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Longitudinal Change in Physical Activity Components Among Community-Dwelling Older Adults

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Purpose: Complexity of physical activity (PA) and health effects are not fully captured using common measures such as duration and intensity. Extending these measures with the PA components of strength, mechanical strain, and turning actions might offer a more complete picture of PA in older adults. We explore the course and heterogeneity of the PA components over time.
Methods: Prospective data from the Longitudinal Ageing Study Amsterdam (LASA) cohort study (1992–2019) were used. We included all participants with at least one follow-up measure, resulting in a sample of n = 5,002. PA component scores of strength (range 1–4), mechanical strain (range 1–3), turning actions (range 1–3), intensity (range 2.5–6.5) were assigned to each self-reported activity. Duration was self-reported and recalculated into minutes/day (range 0–960). All five scores were categorised into tertiles. We applied sequence analysis to plot the trajectories of the PA components and optimal matching algorithms to identify groups with similar trajectories over time. Analyses were stratified for men and women to account for sex differences in PA behaviours.
Results: Our sample had a mean baseline age of 66 years (standard deviation (SD) = 8.6) and 52% were women. The mean follow-up time was 11.1 years (SD = 8.5), and 22% of the respondents died during the 10-year follow-up. For the duration component, 119 distinct trajectories were identified over the 10-year follow-up. OM on these trajectories resulted into six clusters of similar trajectories: stable long, stable medium, stable short, decreasing duration, early deceased, late deceased.
Discussion: A solution of six clusters of similar trajectories could be fitted to all components for the 10-, 20-, and 30-year follow-up periods. However, PA component trajectories differed between components, as well as between sexes within the same component. These findings show that PA components have different trajectories over time, and the importance of these differences in association with health outcomes should be studied in future research.
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