58 - EFFECTS ANALYSIS OF PILATES AND POSTURE EXERCISE PROGRAMS IN ORDER TO IMPROVE FLEXIBILITY IN YOUNG ADULTS

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INTRODUCTION

In different areas related to motor functions, interventions with exercise programs that involve stretching to increase flexibility, has great importance in promoting health and wellness benefits in functional activities, injury prevention, training in postural and muscle relaxation (GAMA et al. 2009).

To Cyrino et al. (2004) the constant practice of strength training and flexibility has a significant influence on physical fitness components related to health, on improve quality of life.

Alternative forms of prophylaxis and therapy can arouse great interest to practitioners, by differentiating themselves from traditional techniques of exercise. However, the method Contrology, known as Pilates, integrates body and mind in harmony, involving strength and softness, working stretching techniques for improving flexibility, posture and motor coordination (SACCO et al. 2005). Other studies have found an improvement in flexibility and posture of practitioners of Pilates exercises (SEGAL and Basford, 2006; BERNARDO, 2006).

The creator of the Contrology Method was Joseph H. Pilates, who was born in Germany in 1880 and died in the United States in 1967. In 1912 he began developing the Pilates equipment for the practice of Contrology and by 1920, initiated the method in New York, United States. He described the Contrology as the balance or the complete body coordination, mind and spirit by contributing positively to improve the practitioners' quality of life (LANGE et al. 2000).

In a recent study conducted with 52 old students, 27 students have undergone the practice of Pilates exercises and 25 remained as controls. The sessions were held twice a week, lasting one hour, for eight weeks and the results show an quality of life improvement for people practicing Pilates (Δ1.26%, $p = 0.0411$) than did the Control Group (RODRIGUES et al. 2010).

Improved posture and flexibility are the claims of the method and its creator, which prioritized these components with the practitioners in his gym in New York, mostly dancers and athletes of various sports. Posture exercises programs have similar aims in relation to posture and flexibility exercises (SEGAL and Basford, 2006).

The Contrology recommends the exercises with and without apparatus, in a conscious way, based on the following principles: global body movement, uniform muscles development, concentration, precision, control center, rhythm, breathing and flexibility (SACCO et al. 2005 ; LANGE et al. 2000).

Essentially, when performing the movements should be run "Power House" (Center Force), maintaining the contraction of the pelvic floor muscles, transversus abdominis, diaphragm, the abdominal obliques and multifidus. Being that special attention should be given to the transverse muscle of abdomen, once reinforced, promotes greater stability in the paravertebral muscles, facilitating the restoration of muscles, joints and ligaments and helping in the recovery and injury prevention (SACCO et al. 2005).

The aim of this study was to analyze the influence of Pilates exercises and posture exercise programs to improve flexibility in young adults, practitioners of exercise in gyms and clinics of physical activity.

METHODS

A study was conducted with students, males, the PRAXIS Centre for Physical Activity in São Paulo. The Pilates group was composed by 14 subjects and the group of posture exercise program by 22 subjects. Both groups answered a questionnaire about health history and morbidity survey and were distributed randomly. The first, called Pilates Group (GP), underwent 12 weeks of training for 3 months, twice a week with 50 minutes each session with standardized exercises Contrology Method (Pilates). The second, called Group of Posture Exercise Programs (GGP), also underwent the same training period, volume and intensity, with posture exercise programs with the same selection criteria, so that the movements during the exercises involving the same joints in both methods.

Participants were instructed to remain during the trial period, without any involvement in other programs of regular physical activity. The variables considered in the study were “Flexibility Shoulder (right and left)” and “Flexibility of the hips (left and right)”. For hip flexibility, were considered two types of evaluation, i.e. active, in which the performer alone made hip flexion, and passive, when performed a flexion with the help of the evaluator.

Were used hip and shoulder flexibility tests to evaluate the flexibility with a fleximeter Sanny ® according to the procedures described by Miller (2006). It was noted the highest degree obtained in three repetitions of each motion. The classification of the range of joint angles of the upper limbs and pelvis was performed according to The American Academy of Orthopaedic Surgeons, 1965.

RESULTS

Comparing the absolute flexibility values between collections before and after intervention there was no significant difference in both groups ($p > 0.05$), but indicators show progress on important changes, considering the consequences of these changes in the gain of joint mobility and improving physical fitness, also indicating a superior evolution in the group subjected to Pilates expressed in relative values.

The group submitted to the Pilates method had increased significantly above the group trained with the GGP method in flexion in the joints of the right shoulder and right hip (Table 1).

The comparative analysis between the values expressed in flexibility degrees between the first and second active collecting passive collection, no significant difference were found (Table 2).

