

Pelvic floor muscle training as a method supporting the treatment of pelvic floor dysfunctions in women

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Objective: Pelvic floor dysfunctions in women are a challenge for the modern health care system. Presentation of the most popular types of pelvic floor muscle training used successfully in women at different stages of their lives. **Mechanism:** In the training of the pelvic floor muscles, it is important to have adequate blood supply and flexibility to build the correct muscle tone, which regulates the correct response to pressure changes in the abdominal cavity. **Findings in brief:** The exercises are designed to strengthen weakened muscles, improve the quality of life and prepare women for possible surgery. **Conclusions:** The pelvic floor muscle exercises are the primary method of treatment for patients with pelvic floor disorders.

Keywords

Pelvic floor dysfunctions; Kegel exercises; Abdominal cavity; Pelvic floor muscle training

1. Introduction

Prevention and treatment of pelvic floor dysfunctions in women, including urinary incontinence, has become a challenge for the health care system. These diseases reduce the quality of life, reduce self-esteem, attractiveness and sexuality. They contribute to social, professional and social isolation. Prevention and treatment of pelvic floor dysfunctions in women, including urinary incontinence, has become a challenge for the health care system. These diseases reduce the quality of life, reduce self-esteem, attractiveness and sexuality. They contribute to social, professional and social isolation [1]. The first stage of therapy of pelvic floor muscle dysfunction is conservative treatment. This procedure in the initial stages involves the elimination of factors causing disorders. These include weight reduction, treatment of urinary tract infections or elimination of coughing [2]. In addition, this procedure includes some methods in the field of physiotherapy, pharmacotherapy and behavioural therapy. Invasive treatment in the form of surgical treatment is introduced at the moment in which the above-described methods do not bring satisfactory results [3].

2. The most popular types of pelvic floor muscle training

The basic physiotherapeutic method used in patients with pelvic floor dysfunctions is the active and reflexive exercises known as pelvic floor exercises, sensory training, historically also referred as Kegel exercises [4]. In 1948 the first publications appeared. Arnold Kegel published the results of his long-term research proving the connection of pelvic floor muscle exercises with the decrease of discomfort associated with disorders in the work of the lower urinary tract [5]. Pelvic floor muscle training aims to improve the strength of muscle contraction as well as their coordination. Due to the large variety of methods of learning these exercises, it is difficult to assess the real effects of pelvic floor muscle training. Many analyses also describe the benefits of performing pelvic floor muscle exercises in the form of improved quality of life, satisfaction with treatment, and moreover, the need to continue treatment [6].

The main purpose of pelvic floor muscle training is not just to strengthen these muscles. Good blood circulation and muscle flexibility build the right muscle tonus, which regulates the proper response to changes in intra-abdominal pressure. This means that the pelvic floor should react correctly depending on the situation. Especially during an increase in intra-abdominal pressure, e.g., during coughing or sneezing. The pelvic floor should inflate spontaneously. It is called a reflex reaction. In contrast to this phenomenon, it should be expected that during micturition or defecation, the pelvic floor should relax so that the physiological activities are carried out freely. Relaxation of the pelvic floor muscles is extremely important also during delivery. Muscle flexibility, in this case, is the basis for the proper course of delivery [7].

The basis for starting proper pelvic floor muscle training is to make the patient aware of where the pelvic floor is located and how to feel the pelvic floor muscles most simply and logically. It is important to explain the aetiology of the

formation of the disease entity that it has and the purpose of the intended therapy. Full awareness and the correct feeling of tension and relaxation are a priority in the effectiveness of treatment. An effective way to locate pelvic floor muscles is to visualise three situations — stopping the urine stream, stopping gases and pulling in the tampon. It is important to acquire the ability to distinguish all activities to tighten individual muscles without activating all simultaneously [7].

When a patient starts the pelvic floor muscle training exercises, special attention should be paid to her body position. It is important that the starting position for the exercise does not cause the muscles of the abdomen, buttocks or thigh adders to tighten. It is an important element because this positioning of the body prevents the exercise correctly and effectively [8]. At the moment when the patient has mastered the exercises recommended by the physiotherapist, it is recommended to change the starting position, increase the duration of exercise and the number of repetitions. Then the degree of advancement of the exercise is increased by adding the tension of the abdominal muscles in situations of increased intra-abdominal pressure [8].

There are many methods of doing pelvic floor muscle exercises. All have a common goal — to strengthen and relax the weakened muscles.

One of the most popular methods of pelvic floor muscle training is developed by the Profesor Kari Bø Pelvicore technique. The purpose of these exercises is to strengthen the tension and regain control over the pelvic floor muscles. This method is dedicated to women of all ages for the prevention and treatment of pelvic floor diseases [9]. Introduction to the exercises is preceded by the study of the position of the pelvic floor muscles, as well as tensioning them around the urethra, vagina and anus. The next step is to perform breathing exercises, stretching and shaping posture. The Pelvicore technique is divided into two sequences. The first of these emphasises improving the muscle tone of the pelvic floor by strengthening the abdominal and back muscles. The second focuses on short exercises that allow the patient to urinate in a controlled manner [9]. This technique consists of 2 sequences. The first contains three stages of exercise - pelvic floor muscle exercises, exercises to strengthen the abdominal and buttocks muscles, and stretching exercises [10]. The second is based on the technique of instant control [10]. This program turns out to be effective in 60–70% of women with stress urinary incontinence, who exercised regularly for six months [10].

