



How Life-Course Trajectories of Physical Activity Track with Later Life Cognitive Decline



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INTRODUCTION

- Lifestyle risk factors, including physical activity, can help slow cognitive decline.
- Patterns of physical activity change over the life-course, but few studies have related prospective, repeated measures of physical activity to cognitive decline.
- **Characterizing longitudinal physical activity trajectories over the adult life-course is needed to better prevent later life cognitive decline.**

METHODS

- **Sample:** Framingham Heart Study Gen 2 or Omni 1 participants with ≥ 3 self-reported physical activity and ≥ 2 cognitive factor score measures
- **Physical Activity Trajectories:** group-based multi-trajectory models grouped participants with similar patterns of physical activity (physical activity index) over age (**Figure 1**)
- **Statistical Analysis:** linear mixed effects models estimated associations between trajectory groups (Plummers = reference) and changes in cognitive factor scores (**Figure 2**)
- **Covariates:** age, sex, race, educational attainment, cohort, cardiovascular risk score, depressive symptoms

RESULTS

Table 1. Sample Characteristics Overall and Across Life-Course Physical Activity Trajectory Groups

	Overall (n=2229)	Physical Activity Trajectory Group			
		Stabilizers (n=176)	Decliners (n=526)	Reversers (n=1145)	Plummers (n=382)
Age (years), mean (SD)	62.0 (9.2)	55.1 (7.9)	61.5 (8.8)	62.4 (9.1)	64.7 (8.9)
Female, N (%)	1234 (55%)	81 (46%)	273 (52%)	691 (60%)	189 (50%)
White race, N (%)	2084 (94%)	173 (98%)	444 (84%)	1103 (96%)	364 (95%)
College education, N (%)	1582 (71%)	141 (80%)	384 (73%)	804 (70%)	253 (66%)
Body mass index (kg/m ²), mean (SD)	27.2 (4.8)	27.8 (4.9)	28.3 (4.9)	27.3 (4.6)	28.0 (5.0)
Current smoking, N (%)	221 (10%)	23 (13%)	50 (10%)	118 (10%)	30 (8%)
Depressive symptoms, N (%)	199 (9%)	20 (11%)	53 (10%)	88 (8%)	38 (10%)
High cardiovascular risk, N (%)	537 (24%)	20 (11%)	124 (24%)	269 (24%)	124 (33%)

