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Duckham R, Crouter S, Churchill LC, Kane KJ, Franklin PD, Li W. (2013). Setting Proper Matrices for Accelerometry-based Physical Activity Measures in Older Women. UMass Center for Clinical and Translational Science Research Retreat. Retrieved from https://escholarship.umassmed.edu/cts_retreat/2013/posters/62

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Setting Proper Matrices for Accelerometry-based Physical Activity Measures in Older Women

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BACKGROUND: Accelerometers to objectively measure physical activity (PA) among adults and youth are widespread, with few studies in the older population. Optimal PA cut-points in older adults who are often frail and/or have limited function still remain unclear.

Purpose: To compare the level of PA in older women with lower extremity problems using existing PA cut-points.

METHODS: Women (N=89) aged 65 to 85 years were instructed to wear an Actigraph accelerometer for seven consecutive days. Wear-time and activities away from the home were recorded daily. Questionnaires were used to assess participant sociodemographic attributes, lower extremity and comorbid conditions. PA was defined using cut-points identified in the literature (Freedson, Copeland (one axis) and Carr (vector)). Weekly minutes of sedentary, light, moderate and vigorous activity was compared among age groups, and those with or without lower extremity problems affecting walking.

RESULTS: Preliminary data of 72 women with valid accelerometry measures (≥ 6 consecutive days of ≥ 8 hours of daily wearing time). According to the Freedson cut-points, average weekly minutes of light, moderate and vigorous PA were 4,674 (612, 8,520), 24.0 (range 0, 1,050) and 6.6 (range: 0, 330), respectively. Application of Copeland and Carr cut-points yielded similar patterns. Such patterns were persistent when the analysis was stratified by age group (<75 vs. ≥ 75 y) and whether having any lower extremity problem affecting walking.

CONCLUSION: The existing cut-points for PA are ineffective in differentiation of active and inactive older. Age-appropriate cut-points for PA need to be established in older adults. Due to the lack of time spent in moderate/vigorous PA, health promotions may consider focusing on decreasing sedentary time and increasing time spent in light PA rather than promoting 150 minutes per week of moderate/vigorous PA in older adults.

Word count: 285