

VISUAL BEHAVIORS OF PENALTY KICKERS IN A REAL-PLAY SITUATION

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Introduction

Penalty kicks is decisive role in important competitions such as the World Cup. In previous studies that skilled goalkeepers use more effective visual search strategies than less skilled counterparts has been widely researched. Meanwhile, only a few studies have investigated visual behaviors of penalty kickers (e.g., Nagano et al., 2006; van der Kamp, 2006; Wood & Wilson, 2010). In the first study of penalty kickers, Kuhn (1988) identified two kicking strategies, which were termed keeper-dependent (KD) and keeper-independent (KI). The aim of this study was to investigate visual search behavior of kicker using a KD strategy and KI strategy in a real-play situation.

Methods

Twenty male university footballers volunteered to take part in this study. Participants were fitted with an eye-mark recorder EMR-9 (nac Image Technology, Inc., Tokyo, Japan) to record the gaze while kicking. Each participant took 5 practice kicks in a “real-play” situation with an experienced goalkeeper, followed by the 20 kicks for a test trial; half of the trials were KD strategy and the other half were KI strategy. An externally positioned digital video camera was located behind of the participants. This view allowed the whole area of the penalty kick to be visible for subsequent analyses.

Results & Discussion

The shooting performances (the number of scoring a goal) for KD strategy were lower than for KI strategy. Regardless of kicking strategies, the number of fixations for high scorers was lower than low scorers. The last fixation durations for KD strategy on the ball were shorter than for KI. Regardless of kicking strategy, last fixation duration for high scorers on the ball were longer than for low scorers. These results suggest that the shooting performance was affected by visual behaviors of a kicker.

Conclusion

We measured the eye movements of penalty kickers in a real-play situation. The visual behaviors of kickers affect the performance. More research is required to understand “how” and “when” penalty kickers decide on their strategy and the direction.

References

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