

ORIGINAL RESEARCH

ACCURACY OF SELF-REPORTED FOOT STRIKE PATTERN
IN INTERCOLLEGIATE AND RECREATIONAL RUNNERS
DURING SHOD RUNNINGMichael B. Bade, PT, DPT, PhD^{1,3}Katie Aaron, PT, DPT²Thomas G. McPoil, PT, PhD¹

ABSTRACT

Background: Clinicians are interested in the foot strike pattern (FSP) in runners because of the suggested relationship between the strike pattern and lower extremity injury.

Purpose: The purpose of this study was to assess the ability of collegiate cross-country runners and recreational runners to self-report their foot strike pattern during running.

Study Design: Cross-sectional Study

Methods: Twenty-three collegiate cross-country and 23 recreational runners voluntarily consented to participate. Inclusion criteria included running at least 18 miles per week, experience running on a treadmill, no history of lower extremity congenital or traumatic deformity, or acute injury three months prior to the start of the study. All participants completed a pre-test survey to indicate their typical foot strike pattern during a training run (FSPSurvey). Prior to running, reflective markers were placed on the posterior midsole and the vamp of the running shoe. A high-speed camera was used to film each runner in standing and while running at his or her preferred speed on a treadmill. The angle between the vector formed by the two reflective markers and the superior surface of the treadmill was used to calculate the foot strike angle (FSA). To determine the foot strike pattern from the video data (FSPVideo), the static standing angle was subtracted from the FSA at initial contact of the shoe on the treadmill. In addition to descriptive statistics, percent agreement and Chi square analysis was used to determine distribution differences between the video analysis results and the survey.

Results: The results of the chi-square analysis on the distribution of the FSPSurvey in comparison to the FSPVideo were significantly different for both the XCRunners ($p < .01$; Chi-square = 8.77) and the REC Runners ($p < .0002$; Chi-square = 16.70). The cross-country and recreational runners could correctly self-identified their foot strike pattern 56.5% and 43.5% of the time, respectively.

Conclusion: The findings of this study suggest that the clinician cannot depend on an experienced runner to correctly self-identify their FSP. Clinicians interested in knowing the FSP of a runner should consider performing the two-dimensional video analysis described in this paper.

Level of Evidence: 3

Keywords: Foot strike, kinematics, running

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