

Gender Differences in Incremental Force Production Accuracy Following a 3-, 6-, or 12-Week Strength Training Course

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ABSTRACT

Subjective muscular force production is a commonly used psychophysiological method in resistance training and physical rehabilitation. However, limited research is available regarding whether differences exist in match-force production accuracy between male and female adults. **PURPOSE:** The purpose of this study was to examine the gender differences in perceived force production accuracy following participation in a strength training course. **METHODS:** Participants (20 males, 26 females) were sampled from an undergraduate strength training course. Using a hand-grip dynamometer, maximal and incremental force production measurements were collected with the participants in a seated position with their dominant forearm resting on a table. Participants were asked to produce a maximal force on the hand-grip dynamometer followed by two sets of incremental force measures at 25%, 50%, 75%, and 100% of maximal effort with adequate rest in between bouts. Incremental hand-grip measurements were repeated following a 3-, 6-, or 12-week strength training course. A linear regression analysis was used to examine the relationship between gender and hand-grip force error for the increments of force.

RESULTS: Results indicated that the most variance in error was at the submaximal muscular force production of 25%, whereas the most accurate increment was at 100%, regardless of duration (3-, 6-, or 12-weeks) of participation in the strength training course ($r^2 = 0.046$, $p < 0.001$). For increments of lower exertion (i.e., 25% and 50%), there was no significant differences between male and female participants. However, for higher incremental force exertion (i.e., 75% and 100%), approximately 23% of variance ($r^2 = 0.230$, $p < 0.001$) and 32% of variance ($r^2 = 0.322$, $p < 0.001$) in force production accuracy, respectively, can be accounted for by gender. **CONCLUSION:** Following exposure to strength training instruction, physically active female adults are more accurate in force production at incremental exertion levels (i.e., 25%, 50%, 75% of maximal force), whereas males have greater match-force accuracy at 100% of maximal force production.