



MUSCULOSKELETAL MATTERS

WINTER 2021

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Stacy Brown
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Muscular Diagram of the Right Arm (2005)
Stacy Brown
Pencil and Prismacolor Marker

SURGERY

LISA FRIEDMAN, MD

I meant to ask if it bothered you
but I knew you wouldn't answer.
Your face was buried under a sheet
I wonder if you'd hid a book and light
like you did at night when you were young.

The numbers on the screen
said you didn't mind much at all.
Your skin was already painted
staining it like an old photograph
ancient remembrance of before the scar.

After the first cut
a river of blood flowed into my hands.
You tried to be strong
blinking back tears from the corner of the wound
I suctioned out the emotion with my tools.

The sheath is seen for the first time.
I pull the hole open wider
draw the light from behind my head
The immaculate whiteness beams at me
grinning under the spotlight.

I wrestle tendon from its place
and pull it like a toddler
sucking pasta through pursed lips.
This small worm of tissue
has been destined for a higher call.

I shave away the stubble,
remove the fallen wreckage
leaving your insides naked.
On bare bone I place my drill
ready to rebuild.

FOLLOWING HER CALLING: DR. CASSANDRA RICKETTS' PATH TO ORTHOPEDIC TRAUMA SUR-

CARLY DETER, M2

You don't have to talk to Dr. Cassandra Ricketts for long to see her passion for orthopedic trauma surgery shine through. It was sparked at just 16 years old when she suffered an ACL tear while playing competitive volleyball. She made a full recovery, thanks to her orthopedic surgeon, and went on to play division 1 Volleyball on a scholarship at American University in Washington DC, serving as captain of the team during her junior and senior years. She had known for a while that she wanted to be a doctor, but her injury gave her the first look at the specialty she would fall in love with. Medical school at the University of Utah showed her countless specialties she could pursue, and she kept her mind open and learned about each one, but she said "once I rotated on orthopedics, it was a done deal. The 18 to 20 hour long days flew by." It provided a different perspective of the field and gave her a taste of all the different subspecialties orthopedics has to offer, as well as a closer look at the impact orthopedic surgery can have on the functionality of people in all stages of life.

When it came time to apply for residency, Dr. Ricketts interviewed at top programs across the country, and "Geisinger was hands down my favorite interview day. It was everything I could have hoped for and more." She went on to become chief resident in her program, and developed strong mentorships with the program leadership. While excelling in her residency program, she still found time to enjoy life outside of work by getting together with friends and staying active by playing in a volleyball league once a week. Surgical residencies have long hours and lots of call, but Geisinger provided the opportunity for strong work-life balance and resident comradery, encouraging residents to take care of themselves physically and mentally outside of work.

The most recent achievement on Dr. Ricketts' resume is her orthopedic trauma fellowship match at the Florida Orthopedic Institute within Tampa General Hospital, the longest-standing trauma fellowship in the country. After laying out her options and coming to the consensus that trauma was her calling, she communicated this to her mentors who responded by saying "we knew you were doing trauma the whole time, you just didn't know it yet." Trauma is what drew her to orthopedics as a medical student because it is team oriented, fast-paced, interesting and challenging. If plans A-C do not work, "you have to be ready for plans D through V, to be flexible and critically thinking about how to give the patient the best outcome," she explained. She walked us through the fellowship application



You have to be ready for plans D through V, to be flexible and critically thinking about how to give the patient the best outcome.



process, explaining that it's fairly similar to residency applications, although more heavily reliant on direct conversations between program leadership and mentors of the applicant. She stressed the importance of finding mentors early in your career who can support you through the process and guide you through tough decisions.

Looking back on her journey, Dr. Ricketts reflected on the importance of building a network of supportive colleagues and friends in medical school who will stick with you, and focusing on learning medicine during the first two years. During third year, she recommends talking to your mentor about how to strategically plan your away rotations and talking to current residents at programs you may be interested in. During clinical years, her advice is to always have a good attitude and be helpful, which can be accomplished by anticipating what the medical team needs and having it ready so you can be a contributing member. At the end of the day, she reminds students that "orthopedic surgeons can come in all shapes and sizes... we hope to be able to get more diverse people in orthopedics so we can better help our patients" which, at the end of the day, is what it's all about.

PHYSICIAN HIGHLIGHT: DR. JOEL KLENA

MIRA PATEL, M2

On some afternoons, you may find Dr. Joel Klena on an athletic field, whistle around his neck, not as Dr. Klena but as Assistant Coach Klena, leading girls lacrosse practice for Danville High School. Division Chief of Hand and Microvascular Surgery of the Geisinger Musculoskeletal Institute, and the Program Director for the Geisinger Orthopedic Surgery Residency, Dr. Klena is a community physician at heart, loved by his colleagues, patients, and athletes.

