108 - EFFECTS FROM RESISTENCE TRAINING ON THE POSTURE OF SEDENTARY ELDERLY: REVIEW STUDY

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INTRODUCTION

The idea of the new century is "to live more and better" (FILHO, 2006, p.73), adopting healthy habits, among them the practice of physical activities, which, according to Filho (2006), Baltes and Baltes (1991) apud Teixeira (2005), Balsamo and Simões (2005), and Macaedle et al. (2008), are responsible to promote functional and physiological befits in whole life stages of any person. The functional benefits are associated to improvement of the main physical qualities, these capacities correspond to flexibility, strength, aerobic and anaerobic resistance, localized resistance muscle, velocity, coordination, balance, rhythm, agility, and muscle relaxation. The morphological aspects are associated with increased muscle mass, reduction of adipose tissue, improvement and maintenance of bone mineral density.

Among the several functional complications, the bad posture has been pointed as the one of the major consequences of the quality life regression of elderly, once the physical capacity as lift, walk, and standing, depends of the multi skeletal system fortified and healthy to support the tired body affected by the time. This revolution of age group doesn´t need come with of functional dependence that insists to accompany the ageing, because it influences negatively in three sectors that are directly linked to the elderly, in other words, the household, the society, and the elderly person (BALSAMO E SIMÕES, 2005, P. 152). The human body is or not in movement, keeps its posture to the dynamic action of applied strength on the muscles, where the ideal posture is the one which these strengths supports and leads the body without overload, with maxima efficiency and minimum physical and psychic efforts. To maintain the ideal posture, the continuous muscle actions make the compress work of effect from the gravity with the unbalanced external strength, contributing to maintenance of our temper-space conscience (PEREIRA, 2009, p. 17-59).

On the elderly people, the normal postural alignment is modified through morphstructures changes of the responsible elements by the maintenance posture, among which, the muscle and bone mass that suffer considerable decreases in the process of aging, it increases the dorsal kyphosis, according to Regolin and Carvalho (2010), "It is considered an important intrinsic risk factor of falls in elderly people for promote the displacement of gravity center (GC) near the stability limit". The advent of the falls in weakened elderly on the musculoskeletal function affects the fitness and consequently the quality life of this people, becoming a dependent, depressed, timid person, and then they isolated themselves from the sociability, which is so important in this and other phase of life (PAULA, 2010).

The resistance training (RT) has been used in combating and preventing of vertebral column problems, because it provides the increase of the strength and resistance muscles which are so important to maintenance of a healthy posture. Thus the personality physical exercise, as resistance training (RT), it is an alternative of chosen with the aim to try of decelerated the process of loss of functional capacities affected by sedentary and poor posture acquired for several forms, or lack of physical exercises neither natural aging process.

Therefore, what are the effects that strength training can cause on the posture of sedentary elderly and then to contribute on the quality life, healthy and functional independence so essential to healthy aging, leaving the sedentary stage that the modern world keeps us stay in?

So, through a literature review, this research had the aim to explore the resistance training effects about the elderly posture, which, the aging process and sedentary habits cause functional dependence and reduction in physical capacity (strength, flexibility, and cardiovascular endurance) due to weakening of skeletal muscles conducing to increase of dorsal kyphosis, modifying the life quality of this people, based on the follows studied problems: How do functional and morphstructures changes influence on your quality life? Which are the consequences of poor posture in elderly? And, what is the action of strength training on the sedentary elderly posture?

This is a literature review studied, which obtained scientific data through search in electronic data base and books that approaches about this subject specify by renowned authors in this area, to 2001 from 2013 years, from data base: Medline SciELO, Brazilian Magazine of Science and Sport (RBCE), PUBMED, Lilacs and Academic Google. However, in function of a small number of studies found relative to this subject, the research was made in traditional and electronic journals: Brazilian Magazine of Prescription and Phisiology of Exercises (RBPFEX) and Fitness & Performance Journals. Studies was selected that processed process of intervention through Resistance Training and answers was verified on posture, balance, and falls. The key words used on Portuguese language were: elderly, sedentary, quality life and posture. The same terms were translated to English language.

