**Statement of Purpose**

The goals of this study is to focus on three muscles of the lateral ankle that both exhibit high degree of variation in muscle groups in relevant literature. This has lead to clinical variants belonging to the accessory peroneal muscles, but are not variants of the same structure. There is a high incidence of type Ib and Ic in this study's classification system. Therefore, a classification system was designed to readily classify the morphology of the lateral triangular complex. Furthering the classification, each structure is designated an alphabetical correspondence with the number of structures that occur within a subject. The PT, PDQ and PQ existence within a subject's foot and ankle. The Incidence and Classification of the Peroneus Tertius, Peroneus Quartus & Peroneus Digiti Quinti: A Cadaveric Study

**Methodology**

Cadavers were donated to the 2018 Intensive Summer Anatomy Course at Western University of Health Sciences for Doctor of Podiatric Medicine and Doctor of Osteopathic Medicine candidates. Fourteen bodies with twenty-seven usable limbs were dissected and studied. A classification system was built on the basis of structures on their occurrence alone and with other lateral structures present. Data, description, and pictures were counted in each limb regardless of findings. The Peroneus Digiti Quinti (PDQ) only

**Results**

The PT was observed in 100% of the cadavers. 35 individual PT structures were found in the 27 legs. The PT had 6 common origins and insertions. While some contained their own muscle bellies and others did not. The PDQ was observed in 23 of the 27 legs, a prevalence of 85.2%. Its origin site was fixed, forming at the PB tendon, as the PB tendon is inserting into the base of the fifth styloid. However, insertion varied with 5 common points.

10 out of 27 legs exhibited a PQ, while the remaining 63% was absent for this structure. All ten of the PQ originated from the distal third PB and coursed through the fibular groove. The fibular trochea was the common site of insertion, with 9 of the 10 structures exhibiting this form. The remaining PQ took an unlooked insertion by joining the Peroneus Longus tendon. A lateral triangular complex classification system has been designed upon the PT, PDQ and PQ existence within a subjects foot and ankle. The lateral triangular complex can be subdivided into I, II and III which corresponds with the number of structures that occur within a subject. Furthering the classification, each structure is designated an alphabetical character a, b or c, which represents the PT, PDQ and PQ respectively.

**Discussion**

The lateral triangular complex refers to three structures of the lower extremity. Often, the lateral triangle is incomplete as not all the structures always occur at the same time, which is one reason for the creation of a classification system that is readily usable. There is discrepancies amongst the literature defining the incidence and functions of the separate parts of this complex as well as its clinical significance. Though measurements of dimensions and data collections of these structures have been done, there was no defining classification for these structures. Therefore, a classification system was designed to readily classify the morphology of the lateral triangular complex.

Most literature cites the PDQ at 32-34.3% in their studies, while some outsiders reported at 71 and 79.5%. The study found to correlate with the outlier studies with having even higher incidence of 85.2%.

The PQ had an incidence of 37 percent This rate is significantly higher than the current literature which places it at 5.2-21.7%.

Though there was 0% incidence of type Ib and Ic there is potential for this type to exist because other studies show the PT is not always occurring. Therefore, according to the Y-system it can be a lateral accessory replacement phenomenon, they would have encountered type Ib and Ic in this study's classification system. The PDQ may help create the rigid beam effect on the lateral foot cortex as supination happens. The PQ alone, would help evert the calcaneus based on the anatomy. There is suspicion that the PDQ and PQ functions more as propulsive role. Whether or not this occurs with a biomechanic component is yet to be determined or quantified.

**References**

- Wood J. Variations in Human Myology Observed during the Winter Session of 1866-67 at Kings College, London.
- Thierfelder KM, Gemescu IN, Weber MA, Meier R. [Injuries of Ligaments and Tendons of Foot and Ankle: What Every Radiologist Should Know].
- Reimann R. [Variable extensor apparatus of the small toe. Opposing muscle groups in competition for extensor function of the fifth involutional metacarpal ray of the lower extremity].
- plane, edgewise. The Incidence and Classification of the Peroneus Tertius, Peroneus Quartus & Peroneus Digiti Quinti: A Cadaveric Study
- Garrett Wireman ATC, BS, MS-2 & Eduardo Glass BS, MS-2