Does the Degree of the Q-Angle Affect the Frequency of ACL Injuries or Knee Pain?

Turnbough, Rayah (School: Salem High School)

In the last year, five student-athletes participating in high school basketball tore their ACLs. This project aimed to determine if a correlation exists between the Q-angle of an athlete's knee and a resulting knee injury. The goal is to prevent or decrease the number of knee injuries and associated surgeries, specifically ACL tears. The Q-angles of athletes with and without ACL tears were measured. A full circle manual goniometer was used to measure the student-athletes from their hip bone to the middle of the knee cap capturing the degree of angle for Q-angle. The participant laid flat on their back during measuring to ensure precise measurement of the Q-angle was obtained. After measuring, the participant was asked if they were experiencing any knee pain. The student-athletes with previous torn ACLs had Q-angles outside the norm and were experiencing knee pain. Athletes without torn ACLs had Q-angles within the normal range (females 15-18 degrees, males 10-13 degrees) and were not experiencing knee pain. Therefore, Q-angle measurements could be used as an indicator of potential knee injuries, knee injuries that have not healed properly, and specifically potential ACL tears. This project's proven hypothesis supports the recommendation to add Q-angle measurements to the yearly sports physicals that student-athletes are required to have.

Awards Won:

Missouri University of Science and Technology: $1,250 tuition scholarship (renewable for up to 4 years)

Missouri University of Science and Technology: Summer Camp scholarships (camp tuition and travel expenses, valued at up to $1,500)