

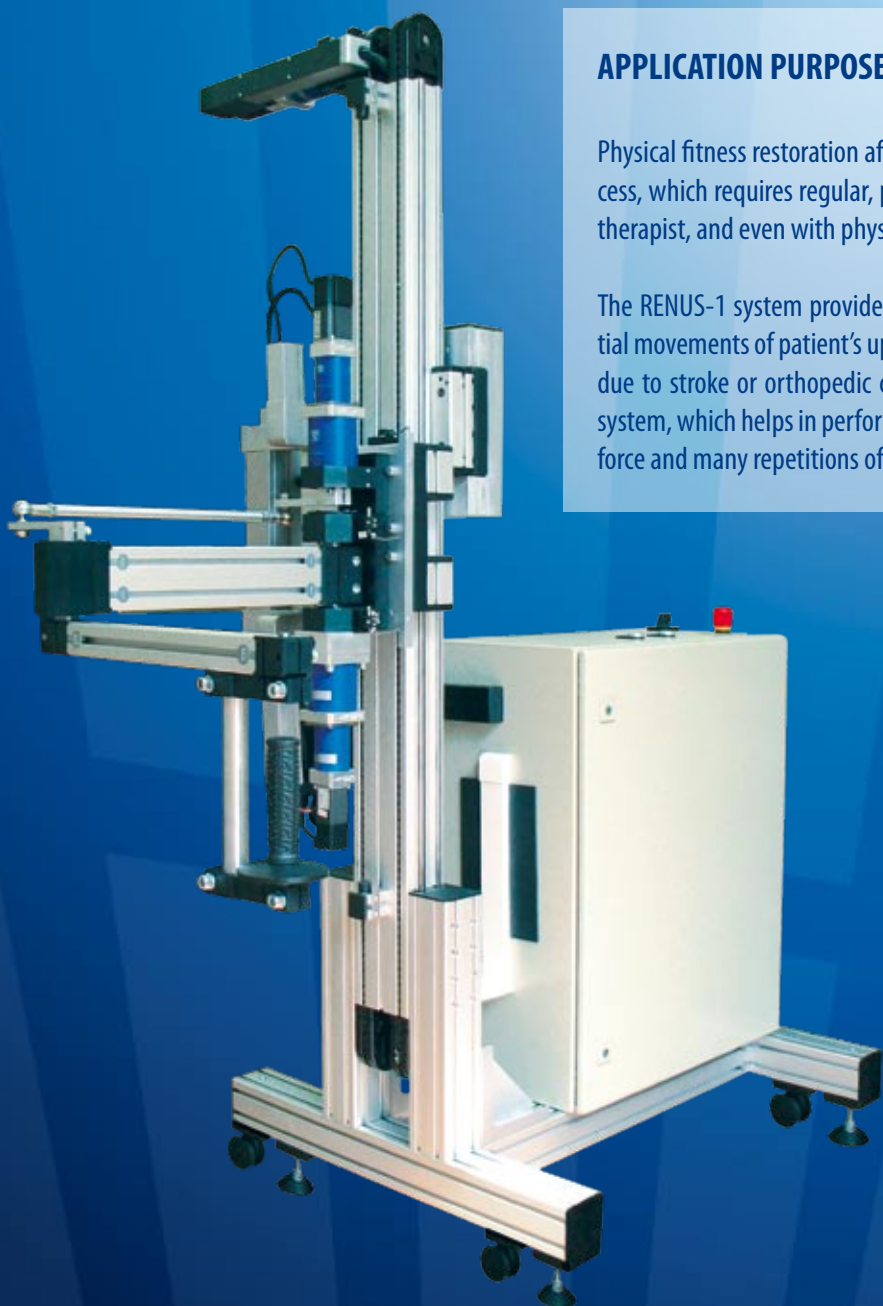
RENUS-1

***MECHATRONIC ACTIVE REHABILITATION ASSISTANCE SYSTEM
FOR STROKE OR ORTHOPEDIC PATIENTS**

APPLICATION PURPOSE

Physical fitness restoration after stroke or orthopedic diseases is a long-term process, which requires regular, painstaking exercises under supervision of a physiotherapist, and even with physiotherapist's assistance in the first phase.

The RENUS-1 system provides capability of performing complex, controlled spatial movements of patient's upper limb for rehabilitation of patients with paralysis due to stroke or orthopedic condition. The system is a physiotherapist-assisting system, which helps in performing painstaking work requiring significant physical force and many repetitions of a single exercise.



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THE SYSTEM CONSISTS OF:

- ✓ a robot, which performs spatial movement,
- ✓ a control system,
- ✓ a computer – assisted programming and exercise supervision system.

THE SYSTEM OPERATES IN THE FOLLOWING MODES:

- ✓ learning, when the movement path, required for the exercise, is programmed by the physiotherapist,
- ✓ passive, when the robot moves the patient's limb along the movement path programmed by the physiotherapist,
- ✓ active, when the patients attempts to move the robot's arm along the trajectory shown on a display as a line of movement to be made and cursor, showing current robotic arm position.

SYSTEM FEATURES:

- ✓ Simple design,
- ✓ Mobility,
- ✓ Safety,
- ✓ Performing of exercises requiring complex spatial programmed movement path,
- ✓ Continuous control movement parameter and forces and momentums between patient's limb and robot,
- ✓ Tracking and objective assessment of patient's progress based on information collected,
- ✓ Physiotherapist can supervise many exercising patients at a time,

Power supply: 230V AC, 500VA power consumption.

**The mechatronic system of rehabilitation support was produced in the Industrial Research Institute for Automation and Measurements PIAP in Warsaw as a result of execution of a research task in the PW-004/ITE/02/2004 project covered with the PW-004 Multiyear Program that is coordinated by Institute of Operating Technology PIB in Radom.*