

associated with femoral neck BMD ($B=-.11, p=.015$) and lumbar spine BMD ($B=-.35, p<.001$), but MVPA showed significant effect modifications on both femoral neck BMD loss ($B=.09, p=.040$) and lumbar spine BMD loss ($B=-.03, p=.007$). Also, walking significantly moderated the association between depression and lumbar spine BMD loss in this age group ($B=.05, p=.017$). In 35-49 yrs old group, depression was significantly inversely associated with femoral neck BMD ($B=-.07, p=.003$), but walking significantly moderated the association ($B=.01, p=.029$). In other age groups, depression was not significantly associated with BMD. **CONCLUSION:** This study suggests that practitioners should include MVPA and walking in the depression treatment program to prevent comorbidity for bone mineral loss in young adults. Corresponding: Miyoung Lee, mylee@kookmin.ac.kr

331 Board #172 May 30 9:30 AM - 11:00 AM
Cardiorespiratory Fitness, Different Adiposity Exposures, and Cardiovascular Disease Mortality Risk in Healthy Women

Stephen W. Farrell, FACSM, Carolyn E. Barlow, Benjamin L. Willis, David Leonard, Andjelka Pavlovic, Laura F. DeFina. *The Cooper Institute, Dallas, TX.*

(No relevant relationships reported)

PURPOSE: We examined the prospective associations among cardiorespiratory fitness (CRF), different adiposity exposures, and cardiovascular disease (CVD) mortality in women. **METHODS:** 19,838 apparently healthy women without history of CVD completed a comprehensive baseline health examination between 1970 and 2013. Clinical measures included body mass index (BMI), waist circumference (WC), waist-to-height ratio (W:HT), percent body fat (%Fat), and CRF quantified as duration of a maximal treadmill exercise test. Women were classified by CRF as low (quintile 1), moderate (quintiles 2-3), and high fit (quintiles 4-5) as well as by standard clinical cut points for adiposity exposures. Hazard ratios (HRs) were computed using Cox regression analysis. **RESULTS:** During a mean follow-up period of 19.2 ± 10.3 years, 391 CVD deaths occurred. Adjusted mortality rates for high, moderate, and low CRF groups were 0.55, 1.28, and 2.0 deaths/10,000 woman-years, respectively (p for trend $<.001$). Adjusted mortality rates of overweight women within each adiposity exposure were higher when compared with normal-weight women ($p<.001$). When grouped for joint analyses into CRF x adiposity categories, there was a significant positive trend in CVD mortality across decreasing categories of CRF within each category of W:HT and %Fat, as well as within the normal and overweight BMI categories and the normal WC category ($p<.03$). CRF was not significantly associated with CVD mortality within the obese BMI or high WC categories. **CONCLUSION:** Higher levels of CRF are associated with lower CVD mortality risk in women, and attenuate the risk of CVD mortality in overweight women. The use of various adiposity measures to estimate CVD mortality risk in women may be misleading unless CRF is also considered. These findings support the 2016 American Heart Association Scientific Statement recommending that CRF measurement or estimation be included in routine clinical practice.

332 Board #173 May 30 9:30 AM - 11:00 AM
A Strategy To Reduce The Dropout Rate In A Volunteer-led Community Weight-loss Program

Ryoko Mizushima, Yoshio Nakata, Xinyu Zuo, Seiji Maeda, Kiyoji Tanaka, FACSM. *Tsukuba University, Tsukuba, Japan.*

(Sponsor: Kiyoji Tanaka, FACSM)

(No relevant relationships reported)

We implemented a volunteer-led community weight-loss program within the Tsuchiura City (Japan) routine health promotion program in 2015. Although the participants successfully decreased their body weight, there was a relatively high dropout rate. We interviewed a focus group after the intervention, revealing a lack of understanding about the weight-loss program. To address this issue, we planned to increase communication among the participants in the subsequent 2016 trial.

PURPOSE: The purpose of this study was to compare the degree of weight loss and the dropout rate between the 2 interventions (2015 vs. 2016). **METHODS:** Participants were Tsuchiura residents with a body mass index (BMI) >25 kg/m²: 27 in 2015 (4 men, age 60.7 ± 4.0 years, BMI 29.7 ± 4.0 kg/m²) and 39 in 2016 (9 men, age 57.3 ± 11.0 years, BMI 28.8 ± 3.8 kg/m²). The weight-loss program was led by community volunteers who attended 4 to 5 training sessions (3 hours per session). The program consisted of 8 sessions (2 hour per session) over 3 months. Participants were instructed to maintain a well-balanced low-calorie diet targeting 1680 and 1200 kcal/day for men and women, respectively. In 2016, we added exercises, group activities, and cooking demonstrations to increase communication and deepen participants' understanding of the weight-loss program. **RESULTS:** In 2015, 15 of 27 participants completed the 3-month program (dropout rate, 44.4%); their mean (95% confidence interval) weight loss was 6.7 (4.7-8.6) kg, corresponding to 8.7% of initial body weight. In 2016, 31 of 39 completed the program (dropout rate, 25.8%); their mean weight loss was 5.6 (4.5-6.6) kg, corresponding to 8.0% of initial body weight. A significant difference was found in the dropout rate (44.4% vs 25.8%, $P < 0.05$).