DISCUSSION AND ANALYSES

Pedrinelli et al (2009) researches, thought a review, the effects of physical activities on elderly posture stability, besides specifies which the best prescription form to this age group. The author has come to the conclusion that exercises programs must be individualized as specify necessities of the elderly, in the other words, to function the posture stability in elderly, exercises must be applied with factors that are involved on the composition of postural stability (REGOLIN E CARVALHO, 2010), which is, a progressive muscle strengthening and in long term is done besides a program divided in three stages: warm up, training period, and stretching. RT is responsible to improve several components of physical fitness, as the flexibility, once it is denominated as the maxima physiology passive amplitude in a specify articular movement, RT functions the quality of this movements, it can be performed in great amplitudes, reducing the muscular and articular risks injuries and increasing the improving coordination and the efficacy, brings functional benefices to the posture.

Câmara, Bastos and Volpe (20012) conducted a literature research checking the resistance exercises effects (RE) on physiopathology of fragility syndrome. The aspects of fragility including: mobility reduction, march abnormal, muscle weakness, reduce exercise tolerance, unstable equilibrium, poor nutrition, and sarcopenia3. From the effects that RE can cause on this elderly population, the authors mentioned the increase of myophibrillars protein syntheses, increase of muscular quality

(strength, resistance, and flexibility), besides increase on cross sectional area (muscle volume), contributing to reverse or minimize the sarcopenia process, which is directly connected to acquiring of a bad posture by elderly, to be responsible by falls and influencing negativity on their QV.

The learning coordination of human is performed by work proprioception4, that through motor training (RE, for example) causes changes on internal state in level of Central Nervous System (CNS) faced the synaptogenesis process, in the other words, the increase of the synapses numbers among encephalic neurons that always happens when lived and learned something new in interaction with world, including coordination abilities, even in advanced ages, as in the old age, synaptic connections can be acquired by new and efficient stimulus. (PEREIRA, 2009).

Dias, Gurjão, and Murucci (2006), in a literature review, search to elucidate the benefits of weight training (WT) about 4 components of fundamental physical fitness to quality life (QL) of elderly: strength, balance, and aerobic endurance. Dias et al (2006), says that the balance is associated to high rate of falls of elderly people, and the imbalance is characterized by degradation of the neural, sensory and muscleskeletal system. In this study are noticed changes on strength muscle after few weeks of WT. This improvement can support as only on elderly dependence as the decrease of falls. The WT promotes on the improvement of flexibility and aerobic endurance too.

Although improvement described by researchers of Dias et al (2006), others scholars cited for them, though presented weight training, which method of conducting occurred on sitting and/or with backboard, didn´t present signify alterations on the balance after the WT program, and advised exercises that involve the active maintenance of postural stability, which the results more efficient would be seen in WT associated to specify training of balance. Gonçalves (2003) cites that the specify type of exercises is what will determinate the specify adaptations of the physiological mechanism of the individuals, due to propitious adaptations on own muscle and in its neural organization, thus the exercises with free weights will request more neural coordination than the exercises on fitness equipment, because the free weights request more balance and attention on posture to be done correctly. Ultimately, the experimental study was interested to notice the displacement amplitude of the pressure center toward lateral middle and reward direction will be decreased proportionality to increase of physical activities levels in sedentary and practitioners of regular physical exercises, reaching the lowest values in athletes. The research performed by Almeida (2007), selected 18 elderly male with age than sixty years old, besides an interview, the elderlies were divided in three groups: sedentary (only diary activities); trainees of regular physical exercise (linked in a gym or regular physical activity program); and athletes (people besides to regular physical exercises with localized muscle resistance activities, physical resistance in general, strength exercises, stretching, and participate of sport competitions.).

The study was performed based on force platform in which participant must be stay in three different postures: feet together, feet apart at the hip, and support unipodal, that each posture should be remained around 37 seconds, with a stare to a point near 1,5 meter of distance. The study analysis noticed that don´t have signify statistical differences among the three groups on the three different positions, however the quantity analysis indicate that sedentary group has a tendency to have less stability on feet together position and the unipodal support; on the other hand the athletes group presents greater tendency in the same positions of sedentary.

