

maintaining their body weight: weight loss maintainers (WLM) and always normal-weight individuals (NW). **Methods:** WLM (n=180) and NW (n=141) completed the Paffenbarger PA questionnaire (PPAQ) and wore the RT3 accelerometer. Participants were categorized according to the number of different moderate-to-vigorous activities (MVPAs) reported on the PPAQ: variety ( $\geq 2$  MVPAs; n=216) and (1 MVPA; n=105). Regression analyses assessed the associations of PA variety (variety vs. non-variety) and group (WLM vs. NW) with MVPA bout ( $\geq 10$ -min) minutes. **Results:** Variety (p=0.005) and WLM status (p=0.001) were both independently related to higher MVPA levels. MVPA bout minutes were higher in participants with variety versus non-variety ( $35 \pm 26$  vs.  $24 \pm 25$  min/d, p=0.001) and in WLM versus NW ( $36 \pm 29$  vs.  $25 \pm 22$  min/d, p=0.001). There was a trend for a variety x group interaction (p=0.08), with variety having more of an impact on MVPA in NW ( $32 \pm 25$  vs.  $17 \pm 13$  min/d, p<0.001) than in WLM ( $37 \pm 28$  vs.  $33 \pm 32$  min/d, p=0.40). **Conclusions:** Performing a variety of activities is related to greater engagement in sustained MVPA in both WLM and NW. Future studies should examine whether variety can assist with adoption and maintenance of high MVPA levels.

### 713-P

#### Comparability Between Kenz Lifecorder and ActiGraph GT1M Accelerometers

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**Background:** Several observational and interventional obesity studies have utilized Kenz Lifecorder accelerometers to measure free-living physical activity levels in Japan. The Kenz accelerometer outputs data as an activity index and steps. Our aim was to establish comparability between the Kenz activity index output and the ActiGraph GT1M accelerometer counts (commonly used in the US and other countries), and validity of the step counting from both monitors, such that different population data could be compared.

**Methods:** 11 Kenz and 13 ActiGraph GT1M monitors were secured on a modified orbital shaker (large platform VWR) and subjected to movements ranging from a radius of 0.5-2.0 inch (0.25 inch increments) and frequency from 20-250 RPM (10 RPM increments). Data were collected at their highest time resolutions (4 sec for Kenz and raw data for GT1M) and integrated post hoc to 1 minute epochs. **Results:** Kenz' activity index was found to be primarily determined by step frequency (sigmoidal  $R^2 = 0.98$ ) and not by acceleration. GT1M counts were determined by frequency and radius of movement (3<sup>rd</sup>-order polynomial  $R^2$  ranges from 0.90-0.97). Step counts of both devices showed similar validity (> 99%) on the shaker, but only within the linear detection ranges from 100-240 RPM for Kenz and 80-250 RPM for GT1M. Both devices' lower step detection limit was acceleration dependent. **Conclusions:** Kenz and GT1M monitors have similar step counting validity but the Kenz activity index cannot be easily converted to GT1M counts due to the difference in algorithms.

### 714-P

#### Assessing Physical Activity and Its Relationship to Cardiovascular Risk Factors: NHANES 2003-2006

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**Background:** Levels of physical activity (PA) in the general population are difficult to characterize. Historically measurement has been based on self-report, which can be subject to bias. PA monitor use has created opportunities to improve surveillance and analytic research on activity and health.

