Analysis of the Kinematical Demands Imposed on Top-Class Assistant Referees During Competitive Soccer Matches
Mallo, Javier; Navarro, Enrique; García-Aranda, Jose; Gilis, Bart; Helsen, Werner

Abstract

The aim of this study was to describe the kinematical demands placed on soccer assistant referees during the 2003 U-17 World Championship, and to examine the relationship between the results in the fitness tests adopted by FIFA and match activities. Twentytwo international-level assistant referees were observed during 12 matches and computerized analysis of match activities was performed using a two-dimensional photogrammetric video analysis system based on DLT (direct lineal transformation) algorithms. Before the start of the tournament, the assistant referees completed a 2 × 50-m sprint test and a 12-minute run test. Assistant referees covered on average 6137 ± 539 m during the matches, with 20% of the total distance covered at high velocities (speeds faster than 13 km·h⁻¹). During the second half, time spent standing still increased (P < 0.01) and distance covered jogging (P < 0.05), cruising (P < 0.01) and moving sideways (P < 0.001) decreased. The score in the 12-minute run test showed a low correlation with the entire match distance (r = 0.24; P > 0.05) and with the time spent exercising at a high intensity (r = 0.35; P > 0.05). The 50-m sprint time was not significantly correlated (r = -0.38; P > 0.05) with time spent within the high-intensity activities category. The results of this study demonstrate that assistant referees experience unique kinematical demands during soccer officiating and that the score in the battery of fitness tests adopted by FIFA was not correlated to match activities.