Therefore, as a conclusion, the study of Almeida (2007) says that through quantify analysis, the physical activities can influence on postural stability, due to a tendency on amplitude decrease of displacement of the pressure center in athletes group, even on the statistically test haven't had this confirmation.

CONCLUSIONS

In view of not only the increase of the elderly numbers, but also the quality growth of this people, it is necessary to present studies that bring the benefit of changes on sedentary life style to improve the morphological and functional conditions of these individuals, and consequently on the quality life improvement.

We didn´t find studies that related specifying the influences of RT on sedentary elderly posture, but all of studies here discussed presented positive answers about influence components directly linked to life quality of aging people, in the other word, strength, flexibility, and balance, which are qualities directly linked to improvement of posture.

Considering that the falls occurred are related to decrease of strength, muscle potency, and balance, the maintenance of these physical qualities have a direct relationship with decrease of falls, because the muscle mass will maintain the strength of responsible muscles by sustenance of healthy body posture, once that the aging process promotes the displacement of gravity center, that consequently increase the falls risks, because the elderly are in imbalance due the dorsal kyphosis increase.

We suggest to perform experimental researches about this team specify, due to didn´t find researches of this type on base data used.

REFERENCES

AIKAWA, A. C. BRACCIALLI, L. M. P. PADULA, R. S. Efeitos das alterações posturais e de equilíbrio estático nas quedas de idosos institucionalizados. Revista de Ciências Médicas, Campinas, v. 15, n. 3, p. 189-196, may/june. 2006.

DE ALMEIDA, S.T. Análise da estabilidade postural de idosos sedentários, praticantes de exercício físico regular e atletas. Revista Brasileira de Ciências do Envelhecimento Humano, Passo Fundo, v. 4, n. 1, p. 39-47, jan/june. 2007. Available at: <https://www.google.com.br/search?q=analise+da+estabilidade+postural+de+idosos+sedentarios%2C+praticantes+de+exercicios+fisicos+regular+e+atletas&oq=analise+da+estabilidade+postural+de+idosos+sedentarios%2C+praticantes+de+exercicios+fisicos+regular+e+atletas&aqs=chrome..69i57.36827j0j8&sourceid=chrome&espv=210&es_sm=93&ie=UTF-8>. Accessed in: 12 feb. 2013.

BALSAMO, S. SIMÕES, R. Treinamento de força para osteoporose, fibromialgia, diabetes tipo 2, artrite reumatoide e envelhecimento. 2ª edition. São Paulo: Phorte Editor, 2007.

CÂMARA, L. C. BASTOS, C. C. VOLPE, E. F. T. Exercício resistido em idosos frágeis: uma revisão de literatura, Fisioterapia em Movimento, Curitiba, v. 25, n. 2, p. 435-443, apr/june. 2012. Available at: <http://www.scielo.br/pdf/fm/v25n2/v25n2a21.pdf>. Accessed in Feb 12, 2013.

CAMPOS, M. O. NETO, J. F. R. Qualidade de vida: um instrumento para a promoção de saúde. Revista Baiana de Saúde Pública, Baia, v. 32, n. 2, p. 232-240, maio/ago 2008. Disponível em: <http://stoa.usp.br/lislaineaf/files/-1/19150/qualidade-vida-instrumento-promocao-saude.pdf>. Accessed in: feb. 13, 2013.

DIAS, R. M. R. GURJÃO, A. L. D. MARUCCI, M. F. N. Benefícios do treinamento com pesos na aptidão física de idosos. Revista ACTA Fisiátrica, São Paulo, v. 13, n. 2, p. 90-95, 2006. Available at: <http://www.luzimarteixeira.com.br/wp-content/uploads/2011/04/sarcopenia-e-treinamento-com-pesos-2.pdf>. Accessed in: feb 12, 2013.