**Methods:** Data on PA from accelerometers, demographics, blood pressure, plasma glucose and lipids, self-reported hypertension and diabetes were obtained for adults, ages 20-65, in the NHANES surveys, 2003-2006. Outcomes were assessed as levels of moderate and vigorous activity, percentage of participants meeting recommended guidelines, and the correlations between activity and cardiovascular risk factors. **Results:** Accelerometry data were available on 3,370 adults. Based on standard algorithms, activity levels were extremely low in all age-gender-race/ethnic groups, with an average of only 1 bout of vigorous activity lasting longer than 1 minute/day. Men spent 35 minutes in moderate activity/day, women 21 minutes; >75% of this activity was accumulated in 1-minute bouts. Levels of activity declined sharply after age 50 in all groups. Negative associations were observed between minutes of combined moderate and vigorous activity and systolic blood pressure, blood glucose, diabetes, hypertension, body mass index and obesity, and a positive association was seen with HDL-

cholesterol (all P < 0.03), suggesting valid rank ordering of participants by activity level. However the magnitude of the gap between self-report and accelerometry activity must be a result of either a vast social acceptability bias in reporting or inaccurate measurement with accelerometry. **Conclusions:** Valid, objective methods to assess PA are urgently needed for population surveillance.

### 715-P

#### The Effects of BMI Status and Motivation on Physical Activity in Underserved Adolescents

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**Background:** Underserved (low-income, ethnic minority) adolescents have among the highest rates of overweight and obesity in the United States. Additionally, ethnic minorities and those of lower socioeconomic status (SES) are less physically active than their non-minority peers and those of higher SES. Previous research, based on Self-Determination Theory, has demonstrated that motivational factors are important predictors of moderate-to-vigorous physical activity (MVPA) in youth. However, these motivational effects have not been examined as a function of weight status and little research has specifically focused on underserved youth. The present study expands on past research by examining whether age- and sex-standardized body mass index (zBMI) interacts with regulatory (intrinsic) motivation, enjoyment, and extrinsic motivation in predicting MVPA in underserved adolescents. **Methods:** Participants from the Active by Choice Today (ACT) Trial (n = 1,416; 54% girls, 73% African American, 52% overweight/obese) completed baseline measures, including objective height and weight assessments, self-reported motivational surveys, and 7-day accelerometry estimates of MVPA. **Results:** Regression analyses demonstrated significant interactions between zBMI and both regulatory motivation (B = -2.21 s.e. = 0.77, t = -2.86, p < .01) and enjoyment (B = -2.33, s.e. = 0.81, t = -2.87, p < .01) predicting MVPA. Regulatory motives and enjoyment were more strongly associated with greater minutes of MVPA among adolescents with lower zBMI as compared to those with higher zBMI. The interaction between zBMI and extrinsic motivation was not significant. **Conclusions:** Integrating motivational approaches for increasing PA in underserved adolescents may be an important future direction for developing effective obesity prevention programs.

### 716-P

#### Waist Circumference Predicts Poor Motor Coordination in Portuguese School Children

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**Background:** Body fatness may influence motor coordination in young children. We aimed to analyze the relation between motor coordination and waist circumference (WC) and to determine the ability of WC to identify children at risk of poor motor coordination based on receiver operating characteristic curve (ROC) analysis, in a sample of Portuguese children.

**Methods:** The sample comprised 738 urban school children (45.8% girls), aged 8 to 12 years (mean  $10.2 \pm 1.2$  years) from North of Portugal. WC was measured with standardized protocols. Motor coordination levels were assessed with the Körperkoordination Test für Kinder (KTK) and children were classified according to age- and sex KTK criteria. For ROC analysis, subjects were classified in two groups: (i) disturbances and insufficiencies of coordination; (ii) normal and good coordination. **Results:** Linear regression analysis showed that WC was negatively associated with motor coordination (B = - 0.553 SE:0.066, p<0.001 in boys and B = - 0.527 SE:0.084, p<0.001 in girls). ROC analysis showed that WC predicted poor motor coordination (AUC: 0.672; 95%CI: 0.623 to 0.717, p<0.001 for boys; AUC: 0.659; 95%CI: 0.606 to 0.710, p<0.001 for girls) with WC cut-off values of 71 cm for boys and of 66 cm for girls. **Conclusions:** Waist circumference was associated with poor motor coordination. The early identification of children with high waist circumference may be important to implement and develop health-related behaviours as well as to avoid having poor motor coordination.