43 - THE INFLUENCE OF RESISTANCE EXERCISES FOR PEOPLE WITH RHEUMATOID ARTHRITIS.

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INTRODUCTION

Faced with the evidence that the contemporary man is used less and less of their powers of that body and the low level of physical activity is a decisive factor in the development of degenerative diseases, submits to the hypothesis of the need to promote changes in their lifestyle, leading to incorporate the practice of physical activities.

The estimate in Brazil, according to reports from Reumatologiars (2001), is that 15 million Brazilians are affected by some form of arthritis, especially in the 3rd age, and with rheumatoid arthritis for about 1.6 million people, and the arthritis Rheumatoid affects women after thirty years, is a serious problem in the health area (DUARTE, 2003).

The Rheumatoid Arthritis (RA) is a chronic disease usually progressive, that characterized by symmetrical involvement of multiple joints, to varying degrees of functional disability. Affects activities of daily living (ADL) as robe, climbing stairs, lie down and get out of bed or floor and can seriously reduce the autonomy and later, the patient's quality of life (and SIMÃO Balsamo, 2005. P . 126). This is characterized clinically as an additive and symmetric polyarthritis with the potential to deformities, it is the most common diseases of the connective tissue, affecting around 1% of the world's population, most often women, in 3:1 ratio for men . Its peak incidence is situated around 40 years and its prevalence increases with age and may, however, affect any age group (SILVEIRA, 1998; ALBERTS, 2001).

Considering the potential of such an incapacitating illness, the monitoring of these patients the functional point of view must occur since the onset of the disease, with guidance of the patient and therapeutic programs aimed to protect articulate, the maintenance of functional status of the locomotor system and the cardiorespiratory system (American College of Rheumatology, 2002).

The resistance exercises (RE) has become one of the most popular forms of exercise, being known by the scientific environment and training of force, counter-resistance training, training with weights, resistance training (FLECK, 2006), promoting the benefits for muscle development -skeletal system and to health (HASSI et al, 2000). Polls show that the work of muscle development, through the RE, promotes an increase in muscle mass, on the other hand, exercise is associated with a reduced chance of developing several degenerative diseases (SIMÃO; LEMOS, 2001). Epidemiological studies consistently show that less physically active individuals fall ill during the life (LEMER et al, 2000). For some scholars any form of physical exercise and is geared to improve the life expectancy of people. Some entities related to the exercise science argue that the health and quality of life of man can be preserved and enhanced by the practice of regular physical activity (Brazilian Society of Medicine of Sports, 1999).

The RE are easily adaptable to many different types of people, from a patient before an athlete of high level, because to make several variables that can be easily adjusted. In addition to developing optimal level of physical conditioning general - and as an excellent incentive to health. Nearly all physical abilities can be worked with the practice of resistance exercises. (GIANOLA, 1972). The movement is the best incentive for the joint, ligaments and muscles. Its goal will be to maintain or improve mobility, muscle strength, stability and articulate as a consequence, improve the functional abilities in activities of daily life, through the ER (FLECK, 2006).

To this clinical picture, the objectives of the study sought to verify the influence of endurance exercise in the development of strength, flexibility, quality of life and indicators of disease (inflammation and joint pain, muscle atrophy, morning stiffness and loss of function) In patients with RA.

METHODOLOGY

The study was conducted in patients with RA, female and aged over eighteen. All the participants signed the free and informed consent and the project was approved by the Ethics Committee of FHCGV (protocol no. 068/2006). It was submitted for assessment and indication of two doctors rheumatologists, through clinical examinations, and subsequently were selected from a medical certificate that confirmed the disease, issued by doctors, freeing the participants to practice the exercise. The participants in the study were informed about the search and signed the free and informed consent.

The group was formed by six women. Then we did an evaluation of the quality of life, where the students had to respond appropriately to specific questionnaire (HAQ-Health Assessment Questionnaire). We continue the evaluation process, using three tests: test of flexibility, test of strength of handgrip test and sit in the chair lift and thirty (30) seconds to assess level of strength of members.

