



FASIG updates

The FASIG is pleased to introduce FASIG Student Team! This team of students is spearheading membership outreach efforts with this quarterly newsletter. In our first edition, we focus on the theme of breadth of foot and ankle care.

Meet the team!



Josh Holland is currently in his final year of PT school at Regis University. Fun fact – Josh is currently in Tanzania!



Mike Stroud is a 3rd year physical therapy student at George Fox University, and a proud husband and dad of 2 boys.

Zach Klemmer is a 3rd year physical therapy student at George Fox University. He is interested in outpatient orthopedics and enjoys being outdoors with his wife and playing all sports.



The American Orthopaedic Foot & Ankle Society (AOFAS) annual meeting is rapidly approaching – September 12-15 in Chicago. FASIG is contributing to the meeting with educational sessions geared for a broad range of practitioners as part of the Allied Health Program. For more details about the meeting, visit <<https://www.aofas.org/annual-meeting>>.

Our efforts to establish a fellowship in Foot and Ankle practice are moving forward. A task force is in place with a lead consultant identified. The petition to ABPTRFE will be the next steps for later this Fall.



Member Spotlight

Featuring Dr. Jeff Houck, PT, PhD

Where are you originally from?

"Fair Oaks, CA. I'm a Cali boy."

Where do you currently work?

"George Fox University."

What type of setting do you work in?

"Research and academics mainly. Some outpatient specialty care."

What sparked your interest in the foot and ankle?

"I started getting my PhD studying the knee. I was originally doing ACL work, but thought that was oversaturated. A partner of mine did foot and ankle alongside four fellowship trained surgeons, and they recruited me and convinced me that there was more good work to do in the foot and ankle versus the knee. Not everyone understands foot and ankle well, and I saw an opportunity to make a bigger impact."

What is your current research interest?

"I have many research interests, but the main one that excites me is patient reported outcomes using scales such as PROMIS (Patient-Reported Outcomes Measurement Information System). Scales are just measurement tools, but [...] they go into biopsychosocial model of care. One particular project that I am excited about is patients' ability to participate in social roles after ankle surgeries. Do people know how to be fit after major surgeries such as ankle fusions? Are they able to participate? Is there value in the previous treatments if they still score low socially on a patient reported outcome scale 1 year out from surgery? The impact of PROMIS is fascinating and very useful to high value care. I also love studying the biomechanics of how the foot really works and, in particular, how the big toe works. Bunion surgery is one of the most common surgeries performed, and I am interested in how [rehab helps] in the recovery process. How are we able to redistribute load on the foot? Also, hallux rigidus. It is hard going uphill with this condition and confusing to people how to deal with it.

As you can see I have a lot of research interests, but, to sum up, I am interested in the whole package of how to stay fit when dealing with these conditions. Looking at both sides (biomechanics and psychosocial) to pull it all together for conservative care or surgical care problems."

How did you become involved in research/academics?

"This is a funny story. I was in Japan working as a Physical Therapist, giving talks and reading research papers and thought to myself, if I am going to read this much I might as well be an academic. So, I applied to get a PhD from the University of Iowa. I knew I could have an influence on the field of physical therapy by changing how people think about care – not just changing interventions."

What other activities/hobbies do you enjoy outside of physical therapy?

"I enjoy being outdoors and on the water, paddle boarding with my wife, hiking, being social and having fire pit parties at my house, salsa dancing, and art."

FASIG Updates

Member Spotlight –
Jeff Houck

Foot/Ankle Osteoarthritis
Considerations

Citation Blast – Ankle
spasticity management

Foot/Ankle Osteoarthritis Considerations

Osteoarthritis (OA) is all too common among the patients we treat and most commonly seen in the hip and knee. The foot, however, is perhaps the most understudied osteoarthritic region. A systematic review by Kalichman & Hernández-Molina¹ stressed that OA is linked to chronic pain in the foot and increased functional impairments.

