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## E-27 Free Communication/Poster - Physical Activity and Mental Health

May 31, 2013, 7:30 AM - 12:30 PM  
Room: Hall C

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2026 Board #90 May 31, 9:30 AM - 11:00 AM

### Cardiac Autonomic Control in Depressed Women and Non-depressed Controls

Yuh-Jen Lin, *Kaohsiung Medical University, Kaohsiung, Taiwan.*  
(No relationships reported)

Research has indicated that depression may have adverse influences on cardiac autonomic control, which have been implicated as a potential mechanism that links depression and increased risk of coronary heart disease.

**PURPOSE:** This study aimed to compare the differences in heart rate variability (HRV) between depressed women and non-depressed controls.

**METHODS:** Women with a BDI-II score of  $\geq 14$  were recruited in the depressed group. An age matched group of non-depressed women were recruited in the control group. All participants filled out perceived stress scale (PSS) and then had their electrocardiogram (ECG) measured while lying in supine position for 15 minutes. The ECG of the last 5 minutes was analyzed for high frequency (HF), low frequency (LF), and low to high frequency ratio (LF/HF) HRV.

**RESULTS:** A total of 44 participants were recruited for this study (depressed group  $n=22$ , mean age= $32.1 \pm 9$  yr; control group  $n=22$ , mean age= $29.3 \pm 9$  yr). The results showed that the depressed group had significantly higher PSS scores than the control group ( $34.10 \pm 6.15$  vs.  $23.55 \pm 7.79$ ,  $p < .05$ ), LF ( $45.94 \pm 20.5$  vs.  $37.74 \pm 15.5$  n.u.,  $p > .05$ ), and LF/HF ( $1.504 \pm 1.65$  vs.  $0.812 \pm 0.52$   $p > .05$ ) HRV.

**CONCLUSIONS:** Depressed women perceived more stress as compared to non-depressed controls. Although depression may influence the cardiac autonomic nervous system, we did not find any differences in HRV between depressed women and non-depressed controls in this study.

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2027 Board #91 May 31, 9:30 AM - 11:00 AM

### The Effect of Aerobic and Resistance Training on the Body Image of Female College Students

Elizabeth Carpio-Rivera<sup>1</sup>, Gerardo Araya-Vargas<sup>1</sup>, José Moncada-Jiménez<sup>2</sup>, Walter Salazar-Rojas<sup>1</sup>. <sup>1</sup>University of Costa Rica, San José, Costa Rica. <sup>2</sup>Human Movement Sciences Laboratory (LACIMOV), San José, Costa Rica.  
(No relationships reported)

Body image concerns among females are currently under scrutiny. Aerobic and resistance training exercise programs are recommended to college students to positively increase their body image perception. However, exercise intensities that better change body image perceptions are lacking in the literature.

**PURPOSE:** The aim of the study was to determine the acute and chronic effect of an aerobic and resistance training program of different intensities on the body image of female college students.

**METHODS:** Volunteers were 62 women (Mean age =  $19.47 \pm 2.53$  yr.), randomly assigned to five experimental groups: a) 30-min aerobic exercise at 50% of their maximal heart rate (HRmax); b) 30 min-aerobic exercise at 80% HRmax; c) 30-min resistance training at 50% of 5RM; d) 30-min resistance training at 80% of 5RM; and e) 30-min no exercise (control group). Participants performed three exercise sessions in the respective experimental condition within 21 days and filled the Muscularity Rating Scale (MRS) before and after each exercise session.

**RESULTS:** Mixed factorial analysis of variance revealed an acute increase in the mean MRS scores in the resistance training exercise condition in the 50%-5RM (Pre =  $4.37 \pm 0.99$  vs. Post =  $5.13 \pm 1.14$ ; Effect size = 0.77;  $p < 0.05$ ) and the 80%-5RM intensities (Pre =  $4.02 \pm 0.90$  vs. Post =  $4.52 \pm 1.15$ ; Effect size = 0.56;  $p < 0.05$ ). A chronic increase in mean MRS scores was observed from session one to session three in the resistance training exercise condition in the 50%-5RM (Pre =  $4.50 \pm 0.97$  vs. Post =  $5.10 \pm 0.99$ ; Effect size = 0.62;  $p < 0.05$ ) and the 80%-5RM intensities (Pre =  $4.00 \pm 0.88$  vs. Post =  $4.86 \pm 1.29$ ; Effect size = 0.98;  $p < 0.05$ ). No significant interactions or main effects in MRS were observed in the aerobic and control groups.