Dr. Klena started his educational career in mechanical engineering, receiving a BS with honors from the United States Merchant Marine Academy (USMMA) at Kings Point, N.Y., graduating ninth in his class. His time at the USMMA included service in the Gulf War conflict and captaining the Academy's NCAA Division I Rugby Team. Shortly after graduating, he was struck by the importance of the human body and the people around him who were affected with illness, making him think that maybe he wanted to do something different with his life. Even working as an engineer, he found that what he enjoyed more than the job itself was the interactions with people and getting to know them.

Although switching gears from engineering to medicine may seem like a daunting task, Dr. Klena was committed and calculated. A double major in military school, he had done very well. He was prepared for the work required and medical school, thriving in clinical rotations and getting to know his patients.

During Dr. Klena's third-year orthopedic rotation it all

came together. In school for mechanical engineering, he had learned how to pipe fit and weld. Being in the Merchant Marine had taught him to be hands-on even outside of the classroom, "because when you're at sea, you know, you can't call a repair man." He knew then, "the immediate satisfaction of taking something broken and repairing it was just a natural fit."

Dr. Klena's most enjoyable part of orthopedic surgery is operating. There is "the satisfaction of trauma, that you can repair things, but also the satisfaction of elective surgeries where you can impact people's lives," he says. His passion for teaching is evident when he reflects on the residents, calling them "the most under recognized strength of our program. The residents are always willing to participate in interviews, teach medical students, and teach each other. By far and away, the biggest strengths of our program are the camaraderie of the residents and the pride they have in making sure that the program not just maintains but improves every year."

His plans for the residency program continue to grow. With the specialty hospital being constructed, it will "have a profound effect on the way we care for our patients, as well as the way we educate our future surgeons." He sees that as an opportunity to improve the care he gives, but also improve the education. He hopes that the program can try to target underrepresented minorities and women in healthcare. These developments would not only pay huge dividends to the field of orthopedics, he says, but be an enduring legacy for the program.



The immediate satisfaction of taking something broken and repairing it was just a natural fit.

UPCOMING EVENTS

Congratulations to the 2022 Musculoskeletal Matters leadership team!

- Managing Editor - Emily Kummerer
- Design Editor - Sydney Williams
- Current Events Editor - Seth Ellison
- Physician Network Editor - Jeffrey Sungjae Mun
- Alumni Network Editor - Samuel Paek
- Editorials Coordinator - Patrick Kowalski
- Research Editor - Frank Vazquez
- Volunteering Editor - Niki Viradia

We are so excited to welcome this group of passionate and highly-qualified students to the Musculoskeletal Matters team. The new leadership will continue to build upon the mission of the founding Musculoskeletal Matters team and will work to expand this project beyond Geisinger Commonwealth School of Medicine.



Walk With a Doc

Saturday, March 26th, 2022 at 9am

Lackawanna River Heritage Trail, W Olive St, Scranton, PA 18508

Since 2005, Walk with a Doc has been dedicated to helping others take steps towards a healthier lifestyle. Start your week-end off great by engaging in conversation with members of your community and taking strides to improve your general health. A physician will give a brief presentation on a health topic and then lead participants on a walk at their own pace. Healthy snacks, coffee, and a T-shirt will be provided. No sign-up necessary.

VOLUNTEER OPPORTUNITIES

Considering restrictions of the COVID-era, members of Geisinger's Student Musculoskeletal (SMS) Club have had to think outside the box to safely interact with and serve the greater Scranton Community. This past year the Student Musculoskeletal Society has partnered with various student groups at Geisinger Commonwealth School of Medicine (GCSOM), including the Art Club, the student band, and the student a cappella groups. Together, we have planned interactive service events for the residents at St. Joseph's Center. These events have included an outdoor concert, interactive art projects, and holiday card making for both Halloween and the winter holidays. This winter GCSOM students also volunteered to admin-

ister vaccines at St. Joseph's Center. Students helped during 3 separate vaccination days, getting to practice an important clinical skill and build relationship with the faculty, staff, and residents at St. Joseph's Center.

As well, GCSOM students have enjoyed spending Friday mornings raking leaves and weeding to help maintain the therapy garden at St. Joseph's Center. While the winter weather has put a hold on the garden work, please watch your E-mail for these opportunities in the Spring! If you are looking for a meaningful way to become closer with the Scranton community through service, please E-mail agagliardi@som.geisinger.edu. We welcome everyone!

