93 - PILATES METHOD: A STUDY ABOUT THE INFLUENCE OF EXERCISES IN WOMEN'S MUSCULAR FORCE

CRISTIANE MONTEIRO CARVALHO,
SEBASTIÃO CLAUDIO BATISTA FERREIRA,
GISELE DE PAULA VIEIRA,
CO-ADVISOR: DRA. MARIA AUXILIADORA TERRA CUNHA,
ADVISOR: DR. V. F. SILVA,
Human Motricity Sciences Master's Program at Universidade Castelo Branco,
Rio de Janeiro, RJ, Brasil

INTRODUCTION

Pilates' method is well known in the world as physical movements practiced without impact, different from other modalities, consisting of activities consciously exercised both on the soil and on specific apparatuses (GALLAGHER, 1999; GAGNON, 2005). It has been widely applied, aiming at increasing the muscular force and other traits as well as promoting health and life quality. (MUSCOLINO, 2004b; APARÍCIO, 2005; PIRES, 2005).

The technique developed by the German Joseph H. Pilates, in 1920, is also known as the “Art of Control” or “Controloy”. It includes over five hundred types of exercises to be executed on the basis of principles of concentration, breathing, centering, motor control and precision (PILATES, 1945, 2000; LATEY, 2001; JAGO, 2006; JOHNSON, 2007).

Pilates' exercises are prescribed for most people of healthy individuals, and in case of malfunctions and injuries, the are efficient in rehabilitation programs (REYNEKE, 1993; LABRUSCIANO, 1996; LATEY, 2001; STANKO, 2002; MUSCOLINO, 2004 a; SMITH, 2004). Nevertheless, the protocols standardization and evaluation procedures are not available, which m makes it difficult to interpret results (POLLOCK, 1993).

According to Mcardlle (1998) and Barbanti (2003), the muscular force is a physical trait that can be defined as the capability of exerting physical tension against a resistance, by performing different muscular actions.

For Dantas (2002) and Kraemer (2002), it is the maximum capability the muscle has to bear an overload; it is a fundamental feature of health, physical skills and improvement of life capacity.

The striated muscle is a dynamic tissue with great capacity of adaptation caused by functional demand actions. For Wilmore & Costill (2001), the physical exercise is a powerful inductor of neuromuscular adaptations

The increment of muscular force is the product of two major factors: the neural and muscular adaptations. The neural adaptations (MORITANI, 1979; STARON, 1991; DESCHENES, 2000, KRAEMER, 2002) are the ones responsible for the increase of force in the training first weeks, between the sixth and eighth weeks. The muscular adaptations (STARON, 2000; WILLIAMS, 2002) happen more intensely later. They are essentially related to the food intake and muscular hypertrophy.

It is known that the decrease of muscular force can start approximately at the age of 25, caused by different reasons, such as: biological (age, gender, hormones, number and types of motor activities, size and speed of muscular contraction), degree of physical activity and environmental aspects (SCHNEIDER, 2002; CANDELORO, 2007).

According to Neri (2001), women's aging process entails a growing influence on their health, functionality, social protection and integration.

The muscular deficit, for Aquino (2002) and Willians (2002), is the major cause of joint instability, so the muscular increment is extremely important for the joint integrity, functional performance and prevention of pathologies, including the respiratory pathologies..

The force training has demonstrated its efficiency in the improvement of functional capacities as well as in the increase of muscular mass (POLLOCK, 1993; ACSM, 2002).

The center of force, or powerhouse, is the core of the body and the main focus for the training in the Pilates' exercises. It consists of the abdominal transverse muscle, internal and oblique muscles, gluteus and thigh posterior muscles (MULHEARN, 1999; HERRINGTON, 2005; JOHNSON, 2007).

For Pilates, the individual who has a strong “powerhouse” would feature stable spine, body balance, optimization of muscular chains and efficient movement (MUSCOLINO, 2004a).

Since the recent surveys indicate the Pilates' method exercises increase muscular force (REYNEKE, 1993; LABRUSCIANO, 1996; STANKO, 2002; KOLYNIACK, 2004; MUSCOLINO, 2004a, b; SMITH, 2004), this study aims at identifying the influence of this training method over women's muscular strength.

