11 - THE EFFECTS OF DETRAINING PHYSICAL ABILITIES IN THE ELDERLY.

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INTRODUCTION

The growth of the elderly population is a worldwide phenomenon, and in Brazil surpassing even the growth of children. Because it occupies the elderly, increasingly, an important role in Brazilian society (IBGE, 2002). Thus, it is important to investigate strategies for improving the quality of life in this new context population (SANTANA, 2009).

The relationship between quality of life, physical activity, health and aging has been increasingly discussed and analyzed scientifically. Currently, health professionals stress the importance of physical activity as a factor in the success of the aging process (Matsuda, 2001a).

According to Hoffman (2002) there are three stages in the life of all organisms, the growth phase and development phase of reproduction and aging. This last phase is characterized by a progressive decrease in functional capacity.

Thus, the phenomenon of aging is marked by a process of loss of functionality caused by a significant drop in performance, physical abilities and aptitudes (SANTANA, 2009).

These capabilities correspond to physical flexibility, strength, aerobic endurance, anaerobic and muscular, speed, coordination, balance, rhythm, flexibility and relaxation. These are significantly affected during aging, preventing and / or hindering Geronte to perform their daily activities, there is loss of independence (ALVES et al., 2004, MATSUDO et al. 2000; REBELATTO et al., 2006).

To avoid these losses, some elderly people seek to perform exercises such as walking, aerobics and resistance exercise. This last method is more secure and complete and the elderly should be seen as a priority to ensure the development of physical abilities (SANTOS, 1997; MATSUDO, 2001b).

The practice of exercise promotes weight changes and adaptations that enhance the human body, whether in the functional or morphological (SANTOS, 1998).

In addition, weight training allows the body to appropriate improvements and improvements in physical abilities, such as enrichment in the range of motion, increased strength, improved aerobic endurance and anaerobic power, agility and others (SANTOS, 1998; MATSUDO, 2001b).

However, such changes induced by regular physical activity can be reduced or return to the situation prior to the training program when the exercise is stopped, and this phenomenon is called detraining (KRAEMER, 1997 cited in MATSUDO et al., 2001b).

Such interruptions can occur for reasons of injuries and health problems (BOMPA, 2002 apud LIMA, ARIES, 2009). The same causes loss of physiological adaptations, and these losses they are larger or smaller according to the duration and intensity of training performed (FATOUROS et al., 2005; FATOUROS et al., 2006) or with the untrained, the body adapts to the new structural and metabolic demands, leading to partial or complete loss of training-induced adaptations (MUJIKA, 2000 apud LIMA, CARNEIRO, 2009; MICHELIN et al., 2008; MELNYK et al., 2009; FONTOURA et al., 2004; FATOUROS et al., 2005; FATOUROS et al., 2006).

This study aimed to determine the levels of strength, endurance and flexibility of elderly between 60 and 80 years, after fifteen (15) and forty-five (45) days of interruption (untrained) of a resistance exercise program developed under the project " Health and quality of life "of the Laboratory of Resistance Exercise and Health (you read).

METHODOLOGY

Type of study

The study presents the empirical-analytic approach, is quantitative in character, with prospective data collection, explanatory, since it seeks to analyze the effects of disruption (untrained) a program of exercises with free weights on the physical abilities of the elderly 60 to 80 years.

This research was conducted at the Laboratory of Resistance Exercise and Health (you read), located at the University of Pará, Campus III of the Center for Biological and Health Sciences (CBHS).

Research subjects

The sample studied consisted of 19 subjects, these men and women who practice resistance exercise you read in \ UEPA, aged 60 to 82 years, and 63.84 ± 8.62 years. Their mean age was 70.41 ± 5.72 respectively.

