Mechanical Transduction of Therapeutic Stress to Human Tissues

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Technology description

Researchers at The University of Iowa have developed a novel system that delivers vibration and compression to human tissue in any programmed sequence. Our apparatus applies a mechanical load, in combination with a feedback controlled dynamic vibration stimulus, to improve muscle and other orthopedic responses to physical therapy. With this technology, the researchers are attempting to isolate the specific appendage and tissue of interest in order to provide the most optimized vibration possible to enhance the recovery of that tissue. They believe the addition of the vibration stress increases the healing response seen in muscle and bone tissues. Treating individuals with this technology will enhance injury recovery, and provide other benefits related to improved muscle and tissue function. A utility patent has been filed (US Patent Application No. 13/967,686).

Background:

Human tissue can be damaged due to various circumstances such as surgery, injury, disease, or paralysis. Healing naturally provided by one's body can take place over extended periods of time. Medical research aspires to discover methods of speeding up the recovery process through the application of therapeutic stress for cell, tissue, and organ repair. Vibration and compressive loads are mechanical stimuli that have a powerfully positive influence on biological tissues. Researchers at The University of Iowa have identified technology that allows one to deliver various mechanical stimuli to positively influence human tissues. With this, they developed a novel system that delivers vibration and compressive load to human tissue in any programmed sequence. No system has been developed previously to apply compressive loads in combination with vibration stress to human tissues.

Description:

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Advantages

• Novel method to load tissue with two forms of stress: vibration and compressive load
• Enhance tissue repair after injury, surgery, or reduced use due to immobility
• Strong potential to prevent bone density loss (osteoporosis), enhance knee cartilage repair, and regulate spinal reflex excitability
• No previous system has been developed to apply compressive loads and vibration in various combinations to enhance the regeneration of bone tissue in humans.

Institution

University of Iowa

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com