The test of flexibility was applied in the bank from Wells (Wells and Dillon), fujk brand, which was used to measure the flexibility of the back of the trunk and legs. The test of strength of handgrip dynamometer was carried out, Jamar mark, being shown to assess the static strength of the flexor muscles of the hands (digital flexor). The test of the chair lift in thirty (30) seconds has been recommended as a practical alternative to measure indirectly the strength of lower limbs due to moderately high correlation with the 1RM test in the "leg press" in males (0.78) and women (0.71) (MATSUDO, 2004). Starting from these data, the programs were applied to RE, which gave emphasis to the site committed by RA. First was launched hand of a basic program for all participants with AR, which consisted of: Leg press vertical (45); Traction Front; Supine, and Seated Calf Abdominals.

Later use the programs of RE-specific articulation compromised. If the link was compromised the knee (knee extension), articulation thigh-femoral(abduction and extension of the thigh), wrists (extension and flexion of the wrist), elbow (flexion and extension of the arm).

For five of them, was applied to exercise the "ball", in which the participants held with both hands of Rubber balls and push and release, thereby strengthening the muscles of the hands, wrists and forearms. Four of the six participants performed Flexo-extension of the wrists, using dumbbells, and done so unilaterally that, as well as the "ball" gave emphasis to the wrist and forearm muscles. One participant, because reports of pain in the heels, used the exercise known as Calf standing, emphasizing the work of strengthening of the gastrocnemius.

Another participant reported because of pain in his shoulders to perform the exercise straight supine, used the device known as albacore, working as the pectoral muscles. Another participant was used for arms of the exercises called Thread Biceps curl and triceps Donkey kick, both with the use of dumbbells. Emphasized the biceps and triceps muscles of the arm, respectively.

Those programs consisted of three series, which had for ten to fifteen repetitions, with intervals between sets of a minute. In addition to the RE, aerobic exercises were used in four participants before the training. Using a bicycle or a treadmill ergometric between fifteen to twenty minutes, with the goal of warming and increased heart rate. These exercises no influence exerted on the body composition of the participants probably because of short duration and low intensity and also by the fact that there has been no control of variable power, because according to the American College of Sports Medicine (1995) to be no changes in body composition the aerobic exercise should take between 20-60 minutes duration.

Such programs of RE lasted five months, more specifically 23 weeks. After five months repeat the tests made at the beginning, with the purpose of analyzing the data, comparing the results of the program at the end of it.

DATA ANALYSIS AND DISCUSSION

This study aims to examine the effect of 23 weeks of ER in women with RA, aged 54.8 ± 18.6 years (Table 1), noting the strength, flexibility, quality of

Table 1 - Characteristics of age and frequency of training of the students in the study (N=6), Belém-PA, 2007.

Characteristics	Mean	SD
Age	54,8	18,6
Frequency Training	23,0	3,0

Source: LREH (Laboratory of resistance exercises and Health), 2007.

In this study was chosen by the frequency of two days/week, with a minimum interval between sessions of 48 hours of intervention (Table 1). Evans (1996), Porter et al., (2002) and Carvalho et al., (2004) have shown positive results with only two days/week. Stadler et al., (1996) also found the same results.

Upon completion of all procedures and assessments of the study, the information has been entered and tabulated in the database for statistical analysis of them. According to the nature of the variables (numerical continuous) found through the Z test score, was used descriptive statistical analysis, the percentage being informed of the results of the study, as well as mean and standard deviation (SD) of each variable. The database, and the tables were built in Microsoft Excel 2007. To analyze the statistical significance of the comparison of the results of the study before and after the program of RE, according to the nature of the variables we used the Student t test for paired samples. The study acknowledged the value of p <0.05 for statistical significance, held in Software BioEstat 4.0.

