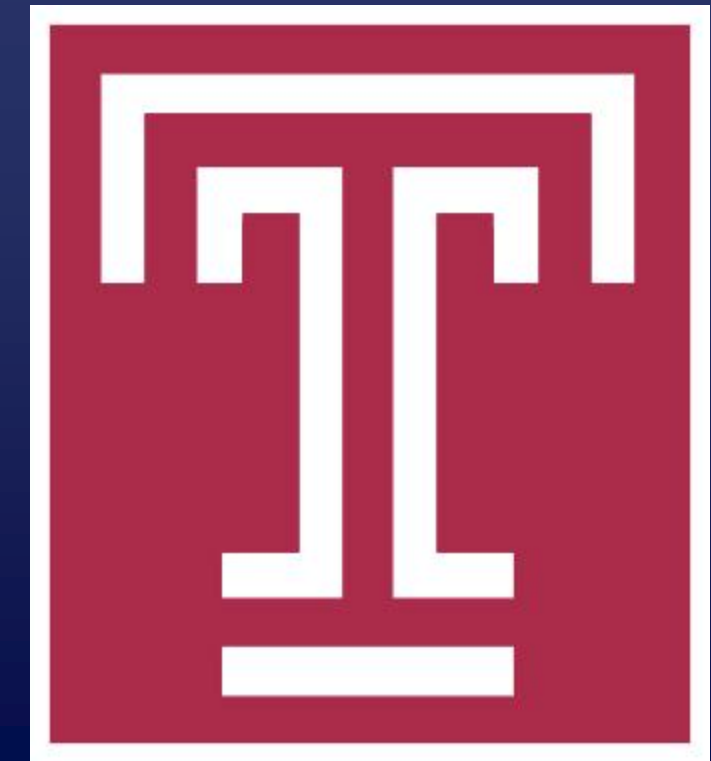


Laterality of Acute Ankle Pathology

Sara Naguib, DPM^a, Hyun Shim, DPM^a, Laura E. Sansosti, DPM AACFAS^b, and Andrew J. Meyr, DPM FACFAS^c

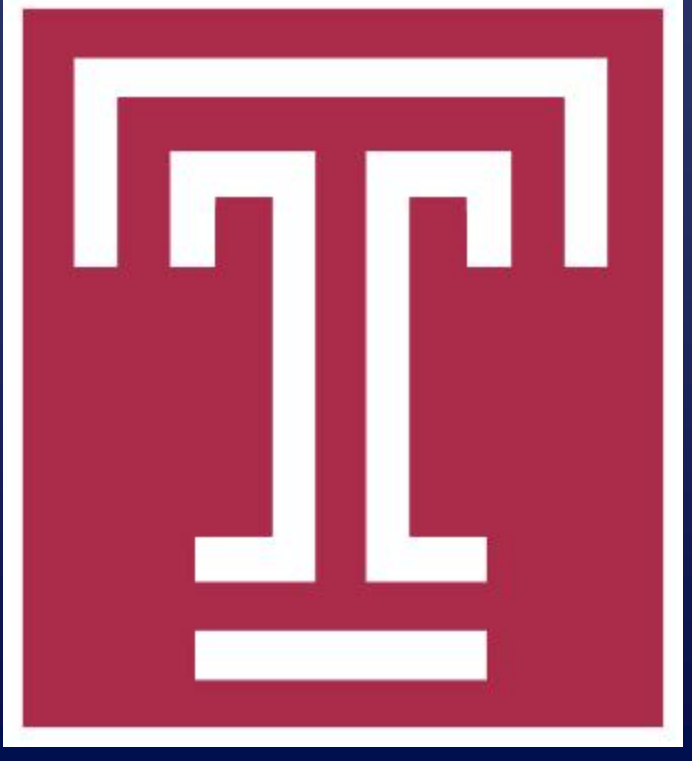


^aResident, Temple University Hospital Podiatric Surgical Residency Program, Philadelphia, Pennsylvania

^bClinical Assistant Professor, Departments of Surgery and Biomechanics, Temple University School of Podiatric Medicine, Philadelphia, Pennsylvania

^cClinical Associate Professor, Department of Podiatric Surgery, Temple University School of Podiatric Medicine, Philadelphia, Pennsylvania (AJMeyr@gmail.com)*

*Please don't hesitate to contact AJM with any questions. He's happy to provide you with a .pdf of this poster if you email him.



Statement of Purpose and Literature Review

Laterality differences in acute and chronic lower extremity pathologies have always represented an area of interest for our group. In fact, one of the corresponding author's first studies found no clinically or statistically significant differences in the surgical correction of bunions, hammertoes or neuromas between right and left feet, but did find that the surgical correction of hallux limitus deformities occurred more frequently on the right compared to the left side [1]. We think this topic likely underscores the importance of both structure and function on the development and treatment of the lower extremity, whereas our focus is often primarily on static structure.

Specific to the ankle, Niu et al found that dominant ankles produced greater angular displacements and higher velocity peaks during barefoot jumping, potentially leading to an increased risk of injury [2]. Similarly Knight and Weimar found that the non-dominant limb demonstrated better posture stabilization during simulated ankle sprains, again potentially leading to an increased risk of injury of the dominant limb [3]. Conversely however, Noback et al found that Achilles tendon ruptures were more common on the left versus the right [4].

The objective of this investigation was to evaluate laterality differences in the presentation of acute ankle pathology.

Methodology

Following IRB approval, a retrospective analysis of all ankle injuries presenting to the emergency department of a Level-1 trauma center over a two-year period was performed. Inclusion criteria of the cohort consisted of ankle sprains, ankle fractures and fractures of the distal tibia. Diagnosis codes were utilized for inclusion.

Following data collection, a chi-squared test was utilized to evaluate for any laterality differences.

Results

We observed 446 left-sided ankle injuries, 568 right-sided ankle injuries, and 18 bilateral ankle injuries that met inclusion/exclusion criteria. Right-sided injuries were observed to be more common (chi-squared 14.2; $p=0.0002$).

Conclusions

As with any scientific investigation, critical readers are encouraged to review the study design and specific results in order to reach their own conclusions, while the following represents our conclusions based on the data. As scientists, we also never consider data to be definitive, but do think that these results are worthy of attention and future investigation:

-The results of this investigation indicate that there is a laterality difference in the presentation of acute ankle injuries with right-sided injuries being more common.

-This might provide insight into not only the epidemiology of a common lower extremity injury, but also begin to provide information with respect to the structural vs. functional pathogenesis, potential preventative measures, and rehabilitative protocols of ankle injuries.



Right-sided injury	N= 568 (55.0% of total)
Left-sided injury	N=446 (43.2% of total) [$p=0.0002^*$]

References

- [1] Meyr AJ, Mbanuzue QJ, Sheridan MJ, Kashani A. The laterality of the surgical correction of forefoot pathology. *J Foot Ankle Surg.* 48(5): 552-7, 2009.
- [2] Niu W, Wang Y, He Y, Fan Y, Zhao Q. Kinematics, kinetics and electromyograms of ankle during drop landing: a comparison between dominant and non-dominant limb. *Hum Mov Sci.* 30(3): 614-23, 2011.
- [3] Knight A, Weimar W. Difference in ratio of evorator to invertor activity between the dominant and nondominant legs during simulated ankle sprains. *J Sport Rehabil.* 22(4): 272-8, 2013.
- [4] Noback P, Jang E, Cuellar D, Seetharaman M, Malagoli E, Greisberg J, Turner Vosseller JT. Risk factors for achilles tendon rupture: a matched case control study. *Injury.* 48(10): 2342-2347, 2017.