Tests used

The evaluations consisted of: the end of the program of resistance exercise that lasted five (5) months, after fifteen (15) days of the first tests was the second evaluation and third evaluation after forty-five (45) days, which corresponded to the beginning Return of the recess of the elderly. Evaluations were made by the March 2 minutes Stationary (RIKLI; JONES, 1999), Flexibility in the Bank of Wells (MARINS; GIANNICHI, 1998), lower limb muscle strength (RIKILI; JONES, 1999), Upper Limb Muscle Force to handgrip tests (Matsuda, 1987) and elbow flexion (CAMPOS et al., 2010).

Training protocol

Strength training was carried out for 5 months, with meetings held twice a week, lasting from thirty minutes to one hour. The exercises made corresponded: leg press, bench press, deadlift, row-sided, stiff, development, and abdominal pull ahead. As

performed three sets of eight to twelve repetitions.

Analysis of data

The data were presented in tables and graphs and treated statistically using the SPSS 18.0, where he used descriptive statistics to characterize the sample and inferential statistics using analysis of variance test to compare data from different groups and the different stages of testing. For statistical inference we adopted a significance level of $p \leqslant 0,05$

RESULT

Figure 1 shows changes in the levels of the variables studied in testing three times in the total study sample. It was found that when analyzing the study overall, there were no significant changes in the statistical point of view about the variables.

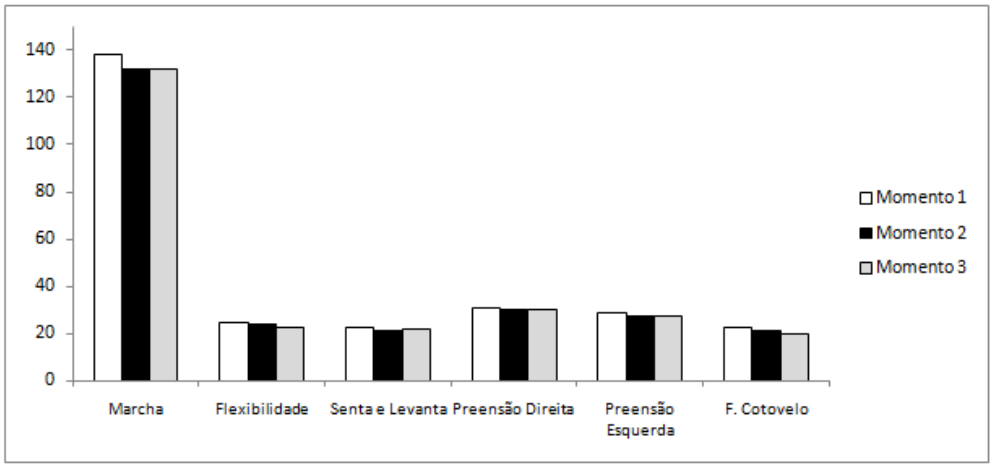


Figure 1 - Levels of the variables at different times in the testing sample.
Source: you read, 2011.

This study presents results similar to those already made, as is the case of Lemmer et al. (2000) that compared the effects of nine weeks of strength training and 31 weeks of detraining on force levels in men and women young and old. We evaluated the aerobic power, body composition, test 1RM (repetition maximum) and peak isokinetic torque.

The research results of Lemmer et al. (2000) showed that there was a significant increase in strength during training. After 12 weeks of detraining, no group showed significant differences. However, after 31 weeks, men, women, young and old showed a significant reduction in strength compared with the end of training. After 31 weeks, compared to initial values were relatively equal in men and women young and old.

According to the studies of Housh et al. (1996) investigated the effects of eight weeks of training followed by eight weeks of detraining in a program of resistance to eccentric exercise. The results have shown that there was a significant difference between the pre-training periods of post-training and detraining. However, there is no significant difference between the post-training period of detraining.

Based on the observations from studies of Housh et al. (1996) compared to those of Lemmer et al. (2000), to infer that eight or twelve weeks of detraining are not sufficient to generate significant reduction in muscle strength. However long periods of detraining as 31, 48, 52 weeks observed by Lemmer et al. (2000), Fatouros et al. (2005) and Toraman (2011) respectively, provide significant decreases.