**CONCLUSIONS:** College females performing resistance training exercises at moderate and high intensity increased their body image perceptions both, acute and chronically. Exercise intensity did not affect body image perception in the aerobic or resistance training exercise conditions.

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2028 Board #92 May 31, 9:30 AM - 11:00 AM

### Relationships Between Physical Activity, Depressive Symptoms, Self-rated Health And Self-rated Well-being Among Men Aged 40

Elina Engberg<sup>1</sup>, Svetlana From<sup>1</sup>, Helena Liira<sup>1</sup>, Katriina Kukkonen-Harjula<sup>2</sup>, Heikki Tikkanen<sup>1</sup>. <sup>1</sup>University of Helsinki, Helsinki, Finland. <sup>2</sup>UKK Institute for Health Promotion Research, Tampere, Finland.  
(No relationships reported)

Perceived health has proven to be a valid predictor of morbidity and mortality. Physical activity (PA) has been shown to decrease symptoms of depression, anxiety and possibly stress in a general population.

**PURPOSE:** To examine associations between PA, depressive symptoms, self-rated health and self-rated well-being among middle-aged men.

**METHODS:** A total of 629 men (age  $41 \pm 3$  yrs [mean  $\pm$  SD], BMI  $26.8 \pm 4.2$  kg/m<sup>2</sup>), of which many were at increased risk of cardiovascular diseases, completed a baseline questionnaire as part of a health check-up. PA was classified as weekly frequency of PA that lasted at least 30 minutes, induced sweat and got a person at least slightly out of breath. Depressive symptoms were assessed by The Patient Health Questionnaire-2 (PHQ-2). A PHQ-2 score ranges from 0-6; 6 indicating the highest level of symptoms. Participants were asked to rate their health and well-being using a scale from 0-100; 100 indicating the best state. Group comparisons were made using the Kruskal-Wallis test and the Mann-Whitney test.

**RESULTS:** The mean PHQ-2 scores for PA were  $1.54 \pm 1.29$  (group 1: PA  $\geq 3$  times/week,  $n = 177$ ),  $1.67 \pm 1.28$  (group 2: PA 1-2 times/week,  $n = 283$ ) and  $1.79 \pm 1.42$  (group 3: PA sometimes or never,  $n = 169$ ). Self-rated health was  $70.5 \pm 16.7$ ;  $63.0 \pm 16.7$  and  $56.2 \pm 19.0$  and self-rated well-being was  $68.8 \pm 16.8$ ;  $64.6 \pm 18.4$  and  $59.5 \pm 20.4$ . There were no significant differences in PHQ-2 scores between the PA groups. However, there were significant differences in self-rated health ( $p < 0.001$ ) and self-rated well-being ( $p < 0.001$ ) between the PA groups. Differences in self-rated health were significant ( $p < 0.001$ ) between the PA groups 1 and 2, 1 and 3, 2 and 3. Differences in self-rated well-being were significant between the PA groups 1 and 2 ( $p = 0.015$ ), 1 and 3 ( $p < 0.001$ ), 2 and 3 ( $p = 0.021$ ).

**CONCLUSION:** Self-reported PA was strongly associated with self-rated health and well-being among middle-aged men. Participants who were physically active more frequently perceived their health and well-being to be better than those who were active less frequently. Participants who were physically active more frequently had fewer depressive symptoms than those who were active less frequently but this association was not statistically significant. Supported by Tekes (40043/07) and Ministry of Education and Culture, Finland.

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2029 Board #93 May 31, 9:30 AM - 11:00 AM

### Perceptions of Body Image and Prevalence of Disordered Eating among U.S. Army Drill Sergeant Candidates

Toni M. Torres-McGehee<sup>1</sup>, Christine E. Blake<sup>1</sup>, Dawn M. Minton<sup>1</sup>, Edward A. Frongillo<sup>1</sup>, Michael P. Burke<sup>1</sup>, Allison Lenker<sup>1</sup>, Sonya Cable<sup>2</sup>, Jeremy R. Searson<sup>1</sup>, Sandra H. Glover<sup>1</sup>. <sup>1</sup>University of South Carolina, Columbia, SC. <sup>2</sup>Army Initial Military Training Center of Excellence, Fort Eustis, VA.  
Supported by T.M. Torres-McGehee: Contracted Research - Including Principle Investigator; Department of Defense Contract #22070-08-18881.

