



REVIEWER'S REPORT

Manuscript No.: IJAR-50405

Date: 26-02-2025

Title: The Influence of Quadriceps-to-Hamstring Strength Ratio on ACL Stability.

Recommendation:

- Accept as it is.....**YES**.....
- Accept after minor revision.....
- Accept after major revision
- Do not accept (*Reasons below*)

Rating	Excel.	Good	Fair	Poor
Originality	√			
Techn. Quality		√		
Clarity		√		
Significance			√	

Reviewer's Name: Dr Aamina

Reviewer's Decision about Paper: **Recommended for Publication.**

Comments (*Use additional pages, if required*)

Reviewer's Comment / Report

The paper, "The Influence of Quadriceps-to-Hamstring Strength Ratio on ACL Stability," presents a well-structured and insightful analysis of the relationship between muscle strength balance and anterior cruciate ligament (ACL) stability. The study provides valuable contributions to the field of sports medicine and injury prevention, particularly concerning athletes at high risk of ACL injuries.

Strengths of the Paper

1. Relevant and Well-Defined Research Focus:

The study addresses a critical issue in sports science by examining the impact of the quadriceps-to-hamstring (Q:H) strength ratio on ACL stability. This focus is essential

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given the prevalence of ACL injuries in athletes and the role of muscular strength in injury prevention and rehabilitation.

2. Clear and Concise Abstract:

The abstract effectively summarizes the research, providing a coherent overview of the study's aim, objectives, methodology, results, and conclusions. The inclusion of a hypothesis strengthens the clarity of the research intent.

3. Strong Rationale in the Introduction:

The introduction provides a solid foundation for the study by contextualizing the importance of ACL stability and the potential role of muscle strength balance. The discussion on gender disparities and neuromuscular factors enhances the relevance of the research.

4. Methodological Rigor:

The study employs a robust methodology, utilizing a cross-sectional design with a well-defined sample of competitive athletes. The use of handheld dynamometry for muscle strength assessment and clinical tests for ACL stability evaluation ensures objective and reliable data collection. The inclusion of statistical analyses, such as regression models and t-tests, strengthens the validity of the findings.

5. Well-Organized Results and Data Interpretation:

The results are clearly presented, with significant findings linking the Q:H ratio to ACL stability. The identification of an optimal Q:H ratio (0.6–0.8) provides practical insights for injury prevention and rehabilitation. The discussion on gender differences further enhances the study's applicability to tailored training interventions.

6. Statistical Relevance and Clinical Implications:

The paper effectively integrates statistical findings, demonstrating a significant inverse correlation between Q:H ratio and ACL instability ($r = -0.45$, $p < 0.05$). The explained variance of 21% provides meaningful insights into the relationship between muscle strength balance and ACL function. The study also offers evidence-based recommendations for targeted strength training programs, particularly for female athletes.

7. Logical Flow and Readability:

The paper is well-structured, maintaining a logical progression from the research

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question to methodology, results, and discussion. The clarity of language and precise explanations enhance readability and comprehension.

Conclusion

The study makes a valuable contribution to understanding the role of Q:H strength ratio in ACL stability. Its findings support the implementation of targeted training programs aimed at improving hamstring strength, particularly in female athletes, to reduce ACL injury risk. The paper is a well-executed and relevant addition to sports science literature.