34 - THE USE OF STRINGS AND STRINGS WITH ELASTIC STRAPS AS ACTIVITIES INSERTED INTO THE THREE MODALITIES OF PILATES METHOD

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INTRODUCTION

According to the Brazilian Society of Pilates, the method of Pilates is a method of mental and physical conditioning, with exercises of low effort, making use of different equipment and devices. It was elaborated in the 20's by a German called Joseph Pilates, a nurse that during the First World War, noticed that the injured people could recover the strength and resistance of their muscles applying the knowledge he had about anatomy and physiology.

The benefits of the method are: the increase of strength, better muscle control, better breathing capacity, better flexibility; the method also stretches the body, makes it rigid, model the muscles and helps correct the posture (CAMARÃO, 2004).

Flexibility can be defined, as an operational way, as a "motor quality which depends on the muscle elasticity and articular mobility, expressed by the maximum amplitude of movements that are necessary to perform any physical activity, without occurring lesions-pathologies." (ARAÚJO, 1983).

For the development of flexibility, the exercises must reach the maximum amplitude of movement (DANTAS, 1999).

According to Argo 2006, Water Pilates is a new modality of exercise in pools developed especially for water. It can be practiced in any kind of pool, in deep and shallow swimming pools. It has the objective of ally the benefits of a conventional Pilates class with the properties offered by water making the exercises of flexibility, concentration and relaxation easier. Through this modality, the person performs several exercises of Pilates together with breathing work and activation of the power house (center of strength), which has as the main muscle the transverse abdominal. Part of the class and postures are practiced when floating (support with the help of accessories) and another part is performed with the feet on the ground or l on the board of the swimming pool. Pilates in the water adapts the exercise of the ground changing planes to keep the head out of water. The position of the body is different; however the movements and muscles are similar. (Argo 2006).

The therapeutic effects of Hydrotherapy are aimed to promote the muscle relaxation, lessen the pain, provide the execution of movements without pain in their whole amplitude of normal movements; lessening the intra-articular compressive strengths; lessening the chronic swelling; keeping the strength and muscle resistance and keeping the functional capacity of the loco motor system (FREITAS JUNIOR, 2005).

This patent reveals a model designed to the application of techniques of gymnastic turned to kinesiotherapy, especially to Pilates method, originated in a string form which comprehends heavy portions and sections to apply the arch with a smaller diameter that is used to fix a strap. It belongs to the technical field designated to the development of the product to practice sports such as games and amusement games, more precisely to what is concerned to the machines that are designed to physical activities, gymnastics and swimming in the area of physiotherapy as in the hydrotherapy, Water Pilates and the exercises of rehabilitation on the ground covering several areas such as physical conditioning and general stretching that make use of this technique with constructive characteristics that make it practical and singular when compared with the others (Certificate of patent acquisition, 2008).

As presented, there was a doubt whether the use of strings and strings with elastic straps introduced as an aid to the practice of the method was really able to increase the flexibility and in which modality would present better results, because they were enclosed into the patent in the item of accessories for the practice of Pilates, hydrotherapy and kinesiotherapy in general (INPI, nº. UM 8802014-2, on 25/08/2008).

Thus, the aim of this research was to check the effects of Pilates method associated with strings and strings/elastic straps on flexibility after 20 sessions of practice of the 3 modalities of Pilates and strings based on the flexibility gain as a way to assure or not satisfactory results.

METHODOLOGY

This research can be defined as a field, qualitative, transversal cut and comparative research.

This research began after the approval of the Ethic Committee of research with human beings.

