Winter Symposium 2018

Thank you to all who attended the 2018 Musculoskeletal Winter Symposium on February 22, 2018! There were over 100 attendees, talks from two P+F awardees, talks from four abstract submissions and the Keynote address by Dr. Andre van Wijnen. There were 52 posters presented at the poster session. Congratulations to the 7 travel award winners (see photo below).

We hope you enjoyed the program and the opportunity to network with your colleagues. We continue to try to improve the Symposium based on your feedback, so that it is very informative. Thank you for your participation and we look forward to seeing you again next year!

The Department of Orthopaedic Surgery at Washington University is recruiting for new faculty to join our research program in the broad area of musculoskeletal diseases and medicine. For more information, visit the main page of our website.

2018 MRC Symposium Travel Award Winners!

From left: Yongiia Li, Jeremy Eekhoff, Gaurav Swarnkar, Gabriel Mbalaviele (standing in for Chun Wang), Evan Buettman, Era Jain, Amanda Dicks, Yousef Abu-Amer (2018 Symposium Director)
In the Harris lab, we combine computer simulation, imaging, and in-vivo biomechanics to investigate the joint-level geometric and mechanical contributors to pathways of osteoarthritis (OA) development (Fig 1). Our work centers on linking outward manifestations of pathology (e.g. functional deficits) with internal abnormalities (e.g. bone deformity, muscle dysfunction). Our goal in doing so is to establish a chain of information that translates from researchers to clinicians (e.g. surgeons, physical therapists) for improved patient care.

Currently, our major focus is on muscle performance and joint mechanics in patients with developmental dysplasia of the hip (DDH).

DDH is a major etiological factor in hip OA, especially in adolescents and young adults. The common paradigm of DDH pathomechanics is that bony deformities of the acetabulum and proximal femur fail to provide a congruent surface for articular loading and instigate the metabolic cascades and mechanical injury leading to OA.

In a new project we are investigating a revised model of DDH that incorporates abnormalities in the surrounding muscle geometry, motion, and loading (Fig 2).

Our studies will provide new knowledge about how relationships between abnormal bone and muscle may be important factors in DDH pathomechanics, symptomatology, and structural damage.

Hip preservation surgeries for DDH can relieve pain for many patients, but many others develop additional symptoms and long-term results do not demonstrate an effective offset of OA. In a new MRC Pilot and Feasibility Award, we will clarify the effect of hip preservation on muscle performance, which is not currently part of postsurgical assessment, and how it is altered at the time patients are cleared for return to full activity. By quantifying muscle atrophy, mechanical moment arms, neuromuscular activation patterns, joint reaction forces, functional strength, and movement patterns we hope to clarify why some patients respond well to surgery and others do not, as well as inform optimized surgical techniques and postsurgical rehabilitation.

The Harris lab is housed in the Program in Physical Therapy’s Movement Science Research Center at 4444 Forest Park Blvd. Please come by to see our motion capture system, instrumented treadmill, and to talk about biomechanics in the context of surgery, rehabilitation, OA, and regenerative medicine.

Research Highlight

Michael Harris, PhD
Assistant Professor of Physical Therapy, Orthopaedic Surgery, Mechanical Engineering

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