The Impact of Constraints on Exploratory Action in Football

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Introduction

Exploratory action, in which the movement of the eyes, head and body allow visual perception of affordances provided by teammates and opponents, is a key component to skilled perception-action[1].

In football, exploratory action before a player receives a pass is related to improved performance with the ball[2]. Therefore, understanding what influences the visual exploratory behavior of footballers is important for continued player development and improved training methods.

This research had two aims. First, to understand differences in exploration behavior when in possession and not in possession of the ball. Second, to understand if there is a difference in exploration behavior according to the spatial constraints of the playing area.

Method

Six experienced football players with mean age of 22.5 (SD=1.96) years played three versus three football matches on three different pitches (Figure 1).

Exploratory behaviors, defined as head movements in which the intention of the player was to perceive important information in the environment, were coded when each player was in possession and not in possession of the ball.

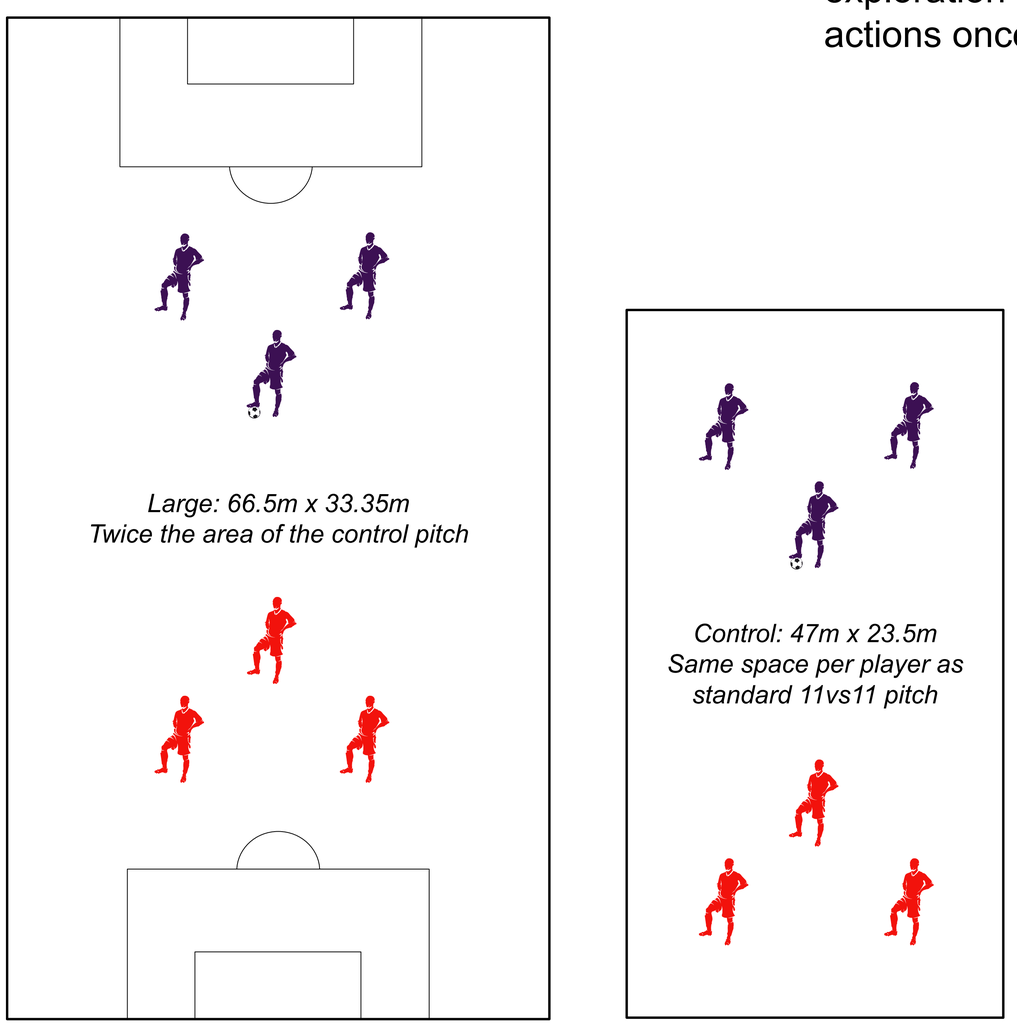

Figure 1. Dimensions of the large, control and small pitch sizes.

Results and Discussion

Players explored significantly more often when they were not in possession of the ball compared to when they were in possession of the ball. Players explored significantly more often when playing on the small sized pitch compared to when playing on the control sized pitch (Figure 2).

