



## Mid Atlantic Regional Chapter of the American College of Sports Medicine

Annual Scientific Meeting, November 1<sup>st</sup> – 2<sup>nd</sup>, 2019  
Conference Proceedings

International Journal of Exercise Science, Volume 9, Issue 8



### Validity and Reliability of the Two-Point Method for Estimating Squat and Bench Press One-Repetition Maximums

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**Purpose:** To assess the validity and reliability of the two-point method for estimating one repetition maximums (1RM) in the squat and bench press exercises with varied pairs of loads. **Methods:** Thirteen resistance-trained men (age:  $21.7 \pm 0.4$  years; height  $1.74 \pm 0.07$  m; mass:  $82.9 \pm 9.5$  kg; 1-repetition maximum (1RM) back squat:  $149.9 \pm 20.7$  kg; 1RM bench press:  $114.8 \pm 18.5$  kg) performed three trials of squat and bench press using the following percentages of 1RM: 20, 30, 40, 50, 60, 70, 80%. The order of the loads was counterbalanced across the participants. The mean vertical velocity of the barbell during the concentric phase of each repetition was recorded using a 3-D motion analysis system (Vicon; 200 Hz). Varied loading pairs (20% & 80%, 30% & 70%, 40% & 50%, 40% & 70%,) were selected and regression equations were created to estimate 1RM. Analysis of variance was used to compare differences between the measured and estimated 1RMs for the squat and bench press. Coefficients of variation (CV%) and intra-class correlations (ICC) were calculated to determine the reliability of the two-point method in both exercises. **Results:** No significant differences were found ( $p > 0.05$ ) between estimated and measured 1RMs despite large range of mean differences in the squat (MD: 6.5 – 27.5 kg) and bench press (MD: 1.1 – 4.3 kg). A large range of CV%<sub>s</sub> (squat CV%: 6.5 – 30.1%; bench press CV%: 3.2 – 5.5%) and ICC<sub>s</sub> (squat ICC: 0.14 – 0.82; bench press ICC: 0.85 – 0.97) were found across the four loading pairs. **Conclusion:** The two-point method represents a useful means of estimating 1RM during the back squat and bench press exercises without inducing the fatigue associated with directly measuring 1RM. However, selection of loading pairs is important as low reliability was displayed depending on the choice of loads. Individualized force velocity characteristics should be considered when utilizing the two-point method for estimating a 1RM.