Single camera analyses in studying pattern forming dynamics of player interactions in team sports

Ricardo Duarte[1*], Orlando Fernandes[2], Hugo Folgado[2], Duarte Araújo[1,3]

[1]Faculty of Human Kinetics, Technical University of Lisbon, Lisbon, Portugal

[2]School of Science and Technology, University of Évora, Évora, Portugal

[3]CIPER – Interdisciplinary Centre for the Study of Human Performance, Portugal

* Corresponding author:

Ricardo Filipe Lima Duarte

Faculdade de Motricidade Humana

Estrada da Costa

1495-688 Cruz Quebrada, Portugal

Phone: +351214149166

E-mail address: rduarte@fmh.utl.pt

Abstract

A network of patterned interactions between players characterises team ball sports. Thus, interpersonal coordination patterns are an important topic in the study of performance in such sports. A very useful method has been the study of inter-individual interactions captured by a single camera filming an extended performance area. The appropriate collection of positional data allows investigating the pattern forming dynamics emerging in different performance sub-phases of team ball sports. This chapter outlines (i) a simple and flexible motion analysis procedure to capture the movement displacement trajectories of performers using a single camera and, (ii) exemplar data illustrating the analysis methods employed in the identification of pattern forming dynamics in a 3vs3 sub-phase of association football near the scoring areas.