For the accomplishment of the study, the participation of samples formed by two people was necessary, a man and a woman, aging 18 to 32 years old for each modality. Place of accomplishment: Form Move Pilates Studio in Cascavel – PR, and the swimming pool of a private college of the Western Paraná. The groups participated in the three modalities which were: Mat, studio (Wall Unit, Reformer and Cadilac) and Water Pilates without the use of strings and strings with elastic straps. The samples were composed by two individuals for each modality. There was a control group (group 4) of individuals that had been practicing only the pilates method for more than 6 months in the three modalities. Due to factors that interfere in the flexibility such as, sex, time of the day, room temperature and mental state, some criteria were adopted. The modalities were composed by two individuals, a man and a woman; these people aged 18 to 32 years old; the individuals confirmed that they were not going through any emotional problem such as stress, depression and anxiety; the temperature of the water was always 32 degrees Celsius for the Pilates Water modality; the room temperature for the other 2 modalities was 20 degrees Celsius, the activities were accomplished for all the modalities by the end of the afternoon shift; the tests were also taken by all the individuals by the end of the afternoon shift, for the groups that had already been practicing the activities, the tests were taken 48 hours after the activities due to possible tiredness.

MATERIALS:

A 32-Celsius-degree swimming pool whose measures were: length – 8 m; width – 4 m; and depth: 1.20 m, parallel bar, aquatub (floaters), step for the application of the method, lateral support bars, strings (Form Move) developed by the researcher Form Move, elastic straps (theraband) and mattresses.

A Pilates Studio composed by some devices such as Wall Unit, Cadilac, Reformer and as an evaluative instrument,

the Wells bench, which enables the evaluator to measure the flexibility and the posterior part of the trunk and legs.

Procedures:

This research used the application of 20 attendiments during 50 minutes of the Water Pilates, Mat Pilates and Pilates methods in a Studio under the supervision of the researcher who was responsible for each modality three times a week.

A series of 8 repetitions was taken for each exercise, led to the limit of strength and/or flexibility of the student. The duration of time of the exercises was equivalent to two complete respiratory cycles (breath in to get ready, breath out to make the movement, breath in to keep the position and breath out to return to initial position).



Two procedures were used to accomplish the research, first, a questionnaire was applied, and this questionnaire was formed by personal questions which were kept in secret. The other procedure was the use of the Wells bench to check the flexibility of the posterior region of legs and trunk. The tests were taken as evaluations and re-evaluations, for the control groups 48 hours after the training. The questionnaire was handed to the students and after they were filled by them, the individuals received attendiment in the three modalities in the Form Move Pilates Studio and in the swimming pool, it was also arranged some meetings when the researcher explained the way the strings and the strings with elastic straps should be used, making use of videos with images of the researcher responsible for the research, pictures and a demonstrative experimental class, and for the other two groups, the questionnaire was given on the day they were formed. The individuals of the groups which started the activities were selected at random. The evaluator did not know the modality that each person would practice or was practicing, because the evaluator was responsible to train the individuals in each modality during 20 attendiments, however, an evaluator was advised not to have any problem in the results. The evaluators gave and took the tests before the activities and after the 20 attendiments were accomplished, and also evaluated the control group (group 4) 48 hours after a training session in the method for each modality. After the sample had been selected, the participants were informed about their schedules according to their availability and the availability of the evaluator to take the evaluations. These evaluations were taken in a physiotherapy clinic called IES of the Western Paraná.

The individuals who had already been practicing Water Pilates for more than six months had the activity in a swimming pool of a private college twice a week, supervised by the researcher, however they had never used strings during their activities. The volunteers who had been practicing the activities on the ground and Studio modality for more than six months used the Form Move Studio.

The activities developed in the three starter groups were elaborated by the researcher who also organized a protocol for the modalities that had (single leg stretch, double leg stretch, single straight, double straight, Hamstring stretch, Spine stretch, Monkey , front swimming Long stretches; Elephant; Tower; Leg series supine: circles (series of raised legs: Circles);Water Pilates: kicking with the legs; Saw; Stretched Rope; Circles with the leg; Hot potato; Diamond pendulum; Raised diamond; cork screw; shrink and stretch to the left/right; V- Crunch; Floating; Step.

