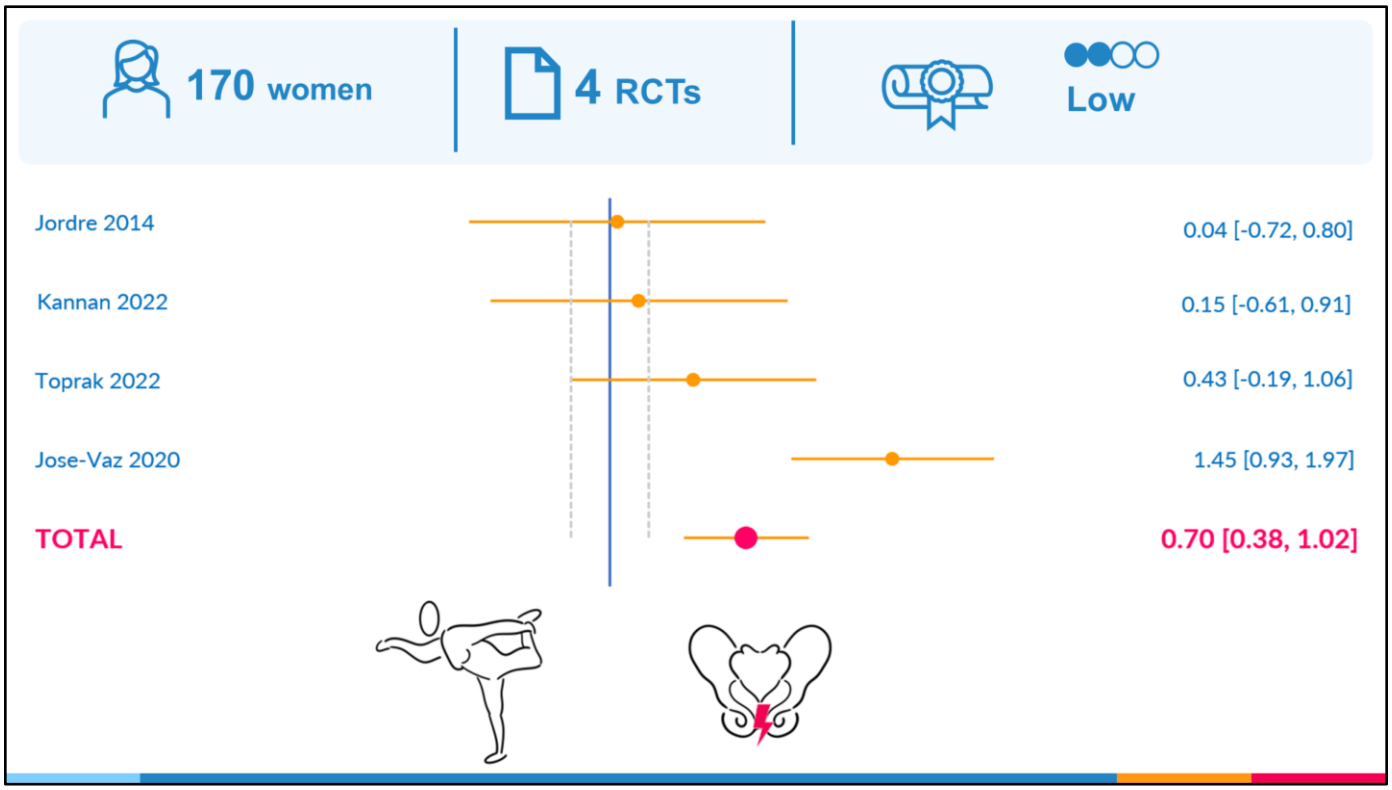
Then we have two results about indirect approaches to exercises for UI.
The first result is about indirect exercises vs. standard, direct PFMT.

Indirect vs Direct

COMBINED (Indirect+Direct) vs Direct

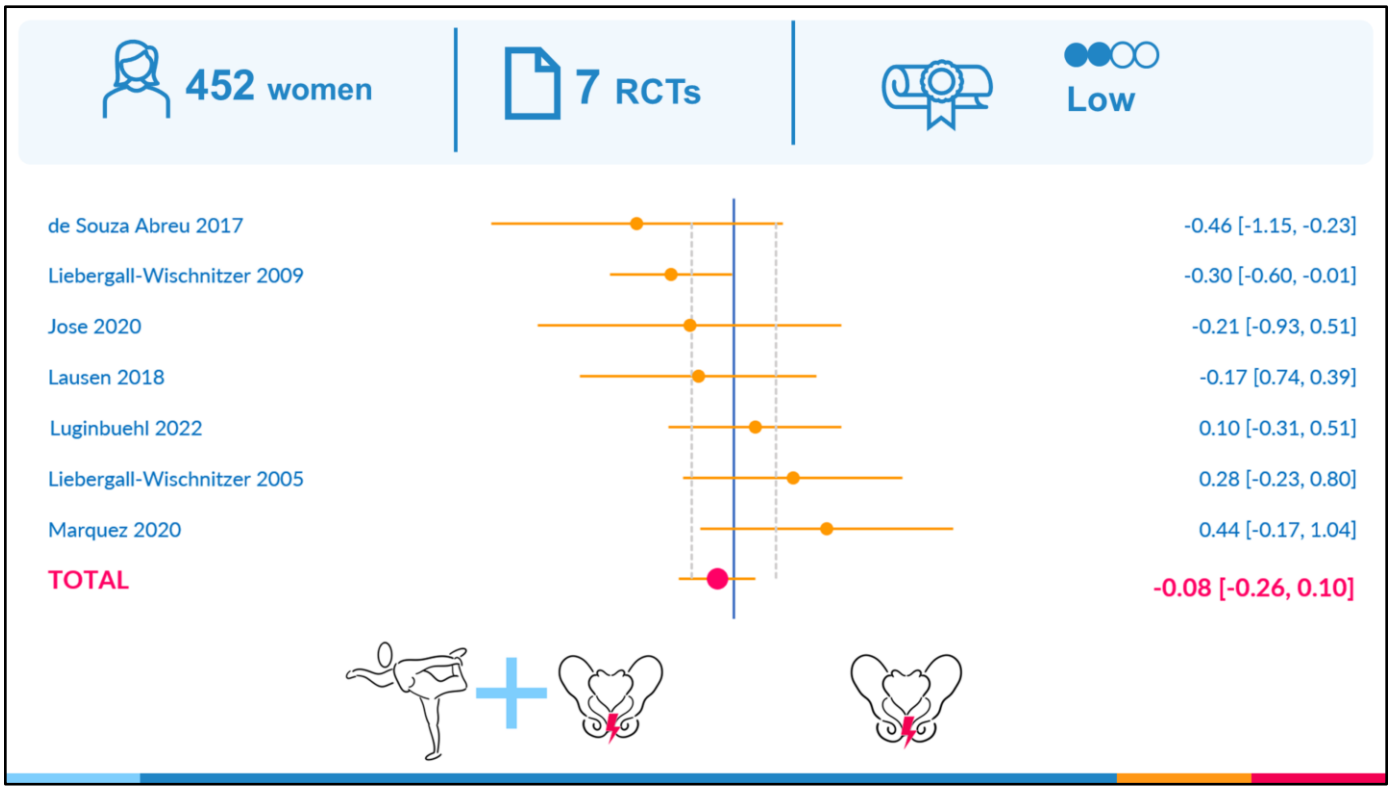


The second result is about the effect of doing indirect exercise added to standard direct PFMT versus doing the direct PFMT only.



So, let's first look at indirect exercise approaches as a standalone intervention. These include yoga, Pilates, Hypopressives, or other types of breathing exercises, without VPFMC
Effect estimates together with summary estimate, consistently show standard, direct PFMT is better.
Unfortunately there were not many participants in this comparison which affects our certainty.

Resisisted hip rotation Jordre 2014
Yoga, pilates Kannan 2022
Diaphragmatic breathing Toprak 2022
Hypopressives Jose-Vaz 2020



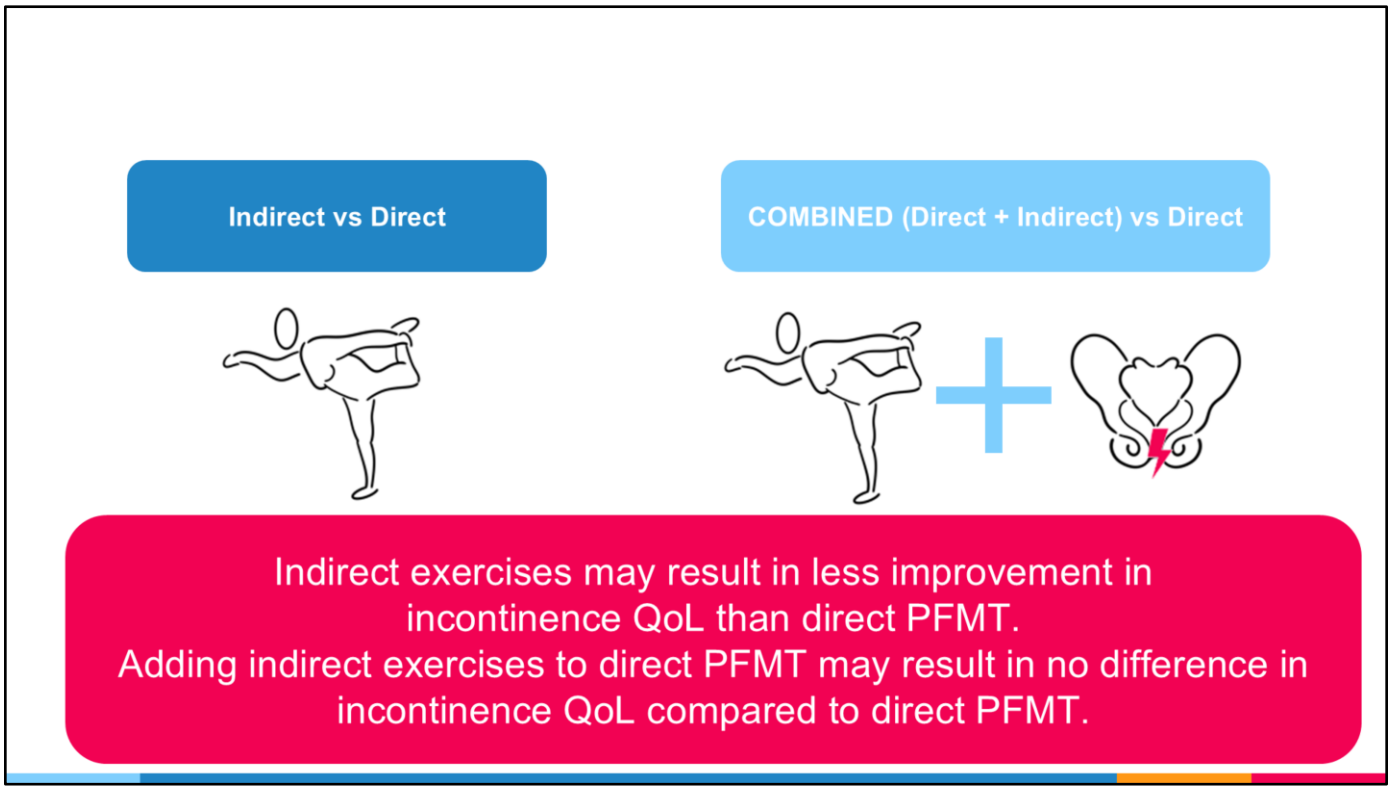
Let's now look at whether adding indirect exercises in addition to direct PFMT is more effective than just PFMT alone.

