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# Visual Estimation of ACL Injury Risk: Efficient Assessment Method, Group Differences, and Expertise Mechanisms

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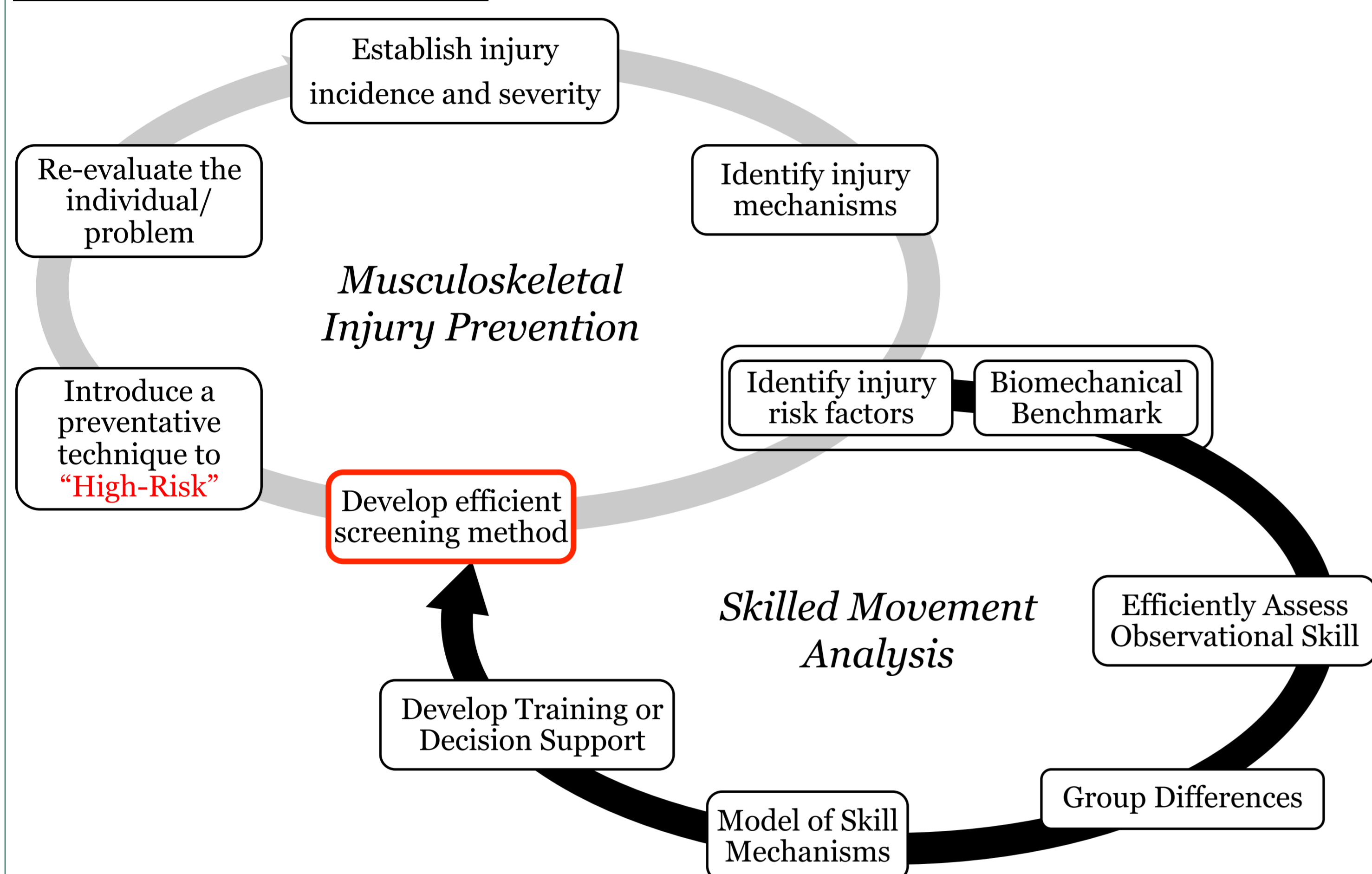
www.ACL-IQ.org

## Introduction

### Impact

- Over 2 million ACL injuries occur worldwide annually.
- Approximately 1 in 30 female athletes participating in landing and cutting sports (basketball, soccer) will tear their ACL within one season of play.
- Annual costs in U.S. likely exceed \$3 billion (majority pursue surgery).
- Osteoarthritis occurs at 10 times the normal rate.

