IMPROVEMENTS OF GRASPING: 
CLINICAL EVALUATION OF THE BIONIC GLOVE

Stevan Jović, Aleksandar Stojanović, Andjelka Pjanović, Slobodanka Radosavljević, 
Dragan Vulović, Laslo Švrljih, Gordana Savković and Dejan Popović

Institute for Rehabilitation "Dr Miroslav Zotović", Belgrade Yugoslavia

1Faculty of Electrical Engineering, University of Belgrade, Belgrade

Abstract - Improvements of grasping function when using the Bionic Glove was followed in ten subjects after spinal cord injury at C6-C7. The study was performed in the Rehabilitation Institute Dr Miroslav Zotović in Belgrade. The Bionic Glove is a new functional electrical stimulation (FES) device designed to assist daily living functions. The signals from a sensor in the glove detect the wrist movement and generate stimulation profiles needed for opening and closing of the hand via three surface electrodes. The study concerns subjects who were regularly in the Rehabilitation Institute. The study follows the evaluation protocol developed at the University of Alberta, Edmonton, Alberta. The functional independence measure (FIM), upper extremity function test and quadriplegic index of function (QIF) were followed for six months and show systematic substantial improvement. The over all conclusions are: 1) the Bionic Glove improves the power grasp allowing easier handling of heavier and bigger objects; 2) the tonic spasticity of forearm muscles was decreased, and in three from ten subjects the change was substantial; 3) the handling of small objects was not efficient in most of the subjects, and they preferred not to apply the glove for finger food or writing; 4) the speed of grasping was improved. Some functions (e.g., answering the phone, pouring the juice, opening the pop or beer can) were improved greatly. Some patients are still reluctant to use the glove because of the difficulties in positioning of electrodes, cosmesis and practicality of donning and doffing.