The meta-analysis suggests no important effect of adding indirect exercises to standard PFMT.

Lumbopelvic stabilisation de Souza Abreu 2017
Paula method Liebergall-Wischnitzer 2009
Palloff press (stabilisation) Jose 2020
Pilates Lausen 2018

Exercises that were said to elicit involuntary fast reflexive PFM contractions:
- running on the spot with pre-contraction
- squat jumps
- counter movement jump
- drop jump Luginbuehl 2022

Paula method Liebergall-Wischnitzer 2005
Resisted hip exercises Marquez 2020



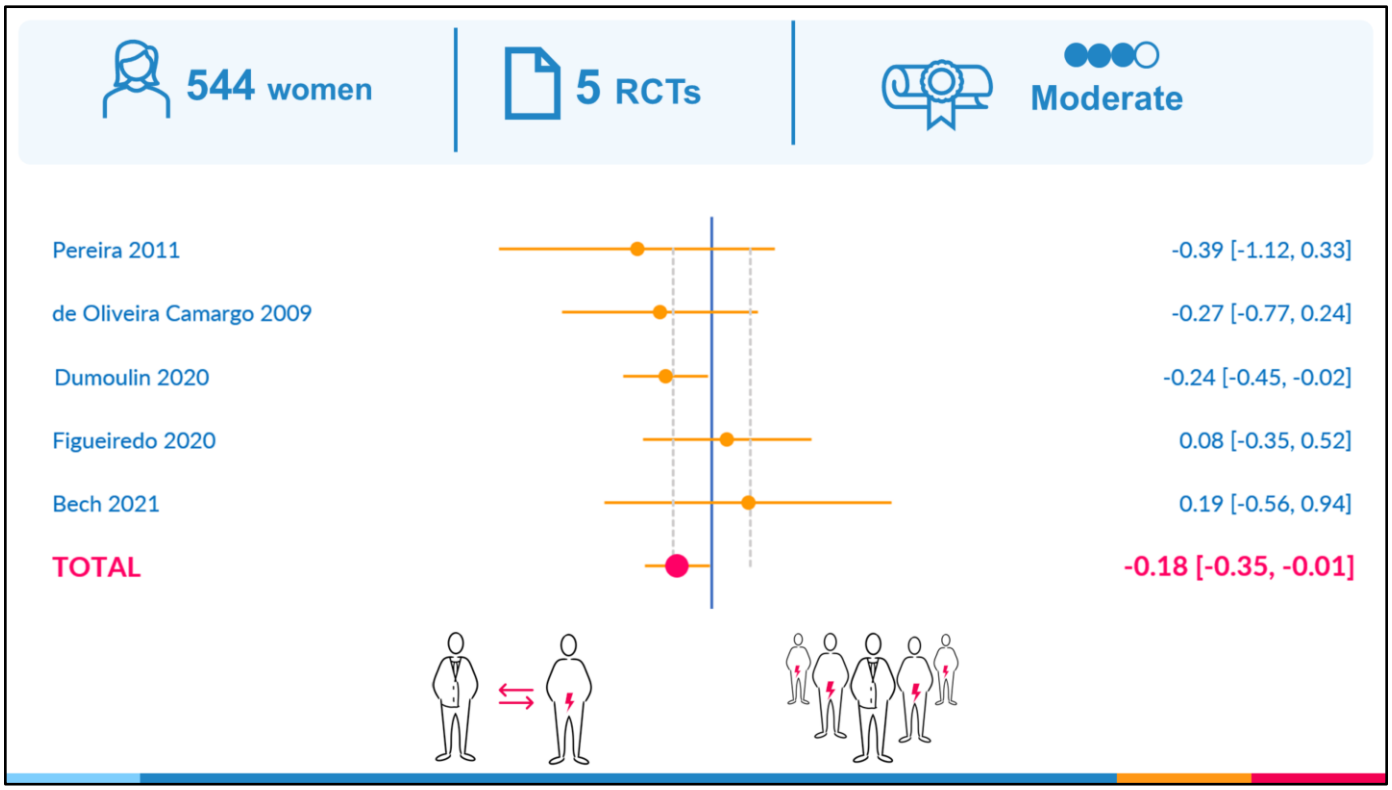
To summarize, Indirect exercises may result in less improvement in incontinence QoL than direct PFMT. Adding indirect exercises to direct PFMT may result in no difference in incontinence QoL compared to direct PFMT.

2.

Exercise intervention delivery

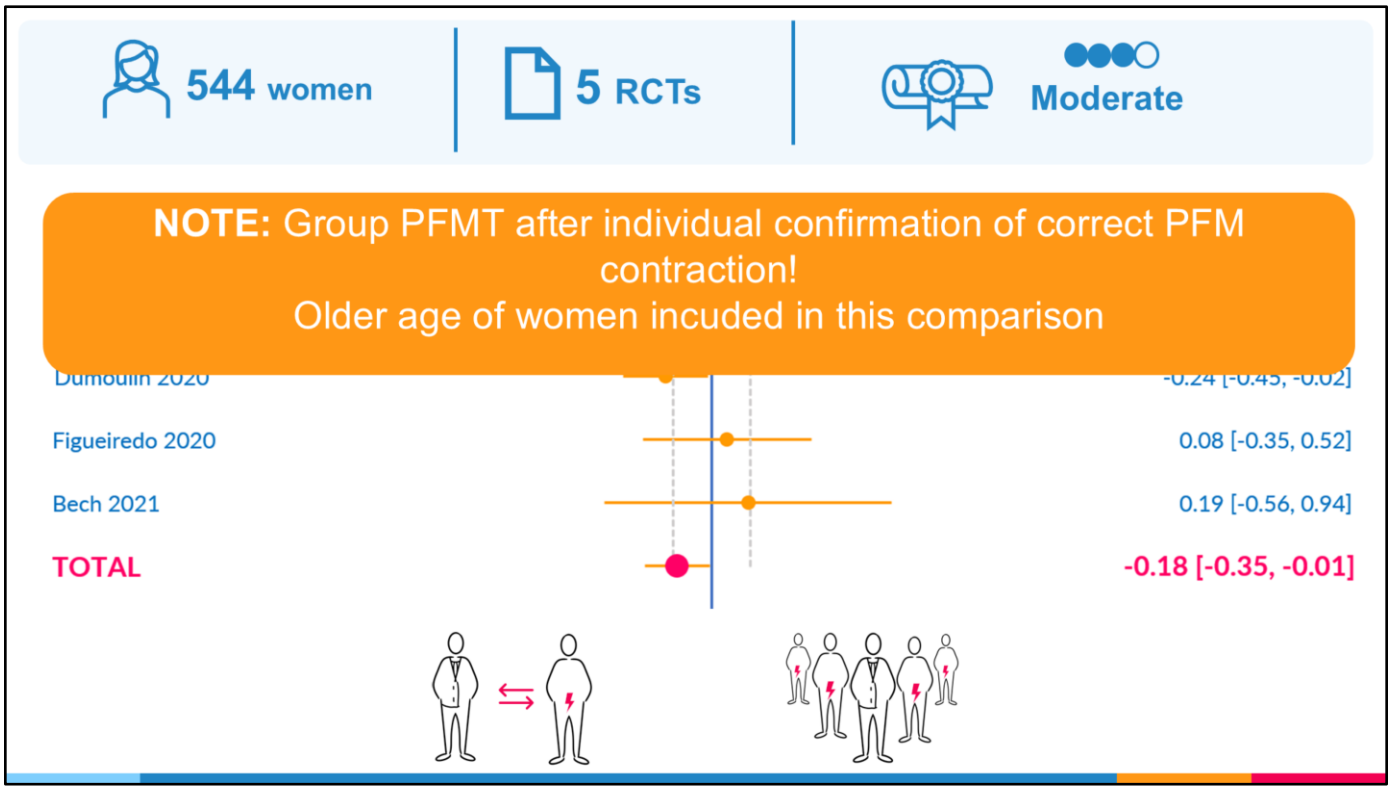
Group vs Individual

And finally, we arrive at the comparison investigating teaching and supervision of PFMT. Here I will show you the result about group versus individual supervision of training. I find this comparison extremely interesting considering common opinions suggesting group PFMT to be not only less effective but also potentially harmful. So, let's look at the data! Note, in all these studies the women are doing some standard direct PFMT.

