

## Resistance Training may Mitigate Age-related Decline in Physical Function

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Category: Masters

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### ABSTRACT

Aging is often accompanied with the onset of sarcopenia, defined by low muscle mass, strength, and physical function. Regular resistance exercise may mitigate this loss; however, data are lacking that compare younger and older adults who do and do not perform resistance training for general health on skeletal muscle mass and physical function. **PURPOSE:** The aim of this study was to identify differences in muscle mass and physical function between younger and older adults who did and did not perform resistance training for general health. **METHODS:** Healthy younger ( $23.8 \pm 0.4$  yrs) and older ( $68.5 \pm 1.2$  yrs) men and women ( $n = 76$ ) who either did or did not regularly participate in resistance training were placed into 4 groups: young trained (YT:  $n = 22$ ), young not trained (YNT:  $n = 16$ ), old trained (OT:  $n = 17$ ), and old not trained (ONT:  $n = 21$ ). Dual energy x-ray absorptiometry assessed appendicular skeletal muscle mass (SMI). Participants performed 4 physical function tests: stair climb (SC), 30s sit-to-stand (30sSTS), 6-min walk test (6MWT), and timed-up-and-go (TUG). ANOVAs were used to compare groups for all measures,  $p \leq 0.05$ . Data are reported as mean  $\pm$  SE. **RESULTS:** Differences were found between groups for SMI, SC, 30sSTS, 6MWT, and TUG ( $p \leq 0.05$ ). SMI was higher for YT compared to YNT ( $p = 0.001$ ), ONT ( $p < 0.0001$ ) and OT ( $p = 0.032$ ) (YT:  $8.67 \pm 0.36$  kg/m<sup>2</sup>, YNT:  $7.08 \pm 0.23$  kg/m<sup>2</sup>, OT:  $7.73 \pm 0.29$  kg/m<sup>2</sup>, ONT:  $7.11 \pm 0.27$  kg/m<sup>2</sup>). SC performance was slower for ONT compared to YT ( $p < 0.0001$ ), YNT ( $p < 0.0001$ ), and OT ( $p = 0.032$ ); however, YT and was faster than OT ( $p = 0.002$ ) (YT:  $2.37 \pm 0.05$ s, YNT:  $2.60 \pm 0.10$ s, OT:  $2.94 \pm 0.15$ s, ONT:  $3.32 \pm 0.16$ s). For 30sSTS, OT completed more reps than ONT ( $p < 0.0001$ ) and YNT ( $p = 0.001$ ). YT completed more reps than YNT ( $p < 0.0001$ ) and ONT ( $p < 0.0001$ ) (YT:  $22.8 \pm 0.5$  reps, YNT:  $18.4 \pm 0.7$  reps, OT:  $22.1 \pm 1.1$  reps, ONT:  $16.7 \pm 0.6$  reps). OT ( $p = 0.001$ ), YT ( $p < 0.0001$ ), and YNT ( $p = 0.046$ ) walked farther in the 6MWT compared to ONT, and YT walked farther than YNT ( $p = 0.048$ ) (YT:  $837.0 \pm 16.7$  yds, YNT:  $783.2 \pm 14.5$  yds, OT:  $819.9 \pm 23.3$  yds, ONT:  $728.3 \pm 18.9$  yds). For TUG, OT ( $p = 0.001$ ) and YT ( $p = 0.046$ ) were faster than ONT (YT:  $5.81 \pm 0.17$ s, YNT:  $5.87 \pm 0.25$ s, OT:  $5.31 \pm 0.19$ s, ONT:  $6.35 \pm 0.21$ s). 30sSTS, 6MWT and TUG were not different between OT and YT. 6MWT and SC were not different between OT and YNT ( $p > 0.05$ ). All other comparisons were not significantly different ( $p > 0.05$ ). **CONCLUSION:** Resistance trained older adults outperformed their nonresistance trained peers and these data suggest that older adults who engage in regular resistance training may maintain physical function similar to that of younger adults. Funded by Texas American College of Sports Medicine Student Research Development Award and Thesis Fellowship Award to H. Kendall.