The Nutrition arm of the Soldier Health Promotion to Examine and Reduce Health Disparities Project examined nutrition, eating behaviors, and weight management in the U.S. Army. Limited research is available on eating attitudes and behaviors of Drill Sergeants Candidates (DSC). Discrepancy between perceived (PBI) and desired body image (DBI) has been associated with

maladaptive thoughts and behaviors. Little is known about perceptions of others (e.g., DSC's perception of what a Soldier should look like), which may in turn influence dietary behaviors through projected DBI of Soldiers in Basic Combat Training.

**PURPOSE:** Estimate prevalence of disordered eating (DE) risk and investigate body dissatisfaction and body image perceptions of Soldiers among DSC in the U.S. Army.

**METHODS:** Participants were 554 DSC (males = 438, females = 109). Data collected were: self-reported height, weight, desired weight, Eating Attitudes Test scores, and 6 silhouette questions assessed body image (PBI and DBI of DSC and DSC's perceptions of PBI and DBI of male and female Soldiers).

**RESULTS:** Estimated prevalence for DE risk for DSC was 45.5% (males 33.9%, females 10.5%). DSC self-reported binge eating (7.0%); vomiting to control weight (2.3%); use of laxatives, diet pills, and/or diuretics (30.7%); exercise to control weight (16.6%); and lost 20 pounds or more in the last 6 months (15.9%). A 2 (DSC gender) x 2 (perception of DSC: PBI vs. DBI) repeated measures ANOVA indicated a significant interaction on perceptions ( $P \leq 0.001$ ). Regardless of gender, DSC desired to be smaller than their PBI. A second 2 (DSC gender) x 2 (Soldier gender) x 2 (perception: PBI vs. DBI) repeated measures ANOVA indicated a significant main effect of DSC gender ( $P = 0.04$ ) with an interaction for perception and Soldier gender ( $P = 0.002$ ). DSC perceptions for female Soldiers were smaller than for male Soldiers.

**CONCLUSION:** DE risk prevalence among DSC is similar to elite athletes; males presented a higher risk than females. DSC desired to be smaller in size warranting further examination of the causes and consequences of these maladaptive thoughts and behaviors. Nutritional programming for DSC may decrease risk of unhealthy pathogenic behaviors and, in-turn, aid in safe weight-loss methods among DSCs.

Supported by Department of Defense Grant Contract #22070-08-18881

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2030 Board #94 May 31, 9:30 AM - 11:00 AM

### Learning Curve and Motor Retention of a Video Game in Adults

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(No relationships reported)

Video game use among children, adults and the elderly is increasing worldwide; however, there is a lack of information regarding the learning curve and motor retention of such games.

**PURPOSE:** The purpose of the study was to compare the learning curve and motor retention of the Dance Dance Revolution 2 Hottest Party (DDR) video game in adults.

**METHODS:** Volunteers were 20 young ( $M = 23.9 \pm 2.8$  yr.) and 18 older adults ( $M = 60.7 \pm 5.9$  yr.), randomly assigned to two experimental conditions consisting on performing the game DDR 7 (DDR7) and 14 (DDR14) trials. Participants were instructed to dance a song in the beginner mode for six sessions two times per week, followed by a detraining period of eight days. Then participants were instructed to dance again in order to study motor retention following detraining (session 7). Scores were recorded at the end of each performance.

**RESULTS:** A three-way ANOVA revealed a significant interaction between sessions, groups and trials ( $p = 0.017$ ), between sessions and groups ( $p = 0.001$ ), and simple effects for sessions ( $p = 0.001$ ) and groups ( $p = 0.001$ ). Follow-up analyses indicated significant mean score differences ( $p < 0.05$  for all) among the young and the old participants in both trial conditions. Older participants in DDR7 condition scored higher in session 6 ( $M = 229 \pm 26.5$ ) vs. 1 ( $M = 180.4 \pm 34.3$ ), 2 ( $M = 201.7 \pm 33.3$ ), and 3 ( $M = 206.8 \pm 39.7$ ); as well as in session 5 ( $M = 224.5 \pm 34.9$ ) vs. 1 and 2, and in 3, 4 ( $M = 223.2 \pm 28.8$ ) and 7 ( $M = 219.3 \pm 32$ ) vs. session 1. Older participants in DDR14 scored higher in session 4 ( $M = 253.4 \pm 39.1$ ), 5 ( $M = 252 \pm 40.3$ ), and 6 ( $M = 258.9 \pm 35.6$ ) vs. 1 ( $M = 186.2 \pm 45.6$ ), 2 ( $M = 219 \pm 40.6$ ), and 7 ( $M = 225.5 \pm 52.4$ ), and in session 3 ( $M = 240 \pm 33.6$ ), 7 and 2 vs. session 1. Younger participants did not score different in either trial condition.

