

Proceedings of the 7th Annual World Conference
of the Society for Industrial and Systems Engineering,
Binghamton, NY, USA
October 11-12, 2018

A Psychophysical Approach for Predicting Maximum Voluntary Contraction in Jordanian Cancer Patients at King Hussein Cancer Foundation Centre

H.A. Almomani, A. Khazaleh, A. Bashir, M. Hamasha, M. Aljarah O. Mnaizel

Industrial Engineering Department,
The Hashemite University
Jordan

Corresponding author's Email: Heshamalmomani@hu.edu.jo

Abstract: Latest research shows that the handgrip strength is a significant factor in term of influencing an individual's performance in general. In this research, handgrip strength is linked with cancer-related fatigue (CRF) to be used as a subjective sense of tiredness and reduction of physical function. This research determines handgrip strength for cancer patients through measuring the Maximum Voluntary Contraction (MVC) for hand muscles, which is considered as a reliable tool for patient physical assessment. We chose a sample of 49 Jordanian cancer patients under treatment at King Hussein Cancer Center (KHCC) with ages range from 20 to 66 years old. A digital hand grip dynamometer was employed to measure the MVC data. Five different factors are involved as follows: Gender, Age, Cancer Type, Height, and Body Mass Index (BMI). The outputs (i.e., MVC values) were analyzed using Statistical Analysis methods, Mathematical Modeling and Neural Network Analysis, results were obtained in relation to the previously mentioned factors, independently. We found that the cancer type has major effects on MVC values, whereas Limited effects are found for BMI, Height, Age and Gender.

Keywords: *Jordanian Cancer Patients, Isometric Hand Muscle Strength, Maximum Voluntary Contraction, Isometric Endurance Limit*