### Potential Solutions



- Efficient screening method: **Skilled movement analysis**
  - a.) Reduce screening time and cost
  - b.) Ensure biomechanical feedback during prevention programs is accurate

### Aim

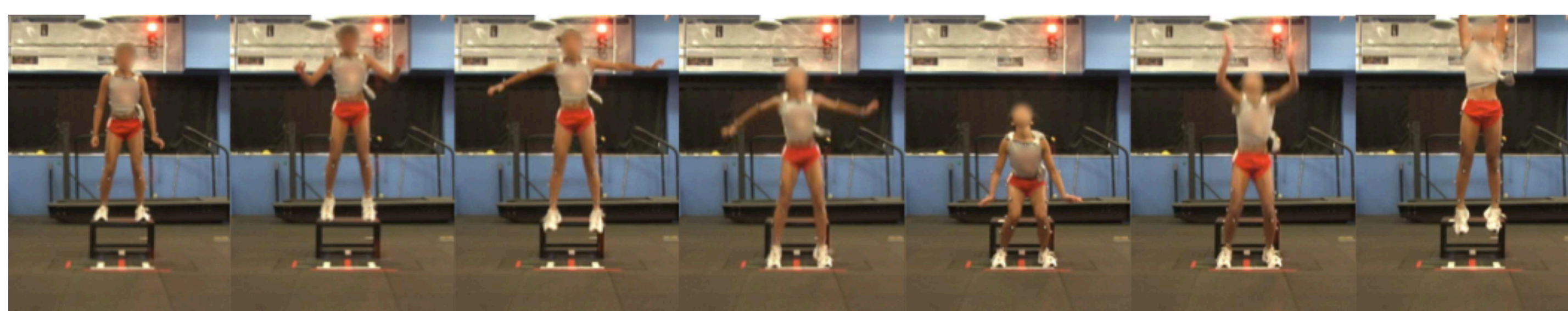
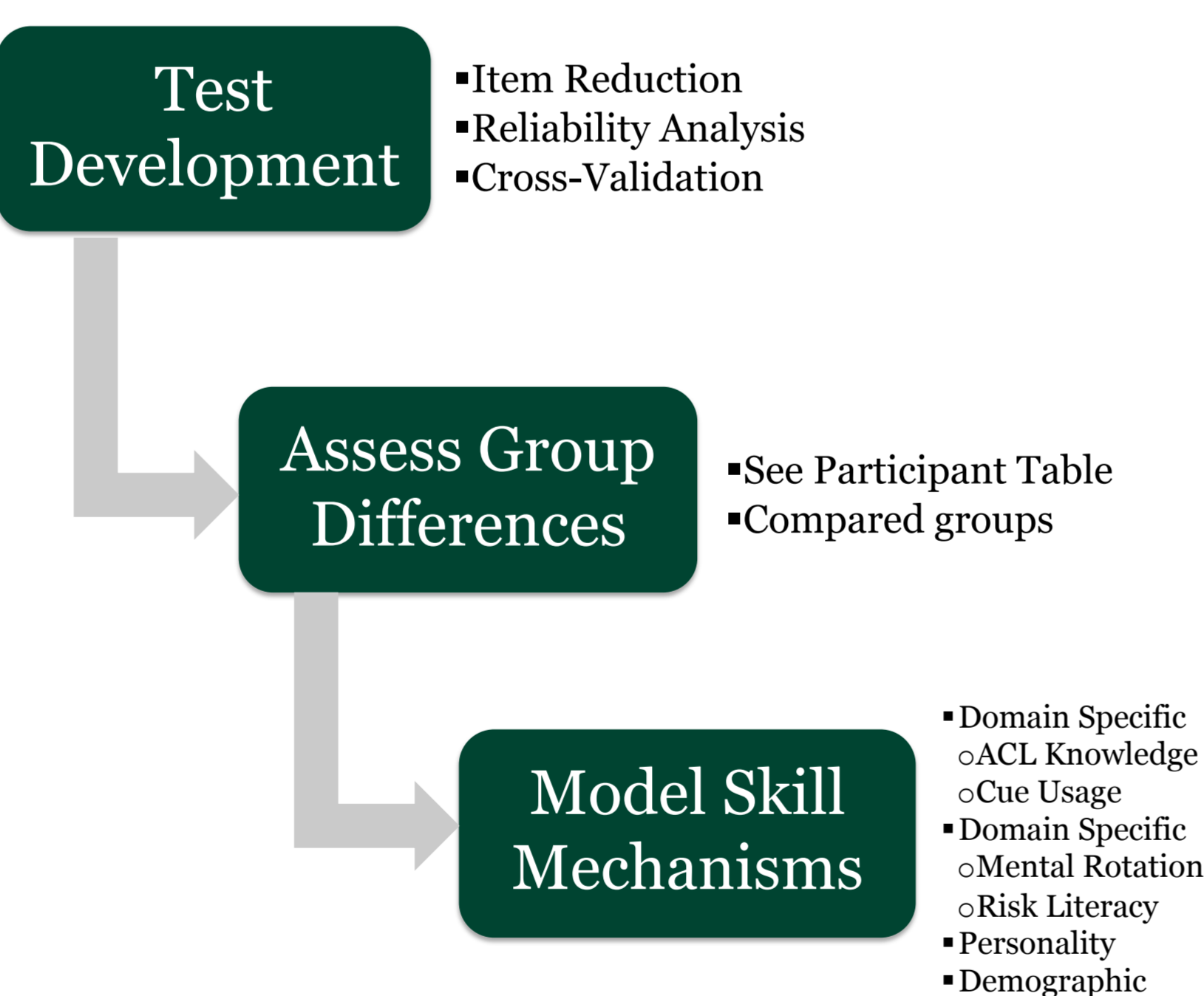
- 1.) To create an **efficient** and **effective** visual screening system for ACL injury risk