FILHO, W. J. Atividade física e envelhecimento saudável. Revista Brasileira de Educação Física Especial, São Paulo,

v. 20, n. 5, p. 73-77, set. 2006. Available at: <http://www.danielsimonn.com.br/recomendados/terceira-idade/artigo3.pdf>. Accessed in: feb 11 2013.

IBGE. Indicadores Sociodemograficos e da Saúde no Brasil. 2009.

JUNIOR, E. de D. A. Envelhecimento e Vida Saudável. Rio de Janeiro: Apiairi, chapters. 10, 11 e 12, 2009.

LUZIMAR, T. Atividade Física Adaptada e Saúde: Da teoria à Prática. São Paulo, Ed. Thorte, chapter 13, 2008.

MAIOR, A. S. Fisiologia dos exercícios resistidos. 1st edition. São Paulo: Phorte Editora, 2008.

MATSUDO, S. M., MATSUDO, V. K. R., BARROS NETO, T.L. Atividade Física e Envelhecimento: aspectos epidemiológicos. Ver. Bras. De Medicina do Esporte, v. 7, n.1, jan/feb. 2001.

MAGEE, D. J. Avaliação Postural. In: Magee DJ. Disfunção Musculoesquelética. 3rd edition, São Paulo: Manole, p.105-157, 2002.

MCARDLE, W. D., KATCH, V.L., KATCH, F.I. Fisiologia do Exercício: energia, nutrição e desempenho humano. Translated by Giuseppe Taranto. Rio de Janeiro: Guanabara Koogan, 2008.

MERQUIADES, J. H. AGRA, J. H. M. ALBUQUERQUE, K. M. D. COSTA, R. C. NAVARRO, A. C. A importância do exercícios físico para à qualidade de vida dos idosos. Revista Brasileira de Prescrição e Fisiologia do Exercício, São Paulo, v. 3, n. 18, p. 597-614, nov/dec. 2009. Available in: <http://www.cdof.com.br/Atividade%20f%EDsica,%20qualidade%20de%20vida%20e%20idosos.pdf>. Accessed in: feb. 13, 2013.

MINAYO, M. C. S.; HARTZ, Z. M. A.; BUSS, P. M. Qualidade de vida e saúde: um debate necessário. Ciência & Saúde Coletiva, Rio de Janeiro, v.5 n.1, 2000. Avaliable at: <http://adm.online.unip.br/img_ead_dp/35428.PDF>. Accessed in: feb. 13, 2013.

MONTENEGRO, L. P. A importância da prática do treinamento de força pelos indivíduos idosos. Revista Brasileira de Prescrição e Fisiologia do Exercício, São Paulo, v. 5, n. 29, p. 423-426, set/out. 2011. Available at: <http://www.leodepaiva.com/DownloadableContentHandler.ashx?mediaId=c3d0d8fd-fc63-4b0d-9779-281f8b2fb38e>. Accessed in: feb.13, 2013.

MONTOVANI, E. P. Atividade física, saúde e envelhecimento. In: VILARTA, R. SONATI, J. G. (Orgs.). Diagnóstico da alimentação saudável e atividade física na FUNCAMP. Campinas: Ipes Editorial, 2007. Chapter 9, p. 65-72. Available at: <http://www.fef.unicamp.br/fef/qvaf/livros/alimen_saudavel_ql_af/diagnostico_funcamp/funcamp_cap9.pdf>. Acessed in: feb.11, 2013.

PACCINI, M. K. CYRINO, E. S. GLANER, M. F. Efeito de exercícios contra-resistencia na postura de mulheres. Revista da Educação Física/ UEM, Maringá, v.18, n. 2, p. 169-175, 2nd in 2007. Available at: <http://eduem.uem.br/ojs/index.php/RevEducFis/article/view/3273>. Accessed in: feb. 13, 2013.

PAULA, F. L. Envelhecimento e Quedas de Idosos. Rio de Janeiro: Apicuri, caps. 2 e 3, 2010.

PEDRINELLI, A. GARCEZ-LEME, L. E. NOBRE, R. S. A. Efeito da atividade física no aparelho locomotor do idoso. Revista Brasileira de Ortopedia, São Paulo, v. 44, n. 2, p. 96-101, 2009. Avaliable at: <http://www.scielo.br/pdf/rbort/v44n2/a02v44n2.pdf>. Accessed in: feb. 12, 2013.