Treatment of foot and ankle OA is often complicated by systemic factors. A recent study of Australian general practice² identified 65% of patient encounters for foot/ankle OA also involved managing two or more comorbidities. In this same study, 64.6% of all patients were prescribed or referred to pharmacological management, and opioid prescriptions were more prevalent than physiotherapy referrals.²

Psychosocial aspects of patient care are also an important consideration in this patient population. A cross-sectional study by Perruccio and colleagues³ compared foot/ankle OA to knee OA using a health-related quality of life survey (HRQoL) just prior to evaluation with an orthopedic surgeon. The HRQoL surveys bodily pain, physical function, social functioning, mental health, and general health, BMI, comorbidities, and sociodemographic characteristics. The authors point to a need to acknowledge the negative impact of obesity in individuals with foot and ankle OA.³ The patients with foot/ankle OA included in this study were also found to have low educational status, so the authors point to the need to adjust patient education to the individual. The

authors note that “[...] a broader approach to patient education was appropriate for knee OA patients, but a more specific and targeted attention strategy was necessary for foot/ankle patients in attempts to improve the overall health-related quality of life.”³

Focusing on the patient’s goals keeps us true to the APTA vision statement of optimizing movement to improve the human experience.⁴ Taking a treatment approach that considers not only the foot and ankle but also the systemic environment and psychosocial factors ultimately aims to promote a more active lifestyle and improve patients’ overall health-related quality of life.

References:

1. Kalichman, L. Hernández-Molina, G. (2014) Midfoot and forefoot osteoarthritis. *The Foot*, 24(1) pp. 128-134
2. Paterson, K.L., Harrison, C., Britt, H., Hinman, R.S., Bennell, K.L. (2018) Management of foot/ankle osteoarthritis by Australian general practitioners: An analysis of national patient-encounter records. *Osteoarthritis and Cartilage*, 28(1) pp. 888-894
3. Anthony V. Perruccio, A. V., Gandhi, R., Lau, J.T.C., Syed, K.A., Mahomed, N.N., Rampersaud, Y.R. (2016) Cross-sectional contrast between individuals with foot/ankle vs knee osteoarthritis for obesity and low education on health-related quality of life. *Foot and Ankle International*, 37 (1), pp. 24-32.
4. “Vision statement for the physical therapy profession and guiding principles to achieve the vision” (2013) Retrieved from: <https://www.apta.org/Vision/>

“Focusing on the patient’s goals keeps us true to the APTA vision statement of optimizing movement to improve the human experience”

Citation Blast – Ankle Spasticity Management

Individuals post-stroke can present with ankle spasticity, affecting their gait performance, increasing fall risk, and decreasing their overall functional level. This citation blast examines the current literature in interventions for management of ankle spasticity in individuals post-stroke.

1. *Cinone N, Letizia S, Santoro L. et al. Combined effects of isokinetic training and botulinum toxin type A on spastic equinus foot in patients with chronic stroke: A pilot, single-blind, randomized controlled trial. Toxins. 2019; 11(4). doi: 10.3390/toxins11040210.*

This pilot, single-blind, randomized controlled trial examined the effect of BoNT-A injection combined with an ankle isokinetic treatment on function and spasticity in chronic stroke patients. The authors found statistically significant improvements in gait speed, walking capacity, and tone reduction in the experimental group of patients with chronic hemiparesis.

2. *Yang YR, Mi PL, Huang SF, Chiu SL, Liu YC, Wang RY. Effects of neuromuscular electrical stimulation on gait performance in chronic stroke with inadequate ankle control: A randomized controlled trial. PLoS ONE. 2018; 13(12):e0208609.*

The purpose of this randomized controlled trial was to determine the effects of neuromuscular electrical stimulation (NMES) on dynamic spasticity of the ankle dorsiflexors and plantarflexors in individuals with chronic stroke. The individuals who received NMES on the tibialis anterior muscle (NMES-TA) showed a significant decrease in static and dynamic spasticity of the ankle plantarflexors. The NMES-TA group also showed greater improvements, compared to the control group, in ankle plantarflexion during push off, muscle strength of ankle dorsiflexors, and spatial asymmetry after 7 weeks of intervention.