## Methods

### Participants

Group	n
ExSci Student	48
ExSci Academic	30
S&C Coach	41
Athletic Trainer	52
Physical Therapist	59
Physician	39
Sport Coach	34
Parent of Athlete	26
Female Athlete	11
General Public	320
<b>Total</b>	<b>660</b>

### Procedures



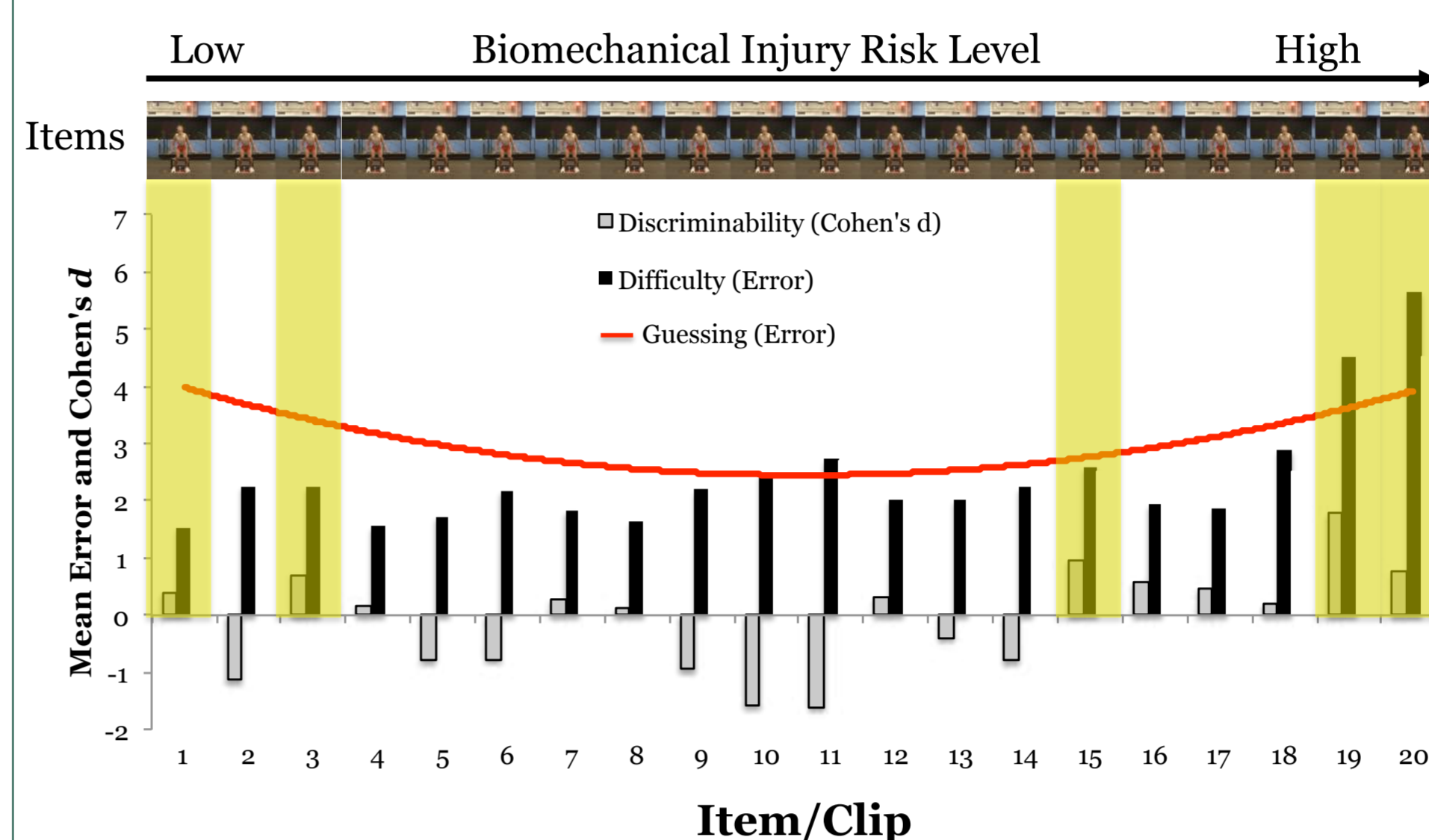
	Very Low								Very High
Risk for ACL Injury	○	○	○	○	○	○	○	○	○
Confidence in Answer	○	○	○	○	○	○	○	○	○

Figure 2: Sample ACL-IQ item (snapshot of video sequence)