Table 1. Comparative analysis of the differences observed in degrees between the first and second collection methods between Pilates and posture exercise programs (GGP).

JOINTS	METHODS		
	Pilates	GGP	t
OFD	13,50 ± 6,29	8,22 ± 2,59	0,0006*
OFE	13,70 ± 4,73	6,86 ± 4,59	6,5204
OED	12,07 ± 1,63	8,18 ± 2,06	4,9614
OEE	11,42 ± 1,15	7,68 ± 1,28	1,2267
QFAD	22,57 ± 1,39	14,22 ± 2,22	1,3909
QFAE	19,07 ± 2,20	15,50 ± 1,97	7,0005
QFPD	22,42 ± 3,20	18,54 ± 2,72	0,0002*
QFPE	23,57 ± 2,47	17,18 ± 1,62	2,8524

Right shoulder flexion (OFD), left shoulder flexion (OFE), right shoulder extension (OED), left shoulder extension (OEE), right hip active flexion (qfad), left hip active flexion (QFAE); right hip passive flexion (QFPD); left hip passive flexion (QFPE). * p<0,05.

Table 2. Comparative analysis between the flexibility values in the hip joint expressed in degrees between the first active and second passive collection.

	METHODS					
	Pilates			GGP		
	1° active collection	2° passive collection	t	1° active collection	2° passive collection	t
QFD	74,42 ± 5,95	117,92 ± 6,49	2,7585	78,86 ± 10,97	118,54 ± 15,37	2,7648
QFE	75,07 ± 7,37	120,50 ± 3,93	2,3220	78,31 ± 11,84	115,40 ± 13,65	1,8487

Right hip flexion (QFD), left hip flexion (QFE); p>0,05.

DISCUSSION

In this study, we use static and dynamic flexibility exercises both in Posture exercise program and Pilates groups. The literature presents several benefits gained by practicing these exercises, such as the most used: Dynamic exercises - Ballistic, Static and Proprioceptive Neuromuscular Facilitation (Chagas et al. 2008).

Descriptive analysis of the results expressed in absolute flexibility degrees, in the collections of pre and post intervention and relative changes in delta percentage showed no significant difference between the two study groups, however, we can infer that the indicators of relative changes show considerable improvements in physical flexibility, indicating that the group that practiced Pilates showed higher improvement when analyzed the relative values separately.

The group that participated in Pilates, showed improvement of physical flexibility, to analyze the differences in degrees observed between the first and second collections for both methods. With the right shoulder flexion (OFD) achieved was 13.50 ± 6.29, compared to GGP, which accounted by (OFD) 8.22 ± 2.59, t = 0.0006 and p <0, 05. In Pilates group with passive hip flexion, right (QFPD) the result was 22.42 ± 3.20. For GGP, the results were 18.54 ± 2.72, t = 0.002, p <0.05, as presented in Table 1. These data corroborate the claims of Alter (1999) when he says that flexibility is specific to each individual and joint, i.e. the AM (Range of Motion) obtained on one side is not related to the opposite side and the reasons for handedness and dominance are unknown, although there are theories.

Perhaps this improvement was due to the practice of specific exercises of Pilates. Sacco et al. (2005) cites as an example, "Spine Stretch", which focuses on improving the stretching of the posterior muscles, stabilize the pelvis, it recruits the muscles of the elbow and scapular stabilizer muscles isometrically and activates the muscles of the trunk.

In another study, Skeays et al. (2008) examined the effects of Pilates exercises for the shoulder range of motion in women who had been treated for breast cancer. They found significant improvement in shoulder abduction and external rotation. They concluded that Pilates exercises were effective in improving the articulation of the shoulders and a greater amount of research must be done to increase the discussions.

The paper published by Kolyniak et al. (2004) evaluated the effect of the method on the function of trunk extensors and flexors, founded positive results showing that the Pilates exercises decrease the imbalance between agonist and antagonist muscles involved in extension and flexion of the trunk.

The joint mobility limitation may greatly affect the balance of the muscles causing a decrease in ADM in the major joints (ALTER, 1999), one of the reasons that might have led the group of Pilates in the present study, the present greater flexibility in the shoulder joints hip and by improving the stretching of posterior muscles.

For young people with postural deviations, information for proper treatment and preventive exercises are crucial in this phase of training the body. Therefore, there is a need to work with flexibility exercises and proprioception and stabilization mechanisms for maintaining good dynamic and static stability (KRAEMER et al. 2002).

In another study that evaluated the effects of Pilates exercises with sedentary adult women, Sekendiz et al. (2007) founded that there was improvement in flexibility with p <0.05 in the sit and reach test and concluded that the method also helps in improving the quality of life in sedentary regard to the muscular endurance of paraspinal muscles.

