VIRTUAL REALITY AIDED TRAINING OF COMBINED ARM AND LEG MOVEMENTS OF CHILDREN WITH CP.

Source: Institute of Robotics and Intelligent Systems, ETH Zurich, Switzerland. riener@hest.ethz.ch

ABSTRACT

Cerebral palsy (CP) occurs in over 2 out of 1000 live births and can impair motor control and cognition. Our goal was to create a robotic rehabilitation environment that mimics real-life situations by allowing simultaneous exercise of upper and lower limbs. We chose to use the Lokomat as a gait robot and added a novel removable arm robot, called PASCAL (pediatric arm support robot for combined arm and leg training), that was integrated into the Lokomat environment. We also added a virtual reality (VR) environment that enables the subject to perform motivating game-like scenarios incorporating combined arm and leg movements. In this paper we summarize the design of PASCAL and present the novel virtual environment including first experimental results. The next step will be to test whether a combined application of the virtual environment and the two simultaneously working robots is feasible in healthy participants, and finally to clinically evaluate the entire system on children with CP.