3D Shoulder Motion Measurement System

IP Status: Pending US Patent; **Application #:** 15/581,803

Accurately Measures and Diagnoses Shoulder Movement Disorders

The MnMotion System™ is an easy to use clinical tool to accurately measure, diagnose and objectively track progress for shoulder movement disorders. The system consists of a physical component that attaches to a mobile device or smartphone and accurately measures shoulder positions. The handle maximizes accuracy of measurement, including location of fingers relative to important bony landmarks, and features an ergonomic grip to stabilize the attached phone or mobile device while taking measurements. The mobile device's sensors capture accurate three dimensional position information of the bone being measured and the patient's movement data is analyzed by a user-friendly mobile app to provide targeted diagnostic information and treatment recommendations. The MnMotion System has the potential to be the new standard of care for shoulder movement diagnoses and treatment and may even be used to develop similar products for other joints, resulting in a suite of simple measurement devices and associated mobile apps for diagnosis and guided treatment of musculoskeletal and neuromuscular movement disorders.

Improved Shoulder Movement Assessment

Visual observation is the current clinical standard of care for assessing movement of the scapula, but this practice is inadequate for a number of reasons. Imaging based systems are highly accurate for tissue pathology, but they cannot assess the movement abnormalities that are the focus of rehabilitation treatments fundamental to successful patient outcomes. Clinical tools (e.g., inclinometers) are rarely used for shoulder motion measurement due to their difficulties and limitations. The MnMotion System addresses current unmet needs in identifying, tracking and successfully treating shoulder movement disorders. It provides the following benefits that current solutions do not:

- Objective, accurate measurements
- Measurement of three dimensional shoulder movement disorders
- Ability to diagnostically direct treatment
- Easy tracking of patient progress over time

BENEFITS AND FEATURES:

- Accurately measures, diagnoses and objectively tracks progress for shoulder movement disorders
- Measures three-dimensional motion
- Mobile device's sensors capture accurate three dimensional position information of the scapula
- Handle maximizes measurement accuracy, features ergonomic grip to stabilize attached device
- User-friendly mobile app displays and analyzes patient's movement data
- Provides targeted diagnostic information and treatment recommendations
- Guides clinicians, motivates patients and could improve outcomes
- May improve competence and confidence in shoulder motion measurement, particularly for novice and less experienced practitioners
- Cost-effective

Technology ID
20160347

Category
Engineering & Physical Sciences/Instrumentation, Sensors & Controls
Life Sciences/Diagnostics & Imaging
Life Sciences/Human Health
Life Sciences/Medical Devices
Software & IT/Mobile Apps

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APPLICATIONS:

- Movement assessment of the scapula
- Shoulder movement diagnosis and treatment
- Potential to develop similar products for other joints for diagnosis and guided treatment of musculoskeletal and neuromuscular movement disorders

Phase of Development:
Prototyped, validation study underway: beta versions of smartphone handle and application undergoing validation and reliability testing in clinics; next step is to evaluate feedback from beta users (clinicians).

Researchers

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