Corroborating the survey data above, Rodrigues et al. (2010) report that for the practitioners of Pilates exercises for two months, twice a week, there was improvement in quality of life (Δ1.26%, p = 0.0411) which was attributed to sport practice.

Bertolla et al. (2007) investigated 11 athletes, male soccer players, developed for 4 weeks, 3 sessions of Pilates a week. Participants were evaluated on the flexibility, through fleximeter, barefoot, and were instructed to develop hip flexion to the maximum extent achieved. The result for the group called Control Pre-Test was 118,40° ± 18,78 e Pós-Teste 127, 40º ± 19,32 with a significant improvement in flexibility p <0.05 and for Group Pilates Pre-Test 130, 83º ± 13,63 and Post-Test 140, 17º ± 9, 99, p< 0,001, classified as extremely significant and concluded that the hamstrings and gastrocnemius improved the potential stretching during this period in this evaluated subjects.

In our results, some data are consistent with the study above, with regard to the superiority of the group submitted to the Pilates exercises. When were the comparative analysis of observed differences in degrees between the first and second

collection for the Pilates and GGP group, we find some results that show evidence of improved flexibility in the hip joint that was significant for the group submitted to the Pilates exercises. In the analysis with QFPD (hip flexion passive right) found 22.42 ± 3.20 and for the group of GGP 18.54 ± 2.72 and t was 0.002 with p <0.05 (Table 1). Comparative analysis of the hip flexibility data, expressed in degrees, between the first active and second passive collection, no significant difference were found (Table 2).

Our data revealed important changes in the flexibility of the hip, although not significant, it can contribute in improving the quality of life of those involved in research as well as posture. Segal et al. (2004) as well as in our study, we evaluated the flexibility of the hip in 47 adult participants, involved in a Pilates exercise program for 6 months, with sessions of 1 hour, 1 time per week and had improved physical capacity observed in this by means of the fingers touching the ground and the distance during this period decreased by 4.3 cm and 3.4 cm in two months, this difference was considered significant p <0.01.

Bernardo (2006) related the lack of experimental studies with the Pilates Method and cited the effectiveness of the method in a study of healthy adults in the improvement of the abdominal muscles, posture and flexibility.

Therefore, there are still some unknown parameters in relation to the study aim due to small amount of research that possibly only be answered with new experimental studies.

CONCLUSION

It was concluded that the group that participated in the Pilates exercises showed significant improvement in flexion of the joints of his right shoulder and right hip.

In the analysis of the values of flexibility between the first active and second passive collection no significant difference between groups of Pilates and GGP group were founded. Comparing the absolute values of flexibility and post-intervention, the difference was not statistically significant, however, indicators of relative changes revealed changes that can increase the gain of joint mobility and the consequent improvement in the daily activities of those subjects involved in this program.

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EFFECTS ANALYSIS OF PILATES AND POSTURE EXERCISE PROGRAMS IN ORDER TO IMPROVE FLEXIBILITY IN YOUNG ADULTS

ABSTRACT

Contrology focus on body-mind harmony and combines strength with gentle movements, differentiating itself from the traditional exercise techniques. This study evaluated the effect of Pilates and posture exercise programs on the improvement of body flexibility in young men. The Pilates and Posture exercise groups had 14 and 22 participants, respectively, with similar mean age (22.72 ± 1.93 years and 22.09 ± 1.57 years, respectively), mean weight (75.66 ± 7.87 kg and 76.88 ± 8.78 kg, respectively), and mean height (175.59 ± 6.25 m and 176.38 ± 7.18 m, respectively). Student's t-test for paired samples was used to compare baseline and endpoint results within groups. Student's t-test for independent samples was used for comparisons between groups. All tests were performed at a significance level of 0.05. There was a significant (p<0.05) improvement in the flexion of the right shoulder and passive flexion of the right hip in the Pilates group (13.50 ± 6.29 and 22.42 ± 3.20, respectively) compared with the Posture group (8.22 ± 2.59 and 18.54 ± 2.72, respectively). The Pilates exercise program was more effective in improving shoulder and hip flexibility than the posture exercise program.

