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Radiographic measurement of femoral intercondylar notches in ACL injured and healthy sportspeople.

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Purpose: A narrow intercondylar notch width has for decades been considered a predisposing factor for ACL injury, in particular non-contact injury.1, 2 During side-stepping and cutting the ACL winds around the walls of the intercondylar notch and can become amputated, especially if housed within a narrower notch. While several researchers have found a relationship between a narrow intercondylar notch width index (NWI) and ACL injury,3, 4 some investigators have not.5 This study aims to compare the NWI in injured and uninjured athletes. In particular both anterior and posterior notch width indices were measured which is not common in the literature.

Method: Twenty-five ACL injured patients who had no reconstructive surgery were recruited from a larger cohort. All patients had a complete ACL rupture diagnosed either during arthroscopy, by MRI or on clinical examination by an orthopaedic surgeon. Patients over the age of 46 were excluded. Patients were matched with 25 healthy athletes for age and sporting levels. The injured group comprised 6 females and 19 males aged 23 to 46 years old (mean 34). The uninjured group comprised 9 females and 16 males aged 21 to 44 years old (mean 32). Patients were radiographed in 4 point kneeing as described by Le Prade.5 One of the authors attended each session to ensure correct positioning, constant knee angle and avoidance of femoral rotation. NW indices were calculated as described by Soural et al.6 Independent t-tests were used to compare NWI between groups.

Results: The mean anterior NWI was .199 for the injured group, and .233 for the uninjured group (p<.001). The mean posterior NWI was .276 for the injured group, and .293 for the uninjured group (p=008). The difference between anterior NW indices reached greater significance than for posterior NW indices.

Conclusion: The significant difference found in the NWI between injured and healthy subjects confirms that a narrow NWI may be a factor in the pathogenesis of ACL injuries. Although limited as compared to CT and MRI we suggest that radiography is a convenient and inexpensive means whereby valuable information with regard to notch size can be provided. Radiographic screening may assist in identifying sportspeople at risk of ACL injury.

References:

