

Physical Activity Trajectories and Their Predictors in Older Adults Participating in a 12-Month Multicomponent Intervention

Tiina Savikangas¹, Anna Tirkkonen¹, Sarianna Sipilä²

¹ Gerontology Research Center, Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland

² Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland

Purpose: Physical activity (PA) interventions in older adults often yield short-lived benefits. To achieve lasting effects, identifying responders and non-responders is crucial. This study aims to identify PA trajectories and their predictors during and after a multicomponent intervention.

Methods: Community-dwelling men and women (70–85 years, mean 74.4) were recruited to the PASSWORD study and randomised to physical training (PT, $n = 159$) or physical and cognitive training (PTCT, $n = 155$). PT included strength, gait, and balance training. PTCT included PT and additional computerised executive functions training. Self-reported PA was assessed with a single-item question at baseline, after 6 (6mo) and 12 months of intervention (12mo), and after a 12-month follow-up (24mo). Predictors were assessed at baseline and included socio-demographics (age, sex, marital status, education, occupational status, residential area), physical health and functioning (body mass index, self-rated health, number of chronic conditions, lower-extremity functioning, aerobic endurance), mental wellbeing (positive and negative affect, depressive symptoms), and cognitive functioning (global cognition, global executive functions, cognitive flexibility, working memory updating). PA trajectories were identified by using latent class mixed models in participants ($n = 288$) who had PA data at 24mo.

Results: Five trajectories were identified: Moderate-high (34%), Low-low (24%), Low-moderate (16%), Moderate-low (14%), and Low-high (13%). At baseline, participants in Moderate-high and Moderate-low engaged in brisk PA, while participants in other trajectories engaged in light activities. PA increased from baseline to 6mo, except in Moderate-low, and declined from 6mo to 12mo, except in Moderate-high group. PA increased from 12mo to 24mo only in Low-high group. At 24mo, PA remained higher compared to baseline in Moderate-high, Low-high, and Low-moderate groups.

Between-trajectory differences were observed in intervention arm, age, all physical health and functioning indicators, depressive symptoms, positive affect, and working memory ($p \leq 0.034$). In general, Moderate-high participants were younger, healthier, and better functioning than Low-low participants. Low-moderate participants belonged more often to PT than PTCT group ($p = 0.021$).

Conclusion: Year-long multicomponent intervention following PA guidelines may increase PA and thus prevent functional decline in relatively healthy and well-functioning older adults with high mental wellbeing. Alternative approaches are needed in those with poorer baseline health and functioning.

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