

## VISUAL SKILLS INVOLVED IN DECISION MAKING BY EXPERT REFEREES<sup>1</sup>

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*Summary.*—Previous studies have compared visual skills of expert and novice athletes; referees' performance has not been addressed. Visual skills of two groups of expert referees, successful and unsuccessful in decision making, were compared. Using video clips of soccer matches to assess decision-making success of 41 national and international referees from 31 to 42 years of age, 10 top referees were selected as the Successful group and 10 as the Unsuccessful group. Visual tests included visual memory, visual reaction time, peripheral vision, recognition speed, saccadic eye movement, and facility of accommodation. The Successful group had better visual skills than the Unsuccessful group. Such visual skills enhance soccer referees' performance and may be recommended for young referees.

Almost all sports are judged by one or more referees. It is clear that refereeing of a match is an integral facet of the sport itself, and in addition, errorless refereeing is ideal. Calling a penalty incorrectly can produce many problems on the field and among spectators (Plessner & Haar, 2006). In most professional team sports, referees must consider various information sources (such as markers on the field, player and ball positions, assistants' reports, etc.), make rapid decisions, and discuss calls with the person who analyzes and criticizes their decisions based on slow-motion replays from different angles (Mascarenhas, Collins, & Mortimer, 2003; Helsen, Gilis, & Weston, 2007). Under such conditions, referees require excellent visual skills to catch details of action on the field during matches. They also require the cognitive skills to predict actions, know which actions to watch, and to make rapid and appropriate decisions (Ghasemi, Momeni, Rezaee, & Gholami, 2010).

The focus of this study is the association of referees' decision making and visual skills. Compared with the number of publications on the performance of players, research on the performance of referees in association football (soccer) is limited and began only about a decade ago. Studies have tended to investigate primarily physical demands and physi-

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