S143) THE IMPACT OF GAIT DISABILITY ON THE CALIBRATION OF ACCELEROMETER OUTPUT IN ADULTS WITH MULTIPLE SCLEROSIS

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Background: Accelerometer activity counts have been correlated with energy expenditure during treadmill walking among minimally impaired, independently ambulatory adults with multiple sclerosis (MS). This association yielded cut-points for computing time spent in moderate-to-vigorous physical activity (MVPA) based on the accelerometer output. Objectives: The current study examined the impact of gait disability on 1) the association between accelerometer activity counts and energy expenditure during overground walking in people with MS, and 2) the calibration of accelerometer output for computing cut-points that correspond with time spent in MVPA. Methods: The sample included 24 individuals with a definite diagnosis of MS, and 10 people reported gait disability based on Patient-Determined Disease Steps (PDDS) scores. The participants undertook three 6-minute periods of overground walking while wearing an Actigraph accelerometer (model 7164) and a portable metabolic unit (K4b2 Cosmed, Italy). The first period of walking involved the participants walking at a self-selected, comfortable speed, and this was followed by two consecutive walking periods that were either ½ mph above or below the comfortable walking speed. Results: Strong linear relationships were observed between activity counts and energy expenditure during overground walking in the overall sample ($R^2 = 0.90$) and in the subsamples with and without gait disability ($R^2 = 0.88$ and $R^2 = 0.91$, respectively). The slope of the relationship was significantly steeper in the subsample with gait disability ($\beta = .0049$) compared with those without gait disability ($\beta = .0026$). The difference in slopes yielded a significantly lower cut-point for MVPA in those with gait disability (1886 vs. 2717 counts/min). Conclusions: Such findings provide evidence for a strong linear relationship between activity counts and energy expenditure during overground walking in people with and without gait disability. The findings verify that cut-points for quantifying time spent in MVPA are significantly lower in people with MS who have gait disability.

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