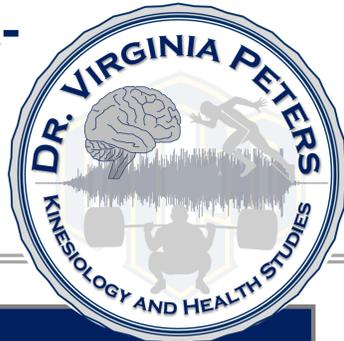




IS THERE A RELATIONSHIP BETWEEN ONE-REPITION MAXIMUN FOR BENCH PRESS AND HEX-BAR DEADLIFT WITH ACFT TESTING VARIABLES?

Mikayla I. Navarro, Dylan M. Montgomery, Tatum D. Robertson , & Eric C. Conchola
 University of Central Oklahoma



INTRODUCTION

While athletic performance may be directly tied to sport, tactical fitness (military) relies on similar characteristics as well. For example, when assessing the Army Combat Fitness Test (ACFT), there are six events (Hex-Bar Deadlift, Standing Power Throw, Hand Release Push-Up, Sprint, Drag, Carry, Plank, 2 Mile Run) that are assessed. Throughout the events, muscular strength, muscular power and muscular endurance are commonly assessed. Although ACFT testing assesses a variety of variables (strength, power, endurance, aerobic fitness) one variable that lacks assessment is upper-body strength (Bench Press 3-RM). Knowing that the ACFT perform events that rely on upper and lower-body strength and power Standing Power Throw (SPT) and Sprint Drag Carry (SDC), assessing upper-body strength may be of importance for greater understanding in specific ACFT events.

METHODS

Twenty healthy ROTC males (age = 20.35 ± 1.90 years, height 176.84 cm ± 7.63 cm, mass 79.92 kg ± 10.00 kg) and six healthy ROTC females (age = 19.83 ± 1.72 years, height 162.05 cm ± 6.45 cm, mass 61.94 kg ± 6.21 kg) volunteered to participate in the study. Any upper or lower extremity injuries resulted in exclusion from the study. Participants performed a baseline three repetition maximum (3-RM) assessments for straight bar bench press in late January, 2025. Maximum strength (1-RM) was calculated from the 3-repetition maximum (weight ÷ (% 1-RM ÷ 100)). A diagnostic ACFT assessment was performed within 14-21 days post 3-RM bench press (due to weather). The 3-RM Hex-Bar Deadlift was calculated from the ACFT Hex-Bar Deadlift event using the same formula from the bench press. The SPT consists of a cadet throwing a 4.54 kg sand filled medicine ball behind them for distance (meters), two attempts are performed. The SDC consists of a 25 meter distance for each task, where the cadets will sprint, drag a 40.91 kg sled, lateral shuffle, carry two 18.18 kg dumbbells, and sprint again. One attempt was performed. A Spearmans Rho correlation was used for each gender independently and an alpha of 0.05 was used for level of significance.

RESULTS

For males, Bench Press 1-RM was positively correlated with DL 1-RM and Power Toss (r=0.70-0.86, p=<0.001 – 0.001), and negatively correlated with SDC (r=-0.69, p=0.001). DL 1-RM was positively correlated with Power Toss (r=0.76, p=<0.001) and negatively correlated with SDC (r =-0.74, p =<0.001), Power Toss was negatively correlated with SDC (r=-0.74, p=<0.001). For the females Bench Press 1-RM was positively correlated with DL 1-RM, and Power Toss (r=0.841-0.924, p=0.004-0.018). DL 1-RM was significantly correlated with Power Toss (r=0.886, p=0.009).

CONCLUSIONS

The present study observed similar positive correlational results per gender, however, males saw significant negative correlations for 1-RM strength for upper and lower body when completing the SDC.

PRACTICAL APPLICATIONS

These findings may be of importance for future ACFT testing comprehension. Specifically, future assessments may want to incorporate upper-body predicted 1-RM'S and see if that has a positive impact on overall ACFT performance and score outcomes.

ACKNOWLEDGEMENTS

UCO Army ROTC



Education and Professional Studies
 Department of Kinesiology and Health Studies

Table 1: Female Correlation of Estimated 1-RM with Power Toss and Sprint Drag Carry

	Hexbar Deadlift	Bench Press	Power Toss	Sprint Drag Carry
Hexbar Deadlift	1	0.924**	0.880*	-0.030
Bench Press	0.924**	1	0.841*	-0.058
Power Toss	0.880*	0.841*	1	-0.257
Sprint, Drag, Carry	-0.030	-0.058	-0.257	1

* Correlation level at 0.05, ** Correlation level at 0.01

Table 2: Male Correlation of Estimated 1-RM with Power Toss and Sprint Drag Carry

	Hexbar Deadlift	Bench Press	Power Toss	Sprint, Drag, Carry
Hexbar Deadlift	1	0.855**	0.756**	-0.744**
Bench Press	0.855**	1	0.701**	-0.669**
Power Toss	0.756**	0.701**	1	-0.735**
Sprint, Drag, Carry	-0.744**	-0.669**	-0.735**	1

* Correlation level at 0.05, ** Correlation level at 0.01