These participants were advised to attend the sections with adequate clothes, in order to provide better movements and for the referential points to become visible. The movements were made in an active way by the volunteer who followed the command of the evaluator for each movement.

To measure the flexibility, the Wells bench was used “sitting and reaching” through the Wells's protocol (1989), where the individual sits in front of the bench, placing his feet on the supporting frame with his knees stretched, raising the arms and placing hands together leaning forward until touching the ruler on the bench.

DISCUSSION AND RESULTS

According to the results obtained in this study, for the 12 participants who were evaluated and underwent these activities of the pilates method in the three modalities, there was an increase of the flexibility of all movements that are in the evaluation with even higher results in the hydrotherapy (Water Pilates Modality) due to the possible maintenance of the stretching that the developed instrument can have in the accomplishment of the proposed exercises.

To generate data that proved whether there was improvement or not in the accomplishment of the activities, in all the charts, there were calculations in a descriptive statistical way in order to determine the percentages of the variations. In the three following charts it was analyzed the difference between the first evaluation and the re-evaluation and the difference between the two groups in relation to the first one was taken.

TABLE 01:WELLS BENCH-GROUND

Wells bench	Ground group	Ground group with strings	Control group
Men			
1 evaluation	22,2cm	19,8cm	37,4cm
2 evaluation	29,4cm	30,2cm	37,4 – 29,4= 8cm
Difference	7,2cm	10,4cm	37,4 – 30,2= 7,2cm
Women			
1 evaluation	23,1cm	23,6cm	39,6
2 evaluation	34,6cm	35,1	39,6 – 34,6= 5cm
difference	11,5cm	11,5cm	39,6 – 35,1= 4,5cm

Source: the author, 2009

For the men of the ground group there was an increase of the evaluation for the Wells bench of 32.4% between the evaluation and the re-evaluation.

However the percentage of the ground group with strings increased in the evaluation through the Wells bench of 52.5% between the evaluation and the re-evaluation.

For the women of the ground group, there was an increase in the evaluation through the Wells bench of 49.7% between the evaluation and the re-evaluation.

However for the women of the ground group with strings, there was an increase through the Wells bench of 48.7% between the evaluation and the re-evaluation and when these groups were compared, the difference in percentage wasn't significant, yet, when accomplished as an isolated factor, the women's ground group without strings without strings had a lower percentage than the ground group of women.

Therefore, in this modality the highest results were found in the group of men with strings, possibly due to the physiological response that the proprioreceptive stimulus imposed by the string instrument caused in the muscle chain using the principle of reciprocal enervation reported in a study made by (COELHO 2007) which shows that if a muscle is immobilized in the stretching position for a longer period of time, the muscle deformation will be higher in muscles with lower elasticity rate and will be proportionally dependant on the strength applied and the time factor which was called “paradox of elasticity rate”. Some studies also report that women have a better plastic adaptation compared to men, possibly having a higher necessity fo a stimulus in addition to what was imposed by this modality.

TABLE 02: WELLS BENCH – WATER PILATES

Water Pilates	Water Pilates group	Water Pilates group with strings	Control group
men			
1 evaluation	22cm	21,7cm	36,8cm
2 evaluation	31,5cm	31,8cm	36,8 - 31,5= 5,3cm
difference	9,5cm	10,1cm	36,8 – 31,8= 5cm
women			
1 evaluation	24,7cm	19,9cm	40,3cm
2 evaluation	35,5cm	32,4cm	40,3 – 35,5= 4,8cm
difference	10,8	12,5cm	40,3 – 32,4= 7,9cm

Source: the author, 2009

For the men of Water Pilates group, there was an increase through the Wells bench of 43.1% between the evaluation and the re-evaluation, however for the men of Water Pilates group with strings there was a significant increase in the percentage in the evaluation through the Wells bench of 46.5% between the evaluation and re-evaluation when compared as an isolated factor.

