82 - MANUAL HOLD FORCE AVALIATION IN ELDERLY PEOPLE PRACTIONERS OF STRENGTH TRAINING

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INTRODUCTION:

The 20th century has marked definitively the importance of the aging study in one hand because of the natural tendency on search and study of the aging process, which had already announced on the previous centuries. On the other hand, the increase of elderly people in the world exerted pressure on the development of this area (NETTO, 1996).

The concept of human aging is a dynamic and progressive process in which there are morphological, functional, biochemical, and psychological modifications, that determinate the adaptation capacity of a subject on the environment, causing greater both venerability and incidence of pathological processes that determinate his/her death (NETTO, 1996).

The literature shows that the gradual reduction of many human organic systems on making their function in an efficient way may be a result of these subjects' way of life and not only a proper and unavoidable characteristic of this process (MEIRELLES, 2000).

In absence of disease it is given credit that the elderly people's physical fragility is generated, in great part, by sarcopenia, which is defined by both muscular mass and force decrease as a result of getting old (TRACY et al., 1999; MORLEY et al., 2001; PORTER, 2001; GREENLUND, 2003). The sarcopenia indicates loss on structural muscular composition quality such as innervations, contractibility, and fatigability of the aged muscle, resulting in the loss of functional autonomy of the elderly people (VANDERVOOT & SYMOUNS).

Significant alterations occur in both intrinsic properties of muscle fiber and its total percentage with aging that leads to a progressive change of the motor function. The alterations on both structural and velocity contraction of type I and II fibers affect the muscular functionality of the elderly people (KRICVAS, 2001).

The neuromuscular alterations related to aging have been told by the reduction of alpha motor neuron, quantities of motor unities and muscle fiber reduction. As consequence of these changes, the muscular force decrease occurs as consequence of these changes (RASO; ANDRADE; MATSUDO, 1997). A reduction of approximately 30% on muscle force between 50 and 70 years old is generally found in literature, being more accentuated after 70 years old. (MAZZEO, 1998).

Elderly people manual push pull force is frequently described on literature and there is a directly proportional relationship with the global muscular force. Some parameters are already known: It's known that hand hold force from 16 to 45 years old is about 45 kg; by the age of 55 it decreases to 34 kg and by the age of 75 it decreases to 22kg (SHEPHARD, 2003).

At one research Bassey and Harries apud FLECK (1999) found a decrease of 2% in hand squeeze force per year in elderly people. However, in the period of 4 years, this loss became 3% per year in men and about 5% in elderly women.

A CELAFISCS research with 167 women between 50 and 79 years old using 1kg weight for superior members was developed using two exercises for each body segment. On the first two weeks, these women realized 2 series of 8 repetitions and there was increase after each two weeks. After the whole period of the training, there was an increase of 23,7% on superior member force, and a decrease of 1,5% on specific movements that can increase hand hold force.

As a result of the muscular force and mass loss linked to aging, a lot of attention concentrated in prevention and reversion strategies of these losses and thus shows that the strength training is an efficient way to increase muscle force and functional capacity in elderly population (FLECK, 1999).

The strength training is more and more indicated and practiced for elderly people. Among the researchers in Physical Education field, Santarém deserves prominence, who affirms that strength exercise brings global benefits to elderly health, or either, it improves mobility and hinder muscle atrophy, increase bone mass, prevent cardiac disease, revert the hypertension and high heart rate during the diary physical activities (diary life activities - DLA).

Peachar apud MACARDLE (1998), says that training specificity is related to specific muscles that participate of the desired movement since demanded neuromuscular solicitation provokes specific and correspondent physiological adaptation. Thus, the overload should be applied on muscular movements that seems to daily movements.

In this manner, it was decides to do a research in this area, taking the importance of the muscular function in elderly people's autonomy is in the fact of force associates to a great quantity of daily activities undeniably, otherwise, working the muscular force it has as a goal the independence and autonomy maintenance in elderly people's life. Maintaining the manual push pull force is extremely important on realization activities such as holding objects, using a railing or support on the bus, do household chores, at last maintain diverse daily activities in an autonomous way.

The main goal of this study was analyze the manual push pull force on elderly women practitioners of strength training after a specific resistance training of wrist flexor muscles.

Methods:

The sample was composed of 15 elderly women, with average age of 70 years old practitioners of lifting training of AFRID (Physical and Recreational Activity for Elderly people) project. The training lasted 16 weeks. It was used a resistance machine for wrist flexion movement. The subjects had trained regularly 3 times per week using high intensity load (between 70% and 80% of maximum repetition contraction).

The manual push pull test or manual dynamometry as the standardization cited by SOARES E SESSA (1995), protocolised by MATSUDO (2000) was used as a collected instrument. For the test realization it was used an adjustable dynamometer and calibrated from 0 to 100 kilograms.

