



ISTITUTO ITALIANO
DI TECNOLOGIA

TITLE

Ankle Rehabilitation Platform

INVENTORS

Jody A. Saglia, Nikos G. Tsagarakis, Jian S. Dai, Darwin G. Caldwell

DESCRIPTION

The Advanced Robotics department is involved in an interdisciplinary and interdepartmental activity, oriented to human rehabilitation. With this perspective, researchers of the Italian Institute of Technology have developed this Ankle Rehabilitation Platform, a medical device able to accelerate and significantly improve the functional recovery of patients with ankle impairments. The simplicity and compactness of the device together with its redundant characteristic, which allows simultaneous control of position and stiffness, improves the quality of and increase the productivity of ankle physiotherapy delivered by the clinicians.

The actuator, core of this rehabilitation device, presents unmatched technical features:

- High speed and force output
- Backdrivability
- Very high power to size ratio
- Good power to weight ratio
- Long stroke and high position resolution
- The actuator is equipped with full state sensing, namely an encoder for position and velocity measurements and an axial load cell mounted on the tip of the moving piston. This allows to control the actuator in either position/velocity or force



APPLICATIONS

The rehabilitation device is already under test in a number of hospitals and one of the devices chosen by INAIL to start with IIT a joint project to improve the rehabilitation techniques and methods over the next three years.

KEYWORDS

ankle rehabilitation, ankle functional recovery, ankle phisiotherapy

BIBLIOGRAPHIC DATA

Attuatore lineare e dispositivo di riabilitazione incorporante tale attuatore

Application Number TO2009A000042, WO/2010/092497, US 2011/0306473, EP 2381910, CN

Priority Date January 23, 2009

Applicants Fondazione Istituto Italiano di Tecnologia

CONTACTS

Technology Transfer Office

Lorenzo De Michieli

+39 010 71781 569

lorenzo.demichieli@iit.it

Fondazione Istituto Italiano di Tecnologia - Italian Institute of Technology

Sede Legale: Via Morego, 30 16163 Genova Uffici di Roma: Via Guidubaldo del Monte, 54 00197 Roma

Tel. 010 71781 Fax. 010 720321

C.F. 97329350587 - P.I. 09198791007