**CONCLUSIONS:** Older adults showed a learning curve after the fourth session when performing 14 and 7 trials compared to younger adults. Motor performance was reduced after eight days without practice reduced only in older adults in the DDR14 condition.

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2031 Board #95 May 31, 9:30 AM - 11:00 AM

### Self-selected And Imposed-load Resistance Exercise: Effects On Self-efficacy In Recreationally Trained Women

Chris Torres<sup>1</sup>, Brian C. Focht, FACSM<sup>1</sup>, Matthew J. Garver<sup>2</sup>, Joshua A. Cotter<sup>3</sup>, Steven T. Devor, FACSM<sup>1</sup>. <sup>1</sup>The Ohio State University, Columbus, OH. <sup>2</sup>Abilene Christian University, Abilene, TX. <sup>3</sup>California State University-Pomona, Pomona, CA.  
(No relationships reported)

It is well-established that self-efficacy (SE) beliefs are important determinants and outcomes of exercise behavior. Although emerging evidence links acute exercise performed at a self-selected (SS) intensity with more favorable affective responses, the extent to which SE responses to acute resistance exercise (RE) may differ as a function of SS or imposed loads remains unclear.

**PURPOSE:** The purpose of this investigation was to examine the SE responses to SS and imposed-load bouts of acute RE.

**METHODS:** Twenty ( $M$  age = 23 years) recreationally-trained women completed acute bouts of RE using loads of 40% of one repetition maximum (1RM), 70% of 1RM, and a self-selected (SS) load. RE consisted of 3 sets of 10 repetitions of 4 different strength training exercises. Task SE to complete the prescribed number of repetitions for each exercise was assessed prior to, during (immediately before sets 2 and 3 of each exercise), and 5-min following each RE condition.

**RESULTS:** Results of repeated measures ANOVA analyses conducted for each exercise yielded significant Condition x Time interactions for the chest press ( $p < 0.05$ ) and lat pull-down exercises ( $p < 0.01$ ) as well as significant Condition main effects for the leg extension ( $p < 0.01$ ) and leg curl exercises ( $p < 0.01$ ). Post-hoc analysis revealed that while SE was significantly higher in the SS and 40% Conditions relative to the 70% 1RM Condition, SE only increased significantly from baseline in the 70% 1RM Condition.

**CONCLUSIONS:** The present results suggest that SS and imposed load bouts of RE are associated with different trajectories of SE responses during acute RE. Although recreationally-trained women reported higher overall SE for completing the 40% 1RM and SS RE Conditions, the 70% 1RM Condition resulted in the greatest increase in SE from baseline. Collectively, the differential SE responses that emerged during the SS and imposed-load bouts of RE may have valuable conceptual and practical implications for future RE promotion efforts.

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2032 Board #96 May 31, 9:30 AM - 11:00 AM

### The Relationship Exercise Habits And Sleep In Community-dwelling Elderly

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(No relationships reported)

Recent reports produced in Europe and the United States show that physical activity may improve quality of sleep, especially sleep disorders such as insomnia. Exercise, however, has not yet met established efficacy standards although some studies have shown improvements in sleep disorders with exercise. In Japan, there is a lack of evidence regarding the effects of exercise on sleep disorder and insomnia. We need data examining whether physical exercise improves sleep disorders. The number of people suffering depression has increased in Japan and previous studies have reported that insomnia is considered to be a risk factor leading to depression. We hypothesize that physical exercise improves sleep quality and reduces sleep complaints.

**PURPOSE:** To explore the relationship between physical exercise habits and sleep patterns in community-dwelling elderly.

**METHODS:** This study was cross-sectional with 372 subjects (male  $n = 162$ , mean age 76 years, female  $n = 210$ , 77 years) in community-dwelling elderly. The following information regarding exercise habits was gathered via a questionnaire: exercise timing, intensity, length, and frequency. The Pittsburgh Sleep Quality Index (PSQI-J) measured sleep quality. We used the GDS (Geriatric depression Scale) as our mental health index. Height and weight were also measured. To examine the association between exercise habits as the independent variable and status of sleep as the dependent variable, odds ratios (ORs) and 95% CIs were calculated using multilevel logistic regression analysis (Covariate; age, BMI and depression).