MATERIAL AND METHODS

SAMPLE

The individuals Who participated in this study were chosen at random at Pilates' training centers in Rio de Janeiro – RJ, in the period from May to August 2009. .The sample was made up of thirty volunteer female subjects, at ages ranking from the minimum of twenty-five to the maximum of sixty-eight, all selected among those who had Pilates' s physical fitting modality as their single physical activity program. They practiced Pilates' activities twice a week, and had been engaged in those exercises for six healthy months, that is, they were free from conditions that could risk their joint and muscular-skeleton systems.

Three groups were created and named: Young Adult (Adulto Jovem – AJO), gathering individuals from the age of twenty-five to the age of thirty-nine years old; Average Young (Médio Jovem - MJO) with individuals from the age of forty to the age of fifty-nine year old and the Third Age (Terceira Idade - TID) including those at the age of sixty or above.

All the participants were informed in details about the procedures to be used and all agreed on signing a consent term stating that they were aware of all the process.

Description of the Pilates' Class

The average class lasted for sixty minutes, and it was carried out individually, in a quiet environment, applying the method's specific apparatuses: Cadillac, Lader Barrel, Reformer, Wall Unit, Wunda Chair and floor. Multiple global exercises for overall stretching and strengthening were accomplished, at basic and intermediate levels, respecting every participant's individuality and capacity.

Every exercises was repeated from ten to twelve times, slowly, simultaneous to breathing (expiring during the accomplishment of the movement and inspiring to retake initial position), under an instructor's supervision.

Assessment of Women's Muscular Strength

The subjects were evaluated individually after the Pilates' class by means of abdominal test of trunk partial flexion. The way the test was applied was the same to all the individuals, that is, the position was lying on their back on a specific kind of mattress named Ortobom, with their knees bent and feet planted on the floor, fingers intertwined behind their heads and closed elbows. The

trunk lifted as high as the point when the scapula rises from the mattress and returns to its initial positions. The number of abdominal flexions per minute is registered. The chronometer used was a one-hundred-real (R$100) Polar unit. The performance (number of repetitions) achieved was rated according to the patterns proposed by Pollock & Wilmore (1993), in Table 1. The individuals accomplished the maximum number of flexions there were able to sustain, within their limits free from pain.

Table 1: Classification of Abdominal Test for Women (number of repetitions per minute)

Age	*1 Excellent*	*2 Above Average*	*3 Average*	*4 Below Average*	*5 Weak*
20 - 29	+ 36	31 a 35	25 a 30	21 a 24	- 20
30 - 39	+ 29	24 a 28	20 a 23	15 a 19	- 14
40 - 49	+ 25	20 a 24	15 a 19	07 a 14	- 06
50 - 59	+ 19	12 a 18	05 a 11	03 a 04	- 02
60 - 69	+ 16	12 a 15	04 a 11	02 a 03	- 01

Adapted source: POLLOCK & WILMORE. 1993.

Statistical Analysis

The values of the data obtained in the post-class assessment were compared between the groups and inside each group according to Student's text t for both depending variables with significance level p- value < 0.05.

RESULTS

In this study, according to the classification by Pollock & Wilmore (1993), women's performance featured excellent muscular strength above average and average. The results for the below average and weak were not registered, as demonstrated in Table 2.

Table 2: Results of women's muscular strength assessment

Subject/Group	*AJO*	*MJO*	*TID*
1	1	1	1
2	2	1	1
3	2	1	1
4	1	1	1
5	1	1	1
6	1	1	1
7	3	1	1
8	3	1	1
9	1	2	1
10	1	1	1

Regarding the partial flexion of the trunk for the AJO group, 50% of the women featured results considered excellent, 30%0of them were above average, and just 20% features results considered average.

The variation of results ranked between twenty-two and sixty-seven repetitions. The middle number was 34 and the average was 35.9, as demonstrated in figure 1.

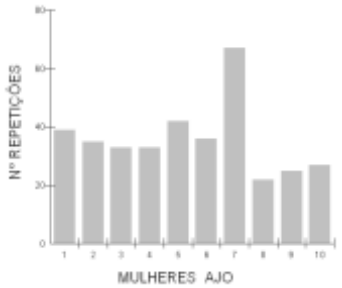

Figure 1: Distribution of muscular strength test results of the Young Adult (AJO) group.