Table 2 - Difference between the values of flexibility, the tests of strength of handgrip and sit down and get out of chair, and the HAQ score of the first and last, among females in the study (N=6), Belém-PA, 2007.

Variables	Home	End	p-value
	Mean ± SD	Mean ± SD	
Flexibility (cm)	211,4 ± 87,3	244,3 ± 74,1	0,0054*
Test of Strength of handgrip Right	0,4 ± 0,6	1,0 ± 1,0	0,5197
Test of Strength of handgrip Left (Kg)	0,4 ± 0,5	0,6 ± 0,2	0,5286
Test to sit and lift chair (n° repetition)	9 ± 2	14 ± 3	0,023*
Score of HAQ	9 ± 8	5 ± 3	0,1084

Source: LREH (Laboratory of resistance exercises and Health), 2007.
* Difference statistically significant (Student's t-test for paired samples, p <0.05)

The response of resistance exercises with regard to flexibility (Table 2) was considered satisfactory since the results from the paired Student t test, showed significant increases in the use of the bank Wells (Sanny) to the beginning of training (211.4 ± 87.3) and end (244.3 ± 74.1), demonstrating that with the effectiveness of such training with the flexibility, according to Gianolla (1972) in their study showed that resistance exercises stimulate By pushing back the flexibility to the joints higher degrees of magnitude.

Stretching exercises were conducted after the session of endurance exercise as a criterion of "back to calm," since, according to Piza (2006) is stretching the form of work aimed at maintaining levels of flexibility and value-realization of the normal range of motion with the minimum of physical force while maintaining the normal degree of articulation, so not having influenced the gains of the flexibility of students, the year they arise resisted.

The Test of the Chair Lift Sitting around in 30 seconds showed gains in muscle strength related to lower limbs, and showed statistically significant results p <0023 (Table 2). This test, as has been emphasized before, is recommended as an alternative practical indirectly to measure the strength of the lower limbs (MATSUDO, 2004).

Table 3 - Difference between loads (kg) and number of repetitions start and end of the study performed by students (N=6), according to the different types of resistance exercises, Bethlehem, PA, 2007.

Resistance Exercises	Home	End	p-value
	Mean ± SD	Mean ± SD	
Leg Press (kg)	8,3 ± 16,0	31,7 ± 17,2	0,0009*
Traction Front(kg)	5,3 ± 3,3	13,2 ± 4,5	0,0001*
Supine Right(kg)	1,2 ± 0,4	2,5 ± 1,0	0,0103*
Supine left (kg)	1,0 ± 0,6	2,3 ± 1,2	0,0103*
Seated Calf(kg)	3,3 ± 8,2	12,3 ± 7,7	0,0066*
Abdominals (n° repetition)	30,0 ± 0,0	41,2 ± 4,4	0,0016*
Extensor chair(kg)(1)	4,4 ± 8,8	14,0 ± 10,2	0,0180*

Source: LREH (Laboratory of resistance exercises and Health), 2007.
* Difference statistically significant (Student's t-test for paired samples, p <0.05).
(1) Devices used in five women in the study.

It was also confirm the earnings power of the study participants through the differences between initial and final loads in different types of exercises used during training (Table 3), because in all the basic exercises was presented evolution of cargoes.

A limitation of the study was to test the strength of handgrip, which indirectly determines whether the muscle strength of upper limbs, there was no statistically significant difference this result may have been influenced by poor calibration of manual Brand Jamar dynamometer.

Before the meeting of RE were made aerobic exercises lasting from fifteen minutes and low-intensity, with the goal of warming and increased h

Table 4 - Difference between the values of variables biometric among females in the study (N=6), Belém-PA, 2007.

Variables	Home	End	p-value
	Mean ± SD	Mean ± SD	
Weight (kg)	57,1 ± 9,8	57,8 ± 10,0	0,0756
Height (m)	1,528 ± 0,057	1,532 ± 0,055	0,2892
Body fat (%)	29,8 ± 9,9	28,2 ± 7,1	0,3784

Source: LREH (Laboratory of resistance exercises and Health), 2007.
* Difference statistically significant (Student's t-test for paired samples, p <0.05).

