

Does Prior Hamstring Strain Injury Affect Hamstring Muscle Activation Patterns in Amateur Football Players? A Case-Control Study

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Abstract

Objective: To determine if there is a relationship between prior hamstring strain injury and medial:lateral (M:L) hamstring activation ratio in amateur football players during normal gait.

Design: A Case-Control Study.

Methods: Six male amateur football players with a history of unilateral hamstring strain injury volunteered. EMG recordings of medial hamstring (Semitendinosus) and lateral hamstring (Biceps Femoris) were taken during a 3 m on ground walk. EMG data coupled with kinematic analysis was used to formulate medial:lateral hamstring activation ratios during the gait cycle. The activation ratio of the previously strained hamstrings was compared to the non-injured hamstrings. The primary outcome of the study was a significant difference in activation ratios of the previously injured hamstrings compared to ratios in the uninjured hamstrings.

Results: There is no significant difference between mean M:L hamstring activation ratios in previously injured hamstrings (M=2.54, SD=1.56) and uninjured (control) hamstrings (M=3.06, SD=2.86) across the full gait cycle; $t(10)=0.73$, $p=0.05$. Mean M:L activation ratios during 'Stance phase' show no significant difference between case and control hamstrings; $t(10)=0.88$, $p=0.05$. During 'Swing phase' there is no significant difference in mean M:L activation ratios between previously injured and uninjured hamstrings; $t(10)=0.61$, $p=0.05$.

Conclusion: Previous hamstring strain injuries do not result in a significantly different hamstring activation ratio during walking when compared with uninjured hamstrings. This is true for both 'Stance phase' and "Swing phase' of gait cycle as well as across the entire gait cycle.