PEREIRA, C. A. Treinamento de força funcional: desafiando o controle postural. 1st edition. Jundiaí-SP: Fontoura, 2009.

PITANGA, F. J. G. Epidemiologia, atividade física e saúde. Revista Brasileira de Ciência e Movimento, Brasília, v.10, n.3, p. 49-54, july 2002. Available at: <http://www2.fct.unesp.br/docentes/edfis/ismael/ativ.fis%20e%20saude/Epidemiologia%20da%20atividade%20f%EDsica.pdf>. Accessed at: feb.13, 2013.

REGOLIN, F. CARVALHO, G. A. Relação entre cifose dorsal, densidade mineral óssea e controle postural em idosos. Revista Brasileira de Fisioterapia, São Carlos, v. 14, n. 6, p. 464-469, nov./dec. 2010. Available at: <http://www.scielo.br/pdf/rbfis/v14n6/a03v14n6.pdf>. Accessed in: feb 11, 2013.

RIBEIRO, A. P. DE SOUZA, E. R. ATEI, S. DE SOUSA, A. C. SCHILITHZ, A. O. A influência de quedas na qualidade de vida de idosos. Ciência & Saúde Coletiva, Rio de Janeiro, v. 13, n. 4, p. 1265-1273, 2008. Accessed at: <http://www.scielo.br/scielo.php?pid=S1413-12320080004000023&script=sci_arttext>. Accessed in: feb. 11, 2013.

SOUSA, E. C. Pesquisa em Treinamento Resistido e Saúde. Coleção Pós-graduação, v. 11, chaptrs. 2, 3, 4, 9 e 13, Belém-PA, 2012.

WOLFF, S. H. Vivendo o envelhecimento: Recortes de práticas sociais nos núcleos de vida saudável. Universidade do Vale do Rio dos Sinos. Ed. Unisinos, 2009.

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EFFECTS FROM RESISTENCE TRAINING ON THE POSTURE OF SEDENTARY ELDERLY: REVIEW STUDY

ABSTRACT

The functional dependence so noticed on elderly stage is physiologically associated mainly to the physical qualities, such as strength, flexibility, aerobic and anaerobic resistance, localized resistance muscle, velocity, coordination, balance, rhythm, agility, and muscle relaxation (SOUSAet al, 2012). On the other hand, the morphological aspects are associated with increased muscle mass, reduction of adipose tissue, improvement and maintenance of bone mineral density, important to support of body posture. According to Filho (2006), Teixeira (2005), Balsamo and Simões (2005), and Mcadleet al. (2008), the regular physical activity has a goal of maintenance or revere the loss of these capacities so important in the life of any person. The aim of this review study is research the influences of the resistance training (RT)in the posture problems which contributes to the loss in a quality life of elderly people. The conclusion is that the regular systematic physical activity, as RT, prevents a severe loss and regains the morphological and physiological functional capacities caused by advanced age and sedentary, besides contribution to maintenance of balance and body posture which are so important to the reduction falls and a healthy aging.

KEYWORDS: Elderly; Resistance Training; falls.

EFFETS DE LA FORMATION DE LA RÉSISTANCE DES PERSONNES ÂGÉES EN ATTITUDE SÉDENTAIRE: ÉTUDE SUR L'EXAMEN

RÉSUMÉ

La dépendancefonctionnelleobservée au cours du vieillissementphysiologiqueestassocié avec les principauxqualités physiques tellesque la force, la souplesse, l'enduranceaérobie, anaérobie et musculairelocalisée, la vitesse, la coordination, l'équilibre, le rythme, l'agilité et la détente (SOUSAet al, 2012). En ce qui concerne les caractéristiquesmorphologiquessontassociés à une augmentation de la masse musculaire, de réduire le tissuadipeux, et