With regard to changes in body composition, the RE alone does not seem effective in reducing the weight and fat percentage or total body fat (Table 4). This evidence suggests the need for interaction between RE and specific diet, with control of quantity, type and time of intake of nutrients in relation to the time of completion of training, when the goal is change in body composition. It also noted an increase in stature, noting with this hotfix posture of the participants.

When finished the analysis and discussion of the data can say that the increases in charges in appliances, to assess how much these people have been weakened, as well as the training progressed significantly due not only to gain in strength, but also of trust and security for execution the movement against resistance. It is never too reinforce the importance of a diet together with the resistance exercises to improve body composition, because if there were such monitoring is likely to improve body composition, with decrease in the percentage of fat and increase muscle mass.

CLOSING REMARKS (CONCLUSION)

To alleviate the symptoms of RA and ensure an independent life is essential that people with RA have an active life, with the participation in a program of RE, ensuring the functional capacity for carrying out activities of daily life, occupational and recreational.

The concept of RA, explained in this paper, is characterized by symmetrical involvement of multiple joints, however, as has been said before in the study, this symmetry was not observed, by contrast, the inflammation showed an asymmetry, affecting primarily one side of the body and not both at once.

Bearing in mind the objective of this work, we tried to check the influence of RE in the development of strength, flexibility, quality of life and indicators of the disease in patients with rheumatoid arthritis. To this end, it emphasized the results and benefits developed by this research.

The results of this study indicated that 23 weeks of RE, with two weekly sessions, increase in muscle strength in women suffering from RA, being shown by the gradual increase of loads. We can also conclude that the impairment of flexibility has intimate relationship with physical inactivity, ie a sedentary lifestyle affect this ability. If we talk of the RE is necessary to take into account that they can at least maintain the level of flexibility and even increase it. Showing the flexibility that this study showed a p-value of 0.0054 *.

Therefore, as in the study were increased strength and flexibility, we can say from this statement that the ADL were positively influenced, being shown in the HAQ score that showed a p-value of 0.1084, although not statistically significant, shows a trend in improving their quality of life. Thus, if the study was extended for more time, perhaps this figure to reach significance.

Note that if there were a control group would be effective in this study show that people who did not have RE progressive loss might have regarding the strength, flexibility and worsened their quality of life due to limitations in activities of daily living, getting this as a suggestion for future research.

A limitation of the study was to test the strength of handgrip, which indirectly determines whether the muscle strength of upper limbs, there was no statistically significant difference this result may have been influenced by poor calibration of manual Brand Jamar dynamometer.

Another limitation of the study was verified in the frequency of participants, as participants who had greater success were those who showed up more often at weekly sessions of RE.

With this, it is suggested that further studies are verified, before the evaluation, calibration of equipment, and there is a greater recovery with respect to frequency, for best results. So work like this can help guide and conduct appropriate for designing a program of exercises, thereby improving the quality of life of people with this condition.

Keywords: Rheumatoid Arthritis, resistance exercises, quality of life.

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Rheumatic diseases, including Rheumatoid Arthritis (RA) are associated with a series of events, especially stiffness, pain, deformity and articulate soft tissue, muscle atrophy, unconditioned and widespread decline in physical function. Resistance exercises (RE) are of great importance to these symptoms do not affect the activities of daily living, as stimuli to promote physical fitness, such as: flexibility, strength development, strength and power. The study aimed to verify the influence of RE in the development of strength, flexibility, quality of life and indicators of the disease in patients with RA. The methodology of this study is based on the participation of six women aged over 18 years. Subjected to RE, twice weekly, with intervals of at least 48 hours between training sessions for 23 weeks. All the participants signed the free and informed consent and the project was approved by the Ethics Committee of FHCGV (Protocol No. .068/2006). Initially it was made assessing the quality of life and physical fitness test and there are indicators of disease through clinical and laboratory examinations. Subsequently, RE was applied according to the needs of participants. According to the nature of the variables (numerical continuous) found through the Z test score, was used descriptive statistical analysis, informing the percentage of the results, as mean and standard deviation (SD) of each variable. For analysis of statistical significance was used Student's t test for paired samples. The study acknowledged the value of $p < 0.05$ for statistical significance, held in Software BioEstat 4.0. The results of this study demonstrate the efficiency of RE in patients with RA, especially with regard to flexibility ($p = 0.0054$), to force manual ($p = 0.5197$, $p = 0.5286$) and lower limbs ($p < 0023$). Were reported improvements in activities of daily life, showing great relevance in the life of them.