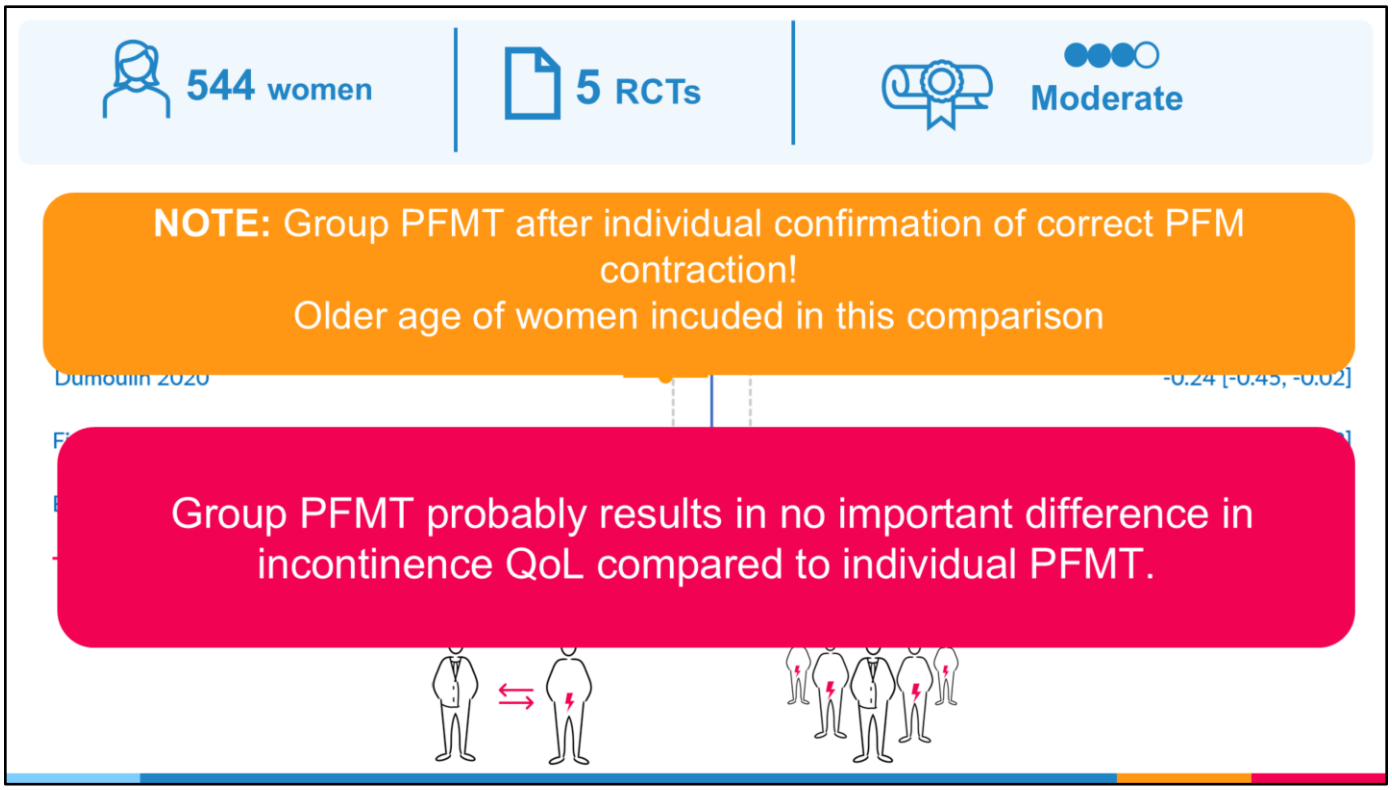


In this comparison, we may immediately notice the summary estimate lies between the dashed and solid line, suggesting this is not an important clinical difference. The confidence interval does cross the dashed line, so this decreases our confidence about the result a little.

Uooouu... That is not necessarily what we wanted to hear as physios, right?...



There are two relevant points to consider while interpreting the results of this comparison:
Firstly, in the majority of data is from women who had a correct PFM contraction confirmed prior to commencing group training. In some studies, even a period of individual therapy was included before joining the group training. Secondly, more of the women in these studies were older, which may be important when we think about the clinical interpretation of these results.



So the summary evidence statement is that group PFMT probably results in no important difference in incontinence QoL compared to individual PFMT.

Summary of key recommendations

So to summarize, what does the evidence say about how to do PFMT?

Summary of key recommendations

DO STANDARD, DIRECT PFMT

For a woman who can contract, always start here

Start with direct PFMT (we are not saying: never add anything else, but don't start with anything else!)

Summary of key recommendations

DO STANDARD, DIRECT PFMT
For a woman who can contract,
always start here

DO NOT CHOOSE
INDIRECT APPROACHES
AS A MAIN INTERVENTION
Available evidence suggest this is not effective.

Don’t choose an indirect method on its own – available data suggest this may not be an effective treatment.

Summary of key recommendations

DO STANDARD, DIRECT PFMT
For a woman who can contract, always start here

DON'T ADD INDIRECT APROACHES TO DIRECT PFMT
This increases complexity and may add no benefit

DO NOT CHOOSE INDIRECT APPROACHES AS A MAIN INTERVENTION
Available evidence suggest this is not effective.

Don't add indirect aproach to direct PFMT– this may add no benefit, just adds extra tasks for women to do, which may have implications for exercise behavior.

Summary of key recommendations

DO STANDARD, DIRECT PFMT
For a woman who can contract, always start here

DON'T ADD INDIRECT APROACHES TO DIRECT PFMT
This increases complexity and may add no benefit

DO NOT CHOOSE INDIRECT APPROACHES AS A MAIN INTERVENTION
Available evidence suggest this is not effective.

GROUP PFMT MAY BE AN OPTION!
If this is available and preferred, so long as a correct contraction is confirmed.

If group supervision is what your service offers, or if a woman prefers it, then as long as correct VPFMC is confirmed prior to group exercise, there may be no important difference in outcome.

Assessment, planning and progressing of PFME prescriptions in clinical and non-clinical settings

Workshop 21

Helena Frawley

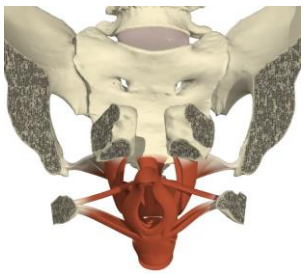
ICS 2024 MADRID

Assessment, planning and progressing of PFME prescriptions in clinical and non-clinical settings

- Starting a PFME prescription through good:
  - assessment
  - instruction
- Modes of delivery:
  - 1: 1 clinic based (in-person) assessment
  - Group program
  - 1:1 remote assessment
  - Self-assessment
- Clinical supervision
  - Ongoing with multiple contacts
  - Group versus one-to-one contacts
  - No supervision

Instruction and assessment of PFME in clinical settings

- Starting a PFME prescription through good:
  - Verbal instruction of structure and function
    - use good teaching props (diagrams, 3D models, videos)
    - For clinicians: clinical skill training:
      - https://www.continence.org.au/professionals/continence-learning Pelvic Floor Muscle Assessment Skills Training
  - Verbal teaching of a PFMC: allow a couple of patient attempts before seeking feedback
  - Refine with simple verbal assessment & feedback

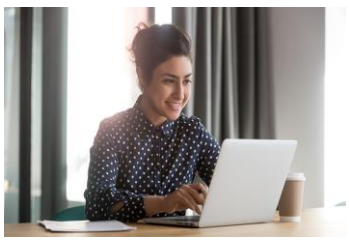


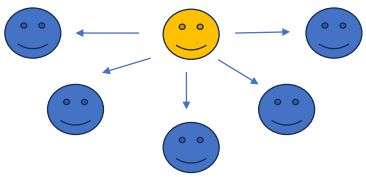
CFA assessment video
Pre-surgery: ERAS video https://vimeo.com/812265386/eeb46cbf2b

Assuming your interaction with the woman is live, i.e. person to person.
Will be different if you are providing an entirely remote, non interactive method, e.g. handout, e-based/digital health resource

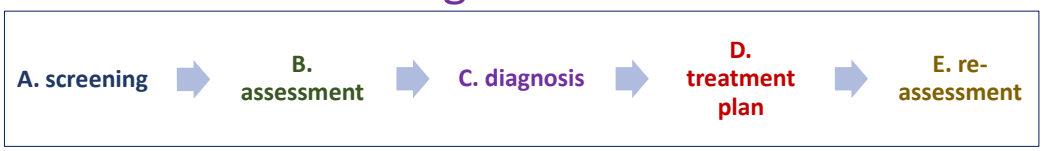
Instruction and assessment of PFME in non-clinical settings

- Remote verbal instruction, assessment and feedback can be the same as clinical / face-to-face setting
- Individual versus Group:
  - Can be same, but with less time and ability to visually monitor all participants in group and give individualised feedback





Clinical assessment: a part of clinical decision-making framework



Clinical signs:

- **Visual (perineum)**
- **Simple tests (perineum)**
- **Palpatory (per perineum, per vaginam, per rectum)**
- **Differential diagnoses (1°, 2°, 3°, etc), informed by clinical reasoning**

Frawley, H. C., & Brennen, R. (2023). Gynaecological cancer and pelvic floor dysfunction, ch 13. In K. Bø, et al (Eds.), *Evidence based physical therapy for the pelvic floor: bridging science and clinical practice* (3rd ed.). London: Elsevier.

Mateus-Vasconcelos ECL, Ribeiro AM, Antônio FI, Brito LGO, Ferreira CHJ. Physiotherapy methods to facilitate pelvic floor muscle contraction: A systematic review. Physiother Theory Pract. 2018 Jun;34(6):420-432. doi: 10.1080/09593985.2017.1419520.

Pena CC, Bø K, de la Ossa AMP, Fernandes ACNL, Aleixo DN, de Oliveira FMF, Ferreira CHJ. Are visual inspection and digital palpation reliable methods to assess ability to perform a pelvic floor muscle contraction? An intra-rater study. Neurourol Urodyn. 2021 Feb;40(2):680-687. doi: 10.1002/nau.24609.

