

Is whey protein or Oscar Mayer P3 Portable Protein Pack better for one repetition max strength gains?

Daniel Martinez, John Cryer, Jonathan Herrera, Yancarlo Palacios, Zachary Blankenship
KINE 3325 – Undergraduate Research Methods (Dr. Caçola)
 Department of Kinesiology - The University of Texas at Arlington

Abstract

Protein is found all throughout the body and is the key component to building muscle. Protein is built from building blocks called amino acids. It has been found that whey protein is digested very quickly, and possesses a greater compliment of essential amino acids and branched chain amino acids. Oscar Mayer P3 pack contains cheese, nuts, and meat which complement the essential amino acids. Research has shown that Whey protein stimulates greater increase in muscular strength due to its concentration, fast digestion, and mixture of peptides over its predecessors. The aim of the experiment is to determine whether powder protein will produce a higher one repetition max in bench, squat, and hand grip strength when compared to a prepackaged protein pack. Twelve men between ages 18 and 26 volunteered to participate in the study. Each subject was required to fill out a questionnaire and a consent form for risk and benefits of the study. All participants were first evaluated with a one repetition max (1RM) in bench, back squat and hand grip strength. The hand grip strength was measured by a standard Dynamometer. Participants were then divided into two groups by random. The participants met 3 times a week for 4 weeks in a recreation fitness facility for 30 minute sessions. Each session was designed to specifically address muscular strength, muscular endurance, and aerobic capacity. After 4 weeks a measure of the 1RM in bench, squat, and hand grip strength was administered to determine the change of each individual. The groups were then compared to determine the effectiveness of each protein. In the independent t-test comparing the pretest and posttest of the whey protein group and P3 group bench max had no significant difference ($p > .05$). The grip strength pretest and posttest max had no significant difference ($p > .05$). The squat strength pretest and posttest max had no significant difference ($p > .05$). In the dependent t-test comparing the two groups of the whey protein and the P3 group significant differences ($p < .05$) were found between the two groups. In bench, squat, and grip strength there was a significant difference between the pretest and posttest. The present study found evidence that consuming additional protein during resistance training will result in strength gain in untrained males. This will be attributed to the extra dietary protein or the neural adaptations.

BACKGROUND & PURPOSE

- It has been found that whey protein is digested very quickly, and possesses a greater compliment of essential amino acids and branched chain amino acids (Burke et al., 2001).
- Studies have found that males who supplemented with whey protein had a greater gain in relative lean muscle tissue, had greater knee extension peak torque and a greater relative increase in one repetition max on the bench when compared to a placebo group (Burke et al., 2001).
- The aim of the experiment is to determine whether Gold Standard Whey Protein Powder will produce a higher one rep max in bench, squat, and hand grip strength rather than the Oscar Mayer P3 Portable Protein Pack.

Table 1. Exercise Plan for Both groups

Focus	Workout Exercise
Muscular Strength	Push Ups/Pull Ups/Chin Ups/ Assisted pull ups and chin ups if needed
Muscular Endurance	Row machine – 1000 meters
Flexibility	Static and Dynamic stretching
Chest Workout	Barbell press, dumb bell press, chest flies, push ups
Back Workout	Lat pull down, Seated row, Single arm row
Ab Workout	Curl-ups, crunches, planks, and bicycles
Leg Workout	Back squats, Lunges, leg curls, leg extensions

METHODS

- 12 adult untrained males (ages 18-26) volunteered to complete the study.
- All participants completed a questionnaire to determine fitness level and supplementation history.
- The subjects first completed a pretest to determine one repetition maxes in bench, hand grip strength and squat.
- The subjects were then assigned to either the Oscar Mayer P3 group or whey protein group. They then completed 4 weeks of resistance training.
- Each subject consumed either the whey protein or portable protein pack 15 minutes after completing the last exercise.
- After 4 weeks of resistance training the subjects completed a posttest to determine one repetition maxes in bench, hand grip strength and squat.

