METHODS: Sixteen adults with DS (10 men; age 31 ± 15 years) performed 12 tasks: sitting; playing an app; drawing; folding clothes; sweeping; fitness circuit; moving box; basketball; standing; and walking at the preferred speed and at 0.8 and 1.4 m/s. We measured VO$_2$ with a spiro meter (K4b2, Cosmed) and VA and VM with an accelerometer (GT3X-BT, Actigraph) on the non-dominant hip. We used two separate multi-level regression models to predict VO$_2$ from VA or VM. We evaluated the fit of models with the R$^2$, and accuracy with Bland-Altman plots and absolute percent error which was compared between models across tasks using within-subject (method-by-task) ANOVA and follow-up paired-samples t-tests. RESULTS: Both VM and VA significantly predicted VO$_2$ in separate models (p <0.001; R$^2$ = 0.74 and 0.65, respectively). Across all tasks combined, absolute percent error was lower for the VM than the VA model (23.7 ± 26.2 and 33.6 ± 35.9, respectively). A significant method-by-task interaction in within-subject ANOVA and follow-up t-tests indicated that absolute error was lower for the VM than the VA model for sitting, playing an app, drawing, and standing (p ≤0.004), but did not differ for other tasks. Bland-Altman plots indicated zero mean error for both models; however, the limits of agreement were narrower for the VM than the VA model (-6.44 to 6.44 and -5.57 to 5.57 ml kg$^{-1}$ min$^{-1}$, respectively).

CONCLUSION: Both VA and VM counts predict VO$_2$ in adults with DS; however, precision is more accurate for a VM than a VA model during sedentary behaviors. VM counts should be used in developing accelerometer-based prediction of physical activity and sedentary behavior in adults with DS. Supported by NIH Grant R15HD098660.

INTRODUCTION: The 2008 Physical Activity Guidelines for Americans recommended adults engage in ≥150 min/week of moderate-to-vigorous intensity physical activity (MVPA) in bouts of ≥10 minutes to elicit numerous health benefits. However, the 2018 Physical Activity Guidelines recommends that all MVPA, regardless of bout length, contribute to the desired MVPA goal as this also elicits health benefits.

PURPOSE: This study examined whether the number of adults meeting the public health recommendation of 150 min/week of MVPA differed based on the criteria that considered all minutes or minutes that were only accumulated in bouts of ≥10 minutes.

METHODS: Baseline data from 377 adults with obesity (age=45.5±8.0 years; BMI=32.2±3.8 kg/m$^2$) who enrolled in a behavioral weight loss program were analyzed. Participants reported not engaging in regular structured exercise that exceeded 60 min/week. Participants were instructed to wear an activity monitor (SenseWear Armband) for 7 days while maintaining their regular physical activity prior to initiating the intervention. Data were considered valid if the activity monitor was worn for ≥10 hours per day on at least 4 days. These data from the activity monitor were used to identify total minutes of MVPA that met the criteria of ≥3 METs regardless of bout length and total minutes of MVPA that was accumulated in bouts ≥10 minutes.

RESULTS: Median minutes of total MVPA was 244 (25 th, 75 th percentiles: 118.0, 458.0) min/week. Median minutes of MVPA in bouts ≥10 minutes was 103 (25 th, 75 th percentiles: 27.5, 232.5) min/week. Both total MVPA (0.327, p=0.001) and MVPA in bouts ≥10 minutes (0.275; p<0.001) were correlated with BMI using the Spearman Rank Order procedure. The proportion of adults engaging in ≥150 min/week meeting was 67.4% when total minutes of MVPA was considered and 39.8% when minutes of MVPA in bouts ≥10 minutes was considered.

CONCLUSION: The proportion of adults with obesity or overweight meeting the recommended 150 minutes per week of MVPA will vary based on whether total MVPA or MVPA in bouts ≥10 minutes is used to determine engagement. However, both total MVPA and MVPA resulting from bout ≥10 minutes may contribute to a lower BMI. These findings may have implications for evaluation of and recommendations for MVPA that may impact body weight regulation.

### 1535 Board #129 May 28 10:30 AM - 12:00 PM
Comparison Of Total MVPA Versus MVPA In Bout Of At Least 10 Minutes In Adults With Obesity.
Ronald E. Jackson, Renee J. Rogers, FACSM, Nalingua Yuan, John M. Jakicic, FACSM. University of Pittsburgh, Pittsburgh, PA. (Sponsor: John M Jakicic, FACSM)
Email: rjackson0410@yahoo.com
(No relationships reported)

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### 1536 Board #130 May 28 10:30 AM - 12:00 PM
Comparison Of Physical Activity Scale For Individuals With Physical Disabilities and Accelerometry In Arthritic Individuals
Autumn E. Decker, Julian Martinez, Chris C. Cho, Ann M. Swartz, FACSM, Scott J. Strath, FACSM. University of Wisconsin-Milwaukee, Milwaukee, WI.
Email: aedecker@uwm.edu
(No relationships reported)

PURPOSE: To compare physical activity (PA) estimates from the PA Scale for Individuals with Physical Disabilities (PASIPD) to accelerometer data in individuals with arthritis.

METHODS: Adults aged 64-88y, a sub-sample recruited for a larger protocol, and self-reported with arthritis were included in this analysis. Subjects completed a seven-day monitoring period that included wearing a thigh worn activPAL (AP) accelerometer during all waking hours and completing a wear-time log. At the end of the monitoring phase individuals completed the PASIPD. Accelerometer data was processed with PALstudio (v8.9.1.24) and raw data was manipulated using the activPAL processing package in RStudio (1.2.1335) to calculate hours in stepping, light (1.5-2.99 METs) PA (PAL), and moderate-vigorous (>3.0 METs) PA (MVPA). Items were taken from the PASIPD to calculate hours of LPA and MVPA, and to derive a total activity score. Spearman correlations comparing AP stepping and total PASIPD, AP LPA and PASIPD LPA, and AP MVPA and PASIPD MVPA were computed. Wilcoxon Signed Rank tests were computed for differences between AP and PASIPD LPA and AP and PASIPD MVPA.

RESULTS: Twenty-seven subjects (16 male, 7 female) (mean±SD) age 75.8±6.2 yrs; height 168.4±9.5 cm; mass 83.8±17.6 kg) were analyzed. AP Stepping was significantly correlated with total PASIPD score with a Spearman’s rho of .425; p=.014, AP LPA and PASIPD LPA, and AP MVPA and PASIPD MVPA were significantly correlated, Spearman’s rho of .436; p=.012, and .435; p=.012, respectively. On average, PASIPD underestimated AP LPA by 1.38 hours (p=.024) and overestimated AP MVPA by 1.34 hours (p=.0001).

CONCLUSION: Differences between PASIPD and AP measures of LPA and MVPA were apparent, but the PASIPD was moderately correlated to PA levels in this sample of arthritis individuals. Future work on examining the precision and accuracy of PA surveys in heterogeneous populations with varying disease and disability is warranted.

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