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The Reliability of 1- and 3Rm Tests of Unilateral Strength in Trained and Untrained Men and Women

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ABSTRACT

The purpose of this study was to determine the reliability of the 1- and 3RM tests for the modified unilateral squat. Thirty untrained (22 women, 8 men) and 22 trained (12 women, 10 men) subjects participated in the study. The trained group had a minimum of 1 year lower-body training experience but had not participated in unilateral training prior to the study. After practicing proper technique with light loads, the subjects used the barbell squat to complete a 1- and 3RM pretest and posttest. In each group half of the subjects completed the 1RM tests prior to the 3RM tests while half of the subjects completed the 3RM tests first. A rest period of 48 hours was allowed between each test. Twenty subjects, randomly selected from the two groups, completed a third session of the 1RM test 3 days after the 1RM posttest. Intraclass correlation coefficients were recorded. Differences between pre- and posttest measures were determined by the paired-sample t-test. The 1- and 3RM tests were found to be significantly reliable for trained men,  $r = 0.98$  and  $r = 0.97$ , untrained men,  $r = 0.99$  and  $r = 0.97$ , trained women  $r = 0.99$  and  $r = 0.94$ , and untrained women,  $r = 0.97$  and  $r = 0.87$ , respectively. Posttest scores for the 1- and 3RM tests significantly improved above baseline levels in each group ( $p < 0.05$ ). Strength scores did not significantly increase during the third 1RM test ( $p = 0.22$ ). The data indicate that the modified unilateral squat can be measured with high reliability using the 1- and 3RM tests. The improved posttest scores indicate that a pretest session should take place before recording baseline measurements.

Key words: Single-leg strength, unilateral squat, resistance exercise

Key Points

- The modified unilateral squat is a reliable test for trained and untrained men and women.
- The 1RM and 3RM tests are reliable and safe for trained and untrained subjects.
- A practice session and pretest should be conducted prior to baseline testing.

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