As you can analyze, as the stationary gear, there was a reduction between the three moments of measurement, the same occurring with the flexibility and the elbow flexion. Michelin and Burini Rabbit (2008) studied the influence of aerobic exercise, muscular endurance and flexibility in 44 individuals of both sexes aged 57.6 ± 8.9 years for a period of five months, found significant gains in 22 % and 7% on the strength of lower limbs and VO2max., respectively, achieved through training were maintained after discontinuation of the program for a month. However, the 8% increase in flexibility returned to baseline levels after one month of detraining.

However, it is clear that moderate and intense training promotes greater gains in strength and flexibility when compared to low intensity. With regard to the untrained, falls caused by the same seems dependent on the intensity, which is high to moderate, causes smaller decreases in strength and flexibility during the interruption (FATOUROS et al., 2006).

Now with respect to variables and sits up, manual removal of the left and right there was a reduction between the first and second moment of testing and increased between the second and third time. The variables come from familiarity with the older tests.

On the same graph can be seen that the sample as a whole, in all the variables studied was a reduction from the first moment of testing toward the second time and third time, demonstrating that the detraining was deleterious to these variables. So it is of fundamental importance to take into account the principle of continuity, even with this loss being significant reductions occurred.

Observe that only the stationary gait test showed significant difference from a statistical viewpoint. Having reductions between the first and second time of testing ($p \leqslant 0,07$) and between the first and third time ($p \leqslant 0,10$).

This change has occurred precisely because this test requires the power to execute it, and one of her physical suffering significant reductions with detraining.

Kraemer et al. 2002, found no significant loss in strength of upper and lower limbs for strength training practitioners undergo six weeks of detraining, with significant changes only for power (KRAEMER, 2002; cited PAPESCHI, 2010).

Harris et al. (2007), older untrained individuals undergoing a weight training for 18 weeks, with subsequent 20 weeks of detraining. We evaluated the physical fitness muscle strength and power at 6 weeks and 20 weeks of detraining. Muscle power has fallen sharply in the first week with the force remained above pre-training (HARRIS et al., 2007, cited PAPESCHI, 2010).

Kalapotharakos et al. (2007), trained a group of moderately active elderly with low intensity (60% of 1 RM), three times a week for 12 weeks. Interruption occurred 6 weeks. The short training period associated with moderate intensity resulted in loss

of strength and power, but these values remained above pre workout for strength capacity. (KALAPOTHARAKOS et al., 2007, cited PAPESCHI, 2010).

With respect to other variables, you may notice changes over the testings, but not statistically significant.

It was observed that the longest period of decline was the first time for the second, remaining almost constant from the second to the third moment. This is justified by familiarization with the tests, as well as the untrained time of the second test for the third were not enough to notice reductions.

In Figure 1, it appears that the detraining was deleterious, resulting in decreased levels of the variables, especially between the first and second time.

Table 1 - Descriptive statistics and comparison of the differences between the first and second moments of testing, for the variables studied.

Variável	Grupo 60 a 80 anos	f	*p*
Marcha estacionária	-8,63±9,15	1,81	0,18
Flexibilidade	-0,82±2,53	0,22	0,81
Senta e Levanta	-2,11±1,75	0,76	0,48
Pressão Manual Direita	-1,13±2,30	0,28	0,76
Pressão Manual Esquerda	-1,05±3,69	0,32	0,73
Flexão Cotovelo	-1,47±2,59	0,66	0,52

Source: you read, 2011.

f - index variance

p - significance level ($\leqslant 0.05$)

It can be seen in table 1, all the variables studied had reduced the time between 1 and 2 of testing, however, as you can see there was no statistical difference between groups regarding the levels of change in the variables studied between these moments of testing. You can look at what was the largest reduction in manual removal of the right variable.

