Gait Alterations After Anterior Cruciate Ligament Injury and Implications for Return-to-Play Testing

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INTRODUCTION

• Reoccurring injury to the anterior cruciate ligament (ACL) is a major problem for individuals who undergo ACL reconstructive surgery despite them meeting current requirements for return-to-play1.
• Previous studies have found alterations in gait kinetics and kinematics of ACL deficient and ACL reconstruction patients2.
• It is unknown if gait parameters, such as peak joint angles and moments, provide different information about patient function from what is provided by return-to-play outcomes.

PURPOSE

To assess the relationships between peak joint angles, peak joint moments, and return-to-play outcomes for individuals with ACL injury.

MATERIALS & METHODS

Subjects: 6 subjects (3 ACL reconstruction, 3 ACL deficient) volunteered to participate in the study.

Time Since Injury In Months (mean ± std) Injured Limb Graft Type
6.31 ± 3.41 Right Patellar Tendon

Table 1: Subject Demographics.

Return-to-Play Outcomes: Each subject was assessed with the following clinical measures: single hop test, triple hop test, cross hop test, timed hop test, and quadriceps strength symmetry (QI).

Gait Assessment: Each subject performed two-minute walk trials on an instrumented split-belt treadmill while kinetics and kinematics were collected.

Data Processing & Analysis: Peak knee joint moments and angles for participant’s involved limb were calculated using Visual3D. Relationships between joint moments, joint angles, and return-to-play outcomes were assessed using Pearson Correlation Coefficients.

RESULTS

• Mean peak joint angles and moments had weak to moderately strong relationships with return-to-play outcomes with knee extension moments generally showing the strongest relationships
• Because of the weak relationships between return-to-play outcomes and other gait parameters, these values may provide unique information about patient outcomes
• Future research should further explore this relationship to determine clinical relevance of gait testing for return-to-play assessment

CONCLUSIONS

REFERENCES