

32 - THE INFLUENCE OF WEIGHTLIFTING ON THE PELVIC FLOOR MUSCULATURE STRENGTH IN WOMEN

MIRIAN FERNANDES DE QUEIROZ

Universidade Católica Dom Bosco – UCDB, Campo Grande, MS.

mirianzinha.f.q.v@hotmail.com

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INTRODUCTION

The pelvic floor is an area consisting of muscles, fascia and ligaments that have the role of performing the support of the pelvic area, keep the consistency and coordinate the relaxation during urination and defecation. It consists of three compartments: anterior, medial and posterior. The compound of the levator ani muscle is divided by: iliococcygeal, ischiococcygeus and pubococcygeal and its function is of sustaining the pelvic floor (SILVA; SILVA, 2003).

Little is known about the perineum muscle functioning during the physical exercises practice. Therefore, women who exercise without performing perineal muscle contraction do not have, necessarily, a strong pelvic floor and can acquire urinary infection. According to Bo and Scherbum (2005), the perineum muscle or the pelvic floor strength is defined as the ability of performing the correct contraction, pressing around the opening of the pelvis area and moving internally the pelvic floor. Besides, it is defined as the maximum volunteer contraction, recruiting the most from this muscles to produce strength.

It is important that Physical Education professionals are aware of these facts and engage themselves to work on a prevention ambit. The Physical Education contribution to these women must contain questions that must go beyond the physical recovering. Physical Education is an area that works with the human movement not in a dichotomy way, but in a global way, considering the body in its existential extent. Besides, it is responsibility of the physical education teacher to propose strategies that enable an activity practice that promotes human development in all its (physical, social and affective) aspects and in everybody.

Therefore, the current research is justified by the necessity of inciting new studies that focus mainly on the physiological variables related to the physical strength that in a way causes the pelvic floor weakness and decrease life quality of women.

This study aimed to set a functional profile of the pelvic floor muscular strength in women who have practiced weight lifting for at least one year, aged between 20 to 30 years old and to compare the methods of functional activity and perineometry.

BIBLIOGRAPHIC REVIEW

Arnold Kegel (1948) was the first to relate the use of volunteer exercises to the pelvic floor muscles, observing that some of his patients who underwent surgery to the treatment of the pelvic floor dysfunction had premature redislocation. When evaluating the patient's pelvic floor, a surprisingly bad quality of the muscles contraction also was seen and they were encouraged to train their pelvic floor musculature.

According to Reis (2002) the pelvic floor is a set of soft parts that close the pelvis, being formed by muscles, ligaments and fasciae. Its function is of sustaining and lifting the pelvic and abdominal organs, keeping the faecal and urinary continence. The pelvic floor muscles also take part in the sexual function and distend in their maximum portion at the access of the conceptual product.

The knowledge of the pelvic floor muscles is essential to the weight lifting practice. It is also necessary to highlight that the PFM consists of the pelvic and urogenital diaphragm. The pelvic diaphragm is formed by coccygeal muscles and levator ani muscles, which are divided in pubococcygeus, puborectal and iliococcygeus. The urogenital diaphragm is a fascia muscle located in the caudal portion of the pelvic diaphragm which consists of the bulbocavernosus, the perineal superficial transverse and the ischiocavernosus.

The pelvic floor muscles consist of type I muscle fibers, which are responsible for the slow contraction and type II fibers, which are responsible for the fast contraction. According to Gosling (1981) about 70% of the levator ani muscle fibers are type I, keeping the tonicity of the PFM constant, promoting support to the pelvic viscera. The muscle tonus is present when single muscles have intact musculoskeletal system and show firmness towards palpation.

Ortiz et al. (1994 apud AMARO et al., 2005) developed a functional pelvic floor muscles evaluation which is of great clinical applicability and it aims to verify the degree of contraction of the PFM. Its degree was originally from 0 to 5 according to the view these pelvic floor muscles and the sense to digital palpation of this contraction. However, in 1996 the same authors suggested a new classification, measuring from 0 to 4.

Latorre (2002) suggests that many studies were conducted aiming to know the effects on the exercises in the low urogenital system and in the pelvic floor muscle. The same author also suggests that the pelvic floor is an area that can suffer from progressive muscular weakness with all the situations that require intra-abdominal pressure growth, e.g. coughing, sneezing, intestinal constipation, Valsava maneuver and aerobic exercises practice.