Table 2 - Descriptive statistics and comparison of differences between group 1 and 3 times of testing, for the variables studied

Variável	Grupo 60 a 80 anos	f	*P*
Marcha estacionária	-8,65±11,48	0,98	0,39
Flexibilidade	-2,15±2,98	1,04	0,36
Senta e Levanta	-2,00±2,55	0,97	0,39
Pressão Manual Direita	-0,76±3,25	0,15	0,86
Pressão Manual Esquerda	-1,35±2,55	0,36	0,70
Flexão Cotovelo	-2,41±3,26	0,25	0,78

Source: you read, 2011.

f - index variance

p - significance level ($\leqslant 0.05$)

Table 2 reveals that all variables had a reduction in their levels measured between the two moments of measurement studied, however, as can be seen, none of these reductions showed statistical difference between groups.

Occurred in variable sits and raises the greatest reduction. This variable as well as the stationary gear, need power to carry them out, so the reductions are explained by the studies already cited (KRAEMER et al., 2002, Harris et al. 2007; KALAPOTHARAKOS et al., 2007).

Table 3 - Descriptive statistics of the differences between the group and comparison between times 2 and 3 testing for the variables studied.

Variável	Grupo 60 a 80 anos	F	*P*
Marcha estacionária	-0,24±7,12	0,02	0,98
Flexibilidade	-1,41±1,34	0,89	0,42
Senta e Levanta	0,19±2,10	0,59	0,56
Pressão Manual Direita	0,38±2,02	0,85	0,44
Pressão Manual Esquerda	0,24±3,14	0,06	0,94
Flexão Cotovelo	-0,88±4,03	0,73	0,49

Source: you read, 2011.

f - index variance

p - significance level ($\leqslant 0.05$)

In Table 3, can observe the changes in the study group in the investigated variables between the second and third time of testing. The same is valid to point out that the differences were not statistically significant changes between the two moments of measurement, between the groups.

Note that there was a reduction in the following variables: stationary motion, flexibility and elbow flexion. But the opposite occurred with the variable and sits up and grip, there were increases in the groups.

According to Fleck and Kraemer (1999), the rate of loss of strength depends on the extent of the training period prior to the untrained, training intensity and type of muscle strength testing used.

Final Thoughts.

With the research, it was found that periods of 15 to 45 days of detraining, do not cause significant drops in the statistical point of view in the variables studied.

Soon such interruptions that occur during the projects developed at the Laboratory of resistance exercise, do not cause harm to subjects that are embedded in it.

Thus we conclude that it is OK to continue with the methodology discussed in the laboratory, and the moments of withdrawal shall not prejudice the elderly practicing resistance exercise.

Arises a very important aspect of the resistance exercise training, since it was observed that even after detraining, the level of the aspects studied in the elderly did not have significant changes, ie, the benefit of this training will last for a long period detraining, demonstrating the relevance of this methodology to study the public that due to loss of strength and other variables caused by age, suffer from problems such as loss of balance and consequently increase in the number of falls, reduced muscle mass and As a result of decreased strength and endurance, which can lead to accidents with serious consequences for older

people.

Studies suggest as many people and more observation time to solidify, scientifically, the more the subject matter.

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THE EFFECTS OF DETRAINING PHYSICAL ABILITIES IN THE ELDERLY.

SUMMARY

The growth of the elderly population is a worldwide phenomenon. As a result the elderly occupies a prominent role in society. Currently, health professionals stress the importance of physical activity as a factor in the success of the aging process. This phenomenon is marked by a process of loss of functionality caused by a significant drop in performance in physical and functional capabilities. In order to avoid such losses indicate the health of the elderly doing physical exercise, and one of the most widely shown today is resistance exercise (RE). RE allows the body to appropriate improvements and improvements in physical abilities. However, such changes induced by regular physical activity can be reduced or return the situation prior to the training program when the exercise is stopped, and this phenomenon is called untrained. This work aims to determine the effects of disruption of an RE program on the physical capabilities, specifically the flexibility, strength of upper and lower limbs and resistance, in the elderly, 60 to 82 years participating in the project "Health and Quality of Life" Laboratory of resistance exercise you read. To assess the physical abilities of the elderly were performed the following tests: flexibility (Wells Bench), stationary motion, hand grip (hand dynamometer), and sit ups. These are effected in three periods, at the end of the program RE, after fifteen days of the first tests was the second evaluation and third evaluation shortly after forty-five days. The analyzed group consisted of 19 elderly. According to the statistical analysis results in a reduction in the first place for the third time, demonstrating that the detraining was deleterious to the mentioned variables. However, these reductions do not cause significant drops in the

