Association of 3-year changes in physical function with subsequent 15-year mortality in community-dwelling older men

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Background & Aim

Physical function is a predictor of mortality in older persons. However, few studies so far have examined the association between changes in physical function and subsequent mortality and at present evidence is lacking that changes in physical function would affect mortality hazard.

In this study, we aimed to examine whether 3-year changes - not caused by any active intervention - in four assessments of physical function (**Short Form-36 Physical Function Index, Grip strength, Chair rising, and Timed Up and Go**) in community-dwelling older men independently predict subsequent 15-year all-cause mortality.

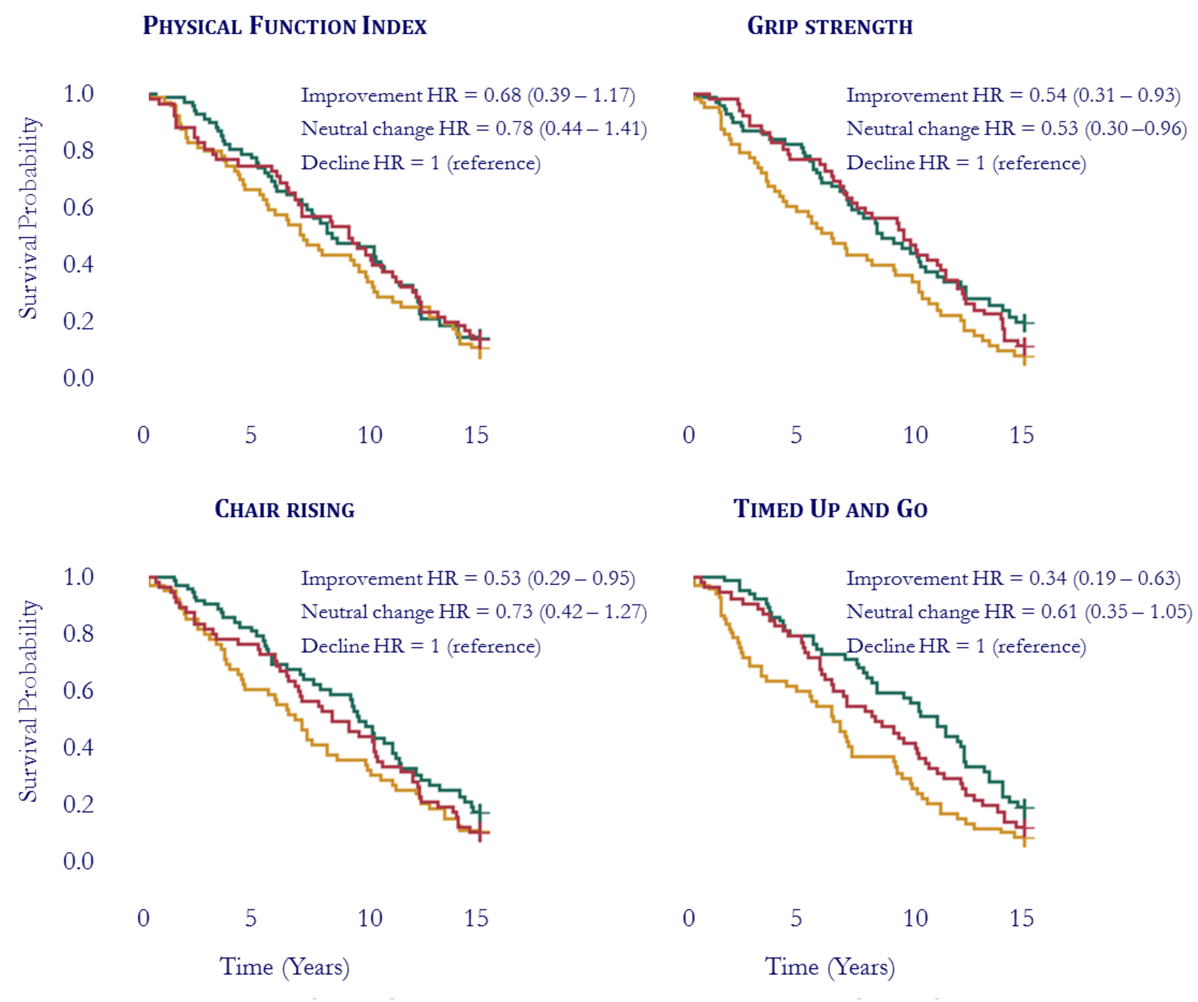
Methods

- **Population-based cohort** study in older men living in the semi-rural community of Merelbeke, Belgium.
- The study population consisted of **171 ambulatory men** who attended both the second and fifth wave, aged 71 years or more at the second wave.
- Change in physical function over **four assessment points** within three years was estimated for each subject separately using the formula for the slope of an ordinary least-squares regression line.
- Cox proportional hazard models were used to analyse associations with all-cause mortality. Because the effect of decline was not constant over **15-year time**, a time-dependent covariate was constructed and additional analyses were performed examining the associations with shorter-term (7-year) mortality.

Results

- Median (25th – 75th percentile) 3-year change in Short Form-36 Physical Function Index was -4.71 (-18.58 – +0.11) points, in Grip strength +0.25 (-4.02 – +2.23) kg, in Chair rising -0.90 (-2.14 – +0.15) seconds, and in Timed Up and Go -0.02 (-1.18 – +1.22) seconds.
- After 15 years of follow-up, 149 men (**87%**) **died**. Median survival time after the fifth wave was 8.3 (4.3 – 12.4) years.
- 3-year decline in all physical function assessments was associated with mortality hazard, independent from age and baseline physical function. However, a significant **time-attenuated effect** for changes in Short Form-36 Physical Function Index, Grip strength, and Chair rising was detected after 7-year time.
- Both physical function at a single time point assessment (either baseline or closure at wave 5) and 3-year decline in physical function estimated from repeated assessments were associated with higher subsequent 7-year mortality hazard, independent from age.

Figure 1. Age- and baseline physical function-adjusted survival curves stratified by tertile of 3-year change in physical function.



Conclusions

Physical function assessments at a single time point are robust predictors of all-cause long-term mortality in community-dwelling older men. Nevertheless, older community-dwelling men can experience changes in physical function over 3-year time, not caused by any active intervention. In this respect, repeated assessments of physical function can provide prognostic information beyond that available from single initial assessment for subsequent mortality hazard.