CONCLUSION: We reduced the dropout rate while obtaining equivalent weight loss by increasing communication among the participants during a volunteer-led community weight-loss program.

333 Board #174 May 30 9:30 AM - 11:00 AM
Physical Activity Guideline Attainment and Gender Influence Chronic Disease Risks Among African American College Students

Amanda A. Price, Georgia McCauley, Vanessa Duren-Winfield. *Winston-Salem State University, Winston Salem, NC.* (Sponsor: Melicia C. Whitt-Glover, FACSM)

(No relevant relationships reported)

Chronic disease risk and poor health behaviors, including physical inactivity, are increasing among college students. African American (AA) college students are a vulnerable population given the disproportionate manifestation of chronic disease in AA adults. AA women are particularly high risk given the higher prevalence of chronic diseases among women compared with men. **PURPOSE:** To examine differences in chronic disease risk among AA college students by attainment of physical activity (PA) guidelines and gender.

METHODS: AA college students ($N=63$; 43 female, 20 male; aged 18.2 ± 1.3 yrs) were recruited for a study examining and intervening on cardiovascular disease risk. Physical assessments and blood marker investigation were collected. Participants also completed self-report surveys: International PA Questionnaire (IPAQ), Perceived Stress Scale (PSS), and Pittsburgh Sleep Quality Index (PSQI). Students were categorized by meeting or not meeting PA guidelines (≥ 150 min/wk). Descriptive statistics, frequencies, and independent samples t-tests were used to describe overall and stratified chronic disease risk profiles.

RESULTS: Overall, students were overweight/obese (54%), had optimal blood profiles, did not attain the PA guidelines for health (54%), were moderately stressed (PSS: 15.1 ± 6.5), had poor sleep quality (PSQI: 5.7 ± 3.1), and failed to meet sleep recommendations (6.5 ± 1.2 hrs/night). Females reported higher perceived stress than males (PSS score 16.7 ± 5.6 vs. 11.5 ± 7.2 , $p<.01$); no other gender-specific differences in physical or blood biomarkers were detected. More males (85%) than females (28%) met PA guidelines. Females who met PA guidelines had significantly lower waist circumference (74.1 vs. 85.7 cm), BMI (23.1 vs. 28.6), and LDL cholesterol (65.1 vs. 74.3 mg/dL), and higher sleep quality (4.8 vs. 6.0) compared with females not meeting PA guidelines (all $p < .05$). There were no significant differences between males by PA guideline attainment.

CONCLUSIONS: We identified linkages between PA guideline attainment and chronic disease risk in AA college students, which was more meaningful among females. Given the low PA rates among females, additional work is needed to understand strategies for increasing PA among female AA college students. Supported by NIMHD 1R15MD010194-01.

334 Board #175 May 30 9:30 AM - 11:00 AM
The Prevalence of Hypertension in a Population of Former Professional Football Players

Jaime Kaplan, Genevieve E. Smith, Gregory W. Stewart, FACSM. *Tulane University School of Medicine, New Orleans, LA.* (Sponsor: Gregory Stewart, MD, FACSM)

(No relevant relationships reported)

OBJECTIVE: There is substantial data suggesting that former professional football players have considerable cardiovascular disease risk. The objective of this study was to better understand the prevalence of hypertension, a major risk factor for cardiovascular disease, in former professional football players. **DESIGN:** Data including blood pressure, height, and weight were collected from 981 former professional football players between April 2015 and May 2017 during cardiovascular screening events held throughout the U.S. Demographic information was collected from all subjects, including age, race, previous hypertension diagnosis, and treatment. Means were analyzed using one-way ANOVA, Chi square, or paired T-tests where appropriate. **RESULTS:** Pre-hypertension was greatest for former players aged 20-59, with almost 50% of those aged 20-39 pre-hypertensive at screening. Hypertension was greatest in former players aged 60+, with more than 50% of these individuals hypertensive at screening; over 20% of those 20-39 were hypertensive. White former players aged 60+ had the lowest prevalence of pre-hypertension. Hypertension prevalence was only significantly different between age-specific racial groups at age 40-59. The majority of former players had a BMI ≥ 30 kg/m², regardless of age; those with normal BMI were least likely to be hypertensive. Over 30% of former players reported previous hypertension diagnosis, with approximately 75% of those diagnosed reporting treatment. Of those former players that reported treatment, most had poorly controlled blood pressure at the time of screening. Of former players that reported no hypertension diagnosis, 41% had elevated blood pressure at screening. Former players aged 30-39 had the highest prevalence of previously undiagnosed elevated blood pressure at screening. **CONCLUSIONS:** Hypertension is a serious concern for former professional football players, even those considered to be younger and at decreased

risk. This may be related to the high BMI typically associated with these athletes. Blood pressure control in those reporting diagnosis is also a concern, as the majority of those men had high blood pressure at screening.