For the women of the Water Pilates group, there was an increase in the evaluation through the Wells bench of 43.7% between the evaluation and re-evaluation and comparing it with the group of men in the same modality, the percentage wasn't meaningful, yet, when it was compared to the Water Pilates group of women with strings, there was an increase in the evaluation of the Wells bench of 62.8% between the evaluation and the re-evaluation, which is a significant result if evaluated as an isolated datum.

It was observed that in the hydrotherapy modality, the physiological properties of water overpassed the differences that women, due to their less dense tissues, are in general less flexible than men. (SILVA, T. Florêncio 2008)

Corroborating with this study and with the discoveries of Candeloro and Caromano (2007) about “the effects of hydrotherapy on the flexibility and muscle strength of old women” where the proposed hydrotherapy program was efficient to improve the flexibility, and partially the muscle strength of middle aged women who participated in the study.

TABLE 03 :WELLS BENCH – STUDIO

STUDIO	Studio group	Studio/strings/straps	Control group
Men			
1 evaluation	21,3cm	21,7cm	33,9cm
2 evaluation	27,4cm	22,4cm	33,9 – 27,4= 6,5cm
difference	6,1cm	0,7cm	33,9 – 22,4= 11,5cm
women			
1 evaluation	25,6cm	24,8cm	38,1cm
2 evaluation	34,8cm	28,2cm	38,1 – 34,8= 3,3cm
difference	9,2cm	3,4cm	38,1 – 28,2= 9,9cm

Source: the author, 2009

For the men of Studio group, there was an increase in the evaluation through the Wells bench of 28.6% between the evaluation and the re-evaluation, however, for men of Studio group with strings and straps, there was an increase in the evaluation through the Wells bench of only 3.2% between the evaluation and re-evaluation.

For the women of studio group, there was an increase in the evaluation through the Wells bench of 35.9% between the evaluation and the re-evaluation, where the percentage was higher than the one for the men of the same group.

For the women of Studio group with string and straps, there was an increase in the evaluation through the Wells bench of 13.7% between the evaluation and the re-evaluation, it is possible to notice that although the increase is higher for women than men in this modality ,the percentage was lower when compared to the control group and to the other modalities which used the Form Move strings and the ones that didn't do it. It was observed that higher results in this study refer to the Water Pilates modality with the use of strings according to the evaluation with Wells bench, it occurs due to the physiological effects caused by the immersion and the possible stability that the string offered in a liquid media.

According to Candeloro e Caromano (2007), the hydrotherapy is a physiotherapeutic resource that uses the physical, physiological and Kinesiological effects resulting from the body's sinking in warmed swimming pools as a resource of rehabilitation or prevention of functional disorders. The physical properties and the warming of the water play an important role in the improvement and maintenance of the amplitude of the articulation movements, reducing the muscle tension and relaxation.

In the Pilates method of studio, the lower gain of flexibility was observed, because the movements proposed by the use of strings associated with elastic straps in studios, prioritizes and provides general strengthening due to the fact that the

straps can be used as "coils" of lower flexibility, however, the study did not evaluate the efficiency of this parameter.

Lima et al (2006), describes that through the measurement of resistance, more objective treatment protocols should be used and this measurement can be formally reported according to the advancements of each patient for it to become a form of motivation and thus get better results.

CONCLUSION

This study enabled to observe that the use of strings and strings with elastic straps in the Pilates method can contribute to increase the increment of flexibility as an isolated factor, however, new studies are recommended with the use of the patented instrument associated with elastic straps in several areas of the physiotherapy, fitness and hydrotherapy and in the clinic pilates for special groups (pregnant women, old people and overweight people). The results of this paper were meaningful, probably due to the adding up of different ways of stretching (active, passive, elastic and dynamic) that the string instrument established with the pilates method.

Due to the fact that the strings have a limit of elasticity, suffering deformation when overpassed, for the material to be preserved, its elasticity limit must be respected.

This material is a new accessory, so it can encourage new research about the quality, elastic behavior, life span and others and the treatment of several pathologies making use of this instrument.