When physical education professionals are inserted in the area of health, they form an activity group, they have the responsibility of reporting and raising awareness for the women that this muscle will not be about urinary incontinence, it will have the role of prevention. The role of the physical education professional is of fostering good health and preventing diseases.

In this sense, the focus of the physical professional intervention, aims prevention, promotion, protection and to rehabilitation of health in the context of social determinants of health of a population or individual CONFEF (2003).

The professional must be able to work in a team, to manage activities and to deal with health policies, besides practices of diagnoses, planning and specific interventions in the area of body practices and physical activities.

According to Moreno (2004) physical activities is proved to be beneficial to human beings, because they protect specially women, with disorders, such as osteoporosis, obesity, coronary diseases, among other disorders, being a rule among women.

Although it is important, many women still do not know what PF is, nonetheless about its usage. In a study conducted at Alto do Tietê gym in Mogi das Cruzes - SP, it was observed that 27.5% of the attendees did not know how to find the pelvic floor muscle and 72,5 knew where the positioning. After the explanatory class 100% of the patients said they were aware of this muscles positioning.

The trouble of tightening and/or keeping the muscles contraction causes a reduction on its functional capacity. The PF can suffer progressive muscle weakness with all the situations that demand the raise of intra-abdominal pressure, it is said that

the pelvic floor muscle (PFM) dysfunction can cause the decline of the pelvic organs from their normal alignment, because of the increase of pressure on its muscle, possibly entailing organ prolapse and urinary incontinence.

METHODOLOGY

The study was conducted in the field, it was descriptive, quantitative and by comparison, with analyses and interpretation of data collected.

Young women aged from 20 to 30 years old were invited, the average being from 21 to 23 years old, weight lifting practitioner for at one year, who meet the following criteria of inclusion: not having children, not having been pregnant, not practicing any activity other than weight lifting, no history of faecal or urinary infection, nor having premature menopause.

The used instruments were anamnesis records, questionnaire (containing questions about the knowledge about pelvic floor), a Quark® device to measure the perineal pressure (this being an inflatable covered by latex vaginal sensor connected to the pelvic floor) lubrication gel, condom, alcohol 70, latex gloves, stretcher, bed sheet and ICF.

At the first moment the women who agreed to participate in the research by the ICF signature answered a questionnaire with questions about the pelvic floor muscle. At a second step they received information about the localization the function and how to tighten correctly this muscle. Later, they went under a functional evaluation, done by a capable professional in the area, by perineometry and also by the functional pelvic floor evaluation.

The functional evaluation was done from the external genitalia visualization, verifying if the presence or absence of visible volunteer contraction of this muscle, after a verbal command.

The palpation was through a touch made with gloves and lubricant, it is done by introducing the middle fingers and the forefinger in the patient's vagina, then moving them to gather the contraction strength.

After that an evaluation through the perineometer will be done, it is done with a participant in supine position, in a gynecological position. The sensor to be introduced is covered by a condom and lubricant, then, bloated in the vagina. Then, the woman is oriented to contract the perineum for as long as possible. After three contractions, with an interval of one minute each, the results showed in the device are registered.

The data collected were analyzed through the statistical software Graphpad prism version 5.0.

RESULTS AND DISCUSSION

The results show that the average of age among the participants was of 21 to 23 years old and their marital status of most of them was single (90%), sexually active. As for the issues related to the health: none of them showed pain or discomfort in the sexual act, only (10%) had involuntary loss of urine and none of them reported pain or burning when urinating. None of the participants presents associated diseases and 80% of them go to the gynecologist regularly. When asked about practicing weight lifting, the average was from 2 to 9 years, the longest time was 10 years and the shortest was 1 year.

The gynecological exam is not a preventive procedure that women take calmly, making some of them not to seek a gynecologist and do not take this exam regularly. The reasons that lead a woman to seek a gynecological appointment are various since prevention to the desire of taking care of herself, the fear of having cancer, some discomfort and even mandatory exams in the health program (CARVALHO and FUREGATO 2001).

