

Assessment of grip force and subjective hand force exertion under
handedness and postural conditions

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Abstract

The Borg CR-10 scale has been used to quantify the perception of physical exertion. An experiment was conducted to test the grip force of males on four levels of the CR-10 scale under experimental conditions. It was found that the subjects applied higher grip forces than they perceived at levels 2, 5, and 7 on the scale. The grip forces between dominant and non-dominant hands at low CR-10 levels were negligible. The grip forces were significantly different between the two hands at level 10. Similar results were found for the postural conditions. A follow-up experiment was conducted to estimate the subjective rating when applying a pre-determined grip force under the same conditions. Regression models were established to link the relationship between the subjective rating and hand force. The estimated ratings were lower than those actual values under all the tested conditions, even though the models have high R² values.

Keyword : Borg CR-10; Grip force; Hand exertion; Subjective rating