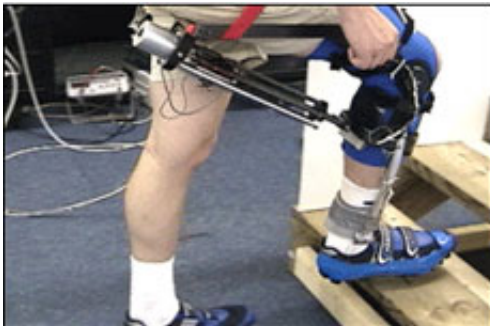


USING “SMART FLUIDS” TO RETRAIN MUSCLES

May 26 2004



Traditional orthotic device



“Smart fluid” orthotic device

(5-20-04) Boston, Mass. -- Physical rehabilitation has traditionally consisted of arduously retraining the body on weight machines and other resistance devices, but with the growing interest in “smart fluids,” Northeastern University engineering professor Constantinos Mavroidis envisions a simple brace that can increase the resistance on a healing

joint with the turn of a dial.

“Smart fluids” is a generic term for any particle-filled, oil-based suspension that changes consistence in a magnetic or electric field. Mavroidis is working with electro-rheological fluids (ERFs) which change from liquid to solid the instant an electric field is applied; remove the field and the paste-like substance reverts to liquid form.

The possible applications for ERFs have exploded over the last decade, including automotive technology and industrial uses, and Mavroidis and his co-researchers have already developed prototypes for a leg brace that could increase pressure on a joint simply by increasing the voltage from a small battery. Plans are underway to begin human trials this fall in association with Spaulding Rehabilitation Hospital in Boston.

The power of smart fluid could transform the rehabilitation process for millions of people. According to the National Health Interview Survey on Assistive Devices, 3.5 million individuals in the United States have used orthotic devices for rehabilitation or mobility assistance. Currently, the most effective types of orthoses consist are often noisy, cumbersome, or difficult to conceal. ERF-powered orthotics, which are efficient and streamlined, would revolutionize rehabilitation therapy.

Northeastern University, located in the heart of Boston, Massachusetts, is a world leader in cooperative education and recognized for its expert faculty and first-rate academic and research facilities. Through co-op, Northeastern undergraduates alternate semesters of full-time study with semesters of paid work in fields relevant to their professional interests and major, giving them nearly two years of professional experience upon graduation. The majority of Northeastern graduates receive a job offer from a co-op employer. Cited for excellence in programs integrating classroom and work place experience two years running by U.S. News & World Report, Northeastern was named a top college in the northeast by

the Princeton Review 2003/04. In addition, Northeastern's career services was awarded top honors by Kaplan Newsweek's "Unofficial Insiders Guide to the 320 Most Interesting Colleges and Universities," 2003 edition. For more information, please visit www.northeastern.edu

Citation: USING "SMART FLUIDS" TO RETRAIN MUSCLES (2004, May 26) retrieved 25 April 2024 from <https://phys.org/news/2004-05-smart-fluids-retrain-muscles.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.