statistical point of view. It is concluded that periods of 15 to 45 days did not promote significant losses in terms of the statistical variables. But noted that the reversal occurred, so the principle of continuity is reinforced by the results of this study.

KEYWORDS: Elderly. Physical abilities. Untrained.

LES EFFETS DE DÉBARQUEMENT DES CAPACITÉS PHYSIQUES CHEZ LES PERSONNES ÂGÉES.
SOMMAIRE

La croissance de la population âgée est un phénomène mondial. En conséquence les personnes âgées occupe une place importante dans la société. Actuellement, les professionnels de santé soulignent l'importance de l'activité physique comme un facteur dans la réussite du processus de vieillissement. Ce phénomène est marqué par un processus de perte de fonctionnalité causée par une baisse significative de la performance dans les capacités physiques et fonctionnelles. Afin d'éviter de telles pertes indiquent l'état de santé des personnes âgées faisant de l'exercice physique, et l'un des plus largement aujourd'hui représentée est l'exercice de résistance (RE). ER permet au corps de l'amélioration appropriées et l'amélioration des capacités physiques. Toutefois, de tels changements induits par l'activité physique régulière peut être réduite ou le retour à la situation avant le programme de formation lorsque l'exercice est arrêté, et ce phénomène est appelé non formés. Ce travail vise à déterminer les effets de la perturbation d'un programme d'ER sur les capacités physiques, notamment la flexibilité, la force des membres supérieurs et inférieurs et de résistance, chez les personnes âgées, 60 à 82 ans participent au projet Santé et qualité de vie Laboratoire de résistance exercice que vous lisez. Pour évaluer les capacités physiques des personnes âgées ont été effectués les tests suivants: flexibilité (Banc Wells), le mouvement stationnaire, poignée de main (la main du dynamomètre), et des redressements assis. Ce sont effectuées en trois périodes, à la fin de l'ER programme, après quinze jours des premiers tests a été la deuxième évaluation et de la troisième évaluation, peu après quarante-cinq jours. Le groupe a analysé composée de 19 personnes âgées. Selon les résultats de l'analyse statistique dans une réduction de la première place pour la troisième fois, démontrant ainsi que le débarquement était nocive pour les variables mentionnées. Toutefois, ces réductions ne causent pas de baisses significatives dans le point de vue statistique. Il est conclu que les périodes de 15 à 45 jours n'a pas favorisé des pertes importantes en termes de variables statistiques. Mais note que le retournement s'est produit, de sorte que le principe de continuité est renforcée par les résultats de cette étude.

MOTS-CLÉS: personnes âgées. Capacités physiques. Inexpérimentées.