RADIOLOGY INTEREST GROUP: LOWER EXTREMITY CLAUDICATION

This paper highlights a case of lower extremity claudication, caused by popliteal artery entrapment by the gastrocnemius muscle, leading to right lower extremity pain in a young adult during athletic activities. A stress CT demonstrated vascular compression of the popliteal artery by the gastrocnemius, and treatment consisted of botulinum-toxin injection in the gastrocnemius to inhibit the release of acetylcholine, decreasing muscular contraction and subsequent vascular compression.



Reference

1. McGinley JC. Nonsurgical treatment of cystic adventitial disease of the popliteal artery caused by functional popliteal artery entrapment syndrome. *J Vasc Surg Cases*. 2015;1(1):28-31. Published 2015 Mar 14. doi:10.1016/j.jvsc.2015.01.002

IMPROVING CARE THROUGH COLLABORATION: PHYSICAL THERAPISTS AT GEISINGER

JESSICA KOSHINKSKI, M2

Musculoskeletal health relies on a multidisciplinary approach to treat patients, requiring expertise from a variety of health care providers. In this issue, we had the opportunity to interview two physical therapists within the Geisinger system, Carrie Grant and Candice Pagnotti. We got to know them, as well as their insights into different aspects of their careers.

Both were exposed to physical therapy through personal experience early. "My uncle was a physical therapist at Marion Community hospital, and they had an open house when I was in kindergarten. I loved that my uncle could fix people without medicine or surgery. It also looked so fun to be able to be with people and treat them with all kinds of 'toys' in the clinic," Grant said. Pagnotti received physical therapy for an ankle sprain and felt the passion that the physical therapist had and the impact that they had on their patients. These experiences inspired them to pursue careers in physical therapy!

As they have gone through their careers, both women have found their interactions with patients to be the most fulfilling aspect, including encouraging patients to improve their everyday activities and the gratitude they receive from the patients they have helped. Though, they face unique challenges, such as patients that do not respond well to therapy and working

with insurance companies to navigate the restrictions and authorizations to coordinate care. Despite these obstacles, they continue to overcome these challenges to improve patient care and help people get back to the activities that they enjoy.

Moving forward, they are both looking forward to the growth of their practice and looking to advance the field through research. This includes getting involved with large scale research projects to have supporting evidence for using certain methods to help patient's function and quality of life. They also want to continue to contribute to the education of future health care providers regarding the benefits of physical therapy. This provides an opportunity to continue to build relationships with physicians in the system, which they say is a staple at Geisinger with various platforms for communication, as well as the collaborative atmosphere. They find that the ability to build trusting relationships and communicate efficiently is instrumental to improving patient's musculoskeletal health.

Thank you do Carrie Grant and Candace Pagnotti for their time and insights into the field of physical therapy. We look forward to continuing to highlight the providers contributing to progress in the field of musculoskeletal medicine!

PHYSICIAN HIGHLIGHT: DR. MICHAEL SOBOLEWSKI

MIRA PATEL, M2

Dr. Michael Sobolewski, a native of Western Pennsylvania, embraces his role providing orthopedic care to the community in which he lives and works. He treats his patients as though they were family by providing high quality care, ease of communication and access. He serves as the Western Region Director for Geisinger's Musculoskeletal Institute in State College and Lewistown.

His path towards a career in orthopedics began early with an initial interest in architecture and engineering. Participating in numerous sports over the years, having interest in health and exercise and attending an undergraduate anatomy class, all led him to focus his studies on athletic training and exercise science/kinesiology at the Indiana University of Pennsylvania.

He then had the opportunity to work with team physicians, "it was getting to see athletic injuries, the work up and treatment process," that directed him towards orthopedics. Being afforded the opportunity to observe surgical cases during undergraduate studies, he then realized this was for him. He enjoyed the mathematical and systematic approach paired with health and exercise.

Dr. Sobolewski confirmed his plans to pursue a career in medicine after speaking with one of his mentors. His mentor explained to him that "medicine is a calling and a noble profession" and assisted him in coordinating a pre-professional experience to provide exposure to numerous specialties. "I enjoyed all of those experiences, each in their own way", explained Dr. Sobolewski. He appreciated engaging in conversation with patients stating, "there is much to learn just from talking with patients."

