31 - EFFECTS OF WATER RESISTANCE TRAINING IN 9 - WEEKS IN THE AGILITY OF SEDENTARY ELDERY WOMEN

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INTRODUCTION

The aging process is a period of the human development that happens with all population. Aging is a world´s "phenomenon" (TRIBESS et al, 2005) that happens in all countries of the world. Aging is a period inevitable for all human being, and is a period that can happen with individual changes (TRIBESS, 2005). This period leads all people to get until the adult age and therefore seniors age, defined by OMS as people over 60 years old.

Aging also leads to a progressive loss of functionals skills (SPIRDUSO, apud in ALVES et al., 2004). Matsudo et al. (2000), and Okuma (1998, in TRIBESS et al., 2005), say that this period is marked by decreases in motor skills, decrease in strength, flexibility, speed and vO2max, reducing independence and capability of doing diary tasks. These changes suffered by the elderly people during the aging process bring score in five classes: dependents, fragile, independent, actives and athletes (SPIRDUSO, 1995, apud in ANDREOTTI, 1999).

The agility is one of the capacities that suffer chances during the aging process. Agility is physical capacity that permits fast body movements and low duration with direction changes or changes in the gravity center (BENEDETTI et al., 2007), also permits stop or initiate a movement (ZICO, 2004).

Rocha (1995, in MIYASIKE – DA -SILVA et al., 2002) says that beside that, agility permits the person to do fast movements with direction e way changes. And has as principals influences factors strength, speed, flexibility and coordination.

It is a component very used in the elderly diary activities, like walk diverting from people and objects (MIYASIKE – DA – SILVA et al., 2002). With aging, the decrease of this capacity is marked by the reduction of alterations in the neuromotor system to initiate, change or finish movements, being a capacity highly dependent of others physical capacities as strength and aerobic capacity (BENEDETTI et al., 2007). Through it's analysis, is also possible to value the fall risks of the elderly.

Besides the lack of specifics tests to value this capacity, the time up and go test (TUG) is brought as an alternative, consists in an agility activity, that the elderly should get up of a chair, make a turn in a cone, get back and sit down in the chair the fastest as they can (PERRACINI et al., 2008). It ´s been highly used, specially because it is very easy to apply and is very reliable, and is interested to value the agility in a functional task, important to the independence e reduce of the fall risks and injuries (PERRACINI et al., 20008).

It is essential that the elderly keeps a regular physical activity to improve all physical capacities, specially the agility.

Regular physical activity improve the strength and the muscular mass, improving also the flexibility, induces many physiological and psychological adaptations, reducing the risks of falls, injuries and mortality (RAUCHBACH, 2001).

Shephard (1994, apud ANDREOTTI, 1999) affirms in his study that the regular physical activity to elderly represents an essential part to extend and increase the capacity of working of these population, in addition to optimize the daily activities e to prevent incapacities e dependence in the lasts years of life.

The main objective of this study is to check the effects of 9 week water resistance training in the agility of sedentary elderly women.

METHODOLOGY

23 elderly women were randomly selected of the wait list of the Seniors Project of EEFFTO of UFMG. To explain the procedures of the research was sent a letter to their houses explaining everything, with procedures, duration and others.

Table 1 shows the characterization of the women that did the research.

Table 1 – Descriptive Values for the training group

	Minimum	Maximum	Mean	Standard Deviation(SD)
Age (years)	60	77	66,9	4,7
Body mass (Kg) - Pre	48	95	64,1	10,4
Height (m)	1,4	1,66	1,53	0,06

The elderly women were divided into two groups, control and experimental. The experimental group (n=19) received a 8 week water resistance training. Each session had a duration of 40min (initial 5min, meddle 30min and final 5min), three days per week, in total of 254 sessions. Each session consisted in four phases: 1 – warm up; 2 – aerobics exercises; 3 – strength exercises; 4 – cool down, and it´s intensity was measured by an adapted Borg scale (BORG, 1982).

