

Grip Force and CR-10 Ratings for Youth Females

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Abstract

In this study, an experiment was conducted to measure the grip force for teenaged females at four pre-determined exertion levels on the CR-10 scale. The exertion levels of 2, 5, 7, and 10 corresponded to the 20%, 50%, 70%, and 100% of the maximum voluntary contraction (MVC). The subjects were re-quired to grip a dynamometer using both dominant and non-dominant hand. The posture of the elbow was either straight down or at 90 degree flexion. Eight one females participated in the study. The analysis of variance (ANOVA) re-sults indicated that the exertion level, elbow posture, handedness were all sig-nificant factors affecting the grip force. The Duncan' s multiple range test re-sults indicated that the grip force at exertion level 10 (208.95 N) was signifi-cantly ($p < 0.05$) higher than those of the levels 7 (164.66 N), 5 (128.08 N), and 2 (56.65 N). The grip force at exertion level 7 was significantly ($p < 0.05$) higher than those of the levels 5 and 2. The grip force at exertion level 5 was signifi-cantly ($p < 0.05$) higher than that of level 2. The Duncan' s multiple range test re-sults indicated that the grip force at 180 degree elbow posture (142.26 N) was significantly ($p < 0.05$) higher than that of the 90 degree posture (136.91 N). The interaction effects of the exertion level and hand used were also significant ($p = 0.0035$). The overall Pearson' s correlation coefficient between the CR-10 ratings and the grip forces was 0.84 ($p < 0.0001$).

Keyword : hand exertion, power grip, subjective rating, CR-10