Clinical assessment

- Indications, contra-indications, benefits, limitations
- Perineal visual observation:
  - use when external touch or internal examination is inappropriate
  - Often sufficient to observe a PFMC is present and technique is correct
- Perineal digital palpation
  - Can provide more feedback to facilitate correct PFMC
- Per vaginam
  - Digital palpation
  - More comprehensive assessment

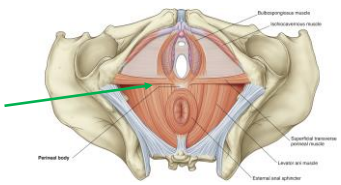


Image: from Gray's Anatomy for Students

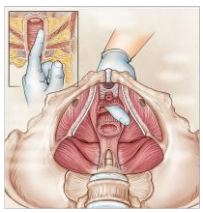


Image: Sarton 2010

Mateus-Vasconcelos ECL, Ribeiro AM, Antônio FI, Brito LGO, Ferreira CHJ. Physiotherapy methods to facilitate pelvic floor muscle contraction: A systematic review. Physiother Theory Pract. 2018 Jun;34(6):420-432. doi: 10.1080/09593985.2017.1419520.

Pena CC, Bø K, de la Ossa AMP, Fernandes ACNL, Aleixo DN, de Oliveira FMF, Ferreira CHJ. Are visual inspection and digital palpation reliable methods to assess ability to perform a pelvic floor muscle contraction? An intra-rater study. Neurourol Urodyn. 2021 Feb;40(2):680-687. doi: 10.1002/nau.24609.

Clinical assessment template

Frawley H, Shelly B, Morin M. 30 Nov 2021.
Content from: Frawley H, Shelly B, Morin M, et al. An International Continence Society (ICS) report on the terminology for pelvic floor muscle assessment. *Neurourol and Urodynam* 2021; 40:1217-1260.

External perineal visual observation

Test	Rating		
Perineal skin assessment	Normal skin	Altered	
Perineal body length (f)	< 3 cm	> 3 cm	
Perineal body position at rest	Normal	Descended perineum Elevated	
Introital gaping	Absent	Present	
Keyhole deformity	Absent	Present	location
Anal gaping	Absent	Present	location

External perineal movement, visual observation

Test	Rating	
Voluntary contraction of the PFM	Present	Uncertain Absent
Direction of movement with PFM contract	Perineal elevation	Perineal descent No change
Sex-specific movement on PFM contraction	Clitoral nod (f) Urethral meatus wink (f) Closure of anus (m) Testicular lift (m) Penile retraction (m)	
Relaxation of the PFM	Yes	Partial relaxation Delayed relaxation Non relaxing PFM
Perineal movement with sustained IAP / bearing down	No change Perineal descent	Perineal elevation Excessive perineal descent
Perineal movement with rapid IAP / cough (note if precontraction vs naive)	Perineal elevation Involuntary contraction No change	Perineal descent

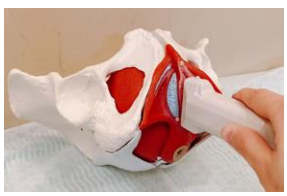
External digital palpation

Test	Rating		
Sensation	Normal sensation	Altered	allodynic, hyperalgesic, hyperesthesic, anesthetic, hypoalgesic, hypoesthesic, dysesthetic, paresthesic, neuralgic
Perineal scarring	Absent	Present	Location, degree of healing, adhesion extent and location, pain
Tone	Normal	Decreased Increased	
Tenderness	Absent	Present	Location, referral
Tender point	Absent	Present	Location, referral
Pudendal neurodynamics	Negative	Positive	/ 10 R L
Cotton swab test (f)	Negative	Positive	/ 10 location
Bulbocavernosus reflex (f)	Present	Absent	
Bulbospongiosus reflex (m)	Present	Absent	
Anal reflex	Present	Absent	
Voluntary contraction of PFM	Present	Uncertain Absent	

Pelvic floor muscle assessment

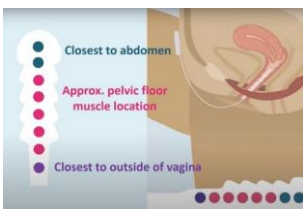
Measurement tools to assess different aspects of function and morphometry:

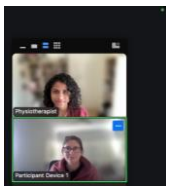
- sEMG: myoelectrical activity
- Transperineal ultrasound (B mode, shearwave)
- Algometry
- Myotonometry
- Manometry/pressure
- Dynamometry

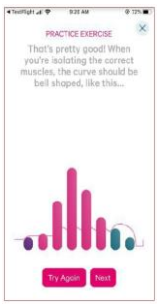


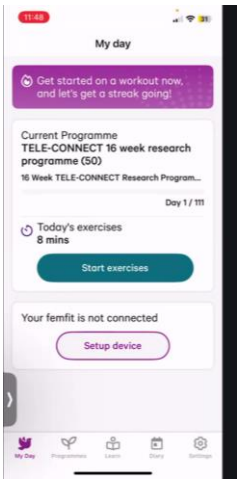
Instruction and assessment of PFME in non-clinical settings

- Remote (audio-visual) assessment
  - Need clear voice, language, instructions
  - If A-V, need good understanding of technology
  - May supplement with home device, e.g.
    - Femfit® intra-vaginal biofeedback device
    - Real-time feedback to:
      - Patient using app on smart device





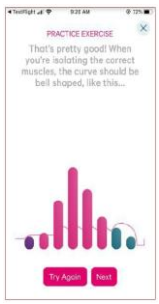


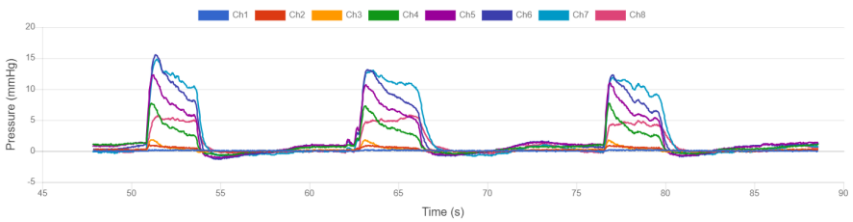


Examples from my telehealth trials

More comprehensive assessment of PFME in non-clinical settings

- Real-time feedback to:
  - Patient using app on smart device
  - Physiotherapist using
    - shared screen to monitor simultaneously
    - Web-based portal data to provide more sophisticated feedback and for analysis purposes





Examples from my telehealth trials

Planning and progressing PFME prescriptions in clinical and non-clinical settings

- Supervision, progression, maintenance:

CERT-PFMT ✓ ***C***onsensus on ***E***xercise ***R***eporting ***T***emplate

Checklist for reporting exercise programs – amended for Pelvic Floor Muscle Training (PFMT) (Slade 2021)

- modify according to
  - no follow-ups: provide self-progression exercise plan
  - limited follow-ups: provide self-progression exercise plan and confirmation of correct progress
  - 1:1 ongoing with multiple contacts: ability to re-assess
  - group ongoing with multiple contacts: progress group with individual modification based on verbal feedback if able

Behavioural science theory and techniques to promote PFME adherence

Workshop 21

Sarah Dean

ICS 2024 MADRID

Behavioural science theory, models & frameworks

Which one for understanding adherence?

There are many theories, frameworks, models and techniques
But no one theory or model or framework is 'best'
But many contribute and may help our understanding

Behavioural science theory, models & frameworks – which one?

Simplest
Understanding, Satisfaction & Recall (of information) = adherence (behaviour change) (Philip Ley 1982)

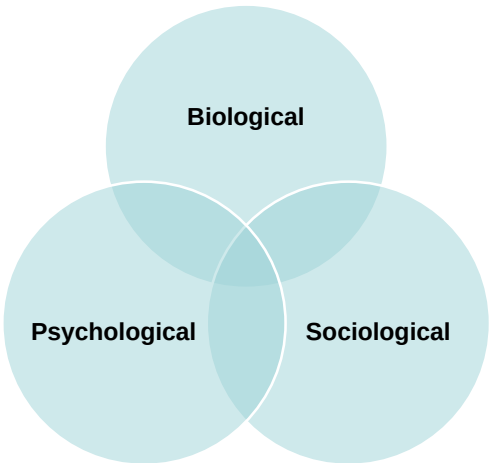
But
Knowledge – Behaviour Gap

I'm going to start with one of the simplest from Philip Ley in 1982. We need to be sure the information we give is of good quality and check there is no misinformation or misunderstanding, we need to check people are satisfied with what they have been told – does it align with their beliefs and expectations, and that they can recall it easily, so not too complicated or technical, and be careful it is not an overwhelming amount of information.

This led to straightforward interventions such as 'we simply need to educate our patients more' and 'provide them with memory aids', sadly this is seldom enough, having the understanding or know how doesn't mean it will happen, the determinants of human behaviour is more complex, and this is known as the **knowledge-behaviour gap.**

The lesson here is please do not assume simply educating your patient with lots of information will work – but equally this doesn't mean information and understanding is not needed, it is rather just part of what is needed, a platform to start from….and we then need to consider additional factors…..

The BioPsychoSocial Model (Engel 1977)



World Health Organisation (WHO)

International Classification of Functioning, Disability & Health (ICF), 2001

Based on the biopsychosocial model of health the WHO's ICF is an explicit rejection of the biomedical focus for describing, diagnosing and measuring disease (health).

Does not mean ignore the biomedical!

