Docket #: S05-241

Gait interventions to lower the knee adduction moment

Osteoarthritis, the most common form of arthritis, is a degenerative joint disease in which mechanical factors play a very important role. Knee osteoarthritis in particular is sensitive to mechanical factors associated with the biomechanics of walking. Researchers at Stanford have developed two inventions to help slow the rate of cartilage deterioration in the knee. One invention describes a method to alter the knee adduction moment by modifying shoe sole stiffness. Focusing on shoe sole stiffness provides a number of advantages over the existing practice of making changes to the angle of the shoe sole or using shoe wedges, including improved comfort and a decreased tendency for the subject to adopt a gait that potentially reduces the effectiveness of the intervention. The other invention, a feedback device for gait retraining, helps the subject maintain a new gait pattern by providing constant feedback regarding weight placement and other factors. Currently, subjects seeking feedback on how they are walking are basically limited to receiving verbal instructions from a clinician. The feedback device can be used to help continually remind subjects to maintain a modified gait pattern that alters the peak knee adduction moment. Both of these inventions offer simple, non-invasive, and relatively risk free solutions which may help to slow the progression of knee osteoarthritis.

Applications

- Lower the knee adduction moment to slow the rate of medial compartment cartilage deterioration in the knee, or increase the knee adduction moment to slow the rate of lateral compartment cartilage deterioration of the knee.

Advantages

- Simple
- Non-invasive
- Relatively risk free
- The shoe sole stiffness invention offers improved comfort over existing methods of shoe modification for gait intervention.
- The biofeedback invention provides continuous, accurate information about the subject's gait, allowing for more effective retraining.

Patents

- Published Application: 20140088479
- Published Application: 20090313858
- Issued: 8,950,086 (USA)

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