1991 Board #4 June 1 2:00 PM - 3:30 PM

Effects Of Long-term Elastic Resistance Training On Oxidative Damage Of DNA In Older Adults

Phil Page, FACSM[1], Juan C. Colado[2], Guillermo Saez[2], Pedro Gargallo[2], Amaya Hernando[3], Nuria Estañ[3], Alvaro Juesas[2], Victor Muñoz[2], Victor Tella[2], Michael E. Rogers, FACSM[4]. *[1]Louisiana State University, Baton Rouge, LA. [2]University of Valencia, Valencia, Spain. [3]Universitary Hospital Dr. Peset, Valencia, Spain. [4]Wichita State University, Wichita, KS.*

(No relationships reported)

It is theorized that age-related physiological changes are a consequence of the accumulation of random oxidative damage to deoxyribonucleic acid (DNA), lipids, and proteins. The major by-product of oxidative DNA damage, 8-Oxo-7,8-dihydro-2'-deoxyguanosine (8-oxo-dG), is the most extensively analyzed oxidative stress marker. The concentration of this biomarker increases as age increases. A higher concentration of 8-oxo-dG is related to diseases such as Alzheimer's, osteoporosis and oncogenesis. Despite the multiple benefits of resistance training on the aging process, the effect upon mitochondrial function and oxidative stress in older adults is unknown.
PURPOSE: To determine the effects of a long-term, moderate-intensity elastic resistance training (ERT) program on oxidative damage of DNA in older adults.
METHODS: 46 sedentary older adults (69.1 ± 5.1 yr) were randomized into two groups: Control Group (CG) (n=15) and ERT group (ERTG) (n=31). A 32-wk ERT program was performed 2d/wk with 6 exercises (3 for upper and 3 for lower extremities) completed for 4 sets of 15 repetitions. Perceived effort was 6-7 on the OMNI-RES scale for elastic bands during the first 4 wks and at 8-9 for the final 28 wks. Urine 8-oxo-dG was analyzed using high-performance liquid chromatography at baseline, 16 and 32 wks. Urinary levels of 8-oxo-dG were calculated relative to creatinine levels. Trial (3) by group (2) repeated measures ANOVA was used to determine differences.
RESULTS: 8-oxo-dG was not different between groups at baseline (CG: 3.20 ± 2.51; ERTG: 3.72 ± 2.47 nmol/nmol creatinine). ERTG showed a significant ($p<0.05$) decrease in 8-oxo-dG for time and group of 26.07% at 16 wks and 49.43% at 32 wks.
CONCLUSION: It is possible to reduce oxidative damage of DNA in older adults through regular ERT performed at moderate intensity. A longer training duration provokes greater effects on oxidative stress metabolism. These results highlight the possibility of using a non-invasive and low cost diagnostic method in conjunction with a simple and inexpensive ERT to prevent oxidative stress in older adults.

1992 Board #5 June 1 2:00 PM - 3:30 PM

Dynamic Postural Control and Hip Abductor Muscle Performance Following a 12-week Introductory Golf Program

Andrea M. Du Bois, Nicole Marcione, George J. Salem, FACSM. *University of Southern California, Los Angeles, CA.*

Email: amdubois@usc.edu

(No relationships reported)

Aging is associated with physiological declines that impair the ability to perform activities of daily living and increase fall risk. Specifically, older adults demonstrate poorer mediolateral (ML) postural control and hip abductor muscle (ABD) performance as compared to young adults, and fallers demonstrate greater declines than non-fallers. Moreover, individuals with poorer ML postural control also have weaker hip abductors.
PURPOSE: The purpose of this study was to investigate the effects of an introductory golf training program on dynamic ML postural control and hip ABD performance in an older military veteran.
METHODS: One older military veteran (74 years old) completed 12 weeks of an introductory golf training program (2-90 minute sessions/week) that began with introductory swing training and progressed to regular golf play. Pre- and post-training, ML postural control was assessed via a choice reaction step task (10 trials). Weight-shift time, step time and movement time were calculated for 5 trials when stepping with the left limb. Peak hip ABD isometric torque and rate of torque development (RTD) was assessed utilizing a previously validated weight-bearing assessment (3 trials).
RESULTS: Weight-shift time, step time and movement time decreased by 8.1%, 19.15% and 19.26%, respectively. Peak hip ABD torque increased 16.1% (0.81 N/kg to 0.94 N/kg) and RTD increased in the first 200 ms of the isometric contraction 83.62% (1.19 N/kg·s to 2.19 N/kg·s).
CONCLUSION: Following the 12-week golf intervention, the participant was able to shift his weight and execute the step more rapidly, resulting in a shortened movement time and providing evidence of improved dynamic ML postural control. Additionally, the hip ABD performance improved as evidenced by increases in peak torque and RTD. The golf swing is initiated through near maximal activation of the gluteal musculature resulting in hip abductor torques on par with drop jump landings. Additionally, during a swing, the golfer rapidly shifts the center of pressure through a large range of the base of support. The demands of the golf swing likely served as a training stimulus to improve the ML postural control and hip ABD performance of our older military veteran, suggesting that golf is a viable physical activity intervention to attenuate declines associated with aging.

1993 Board #6 June 1 2:00 PM - 3:30 PM

Analysis of Aquatic Training Program In Water On Functional Parameters Of Elderly Women

JHON F. RAMIREZ[1], Laura Lorena Cadena-Duarte[2], Adriana Rocio Gutierrez-Galvis[3], José F. Zea[4], Rodrigo Esteban Argothy Bucheli[5]. *[1]University of Antioquia, Medellín, Colombia. [2]Santo Tomás University, Bogotá, Colombia. [3]Manuela Beltran Univerity, Bogotá, Colombia. [4]University of Santo Tomás, Bogotá, Colombia. [5]University of Antioquia, BOGOTA, Colombia.*

Email: jhonramirezvillada@gmail.com

(No relationships reported)

PURPOSE: To examine the effects of a training program based on impact and explosive movements performed in swimming pools on body composition (Total body weight, Body Mass Index-BMI, waist Hip Index-WHI, Fat Mass, lean mass), explosive strength (squat jump-SJ, counter movement jump-CMJ, counter movement jump arm swing-CMJas), and gait parameters (centre of pressure-COP, longitudinal displacement-LD) in women over 60 years
METHODS: seventy healthy and physically active old women (60 ± 4.19) was divided into a training group based on multi-jumps performed in a swimming pool ("n=35, GE") and a control group ("n=35, CG"). GE trained three times a week, an hour and a half per session and for a period of 32 weeks. Tests of body composition, explosive strength and gait parameters were applied before and after the training program
RESULTS: There were significant differences in body weight (GE=+2% vs CG= -1%; p=0, 013), BMI (GE=-1,6% vs. CG=-1%, p= 0,023) and WHI (GE=-1,6% vs CG= 1%; p=0, 042) between GE vs CG. Differences in SJ, CMJ, CMJas height (jump height), flight time and Take off velocity and gait parameters (Centre of pressure, p=0, 033) were found between GE vs CG (JG vs CG = (p≤0, 05 and 0,001), with positive changes for GE
CONCLUSIONS: The results suggest that 32 weeks of training with explosive and impact movements in swimming pools improve the strength expressions and induces significant adaptations in gait parameters, but not enough to alter body composition

Copyright © 2017 by the American College of Sports Medicine. Unauthorized reproduction of this article is prohibited.