In relation to the weight and the strength of the PFM the statistical treatment showed that there is no influence of weight ($r=0.2/P=0.57$) on the functional evaluation and on the perimeter ($r=0.46/P=0.18$). Atalah (1997) studies showed that there was no influence from the obesity in the evaluated women. Wesnes et al. in 2007, reported that obesity is considered a risk factor to women who have urinary infection, which may contribute to the decrease of the PF muscular strength.

Regarding the height the strength of the PFM there was no influence on the functional evaluation and on the perineometer ($r=0.31/P=0.39$). Regarding the age ($r=0.14/p=0.70$) on the functional evaluation and on the perineometer ($r=0.04/p=0.92$).

On the functional evaluation of the graphic 01 it can be observed that most women (70%) have weak pelvic floor muscle. According to the Ortiz scale; significant result of degree 1, i.e., without visible perineal contraction, recognizable contraction only by palpation (non sustainable contraction draft).

Rett and col. (2007) report that many women ignore the PF localization and the function, being unable of contracting satisfactorily this muscle after only one verbal or written instruction.

It was observed that from 10 female participants, 10% obtained degree 2 according the Ortiz scale it brings to eye the weak perineal contraction, low intensity contraction, but it is sustainable. Only 10% of the participants had the degree 3, presenting perineal contraction and not opposing to palpation resistance.

The fact that women do not know how to tighten the perineal muscle correctly is also a factor that can damage the muscle strength. And it is not as rare as it seems, because many women do not even know that the muscle exists and the lack of information leads to the lack of body perception of the pelvic floor muscles.

The result by the perineometer was that even though 50% of the women were sexually active, they obtained the strength degree 1, i.e., according to Barbosa classification (2005) light contraction. Only 40% of the participants of the present study achieved the strength degree 2, i.e., mild contraction, not sustainable for 6 seconds.

Marques and Freitas (2005 apud HENSCHER, 2007) demonstrate in a study done with 40 women, that 100% of them did not know the function and operation of the pelvic floor. According to Bo et al, (1990), "the good proprioception and consciousness of the body are necessary to the true growth of the muscular volume and tonus". Complimenting, Henschler suggests that the proprioception and consciousness of the body are decisive factors to the success of training the pelvic muscles.

The results reveal that only 10% of the participants managed to achieve the degree of strength 3 according to Barbosa classification (2005), such as normal contraction, sustained for 6 seconds. It was reported that the participants practiced perineal exercises, this can be explained by a bigger consciousness of the PF muscles and a bigger vaginal perception.

However in the case of perineal exercises practiced only by 20% of the participants ($n=2$) there was influence on PFM. As for the perineal exercises practice it was observed the same influence on the degree of the perineum muscular activity both in the functional evaluation as in the perineometer, i.e., the bigger the stimulation through practice of perineum exercises the stronger the force of the pelvic floor muscles ($r=0.62/p=0.028$).

Ortiz et al (1994 apud AMARO et al., 2005) developed a functional clinical evaluation on the PF muscles that widely used. It was graded initially from 0 to 5, according to the visualization of this muscle contractile activity and the sensitivity to digital palpation of this contraction.

When comparing the functional (subjective) evaluation and the manual (objective) perineometer, the data suggest a significant statistical difference ($p=0.011$), the t-test used is paired and parametric with the significance level ($p,0,05$).

It can be concluded that the manual (objective) evaluation through the perineometer is the most reliable to measure the PF force.

The anatomy must be considered, i.e., each woman has different perineum sizes, considering that the participants are young and childless women.

FINAL CONSIDERATIONS

The present study has shown that weight lifting does not influence on the increase in the pelvic floor muscle strength. Considering that to strengthen these muscles, specific exercises on this muscular group must be done, being them Kegel exercises also known as kinesiotherapy. Therefore, more studies are necessary to prove that the body lifting practice does not influence on the PF force.

It is concluded that there was a significant difference on the comparison of the functional evaluation and the perineometer test, the result obtained through the perineometer had a reliability of 95%. The data analysis result established that 70% of the participants have weak pelvic floor muscles, from this we can suggest that even young women should be aware of this issue and do specific exercises that provide a bigger pelvic floor stimulation, as well as more researches on the subject should be done, thenceforth, try to develop methods applicable in exercises programs, allowing Physical Education professionals to contribute in one more aspect of women's health.