**RESULTS:** The exercise habit shows 22.8 in male and 17.9 % in female. The sleep disorder shows 27.8 in male and 40.1 % in female. Odds ratios (95% CI) were 4.19 (1.34-13.14) in male and 1.16 (0.55-2.47) in female. The exercise habit was related to sleep disorder in male.

**CONCLUSIONS:** These results suggest that exercise may be effective in producing sound sleep. We further posit that exercise may prevent depression via the improvement of sleep. However, this study data doesn't necessarily indicate a causal relationship. We must, therefore, conduct a data longitudinal study to confirm the relationship between exercise habits and sleep.

2033 Board #97 May 31, 9:30 AM - 11:00 AM

### Effects Of Resistance Training On Social Behavior, Self-esteem, And Physical Fitness In Children With Autism

Christopher S. Fitzmaurice<sup>1</sup>, Jean-Ronel Corbier<sup>2</sup>, Erik A. Wikstrom, FACSM<sup>1</sup>, Lee Sherry<sup>1</sup>, Mitchell L. Cordova, FACSM<sup>3</sup>, Reuben Howden<sup>1</sup>. <sup>1</sup>UNC Charlotte, Charlotte, NC. <sup>2</sup>Carolinas Medical Center North East, Concord, NC. <sup>3</sup>Florida Gulf Coast University, Fort Myers, FL.  
(No relationships reported)

Autism Spectrum Disorders (ASD) are becoming a public health concern with a 10-fold increase in prevalence over the past 40 years. Physical activity has been reported to reduce stereotypical behaviors (e.g. hand-flapping, echolalia, tapping and rocking), increase learning and social responsiveness in this population. Resistance exercise training (RT) has been effective in improving the psychological well-being and self-esteem in children.

**PURPOSE:** To investigate the effects of RT on social behavior and self-esteem, as well as physical fitness in children with ASD.

**METHODS:** 14 subjects participated in this study. 7 subjects (6 males and 1 female -age 12.28±1.49 yrs, mass 52.98±14.37 kg.) were randomized to the RT group (TG), while 7 subjects (6 males and 1 female - age 12.42±1.90 yrs, mass 66.49±29.77 kg) were randomized to the control group (CG) and did not participate in any RT. Both the TG and CG groups completed the Social Responsiveness Scale-Parental Version (SRS) and Piers Harris Self-Concept Scale (2nd Ed; PH-2) to assess social behavior and self-esteem respectively. They also performed a one-rep maximum test for upper body and lower body strength, and a 6-minute walk test to assess functional capacity before and after the 11-week training period. The TG group completed 2 sets of 11 exercises, encompassing all major muscle groups, twice a week with each session lasting ~ 1 hour.

**RESULTS:** There was a significant increase in total RT volume in the TG after the 11-week RT program (2,526.20±831.32 vs. 9,459.67±3,389.61 kg; p = 0.001). Both upper ( $\Delta$ 12.33±4.51 kg; p = 0.032) and lower ( $\Delta$ 29.22±12.05 kg; p = 0.001) body strength increased significantly in the TG relative to the CG. There were no group differences noted for social behavior (SRS  $\Delta$ 4.40±10.13; p = 0.387, effect size = 0.55) and self-esteem (PH-2  $\Delta$ -3.57±8.54; p = 0.133, effect size = 0.81) despite moderate effect sizes for self-esteem. While not significantly correlated (p=0.098), the strongest relationship found was between change in training volume and change in self-esteem (r=0.808).

**CONCLUSIONS:** These results suggest that 11-weeks of RT does not have a significant effect on social behavior but a modest improvement in self-esteem in children with ASD was found.

2034 Board #98 May 31, 9:30 AM - 11:00 AM

### Fitness And HR Reactivity To Mental Stress: Impact Of Obesity

Heather L. Caslin, Mary K. Bowen, Kyungeh An, Edmund O. Acevedo, FACSM, R. Lee Franco. *Virginia Commonwealth University, Richmond, VA.*  
(No relationships reported)

Cardiovascular disease (CVD) is the leading cause of death in the United States. Although the physiological impact of physical fitness (PF) on CVD is studied intensively, less attention is given to any cross-stressor adaptation of PF on psychological stress, an independent risk factor to CVD. The impact of PF on heart rate (HR) reactivity to acute mental stress is unclear and may be confounded by the effects of adiposity.

**PURPOSE:** To determine the relationship between PF on HR reactivity during a mental challenge task in non-obese and obese males.

