ABSTRACT

Introduction/Purpose: Currently there is little evidence supporting the use of objective tests, measures, or imaging to help predict time to return to sport (RTS) following a hamstring strain. The purpose of this study is to investigate the predictive value of tenderness to palpation (TTP) as measured by area and location following hamstring strain.

Study Design: Case Series

Methods: Nineteen male athletes (age 28±9 yr) who sustained an acute hamstring strain underwent hamstring tenderness mapping on initial evaluation. The length and width of tenderness of the hamstring was identified with manual palpation, outlined in pen, and was then calculated as a percentage of the length and width of the posterior thigh. All patients underwent the same hamstring rehabilitation protocol with remapping performed at specific stages in rehabilitation. The association between mapping tenderness indices and RTS was assessed by linear regression.

Results: The average length of the area of tenderness was 22±12% with an average RTS of 43±36 days. The length of the area of tenderness measured on initial evaluation was a strong predictor of RTS ($R^2=0.58$, $p<0.001$; $y=2.3x-6.2$). Area of injury ($R^2=0.36$, $p=0.006$) and age ($R^2=0.27$, $p=0.024$) were also related to RTS, while width of injury ($R^2=0.006$, $p=0.75$) and location of injury were not (proximal-distal $p=0.62$, medial-lateral $p=0.64$). Adding age with length of injury into a multiple regression analysis improved the prediction of RTS ($R^2=0.73$). The relationship between RTS and length of tenderness was relatively unchanged when the additional mapping indices taken during the course of rehabilitation were added to the analysis ($R^2=0.61$, $p<0.001$; $y=2.3x-4.4$). This indicates that the regression equation can be used to estimate RTS regardless of when in the post injury/rehabilitation process the mapping is performed.

Conclusions: The length of the area of tenderness to palpation of the injured hamstring muscle was highly predictive of RTS time. Based on the regression equation a patient with a length of tenderness of 10% would have an estimated RTS time of 17 days, while a tenderness length of 30% would be estimated to return in 63 days. This hamstring mapping technique described was predictive of the RTS and may be a useful clinical tool.

Keywords: hamstring, mapping, prognosis, palpation, tenderness

Level of Evidence: IIb

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