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The Effects of Abdominal Strength on Firefighting Ability

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Int J Exerc Sci 2(1): S27, 2009. The purpose of this project was to identify the relationships between various fitness parameters such as: upper body muscular endurance, upper and lower body strength, flexibility, anaerobic power, abdominal strength, body composition and the performance on an "Ability Test" (AT) that includes a set of six simulated firefighting tasks. Ninety firefighters participated in this study (age 33.54 ± 6.95 years). Firefighting ability was determined based on the time of completion of the AT. Abdominal strength was determined on an isometric device (AbMed). Abdominal strength was significantly inversely correlated ($r = -.54, p < .01$) with the overall performance on the AT test indicating that higher the abdominal strength was associated with shorter time of completion of the AT. Abdominal strength was also related with high performance (shorter times) on all six individual simulated firefighting tasks. In addition, the results of the multiple regression demonstrated that abdominal strength had a significant effect on the overall time to complete the AT. Abdominal strength contributed significantly [$t(53) = -2.94, p < .01$] to the predictive power of firefighter's time to complete the set of firefighting tasks as described in the AT test. The most common test to evaluate core fitness among firefighters was based on the performance on the sit-up test which measures muscular endurance rather than muscular strength. The results of this study demonstrated that abdominal strength might be a better contributor to firefighting ability than abdominal muscular endurance, as determined by the sit-up test. The results presented in this study are unique since the method used to assess abdominal strength was not previously implemented on firefighters.

