older adults (79±7 y/o, 29 women) completed the Montreal Cognitive Assessment (MoCA) of global cognitive function at baseline (Total MoCA score: 25.0±2.9). Physical activity was tracked using a Fitbit wrist-worn activity tracker for two consecutive weeks with all participants having 10 complete days. Daily step count mean and standard deviation were calculated to quantify the daily average (4435.12±2768.88 steps) and daily variation (1671.05±1134.03 steps) in physical activity, respectively. After adjusting for age and sex, participants with greater daily variation in step counts exhibited better global cognitive function (r=0.52, p=0.02). In contrast, average daily steps did not significantly correlate with MoCA performance. Neither of these physical activity outcomes were significantly linked to any MoCA subscore. These results suggest that monitoring day-to-day step count variation may serve as a particularly sensitive indicator of global cognitive health in older adults.