LOS EFECTOS DEL DESENTRENAMIENTO CAPACIDAD FÍSICA EN LOS ANCIANOS.
RESUMEN

El crecimiento de la población de adultos mayores es un fenómeno mundial. Como resultado de la tercera edad ocupa un papel destacado en la sociedad. En la actualidad, los profesionales de la salud destacan la importancia de la actividad física como un factor en el éxito del proceso de envejecimiento. Este fenómeno se caracteriza por un proceso de pérdida de funcionalidad causados por una caída significativa en el rendimiento de las capacidades físicas y funcionales. Con el fin de evitar estas pérdidas indican la salud de las personas mayores hacer ejercicio físico, y hoy uno de los que más se muestra es el ejercicio de resistencia (RE). ER permite que el cuerpo las mejoras pertinentes y las mejoras en las capacidades físicas. Sin embargo, estos cambios inducidos por la actividad física regular puede reducir o volver a la situación antes de que el programa de formación cuando el ejercicio se detiene, y este fenómeno se le llama inexperto. Este trabajo tiene como objetivo determinar los efectos de la interrupción de un programa de ER en las capacidades físicas, específicamente la flexibilidad, la fuerza de las extremidades superiores e inferiores y la resistencia, en los ancianos, 60 y 82 años participan en el proyecto de salud "y calidad de vida "laboratorio de resistencia ejercicio de leer. Para evaluar las capacidades físicas de las personas mayores se realizaron las siguientes pruebas: flexibilidad (Banco Wells), el movimiento inmóvil, apretón de la mano (dinamómetro de mano), y abdominales. Estas se efectúan en tres periodos, al final de la sala de emergencia del programa, después de quince días de las primeras pruebas fue la segunda evaluación y la tercera evaluación, poco después de cuarenta y cinco días. El grupo analizó, integrada por 19 personas mayores. De acuerdo con los resultados del análisis estadístico de una reducción en el primer lugar por tercera vez, lo que demuestra que la falta de entrenamiento fue perjudicial para las variables mencionadas. Sin embargo, estas reducciones no causan caídas significativas en el punto de vista estadístico. Se concluye que los períodos de 15 a 45 días no promovió pérdidas significativas en términos de las variables estadísticas. Sin embargo, señaló que la inversión se produjo, por lo que el principio de continuidad se ve reforzada por los resultados de este estudio.

PALABRAS CLAVE: Ancianos. Capacidades físicas. Sin formación.

OS EFEITOS DO DESTREINO NAS CAPACIDADES FÍSICAS EM IDOSOS.
RESUMO

O crescimento da população de idosos é um fenômeno mundial. Em virtude disso o idoso ocupa um papel de destaque na sociedade. Atualmente, os profissionais da área da saúde destacam a relevância da atividade física como um fator determinante no sucesso do processo do envelhecimento. Esse fenômeno é marcado por um processo de prejuízos da funcionalidade, causada por importante queda de desempenho nas capacidades funcionais e físicas. No intuito de evitar essas perdas profissionais da área da saúde indicam aos idosos realizar exercícios físicos, e uma das modalidades mais indicadas hoje em dia é o exercício resistido (ER). O ER adequado permite ao corpo melhoras e aperfeiçoamentos nas capacidades físicas. No entanto, tais modificações induzidas pelas atividades físicas regulares podem ser reduzidas ou retornam a situação anterior ao treinamento quando o programa de exercício é interrompido, sendo que este fenômeno é chamado de destreino. Este trabalho tem como objetivo verificar os efeitos da interrupção de um programa de ER. sobre as capacidades físicas; especificamente a flexibilidade, força de membros superiores e inferiores e resistência; em idosos de 60 a 82 anos que participam do projeto “Saúde e qualidade de Vida” do Laboratório de exercício resistido LERES. Para avaliar as capacidades físicas dos idosos foram realizados os seguintes testes: flexibilidade (banco de Wells), marcha estacionaria, preensão manual (dinamômetro de mão), senta e levanta. Estes se efetivaram em três períodos, ao final do programa de ER; após quinze dias dos primeiros testes ocorreu a segunda avaliação e a terceira avaliação logo após quarenta e cinco dias. O grupo analisado foi constituído de 19 idosos. De acordo com as analises estatísticas nos resultados obtidos ocorreu uma redução do primeiro momento para o terceiro, demonstrando que o destreinamento foi deletério para variáveis citadas. Entretanto tais reduções não acarretam quedas significativas do ponto de vista estatístico. Assim conclui-se que os períodos de 15 a 45 dias não promovem perdas significativas do ponto de vista estatístico nas variáveis estudadas. Porem ressaltamos que a reversibilidade ocorreu, portanto o principio da continuidade é reforçado pelo resultado desse estudo.

PALAVRAS-CHAVES: Idosos. Capacidades físicas. Destreino.