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EMG Based Wheelchair Prescription tool

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Introduction: Wheelchair prescription done based on the study of biomechanical variables and their measurement along with the analysis and assessment of the occupant needs, has allowed professionals to advance in the standardization of protocols that guarantee the satisfaction of occupants needs in terms of mobility and independence. The modern diagnosis tools in the clinical settings are of great interest towards the definition of protocols that become easy to use and manipulate for occupational therapists, that can allow them to make clinical decisions for the prescription of wheelchairs , so that the ergonomic risk due to excessive loads applied to upper limb structures of wheelchair users is diminished. Objectives: Develop and validate a technological tool that allows professionals to measure the variables that affect the efficiency of wheelchair propulsion using EMG signals. Methodology: The signal was taken in 5 wheelchair users with spinal cord injury (T11- L4), users in ideal biomechanical conditions. The protocol of the signal acquisition was designed based on Biometrics Ltd Technology. The signal was taken in ideal conditions for propulsion and also in a wheelchair that didn't adjust to the user's biomechanical features. The signal was normalized with the Isometric Maximum Voluntary Contraction. The data were analyzed inter and intra subjects using ANOVA. Results: The study will finish on July 2009. Contribution to OT practice: The tool will contribute to the standardization, validation, and generation of evidence that allows us to build up our body of knowledge which can makes us visible in global academic communities and in interdisciplinary teams in the field of physical dysfunction and rehabilitation engineering, constituted by professionals that from their diverse knowledge and conceptual appropriations contribute to the biomechanical comprehension of human beings. The contributions that we can make as Occupational Therapists related to the comprehension of occupational performance from this theoretical perspective, will allow us to remain in force in the middle of a knowledge society that demands professionals and disciplines all along, that are able to demonstrate in a quantitative measure the effectiveness of its procedures and interventions.