

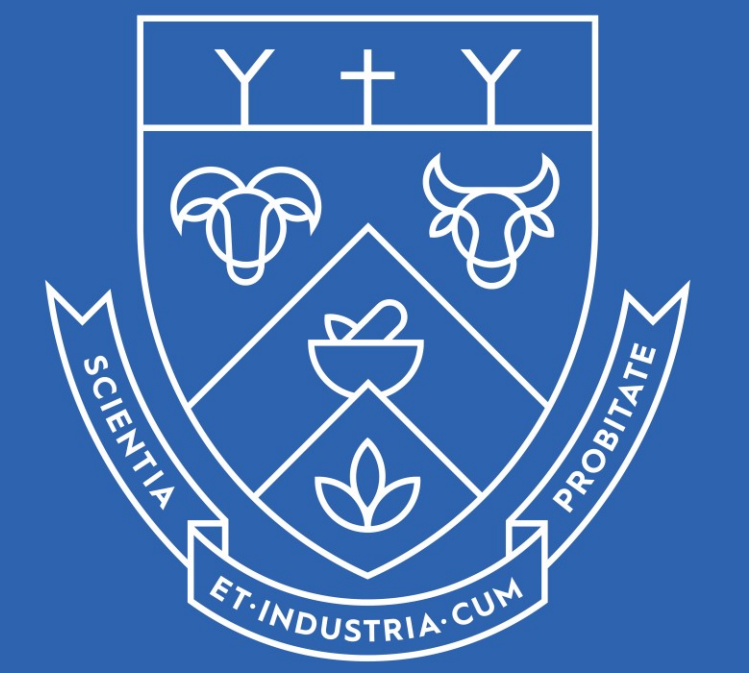
Can fitness tests be used to predict the vascular health of physically active older adults?

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Objective

There is an increased risk of cardiovascular diseases among older adults. This research aimed to determine which fitness tests could predict the vascular health of older adults using the gold standard pulse wave velocity (PWV) (applanation tonometry).

Methods

This cross-sectional study analysed 81 physically active adults (n=57 females) aged 64-91 (M=78±6.42) residing in independent living communities. A four-component fitness test included the 4-stage balance test (balance and falling assessment), six-minute walk test (SMWT) (aerobic exercise capacity), 30-second sit-to-stand test (postural hypotension and falling assessment), and the grip strength test (upper body strength) along with a PWV measurement. A regression use the four fitness tests as predictors of PWV for all participants. Pearson correlations then analysed these variables by subgroups of sex and age.

Results

When including all 81 participants, the four-component fitness test significantly accounted for 20% of the variance in PWV ($R^2=.20$; $F(4,76)=4.70$, $p=.002$) among older adults. Of the four components, higher sit-to-stand scores correlated with having healthy arteries ($\beta=-.27$, $p=.027$), but higher grip strength scores correlated with having unhealthy arteries ($\beta=.23$, $p=.036$). Neither the SMWT nor the balance test significantly contributed to the regression model.

Pearson correlations indicated for men that better balance correlated significantly with healthy arteries ($r=-.47$, $p=.011$). For women, higher sit-to-stand scores ($r=-.43$, $p \leq .001$) and better balance ($r=-.23$, $p=.045$) correlated significantly with healthy arteries. Among 70-79 year olds, higher sit-to-stand scores ($r=-.41$, $p=.002$) and better balance ($r=-.32$, $p=.014$) correlated significantly with healthy arteries. Among 80-89 year olds, higher SMWT ($r=-.40$, $p=.024$) correlated significantly with healthy arteries.

→ Conclusions

The four-component fitness test did significantly predict arterial stiffness in older adults, but grip strength scores were unexpectedly negatively related to healthy arteries whereas sit-to-stand was positively related.

In most groups, better balance and higher sit-to-stand scores were correlated to healthy arteries which was somewhat surprising.

Older participants were the only subgroup which showed a correlation between healthier arteries and higher SMWT scores.

Given the SMWT is an aerobic exercise capacity assessment, it is surprising it did not correlate stronger to PWV.