The sessions followed a progressive intensity, beginning in the first week with 95% of aerobic resistance, increasing in 5% until the tenth week that the intensity of the session should be only of 50% of aerobic resistance.

To the control group (n=4) two session were scheduled, pre and post tests, together with the experimental group.

Both groups did the same tests, to avoid problems in the results and measures; they happened in the same time, same conditions e in the same order.

All the research was held in the Federal University of Minas Gerais (UFMG), in Physical education school, physiotherapy and occupational therapy (EEFFTO), because this institution had all structure necessary to do the tests and the analysis of the dates.

The TUG, by Perracini et al., 2008, was used to measure the agility of the women. The test initiates with the elderly woman sat in a chair, in the signal of the evaluator, she should get up, walk 3m, make a turn in the cone, get back and sit again, as fast as she can.

STATISTICAL ANALYSIS

The values found during the tests were presented in mean and standard deviation. The ANOVA was used to test differences inter and intra groups, and ANOVA factor 1 was used to compare pre and post test values between the groups and t-test was used to compare differences between the two groups´ test.

RESULTS

The results found were given as descriptive data, pre and post tests (table 2).

Table 2: Descriptive analysis

Testes	N	Mean	Standard deviation	Minimum	Maximum
TUG – pre	18	9,6606	1,96205	7,13	13,87
TUG – post	19	7,7900	1,20258	5,44	10,84

Kolmogorov – Smirnov test was used to verify homogeneous distribution of the sample (table 3).

Table 3 – Normal distribution by Kolmogorov-Smirnov test.

	TUG	
	pré	pós
Mena	9,6606	7,7900
Standard deviation	1,96205	1,20258
Kolmogorov-Smirnov Z	0,746	1,1

After the determination of the mean and SD values, t – student test for paired datas was used to analyze the differences between pre and post test in the training group (Table 4). The SPSS 13.0 program was used. The statistical significance level was set at $p < 0.05$.

Table 4 – results pré and pós test, statistical significance $p \leq 0,05$.

	TUG
	pré-pós
Mean	1,87667
SD	1,19214
Sig. (2-tailed)	0,000*

*- significant changes

A significant improves after an 9 week water resistance training was found.

DISCUSSION

After the statistical analysis, a significant improve (p=,000) in the agility of all elderly women in the training group was found.

The TUG test was used do analyze the mobility, speed and dynamic balance of the participants. According to Bohannon (2006) this test is used to value the residential dependence levels, fall risks and mortality in elderly women.

The improve in this capacity can be explained by gains in the strength in the women since Nelson et al (1994, in NASCIMENTO) said that the strength training can improve the balance, the physical activities levels and body mass, producing an improve at the agility. Santos et al. (2002) say that the increase in the strength levels reduces the fall risks that can be related to facility of walking and changes of direction important to daily activities.

A training to improve the agility should reproduce exercises with maximum speed, direction changes and changes in the gravity center (TRANCONSO & VIRTUOSO JR, 2005), what can be placed in a water resistance training.

Etchepare et al. (2003) say that the agility depends of the strength, speed, balance and coordination levels of the people, and after 20 sessions of training there were no significant improve in the agility levels, being against this study that after 24 sessions a significant improve was found.

The times of the tests can be references to the fall risks and what should be done about this capacity. In the age variation of the women in this study (60 – 77 years) a time over 9s (60-69 years) and 10,2s (70-79 years) shows that these women need an improvement in strength, balance and mobility. This improves can happen after a physical activities training, and the results of this study show that after a water resistance training there were a significant improve in the results of the tests. Guimarães et al. (2004) establish values for their study <10s: low fall risks, 10 to 20s: medium fall risks e > 20s: high fall risks.

Before the training, 52,63% of the elderly women did the test below 10s, 42,10% did the test between 10-20s and 5,26% did not do the test. These results indicate that they suffer low and medium fall risks, respectively. After the 24 sessions of training there was an improve in the times in the elderly women tests, 89,47% did the test below 10s and 10,52% did the test between 10-20s, what shows a raise in the elderly women with low fall risks. But is important to say that, even with the reduction of the fall risks, some of the women can still have this risk, and would be advised that they continue to practice so physical activity to this risk reduce over and over.