The AJO group achieved a variation rate of 35.02%, which can be considered significant through the test t, whose p-value was < 0.377.

From comparing the standard proposed by Pollock & Wilmore (1993), it was observed that 90% of the women in the MJO group presented results considered excellent, 10% featured results above the average and the other scores were not found.

The MJO group feature results between twenty and forty repetitions, a middle number of thirty one and an average of 30.1 repetitions, as demonstrated in figure 2.

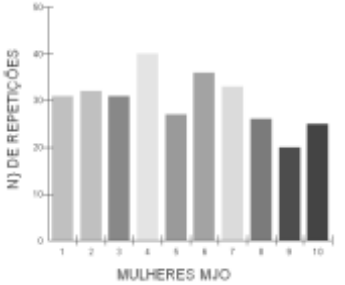

Figure 2: Distribution of muscular strength test results of the Average Young (MJO) group

The MJO group achieved a variation rate of 19.21%, which can be considered significant through the test t, whose p-value was = 0.04.0; It characterizes uniformity of the group.

For group TID, the development regarding the muscular strength test can be considered excellent from the comparison to the standard mentioned because it featured a variation of results between 19 and 30 repetitions, in a middle value of 25.5 and average of 26.9 repetitions, as demonstrated in figure 3. It has achieved a variation rate of 23.67% and p- value= 0.03 according to Student's test t.

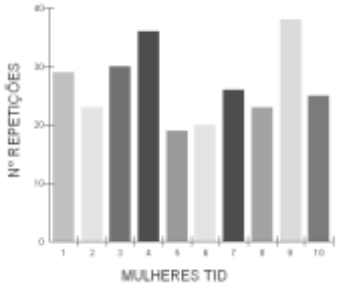

Figure 3: Distribution of muscular strength test results of the Third Age Group (TID).

The analysis of variation between groups concerning the abdominal muscular force test demonstrated a meaningful difference only when compared to groups AJO and TID, inside the groups, in which F =3.48 and p- value = 0.387, as featured in figure 4.

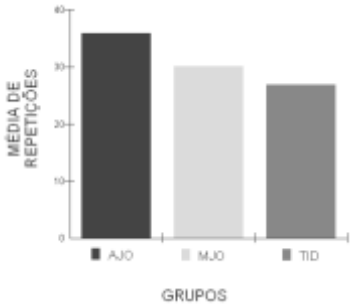

Figure 4: Correlation of results of muscular force test between groups.

DISCUSSION

The muscular strength is an essential physical feature for the body balance, for the functional capacity and for the full accomplishment of daily life activities.

According to Kraemer & Ratames (2004), uni and multi-joint exercises are efficient for the gain of muscular mass, more complete in the neural aspect and with more increment of force.

There are several force training protocols aimed at improving the aspects of the neuromuscular system; however, most of these methods stems from empirical observations and the studies that evaluated their effects are still scarce (UCHIDA, 2004).

According to Bompa & Kornacchia (2000), in order to develop muscular force at the full span of a joint movement, it is necessary to develop the joint flexibility. Consequently, the force work can improve the gain of flexibility and vice-versa (FERREIRA, 1999; BARROS, 2000).

There are problems related to the development of physical skills tests for abdominal muscles dues to the fact that there is no measuring criterion available (SPARLING, 1997).

Ribeiro and collaborators (2002) analyzes the efficiency of three kinds of abdominal exercises and suggest that the trunk partial flexion is ideal and safe to evaluate the localized abdominal muscular resistance, considering the abdominal rectus and lower part as the major muscles.

Researches have proven that the transverse abdominal muscle plays a major role in relation to the other abdominal muscles. Besides participating in the breathing mechanics, it is the most important generator of intra-abdominal pressure (TESH, 1987; GOUVEIA, 2008).

Based on the electromyography, Hodges & Richardson (1997) have found out that the abdominal transverse is the first muscle to be activated during the movement of the limbs. So, this evidences its segment stabilization function. The major stabilizing muscles are the multifidus, the abdominal transverse and the internal oblique muscles (O'SULLIVAN, 1998).

