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A Forearm-Wrist Rehabilitation Module for Stroke and Spinal Cord Injuries

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Abstract : The automation of rehabilitation procedure by the implementation of robotic devices can overcome the limitation in conventional physiotherapy methods by increasing training sessions and duration of process. In this paper, the design of a simple rehabilitation robot for forearm-wrist therapy in stroke and spinal cord injuries is presented. Wrist's biological joint motion is modeled by a gimbal-like mechanism which resembles the human arm anatomy. Presented device is an exoskeleton robot with rotation axes corresponding to human skeleton anatomy. The mechanical structure, actuator and sensor selection, system kinematics and comparison between our device range of motion and required active daily life values is illustrated.

Keywords : rehabilitation, robotic devices, physiotherapy, forearm-wrist
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