

INVESTIGATION OF THE EFFECTIVENESS OF KEEPER-INDEPENDENT PENALTY KICKS USING FAKE VISUAL CUES FROM PENALTY TAKERS

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Introduction

Much research has been conducted on penalty taking in association football. Specifically, it is suggested that effective goalkeepers are more able to execute and utilize a visual gaze pattern that allows them to pick up anticipatory cues. Dicks, Davids & Button (2010) found that the use of deceptive cues by the penalty taker led to lower save rates. However, it is not clear if there is a difference in goalkeeper gaze patterns between deceptive and non-deceptive trials. Previously, Savelsbergh, Williams, van der Kamp & Ward (2002) found that there were no differences in visual search behaviour between successful and unsuccessful anticipation of penalties. The aim of the present study was to investigate the effectiveness of using fake visual cues by the penalty taker and to identify the corresponding visual gaze patterns of goalkeepers.

Methods

9 experienced football goalkeepers (Mean age= 24.8±6.2 years old, playing experience= 13.0±5.5 years) were recruited as participants. Each goalkeeper had to attempt to predict and save pre-recorded penalty kicks that were projected onto a screen by moving their hands left or right. Each clip was 2000ms and terminated one frame (40ms) before ball contact. A total of 3 blocks of 10 kicks, comprising 15 deceptive and 15 non-deceptive, were taken by a skilled player. Deceptive strategies (view direction of kicker's eyes and approach angle) were based on Dicks et al. (2010). A contactless eye tracking system iView X™ RED (SensoMotoric Instruments GmbH) was used to measure visual gaze patterns via Behavioral and Gaze Analysis (SMI BeGaze™ 2.2) software. Performance outcome scores in terms of successful predictions and visual gaze patterns were determined.

Results & Discussion

Deceptive trials (41.3±7.9) had a lower percentage save rate as compared to non-deceptive trials (65.4±14.4), $p < 0.05$. Within the deceptive trials, double deception (i.e., both eyes gaze and approach angle of kicker) had greater impact on deceiving the goalkeepers. Analysis of gaze pattern revealed that participants tend to fixate on similar area of interests regardless of deceptive and non-deceptive conditions.

Conclusion

The use of deceptive cues by a penalty taker in a keeper-independent situation is effective. Particularly, increasing the number of deceptive cues presented could result in greater success.

References

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