ISAKOS

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

9th Biennial ISAKOS Congress • May 12-16, 2013 • Toronto, Canada

Paper #83

Increased Posterior Tibial Slope is Associated with ACL Graft and Contralateral ACL Injury after ACL Reconstruction

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Summary:
An increased PTS is associated with an increased incidence of long term further ACL injury after ACL reconstruction to both the reconstructed and the contralateral knee.

Abstract:
Introduction:
ACL injury is multifactorial, but previous studies have shown that an increased PTS can be a risk factor for primary ACL injury. The purpose of this study is to determine if an increased PTS also predisposes to a second injury after ACL reconstruction, either an ACL graft rupture or a contralateral ACL rupture.

Methods:
Two hundred consecutive subjects with isolated ACL rupture who underwent primary ACL reconstruction with hamstring tendon autograft between October 1993 and March 1996 were enrolled in the study. Both the 15 year outcome was known and radiographic PTS was measureable in 181 subjects. This included 131 intact graft/ contralateral ACL, 31 ACL graft ruptures, 15 contralateral ACL ruptures and 4 who sustained both ACL graft and contralateral ACL injury. The PTS was measured on a digitized lateral radiograph of the knee using the Proximal Anatomical Axis (PAA).

Results:
An increased incidence of further ACL injury was found in subjects with a PTS greater than 12° when compared to subjects with a PTS less than 12° (56% vs 25%; p=0.007). The average PTS was 9.2°. The average PTS for any re-injury was 9.7° compared to 8.8° for no further injury. The average PTS for both ACL graft and contralateral ACL rupture was 12.6°.

Conclusion:
An increased PTS is associated with an increased incidence of long term further ACL injury after ACL reconstruction to both the reconstructed and the contralateral knee. PTS should be considered when counselling patients returning to sports after ACL reconstruction.