He decided late in his third year of medical school that orthopedic surgery was the right fit for him. It was a heavy procedure-based, hands-on specialty with an adequate balance of patient interaction. Dr. Sobolewski was able to draw from his background in architecture/engineering, athletic training, and exercise science. He went on to state, "I remain conservative in my approach and focus on benefits of preventative medicine. I understand that the body functions as a unit and realize some



Find your passion and lifelong pursuit . . . don't let others stop you from achieving it.



dysfunctions do not require surgical options to correct."

Currently, Dr. Sobolewski plays a large role in expanding Geisinger's orthopedic footprint in the Western Region. He along with his fellow total joint surgeon, Dr. Patil, have developed a robotics program at Geisinger Lewistown Hospital. He continues to support and develop a spine program with his colleague, Dr. Badve, as well as looks forward to providing ongoing effort in development of a sports medicine program. His goal is to "provide the communities of central Pennsylvania with a robust, comprehensive orthopedic program and sees his team becoming the premier orthopedic provider." Dr. Sobolewski's commitment to his community and team are exemplary of Geisinger's Musculoskeletal Institute mission for access to great care.

Interested in writing about a topic in musculoskeletal medicine?

We are now accepting editorial submissions! We will be featuring one editorial in each issue of Musculoskeletal Matters and posting the rest of the submissions on the website! Submissions and questions can be sent to Jessica Koshinski (JKoshinski01@som.geisinger.edu).

EYE OF THE CARPENTER: HOW WELL DO ORTHOPAEDIC SURGERY RESIDENTS AND FACULTY ESTIMATE ANGULAR MEASUREMENTS IN DEROTATIONAL OSTEOTOMIES?

Nathan Chacras, Benjamin Wheatley, PhD, Louis C. Grandizio, DO, Mark Seeley, MD

BACKGROUND/SIGNIFICANCE:

Femoral derotational osteotomies are used by Orthopaedic surgeons to decrease anteversion in a variety of pathologies. Intraoperatively, the goal of the surgery is to decrease the rotation of the femur to within physiologic range. Surgeons must visually estimate the angle of correction based off bone markers at the rotating cylindrical portion of the femur. This study sought to assess the inter-subject reliability between subjects and modalities with respect to alpha angle creation.

METHODS:

A rotational femur model was constructed and tested amongst undergraduates, medical students, surgical residents and attendings (Figure 1). Subjects were asked to create angles of 15, 30, 45, and 60 degrees using only Kirschner wires and then only bone marks for reference. One-tailed independent t-tests were performed to determine variability between modalities, and post-hoc power analyses were performed on significant results.

RESULTS:

There was no significant difference in average angle creation error between the 'trained' surgical cohort and the 'hybrid' medical student cohort. Both cohorts had significantly lower average angle creation errors than the 'untrained' undergraduate cohort. Untrained and hybrid cohorts were more accurate with pins than marks. The trained cohort was equally accurate with both modalities. Average range of angle creation was 51.1, 16.5, and 25.9 degrees for the untrained, hybrid, and trained cohorts respectively (Figure 2).

CONCLUSION:

The significant inter-subject variability highlights a need for reinforcement of basic geometric principles within orthopaedic instruction. This model allows for immediate accurate feedback on angle creation. The physiologic range allows for a degree of variability between surgical outcomes without consequence. However, the more than twenty-degree range determined by this study does not fall within those bounds and should be addressed. Moving forward, rotational estimation as a surgical skill should increase in prominence within orthopaedic instruction, and additional emphasis should be placed on fundamental spatial orientation during training.