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THE USE OF STRINGS AND STRINGS WITH ELASTIC STRAPS AS ACTIVITIES INSERTED INTO THE THREE MODALITIES OF PILATES METHOD

ABSTRACT

A lot of discussions aroused about the real gain of flexibility with the practice of the Pilates method, and as it is known, the flexibility has extreme importance for a better quality of life. In this paper we tried to measure the real gain of flexibility provided by the practice of the Pilates method with the instrument patented and called FORM MOVE strings, because there is few scientific papers concerning the flexibility and Pilates method up to the present time and also few resources in the development of new accessories to encourage the practice of physical exercises and the gain of flexibility. The sample was composed by a group of 12 people, aging between 18 to 32 years old, average height of 1.65m and average weight of 62.0 kg for women and 69.0 Kg and 1.79m for men. An initial data collecting was accomplished, and another one after 10 weeks of practice of Pilates method, the control groups that had been practicing the method for more than 6 months in the three modalities were evaluated in the beginning of the research by the evaluator who was prepared by the researcher, this person did not know which modality were practice by the volunteers. In the modalities the proposed exercises varied only in the type of application (Mat, studio, Water Pilates), they were part of the training of the control groups. The instrument used to make the flexibility collecting was the Wells bench. The results demonstrated the efficiency of the association of strings with the method in the flexibility gain, with even higher results in the hydrotherapy (Water Pilates modality) due to the physiological effects of immersion and the possible maintenance of stretching that the developed instrument can have in the accomplishment of the proposed exercises.

KEY WORDS: Pilates Method. Flexibility, Strings.

UTILISATION DES ANNEAUX ET BANDES ASSOCIEES A DES ANNEAUX FLEXIBLE EN TANT QUE MOYEN DE L'ACTIVITÉ DANS LES TROIS MÉTHODE PILATES MODE

RÉSUMÉ

De nombreuses discussions sont en cours à l'égard de l'augmentation réelle de la souplesse à la pratique de la méthode Pilates, et comme nous le savons tous la souplesse est d'une importance fondamentale pour une meilleure qualité de vie. Nous avons effectué ce travail pour mesurer l'augmentation réelle de la souplesse avec la pratique du Pilates avec l'instrument breveté et appelé anneau MOVE FORME, et comme il y a peu d'études scientifiques liées à la souplesse et au MP , à ce jour, et trop peu de ressources au développement de nouveaux accessoires pour encourager la pratique d'exercice et augmenter en souplesse. L'étude a été faite avec un groupe de 12 personnes âgées de 18 à 32 ans, mesurant en moyenne 1,65 m et pesant environ 62.0 kg chez les femmes et chez les hommes avec une taille moyenne de 69,0 kg et 1.79 m . On a fait une collecte d'informations au départ, et une autre collecte après 10 semaines de pratique de la méthode Pilates. Les groupes de contrôle qui pratiquaient la méthode pendant plus de 6 mois avec les trois modalités ont été évalués le début de la recherche par l'évaluateur préparé par le chercheur, il ne savait pas dans quel modelité les bénévoles pratiquaient. Dans tous les modelités des exercices étaient les mêmes (standardisés par la méthode Pilates) en modifiant seulement le type de applicabilité (Mat, Studio, Water Pilates), ils font partie de la formation de groupes de contrôle. L'instrument utilisé pour la collecte de la souplesse a été la “Banque du Wells”. Les résultats ont démontré l'efficacité de l'association des anneaux avec la méthode en augmentant la flexibilité, avec résultats encore plus grande dans l'hydrothérapie (méthode Pilates) à cause des effets physiologiques de l'immersion et et l'entretien éventuel de l'exercice de l'étirement qui l'instrument développé peut établir l'exécution des exercices proposés.

MOTS-CLÉS: Pilates- souplesse – anneaux.

