MONITORING DEVICE TO PREVENT LUMBAR PAIN

PATENTED TECHNOLOGY

CONTACT DETAILS:

Research Results Transfer Office-OTRI
University of Alicante
Tel.: +34 96 590 99 59
Email: areaempresas@ua.es
http://innoua.ua.es

ABSTRACT

A research group of the University of Alicante has developed a device to control dynamic stability of lumbar spine. It allows establish a map pressure and warn about critical pressure levels according body movements. A prototype is being developed and soon it will be available for market demonstration.

This technology estimates lumbar pressure levels and gets a map pressures. Also, it has a specific software for data saving and processing, and it is customizable and water proof. It can be used in the following industrial sectors: Physiotherapy and Orthopaedic Technology, Biomedical Engineering and applications for Medicine and Human Health. The research group is looking for companies acquiring this technology for commercial exploitation.

INTRODUCTION

It is well known that the best disposition of spine when supporting loads is the one which allows keeping its natural lumbar curve. Everyday actions and postures may force curvature changes implying an added stress on lumbar spine. Since having a good muscle tone does not assure a lack of risk, control of those changes is crucial to prevent lumbar damage.

Control may be applied by postural self-control and also from verbal instructions and manual help when developing specific exercises or physical activities. Nowadays, there is a tool (biofeedback) based on a pressure unit which detects pressure degrees on lumbar zone, but only when leaning against a rigid surface either facing-up or standing-up.

TECHNICAL DESCRIPTION

The Spanish research group has developed a device that overcomes those limitations and makes possible a dynamic control of stress in lumbar spine. It can be applied in daily activities and when exercising to relieve lumbar pain.

The device deals with a belt made of a semi flexible textile allowing fastening around holder's waist. In its internal side, measuring sensors send information about pressure levels to a receptor to establish a pressures map. Data are shown in two ways:

a) LEDs showing contact surface and pressure level.

b) Vibratory stimulus emitter, warning holder of pressure levels according to postural movements.

The device includes specific software for data emission and later processing and storing, and disposition of LEDs allows external checking of pressure levels on contact surfaces.

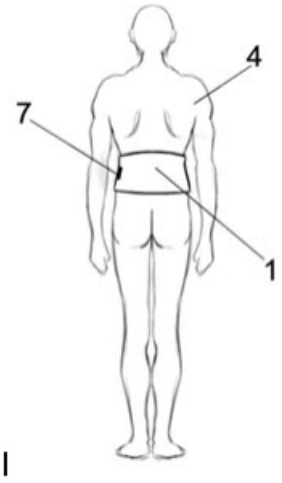

Figure shows how belt is applied on holder's waist.

ADVANTAGES AND INNOVATIVE ASPECTS

The most important advantages of the device are:

- Estimation of lumbar pressure levels;
- Map pressures establishment;
- Allows data saving and processing;
- Software is calibrated for every holder;
- Water proof.

The main innovative aspects are:
- Dynamic control of lumbar spine stability, without interfering in daily activities;
- Easy to use;
- Adjustable;
- Measuring by high sensitivity and precision electronic sensors.

CURRENT STATE OF DEVELOPMENT

Present invention is in prototype development phase. It will be able for market demonstration shortly.

MARKET APPLICATIONS

Application sectors for this technology are:

- Therapeutic services and monitoring equipment;
- Diagnostic services and equipment;
- Applications software for medical and health.

Other current and potential domains of application are:

- Pressure monitoring during daily activities;
- Sport resources and gyms;
- Physical medicine and rehabilitation (hospitals, postural therapy departments);
- Postural hygiene, ergonomics and risk prevention.

COLLABORATION SOUGHT

The research group is looking for companies interested in acquiring this technology for its commercial exploitation.

- Type of partner sought: Industries.
- Specific area of activity of the partner: Health, Sports, Physiotherapy, Orthopaedic.
- Task to be performed: Technology licensing.

INTELLECTUAL PROPERTY RIGHTS

This technology is protected by patent:

- Application number: P201001587.
- Application date: 17th December 2010.

MARKET APPLICATION (2)

Footwear and Textile
Medicine and Health