Figure 1: A 3D rotational femur model built to test angle creation accuracy

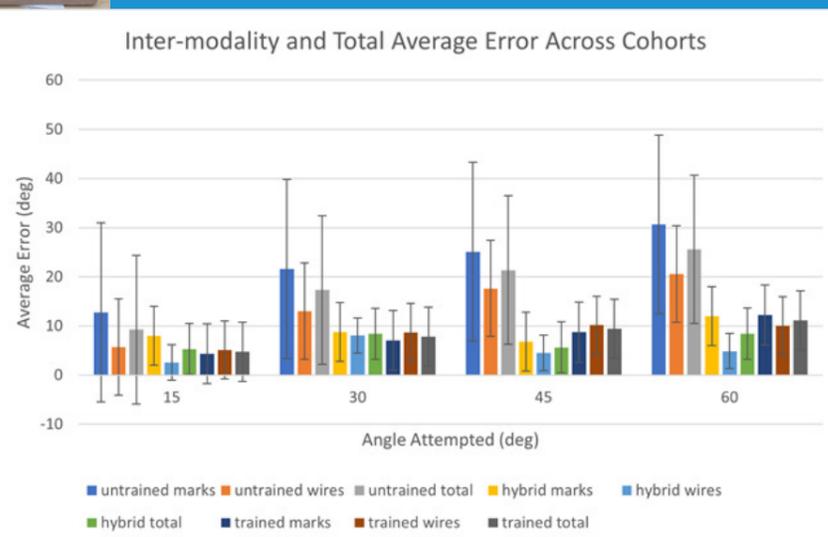


Figure 2: Inter-modality and total average error across cohorts

RESEARCH OPPORTUNITIES: Summer Research Immersion Program

Geisinger Commonwealth School of Medicine's (GCSOM) Summer Research Immersion Program (SRIP) is an eight-week program open to current first-year medical students at GCSOM who are in good academic standing. The program provides students the opportunity to gain hands-on research experience in basic science, clinical science, public/community health, behavioral health or medical education under the guidance of a research mentor. Participants are also offered supplemental seminars on study design, institutional review board (IRB) protocol development, scientific writing and other topics within research. The experience includes an educational stipend contingent upon fulfillment of program requirements. The link to the SRIP application will be available to eligible GCSOM students through Canvas.

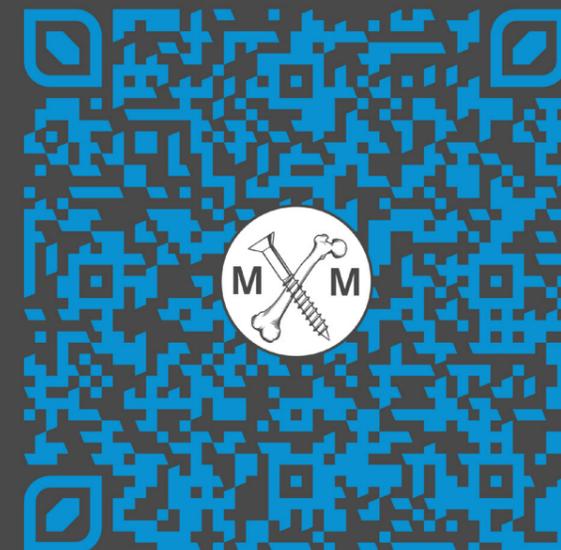
Geisinger MSKI Upper Extremity Research Fellowship

This is a one-year, paid Clinical Research Fellowship in Orthopaedic Surgery within the Geisinger Musculoskeletal Institute for qualified GCSOM students, beginning in July 2022. This research fellowship is designed for qualified GCSOM students interested in both gaining additional research experience and pursuing a career in orthopaedic surgery. The primary goal for this one-year clinical research fellowship is to provide GCSOM students with an opportunity to engage in meaningful clinical research. We aim to provide an opportunity for participating students to strengthen their research skills and knowledge base. We will engage students in a comprehensive musculoskeletal didactic program throughout the year, with the goal of improving their musculoskeletal and orthopaedic knowledge base. Interested candidates should send their CV and cover letter to Jennifer Harding, MSKI Research Director, at jlharding1@geisinger.edu.

Geisinger MSKI Orthopedic Research Application

This application is for outstanding and committed medical students who want to get involved with Orthopaedic research at Geisinger's MSKI. If accepted, students will have the opportunity to work closely with physicians and other research staff on Orthopaedic research projects. The aim of this program is to allow students to engage meaningfully with clinical Orthopaedic research. Applications are reviewed twice a year, in February and August. Student applicants are expected to engage with a Geisinger orthopaedics physician and complete a clinical shadowing experience before submitting their application. Students will also need to obtain a letter of recommendation from the physician with whom they shadowed.

See the full list of research opportunities here:



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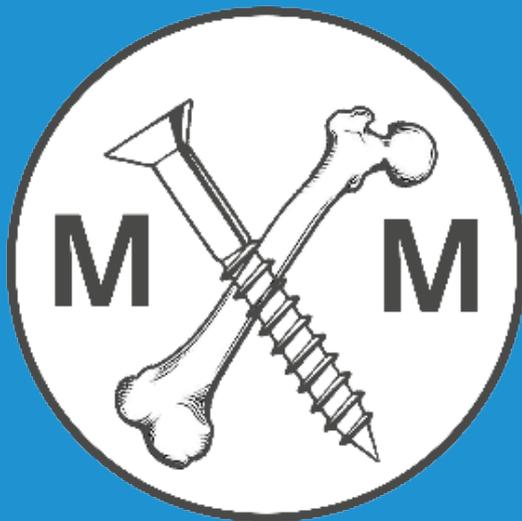
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