

Relationships Between Mobility Tests and Maximum Bicycling Cadence during Speed Training in Older Adults

Benjamin E. Sibson¹, Maria Bellumori² and Christopher A. Knight PhD^{1, 1} University of Delaware, Newark, DE, ²California State University, Monterey Bay, CA.

Bellumori et al (2016) showed that speed-based exercise could improve neuromuscular function and mobility in older adults. Throughout training, the pedaling cadence of fast intervals (revolutions per min. RPM) progressively increased. **PURPOSE:** Secondary analysis was performed to determine if correlations exist between maximum RPM (RPM-max) and mobility tests and surveys of quality-of-life and movement confidence in older adults. **METHODS:** 14 older adults exercised on stationary recumbent bicycles twice per week in a six week program. High speed and low resistance emphasized neural activation while reducing musculoskeletal and cardiovascular strain. 30-min. sessions included five min. of warm-up and cool-down at preferred pedaling cadence. In the middle 20 min., subjects executed 20, 20-s fast intervals. RPM-max values were obtained for the first and last training sessions. Timed up and go test (TUG), 6-meter walk test, with instructions to go fast and safe (walk), 4-square step test (4SST), 9-hole peg test (peg), Activities-specific Balance Confidence (ABC) Scale, 36-item Short Form Survey (SF36), and right and left hand isometric handgrip strength test were administered pre and post training. Grip strength was normalized to body mass (L/RGripN). Pearson's correlations describe the relationships among variables. **RESULTS:** At the program's onset, RPM-max was significantly ($p < .05$) correlated with TUG ($r = -.585$), walk ($r = -.796$), 4SST ($r = -.916$, $n=7$), ABC ($r = .723$, $n=13$), SF36 ($r = .550$), LGripN ($r = .541$), and RGripN ($r = .596$). At the program's end, RPM-max was significantly correlated with TUG ($r = -.849$), walk ($r = -.894$), 4SST ($r = -.791$, $n=7$), LGripN ($r = .690$) and RGripN ($r = .652$). TUG, walk, 4SST, and L/RGripN were significantly correlated with RPM-max both before and after the program. **CONCLUSION:** Maximum RPM has a strong relationship with timed tests of mobility and moderate correlations with strength and perceived quality of life and balance confidence. While the association between fast pedaling and overall mobility is logical, these data support the use of RPM-max as an informative parameter related to mobility status and the overall robustness of the older adult.

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