

Representative Design and Performance Analysis in Soccer

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Abstract: The aim of this paper is to show how evaluation of the tactical demands of training exercises and its comparison with match performance can improve the understanding of players and teams' performance. For that, based on the concept of representative design of practice tasks we present some issues that need to be considered to measure and compare the spatial-temporal relations that sustain the tactical behaviors of players and teams in training exercises and competition.

1 INTRODUCTION

Based on recent technological developments (e.g., game analysis software, remote sensor technology or GPS systems), the capacity to obtain and process data in real time, both in training and competition has been largely improved. Today it is possible to capture real-time notational, positional and motion variables of players, which can be combined and synchronized with the video footage of players to understand team performance (Travassos et al., 2013).

Despite the amount of information produced by performance analysts, as well as the increasing interest in the comparison between training and match performance, an actual challenge for performance analysis in soccer remains “how to get meaningful information into the hands – and minds – of the people who are in a position to make effective use of it” (Alamar and Mehrotra, 2011).

2 FROM PHYSIOLOGICAL TO TACTICAL EVALUATION

Over the last years, the physical and physiological demands of training sessions and competitions were easily and accurately assessed through the external and internal workload of players. However, the evaluation of the tactical demands of training exercises and its comparison with match performance has received little attention in literature (see, for instance, the claim of Hill-Hass et al., 2011).

To improve the tactical evaluation of players and teams, an important concept to consider is the representative design of practice task (Travassos et al., 2012, Stoffregen et al., 2003). The concept of representative design emphasizes the correspondence between the tactical demands of competition and the informational structure inherent to the training exercises across practice sessions. When performance indicators measured during competition did not consider the game context that sustain that behaviors of players and teams (e.g., number of losing passes), or even when the practice exercises for performance evaluation of players results in the removal of game information sources that players use to constrain their actions (e.g., pre-defined passing actions or emergent actions based on for example verbal information), seems to lose the understanding of how players really perform in competitive environments (Travassos et al., 2012, Pinder et al., 2011, Dicks et al., 2010, Vilar et al., 2012).

Assuring the representativeness in the practice tasks, coaches may promote the transfer from training to competition once players and teams seek to explore the performance environment and achieve their goals similarly in both environments. Thus, to increase the value of performance analysis information, for performance analysts and coaches, there is a need to contextualize the actions of players and teams on the game dynamics, by considering, for example, the place on the field where the actions occur or the type of opposition used by the opponent team (high pressure / low pressure, zonal / individual defense) (Duarte et al., 2013, Malta and Travassos,

2014). Also, by measuring the spatial-temporal relations that players explore during cooperative and competitive interactions in specific game environments allows performance analysts and coaches to measure the tactical capabilities of players and teams and, also, to evaluate the level of transfer of players and teams' performance from specific training exercises to competition. For instance, by measuring the preferential couplings between players over the game, it is possible to identify the spatial-temporal relations that constraint game dynamics of a certain team playing against different opponents (Folgado et al., 2014), and compare them with the same relations that occur on the training sessions. Also it is possible to measure how the manipulation of practice tasks can constraint the players and team behaviors (Travassos et al., 2014). With this information coaches can improve the evaluation of the team and design most appropriate practice tasks for the needs of their teams.

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