Keywords: Rheumatoid Arthritis, resistance exercises, quality of life.

L'INFLUENCE DE LA RÉSISTANCE DES EXERCICES POUR LES PERSONNES À LA POLYARTHRITE RHUMATOÏDE

Les maladies rhumatismales, y compris la polyarthrite rhumatoïde (PR) sont associés à une série de manifestations, en particulier la rigidité, douleur, déformation des articulations et des tissus mous, atrophie musculaire, inconditionnel et baisse généralisée dans la fonction physique. Exercices de résistance (ER) sont d'une grande importance à ces symptômes n'ont pas d'incidence sur les activités de la vie quotidienne, comme les stimuli afin de promouvoir la forme physique, tels que: la flexibilité, la force de développement, de force et de puissance. L'étude visait à vérifier l'influence de l'ER dans le développement de la force, la flexibilité, la qualité de vie et des indicateurs de la maladie chez les patients atteints de PR. La méthodologie de cette étude est basée sur la participation de six femmes âgés de plus de 18 ans. Soumis à ER, deux fois par semaine, avec des intervalles d'au moins 48 heures entre les séances d'entraînement de 23 semaines. Tous les participants ont signé le consentement libre et éclairé et le projet a été approuvé par le comité d'éthique de FHCGV (Protocole n ° .068/2006). Au départ, elle a été faite l'évaluation de la qualité de la vie et la forme physique d'essai et il existe des indicateurs de la maladie par examens cliniques et de laboratoire. La suite, ER a été appliquée en fonction des besoins des participants. Selon la nature des variables (numérique en continu) par le biais de l'essai score Z, a servi de statistiques descriptives, d'informer le pourcentage des résultats, en tant que moyenne et écart-type (ET) de chaque variable. Pour l'analyze de signification statistique a été utilisée t de Student pour tester des échantillons jumelés. L'étude a reconnu la valeur de $p < 0,05$ pour la signification statistique, qui s'est tenue à BioEstat Software 4.0. Les résultats de cette étude démontrent l'efficacité de l'ER chez les patients atteints de PR, en particulier en ce qui concerne la flexibilité ($p = 0,0054$), à la force manuelle ($p = 0,5197$, $p = 0,5286$) et les membres inférieurs ($p < 0023$). Des améliorations ont été signalés dans des activités de la vie quotidienne, preuve d'une grande pertinence dans la vie d'entre eux.

Mots-clé: polyarthrite rhumatoïde, des exercices de résistance, la qualité de vie.

LA INFLUENCIA DE LOS EJERCICIOS DE RESISTENCIA PARA LAS PERSONAS CON ARTRITIS REUMATOIDE.