The Swiss BeBo® concept is focused on prevention. This program is aimed at women of all ages. The advantage of this concept is that the entire training program is described in an accessible and understandable way, regardless of medical knowledge. According to this concept, pelvic floor muscle training consists of three stages of learning to strengthen muscles: pelvic movements, rhythmic tension and muscle relaxation, and maintenance of muscle tone [11]. An important element of any exercise involving the pelvic floor muscles is

the correlation between the diaphragm and the pelvic floor. The diaphragm is a large respiratory muscle that changes its morphology during each inhale and exhale [11]. During inspiration, the diaphragm contracts flatten, and the chest expands. The diaphragm moves towards the abdominal cavity. Then the abdominal wall and the pelvic floor remain loose. The situation changes when there is an exhalation. During this phase, the diaphragm relaxes and moves towards the chest. The bottom of the pelvis is sucked up. This phenomenon is used in pelvic floor muscle training. During the exhalation phase, the pelvic floor is stimulated to work [11].

Another example of pelvic floor training is the Cantienica® method by Swiss Benita Cantieni. This method is based on mutual relations between the pelvic floor and the muscles of the back, abdomen and lower limbs. According to the author, the purpose of pelvic floor muscle exercises is to obtain optimal muscular tone and to learn how to automate them in various everyday activities [12]. Cantienica® describes seven training series. Each of them includes a different theme related to pelvic floor anatomy, the relationship between postural defects and their effects on the pelvic floor and the presentation of 5 series of exercises tailored to the therapy stage [12]. It is recommended to perform the entire exercise program twice a week, and single regular exercises daily during daily activities. The essence of achieving the goal through the use of the above training is to automate the tension of the pelvic floor so that it responds adequately to the situation [12, 13].

3. Conclusions

Pelvic floor dysfunctions in women reduce the quality of life, reduce self-esteem, attractiveness and sexuality. There are initial or for many reasons the only methods of treatment that, depending on the severity of the disease, can significantly or completely reduce the nuisance of these symptoms. The pelvic floor muscle exercises are the primary method of treatment for patients with pelvic floor disorders. Their main goal is to strengthen weakened muscles, improve the quality of life, and prepare the woman for possible surgical procedures.

Author contributions

NSK and BP conceived and designed the experiments; BP and RS performed the experiments; PO, KRP analyzed the data; MEG, RS and KRP contributed reagents and materials; NSK, MEG and PO wrote the paper.

Ethics approval and consent to participate

The research based on the Helsinki Declaration. All paper based on literature.

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Conflict of interest

The authors declare no conflict of interest.

References

- [1] Smolarek N, Pisarska – Krawczyk M, Sajdak S. Fizjoterapia jako sposób terapii stosowanej u kobiet z powodu nietrzymania moczu. *Ginekologia Praktyczna*. 2007; 4: 23–27. (In Polish)
- [2] Zielińska A, Smolarek N, Pisarska – Krawczyk M. Nietrzymanie moczu u młodych kobiet. *Ginekologia Praktyczna*. 2009; 2: 19–23. (In Polish)
- [3] Radziszewski P, Baranowski W, Nowak-Markwitz E, Rechbeger T, Suzin J, Witek A. Wytyczne Zespołu Ekspertów odnośnie postępowania diagnostyczno-terapeutycznego u kobiet z nietrzymaniem moczu i pęcherzem nadreaktywnym. *Ginekologia Polska*. 2010; 81: 789–793. (In Polish)
- [4] Mørkved S, Bø K, Schei B, Salvesen KA. Pelvic floor muscle training during pregnancy to prevent urinary incontinence: a single-blind randomized controlled trial. *Obstetrics and Gynecology*. 2003; 101: 313–319.
- [5] Purc D, Rasała A. Metody leczenia nietrzymania moczu. *European Journal of Medical Technologies*. 2015; 3: 33–38.
- [6] Jundt K, Peschers U, Kentenich H. The investigation and treatment of female pelvic floor dysfunction. *Deutsches Arzteblatt International*. 2015; 112: 564–574.
- [7] Keller Y, Krucker J, Seleger M. W drodze do istoty kobiecości (pp. 17–20, 29, 32, 34–38, 64–65, 72–73, 77–78, 89–90). Kraków: Press AEM. 2015. (In Polish)
- [8] Mangit N, Bulloc A, Roman S, Osman N, Chapple Ch, MacNeil S. Production of ascorbid acid re leasing biomateriale for pelvic floor repair. *Acta Biomaterialia*. 2016; 29: 188–197.
- [9] Borowicz AM, Wieczorkowska- Tobis K. Metody fizjoterapeutyczne w nietrzymaniu moczu. *Gerontologia Polska*. 2010; 18, 3: 114–119. (In Polish)
- [10] Bø K, Berghmans B, Mørkved S, Kampen M. Evidence – Based Physical Theraphy for the Pelvic Floor: Bridging Science and Clinical Practice. *Chrichill Livingstone*. 2014; 2: 111–130.
- [11] Newman DK. Pelvic floor muscle rehabilitation using biofeedback. *Urologic Nursing*. 2014; 34: 193–202.
- [12] Cantieni B. Tigerfeeling. Trening mięśni dna miednicy metodą Cantienica (pp. 30–36, 72–156, 160–168). Urban&Partner: Wrocław. 2017. (In Polish)
- [13] Szukiewicz D. Fizjoterapia w ginekologii i położnictwie (pp. 10–19, 64–65). Press PZWL: Warszawa. 2012. (In Polish)