335 Board #176 May 30 9:30 AM - 11:00 AM
Waist Circumference Influences Associations Between Physical Activity And Metabolic Syndrome Risk In College-aged Females

G.M. Frederick¹, M.V. Fedewa², B.M. Das³, W.J. McConnell¹, E.D. Hathaway⁴, R.E. Salyer¹, S. Higgins⁵, M.D. Schmidt¹, E.M. Evans, FACSM¹. ¹University of Georgia, Athens, GA. ²University of Alabama, Tuscaloosa, AL. ³East Carolina University, Greenville, NC. ⁴University of Tennessee Chattanooga, Chattanooga, TN. ⁵Elon University, Elon, NC. (Sponsor: Ellen M. Evans, FACSM)
 (No relevant relationships reported)

PURPOSE: Metabolic syndrome (MetS) increases risk for chronic disease with diagnostic criteria including elevated systolic and/or diastolic blood pressure (SBP and DBP, respectively), triglycerides (TRG), glucose (GLU), waist circumference (WC), and reduced HDL-cholesterol (HDL). Although the prevalence of MetS is low among college students, risk factors for this condition are emerging in this population, especially in females. Moderate-to-vigorous physical activity (MVPA) is known to aid in the prevention of MetS risk factors. While WC is a component of MetS, it may also influence the effect of MVPA on other MetS components. Thus, this study aimed to explore the impact of WC on the association between MVPA and MetS risk factors in college-aged females.

METHODS: College-aged females (n = 328; 18.7 ± 1.2 yo) were assessed for MetS risk factors using standard clinical methods with factor presence being defined by the Adult Treatment Panel III criteria. MVPA was measured using accelerometry (NL-1000; 4 valid, 10-h days of wear). Pearson's correlations were used to assess bivariate associations. Linear regression was used to examine whether there was a significant interaction between WC risk factor status and the associations between MVPA and MetS risk factors.

RESULTS: Among those with normal WC (NWC; n = 287), MVPA was significantly associated with SBP (r = -.228), DBP (r = -.216), TRG (r = -.140), GLU (r = -.129), WC (r = -.250), and HDL (r = .199; all p < 0.05). Among females with high WC (HWC; n = 41), associations between MVPA and MetS risk factors were similar in magnitude or stronger, and significant for SBP (r = -.430), DBP (r = -.420), and WC (r = -.374; all p < 0.05). Only the association between MVPA and SBP was significantly different across WC strata, with a stronger association observed among the HWC group (p < 0.05).

CONCLUSIONS: As hypothesized, these results suggest that WC moderates the association between MVPA and some MetS risk factors. Future research should aim to explore these associations among a larger sample with more variation in WC.

336 Board #177 May 30 9:30 AM - 11:00 AM
The Prevalence of Obesity and Diabetes Mellitus in a Former Professional Football Player Population

Genevieve E. Smith, Gregory W. Stewart, FACSM. Tulane University, New Orleans, LA. (Sponsor: Gregory Stewart, MD, FACSM)
 (No relevant relationships reported)

PURPOSE: To provide information on the prevalence of obesity and diabetes mellitus (DM) in former professional football players. **METHODS:** For this cross-sectional study, 1106 former NFL players were sampled between April 2015 and July 2017. Height and weight were used to calculate BMI; blood samples were obtained from fasted subjects for analysis of fasting blood glucose and hemoglobin A1c. Subjects also completed a questionnaire regarding DM diagnosis. Subjects were assessed for obesity and DM status based on BMI, FBG, HbA1c, and questionnaire results, and stratified by age (20-39, 40-59, 60+), primary career playing position (Big, Big Skill, Skill), and race (Black, White, Other). Statistical analyses included 1-way ANOVA and Tukey post hoc analysis when variances were equal, or Dunnett C statistic for heteroscedastic data. T-tests were used to evaluate differences between groups. **RESULTS:** The prevalence of obesity (BMI ≥ 30) for this population was 63.6%, while the overall prevalence of DM and pre-DM was 13.8% and 61.7%, respectively. Prevalence of both DM and self-reported DM diagnosis increased with each 20 year increase in age (p < 0.0001). There was a significant effect of BMI on DM status, with obese men more than twice as likely to be diabetic (odds ratio 2.375, 95% CI 1.555-3.628). The "Big" position group were more likely to be obese as compared with "Big Skill" or "Skill" (p < 0.0001). Curiously, there was no difference in the prevalence of DM between any of the 3 position groups. When examined further, "Skill" had the highest prevalence of non-obese diabetics, while "Big" had the lowest (p = 0.0002), possibly explaining the lack of overall difference in the prevalence of DM between the 3 groups. Although White subjects were older than either Black or Other race subjects, Black subjects had higher BMI and prevalence of obesity than white subjects and, correspondingly, a