RESULTS

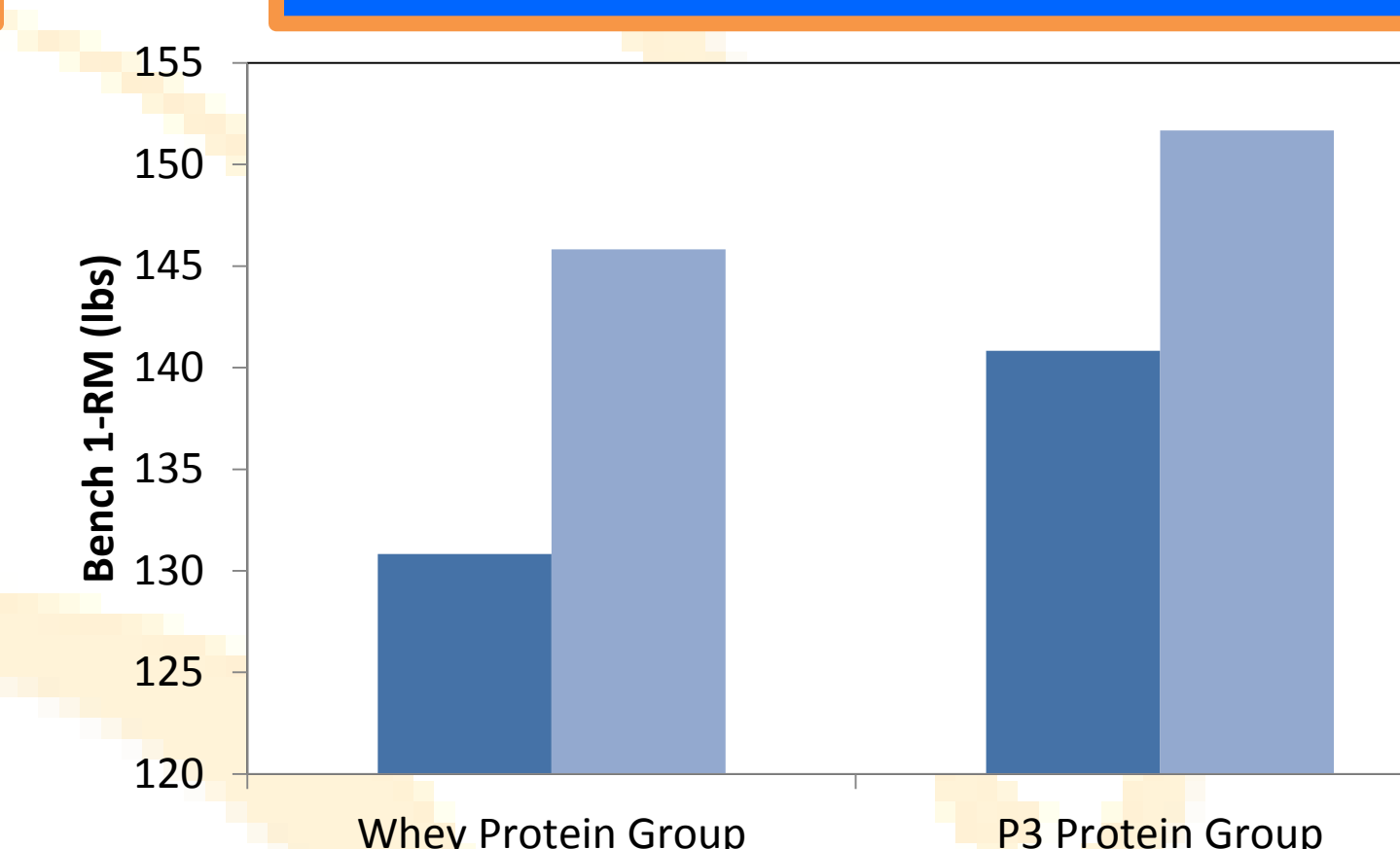


Figure 1: Mean Bench 1-RM Before and After Resistance Training

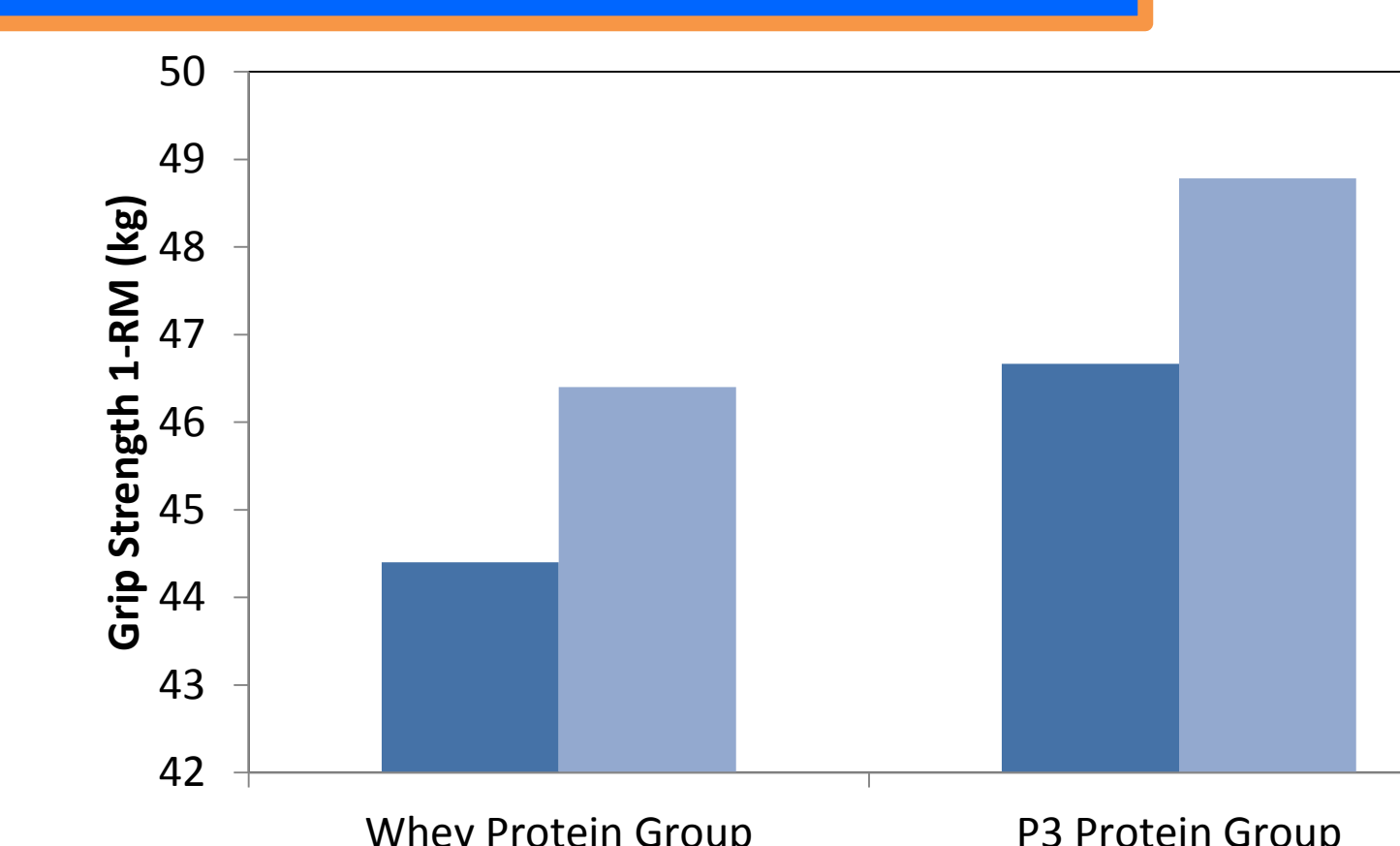


Figure 2: Mean Grip Strength 1-RM Before and After Resistance Training

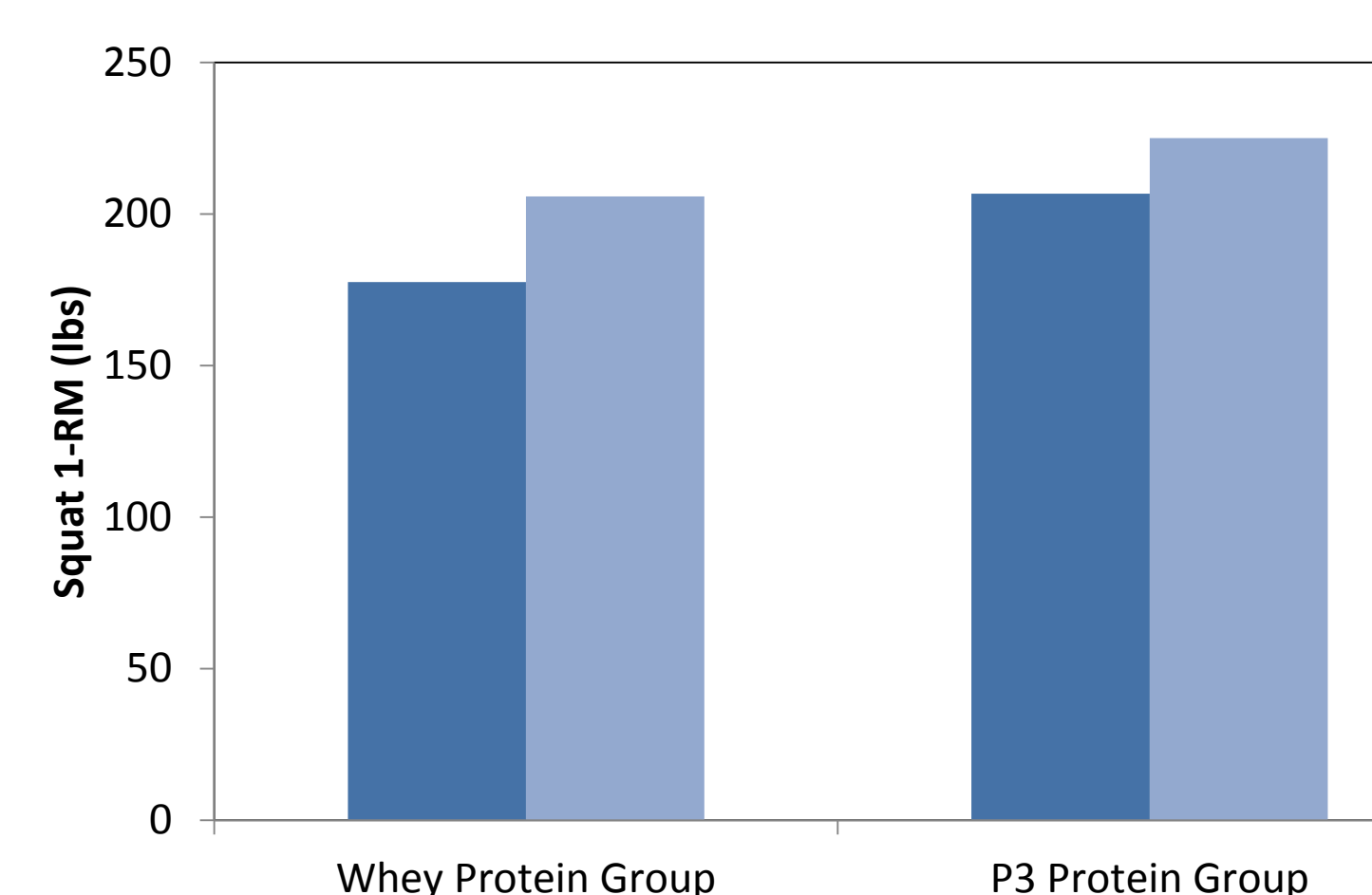


Figure 3: Mean Squat 1-RM Before and After Resistance Training

- In the independent t-test comparing the pretest and posttest of the whey protein group and P3 there were no significant differences ($p > .05$) between any measure of strength.
- In the dependent t-test comparing the groups individually there was a significant difference ($p < .05$) in each measure of strength.

DISCUSSION & CONCLUSION

