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Match performance and physical capacity of players in the top three competitive standards of English professional soccer

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ABSTRACT

The aim of this study was to compare the match performance and physical capacity of players in the top three competitive standards of English soccer. Match performance data were collected from players in the FA Premier League ($n = 190$), Championship ($n = 155$) and League 1 ($n = 366$) using a multiple-camera system. In addition, a selection of players from the Premier League ($n = 56$), Championship ($n = 61$) and League 1 ($n = 32$) performed the Yo-Yo intermittent endurance test level 2 (Yo-Yo IE2) to determine physical capacity. Players in League 1 and the Championship performed more ($p < .01$) high-intensity running than those in the Premier League (Effect Size [ES]: 0.4–1.0). Technical indicators such as pass completion, frequency of forward and total passes, balls received and average touches per possession were 4–39% higher ($p < .01$) in the Premier League compared to lower standards (ES: 0.3–0.6). Players also covered more ($p < .05$) high-intensity running when moving down ($n = 20$) from the Premier League to the Championship (ES: 0.4) but not when players moved up ($n = 18$) standards (ES: 0.2). Similar Yo-Yo IE2 test performances were observed in Premier League, Championship and League 1 players

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(ES: 0.2–0.3). Large magnitude relationships ($p < .05$) were observed between Yo-Yo IE2 test performances and the total and high-intensity running distance covered in both Championship ($r = .56$ and .64) and Premier League matches ($r = .61$ and .54). The data demonstrate that high-intensity running distance was greater in players at lower compared to higher competitive standards despite a similar physical capacity in a subsample of players in each standard. These findings could be associated with technical characteristics inherent to lower standards that require players to tax their physical capacity to a greater extent but additional research is still required to confirm these findings.

1. Introduction

Time-motion analysis is a valuable data collection technique used to quantify the match running performance of elite soccer players (Carling, Bloomfield, Nelsen, & Reilly, 2008). Interest has grown in this area of study over the last five decades as it enables sports scientists to identify the current demands placed on players in competition and apply data to training and testing protocols (Bradley et al., 2011a). Studies have examined match running performance in an array of Leagues around the world (Andersson, Ekblom, & Krustrup, 2008; Bangsbo, Norregaard, & Thorso, 1991; Di Mascio & Bradley, 2013; Di Salvo et al., 2007; Mayhew & Wenger, 1985; Rampinini, Coutts, Castagna, Sassi, & Impellizzeri, 2007; van Gool, van Gerven, & Boutmans, 1988; Withers, Maricic, Wasilewski, & Kelly, 1982). Despite a plethora of research, no criterion measure to distinguish physical performance in elite soccer matches has been identified but the total distance covered and particularly that run at high-intensities seem to be useful indicators (Krustrup et al., 2003).

Indeed, research has shown that players at a higher standard of play perform more high-intensity running than peers at lower standards (Andersson, Randers, Heiner-Moller, Krustrup, & Mohr, 2010; Bangsbo et al., 1991; Ekblom, 1986; Mohr, Krustrup, Andersson, Kirkendal, & Bangsbo, 2008). For instance, Mohr, Krustrup, and Bangsbo (2003) found that elite Italian League players performed 28% more high-intensity running than sub-elite Danish League peers. However, this study quantified match running performance in only 18 elite and 24 sub-elite players and no technical profiles were reported. Moreover, the data were captured from two separate European Leagues of vastly different standards. Similarly, Ingebrigtsen et al. (2012) reported that distance covered in high-intensity running was ~30–40% greater in players in top versus middle and bottom ranking Danish teams. Yet, there is limited information as to what extent match running performance and technical profiles differ in players across various standards within any of the recognised major European soccer-playing nations. To our knowledge, only one study has attempted to compare match running performances across two standards of elite soccer within a single country (Di Salvo, Pigozzi, Gonzalez-Haro, Laughlin, & De Witt, 2013). Match running performance was analyzed in players from the English Premier League and Championship. Results showed that Championship players covered greater distances in jogging, running, high-speed running, and sprinting than Premier League players, although the differences were considered negligible in practical terms. However, additional research is arguably necessary to provide an even more valid expression of the distinguishing characteristics of play between competitive standards within the same country. For example, the inclusion of additional professional Leagues (e.g., third tier) and the monitoring of running performance in the same players who have moved up and down Leagues would enable a greater understanding of the influence of standard on match-play physical performance. In addition, none of the aforementioned studies have provided information on technical indicators across competitive standards and their potential association with differences in running performance. It is also unclear to what extent the physical capacity of players differs between elite soccer standards in the same country, although recent data from elite and sub-elite Norwegian and Danish Leagues indicate markedly higher intermittent exercise performance at the elite standard (Ingebrigtsen et al., 2012). Moreover, Yo-Yo intermittent recovery test scores were