Orthopaedic Section Clinical Research Grant Program, APTA
Grant type: Unrestricted Category

One Year / Mid-Term Award Progress Report

We like to thank the Orthopaedic Section for allowing us to conduct research in investigating brain morphometric changes in people with subacute and chronic low back pain.

1. Summary of accomplishments in the past year:

In the past 12 months, we collected data on 9 subjects with subacute low back pain, added resting state fMRI data collection to study protocol, analyzed resting state fMRI and brain spectroscopy data of subjects to date, presented study results at two institutional research presentations (Student Research Form and T32 Presentations), and submitted one manuscript (in review, Structural Brain Imaging in People with Low Back Pain, Spine Journal, date of submission May, 2016).

2. Provide a one-paragraph summary of results or abstract suitable for posting on the Orthopaedic Section website.

Low back pain is multifactorial and a leading cause of disability. Recent brain imaging studies suggest that chronic low back pain is associated with changes in the central nervous system but this knowledge is limited. Previous studies have shown altered brain neurochemicals in sensory and motor cortices in people with chronic low back pain that are associated with duration and intensity of pain. These neurochemical changes may result in changes in brain function or volume within the somatosensory and affective-motional brain regions. Secondly, the advancement of pain into the chronic stage is not well understood. Non-invasive neuroimaging methods can be used to gain a better understanding of pain processing and associated changes within the central nervous systems on continuum of acute to chronic stages of pain. This study aims to investigate brain volumetric and functional changes in people with subacute and chronic low back pain. Our preliminary data shows that brain volumetric changes are not present in people with low back pain. However, functional changes are altered in people with subacute and chronic low back pain. These functional changes are more robust in chronic stage and associated with pain intensity. Further data collection of remaining subjects will allow us to gain a better understanding of our preliminary findings.

3. Attach a list of your publications published or accepted during the past year, or currently being written. List presentations made and abstracts accepted for presentation based on this work. Indicate with an asterisk (*) those publications supported by Orthopaedic Section funding.

Manuscript submitted

1. Structural Brain Imaging in People with Low Back Pain, Spine Journal; Spine Journal; date of submission May, 2016.