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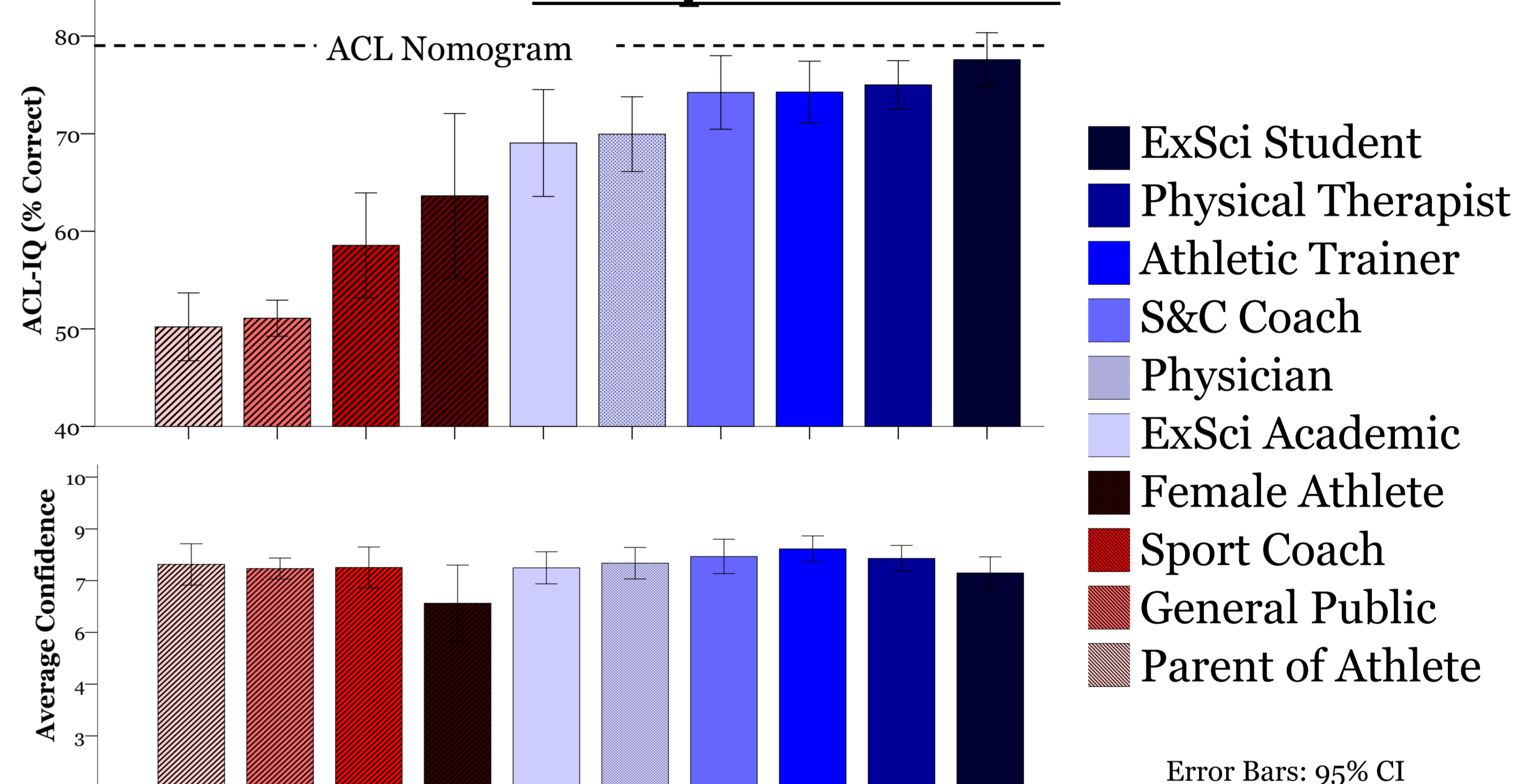
## Results

