Resistance Training Volume Enhances Muscle Hypertrophy but Not Strength in Trained Men

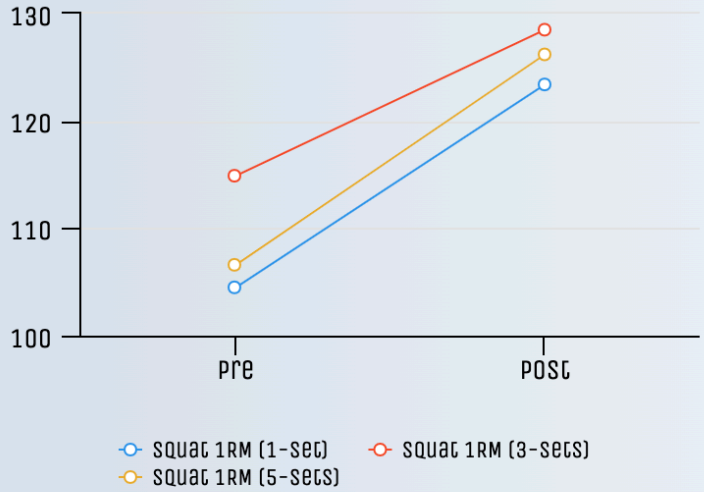
Study Objectives

To evaluate muscular adaptations between low (1-set per exercise), moderate (3-sets per exercise), and high (5-sets per exercise) volume resistance training protocols in resistance-trained men.

Measurements

34 healthy resistance-trained men were randomly assigned to: 1-set per exercise per training session (n = 11), 3-sets per exercise per training session (n = 12), or 5-sets per exercise per training session (n = 11). All routines consisted of 3x weekly sessions performed on nonconsecutive days for 8 wk. Muscular strength was evaluated with 1RM squat and bench press testing. Muscle hypertrophy was evaluated using B-mode ultrasonography for the elbow flexors, elbow extensors, mid-thigh, and lateral thigh

Strength Results



Results showed significant pre-to-post intervention increases in strength and endurance in all groups.Squat 1RM- no significant difference between groups in squat 1RM improvement($P = 0.22$); Bench Press 1RM- no significant difference between groups in bench 1RM improvement ($P = 0.15$). All groups increased muscle size in most of the measured sites from pre-to post intervention. Higher volume significantly increased the muscle size of the elbow flexors, mid-thigh, and lateral thigh.

Conclusion

Increases in strength and can be attained by resistance-trained individuals with just three 13-min weekly sessions over an 8-wk period. These gains are similar to that achieved with a substantially greater time commitment. Alternatively, muscle hypertrophy follows a dose–response relationship, with increasingly greater gains achieved with higher training volumes.

Schoenfeld, B.J., Contreras, B., Krieger, J., Grgic, J., Delcastillo, K., Belliard, R. and Alto, A., 2019. Resistance training volume enhances muscle hypertrophy but not strength in trained men. Medicine and science in sports and exercise, 51(1), p.94.