

## Evaluation of Hand Grip Strength and EMG Signal on Visual Reaction

**Authors :** Sung-Wook Shin, Sung-Taek Chung

**Abstract :** Hand grip strength has been utilized as an indicator to evaluate the motor ability of hands, responsible for performing multiple body functions. It is, however, difficult to evaluate other factors (other than hand muscular strength) utilizing the hand grip strength only. In this study, we analyzed the motor ability of hands using EMG and the hand grip strength, simultaneously in order to evaluate concentration, muscular strength reaction time, instantaneous muscular strength change, and agility in response to visual reaction. In results, the average time (and their standard deviations) of muscular strength reaction EMG signal and hand grip strength was found to be  $209.6 \pm 56.2$  ms and  $354.3 \pm 54.6$  ms, respectively. In addition, the onset time which represents acceleration time to reach 90% of maximum hand grip strength, was  $382.9 \pm 129.9$  ms.

**Keywords :** hand grip strength, EMG, visual reaction, endurance

**Conference Title :** ICBEDA 2014 : International Conference on Biomedical Electronics, Devices and Applications

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** July 30-31, 2014