

Effects of Age and Sex on Muscle Function during Isovelocity Contractions.

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PURPOSE: To assess the effect of age and sex on absolute and relative knee extensor peak torque (PT), power (PW), and time to peak torque (TTP) at multiple velocities. **METHODS:** 61 women and 87 men completed 3 maximal knee extensions at 60, 120, and 180°/sec on an isokinetic dynamometer. Data were analyzed as absolute values and relative to FFM. Volunteers were grouped by sex and age (YW=young women (20 yr); YM=young men (21 yr); OW=old women (71 yr); OM=old men (73 yr)). FFM was estimated with bio-impedance. ANOVAs were conducted to locate differences between groups.

RESULTS: Absolute and relative PT (60 °/s) were different between sex (absolute PT: YM=236.3 vs. YW=148.8; OM=137.2 vs. OW=85.4 Nm) and age groups (YW>OW; YM>OM). Absolute and relative PT (120 °/s) were different between sex (absolute PT: YM=187.0 vs. YW=117.0; OM=108.1 vs. OW=65.9 Nm) and age groups (YW>OW; YM>OM). Absolute and relative PT (180 °/s) were different between sex (absolute PT: YM=155.8 vs. YW=97.5; OM=90.7 vs. OW=56.1 Nm) and age groups (YW>OW; YM>OM). Absolute and relative PW (60 °/s) were different between sex (absolute PW: YM=157.6 vs. YW=101.2; OM=91.1 vs. OW=57.4 W) and age groups (YW>OW; YM>OM). Absolute and relative PW (120 °/s) were different between sex (absolute PW: YM=256.3 vs. YW=159.9; OM=150.2 vs. OW=89.2 W) and age groups (YW>OW; YM>OM). Absolute and relative PW (180 °/s) were different between sex (absolute PW: YM=311.2 vs. YW=189.2; OM=171.7 vs. OW=102.5 W) and age groups (YW>OW; YM>OM). Absolute TTP (60 °/s) was not different between sex (absolute TTP: YM=0.27 vs. YW=0.37; OM=0.31 vs. OW=0.27 s) and age groups. Relative TTP was different between sex (YM=0.004 vs. YW=0.006; OM=0.005 vs. OW=0.007 s) but not age groups. Absolute TTP (120 °/s) was not different between sex (absolute TTP: YM=0.18 vs. YW=0.21; OM=0.18 vs. OW=0.19 s) and age groups. Relative TTP was different between sex (YM=0.0008 vs. YW=0.001; OM=0.003 vs. OW=0.004 s) but not age groups. Absolute TTP (180 °/s) was not different between sex (absolute TTP: YM=0.13 vs. YW=0.13; OM=0.11 vs. OW=0.13 s) and age groups. Relative TTP was different between sex (YM=0.002 vs. YW=0.003; OM=0.002 vs. OW=0.003 s) but not age groups. **CONCLUSION:** Older adults had reduced absolute and relative PT and PW compared to young adults. YM had faster relative TTP than YW; and OM had faster relative TTP than OW.

Supported by NIH National Center for Complementary and Alternative Medicine (1R15 AT003938-01) and the Bloomsburg University Foundation.