**METHODS:** Non-obese (N=10, 21.2±2.6 yrs, 21.8±1.7 kg/m<sup>2</sup>, 16.7±4.1 %FAT) and obese (N=10, 21.4±2.5 yrs, 37.2±4.5 kg/m<sup>2</sup>, 40.0±3.5 %FAT) males volunteered to participate and completed a graded exercise test to exhaustion on a treadmill. Breath by breath data was averaged into 10s intervals and the highest reported oxygen consumption was identified as peak oxygen consumption (VO<sub>2</sub>peak). Participants also completed a 20 minute acute mental challenge (Stroop Color-Word Task and Mental Arithmetic Task) within 48 - 72 hours following the exercise test. HR was measured at rest and during each minute of the mental challenge. HR reactivity was defined as the heart rate difference between resting and peak values taken during the mental challenge.

**RESULTS:** In the non-obese group, a significant relationship (r=0.656, P=0.04) was found between the mental challenge HR reactivity (24.2±6.0) and VO<sub>2</sub>peak (52.34±6.4 mL O<sub>2</sub>•kg<sup>-1</sup>•min<sup>-1</sup>). There was no significant relationship observed in the obese group between the mental challenge HR reactivity (23.9±10.0) and VO<sub>2</sub>peak (36.24±3.5 mL O<sub>2</sub>•kg<sup>-1</sup>•min<sup>-1</sup>).

**CONCLUSIONS:** These results suggest that the impact of PF on HR reactivity to an acute mental stress is blunted in obese individuals. It is plausible that a lack of association between PF and HR reactivity may be due to the chronic adaptation of increased adiposity levels.

Supported by VCU Presidential Research Incentive Program

2035 Board #99 May 31, 9:30 AM - 11:00 AM

### Changes In Anxiety, Salivary Alpha-Amylase And Salivary Cortisol In Relation To A Youth Taekwondo Championship

Laura Capranica<sup>1</sup>, Giancarlo Condello<sup>1</sup>, Francesco Tornello<sup>1</sup>, Anna Valenzano<sup>2</sup>, Mario De Rosas<sup>2</sup>, Antonio Tessitore<sup>1</sup>, Giuseppe Cibelli<sup>2</sup>. <sup>1</sup>University of Rome Foro Italico, Rome, Italy. <sup>2</sup>University of Foggia, Foggia, Italy. (Sponsor: Foster Carl, FACSM)  
(No relationships reported)

No study has investigated psycho-physiological changes during youth taekwondo championships (i.e., multi-competitions with a time schedule ranging between 30 and 120 min) in relation to match outcome, resting condition, exercise intensity, and performance outcome.

**PURPOSE:** To evaluate the effects of official taekwondo competitions (three 1-min rounds with a 30-s recovery) on anxiety, ratings of perceived exertion (RPE), salivary alpha-amylase (sAA), and salivary-free cortisol (sC) in children.

**METHODS:** Parental consent was obtained for 9 (M=6, F=3) young (11.0 ± 0.9 yr) taekwondo athletes. Saliva was collected after awakening, 5 min before and 1 min after official combats, and at 30-min of the recovery period. State Anxiety (STAY-Y1) was recorded before the first competition, whereas coach's and athletes' RPE were obtained after combats. During a resting day, time matched salivary samples (awakening and pre-competition) and Trait Anxiety (STAI-Y2) were collected.

**RESULTS:** No difference emerged for match outcome. Athletes and their coach reported similar RPE. Only 3 (1 male and 2 females) athletes succeeded in at least one match. Collection of recovery values was possible only for the last match of each athlete. Higher (P=0.03) STAY-Y1 (41.6 ± 10.9 pt) was found with respect to STAY-2 (34.8 ± 7.1 pt). Time matched sAA recorded during the resting and competition days were similar. Peak sAA observed at the end of the combat (114.2 ± 108.1 U/mL) was different (P<0.01) from the other samplings (range: 20.6 - 48.1 U/mL). Difference (P<0.01) between pre competition (16.5 ± 13.6 U/mL) and time matched samples during resting day (range 6.2 - 4.6 U/mL) emerged for sC. At 30-min recovery peak sC (19.3 ± 13.3 U/mL) was higher (P<0.01) than awakening (8.0 ± 4.6 U/mL). When considering two consecutive combats, a difference was found for sAA only, with higher (P<0.01) second post-competition values (92.7 ± 37.7 U/mL) with respect to pre-competition (first: 27.1 ± 3.6 U/mL; second: 40.9 ± 2.7 U/mL) and first post-competition (45.8 ± 19.8 U/mL) ones.

