

Difference in Standardized Repetitions Completed at 1-Repetition Maximum Load Percentages for Women

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ABSTRACT

In resistance training, a given training load is determined by two factors, volume (number of repetitions completed) and intensity (weight lifted). The current literature clearly recognizes an inverse relationship between the weight lifted and repetitions completed. The previous studies establishing intensity-to-repetition ratios predominantly utilized male participants. Research has yet to explore and determine appropriate resistance training intensity-repetition ratios for females. **PURPOSE:** Furthermore, the purpose of the study was to examine the relationship between achieved repetitions and load lifted (a percentage of 1RM) of college females. **METHODS:** Subjects included 11 females with six month of consistent resistance training experience. Each participant completed five testing sessions. Session one consists of one-repetition maximum (1RM) testing for the squat (SQ), bench press (BP), and deadlift (DL), utilizing the National Strength and Conditioning Associations (NSCA) standardized 1RM testing procedures. Sessions 2-5 were experimental sessions involving a repetition-maximum testing at 65, 75, 85, and 95% of an individual's 1RM, in the order of SQ, BP, then DL. Following the SQ, participants received 10-15 minutes of rest before performing the same protocol for the BP, followed by 10-15 minutes rest before performing the DL. Repeated measures ANOVA was performed to determine if there were any significant differences in repetitions performed at each level of intensity for the three exercises. A series of one-sample t-tests were performed to indicate significant differences between established target repetitions for each exercise across all intensities (65%=15, 75%=10, 85%=6, 95%=2). **RESULTS:** There was no significant main effect ($p=0.13$) in repetitions completed during SQ, BP, or DL at 65% (26.7 ± 2.0 , 20.6 ± 1.8 , 23.5 ± 2.0 , respectively). Similarly, no significant main effect was found at 75% ($p=0.26$) across SQ, BP, and DL (16.5 ± 1.5 , 13.7 ± 1.0 , 15.5 ± 1.2 , respectively). At 85% there was no significant main effect found for repetitions completed during SQ, BP, and DL (8.9 ± 0.5 , 8.1 ± 0.9 , 8.2 ± 0.8 , respectively). Finally, no significant main effect was present at 95% during SQ, BP, and DL (3.2 ± 0.5 , 2.5 ± 0.4 , and 3.0 ± 0.4 , respectively). The one-sample t-test indicated a significantly higher repetitions for all SQ, BP, and DL at 65% ($p<0.01$) and 75% ($p<0.01$). At 85% of 1RM, only SQ ($p<0.01$) and DL ($p=0.02$) were significantly higher, with only SQ significantly higher at 95% ($p=0.04$). **CONCLUSION:** These results suggest the same intensity-repetition ratios should be prescribed for upper and lower body exercises in females. However, the results suggest different resistance training intensity-repetition ratios should be prescribed for females; meriting future research aimed at establishing sex-specific intensity-repetition ratio norms.