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## Title

# PARALLEL ROBOT FOR THE MOTOR REHABILITATION OF THE LOWER LIMBS

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## Patent/ Application number

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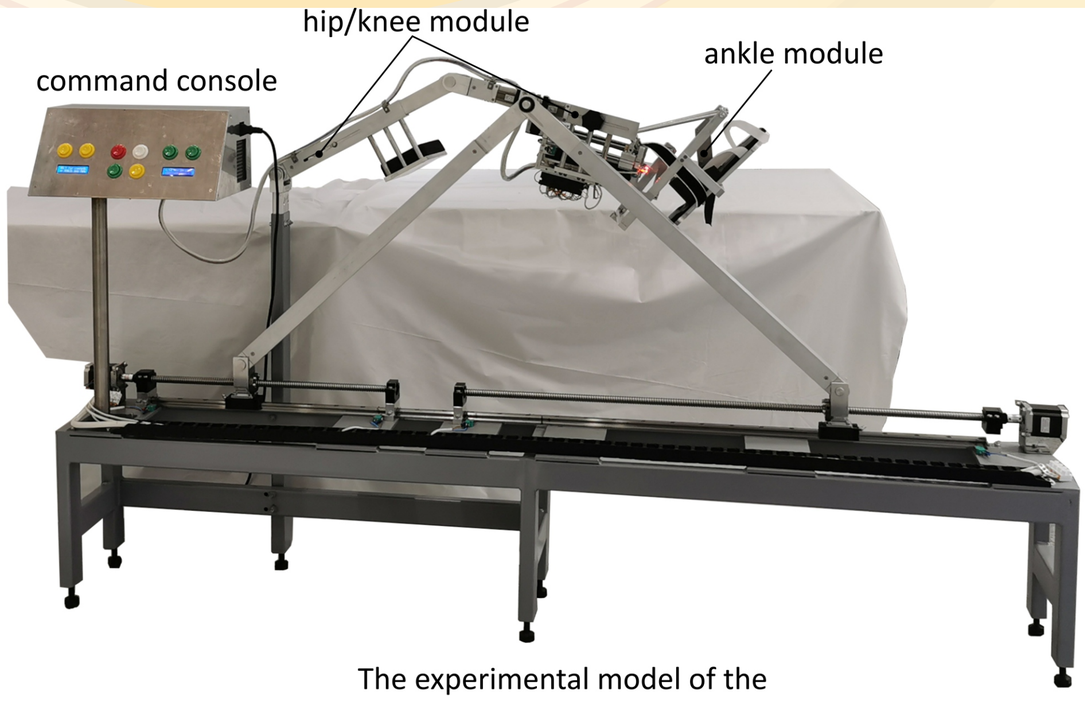
## Short presentation

The present invention (RECOVER) is a parallel robotic system designed for the post stroke rehabilitation of the lower limb for bedridden patients. The robotic system consists of two parallel robotic modules which are connected to each other to achieve the rehabilitation of the main joints of the lower limb (the hip, the knee, and the ankle). The first rehabilitation robotic module (the hip/knee module) is based on a 2-DOF (degree of freedom) planar mechanism and it is designed for hip and knee flexion and extension. The module incorporates a passive motion kinematic chain (with no active joints) on which the lower limb of the patient is mounted and guided by two input motion kinematic chains. The second rehabilitation robotic module (the ankle module) is based on a 2-DOF spatial mechanism which guides a mobile platform together with the patients' foot in spherical motion achieving the ankle flexion/extension and inversion/eversion motions. The lower limb main segments are entirely supported by the robotic system and can achieve various rehabilitation exercises in a reliable manner with very low risk of joint injury.

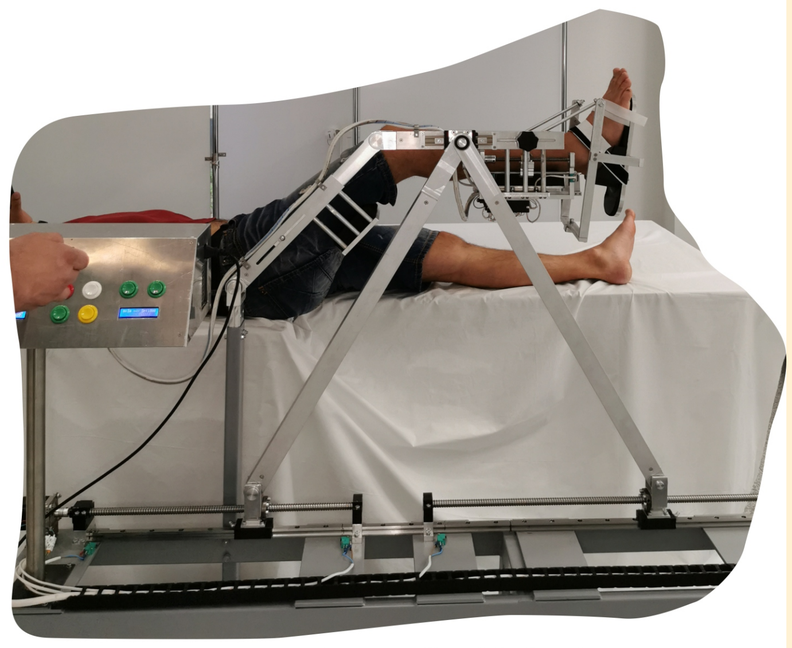
## Applicability

Medical Robotics, Post Stroke Rehabilitation of Bedridden Patients

## Images




The experimental model of the
RECOVER parallel robot for lower limb rehabilitation



Testing RECOVER with human (healthy) subject
(laboratory tests)