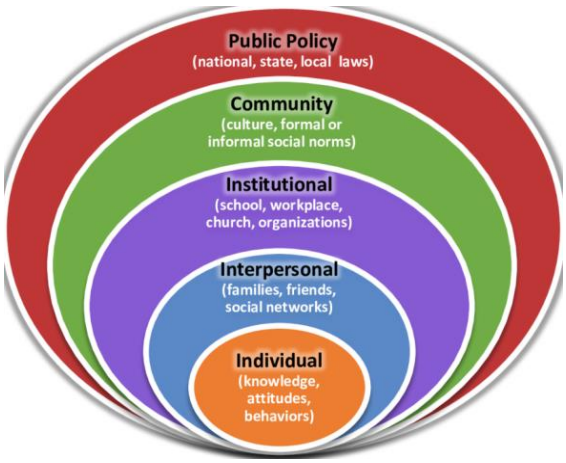
The ICF is an internationally accepted 'shared' language & tool for conceptualising health, a useful framework or 'map' for thinking about where and how to intervene…..

So lets go from a very simple straightforward model to look at something much bigger: the biopsychosocial model. I am sure you know this, sometimes shown as a Venn diagram of three overlapping circles, as on the left of this slide. Sometimes you see it depicted as a series of layers – I will show you a version of this in a moment. The basic premise here is that health is about more than just the biological, and the WHO adopted this as the basis of their current classification system, which is abbreviated to the ICF. It is an explicit rejection of the biomedical focus on disease and the traditional (outdated) view of health that the body is a machine, with broken parts that needs fixing, but this doesn't not mean ignore the biomedical completely…..the ICF does help us conceptually, but it is also very complex, so let's look at another version

Engel, GL (8 April 1977). "The need for a new medical model: a challenge for biomedicine". *Science. 196 (4286): 129–36.*
WHO (World Health Organization). (1980). International Classification of Impairment, Disability, and Handicap (ICIDH). Geneva: WHO.
WHO (World Health Organization). (2001). International Classification of Functioning, Disability and Health (ICF). Geneva: WHO.

Socio Ecological Model of Health

(McLeroy, 1988)

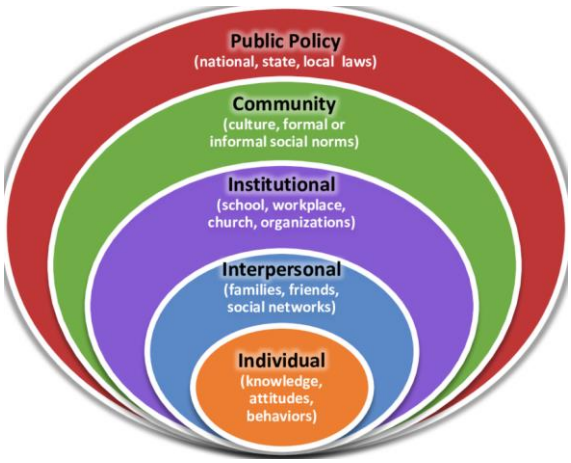


The colourfull figure on the left shows another way of depicting the biopsychosocial model from the last slide; this time using concentric rings with the inner orange circle representing the individual; then each band expands out, ending in the red outer band depicting the wider public policy, government and legislation.
It is a visual way of showing the layers of influence on our health. We can zoom in on the individual (the person-centred approach to health) but also zoom out again to obtain a wider perspective on societal contexts and influences. To effect large scale or population health change it is often the outer level of influence that is critically important, as we will learn about during Tori's talk later in this workshop.

McLeroy KR, Bibeau D, Steckler A, Glanz K. An Ecological Perspective on Health Promotion Programs. Health Education Quarterly. 1988;15(4):351-377. doi:10.1177/109019818801500401

Socio Ecological Model of Health

(McLeroy, 1988)



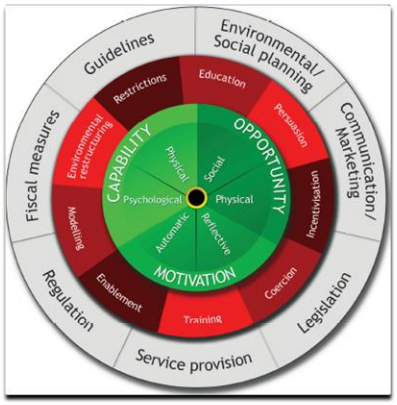
'Big' models & frameworks like this help structure our thinking – to see the bigger picture; to consider influences we might otherwise ignore.

Theories can be embedded or inform this type of 'big' model.

'Smaller' (logic) models, classifications, taxonomies and techniques help us with details needed to operationalise.

These 'big' models and frameworks are useful for guiding our thinking and help us remember influences we might otherwise ignore, but what we need in clinical practice is a means to operationalise these theories, and some of the smaller models and classifications or taxonomies of specific change techniques can help, such as the work done by Susan Michie and colleagues....

Behaviour Change Wheel



Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science* 2011; 6(1):42

Lets look at work of Susan Michie and her colleagues…..they also use layers in of concentric rings to depict their version of the biopsychosocial model, which they call the Behaviour Change Wheel,

Behaviour Change Wheel

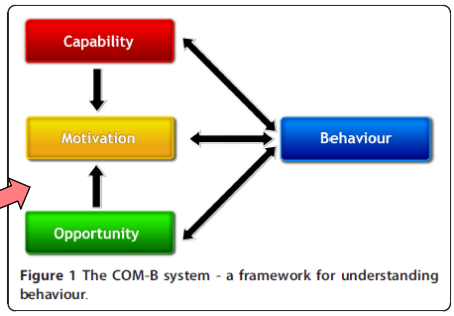


Figure 1 The COM-B system - a framework for understanding behaviour.

COM-B Framework

Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science* 2011; 6(1):42

In the middle of Behaviour Change Wheel, at the level of the individual or the green part of the wheel, this is where the COM-B framework lies, it is based on theories about Capability (in this sense our potential for change) and on theories about Motivation (that drive change), and it shows the importance of providing Opportunities for change….

Behaviour Change Wheel

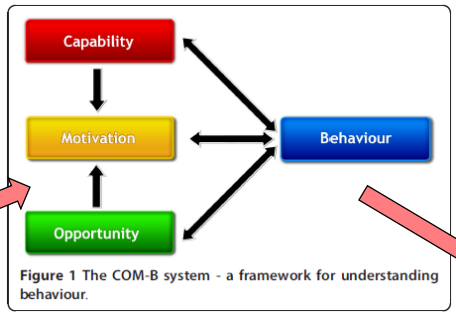


Figure 1 The COM-B system - a framework for understanding behaviour.

COM-B Framework

BCT Taxonomy

ann. behav. med.
DOI 10.1007/s12160-013-9486-6

ORIGINAL ARTICLE

The Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques: Building an International Consensus for the Reporting of Behavior Change Interventions

Susan Michie, DPhil, CPsychol · Michelle Richardson, PhD · Marie Johnston, PhD, CPsychol · Charles Abraham, DPhil, CPsychol · Jill Francis, PhD, CPsychol · Wendy Hardeman, PhD · Martin P. Eccles, MD · James Cane, PhD · Caroline E. Wood, PhD

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Michie S, Van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science* 2011; 6(1):42

To operationalise COM-B into your clinical practice…..we can use behaviour change techniques, or BCTs – which are 'units of change' that are all theoretically informed and have some evidence base somewhere (not necessarily in pelvic floor exercise research). Fortunately, Susan Michie and colleagues have prepared a structured list of these BCTs – a taxonomy. This version lists 93, clustered into 16 groups, but you don't need to know or use all 93!

What I will show you next relates to one the groups – goal setting and planning – something you will all be familiar with…..

Page	Grouping and BCTs
1	**1. Goals and planning**
	1.1. Goal setting (behavior) 1.2. Problem solving 1.3. Goal setting (outcome) 1.4. Action planning 1.5. Review behavior goal(s) 1.6. Discrepancy between current behavior and goal 1.7. Review outcome goal(s) 1.8. Behavioral contract 1.9. Commitment

Goals and Planning are the first group in the taxonomy, and there are 9 BCTs in this group. You probably already do at least half of these.....

I've put the pictures of a target and a football goal on this slide because my observation over the years, and from qualitative data interviewing patients with stroke about their rehab exercises, is that many people don't understand the term 'goal' other than in the context of sport, health professionals do but not patients. So when starting your conversation about goal planning it might be worth using 'target, aim or even hope'.....

Page	Grouping and BCTs
1	**1. Goals and planning**
	1.1. Goal setting (behavior)
	1.2. Problem solving
	1.3. Goal setting (outcome)
	1.4. Action planning
	1.5. Review behavior goal(s)
	1.6. Discrepancy between current behavior and goal
	1.7. Review outcome goal(s)
	1.8. Behavioral contract
	1.9. Commitment

No.	Label	Definition
1. Goals and planning		
1.1	***Goal setting (behavior)***	Set or agree on a goal defined in terms of the behavior to be achieved *Note: only code goal-setting if there is sufficient evidence that goal set as part of intervention; if goal unspecified or a behavioral outcome, code **1.3, Goal setting (outcome)**; if the goal defines a specific context, frequency, duration or intensity for the behavior, <u>also</u> code **1.4, Action planning***

If we follow through the taxonomy each BCT is listed with its name and a definition (bottom middle column). I've used the example of Goal setting (behaviour) because this is what you do when you set the number of exercises to do (as exercises are the behaviour); note that this is not the same as Goal setting (outcome) (number 3 in this group), as the outcome is the health outcome that is wanted – ie no leakage.

When you set a behavioural goal it really helps to define it a bit more – and this is called Action Planning BCT (number 4 in this group).