- The results of the present study show that a 4 week resistance training plan, with protein supplementation, for untrained males will result in an increase in strength.
- Results across studies suggest that consuming additional dietary protein during resistance training, independent of source, may be responsible for the increase in strength (Candow et al. 2006).
- Previous studies have determined that the early gains in strength for complex movements are not due to muscle hypertrophy, but due to neural adaptations (Candow et al., 2006).
- This explains why there were significant increases in strength among the groups, but why there was no significant difference when the groups were compared.
- The present study found evidence that consuming additional protein during resistance training will result in strength gain in untrained males. This will be attributed to the extra dietary protein or the neural adaptations

REFERENCES

- Burke, DG, Chilibeck, PD, Davison, KS, Candow, DG, Farthing, J, & Smith-Palmer, T. (2001). The Effect of Whey Protein Supplementation With and Without Creatine Monohydrate Combined With Resistance Training on Lean Tissue Mass and Muscle Strength. *International Journal Of Sport Nutrition & Exercise Metabolism*, 11(3), 349-364.
- Candow, DG, Burke, NC, Smith-Palmer, T, and Burke, DG. (2006). Effect of Whey and Soy Protein Supplementation Combined With Resistance Training in Young Adults. *International Journal of Sport Nutrition and Exercise Metabolism*, 16, 233-244.