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COMPUTER BASED SIMULATION: REOSURCES FOR OTs

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INTRODUCTION: Due to the complexity of the men-wheel chair system, it is necessary to implement a computer based system to model and reproduce such interface and simulate the propulsion process among diverse environments. **OBJECTIVE:** Design and validate a technological device that would help simulate diverse biomechanical variations related to wheel chair propulsion efficiency based on geometric, kinetic, and kinematic information obtained through EMG studies. It seek to stimulate the performance on diverse ideal and adverse propulsion conditions. **METHOD:** The simulation was done using WORKING-MODEL 2D program, which enables the reproduction of dynamic simulations of the men-wheelchair interface. It can check multiple characteristics of the mechanic system and allows providing a fast and refined simulation based on predefined variables. The simulation, defined as the controlled manipulation of a model, was developed using the Rozendaal and Vegger mathematical model, as the cost efficiency relation. Geometric and physical properties of each of the components of the men-wheelchair interface were identified as variables for the mathematical- computational model. Operation rules such as speed, angles, acceleration and forces were defined, as well as restrictions and environment simulation hypothesis like the strength needed to accomplish a media speed of stationary propulsion. Operation rules were based on the cost efficiency relation that resulted from the load supported by shoulders and correlate them with the direction of the strength performed by the wheelchair ring during propulsion and it was determined as the main criteria of the design. **RESULTS:** The present study ends en July 2009. The result of the simulation would be adjusted and verified through movement analysis and EMG studies.