The evaluated subject was placed in orthostatic position, carrying the dynamometer in a comfortable way as continuation of the arm, staying parallel to the longitudinal body axle. The proximal inter-phalanges joint must be adjust under the bar that is held between the fingers and tenar region. During the manual hold, the arm stays still only happening flexion of the inter-phalanges and metacarpo-phalangeal joint. It was carried through two measurements of each hand on an alternate way, considering the best result. It was carried through before and after the resistance training.

For the statistic analyses it was used the t-student test for the dependent sample, on significance of $p<0,05$.

Results:

The results show that the subjects have obtained significance statistically proved in the average and in the t-student test.

Table: muscular manual hold force performance:

Voluntários	Pré Teste	Pós Teste
1	12,5	19
2	12	17,5
3	16	17,5
4	19,5	26
5	20	27,5
6	20	32,5
7	16	27,5
8	13	19
9	21	23
10	18	19
11	35,5	39
12	15,5	20
13	25,5	32,5
14	18	22
Média	18,75	24,42857143
Desvio Padrão	5,851587086	6,413872083
t de Student	0,026162214	

Final consideration:

From these results we can notice significant improvement in the manual push pull force level, evidencing that specificity phenomenon of the training influence the performance on daily activities.

Still standing out the reduction of the mass and decurrent muscular force of the aging, and the decrease of the functional capacity in individuo aged, the increase in the hold force was sufficiently significant in this so special population.

Thus the strength training correctly prescribed and guided exerts important factor on prevention, consideration, and recuperation of the functional capacity of the elderly population, reign-echo on a positive way on their life quality.

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EVALUATION OF MANUAL HOLD FORCE OF THE PRACTITIONERS OF STRENGTH TRAINING AGED.

ABSTRACT

Introduction: A Practice regular resistance exercise is a good way to reduce or to prevent the functional loss associated to the aging, compensating the reduction of the muscular mass and force related the age. According to literature an importance of muscular function in the autonomy of the aged ones is in the fact of the force to associate undeniably with a great amount of daily activities, i.e., to work the muscular force has as purpose the maintenance of independence and autonomy in the aged. **Objective:** To analyze the manual hold force of the practitioners of strength training aged, after a specific strength training of the forearm flexor muscles. **Methodology:** The sample was composed by 14 women with average age of 70 years, practitioners of strength training at AFRID-FAEFI-UFU project, the volunteers had trained during 16 weeks, 3 times per week having used high intensity load (between 70% and 80% of maximum repetition). The used instrument was the manual hold test or manual dynamometry as the standardization cited by SOARES e SESSA (1995), protocol by MATSUDO (2000). **Results:** The results had demonstrated that the aged ones had gotten significant increase, statistically proved in the average , and in the T-Student test.

Table Performance of the manual hold force

	Pretest	Posttest
X	18,75	24,42
S	5,85	6,41
T-Student	0,026	

Conclusion: From theses results we can notice significant improvement in the manual hold force level aged. Thus

the strength training correctly prescribed and guided exerts important factor on prevention, conservation and recuperation of the functional capacity of the elderly population, reign- echo on a positive way on their life quality.

Palavras Chaves: Strength training, Manual hold force,Aged.

EVALUACIÓN DE LA FUERZA DE PRESIÓN MANUAL EN ANCIANOS PRACTICANTES DE MUSCULACIÓN

RESUMEN

La practica regular de ejercicios resistidos es una buena manera de reducir o prevenir las pérdidas funcionales asociadas al envejecimiento, compensando la reducción de la masa y fuerza muscular relacionadas a la edad. De acuerdo con la literatura, la función muscular es importante para la autonomía de los ancianos porque la fuerza está relacionada innegablemente a una gran cantidad de actividades cotidianas, o sea, trabajar la fuerza muscular tiene como objetivo el mantenimiento de la independencia y autonomía en la vida de los ancianos.El objetivo del presente trabajo fue analizar la fuerza de presión manual en ancianas practicantes de la musculación, después de un entrenamiento específico de fortalecimiento de los músculos de flexión del antebrazo. La muestra fue compuesta por 14 ancianas, con franja etaria de 65 hasta 75 años, practicantes de musculación del Proyecto AFRID, las voluntarias entrenaron durante 16 semanas, 3 veces por semana utilizando cargas de alta intensidad (70% hasta 80% de la carga máxima) el movimiento flexión de puño en el aparato de resistencia. El instrumiento de coleta utlizado fue la prueba de presión manual o dinamometria manual de acuerdo con la padronización citado por SOARES y SESSA (1995), hecho por MATSUDO, (2000). Los resultados demostraron que las alumnas obtuvieron aumento significativo, estadísticamente comprobadas en la media, y en la prueba t de student.

