How is scanning before ball possession related to performance with the ball? An investigation of football players' exploratory action

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Introduction

Performance analysis in football is commonplace in applied and research settings (Sarmento et al., 2017), however, researchers have rarely investigated players' off-the-ball behaviour, before they gain possession of the ball. As they are surrounded in 360-degrees, players need to visually explore (i.e. scan, head-check) in order to gain knowledge of their environment, and prospectively guide their actions with the ball. Preliminary investigations suggest that field constraints influence players' exploratory actions (McGuckian et al., 2017) and that more frequent exploratory actions prior to receiving the ball is related to better pass success (Jordet et al., 2013). However, the relationships between these exploratory actions that occur before gaining ball possession and subsequent performance with the ball are unknown.

Methods

We used inertial measurement units to quantify the exploratory head movements of 15 (mean (SD) age = 18.67 (3.90) y/o) competitive football players during 11v11 match-play and manually coded subsequent actions. Here we report on pass direction, one-touch passes and turns with the ball. Odds Ratios (OR) were calculated to estimate the effect of head turn frequency before receiving the ball on the occurrence of subsequent actions with the ball. An OR above 1 indicates the action with the ball occurred more often when players' head turn frequency was higher than their individual average. Ten time-periods (0-1s, 0-2s, … up to 0-10s) before possession were analysed, and the time-period before possession with the highest OR (i.e. most important time-period for that action with the ball) are reported.

Results

When players turned their head more frequently before receiving the ball they were more likely to play a forward pass (0-8s, OR=2.80), play a one-touch pass (0-1s, OR=1.68), turn with the ball (0-4s, OR=2.53) and play a pass in the direction opposite to which it was received (0-2s, OR=4.49).

Conclusion

When players had a higher frequency of head-movement, they were more likely to play a forward pass, a one-touch pass, turn with the ball, and play a pass in the opposite direction of ball reception. This suggests that a higher frequency of head-turns is related to increased knowledge about their surroundings. The findings demonstrate the value of exploration and frequent head movements before receiving a pass, and therefore the development of these behaviours in training should be a high priority.

References

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