

# **Influence of Knee Angle on Hamstring/Quadriceps Strength Ratio in Male Soccer Players**

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## **Abstract-**

Hamstring muscle injuries account for 12% of all injuries in soccer players. Several studies claim that the hamstring/quadriceps (H/Q) strength ratio has the potential to predict hamstring injuries, although the current evidence is not robust enough to definitively support this claim. Therefore, the main objective of the present study is to analyze whether there are changes in the H/Q ratio at different knee flexion angles and establish a measurement protocol capable of reducing the high prevalence of hamstring injury. We performed an observational study with 24 third-division soccer players. The conventional isokinetic H/Q strength ratio and H/Q strength ratio were measured at different knee flexion angles (15°; 30°; 45°; 60°; and 75°) at 60°/s and 180°/s. The conventional H/Q ratio differs from the H/Q ratios at 15° and 30° knee flexion at 60°/s and from the H/Q ratios at 15°; 45°; 60°; and 75° at 180°/s ( $p < 0.05$ ). Based on the results obtained in this study, we recommend calculating the H/Q ratios at 15° and 30° knee flexion in the protocol for measuring the flexor and extensor strength of the knee. This additional data will establish more specific cut-off points that could predict and prevent future hamstring muscle injuries.

**Index Terms-** hamstring injury; strength ratio; hamstrings; quadriceps; soccer players

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