Page	Grouping and BCTs
1	**1. Goals and planning**
	1.1. Goal setting (behavior)
	1.2. Problem solving
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	1.4. Action planning
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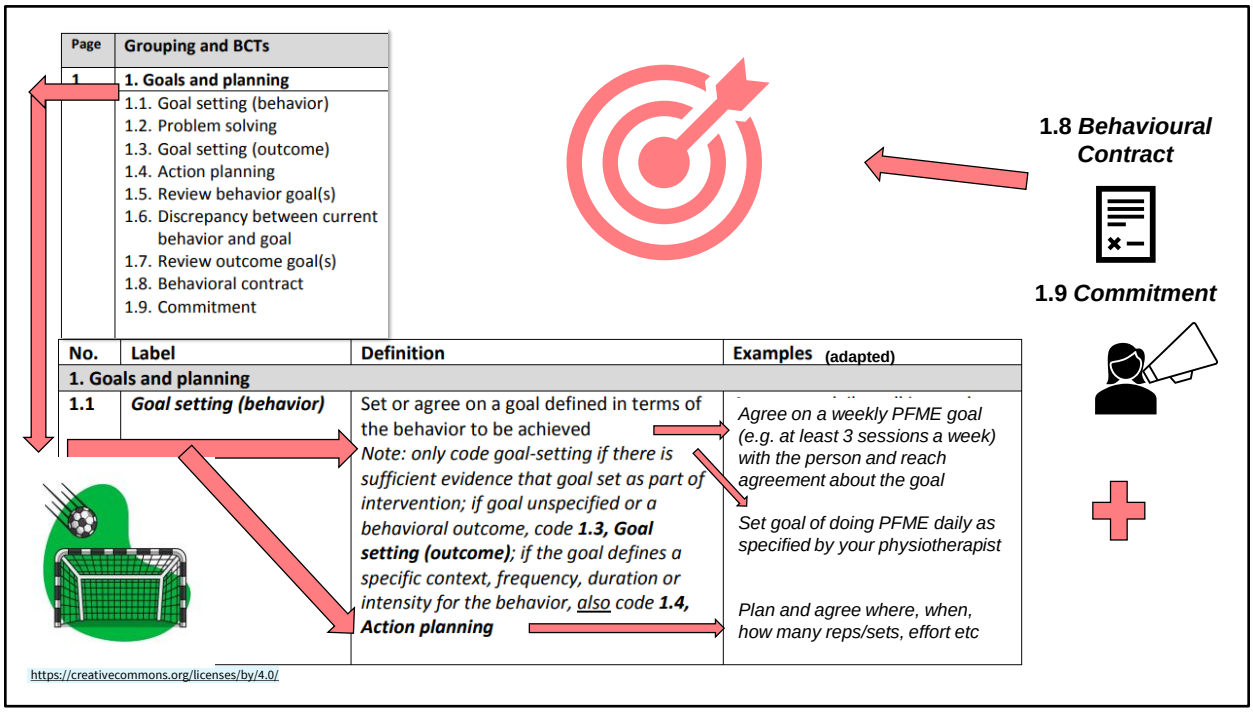
	1.6. Discrepancy between current behavior and goal
	1.7. Review outcome goal(s)
	1.8. Behavioral contract
	1.9. Commitment

No.	Label	Definition	Examples (adapted)
1. Goals and planning			
1.1	***Goal setting (behavior)***	Set or agree on a goal defined in terms of the behavior to be achieved *Note: only code goal-setting if there is sufficient evidence that goal set as part of intervention; if goal unspecified or a behavioral outcome, code **1.3, Goal setting (outcome)**; if the goal defines a specific context, frequency, duration or intensity for the behavior, <u>also</u> code **1.4, Action planning***	Agree on a daily walking goal *Agree on a weekly PFME goal (e.g. at least 3 sessions a week) with the person and reach agreement about the goal* *Set goal of doing PFME daily as specified by your physiotherapist* *Plan and agree where, when, how many reps/sets, effort, hold time/ rest time etc*

So here I have added some examples, relevant to PFME prescriptions....behavioural goals being a weekly or daily target, but the action plan gives all the details



Now in the last slide of this series I am showing 2 more BCTs from this Goals and Planning group which you may not be so familiar with. These are 1.8 Behavioural contract and 1.9 Commitment. These have been successfully used in recent studies including the OPAL trial, and other exercise based rehab trials.

The Commitment BCT is about getting your patient to verbally say back to you what they have agreed to do when you both did the goal setting – it's a useful way to check they can recall it, and that they understand what they have to do……but verbalising is also a powerful change technique as it means you have publicly stated what you intend to do…..

The Behavioural Contract BCT is an extension of this commitment, for this BCT you ask the patient to sign their exercise plan – and this is one of the features we now build in to any exercise dairy or leaflet that is given to a patient during our research trials.

Some additional BCTs to consider

Credible source: learning from others (specialists & others success)

Information about health consequences: manage beliefs & expectations

Practice and Rehearsal: skill acquisition (mastery)

Prompts and cues: memory aids (keep simple & specific)

Social reward & support: praise success

Here are some other BCTs that are likely to be useful when prescribing exercises

Don't underestimate that as a pelvic floor specialist you are a credible source of information – so make it clear you are a specialist, if you don't want to sell yourself in that way then at least say the information you are giving is based on a lot of great research, as we have heard about from Gosia.
Providing good quality information / checking for myths and misunderstanding is right back to that original model from Philip Ley that I showed you at the start – good information is still important!
And as we all know checking technique, whenever possible, is also super important, so get you patients to practice and rehearse with you, or at least get them to verbalise back to you what they are going to do
Prompts and cues really need to be specifically associated with what you want – we often say do PFME when brushing teeth, so this is a very clear specific association, and much better than saying 'throughout the day'

And if you can follow up the don't forget to praise them for their successes – and that they should also acknowledge their own successes –

Many of these things listed here come from Social Learning Theory, way back

from many decades ago and so my next slide gives a summary of this,

Social Cognitive Theory & Self-Efficacy (Bandura)

Health Self-Efficacy conceptually useful – belief in one's ability to act in a way that will be beneficial to health.

Four components:

- skill acquisition & mastery
- belief in health outcome
- vicarious learning – learning from others success
- optimal physiological arousal state

Seldom see Self-Efficacy based interventions use all 4 components.

Bandura's Social Cognitive Theory (SCT) has origins in Social Learning Theory; and part of this is 'self-efficacy', now considered a theory in its own right. We are interested in 'health self-efficacy', which is the belief in one's ability to act in a way that will be beneficial to health. This theory has been used a lot in PFME research and it is useful.

It has four main components, yet we seldom see all 4 being used. I've already talked about learning the skills and mastery (how to do the exercises) and how using credible sources of information, including stories of success that others have had with PFME, helps the belief and buy in to do PFME.

But do you recognise the 4th component? Qualitative work from the OPAL trial revealed how important this is, the clinicians making women feel relaxed and safe during appointments – if women are too anxious and stressed by what is happening they will be physiologically over aroused, all their resources will be used up trying to cope with their anxiety and they wont be able to take on board any advice, information nor will they be able to learn an exercise technique very well. As specialists in pelvic health you will be naturally good at putting your patients at ease, but it is something to check in about, and make sure the women you see really do feel safe and comfortable.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037/0033-295X.84.2.191

Bugge, C., Hay-Smith, J., Hagen, S., Grant, A., Taylor, A., Dean, S. Pelvic floor muscle training for female urinary incontinence: development of a programme theory from a longitudinal qualitative

case study. *BMC Women's Health* **24**, 478 (2024). https://doi.org/10.1186/s12905-024-03308-4

Promote Capability by:

- Provide *information*: benefits of doing PFME, check misinformation / misunderstanding
- *Teach skills* (direct technique & SAID exercise programme) Maria *rehearses / practices* these

Promote Motivation by:

- Set realistic achievable *goals* & agree *action plans*; avoid setting up to fail
- Ask Maria to state her verbal *commitment* and sign a *behavioural contract*
- *Review* & progress goals, give *feedback* & *praise*, ask Maria to *focus on past success*

Provide Opportunity by:

- Agree specific *prompts and cues*
- *Problem solve*, consider barriers and facilitators at outer levels of the wheel

Promote Self Efficacy by

- Ensuring calm, safe space for consultation – *optimal physiological state* to aid Maria's learning
- State your *credibility* (specialist clinician or research evidence) to *enhance self-belief* in positive health outcome if Maria does her PFME
- Ensure Maria has *mastery* (correct techniques), recognises this & has confidence in her ability to do PFME and to overcome any barriers

- Use examples of *past success* with other women so Maria can *learn from others*

Let us go back to Case A again and see how we can apply some behavioural science to help Maria adhere to her exercises, what I have done here is a summary, with the change techniques and self efficacy components in italics.

Capability:
Provide information about pelvic health consequences (of doing PFME), check for misinformation / misunderstanding
Teach the skills (technique and exercise programme); get Maria to rehearse / practice these
Motivation:
Set realistic achievable goals & agree action plans; avoid setting up to fail
Ask Maria to state her verbal commitment and sign a behavioural contract
Review goals, give feedback & social support (praise), ask Maria to reflect on past success
Opportunity:
Agree specific prompts and cues
Problem solve, consider barriers and facilitators at outer levels of the wheel
Promote Self Efficacy by

- Ensuring calm, safe space for consultation – optimal physiological state to aid Maria's learning
- State your credibility as a specialist clinician and / or the research evidence to enhance belief in a positive health outcome if Maria does her PFME
- Ensure Maria has the correct techniques (mastery) for muscle contraction & training programme, recognises her mastery & her confidence in her ability to do PFME and overcome any barriers.
- Offer examples of past success with other women or case stories so Maria can learn from

others

Widening implementation of PFME: adapting exercise parameters for population and prevention approaches

Workshop 21

Victoria Salmon

ICS 2024 MADRID

Pelvic floor muscle exercises (PFME) can be effective for preventing pelvic floor dysfunction

When performed **in pregnancy**, PFME can **prevent** women from leaking urine during and after pregnancy

PFME can **prevent progression** of pelvic organ prolapse

* Pelvic floor muscle exercises can prevent pelvic floor dysfunction (PFD) in two ways:

- Primary prevention – for people with no known pelvic floor dysfunction, unlikely to be seen by specialist health professionals. For example, PFME in pregnancy can prevent urinary incontinence (UI) developing in late pregnancy or postnatally
- Secondary prevention – For women with PFD, PFME can prevent conditions from worsening, for example PFME can prevent progression of pelvic organ prolapse

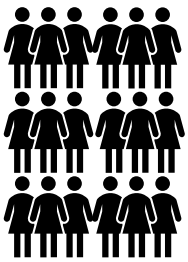
By preventing pelvic floor problems, we can reduce pressure on specialist services but more importantly can improve women's quality of life.

