

INTERRELATIONSHIPS AMONG THE THREE POWERLIFTING EXERCISES IN RESISTANCE TRAINED FEMALES

Corinne C Ellis, Michael M. Esco, Alyssa L. Parten

Exercise Physiology Laboratory, Department of Kinesiology, The University of Alabama

BACKGROUND

- Performance in powerlifting is judged by the maximum weight a lifter can lift in a single repetition (1RM) for back squat (BS), supine bench press (BP), and deadlift (DL).
- In competition, athletes have 3 attempts to achieve their 1RM before moving into the next lift.
- It is commonly believed that a lifter who excels in one of these exercises may perform well in others, but research on this topic for females is limited.

PURPOSE STATEMENT

- The purpose of this study is to examine whether there is a shared variance across the three exercises: back squat, supine bench press, and deadlift, in female weightlifters.

METHODS

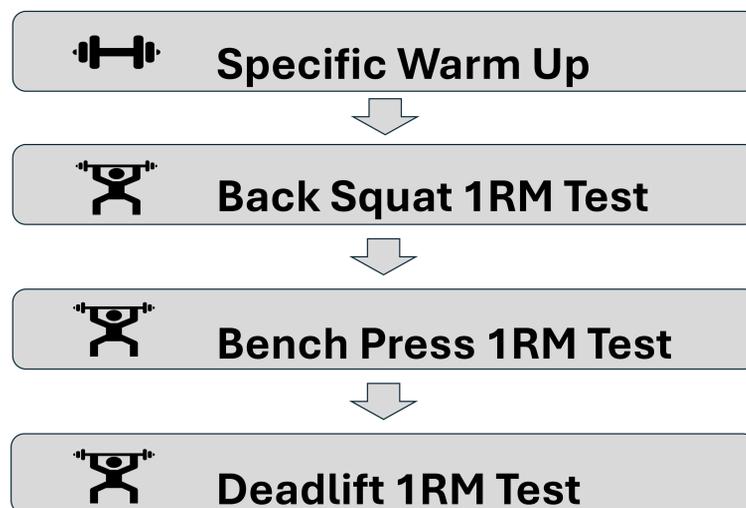
- 24 resistance trained females came to the lab to test their 1RM in BS, BP, and DL.
- Each participant followed the same specific warm up procedures before testing.
- Participants then completed 1 rep at a time, adding weight until failure to determine 1RM before moving to the next lift.
- Proper technique was verified by observation from a Certified Strength and Conditioning Specialist.
- The mean and standard deviation were taken for each lift and stepwise regression analysis was used to determine variance.

METHODS

Table 1. Participant Characteristic (Mean ± SD)

Age (y)	24.9 ± 5.4
Height (cm)	163.8 ± 6.4
Weight (kg)	66.3 ± 7.4
Back Squat 1RM (kg)	88.6 ± 23.3 kg
Supine Bench Press 1RM (kg)	53.8 ± 14.4 kg
Deadlift 1RM (kg)	103.5 ± 27.9 kg

y = years, cm = centimeters, kg = kilograms



RESULTS

Table 1. Descriptive Statistics and Regression Results Among the 1RM Tests

DV	M ± SD	IV	r	R ²	p-value
Bench Press	53.8 ± 14.4 kg	Squat	0.79	0.62	<0.001
		Deadlift	0.23	—	0.28
Squat	88.6 ± 23.3 kg	Deadlift	0.91	0.83	<0.001
		Bench Press	0.30	—	0.17
Deadlift	103.5 ± 27.9 kg	Squat	0.91	0.83	<0.001
		Bench Press	0.23	—	0.28

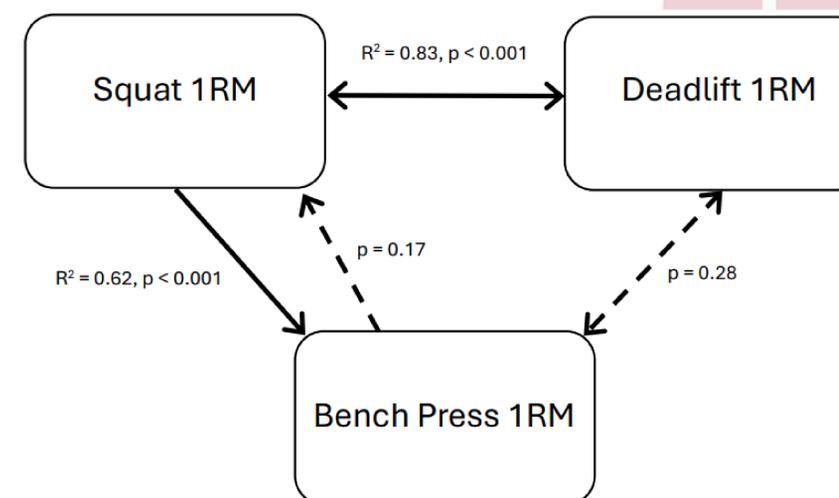


Figure 1. Regression pathways among the performance tests

PRIMARY FINDINGS

- There is a strong relationship between BS and DL performance in female athletes, however BP did not account for either.
- Lower-body strength may contribute to upper-body performance, but not vice versa.
- Improvements in BS performance may contribute to BP strength, perhaps due to leg drive during BP.