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National Aeronautics and
Space Administration



TECHNOLOGY SOLUTION

Health, Medicine and Biotechnology

Ultrasonic System To Assess Compartment Syndrome

An ultrasonic means and method to assess whether Compartment Syndrome has occurred

BENEFITS

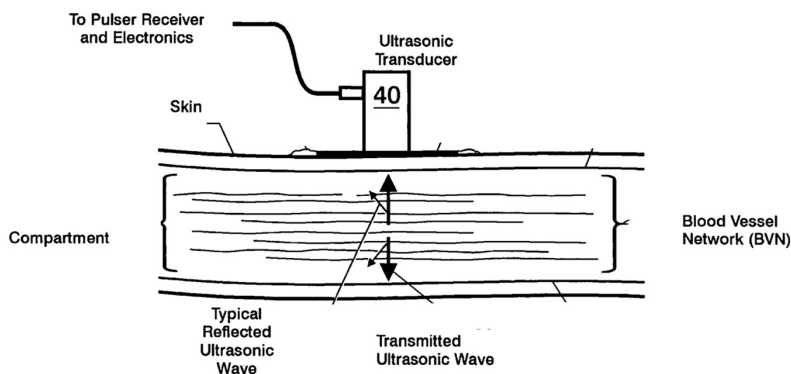
- Non-invasive
- Easy-to-use

NASA Langley Research Center has developed an ultrasonic system to assess Compartment Syndrome. Compartment Syndrome occurs when bleeding or swelling interfere with proper blood circulation in enclosed groups of muscles and nerves. Most commonly this occurs after a substantial injury, such as a broken arm or leg. Without proper treatment, myoneural necrosis occurs, leading to permanent injury and possible limb amputation. Even experienced physicians can have trouble making a reliable diagnosis of Compartment Syndrome and current testing for Compartment Syndrome requires invasive procedures. This invention provides a non-invasive and quick system to test for Compartment Syndrome, and to monitor for its possible onset.



THE TECHNOLOGY

The technology uses ultrasonic waves to categorize pressure build-up in a body compartment. The method includes assessing the body compartment configuration and identifying the effect of pulsatile components on at least one compartment dimension. An apparatus is used for measuring excess pressure in the body compartment having components for imparting ultrasonic waves such as a transducer, placing the transducer to impart the ultrasonic waves, capturing the reflected imparted ultrasonic waves, and converting them to electrical signals, a pulsed phase-locked loop device for assessing a body compartment configuration and producing an output signal, and means for mathematically manipulating the output signal to thereby categorize pressure build-up in the body compartment to the point of interference with blood flow in the compartment from the mathematical manipulations.



Technology schematic

APPLICATIONS

The technology has several potential applications:

- Emergency medicine
- Combat casualty care
- Sports Injuries

PUBLICATIONS

Patent No: 7,381,186

technology.nasa.gov

More Information

National Aeronautics and Space Administration

Agency Licensing Concierge

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