Woodley SJ, Lawrenson P, Boyle R, Cody JD, Mørkved S, Kernohan A, Hay-Smith EJC. (2020). Pelvic floor muscle training for prevention and treatment of urinary and faecal incontinence in antenatal and postnatal women. Cochrane Database Syst. Rev. doi.org/10.1002/14651858.CD007471.pub4

Hagen, S et al. (2017) Pelvic floor muscle training for secondary prevention of pelvic organ prolapse (PREVPROL): a multicentre randomised controlled trial. The Lancet, 389,

(10067), 393 – 402 doi:10.1016/S0140-6736(16)32109-2

Example:
Preventing urinary incontinence related to pregnancy and childbirth

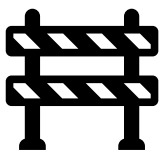


- Prevention requires a population-based approach
- All women are taught pelvic floor muscle exercises during pregnancy regardless of continence status

* Let's use the example of preventing urinary incontinence related to pregnancy and childbirth.

To effectively prevent pregnancy-related urinary incontinence, we must adopt a population-based approach. This involves teaching all pregnant women PFME, regardless of whether they currently have symptoms.

Implementing preventative PFME in antenatal care in the UK



- Not enough **specialists** to see all women
- **Lack of routine provision** in UK antenatal care
- Most midwives and health professionals **do not have the confidence or skill** to teach effective PFME
- Women do not know **what to do or how to do it**
- Social and emotional **norms and taboos** prevent routine discussion and help seeking

So, how can we go about implementing a population-based preventative approach?

For the purposes of this workshop I am going to use examples from the UK, many of which have arisen from the APPEAL research programme. There will of course be variation in different countries and contexts.

In the UK, there aren't enough specialist continence professionals to support all women. While antenatal care providers are well-positioned to deliver PFME advice, it is not currently routinely provided.
Challenges include:

- Lack of confidence and skills among non-specialist health professionals, including UK midwives.
- Women do not know what to do or how to do it.
- Social norms that discourage discussions and help seeking for UI.

The aim of the APPEAL research programme was to see if it is possible to train midwives to teach effective PFME during routine AN care to reduce UI

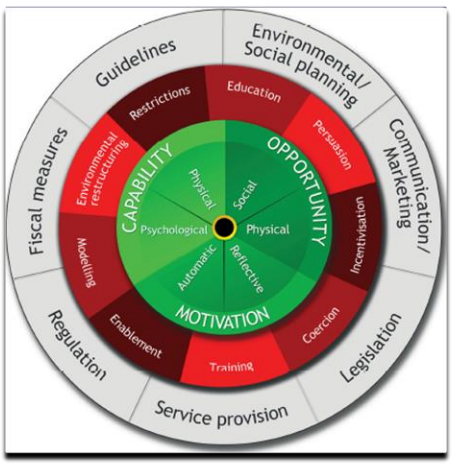
Bick, D, J Bishop, T Coleman, S Dean, E Edwards, H Frawley, E Gkini, et al. 2021.

“Antenatal Preventative Pelvic Floor Muscle Exercise Intervention Led by Midwives to Reduce Postnatal Urinary Incontinence (APPEAL): Protocol for a Feasibility and Pilot Cluster Randomised Controlled Trial.” *Pilot and Feasibility Studies*. https://doi.org/10.1186/s40814-022-01185-y

Salmon VE, Hay-Smith EJC, Jarvie R, Dean S, Terry R, Frawley H, Oborn E, Bayliss SE, Bick D, Davenport C, MacArthur C, Pearson M, and on behalf of the APPEAL study. (2020). Implementing pelvic floor muscle training in women's childbearing years: A Critical Interpretive Synthesis of individual, professional, and service issues. Neurourology and Urodynamics 39; 863-870. DOI: 10.1002/nau.24256

Terry, R., R. Jarvie, J. Hay-Smith, V. Salmon, M. Pearson, K. Boddy, C. MacArthur, and S. Dean. 2020. “‘Are You Doing Your Pelvic Floor?’ An Ethnographic Exploration of the Interaction between Women and Midwives about Pelvic Floor Muscle Exercises (PFME) during Pregnancy.” *Midwifery* 83. https://doi.org/10.1016/j.midw.2020.102647.

Opportunities for implementing preventative PFME



- UK policy and media attention supports pelvic health
- UK policy advocates training for non-specialist staff
- Alignment with midwifery/antenatal staff values and beliefs

But there are key opportunities for implementing preventative strategies

If we consider the behavior change wheel as a framework, in the UK we see:

- Growing policy attention on pelvic health (outer wheel),
- This makes it easier to advocate for training non-specialists like midwives to improve service provision (middle wheel).
- Indeed, Midwives taking part in APPEAL have found that this aligns with their professional values and beliefs (inner wheel).

NHS England. The NHS Long Term Plan. 2019
NHS England » Implementation guidance: Perinatal Pelvic Health Services 2024
Dean, S, V Salmon, R Terry, J Hay-Smith, H Frawley, S Chapman, M Pearson, et al. 2022. "14 TEACHING EFFECTIVE PELVIC FLOOR MUSCLE EXERCISES IN ANTENATAL CARE: DESIGN AND DEVELOPMENT OF A TRAINING PACKAGE FOR COMMUNITY MIDWIVES IN THE UNITED KINGDOM." *Continence* 2 (June): 100204. https://doi.org/10.1016/J.CONT.2022.100204

"At the end of the day, whatever we can do that saves the NHS some money down the line, ***it's worth investing in us being given the time to have the training****, because potentially* ***we're saving tens of thousands*** *with a woman having surgery later on in life because of* ***something that could potentially have been prevented****."*

Quote from community midwife, APPEAL research programme

Midwives want to have training as they recognise Preventing pelvic floor issues, particularly through early interventions like PFME, can reduce long-term healthcare costs by preventing the need for more intensive treatments, such as surgery.

Dean, S, V Salmon, R Terry, J Hay-Smith, H Frawley, S Chapman, M Pearson, et al. 2022. "14 TEACHING EFFECTIVE PELVIC FLOOR MUSCLE EXERCISES IN ANTENATAL CARE: DESIGN AND DEVELOPMENT OF A TRAINING PACKAGE FOR COMMUNITY MIDWIVES IN THE UNITED KINGDOM." *Continence* 2 (June): 100204. https://doi.org/10.1016/J.CONT.2022.100204.

How can we give confidence to non-specialists to teach PFME?

- Team approach to ensure consistency
- Simple messages that fit within brief appointments
- Clear guidance on what to teach and when
- Knowing when and how to refer on to specialists as required
- Resources and support for women

Despite growing awareness, there's little guidance on training clinicians to teach PFME. Midwives face significant pressures, and PFME training needs to be easy to integrate into their practice.
Our findings from APPEAL indicate:

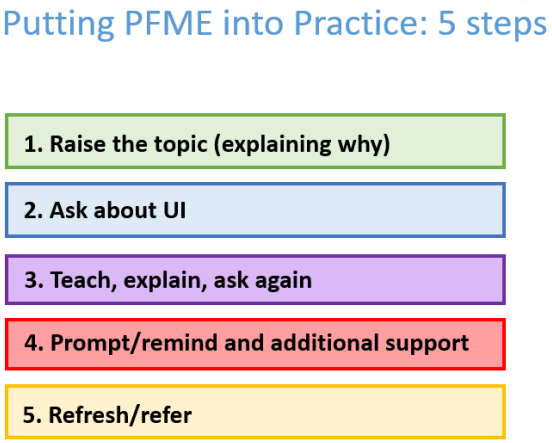
- Teams need to deliver consistent messages.
- The message must be simple for both staff and women. We want to set everyone up to succeed.
- Staff need clear guidance on what to teach and when. This includes feeling confident to ask women about any leaking or pelvic floor symptoms
- And how to refer to specialists if there are any concerns.
- Staff want to empower women and give reassurance that its ok to ask for more help

Dean, S, V Salmon, R Terry, J Hay-Smith, H Frawley, S Chapman, M Pearson, et al. 2022. "14 TEACHING EFFECTIVE PELVIC FLOOR MUSCLE EXERCISES IN ANTENATAL CARE: DESIGN AND DEVELOPMENT OF A TRAINING PACKAGE FOR COMMUNITY MIDWIVES IN THE UNITED KINGDOM." *Continence* 2 (June): 100204.

https://doi.org/10.1016/J.CONT.2022.100204.

The APPEAL training programme

- A training package with resources to support antenatal care staff to help women learn and practice PFME early in pregnancy and to continue postnatally



The APPEAL training was designed with women and midwives with simplicity in mind. It aims to empower antenatal care staff deliver a clear message within their usual clinical practice and support women in performing PFME from early pregnancy.

How should we adapt exercise prescription for a population prevention approach?

Specificity

The right anatomy – *explain correct contraction, direct PFMC*

The right motor unit recruitment – *contract as hard as possible*

Learn the technique – *including PFM contraction during activities of daily living*

Then build the muscle

Overload (progressive)

Build up repetitions to x8-12 for novice exercisers

Progress 1-3 sets for novices/untrained exercisers

In the APPEAL programme, the exercise prescription element is kept as simple as possible, while following the basic exercise physiology principles Sarah mentioned earlier:

We emphasise:

- Correct technique to ensure direct pelvic floor muscle training, as discussed by Gosia, ensuring specificity in the exercises.
- And identifying a starting point for reps and holds,

How should we adapt exercise prescription for a population prevention approach?

Build up to a minimum, basic programme of:

2x sets

Up to **8x in a row**, hold up to **8 seconds***

At least **2** days per week

Specificity

The right anatomy – *explain correct contraction, direct PFMC*

The right motor unit recruitment – *contract as hard as possible*

Learn the technique – *including PFM contraction during activities of daily living*

Then build the muscle

2 and 8 is great!

Overload (progressive)

Build up repetitions to x8-12 for novice exercisers

Progress 1-3 sets for novices/untrained exercisers

*start with as many repetitions/length of hold as a woman can do

- with a target of 2 sets of 8 repetitions, 8-second holds, at least twice a week—"2 and 8 is great!"