### Test Development

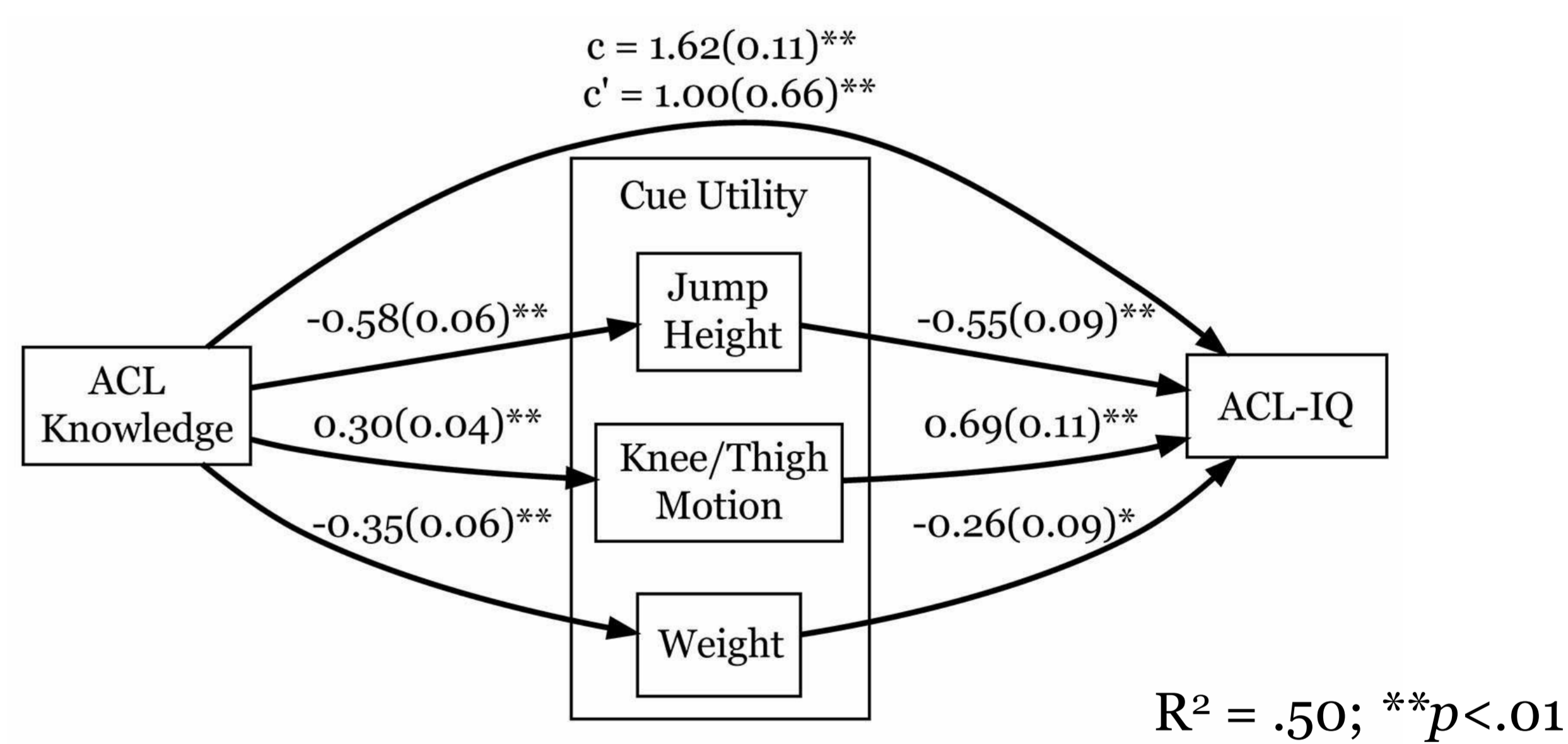


- Number of Items = 5
- Average Time (min:sec) = 2:24
- Test-retest (r) = .90
- Score Range = 0-100 %
- Achieved Range = 26-95 %

### Group Differences



### Skill Mechanisms



R<sup>2</sup> = .50; \*\*p < .01

## Discussion

- It will be important to **target parents, athletes, coaches, and physicians** for improving **risk assessment** performance or to adopt the ACL nomogram to aid their injury risk assessment in practice.
- The **ACL-IQ** is an assessment technology and feedback system for ACL injury risk prediction ability.
- Individuals can assess their ACL injury risk prediction ability with a short, free, and online ([www.ACL-IQ.org](http://www.ACL-IQ.org)) tool.

## Moving Forward

- Future research will focus on developing efficient methods to **improve** visual risk prediction **performance** (e.g., see Decision Tree to the right) and establishing **predictive evidence** that individuals with high ACL-IQ can reduce ACL injuries.

