The FASIG is starting 2017 off with some great new initiatives.

But first, we welcome Jeff Houck as the new Vice President and thank Todd Davenport for his dedicated service over the past 6 years. We also thank Steve Pettineo for his dedicated service on the Nominating Committee for the past 3 years, serving as Chair for the last year. Steve Paulseth is filling the open position on the Nominating Committee.

The Combined Sections Meeting in San Antonio was a great success with ample opportunity to learn and share our experiences in treating and studying foot and ankle impairments.

The FASIG is also dedicated to including more students in our SIG. As part of this initiative, we would like to engage interested students studying in DPT programs across the country to consider being a FASIG Student Intern. The internship will be directly engaged in FASIG events, marketing, and CSM activities. The FASIG leadership is very excited about this opportunity and we look forward to engaging students across our SIG. Please make this opportunity available to students who may be working with you in the clinic or studying with you in the classroom. If you are a student and are interested in the intern position, email Dr. Eric Folmar, at Northeastern University (e.folmar@northeastern.edu). Please include your name, email address, academic institution enrolled in, current year of study, and a one-sentence description of why you are interested in joining the FASIG as a student intern. As always, we welcome your involvement!

Now I would like to introduce Dr. Jeff Houck’s synopsis of his CSM 2017 presentation titled, “Insertional Achilles Tendinopathy: Biomechanical Considerations and Implications for Treatment.”

Insertional Achilles Tendinopathy: Biomechanical Considerations and Implications for Treatment

Jeff Houck, PT, PhD

This CSM 2017 presentation reviewed current Achilles tendon loading experiments and evolving clinical data associated with insertional Achilles tendinopathy (IAT). The new studies address the relative importance of disease models, impairments associated with IAT and current treatment.1-12 Recent evidence has progressed significantly for this hind foot problem so readers are encouraged to consult the references.

The talk started with a review of how new Achilles tendon in-vivo and intro-vivo studies support a model of tendon remodeling.6-10 Ultrasound elastography was used to map the deep and superficial part of the Achilles tendon opposite the posterior calcaneous during weight bearing plantar flexion/dorsiflexion.6 The deep and superficial tendon of IAT participants showed decreased tensile and compressive strain, suggesting less deformation to load.6,7 In-situ mechanical loading of diseased IAT tissue (removed at surgery) showed decreased compressive strain and increased stiffness (ie, steeper stress strain curve) validating the in-vivo measures.10 In contrast, to these studies, a study of whole tendon (musculotendon junction to insertion) showed increased tendon compliance.2 Decreased use and stress shielding by the stiffer diseased tendon near the insertion may explain these findings. These studies motivate therapeutic approaches that (1) decrease compressive loading between the tendon and posterior calcaneous (ie, reducing dorsiflexion) and (2) remodeling of the tendon to handle tensile load.

Latest studies of impairments (ie, ROM, planter flexion strength, alterations in movement patterns) associated with IAT were reviewed to motivate clinical strategies. Two comprehensive studies using 3D motion analysis to quantify gastrocsoleus musculotendon length showed no differences between controls and IAT participants.8,9 There were differences in dorsiflexion with the lunge test, however, this was highly correlated to VAS pain and VISA-A scales.6,9 Therefore, the influence of gastrocsoleus shortening was not supported. Similarly, there were no differences in isometric peak plantar flexion torque between controls and IAT participants. However, 3-dimensional motion analysis during stair ascent showed patients with IAT used a higher percent of their ankle dorsiflexion range of motion (50% vs 38%). This supported the idea that IAT participants were using a higher percent of their available DF ROM and therefore impinging their Achilles tendon (AT) against the posterior calcaneous. Peak ankle plantar flexor power generation was also significantly lower in IAT participants. Most important, was that both of these alterations in movement patterns were correlated to pain severity (VISA-A). These findings support the therapeutic goals of (1) decreasing the percent of dorsiflexion used during movement and (2) an increase in ankle power production used during movement.

The therapeutic strategies for participants with IAT centered on 3 themes: (1) decreasing impingement, (2) remodeling of tendon, and (3) altering movement patterns. Heel lifts or shoes that bias the foot toward plantar flexion, modifying activities like stair descent, and hill running were seen as critical for controlling compression between the posterior calcaneous and AT. Current evidence suggests heavy slow resistance 3 times per week achieves equivalent outcomes as the eccentric Alfredsen protocol (180 reps/day).11 A pilot study presented at the conference showed an average of 22% reduction in tendon thickness measured with ultrasound after 10 weeks of a high load eccentric protocol for non-insertional tendinopathy (CSM Poster #2348). A distinguishing feature of this eccentric protocol is the high load achieved. For example, for a 77 kg man, the peak eccentric exercise load during the 10-week program was 400 lbs. Adapting this program for IAT participants who are typically not as active as non-insertional AT is seen as an important challenge. A gradual but consistent increase in force output may be critical. Finally, strategies to ensure carry over to functional tasks were...
also emphasized, focusing on decreasing dorsiflexion during movements and increasing ankle plantar flexion power. Because a significant number of individuals with IAT choose elective surgery, new studies were reviewed suggesting that patients choosing elective surgery do better if they have significantly low physical function, pain interference, and depression.13

REFERENCES