

KINEMATIC ANALYSIS OF MALE COLLEGIATE RUNNERS DURING DIFFERENT INTERVALS OF 1500 M TIME TRIAL

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INTRODUCTION: This project examined the influence of race duration on running gait. The purpose of this study was to investigate the kinematic alterations at different distances for collegiate male runners during a 1500 m time trial.

METHODS: Six males from the Indiana State University Track and Field team ran a 1500 m Time Trial. The runners' strides were recorded at 75, 300, 700, 1100, and 1500 m by digital cameras at 60 Hz from a sagittal view and a front left view. Sixteen body landmarks were digitized, transformed, and digitally filtered at 10 Hz using the Ariel APAS software. Kinematic variables of stride length, stride frequency, foot contact time, and CM horizontal velocity were calculated for the 4 distances. An ANOVA with repeated measures for the distance factor was performed on the kinematic variables.

RESULTS: Significant differences for the distance factor were found for the stride length, stride frequencies, CM horizontal velocity at foot contact, and foot time during the 1500 m Time Trial. The mean values for the right and left stride lengths, overall stride frequency, horizontal velocity, and foot contact time are presented in Figures 1,2,3, and 4.

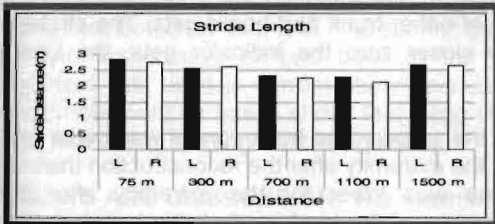


Figure 1 Stride length.

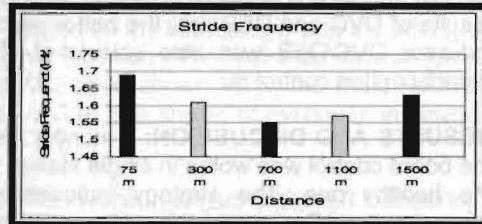


Figure 2 Stride frequency.

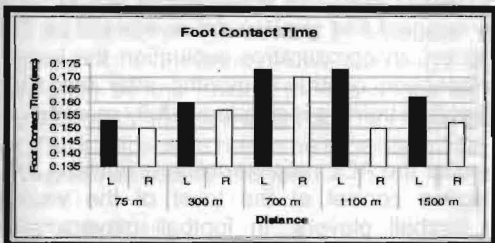


Figure 3 Foot contact time.

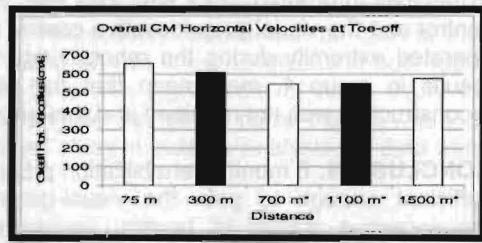


Figure 4 CM horizontal velocity.

CONCLUSIONS: The runners experienced slower leg turnover rates, shorter stride lengths and horizontal velocities after 300 m and the foot contact times were greatest at the 1100 m distance. The runner's speed represented the product of the runner's stride length and the stride frequency (Hunter, 2004).

REFERENCES:

Hunter, P.J., Marshall, N.R. & McNair, J.P. (2004). Interaction of step length & step rate during sprint running. *Medicine & Science in Sport and Exercise*, 36(6-7), 261-270.