**CONCLUSIONS:** These findings confirm that taekwondo combats pose a high stress on young athletes, eliciting a faster reactivity of the sympathetic adrenomedullary system relatively to the hypothalamic-pituitary-adrenocortical system.

2036 Board #100 May 31, 9:30 AM - 11:00 AM

### Cardiometabolic Risk Factors and Mental Health

Courtney D. Jensen<sup>1</sup>, Kelsey L. Darragh<sup>1</sup>, Beth A. Parker<sup>2</sup>, Jeffrey A. Capizzi<sup>2</sup>, C. Michael White<sup>2</sup>, Priscilla M. Clarkson, FACSM<sup>3</sup>, Paul D. Thompson, FACSM<sup>2</sup>, Linda S. Pescatello, FACSM<sup>1</sup>. <sup>1</sup>University of Connecticut, Storrs, CT. <sup>2</sup>Hartford Hospital, Hartford, CT. <sup>3</sup>University of Massachusetts, Amherst, MA.  
(No relationships reported)

**PURPOSE:** Evidence is mixed regarding the associations of cardiometabolic risk factors and mental health. We examined these associations among healthy, adult men (n=74) and women (n=73).

**METHODS:** Cardiometabolic risk factors were body mass index (BMI), waist circumference (WC), blood pressure (BP), and fasting blood lipids-lipoproteins. BMI was calculated from height and weight with a standard balance beam scale. WC was measured at the narrowest point of the torso with a non-distensible tape measure. BP was measured by auscultation after 10 min of seated rest. We determined lipids-lipoproteins with oxidase assays using colorimetric enzymatic methods, and calculated low density lipoprotein (LDL) cholesterol with the Friedwald equation. Mental

health was assessed with the Psychological General Well-Being Index (PGWBI), which characterizes mental health from 0 (i.e., distress) to 110 (i.e., positive well-being). Multivariate regression analyses tested the relationships among cardiometabolic risk factors and PGWBI. Due to significant gender effects, the results are presented by gender.

**RESULTS:** Subjects were 52.4±14.8 yr, overweight (BMI=26.9±4.8 kg·m<sup>-2</sup>; WC=89.8±14.4 cm), with prehypertension (120.5±13.2/75.8±9.4 mmHg), near optimal cholesterol (LDL=124.8±33.7 mg·dL<sup>-1</sup>), and a PGWBI score of 89.5±12.3. Men had a greater BMI (p=0.016), WC (p<0.001), triglycerides (p=0.007), triglyceride/high density lipoprotein ratio (p<0.001), and systolic BP (SBP) (p=0.016) than women. Among men, PGWBI (β=-0.249, r<sup>2</sup>=0.065, p=0.030) and age (β=0.243, r<sup>2</sup>=0.062, p=0.034) explained 8.6% of the SBP variance. Among women, age (β=0.433, r<sup>2</sup>=0.176, p<0.001) was the only significant correlate of SBP. Among men, PGWBI (β=-0.212, r<sup>2</sup>=0.055, p=0.053) and age (β=0.409, r<sup>2</sup>=0.176, p<0.001) explained 20% of the WC variance, but neither was a significant correlate of WC among men (p>0.05).

**CONCLUSION:** Among men, mental health was negatively correlated with SBP; whereas among women, mental health was negatively correlated with WC. Further research is needed to more clearly establish the relationships among cardiometabolic disease risk factors and mental well-being and what mechanisms may account for the sex-dependent findings we observed. Supported by NHLBI/NIH grant RO1 HL081893A2.

## E-28 Free Communication/Poster - Older Adults

May 31, 2013, 7:30 AM - 12:30 PM  
Room: Hall C

2037 Board #101 May 31, 11:00 AM - 12:30 PM

### Muscle And Physical Functional Criteria For Diagnosis Of Site-specific Sarcopenia

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(No relationships reported)

Sarcopenia has been previously defined as a height-adjusted muscle mass loss as well as declines in muscular strength and physical performance, although the definition of sarcopenia is still elusive. Recently we reported that sarcopenia is observed as a site-specific loss of skeletal muscle mass, especially for the quadriceps muscles. However, it is unclear whether muscular and physical functional criteria can be used to assess the site-specific sarcopenia.

**PURPOSE:** To investigate the relationship between age-related site-specific loss of thigh muscle and muscular function and gait performance.