The exercise is an important factor to reduce the fall risks (PROVINCE et al., 1995; LIO AMBROSEL, 2003 apud KURA et al., 2005). Taking back that regular exercises reduce the fall risks and injuries related with falls (NELSON et al., 2007). This information is related with the improvement in the test of the elderly women and the decrease in the tests time that shows a decrease in the fall risks.

CONCLUSION

After the statistical analysis, and a discussion with presented studies, is possible to conclude that after an 9 week water resistance training there were a significant improve in the agility of elderly women.

Besides this improvement of the agility, some women presented medium fall risks. In this way, is possible to conclude that a regular training or regular physical activities should be kept to the reduction of this fall risks. And the water resistance training showed an efficient to improve agility, as all elderly women improved their performance in the test.

Due to the improvement found in this study, is clear that a physical activities program to elderly women is essential to the development and even maintenance of the agility.

Due to the lack of volunteers of the control group, a comparison between the groups could not be done. Comparative studies should be done to make clearer the improvement of the training group, and also the aging process in the agility.

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EFFECTS OF WATER RESISTANCE TRAINING IN 9 - WEEKS IN THE AGILITY OF SEDENTARY ELDERY WOMEN

INTRODUCTION -

With the aging process a reduction in some physical capacities in the elderly people can be seen, one of them and very important is the agility. This reduction can mean an increase the fall risks, difficulty in do fast movements with direction and way changes. The increase of these risks the dependence of the elderly to other people can also increase. OBJECTIVE - the objective of this study was to verify the effects of an 9 week water resistance training in sedentary elderly women. METODOLOGY - 23 elderly women were randomly selected to participate of the study. They were divided into two groups: experimental (GE; n=19) and control (GC; n=4). Both groups did the timed up and go test (TUG). The test was get up in a signal, walk 3 meters make a turn, get back and sit down again, as fast as they could. The experimental group did 9 week water resistance training. After this 9 week training, both groups did the TUG again. Variance analysis (ANOVA) was used to test the differences inter and intra groups and paired -t test was used to compare differences between intra group pre and post tests, the statistical significance level was set at $p < 0.05$.. RESULTS - the data analysis was done in a descriptive way, pre (9,66±1,96) and post (7,79±1,20). The value of p=0,000 shows a significant difference between the values. Due to the death of the experimental group, a comparison between the groups was not possible. CONCLUSION - the results of the study (p=,000) shows that an 9 week water resistance training was efficient to improve the agility levels in the sedentary elderly women, in this way reducing some risks related with the aging process.

KEY WORDS – agility timed up and go test, elderly women

EFFET DE l'entraînement EN 9 VITESSES HIDROGINASTICA SEMAINES CHEZ LES PERSONNES ÂGÉES SÉDENTAIRES

Avec le processus de vieillissement est une réduction de certaines capacités physiques des personnes âgées, l'un d'eux est agilité. Cette baisse peut signifier un risque accru de chutes, de la difficulté de faire des mouvements rapides avec un changement de direction et de sens. OBJECTIF: L'objectif de cette étude était d'évaluer l'effet d'un à huit formations semaine en gymnastique vitesse chez les personnes âgées sédentaires. 23 participants ont été sélectionnés pour participer à l'étude, répartis en deux groupes: expérimental et le groupe témoin et à des essais chronométrés et prenez la route. Le groupe expérimental était soumis à un 9 de l'entraînement semaine en gymnastique. Après ces semaines de formation, les deux groupes ont passé le test à nouveau. L'analyse de variance (ANOVA) a été utilisé pour tester l'intérieur et entre les groupes et les t - test a été utilisé pour comparer intra-différences groupe pré et post tests, avec l'importance des valeurs p <0,05. L'analyse des

données a été fait de façon descriptive, pré (9,66 ± 1,96) et après (7,79 ± 1,20). La valeur de p = 0,000 montre une différence significative entre le pré et post. Par suite du décès de l'analyse expérimentale du groupe témoin entre les groupes n'était pas possible. Les résultats de l'étude (p = 0,000) montrent que les 9 semaines de l'entraînement en gymnastique a été efficace pour une amélioration significative du niveau de l'agilité chez les sédentaires, réduisant ainsi certains risques associés au vieillissement.