Performance de la fuerza de presión manual muscular.

	Pre teste	Pos teste
X	18,75	24,42
S	5,85	6,41
T-Student	0,026	

Los datos apuntan una mejora en el nivel de fuerza de preensão manual en las ancianas. Así, el entrenamiento de fuerza correctamente prescrito y orientado desempeña importante capacidad funcional de los individuos ancianos, repercurtiendo positivamente en su calidad de vida. Palavras Chaves: Musculación, Fuerza de presión manual, Ancianos.

ÉVALUATION DE LA FORCE MANUELLE DE PRISE DES PRATICIENS DE LA FORMATION DE FORCE ÂGÉS.

ABSTRAC

Introduction : Un exercice régulier de résistance de pratique est une bonne manière de réduire ou empêcher la perte fonctionnelle associée au vieillissement, compensant la réduction de la masse musculaire et la forcer ont relié l'âge. Selon la littérature une importance de fonction musculaire dans l'autonomie de âgée est dans le fait de la force à s'associer indéniablement à une grande quantité d'activités quotidiennes, c.-à-d., travailler la force musculaire a comme but l'entretien de l'indépendance et de l'autonomie dans âgées. Objectif : Analyser la force manuelle de prise des praticiens de la formation de force a vieilli, après une formation spécifique de force des muscles de fléchisseur d'avant-bras. Méthodologie : L'échantillon s'est composé par 14 femmes avec l'âge moyen de 70 ans, praticiennes de la formation de force au projet d'AFRID-FAEFI-UFU, les volontaires s'était exercé pendant 16 semaines, 3 fois par semaine ayant employé la charge d'intensité élevée (entre 70% et 80% de répétition maximum). L'instrument utilisé était l'essai manuel de prise ou le dynamometry manuel comme étalonnage cité par SOARES e SESSA (1995), protocole par MATSUDO (2000). Résultats : Les résultats avaient démontré qu'âgés ont eu l'augmentation significative, statistiquement prouvée à la moyenne, et de l'essai d'T-Étudiant.

Tableau - exécution de la force manuelle de prise

	Prétest	Posttest
X	18,75	24,42
S	5,85	6,41
T-Student	0,026	

Conclusion : Des résultats de thèses nous pouvons noter l'amélioration significative au niveau manuel de force de prise âgé. Ainsi la formation de force correctement prescrite et guidée exerce le facteur important sur la prévention, la conservation et la récupération de la capacité fonctionnelle de la vieille population, écho de règne sur un chemin positif sur leur qualité de la vie.

Palavras Chaves: Formation de force, force manuelle de prise, âgée.

AVALIAÇÃO DE FORÇA DE PREENSÃO MANUAL EM IDOSOS PRATICANTES DE MUSCULAÇÃO

RESUMO:

Introdução: A prática regular de exercícios resistidos é uma boa maneira de reduzir ou prevenir as perdas funcionais associadas ao envelhecimento, compensando a redução da massa e força muscular relacionadas a idade. De acordo com a literatura a importância da função muscular na autonomia dos idosos reside no fato da força associar-se inegavelmente a uma grande quantidade de atividades cotidianas, ou seja, trabalhar a força muscular tem como objetivo a manutenção da independência e autonomia na vida dos idosos. Objetivo: O objetivo do presente trabalho foi analisar a força de preensão manual em idosas praticantes de musculação, pós um treinamento especifico de fortalecimento dos músculos flexores do antebraço.Metodologia: A amostra foi composta por 14 idosas, com faixa etária compreendida entre 65 a 75 anos, praticantes de musculação de Projeto AFRID, as voluntárias treinaram durante 16 semanas, 3 vezes por semana utilizando cargas de alta intensidade (70% a 80% da carga máxima).O instrumento de coleta utilizado foi o teste de preensão manual ou dinamometria manual conforme a padronização citada por SOARES e SESSA (1995), protocolado por MATSUDO, (2000). Resultados: Os resultados demonstraram que as alunas obtiveram aumento significativo, estatisticamente comprovadas na média, e no teste t de Student.

Tabela - Performance da força de preensão manual muscular.

	Pré Teste	Pós Teste
x	18,75	24,42
s	5,85	6,41
t de Student	0,026	

Conclusão: Os dados apontam uma melhora no nível de força de preensão manual nas idosas. Assim o treinamento de força corretamente prescrito e orientado desempenha importante papel na prevenção, conservação, e recuperação da capacidade funcional dos indivíduos, repercutindo positivamente em sua qualidade de vida.

Palavras Chaves: Musculação, Força de preensão manual, idosas.