

Comparison level of handgrip strength for the three categories among male athlete's artificial wall climbing and factors WILL affect

ABSTRACT

The aim of this study is to compare the level of handgrip strength (HGS) in male's athletes between three different categories of climbing (boulder, lead, and speed) during competition. Grip strength refers to the ability of the fingers and hand to generate muscle power and force. In sport climbing, performance on climbing athletes are not only depending on handgrip strength but also other factors that should be consider such as anthropometry, finger strength, arm span, experiences in climbing and percentages of body fat. The research design is ex-post facto. The participants were 123 male athletes as subjects (boulders; 41, lead; 41, speed; 41) whose average age is 22.46 ± 4 years. All of them are students of a university in Malaysia. The handgrip strength was measured statically using a hand dynamometer (handgrip). Descriptive statistics were used to explore the differences of handgrip strength in three categories. Descriptive data for boulder ($M=102.646$; $SD=14.71$), lead ($M=92.42$; $SD=15.88$), and speed ($M=88.13$; $SD=16.43$) were determined. The findings showed significant differences handgrip strength score in three categories of climbing [$F(2,120) = 9.26$, $p=0.000$]. Data analysis by using post hoc turkey test showed significance difference between boulder and lead ($p=0.011$), and boulder and speed ($p=0.000$). Significant difference showed in covariance variable of experience [$F(1,115) = 21.41$; $P = 0.00$, eta squared = 0.16], BMI [$F(1,115) = 10.50$; $P = 0.002$, eta squared = 0.084], finger strength power [$F(1,115) = 60.39$; $P = 0.00$, eta squared = 0.34], and percentage of body fat [$F(1,115) = 5.73$; $P = 0.018$, eta squared = 0.047]. Conclusion from this study indicate the level of handgrip strength. Based on the research, boulder climbing found to be stronger compare to lead climbers in handgrip strength. In sport climbing, another factors that should be focus on effected to handgrip strength also on climbing performance.

Keyword: Handgrip strength; Boulder; Lead; Speed; Artificial wall climbing