3. *Ghasemi E, Kahdemi-Kalantari K, Khalkhali-Zavieh M. et al. The effect of functional stretching exercises on neural and mechanical properties of the spastic medial gastrocnemius muscle in patients with chronic stroke: A randomized controlled trial. J Stroke Cerebrovasc Dis. 2018; 27(7): 1733-1742.*

This randomized controlled trial investigated the effects of functional stretching exercises on neural and mechanical properties of the spastic medial gastrocnemius in individuals post-stroke. The researchers were interested in neural properties (H-reflex latency) and muscle structure (fascicle length, pennation angle, and thickness). After 2 months, the results indicated changes in H-reflex latency, pennation angle, and muscle thickness following a stretching program.

4. *Deltombe T, Gilliaux M, Peret F. et al. Effect of the neuro-orthopedic surgery for spastic equinovarus foot after stroke: A prospective longitudinal study based on a goal-centered approach. Eur J Phys Rehabil Med. 2018; 54(6): 853-859.*

This prospective longitudinal study sought to determine the efficacy of neuro-orthopedic surgery for spastic equinovarus foot, a common deformity in individuals with stroke that decreases locomotive performance. The study concluded that a personalized neuro-orthopedic surgical program may improve patient-centered goals within the domains of the ICF model for individuals with spastic equinovarus foot.

5. *Fujita K, Miaki H, Hori H, Kobayashi Y, Nakagawa T. How effective is physical therapy for gait muscle activity in hemiparetic patients who receive botulinum toxin injections? Eur J Phys Rehabil Med. 2019; 55(8): 8-18.*

In this non-randomized controlled trial, gait electromyography was measured following a combination of physical therapy and BoNT-A for 2 weeks in hemiparetic stroke patients. The combination of BoNT-A and physical therapy resulted in increased muscle activity

and knee joint stability during stance phase, and suppression of abnormal muscle activity during the swing phase.

6. *Bani-Ahmed A. The evidence for prolonged muscle stretching in ankle joint management in upper motor neuro lesions: Considerations for rehabilitation – a systematic review. Top Stroke Rehabil. 2019; 26(2): 153-161.*

This systematic review evaluated studies examining the effectiveness of prolonged stretching on spastic ankle plantarflexor musculature in patients with Upper Motor Neuron lesions, such as Stroke, SCI, and TBI. Level II and III evidence was provided to indicate the effectiveness of stretching in rehabilitation of spastic ankle plantarflexor muscles, however, more research is necessary to include the impact of stretching on functional outcomes such as walking.

7. *Oh JH, Park HD, Han SH, Shim GY, Choi KY. Duration of treatment effect of extracorporeal shock wave on spasticity and subgroup-analysis according to number of shocks and application site: A meta-analysis. Ann Rehabil Med. 2019; 43(2): 163-177.*

The researchers provided a meta-analysis to determine the duration of treatment effect of extracorporeal shockwave therapy, and number of stimuli and sites of application to achieve the spasticity-reducing effect as measured by the Modified Ashworth Scale. Extracorporeal Shockwave therapy demonstrated a reduction in spasticity levels for 12 weeks in patients with stroke, multiple sclerosis, and cerebral palsy.

8. *Jung KS, In TS, Cho HY. Effects of sit-to-stand training combined with transcutaneous electrical stimulation on spasticity, muscle strength and balance ability in patients with stroke: A randomized controlled study. Gait Posture. 2017; 54(4): 183-187.*

This randomized controlled trial aimed to evaluate whether transcutaneous electrical stimulation (TENS) reduced ankle spasticity in patients with stroke and whether the combination of TENS and sit-to-stand training would reduce spasticity and increase muscle strength and balance ability. The results indicated improved spasticity score, increased hip extensor strength, and reduced postural sway in the TENS group compared to the sham group.