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Rua caiçara, nº 70 casa 03 Vila Piratininga.

THE INFLUENCE OF WEIGHTLIFTING ON THE PELVIC FLOOR MUSCULATURE STRENGTH IN WOMEN ABSTRACT

The aim of the present study is to verify the degree of contraction of the pelvic floor musculature with women aged between 20 to 30 years old, who have already practiced weightlifting for at least one year and to compare the subjective evaluation (functional) with the objective evaluation (perineometer). Ten women were evaluated by perineometry, and by functional evaluation by writing down the maximum amount of contraction. The parametric and paired t-test was used to compare the same group of women among the functional evaluation and the perineometer test, and also the Pearson correlation test, analyzing the correlation between the functional test and the perineometer test with height, weight, age and the practice of perineal exercises. There was statically difference between the two evaluations, obtained by the rating of p which was equal to $p=0.0011$, the difference presented statistically was significant ($p<0.05$). It can furthermore be noted that with the correlation analyzes among the women who were evaluated there was not influence of weight ($r=0.2/ P=0.57$) in the functional and perineometer evaluation ($r=0.45/ P=0.18$) nor of height ($r= -0.33/ p=0.36$) functional and perineometer evaluation ($r=0,31/ p=0,39$). The age ($r=0.14 / p=0.70$) in the functional and perineometer evaluation ($r= 0.04 / p=0.92$). It is concluded that the practice of weight training does not have correlation to growth of strength in the pelvic floor musculature. When comparing both methods to evaluate the strength of the pelvic floor, the perineometer test turned out to be more reliable than the subjective method. It is believed that this study will help in the actions, strategies and future intervention related to health promotion and prevention of diseases related to the pelvic floor in women.

KEYWORDS: Pelvic Floor, force, body lifting.

INFLUENCE DE LA MUSCULATION SUR LA FORCE DES MUSCLES DU PLANCHER PELVIEN DES FEMMES RÉSUMÉ

Le but de cette étude est de vérifier le degré de contraction des muscles du plancher pelvien chez les femmes âgées de 20 à 30 ans, pratiquant la musculation depuis au moins un an et comparer l'évaluation subjective (fonctionnelle) avec l'évaluation objective (périnéomètre). Dix femmes ont été évaluées à l'aide d'un périnéomètre et par l'évaluation fonctionnelle, en notant la valeur maximale de la contraction. Le test t apparié et paramétrique ont été utilisés pour comparer le même groupe de femme entre l'évaluation fonctionnelle et le test du périnéomètre, et aussi le test de corrélation de Pearson, en analysant la corrélation entre l'évaluation fonctionnelle et le test par le périnéomètre avec la taille, le poids, l'âge et avec la pratique d'exercices du périnée. Il y a eu une différence statistique entre les deux évaluations, obtenue par la valeur de p qui était égale à $p = 0,001$, la différence s'est présentée statistiquement significative ($p < 0,05$). On peut aussi observer, avec l'analyse de corrélation, que parmi les femmes étudiées, il n'y a pas eu d'influence du poids ($r = 0,2 / p = 0,57$) dans l'évaluation fonctionnelle et dans le périnéomètre ($r = 0,46 / P = 0,18$), ni de la taille ($r = 0,33 / p = 0,16$) dans l'évaluation fonctionnelle et dans le périnéomètre ($r = 0,31 / p = 0,39$), ni de l'âge ($r = 0,14 / p = 0,70$) dans l'évaluation fonctionnelle et dans le périnéomètre ($r = 0,04 / p = 0,92$). On conclut donc que la pratique de la musculation n'a pas de corrélation avec l'augmentation de la force des muscles du plancher pelvien. Et en ce qui concerne la comparaison des méthodes pour évaluer la force du plancher pelvien, la méthode par le périnéomètre s'est avéré plus fiable que la méthode subjective. On croit que cette étude pourra aider aux actions et stratégies et futures interventions liées à la promotion de la santé et de la prévention des maladies liées au plancher pelvien de femmes.