KEYWORDS: Pilates, Posture Exercise, Flexibility

L'ANALYSE DES EFFETS DES EXERCICES DE PILATES ET DE GYMNASTIQUE POSTURALE AFIN D'AMÉLIORER LA FLEXIBILITÉ CHEZ LES JEUNES ADULTES

RÉSUMÉ

La contrologie diffère des techniques traditionnelles de l'exercice et intègre corps et esprit en harmonie, impliquant la force et de douceur. L'étude a évalué l'influence des exercices de Pilates et de gymnastique posturale afin d'améliorer la flexibilité chez les jeunes adultes. Les groupes avaient 14 et 22 membres,la moyenne d'âge (22,72 ± 1,93 ans et 22,09 ± 1,57 ans), le poids moyen de (75,66 ± 7.87 kg et 76,88 ± 8,78 kg) et la hauteur moyenne (175,59 ± 6,25 ± 7,18 m 176,38 m). Nous avons utilisé le test t de Student pour échantillons appariés comparant les résultats, et le test t de Student pour échantillons indépendants dans les comparaisons entre les groupes et le niveau de signification était de 0,05. Il y a eu une amélioration statistiquement significative (p <0,05) dans la flexion de l'épaule droite (OFD) et la flexion passive de la hanche droite (QFPD) dans la méthode Pilates groupe (SIO, 13,50 ± 6,29; QFPD, 22,42 ± 3, 20) par rapport au groupe de la gymnastique posturale (OFD, 8,22 ± 2,59; QFPD, 18,54 ± 2,72). Les résultats suggèrent que le programme d'exercices de la méthode Pilates a été plus efficace dans l'amélioration de la flexibilité de l'épaule et la hanche que le programme de gymnastique posturale.

MOTS-CLÉS: Pilates, Gymnastique posturale, Flexibilité

ANÁLISIS DE LOS EFECTOS DE LOS EJERCICIOS DE PILATES Y GIMNASIA POSTURAL CON EL FIN DE MEJORAR LA FLEXIBILIDAD EN LOS ADULTOS JÓVENES

RESUMEN

Contrología centrase en la armonía entre cuerpo y mente, y combina la fuerza con movimientos suaves, diferenciándose por lo tanto de las técnicas tradicionales de ejercicio. Este estudio evaluó los efectos de los métodos Pilates y Gimnastica Postural en la mejora de la flexibilidad de una población de adultos jóvenes. La muestra fue dividida en: grupo Pilates (n = 14; 22,72 ± 1,93 años) y grupo de Gimnastica Postural (n = 22; 22,09 ± 1,57 años), con el peso medio (75,66 ± 7,87 kg y 76,88 ± 8,78 kg) y estatura media (175,59 ± 6,25 m y 176,38 ± 7,18 m). Para el análisis estadístico se utilizo la prueba t de Student para la comparación de los resultados de las muestras pareadas y independientes (comparación inter-grupos). Los resultados en los niveles de flexión derecha del hombro (OFD) y en la flexión derecha pasiva de cadera (QFPD) revelaron mejoras (p<0.05) en el grupo Pilates (OFD, 13,50 6,29; QFPD, 22,42 3,20) respecto el grupo de Gimnastica Postural (OFD, 8,22 2,59; QFPD, 18,54 2,72). Los resultados sugieren que el programa de ejercicios del método Pilates fue más efectivo en la mejora de la flexibilidad del hombro y de cadera del que el programa de Gimnastica Postural.

PALABRAS-CLAVE: Pilates, Gimnastica Postural, Flexibilidad

ANÁLISE DOS EFEITOS DOS EXERCÍCIOS DE PILATES E GINÁSTICA POSTURAL NA MELHORA DA FLEXIBILIDADE EM JOVENS ADULTOS

RESUMO

A Contrologia se diferencia das técnicas tradicionais de exercícios e integra corpo e mente com harmonia, envolvendo força e suavidade. O estudo avaliou a influência dos exercícios de Pilates e Ginástica Postural na melhora da flexibilidade em jovens adultos. Os grupos possuíam 14 e 22 integrantes, com idade média (22,72 ± 1,93 anos e 22,09 ± 1,57 anos), peso médio (75,66 ± 7,87 kg e 76,88 ± 8,78 kg) e estatura média (175,59 ± 6,25 m e 176,38 ± 7,18 m) similares. Utilizou-se o teste t de Student para amostras pareadas na comparação dos resultados, e o teste t de Student para amostras independentes nas comparações entre grupos e o nível de significância dos testes foi 0,05. Houve uma melhora estatisticamente significante (p<0.05) na flexão direita do ombro (OFD) e na flexão direita passiva do quadril (QFPD) no grupo Pilates (OFD, 13,50 6,29; QFPD, 22,42 3,20) em comparação com o grupo de Ginástica Postural (OFD, 8,22 2,59; QFPD, 18,54 2,72). Os resultados sugerem que o programa de exercícios do método Pilates foi mais efetivo em melhorar a flexibilidade do ombro e do quadril do que o programa de Ginástica Postural.

PALAVRAS-CHAVE: Pilates, Ginástica Postural, Flexibilidade