

Quadriceps angle of undergraduate students of University of Peradeniya

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Q angle (Quadriceps angle) is formed between two intersectional lines, one passing between the anterior superior iliac spine (ASIS) to the midpoint of patella and the other from the tibial tubercle through the midpoint of patella. It represents the alignment of quadriceps with the patella ligament. Greater Q angle increases the lateral pull of patella tendon which causes increased tensile stress on the soft tissue in the medial side of the knee joint causing patellofemoral pain, patella subluxation and dislocation. Unequal pull may drag patella over lateral femoral condyle and may cause chondromalacia patellae. Therefore Q angle values are important in the assessment of knee joint biomechanics. Nevertheless normative values vary according to the method used in quantification. It varies between populations too. Further it shows bilateral variation and sexual dimorphism. Therefore it is important to understand Q angle values related to Sri Lankan populations and to establish a standard simple method that could be easily replicated in clinical practice for its evaluation.

A descriptive cross sectional study to quantify the Q angle was conducted among healthy residential undergraduate students of university of Peradeniya. Measurements were done using a goniometer when the subjects were standing in Rhomberg stance on a flat surface with quadriceps and glutei were relaxed. Two sample t-test was used to analyze differences between groups.

Study population included 220 female students and 143 male students with a mean age (SD) of 23.6(1.6) years. Mean Q angle values (SD) were 20.380(4.1) and 11.860(3.5) for males and females respectively and the difference was significant. A significant bilateral variation too was observed among males.

Average Q angle values reported here were greater than the values considered as normal in clinical practice. As described in previous studies sedentary lifestyle induced body types of this academically oriented group may explain these differences. Wider pelvis places the ASIS farther away from the patellar midline. This may explain the greater Q angle among females. Quantification of Q angle in the standing position reflects the functional status of the knee while the Rhomberg stance is easily replicated and minimizes the measurement errors.