améliore le maintien de la densitéminéraleosseuse, important pour le maintien de la posture du corps. Selonle Filho(2006), Texeira (2005), Balsamo et Simões (2005) et McArdle et al. (2008), l'activitéphysiquerégulière a pourbut de maintenir ou de renverserlaperte de cescompétences si importantsdanslavie de tout êtrehumain. L'objectif de cetteétude est d'étudierl'influence de laformation de résistance (FR) danslesproblèmes de posture que lesdeuxcontribuent à laperte de laqualité de vie de lapopulationâgée. Nousconcluons que la pratique d'une activitéphysiquerégulièresystématiquement, comme FR, évitelapertesévère et récupèrelescapacitésfonctionnellesphysiologiques et morphologiquescausés par lavieillesse et lainactivité, cequicontribueenoutreaumaintien de l'équilibre et de laposture si importantpourréduireles chutes et par conséquent à unvieillissementenbonnesanté.

MOTS-CLÉS: sédentairepersonnesâgées, laformation de résistance; posture.

EFECTOS DEL ENTRENAMIENTO DE RESISTENCIA EM LA POSTURA SEDENTARIA MAYORES: ESTUDIO DE OPINIÓN

RESUMEN

La dependencia funcional tanpercibidaenla fase de loanciano está fisiologicamente asociado con las principales cualidades físicas, así como fuerza, flexibilidad, resistenciagminasia, resistencia de locuerpoenciertas partes, velocidad, coordinación, equilibrio, ritmo, agilidade, relajación (SOUSA et al, 2012). Cuanto a los aspectos morfologicos estanasociadosconel aumento de lamasa muscular, reducióndeltejido obeso, mejoralamanutención de ladensidad mineral de loshuesos, importante para lamanutención de como quedaseelcuerpo. Como hedicho Filho (2006), Teixeira (2005), Balsámo y Simões (2005) y Mecardleet al (2008), laactividadfisica regular tienelafinalidad de mantener o reverter lapierda de esas capacidades tan importantes enla vida de cualquier persona. El objeto de esarevisiónes investigar las influenciasdelentrenamiento resistido (ER) enlos problemas del postura que contribuen demasiado para lapierda de lacualidad de la vida de losancianos. Para tanto, lapráctica de las atividades fisicas, regular y sistemática, como ER, evita lagranpierda y recupera las capacidades funcionales fisiológicas y morfológicas causadas por laedadavanzada y por no ser activo, además contribui para lamanuntenciónde lequilibrio y de la postura delcuerpo que sontanfundamentales para laredución de las caídas y por consecuencia, para elenvejecimientosaludable.

PALABRAS LLAVE: anciano, entrenamiento resistido, caída.

EFEITOS DO TREINAMENTO RESISTIDO NA POSTURA DE IDOSOS SEDENTÁRIOS: ESTUDO DE REVISÃO

RESUMO

A dependência funcional tão observada na fase idosa está fisiologicamente associada às principais qualidades físicas, tais como força, flexibilidade, resistência aeróbica, anaeróbica e muscular localizada, velocidade, coordenação, equilíbrio, ritmo, agilidade e descontração (SOUSA et al, 2012). Já os aspectos morfológicos associam-se ao aumento da massa muscular, redução do tecido adiposo, melhora e manutenção da densidade mineral óssea, importantes para a manutenção da postura corporal. De acordo com Filho (2006), Texeira (2005), Balsamo e Simões (2005) e Mcardleet al. (2008), a atividade física regular tem o objetivo de manter ou reverter a perda dessas capacidades tão importantes na vida de qualquer ser humano. O objetivo desta revisão é investigar as influencias do treinamento resistido (TR) nos problemas de postura que tanto contribuem para a perda da qualidade de vida da população idosa. Conclui-se que a prática de atividade física regular sistemática, como o TR, evita a perda acentuada e recupera as capacidades funcionais fisiológicas e morfológicas causadas pela idade avançada e pelo sedentarismo, além de contribuir para a manutenção do equilíbrio e da postura corporal tão importantes para a redução das quedas e consequentemente, para o envelhecimento saudável.

PALAVRAS-CHAVE: idoso sedentário;treinamento resistido; postura.