Considering that the powerhouse of the Pilates' method is located mainly in the abdomen, and that specific tests for the analysis of the abdominal transverse muscle are not available, the option taken was to use the trunk partial flexion test under the fatigue and safety aspects (RIBEIRO, 2002).

It was observed in this study that the Pilates method was efficient for the development of muscular force, principally among third age women, who featured results far above the expected, having scored figures equivalent to the ones among younger women, according to the standards set by Pollock & Wilmore.

The Pilates' method exercises also seem to contribute to the maintenance and promotion of muscular force in subjects in AJO e MJO groups, since scores below the average or weak were not identified.

The performance of muscular force in the AJO group proved to be excellent, above the average and the average. In group MJO it was excellent and above the average. In group TID, it was excellent.

FINAL CONSIDERATIONS

From this study, it was possible to confirm that the Pilates' method exercises influence meaningfully in the development of the physical feature of muscular force, mainly among third age women, provided it is practiced regularly, according to its basic principles, and respecting individual characteristics.

Most of recent studies highlights the efficiency and contribution of the Pilates' method. Even so, there is still a great gap of knowledge in this area that will only improved with the investment in new studies.

The adequacy of Pilates' method technique is necessary according to the needs and requirements of current human beings, so that desirable effects can be achieved.

REFERENCES

AMERICAN COLLEGE SPORTS MEDICINE (ACSM). **Diretrizes do ACMS para os testes de esforço e sua prescrição.** 6. ed. Rio de Janeiro: Guanabara Koogan, 2002.

APARÍCIO, E; PÉREZ, J. **O autêntico método Pilates – a arte do controle.** São Paulo: Planeta do Brasil, 2005.

AQUINO, M. A. et al. Isokinetic assessment of knee flexor/extensor muscular strength in elderly women. **Rev. Hosp. Clin.**, v. 57, n. 4, p. 131-134, Jul./Aug. 2002.

AVEIRO, M. C. Influence of a physical training program on muscle strength, balance and gait velocity among women with osteoporosis. **Rev. Bras. Fisiot**er., v. 10, n. 4, p. 441-448, Out./Dez. 2006.

BARBANTI, J. V. **Dicionário de educação física e esporte**. São Paulo: Manole, 2003.

BARROS, T. L. Efeitos benéficos da atividade física na aptidão física e saúde mental durante o processo de envelhecimento. **Revista Brasileira de Atividade Física e Saúde**, v. 5, p. 60-76, 2000.

BOMPA, O. T.; CORNACCHIA, J. L. **Treinamento de força consciente.** São Paulo: Phorte, 2000.

CANDELORO, J. M.; CAROMANO, F. A. Efeito de um programa de hidroterapia na flexibilidade e na força muscular de idosas**. Rev. Bras. Fisioter.**, São Carlos, v. 11, n. 4, p. 303-309, Jul./Ago. 2007.

DANTAS, E. H. M. Fitness, saúde, wellness e qualidade de vida. **Rev. Min. Educ. Fís.,** v. 2, n. 1, p. 106-150, 2002.

DESCHENES, M. R. et al. Effects of resistance training on neuromuscular junction morphology. **Muscle Nerve**, v. 23, p. 1576-1581, 2000.

FERREIRA, J. M. A. **Hipertrofia e seus efeitos sobre o rendimento da flexibilidade**. [s.l.]: [s.e.], 1999.

FIATARONE, M. A. et al. Hugh-intensity strength training in nonagenarions. Effeets on skeletal muscle. **Journal of the American Medical Association,** v. 263, p. 3029-3034, 1990.

GAGNON, L. H. **Efficacy of Pilates exercises as therapeutic intervention in treating patients with low back pain.** (Tese de Doutorado). The University of Tennessee, Knoxville, 2005.

GALLAGHER, S. P.; KRYZANOWSKA, R. **The Pilates® method of body conditioning.** Philadelphia: Bain Bridge Books, 1999.

GOUVEIA, K. M. C.; GOUVEIA, E. C. O músculo transverso abdominal e sua função de estabilização da coluna lombar. **Fisioter. Mov. ,** v. 21, n. 3, p. 45-50, Jul./Set., 2008.

