

## CONSTRAINTS ON EMERGENCE OF PLAYER-BALL COORDINATION PATTERNS IN ASSOCIATION FOOTBALL

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### Introduction

Previous research on passing skill evaluation in association football has been based on tasks where players pass the ball towards a stationary target [1]. However, in football, players often try to coordinate their gait with ball displacements when dribbling and trying to avoid opponent interception of the ball. The aim of this study was to analyse the movement pattern formation of passing under static and dynamic constraints, involving ball displacement and positioning of opposing defenders.

### Methods

Five players (aged  $15.6 \pm .4$  yrs) performed 58 trials in which one player ran along the side-line toward the by-line to cross the ball to another attacking player in the penalty area. Manual tracking software recorded player-ball movement displacement trajectories [2]. We calculated effects of presence of an opposing defender (with or without), and an approach run to cross a ball (running with or without the ball) on the player-ball reorientation angle and distance of the crossing player to the ball prior to contact, as well as average running velocity.

### Results

ANOVA revealed that the approach run while dribbling the ball, compared to simply running to cross a stationary ball, reduced the player-ball angle (51.16 to 13.44 deg), mean running velocity (5.51 to 5.09 m/s) and the reorientation running distance (5.29 m to 4.03 m). Whilst the presence of a defender reduced the player-ball angle (38.46 to 26.15 deg), it had the effect of increasing the running velocity (5.10 to 5.50 m/s) and the reorientation running distance (4.02 to 5.29 m).

### Discussion & Conclusion

Location of an immediate defender and an approach run while dribbling a ball acted as constraints on player-ball coordination when running to cross a ball into the penalty area, influencing the emergence of different patterns of behaviour. Passing evaluation tasks should represent this type of information in order to enhance validity of skills tests in association football.

### References

1. Russell, M., et al., (2010) *J Sports Sci*, 28(13): pp. 1399-1408.
2. Duarte, R., et al. (2010) *Med Lith*, 46(6): pp. 408-414.