greater prevalence of DM. **CONCLUSION:** Although patterns and trends may reflect those commonly observed in the general population, the prevalence of obesity and DM may be higher in this population than typically reported in the general U.S. population. Furthermore, there may be special consideration that must be given to a former player's previous training with regards to his risk of developing diabetes, aside from current age, health, and BMI status.

337 Board #178 May 30 9:30 AM - 11:00 AM
Vigorous Intensity Volume, Not Total Volume Of Physical Activity, Predicts Adiposity In Young Adults

Minsuk Oh, Kathleen F. Janz, FACSM, Steven M. Levy. University of Iowa, Iowa City, IA. (Sponsor: Kathleen F. Janz, FACSM)
 (No relevant relationships reported)

Vigorous intensity volume, not total volume of physical activity, predicts adiposity in young adults.

PURPOSE: To investigate which daily level of physical activity (PA) is the best predictor of adiposity in young adults.

METHODS: Young adults aged 19.8 years (n = 182 females and 147 males) in the Iowa Bone Development Study were examined. PA was objectively measured by the ActiGraph accelerometer and classified into categories of min/d (i.e., sedentary, light, moderate, vigorous, total metabolic equivalent task (MET)) using the Crouton 2-regression model equation. Lean body mass and total body fat (kg) including visceral adipose tissue (VAT, g) were measured by dual energy X-ray absorptiometry. Associations between PA categories and adiposity were analyzed by partial correlation analysis adjusted for height and lean body mass. Multiple linear regression analysis was used to examine the most influential PA exposure for adiposity. All analyses were conducted separately by gender. Significance level was set as < 0.05* or < 0.01**.

RESULTS: Body fat was negatively associated with both vigorous PA (r = -.29**) and total PA MET time (r = -.21**) in males. In females, body fat was negatively related with vigorous PA time (r = -.24**), and VAT had significant associations with SED (r = .18*) and all PA variables (moderate r = -.21**, vigorous r = -.021*, and total METs time r = -.022*) except light PA time. Multiple linear regression analysis indicated that the best predictor for body fat mass (after adjustment for height and lean body mass) was vigorous PA time for females (β = -.142*, R² = .70, vigorous PA effect on R² for vigorous PA = .02) and males (β = -.216*, R² = .50, R² for vigorous PA = .04). Other PA exposures including total PA METs time were not significant after vigorous PA entered the model.

CONCLUSION: Vigorous intensity volume of PA, not total volume of PA, is the best predictor of body fat mass in young adults. This result suggests that interventions should focus on running, cycling and other intense physical activities to help young adults maintain a healthy level of adiposity.

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338 Board #179 May 30 9:30 AM - 11:00 AM
Association Between Physical Activity Level, Body Composition And Muscular Strength Among Health Professionals

João Henrique V. Pietri, Amauri dos Santos, João Pedro da Silva Junior, Diana Carolina Gonzalez, Victor Keihan Rodrigues Matsudo. CELAFISCS, São Paulo, Brazil.
 (No relevant relationships reported)

PURPOSE: To examine the association between physical activity level (PAL), body composition and muscular strength health among health professionals. **METHODS:** Physical activity level (PAL) was determined by pedometer, and steps counting was taken according to Tudor-Locke C et al. 2004. Sample consisted of 68 women and 11 men, with mean age 48.7 ± 9.3 years old. A pedometer (DIGI-WALKER/YAMAX) was used in the waist by the participants as soon as they wake up until they go to bed, removing the pedometer in cases involving water activities, during 7 days in a row, including a weekend. **STATISTICAL ANALYSIS:** The regression linear analysis with 95% Confidence interval for β was determined using SPSS 20.0, and a level of p < .05 was taken as significant. **RESULTS:** 33% of participants could be considered sedentary, not reaching at least 5000 steps/day. They presented a mean BMI 31.3 ± 6.6 kg/m², and they performed only 3,256 ± 1,223 steps per day. The prediction values between physical activity level and the other variables are in the table below. **CONCLUSIONS:** Unfortunately, health professionals from Sao Paulo state are not active enough. Objectively measured of physical activity level was significantly associated with BMI health professionals.