Evaluating Accelerometer Cut-Points to Classify Physical Activity Levels in Overweight/Obese and Middle-Age-to-Older Women
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Physical activity (PA) patterns of middle-age and older adults differ by type and intensity from younger adults. Due to age-related changes in fitness, older adults may spend more time in lower absolute intensity PA and perceive it as moderate or vigorous PA. Similar situations may exist for overweight/obese adults who may have weight-related increases in the energy cost of movement. Differences in movement patterns may lead to misclassification of PA if measurement standards are based on younger, leaner populations. Advances in ActiGraph accelerometer scoring protocols permit classification of a wider range of PA than previously identified allowing studies of inactivity and lifestyle PA on health outcomes. PURPOSE: To compare differences in min/day spent in levels of PA using Freedson’s three-category and Matthews’ five-category accelerometer cut-points. METHODS: Cross-sectional study with 44 women (age, 50.4 ± 10.2 yr; BMI, 32.3 ± 5.7) who wore an ActiGraph (previously CSA) accelerometer for 8.1 ± 3.6 days, averaging 888.3 ± 68.6 min/d. Movement counts (cts) were collected under free-living conditions and categorized by intensity using Freedson’s [light (<1951), moderate (1952-5724), vigorous (>5725)] and the Matthews’ [inactive (0 – 99), light lifestyle (100 – 759), moderate lifestyle (760 – 1951), moderate walking (1952 – 5724), and vigorous (>5725)] cut-points. Skewed data were normalized using log transformations with data presented as the geometric mean. RESULTS: Using Freedson's cut-points, most of the time was spent in light PA (873.9 min/d) as compared to moderate (10.4 min/d) and vigorous-intensity PA (1.24 min/d). With Matthews’ cut-points, light and moderate-intensity time was redistributed as inactivity (588.4 min/d), light lifestyle (198.4 min/d), moderate lifestyle (52.2 min/d). Moderate walking and vigorous PA remained the same. CONCLUSION: These data show the impact of establishing accelerometer cut-points that reflect time spent in varying PA at the lower intensity movement spectrum. Data are needed to compare the cut-points levels with health outcomes in varying populations to determine their sensitivity for health promotion research and to establish their utility in surveillance systems to characterize population PA levels.