JAGO, R. et al. Effect of 4 weeks of Pilates on the body composition of young girls. **Prev Med,** v. 42, n. 3, Mar. 2006.

JOHNSON, E. G. et al. The effects of Pilates-based exercise on dynamic balance in healthy adults. **Journal of Bodywork and Movement Therapies**, v. 11, p. 238-242, 2007.

KOLYNIAK, I. E. G. G; CAVALCANTI, S. M. B; AOKI, M. S. Avaliação isocinética da musculatura envolvida na flexão e extensão do tronco: efeito do método Pilates. **Rev. Bras. Med. Esporte**, v. 10, n. 6, p. 487-490, Niterói, Nov./Dez. 2004.

KRAEMER, W. J. et al. American College of Sports Medicine Position Stand on progression models in resistance training for healthy adults. **Med. Science Sports Exerc**., v. 34, n. 2, p.364-380, 2002.

LaBRUSCIANO, G; LONERGAN, S. Pilates: a method ahead of its time. **Strength and Conditioning,** p. 74-75, August, 1996.

LATEY, P. Updating the principles of the Pilates method - part 2. **Journal of Bodywork and Movement Therapies**, v. 6, n. 2, p. 94-101, 2001.

McARDLE, W. D.; KATCH, V. L.; KATCH, F. I. **Fisiologia do exercício: energia, nutrição e desempenho human**o. 4. ed. Rio de Janeiro: Guanabara Koogan, 1998.

McCALL, G. E. et al. Acute and chronic hormonal responses to resistance training designed to promote muscle hypertrophy. **Can. J. Appl. Physiol.** n. 24, p. 96-107, 1999.

MORITANI, T.; De VRIES, H. A. Neural factors versus hypertrophy in the time course of muscle strength gain**. Am. J. Phys. Med.**, v. 58, p. 115-130, 1979.

MULLHEARN, S.; GEORGE, K. Abdominal muscle endurance and its association with posture and low back pain: an initial investigation in male and female gymnasts. **Physiotherapy**, v. 85, p. 210-216, 1999.

MUSCOLINO, J.; CIPRIANI, S. Pilates and "powerhouse" I. **Journal of Bodywork Movement Therapies,** v. 8, p. 15-24, Jan. 2004a.

_____. Pilates and "powerhouse" II. **Jounal of Bodywork Movement Therapies**, v. 8, p. 122-130, April, 2004b.

NAHAS, M. V. Atividade física, saúde e qualidade de vida: conceitos e sugestões para um estilo de vida ativo. Londrina: **Midiograf**, 2001.

NERI, A. L. Envelhecimento e qualidade de vida na mulher. 2 Congresso Paulista de Geriatria e Gerontologia. **Anais.** GERP, 2001.

O'SULLIVAN, P.; TWONWY, L.; ALISON, G. Altered abdominal muscle recruitment in patients with chronic back pain following a specific exercise intervention. **Journal of Sports Physical Therapy**,v. 27, n. 2, p. 114-124, 1998.

PILATES, J. **Return to life through contrology.** Village, NV: Dynamisc Inc., 1945.

PILATES, J. H.; MILLER, W. J. The complete writings of Joseph H. Pilates: Return to life through contrology and your health. In: GALLAGHER, S. P.; KRYZANOSWSKA, R. Pilates method of body conditioning: introduction to the core exercises. **Philadelphia: Bain Bridge Books**, 2000.

PIRES, D. C.; SÁ, C. K. C. Pilates: notas sobre aspectos históricos, princípios, técnicas e aplicações. **Revista Digital,** v. 10, n. 90, Buenos Aires, Dez. 2005.

POLLOCK, M. L.; WILMORE, J. H. **Exercício na saúde e na doença.** 2. ed. Rio de Janeiro: Medsi, 1993.

REYNEKE, D. The Pilates method of exercise and rehabilitation. **Physiotherapy in Sport**, v. 18, n. 3, p. 19, 1993.

RIBEIRO, A. H. M.; FILHO FERNANDES, J.; NOVAES, J. S. Abdominais. A eficácia de três exercícios abdominais para teste de resistência muscular localizada. **Fit. & Perform**., v. 1, n. 1, jan./fev., 2002.