Figure 1. Physical Activity Trajectory Groups

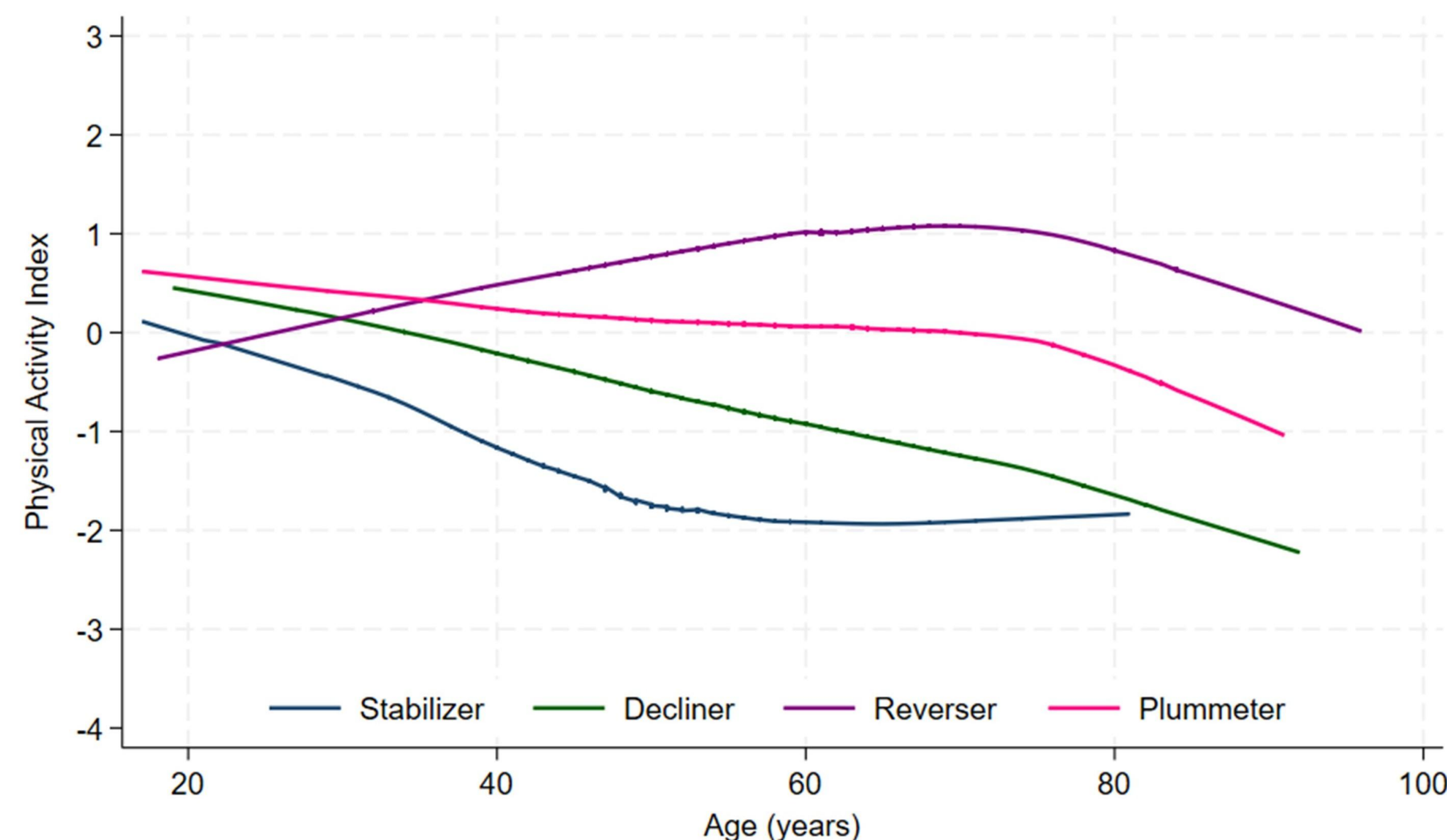
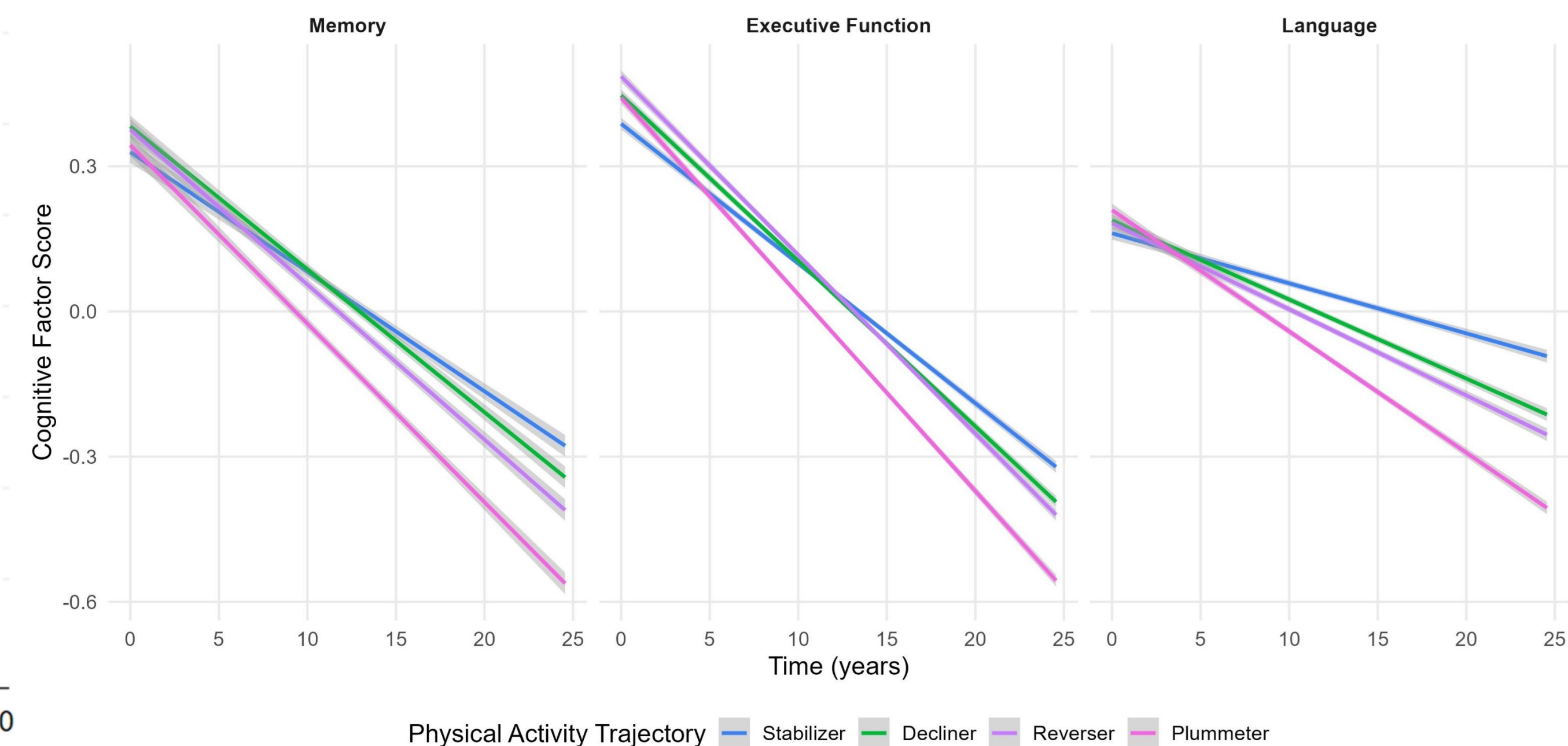


Figure 2. Physical Activity Trajectory Groups and Cognitive Decline



CONCLUSIONS

- Participants with steep declines in physical activity during later life (Plummers) had the fastest rates of cognitive decline, whereas those with stable activity levels from mid-to-late life (Stabilizers) had the slowest rates of decline over the same time period.
- Interventions aimed at sustaining physical activity and preventing later life declines may help mitigate cognitive decline into older age.

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