

WARREN, PATRICK<sup>1</sup>, MARY FORTUNE<sup>2</sup>, D CERI DAVIES<sup>3</sup>, CECILIA BRASSETT<sup>1</sup> and JAI CHITNAVIS<sup>1,4</sup>. <sup>1</sup>Human Anatomy Teaching Group, Department of Physiology, Development and Neuroscience, University of Cambridge, Cambridge, UK; <sup>2</sup>MRC Biostatistics Unit, University of Cambridge, Cambridge Institute of Public Health, Forvie Site, Robinson Way, Cambridge Biomedical Campus, Cambridge, CB2 0SR, UK; <sup>3</sup>Human Anatomy Unit, Department of Surgery & Cancer, Imperial College London, London, UK; <sup>4</sup>Cambridge Knee Clinic, Cambridge, UK. **The morphology of the human prefemoral fat pad suggests that it aids patellar stabilisation in knee extension.**

The prefemoral fat pad (PFP), also known as the posterior suprapatellar or supratrochlear fat pad, is one of three anterior fat pads of the knee joint. The PFP is adherent to the anteroinferior surface of the femur and separates it from the patella in full extension of the knee. While pathological changes in the PFP have been implicated in anterior knee pain, little research has been conducted into its morphology. Therefore, the anatomy of the PFP and its role in shaping the peripatellar environment in full extension were investigated. 36 cadaveric knees from 26 donors (10 male, 13 female, of mean age  $\pm$ SEM  $85\pm 1.5$  years) were dissected in compliance with the UK Human Tissue Act (2004). Measurements were taken of the PFPs to determine whether they were of uniform thickness. The depth of the 'prefemoral sulcus' (a visible central sulcus not mentioned in previous literature) in the PFP was measured prior to PFP resection and then the depth of the underlying femoral (supratrochlear) groove was measured at the same level. The mean thickness ( $\pm$ SEM) of the PFP was significantly less centrally at the level of the prefemoral sulcus ( $2.86\pm 0.24$ mm) than at its medial ( $6.92\pm 0.42$ mm) and lateral ( $4.99\pm 0.43$ mm) prominences overlying the respective femoral condyles ( $p < 0.0001$  for both comparisons). The mean depth ( $\pm$ SEM) of the 'prefemoral sulcus' in the PFP ( $4.41\pm 0.19$ mm) was significantly greater ( $p < 0.001$ ) than that of the underlying femoral groove ( $2.88\pm 0.25$ mm). These results suggest that the PFP acts to deepen the groove in which the patella rests, increasing its stability in full knee extension. Thus, the PFP may play a significant role in shaping the peripatellar environment and therefore, PFP pathology could alter this environment and result in anterior knee pain. This possibility warrants further investigation using *in vivo* imaging.