SARTI, M. A. et al. Muscle activity in upper and lowe rectus abdominus during abdominal exercises. **Arch. Phys. Med. Rehab.**, v. 77, p. 1293-1297, 1996.

SEGAL, N. A.; HEIN, J.; BASFORD, J. R. The effects of Pilates training on flexibility and body composition: an observational study. **Arch. Phys. Med. Rehabi**l., v. 85, n. 12, p. 1977-1981, Dez. 2004.

SILER, B. **The Pilates body. Nova York: Broadway Books,** 2000.

SMITH, K.; SMITH, E. Integrating Pilates-based core strengthening into older adult fitness program. **Topic in Geriatric Rehabilitation,** v. 21, n. 1, p. 57-67, 2004.

SPARLING, P. B. Field testing for abdominal muscular fitness-speed versus cadence sit-ups. **ACSM's Health & Fitness Journal**, v. 1, n. 4, p. 30–33, 1997.

STANKO, E. The role of modified Pilates in women's health physiotherapy. **Journal of the Association of Chartered Physiotherapists in Women's Health,** v. 90, p. 21-32, 2002.

STARON, R. S. Strength and skeletal muscle adaptations in heavy-resistance-trained women after detraining and retraining. **J. Appl. Physiol.,** n.70, p. 631-640, 1991.

STARON, R. S. et al. Fiber type composition of the vastus lateralis muscle of young men and women. **J. Histochem Cytochem**, 48, p.623–629, 2000.

TESH, K. M.; DUNN, J. S.; EVANS, J. H. **The abdominal muscles and vertebral stability. Spíne**. v. 22, n. 15, p. 501-

508, 1987.

UCHIDA, M. C. et al. **Rev. Bras. Med. Esporte**, v. 10, n. 3, p. 165-168, 2004.

WILLIAMS, M. H. **Nutrição para saúde, condicionamento físico e desempenho esportivo**. 5. ed. São Paulo: Manole, 2002.

WILMORE, J. H.; COSTILL, D. L. **Fisiologia do esporte e do exercício.** 2. ed. São Paulo: Manole, 2001.

YAN, Z. Skeletal muscle adaptation and cell cycle regulation. Med. Science Sports Exerc., v. 28, n. 1, p. 24-26, 2000.

Brás de Pina / Rio de Janeiro, RJ / Brasil / CEP: 21012-290
Rua Coirana, 189
Telefone: (21) 8127-2408 / (21) 3137-1927. Email: crismoncar@yahoo.com.br

PILATES METHOD: A STUDY ABOUT THE INFLUENCE OF EXERCISES IN WOMEN'S MUSCULAR FORCE

ABSTRACT:

The Pilates method has been widely spread in order to increase the muscular strength and other physical features. This study aims at identifying the influence of exercises in this training method on women's muscular force. The sample was made up by thirty healthy female subjects from the minimum age of twenty-five to the maximum age of sixty-eight years who were voluntarily selected among those who had joined the training program for at least six months. The subjects were divided in three groups according to their age. Considering that the center of muscular force of the method is in the abdominal muscular system, the volunteers had their abdominal muscular force assessed through a trunk partial flexion after having carried out a Pilates' class. The results obtained were rated, put in a table and statistically analyzed between groups and inside each of the groups according to Student's test t. Remarkable performance was registered inside the groups ($p < 0.05$) with muscular force above the average. In the analysis between groups, the results were significant only in analysis of young adults (AJO group) and third age (TID group), with $p= 0.387$. The Pilates' method has proven to be efficient as a form of training of muscular force, chiefly among third age women.

KEY WORDS: Exercise and movement/method techniques; Muscular force; Analysis and development of tasks.