USO DE ANILLOS Y ANILLOS DE BANDAS RELACIONADAS CON FLEXIBLE COMO MEDIO DE ACTIVIDAD EN LOS TRES MODE MÉTODO PILATES

RESUMO:

Muchas discusiones se han abierto la flexibilidad ganancia real con la práctica de Pilates, y como todos sabemos que la flexibilidad es crucial para una mejor calidad de vida. Buscamos conseguir este trabajo, para medir el aumento de la flexibilidad real a través de la práctica de Pilates con el instrumento patentado llamado FORM MOVE y los estudios científicos, ya que hay pocos en relación a la flexibilidad y la MP hasta la fecha y muy pocos recursos en el desarrollo de nuevos accesorios para fomentar el ejercicio y aumentar la flexibilidad. La muestra se realizó con un grupo de 12 personas de entre 18 y 32 años, altura media de 1,65 m y el peso medio de 62,0 kg entre las mujeres y 69,0 kg y 1,79 m para los hombres. Se realizó una recopilación inicial de datos, y otro libro después de 10 semanas de práctica de Pilates, los grupos de control que practicaron el método de más de 6 meses en las tres publicaciones fueron evaluados al inicio del evaluador preparado por el investigador, esto no es sabemos que el modo de voluntarios practica. Los procedimientos para los ejercicios que modificar sólo el tipo de aplicación (Mat, Studio, Water Pilates), forman parte de la formación de los grupos de control. El instrumento utilizado para recoger la flexibilidad fue el Banco de Wells. Los resultados mostraron la eficacia del método de combinación de anillo en un aumento de la flexibilidad, con resultados aún más en la hidroterapia (Water Pilates), debido a los efectos fisiológicos de inmersión en el mantenimiento y posible de estirar el instrumento elaborado se pudo establecer en la ejecución de los ejercicios propuestos.

PALABRAS CLAVE: Pilates, Flexibilidad, anillos.

O USO DE ARGOLAS E ARGOLAS ASSOCIADAS À FAIXAS ELASTICAS COMO FORMA DE ATIVIDADE DENTRO DAS TRES MODALIDADE DO MÉTODO PILATES

RESUMO

Muitas discussões foram abertas diante do real ganho de flexibilidade com a prática do Método Pilates, e como é sabido que a flexibilidade tem fundamental importância para uma melhor qualidade de vida. Buscamos realizar esse trabalho, para mensurar o real ganho de flexibilidade proporcionado pela prática do Método Pilates com o instrumento patenteado e chamado de argolas FORM MOVE, tendo visto que existem poucos trabalhos científicos relacionados à flexibilidade e MP até a presente data e também poucos recursos no desenvolvimento de novos acessórios para estimular a prática de exercícios e o ganho de flexibilidade. A amostra foi feita com um grupo de 12 pessoas com idade entre 18 a 32 anos, média de altura de 1,65m e a média de peso de 62,0 kg entre a mulheres e 69,0 Kg e 1,79m para os homens. Foi feita uma coleta de dados inicial, e outra coleta após 10 semanas de prática do Método Pilates, os grupos controles que praticavam o método há mais de 6 meses nas três modalidade foram avaliados no início da pesquisa pelo avaliador preparado pelo pesquisador, o mesmo não sabia qual modalidade os voluntários praticavam. Nas modalidades os exercícios propostos modificavam-se apenas no tipo de aplicabilidade (Mat, Estúdio, Water Pilates), os mesmos faziam parte do treinamento dos grupos controle. O instrumento utilizado para fazer a coleta da flexibilidade foi o Banco de Wells. Os resultados demonstraram a efetividade da associação de argolas ao método no ganho de flexibilidade, com resultados ainda maiores na hidroterapia (modalidade Water Pilates) devido aos efeitos fisiológicos de imersão e a possível manutenção dos alongamentos que o instrumento desenvolvido pôde estabelecer na realização dos exercícios propostos.

PALAVRAS-CHAVE: Método Pilates. Flexibilidade, Argolas.

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