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Title: Relationship between measures of muscular strength, endurance, and power to an occupational task among SWAT operators

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PURPOSE: Special Weapons and Tactics (SWAT) officers that express high levels of strength and endurance are more likely to perform better in specific occupational tasks, such as a body drag where they must physically transport a civilian or fellow officer from a hazardous environment. The aim of the present study was to examine the relationship between measures of strength, endurance, and power to sled pull time (a simulated body drag) among SWAT officers.

METHODS: Archival data for twelve (n=12; age 34.33 ± 5.85 yrs.; ht: 72.17 ± 3.04 in., wt: 205.66 ± 24.01 lbs.) SWAT officers. This data were collected as part of the agency's normal training academy fitness assessment prior to commencement of training and included measures of upper-body muscular strength (pull-ups) and endurance (push-ups), trunk muscular endurance (sit-ups), anaerobic power (vertical jump; 300 m run), and aerobic capacity (20 meter multi-stage fitness test). The body drag (BD) assessment was simulated using a 200 lb. sled which was pulled 20 yards, backward, using a rope strap. Time to complete the BD was recorded using a stopwatch to the nearest 0.01 seconds.

RESULTS: The results indicated significant relationships between sled pull time and body weight ($r=-.822$, $p=.001$), BMI ($r=-.632$, $p = .028$), and number of pushups performed ($r=-.661$, $p = .02$).

CONCLUSIONS: As body weight and BMI of the SWAT officers increased, their sled pull time significantly decreased, suggesting larger officers may have an advantage when performing strength-based occupational tasks. It is important to note that simply gaining more weight will not lead to faster times, but rather increasing overall muscle mass by increasing strength would most likely yield better results. Sled pull times also decreased as officers could perform more push-ups, suggesting that overall upper-body muscular endurance may be beneficial when performing such tasks over distance of ~18 meters.