MÉTHODE PILATES: UNE ÉTUDE DE L'INFLUENCE DES EXERCICES SUR LAFORCE MUSCULAIRE DES FEMMES

RÉSUMÉ:

La méthode Pilates s'est largement répandue pour développer la force musculaire et d'autres valeurs physiques. Cette étude cherche à identifier l'influence des exercices proposés par cette méthode d'entreinement sur la force musculaire des femmes. L'échantillon utilisé a été composé par 30 sujets volontaires, choisis au hasard, du genre féminin, sains, à l'âge de 25 ans au minimum et 68 ans au maximum, qui pratiquaient la méthode régulièrement pendant au moins six mois. Cet échantillon a été divisé en trois groupes conformément à l'âge. Étant donné que le centre de force de la méthode se trouve dans la musculature abdoninale, les volontaires ont été soumises à l'évaluation de la force musculaire abdominale après la réalistion de la classe de Pilates, à partir du test de flexion partiale du tronc. Les résultats obtenus onte été ponctués, tabulés et analyses estatistiquement, intra- et intergroupes à travers le test t de Student, où l'on a vérifié la performance significative ($p > 0,05$) intra-groupes, avec force musculaire au dessus de la moyenne et dans l'analyse intergroupes a démontré signification seulement dans l'analyse entre adultes jeunes et troisième âge avec $p = 0,387$. La méthode Pilates s'est montrée efficace comme forme d'entreinement de la force musculaire, surtout pour les femmes du troisième âge.

MOTS-CLÉS: Techniques d'esercice et de maouvement; Force musculaire; Analyse et accomplissement des tâches.

MÉTODO PILATES: UN ESTUDIO DE LA INFLUENCIA DE LOS EJERCICIOS EN LA FUERZA MUSCULAR DE LAS MUJERES

RESUMEN:

El método Pilates está siendo ampliamente difundido con el propósito de aumentar la fuerza muscular y también otros valores físicos. El presente estudio busca identificar la influencia de los ejercicios de este método de entrenamiento sobre la fuerza muscular de mujeres. La muestra se compone de treinta sujetos voluntarios escogidos aleatoriamente, de género femenino, sanos, con edad mínima de veinticinco años y máxima de sesenta y ocho años, practicantes del método, con regularidad, por seis meses como mínimo. La muestre fue dividida en tres grupos de acuerdo con la edad. Considerando que el centro de fuerza del método se encuentra en la musculatura abdominal, las voluntarias fueron sometidas a una evaluación de la fuerza muscular abdominal, después de la realización del ejercicio de Pilates, a partir del test de flexión parcial del tronco. Los resultados obtenidos fueron puntuados, tabulados y analizados estadísticamente intra- e intergrupos a través del test t de Student, y se ha verificado un rendimiento significativo ($p < 0,05$) intragrupos, con fuerza muscular por encima de la media y en el análisis intergrupos mostró significancia solamente en el análisis entre adultas jóvenes y tercera edad con $p = 0,387$. El método Pilates demostró ser eficiente como forma de entrenamiento de la fuerza muscular, sobre todo para mujeres de la tercera edad.

PALABRAS-CLAVE: Técnicas de ejercicio y de movimiento/método; Fuerza muscular; Análisis y desempeño de tareas.

MÉTODO PILATES: UM ESTUDO SOBRE A INFLUÊNCIA DOS EXERCÍCIOS NA FORÇA MUSCULAR DE MULHERES

RESUMO:

O método Pilates vem sendo amplamente difundido com a finalidade de incrementar a força muscular e outras valências físicas. O presente estudo busca identificar a influência dos exercícios deste método de treinamento sobre a força muscular de mulheres. A amostra foi composta por trinta sujeitos voluntários selecionados aleatoriamente, do gênero feminino, saudáveis, com idade mínima de vinte e cinco e máxima de sessenta e oito anos, praticantes do método, regularmente, por no mínimo seis meses. Foi dividida em três grupos de acordo com a faixa etária. Considerando que o centro de força do método se encontra na musculatura abdominal, as voluntárias foram submetidas a uma avaliação da força muscular abdominal, pós-realização da aula de Pilates, a partir do teste de flexão parcial de tronco. Os resultados obtidos foram pontuados, tabulados e analisados estatisticamente intra e intergrupos através do teste t de Student, onde se verificou desempenho significativo ($p < 0,05$) intragrupos, com força muscular acima da média e na análise intergrupos demonstrou significância apenas na análise entre adultas jovens (AJO) e terceira idade (TID) com $p= 0,387$. O método Pilates mostrou-se eficaz como forma de treinamento da força muscular, principalmente em mulheres da terceira idade.

PALAVRAS-CHAVE: Técnicas de exercício e de movimento/método; Força muscular; Análise e desempenho de tarefas.

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