APPEAL research pilot and feasibility outcomes suggest…

Midwives report feeling more confident and changing their practice

More women report doing PFME

Less women reported urinary incontinence 3 months post-partum

University of Exeter · University of Birmingham · Warwick

This training package was tested in the APPEAL pilot and feasibility RCT in the UK

- Results will be published in due course.

Although this was a pilot trial, so not powered to show statistical significance, what we observed was:

- Trained midwives showed improved confidence in teaching PFME and asking about UI
- More women under their care reported performing PFME than those seen by control midwives
- Fewer women seen by trained midwives reported UI at 3 months post-partum

While these are not definitive outcomes, they are indicative of the potential for positive results and support PFME to be integrated into routine antenatal care as a preventative strategy

Hay-Smith J, Bick D, Dean S, Salmon V, Terry R, Jones E, Edwards E, Frawley H, MacArthur C (2023) 225 Antenatal pelvic floor muscle exercise intervention to reduce postnatal urinary incontinence: quantitative results from a feasibility and pilot

randomised controlled trial. Continence 7 (1) DOI: https://doi.org/10.1016/j.cont.2023.100943

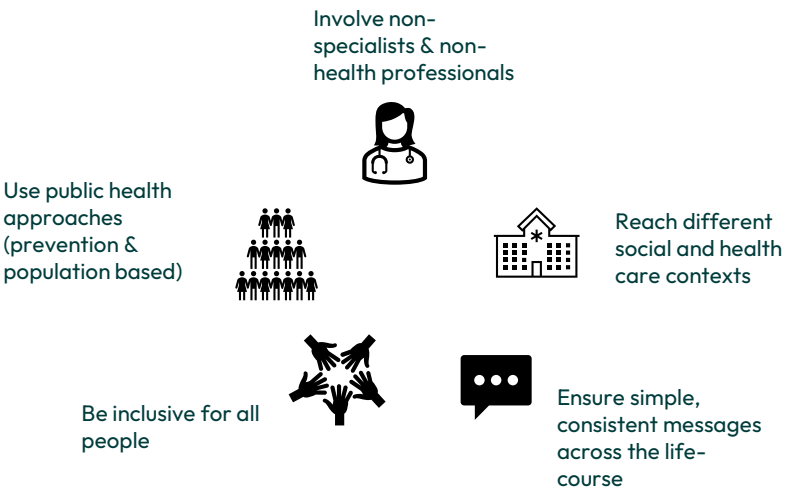
Smith, C, V Salmon, E Jones, E Edwards, J Hay-Smith, H Frawley, S Webb, D Bick, C MacArthur, and S Dean. 2022. “16 TRAINING FOR MIDWIVES TO SUPPORT WOMEN TO DO THEIR EXERCISES DURING PREGNANCY. A MIXED METHOD EVALUATION OF THE MIDWIFE TRAINING DURING A FEASIBILITY AND PILOT RANDOMISED CONTROLLED TRIAL.” *Continence* 2 (June): 100206. https://doi.org/10.1016/J.CONT.2022.100206.

Widening access to training for non-specialists: next steps

- Supporting spread of APPEAL in England
- Refinement of implementation tools and resources
- Adaptation for other health professionals
- Exploration of undergraduate training opportunities
- Development of training for non-health professionals
- Opportunity for international adaptation

The next steps include expanding APPEAL training across England and adapting it for other healthcare professionals and contexts in the UK and overseas, for example primary care nursing, GPs/family doctors, and non-health professionals working with vulnerable groups and underserved communities who may not attend more traditional health settings.

Summary of considerations for widening implementation



So, in summary, to widen implementation of preventative approaches at population level we can aim to use public health approaches that involve non-specialists, deliver simple, consistent messages across the life course, and ensure inclusivity in different social and health contexts.

Revisiting what works and why in pelvic floor muscle exercise prescribing: a biopsychosocial integration of science to help achieve better behavioural and health outcomes

Workshop 21

Panel Discussion

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Case A: Maria

58-year-old woman (female at birth), mother of 2 children (normal vaginal delivery)

Stress urinary incontinence symptoms, grade I (posterior compartment) pelvic organ prolapse on examination (asymptomatic), muscle assessment grade 3 Oxford, no palpable 'detachment' or unequal (left-right) contraction

Part time office-based job

Overweight but not obese, yoga class twice a week and walking group with friends on Sunday

What type of home PFM exercises would you recommend to Maria?

What will help her to learn the technique in a way that helps her condition?

What strength training regimen would be best for her?

Decide if this refresh of the exercise science and clinical trial evidence has helped you decide what exercise parameters you would select for Maria, our Case A scenario.

Case B: Sophia

Sophia, 28-year-old woman (female at birth) planning to get pregnant

No symptoms of pelvic floor dysfunction

Slightly overweight. Likes Pilates, and walks/jogs the local Park Run, but these activities are not easy to fit around her job

Very busy job with an international company, work involves travel and long hours

Wants an on-line consultation; heard about pelvic floor muscle exercises but not sure how to do them

Think about assessment, planning and progressing of PFME prescriptions in clinical and non-clinical settings

Consider implementation of PFME (for population and) prevention approaches

What PFME advice would you recommend to Sophia?

Who can provide this advice?

Hopefully, you will now feel confident advising Sophia in Case B on a basic PFME programme, setting realistic achievable goals that avoid setting her up to fail.

Advice should help her identify her starting point for length of hold and number of repetitions, and aims to build up to 2 sets of 8 repetitions, on at least 2 days of the week. Remembered by '2 and 8 is great'

With the right training, this message can be provided by a midwife or other non-specialist health professional provided they have the confidence to ask about UI and refer to specialist services when required.

Revisiting what works and why in pelvic floor muscle exercise prescribing: a biopsychosocial integration of science to help achieve better behavioural and health outcomes

Workshop 21

Summary

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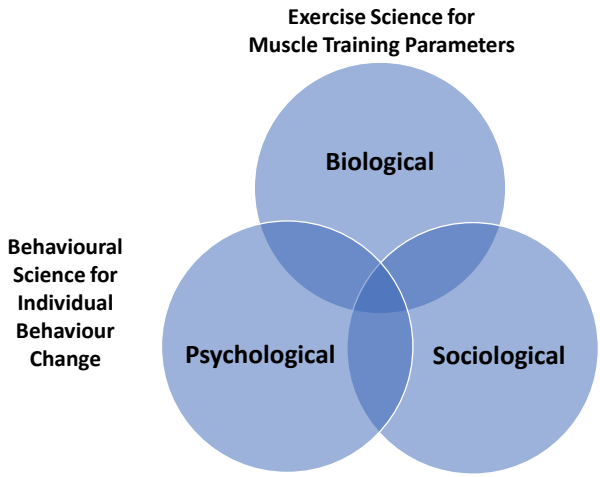
Workshop 21 summary: Biopsychosocial Integration

Maria

Sophia

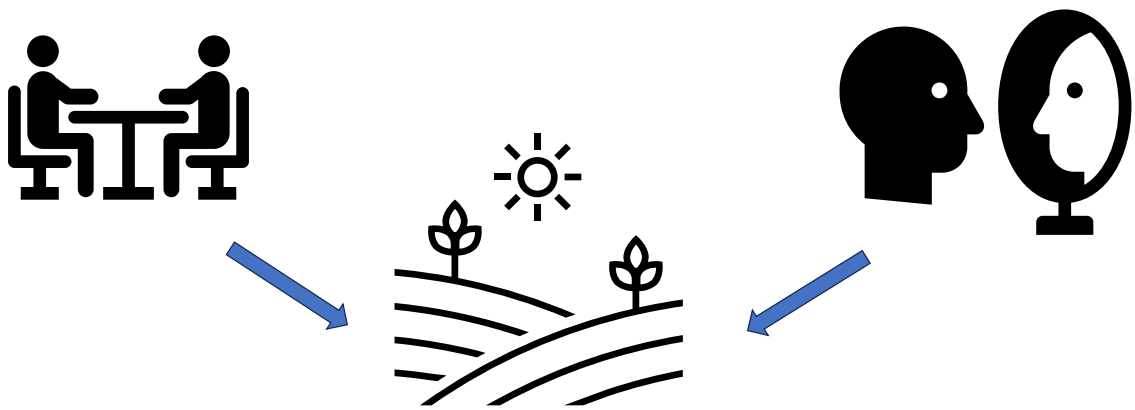


We have looked more closely at three aspects of a biopsychosocial integration – an applied this to two case scenarios

Workshop 21 summary: Evidence Informed Practice

We've been given a brilliant updates on the best clinical research and clinical expertise, and shown how this can inform practice

Workshop 21 summary: Revisiting what works & why



We have had some great debates, thank you for being such a brilliant set of delegates – we wanted to stimulate your thinking – we don't offer exact answers but instead ask you to reflect on your practice and decision making: perhaps to dispel some myths and misunderstandings, perhaps to help you decide on what will be your simple, straightforward and consistent messages about pelvic floor muscle exercises, with the option of being more complex and sophisticated but when needed

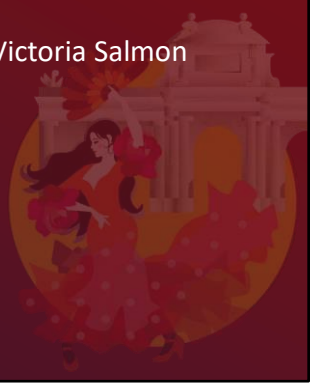
We have, possibly, refreshed your ideas about how best to support people in their pelvic health, both for the treatment and the prevention of pelvic floor dysfunctions

Revisiting what works and why in pelvic floor muscle exercise prescribing: a biopsychosocial integration of science to help achieve better behavioural and health outcomes

Workshop 21

Sarah Dean, Malgorzata Starzec-Proserpio, Helena Frawley and Victoria Salmon
with contribution from Jean Hay-Smith

Thank you



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