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# Athletes Under the Age of 20 Following Primary Anterior Cruciate Ligament Reconstruction: Risk Profile Comparing Three Patient Groups Predicated upon Skeletal Age

Frank A. Cordasco, MD, MS, UNITED STATES Sheena R. Black, MD, UNITED STATES Meghan Price, BS, UNITED STATES Colleen Wixted, BS, UNITED STATES Michael Heller, ATC, PES, CES, UNITED STATES Lori Ann Asaro, PA-C, MS, UNITED STATES Joseph T. Nguyen, MPH, UNITED STATES Daniel W. Green, MD, MS, UNITED STATES

Hospital for Special Surgery New York, NY, UNITED STATES

Summary:

Athletes in Group 2 are at higher risk of re-injury following ACLR.

Abstract:

### Background

With sports specialization and level of competition on the rise, anterior cruciate ligament reconstruction (ACLR) in athletes under the age of 20 has increased significantly in recent years. Reports have demonstrated that the revision ACLR rate is higher and return to sport (RTS) rate is lower in this population.

Hypothesis/Purpose:

The purpose of this study is to evaluate the 2-year clinical outcomes of three cohorts of primary ACLR in pediatric and adolescent athletes under the age of 20 based upon skeletal age with a focus on RTS and the incidence of second surgery

Study Design: Prospective Case Series

#### Methods

This is a prospective evaluation of 324 athletes < 20 years of age following ACLR with minimum 2-year follow-up. The surgical technique was selected predicated upon skeletal age which includes the all-epiphyseal (AE) technique with hamstring autograft in the youngest cohort in lower and middle school (Group 1), the partial transphyseal (PTP) and complete transphyseal (CT) with hamstring autograft performed for athletes in the middle cohort (Group 2), and bone tendon bone autograft (BTB) in the skeletally mature high school athletes (Group 3).

#### Results

The mean chronological age of the entire cohort was 15 years (range 8 to 19 years) with 55% males. The three cohorts included 49 patients (15%) in Group 1 (mean age: 12y), 66 (20%) in Group 2 (mean age: 14.3y), and 209 (65%) in Group 3 (mean age: 16.2y). Group 2 athletes had a significantly higher revision ACLR rate (20%) compared to Groups 1 (6%) and 3 (6%). Similarly, Group 2 athletes had significantly lower RTS rates (85%) compared to Groups 1 (100%) and 3 (94%).



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## Conclusion

The rate of revision ACLR was significantly higher and the RTS rates significantly lower in Group 2 compared to Groups 1 and 3. This age-related risk profile may be used to counsel athletes and parents preoperatively regarding the expectations of surgery with respect to revision ACLR and RTS rates.