Update on the Biedermann Lab for Orthopaedic Research

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The Biedermann Lab for Orthopaedic Research had its grand opening in June of 2015. Since that time, the Lab has worked to develop partnerships with surgeons and researchers from the Philadelphia area and beyond. Thus far, research collaborations have been established with clinicians and scientists from the University of Pennsylvania, Thomas Jefferson University, Children's Hospital of Philadelphia, Emory University, and several orthopaedic implant companies.

Currently, the Biedermann Lab is working on over 15 biomechanical research projects that are in various stages of development, execution, or publication. The ongoing projects have a wide scope of interests and employ a variety of techniques including computational modeling, 3-D printing of bones, cyclic testing of implants, 3-D motion capture, and cadaveric simulations of activities of daily living.

Recently, the Lab completed two experiments focused on implant designs and surgical techniques used to address upper extremity fracture fixation. These projects have been submitted as abstracts to the annual meeting of the Orthopaedic Trauma Association and will also be developed into full-length manuscripts. The full abstracts to these projects can be found within this journal and represent two examples of the opportunities the Biedermann lab brings to Penn. The first study utilized the labs' ability to precisely cyclically load implants to test the strength of different screws implanted at varying angles into plates. The second study utilized the lab's ability to reproduce physiologic forces on cadeaver tissue to test screw placement strength for fracture fixation (Figure 1).

These two studies exemplify the continuous goal of the Biedermann Lab– to perform research that is relevant and translatable so that the standard of care and quality of life for patients is improved. In order to continually achieve this objective, a steady flow of research ideas and scientific collaborations is essential. Going forward, the Biedermann Lab will work hard to continually develop and foster academic relationships at Penn and throughout the world. If you have a research interest that may be suitably addressed with the research competencies of the Biedermann Lab, you are encouraged to contact Michael Hast directly. For more information about the Biedermann Lab, please see its website: www.med.upenn.edu/biedermann/