**METHODS:** Fifty-five men aged 18-79 years (16 young [aged 18-39 years], 13 middle-aged [aged 40-65 years] and 26 old [aged 70-79 years]) volunteered. Muscle thickness (MTH) was measured by ultrasound at three sites on the anterior (30% and 50% of thigh length) and posterior (70% of thigh length) aspects of the thigh. MTH ratios were calculated to assess the site-specific sarcopenia (anterior 30%:posterior 70% MTH [A30:P70 MTH] and anterior 50%:posterior 70% MTH [A50:P70 MTH]). Maximum walking speeds, zig-zag walking time (walked 10 meters apart with alternating right/left direction), maximum voluntary isometric knee extension and flexion (Biodex), toe grasping and handgrip strength were measured.

**RESULTS:** Age was inversely correlated with the ratios of A30:P70 MTH (r=-0.33, P<0.05) and A50:P70 MTH (r=-0.47, P<0.01), thus the site-specific muscle loss of the thigh was observed in the present sample. There were no significant correlations between the A30:P70 and A50:P70 MTH ratios and height (r=0.09 and r=0.21, respectively) and body weight (r=0.03 and r=0.13, respectively). The A30:P70 and A50:P70 MTH ratios were also not correlated to maximal walking speed (r=0.15 and r=0.25). However, the A50:P70 MTH ratio was correlated to zig-zag walking (r=-0.35, P<0.01) and handgrip strength (r=0.33, P<0.05). In addition, these MTH ratios were also correlated with isometric knee extension (r=0.31, P<0.05 and r=0.41, P<0.01), flexion strength (r=0.31, P<0.05 and r=0.41, P<0.01), and toe grasping strength (r=0.27 and r=0.34, P<0.05). Strength ratios did not correlate with MTH ratios.

**CONCLUSION:** Age-related site-specific sarcopenia may assess the decreases in zig-zag walking performance and muscular strength.

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### A Cross-sectional Examination of Declines in Isokinetic Torque and Power across Seven Decades of Life

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(No relationships reported)

Strength and power decline exponentially after 50 years of age with a 20-40% reduction in leg strength and power by the 7th decade of life. Isokinetic dynamometry is often used to assess speed-specific neuromuscular performance.

**PURPOSE:** To assess isokinetic performance by decade in subjects 20 years of age and older.

**METHODS:** Peak Torque (PT) and Average Power (AP) during knee extension (KE) and knee flexion (KF) at 1.05, 3.14 and 5.24 rad·s<sup>-1</sup> were compared by decade in a sample 195 women and 162 men. The age groups were 20-29 (20G), 30-39 (30G), 40-49 (40G), 50-59 (50G), 60-69 (60G) and 70+ (70G). Separate repeated measures ANOVA were employed to examine age-dependent differences by gender and movement.

**RESULTS:** For both genders, KE and KF PT and AP results at all speeds demonstrated significant differences between 20G - 40G and 50G - 60G, and 70G and all other age groups. The only exception was for KFAP where no differences were seen among 50, 60, and 70G, and for KFPT and KFAP, where significant declines were observed between 20G and 30G. The table below shows patterns of change across age groups for KEPT for men and women at two testing speeds.

1.05 rad·s <sup>-1</sup>						5.24 rad·s <sup>-1</sup>					
WOMEN											
20	30	40	50	60	70	20	30	40	50	60	70
99.6 ±11.0	96.3 ±7.9	92.7 ±6.0	77.0 ±3.83*	62.44 ±2.0*	54.0 ±1.6 <sup>#</sup>	59.4 ±5.8	52.5 ±3.6	50.6 ±2.8 <sup>§</sup>	40.7 ±3.0*	34.7 ±0.9 <sup>^</sup>	28.9 ±0.7 <sup>#</sup>
MEN											
20	30	40	50	60	70	20	30	40	50	60	70
168.6±12.5	161.9±9.7	160.4±6.9	126.6±9.2*	114.0±3.2*	94.1±3.5 <sup>#</sup>	91.0±6.3	92.4±5.4	91.8±4.7	76.8±8.7*	62.4±1.9 <sup>^</sup>	54.1±1.8 <sup>#</sup>

\*Significantly different from 20, 30, 40G

<sup>§</sup> Significantly different from 20G

<sup>#</sup> Significantly different from all other age groups

<sup>^</sup> Significantly different from 50G

**CONCLUSIONS:** Our isokinetic results reflect the exponential declines in strength and power seen with age; the influence of speed decrements in age-related declines in neuromuscular performance; especially power; and, the more drastic decline in women compared to men. Additionally, our results provide normative values which allow the assessment of age-related declines by gender.