MOTS CLÉS: Agilite, TUG, personnes âgées

EFECTO DE ENTRENAMIENTO EN 9 SEMANAS HIDROGINASTICA LA AGILIDAD EN PERSONAS MAYORES

INTRODUCCIÓN:

Con el proceso de envejecimiento es la reducción de algunas capacidades físicas de las personas mayores, una de ellas es la agilidad. Esta disminución puede significar un mayor riesgo de caídas, dificultad de hacer movimientos rápidos con el cambio de dirección y sentido. OBJETIVO: El objetivo de este estudio fue evaluar el efecto de 9 semanas de entrenamiento en la gimnasia en el agua en los ancianos sedentarios. metodoloia: 23 participantes fueron seleccionados para participar en el estudio, divididos en dos grupos: grupo experimental y de control y realiza las pruebas de cronometrado y marcharse. El grupo experimental fue sometido a un 9 de semanas entrenamiento en gimnasia. Después de estas semanas de entrenamiento, los grupos tomaron la prueba de nuevo. El análisis de varianza (ANOVA) para poner a prueba dentro de y entre los grupos y la T - se utilizó la prueba para comparar dentro de las diferencias del grupo de pre y post tests, con valores de significación p <0,05. RESULTADOS: El análisis de los datos se realizó de manera descriptiva, antes (9,66 ± 1,96) y después (7,79 ± 1,20). El valor de p = 0,000 muestra una diferencia significativa entre el pre y post. Debido a la muerte de un análisis experimental del grupo de control entre los grupos no fue posible. CONCLUSIÓN: Los resultados del estudio (p = 0,000) muestran que ocho semanas de entrenamiento en la gimnasia fue eficaz para lograr una mejora significativa en los niveles de agilidad de los sedentarios, lo que reduce algunos riesgos asociados con el envejecimiento.

PALABRAS CLAVE: agilidad, teste timed up and go, personas mayores

EFEITO DO TREINAMENTO DE 9 SEMANAS EM HIDROGINÁSTICA NA AGILIDADE DE IDOSAS SEDENTÁRIAS

INTRODUÇÃO:

Com o processo do envelhecimento ocorre uma redução em algumas capacidades físicas dos idosos, uma delas é a agilidade. Essa redução pode significar aumento nos riscos de quedas, dificuldade de realizar movimentos rápidos com mudança de direção e sentido. OBJETIVO: O objetivo do estudo foi verificar o efeito de um treinamento de oito semanas em hidroginástica na agilidade de idosas sedentárias. METODOLOIA: 23 idosas foram selecionadas para participar do estudo, divididas em dois grupos: experimental e controle, e os grupos realizaram o teste timed up and go. O grupo experimental foi submetido a um treinamento de oito semanas em hidroginástica. Após essas semanas de treinamento, os dois grupos realizaram novamente o teste. A análise de variância (ANOVA) foi usada para testar intra e inter grupos e o teste t – pareado foi usado para comparar as diferenças intra grupos pré e pos testes, com os valores de significância para p <0.05. RESULTADOS: a análise dos dados foi feita de forma descritiva, pré (9,66±1,96) e pós (7,79±1,20). O valor de p=0,000 mostra uma diferença significativa entre os valores pré e pós. Devido a morte experimental do grupo controle a análise inter grupos não foi possível. CONCLUSÃO: Os resultados do estudo (p=0,000) mostram que o treinamento de oito semanas em hidroginástica foi eficiente para uma melhora significativa nos níveis de agilidade de idosas sedentárias, reduzindo assim alguns riscos relacionados ao envelhecimento.

PALAVRAS CHAVE – agilidade, timed up and go teste, idosas sedentárias.

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