INFLUENCIA DE LA MUSCULACIÓN EN LA FUERZA DE LA MUSCULATURA DEL SUELO PÉLVICO EN MUJERES

RESUMEN

El objetivo del presente estudio pretende verificar el grado de contracción de la musculatura del piso pélvico en mujeres de edades comprendidas entre los 20 y los 30 años, ya practicantes de musculación desde, por lo menos, un año, y comparar la evaluación subjetiva (funcional) con la evaluación objetiva (perineómetro). Fueron evaluadas 10 mujeres, mediante la perineometría y a través de la evaluación funcional, siendo anotado El valor máximo de contracción. Fue utilizado el test t pareado y paramétrico para comparar El mismo grupo de mujeres entre la evaluación funcional y la prueba del perineómetro, y también el test de correlación de Pearson, siendo analizada la correlación entre evaluación funcional y el test mediante el perineómetro con la altura, el peso, la edad, y con la práctica de ejercicios perineales. Hubo diferencia estadística entre las dos evaluaciones, obtenida por el valor de p, que equivalió a $p=0,0011$, siendo que la diferencia se presentó estadísticamente significativa ($p<0,05$). Puede observarse aun, con el análisis de correlación, que entre las mujeres evaluadas no hubo influencia del peso ($r=0,2 / p=0,57$) en La evaluación funcional y en el perineómetro ($r=0,46 / p=0,18$), ni de la altura ($r=-0,33 / p=0,36$) en la evaluación funcional y en el perineómetro ($r=-0,31 / p=0,39$), ni de la edad ($r=0,14 / p=0,70$) en la evaluación funcional y en el perineómetro ($r=-0,04 / p=0,92$). Concluyendo entonces que la práctica de musculación no posee correlación con el aumento de la fuerza de la musculatura del suelo pélvico. Y en relación a la comparación de los métodos para evaluar la fuerza del piso pélvico, el método por el perineómetro se mostro más fiable que el método subjetivo. Creemos que este estudio ayudará en las acciones y estrategias y en futuras intervenciones relacionadas con el fomento de la salud y con La prevención de enfermedades relacionadas con el suelo pélvico de las mujeres.

INFLUÊNCIA DA MUSCULAÇÃO NA FORÇA DA MUSCULATURA DO ASSOALHO PÉLVICO EM MULHERES**RESUMO**

O objetivo do presente estudo visa verificar o grau de contração da musculatura do assoalho pélvico com mulheres de idade entre 20 e 30 anos, já praticantes de musculação a pelo menos um ano e comparar avaliação subjetiva (funcional) com a avaliação objetiva (perineômetro). Foram avaliadas 10 mulheres, por meio de perineometria, e pela avaliação funcional sendo anotado o valor máximo de contração. Foi utilizado o teste t pareado e paramétrico para comparar o mesmo grupo de mulheres entre a avaliação funcional e o teste do perineômetro, e também o teste de correlação de Pearson, sendo analisada a correlação entre avaliação funcional e o teste pelo perineômetro com a altura, peso, idade e com a prática de exercícios perineais. Houve diferença estatística entre as duas avaliações, obtida pelo valor de p que foi igual a $p = 0,0011$ sendo que a diferença apresentou-se estatisticamente significativa ($p < 0,05$). Pode-se observar ainda, com a análise de correlação que dentre as mulheres avaliadas, não houve influência do peso ($r = 0,2 / P = 0,57$) na avaliação funcional e no perineômetro ($r = 0,46 / P = 0,18$), nem da altura ($r = -0,33 / p = 0,36$) avaliação funcional e no perineômetro ($r = -0,31 / p = 0,39$). Da idade ($r = 0,14 / p = 0,70$) na avaliação funcional e no perineômetro ($r = -0,04 / p = 0,92$). Concluindo então que a prática de musculação não possui correlação para o aumento da força da musculatura do assoalho pélvico. E em relação a comparação dos métodos para se avaliar a força do assoalho pélvico o método pelo perineômetro se mostrou mais confiável do que o método subjetivo. Acredita-se que este estudo auxiliará nas ações e estratégias e futuras intervenções relacionadas à promoção de saúde e prevenção de doenças relacionadas ao assoalho pélvico de mulheres.

PALAVRAS-CHAVE: Assoalho Pélvico, força, musculação.