Las enfermedades reumáticas, incluida la artritis reumatoide (AR) se asocian con una serie de acontecimientos, especialmente la rigidez, dolor, deformidad articular y tejidos blandos, atrofia muscular, incondicional y generalizada disminución de la función física. Ejercicios de resistencia (ER) son de gran importancia a estos síntomas no afectan a las actividades de la vida diaria, como estímulos para promover la aptitud física, tales como: la flexibilidad, la fuerza de desarrollo, la

fuerza y el poder.El estudio tuvo como objetivo verificar la influencia de ER en el desarrollo de la fuerza, la flexibilidad, la calidad de vida y los indicadores de la enfermedad en pacientes con RA. La metodología de este estudio se basa en la participación de seis mujeres mayores de 18 años. Sometido a ER, dos veces a la semana, con intervalos de al menos 48 horas entre sesiones de entrenamiento durante 23 semanas. Todos los participantes firmaron el consentimiento libre e informado y el proyecto fue aprobado por el Comité de Ética de FHCGV (Protocolo N º .068/2006). Inicialmente, se hizo la evaluación de la calidad de vida y estado físico y hay indicadores de la enfermedad a través de clínicas y exámenes de laboratorio. Posteriormente, ER se aplican en función de las necesidades de los participantes. De acuerdo a la naturaleza de las variables (numérico continua) que se encuentran a través de la prueba de puntuación Z, se utilizó un análisis estadístico descriptivo, informar el porcentaje de los resultados, como media y desviación estándar (DE) de cada variable. Para el análisis de la significación estadística se utilizó "t" de Student para muestras pareadas. El estudio reconoce el valor de p <0,05 para la significación estadística, que se celebró en Software BioEstat 4.0. Los resultados de este estudio demuestran la eficacia de ER en pacientes con AR, especialmente en lo que respecta a la flexibilidad (p = 0,0054), a la fuerza manual (p=0,5197, p=0,5286) y extremidades inferiores (p<0023). Se informó de mejoras en las actividades de la vida cotidiana, mostrando gran relevancia en la vida de ellos.

Palabras-clave: artritis reumatoide, ejercicios de resistencia, la calidad de vida.

A INFLUÊNCIA DOS EXERCÍCIOS RESISTIDOS PARA PORTADORES DE ARTRITE REUMATÓIDE

As doenças reumáticas, entre elas, a Artrite Reumatóide (AR) estão associadas a uma série de eventos, principalmente rigidez, dor, deformidade articular e dos tecidos moles, atrofia muscular, descondicionamento físico generalizado e diminuição da funcionalidade. Os exercícios resistidos (ER) são de grande importância para que estes sintomas não afetem as atividades da vida diária, pois promovem estímulos de aptidão física, como: flexibilidade, desenvolvimento da força, resistência e potência. O estudo buscou verificar a influência do ER no desenvolvimento da força, da flexibilidade, da qualidade de vida e indicadores da doença em portadores de AR. A metodologia do presente estudo está fundamentada na participação de seis mulheres com idade superior a 18 anos. Submetidas a ER, duas vezes semanais, com intervalos mínimos de 48 horas entre as sessões de treinamento, durante 23 semanas. Todas as participantes assinaram o termo de consentimento livre e esclarecido e o projeto foi aprovado pelo Comitê de Ética da FHCGV (protocolo nº.068/2006). Inicialmente foi feita avaliação da qualidade de vida e teste de aptidão física e verificou-se os indicadores da doença através de exames clínicos e laboratoriais. Posteriormente, aplicou-se ER de acordo com a necessidade das participantes. De acordo com a natureza das variáveis (numéricas contínuas) encontradas através do teste *Z score*, aplicou-se análise estatística descritiva, informando os valores percentuais dos resultados obtidos, como média e desvio-padrão(DP) de cada variável. Para análise da significância estatística foi utilizado o *teste T de Student* para amostras pareadas. O estudo admitiu o valor de p<0,05 para significância estatística, realizado no Software BioEstat 4.0. Os resultados do presente estudo demonstraram a eficiência dos ER em portadores de AR, principalmente no que diz respeito a flexibilidade (p=0,0054), à força manual (p=0,5197; p=0,5286) e de membros inferiores (p<0,023). Foram relatados melhorias nas atividades da vida cotidiana, demonstrando grande relevância na vida das mesmas.

Palavras-chave: Artrite Reumatóide, Exercício Resistido, Qualidade de vida.