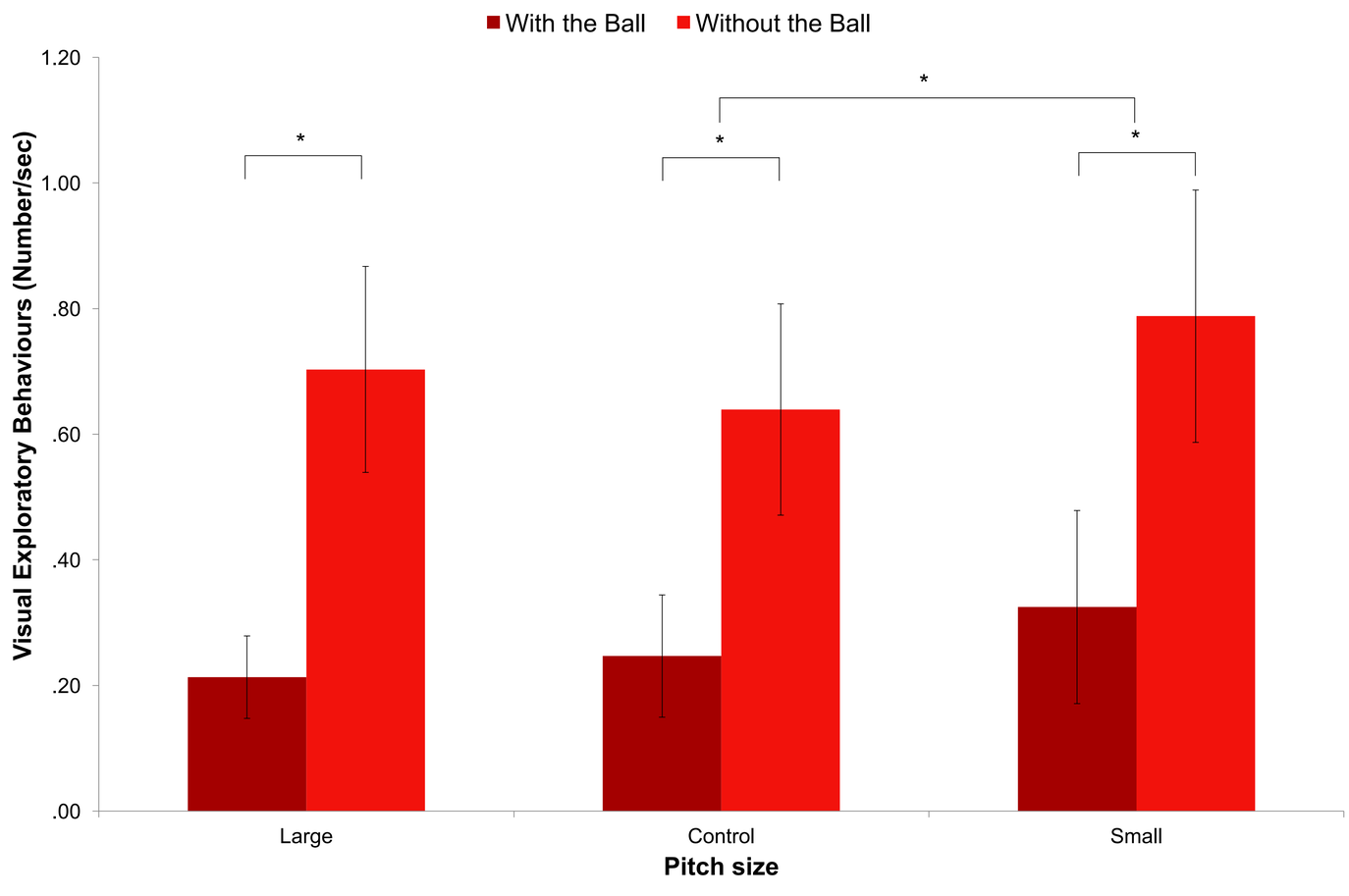

*Figure 2. Number of exploratory behaviours per second with possession of the ball and without possession of the ball when playing on the large, control and small pitches. * indicates p<0.05.*

The higher frequency of visual exploratory behaviors when not in possession of the ball supports the notion that players utilise this behavior in preparation for future actions with the ball. That is, players visually explore their environment often in order to prospectively control their actions with the ball.

When players are constrained by a small pitch size, they visually explore more often. With a smaller pitch size, each player has less space and therefore, more pressure from opponents and less time with the ball. In order to deal with this constraint, players' rate of exploration for affordances increases when not in possession of the ball to allow quicker actions once they do have the ball.

Conclusion

To improve affordance discovery and player performance with the ball[1,2], training drills should aim to encourage visual exploratory action as much as possible. These findings suggest that constraining the available space in training games encourages visual exploratory action, and should therefore be considered when designing training sessions.

References

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