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Research Article

The '5 F's Concept for Pelvic Floor Muscle Training: From Finding the Pelvic Floor to Functional Use

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Abstract

Objective: To introduce and discuss the '5 F's concept as an innovative concept for pelvic floor muscle training in women with pelvic floor dysfunctions.

Material and methods: Introduction of and explanation about the concept of the '5 F's, i.e., 'Find-Feel-Force-Follow-through-Functional' training of pelvic floor muscles. Alignment with evidence-based physiotherapy assessment. Discussion of how biofeedback is an important assessment instrument, especially for identification of the key-element pre-contraction of the pelvic floor muscles during any increase of intra-abdominal pressure rise.

Results: Based on adequate physiotherapeutic diagnostics including biofeedback a proper patient selection who will benefit most of innovative PFMT with or without biofeedback is possible.

Conclusions: Innovative and conceptual pelvic floor muscle training is an important and valuable first-line treatment option in the management of women with pelvic floor dysfunctions.

Keywords: Pelvic floor muscle training; Physiotherapy assessment; Pre-contraction; Biofeedback; Functional training

Main points

Physiotherapy assessment is paramount to select patients who will benefit from physiotherapy treatment.
Based on physiological principles the '5 F's concept incorporated an innovative strategy for successful pelvic floor muscle training.

Next to strength training of pelvic floor muscles pre-contraction and timing are key-elements of pelvic floor muscle training.

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Pelvic floor muscle training (PFMT) aims to restore muscular strength, coordination and pre-contraction of pelvic floor muscle contractions [1]. Other parameters important in relation to the pelvic floor are timely relaxation, endurance, fatigability and repeatability [1].

In PFMT the importance of fast feed forward loop contraction or pre-contraction for maintenance of continence has been widely underestimated while it might be one of the most important elements; in healthy continent women, activation of the PFM before or during physical exertion seems to be an automatic anatomic response, so an unconscious or involuntary contraction [2]. This PFM 'reflex' contraction, for instance during a cough or sneezing, is actually a fast feed-forward loop, preceding intra-abdominal pressure rise by 210-270 milliseconds, keeping the intra-urethral pressure higher than the intravesical pressure during physical efforts. It has been reported that this phenomenon might have been lost in women with urinary incontinence [2]. Also, it has been suggested that a well-timed, fast and strong pelvic floor muscles contraction may prevent urethral descent during intra-abdominal pressure rise [3].

To ensure an adequate sequence in pelvic floor muscle training we introduced the concept of the 5 Fs, i.e., Find-Feel-Force-Follow-through-Functional training of pelvic floor muscles. Awareness (Find and Feel) of the different muscles involved in maintaining continence is necessary to be sure of avoidance of co-contractions of surrounding muscles (abdominals, buttocks, thighs and back) and activation of the relevant muscles. Sometimes, when patients find and use the relevant muscles at the appropriate time, symptoms can reduce at once [4].

As pre-contraction and timing of the PFM contraction might be highly important elements, these elements need to be included in the physiotherapy assessment and, if indicated, in the following treatment [7]. Instrumental biofeedback with an intra-vaginal or intraanal probe may serve this objective. For diagnostic use, biofeedback refers to a range of audiovisual techniques whereby information regarding PFM contraction and relaxation is displayed.

Electromyography (EMG) is one means by which to do this. Usually, for assessment with EMG biofeedback, the motor unit activity of the PFMs at rest, during a maximal pelvic floor voluntary and involuntary (coughing and Valsalva) contraction, and level of relaxation after maximal contraction are measured. The pelvic floor muscle functional assessment with (preferably wireless) EMG biofeedback incorporates structured assessment in different positions, movements, and activities. Pre-contraction, timing, and coordination of the PFMs are tested [7].

Based on adequate physiotherapeutic diagnostics including biofeedback a proper patient selection who will benefit most of PFMT with or without biofeedback is possible with a high cure/improvement rate, also long term.

In selected patients, i.e., those that have insufficient or no awareness how and where to find and feel (the first two 'Fs') the pelvic floor muscles, biofeedback has a great additional value to the training program, speeding up the recovery process.

Basic physiological muscle training principles teach us that pelvic floor muscle exercise programs must consist of selective MAXIMAL voluntary contractions with a repetitive character (Force) and sufficient time of relaxation between consecutive pelvic floor muscle contractions. Exercises can activate latent motor units to the point that the muscle becomes functional again, in stress urinary incontinence the indirect support of the bladder neck [5].

The principle of overload is based on stimulation of the muscle beyond its normal level of performance. Important parameters are quality (inward/upward movement of the pelvic floor muscles while maximal squeezing) and number of MAXIMAL conscious and unconscious contractions, number of contractions, duration of contractions and relaxation. For the training program also the number of series, number and duration of sessions and total training program are important.

The principle of selectivity cq. specificity refers to train a muscle in the way the muscle needs to be used. Exercises are adapted to slow-twitch fibers (endurance exercises) and fast-twitch fibers (strength and speed exercises) [5].

Pelvic floor exercises should be practised in different starting positions; from lying, sitting to standing and resulting in as much as possible simulating everyday situations.

The principles Maintenance and Reversibility (follow-through) alert the patient to train regularly, sometimes lifelong, but the challenge for the pelvic physiotherapist is to incorporate *functional training* in such a way that patients will experience progress of their symptoms as soon as possible [5]. Functional training of pelvic floor muscles means that the pelvic physiotherapist needs to mimic daily life activities and situations in which the patient used to experience incontinence and now – automatically – is capable to avoid this. In case of success, patients will be highly motivated to adhere to and continue their pelvic floor muscle training program. Adherence is one is the most important challenges or threats for this success and focus on this should be a conditio sine qua non [6].

Conclusion: Based on physiological principles, innovative and conceptual pelvic floor muscle training, with or without biofeedback is a valuable first-line treatment option in the management of patients with pelvic floor dysfunctions. Physiotherapy assessment clarifies if and to what extent physiotherapy is indicated and provides optimal PFMT parameters.

Our team has developed and produced evidence-based and clinical practical webinars on these topics, that can be assessed by the link www.iclimburg.nl

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