

Performance indicators as a resource for the selection of talented football players

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ABSTRACT

The evaluation of talent has gained a great impact due to the importance that can have both for football clubs and for the player's own families. However, this contrasts with the processes carried out today, based mainly on the expert's intuition to promote a football player category. In order to try to make an objective evaluation of the soccer player, one of the methods most used in previous studies has been the use of performance indicators, however, the reliability of the same has not been demonstrated. The research objective that has had this work has been to verify the reliability of the performance indicators. First, comparing the performance of a group of players nominated for the gold ball, and secondly comparing the performance of a group of players nominated five times in the last five years with another group of players who have never been nominated. The sample consisted of 103 soccer players. Data collection has been done from the WhoScored database. And the analysis of the same through the program SPSS v. 22.0. The results show that the performance of those players nominated and not nominated for the gold ball is similar, therefore, it is possible to conclude the poor reliability of the performance indicators most used in previous studies. Finally, as a prospective research, it is proposed to use other validated evaluation instruments that are responsible for measuring the tactical aspect of the soccer player. **Key words:** SOCCER, DEVELOPMENT, SCOUT, ASSESSMENT, COMPETITION, IDENTIFICATION.

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INTRODUCTION

Talent is understood as the exceptional mastery of at least one particular, systematically developed skill, situating this person among the top 10% of their peers (Gagné, 2015). Within the scope of soccer, the intuition of the expert (coach, scout) has traditionally been the primary method of performance assessment (Hatun, 2012), due to the lack of appropriate and validated instruments for this purpose (Nicolairé et al., 2013). However, this contrasts with the importance of this process (Fernández-Rio and Méndez-Giménez, 2014) for both football clubs (obtaining sporting talents future) and for families (rise in the social scale). In order to approach an evaluation of objective performance, one of the ways through which the selection of football talent has been carried out has been the comparison between players (Verburgh et al., 2014), based mainly on performance indicators (PI) (Liu et al., 2015).

If we do a review of talent and football, we will discover those aspects that have been studied in regard with the footballer with talent. Reviews of the literature on the most researched key factors (Fernández-Rio and Méndez-Giménez, 2014). Proposal of the key features through international organizations (FIFA, s.f.) or through football clubs such as Ajax Amsterdam (Andriaanse, 1998). Interviews with coordinators quarry (Pazo Haro et al., 2011). Choosing talent forecasts (Williams and Reilly, 2000). Differences between experts and novices in relation to the anthropometric characteristics, techniques and tactics (Lago-Peñas et al., 2014; Woods et al., 2016) and between attention and working memory (Verburgh et al., 2014). And establishment of physical and physiological features in each demarcation (Gonaus and Müller, 2012; Nikolaidis et al., 2014).

But, if we have to highlight one measure to assess the footballer talent is performance indicators. It has been used in so many studies because of the advantages like the possibility of evaluating much parameters and the objectivity. On the other hand, performance indicators have a big disadvantage, related to not assess the tactical aspect. This parameter has been demonstrated like essential in the evaluation of talented player. In this way Blanco (2013) groups PI as follows (figure 1):

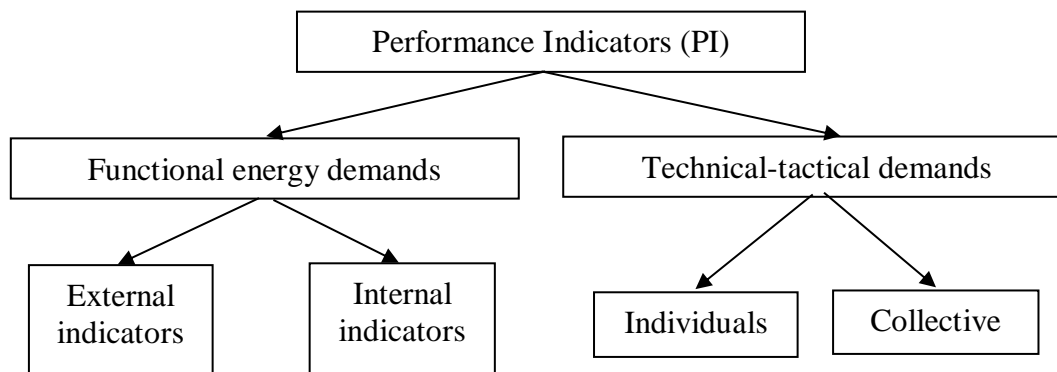


Figure 1. Performance Indicators. Adapted from Blanco Pita (2013)

Thus, depending on the PI that we want to measure, we can differentiate in studies of time-motion analysis (functional energy demands) and notational analysis (technical-tactical demands). Moreover, we have to take into account that the choice of PI to evaluate the performance in a sport will vary depending on the sport modality. Therefore, it is necessary to know that in low-scoring sports such as football, the proposal of PI is more complex than in high-scoring sports, such as basketball, since in the latter the final result is the

consequence of success of each of the possessions of a team (Reina Gómez and Hernández Mendo, 2012). For this reason, and focusing attention on soccer, broader measures of offensive effectiveness, such as goal opportunities and goal shots, are commonly used.

Due to the advantages that the use of PI entails to measure soccer performance (objective evaluation), they have been used in many investigations both at a collective level (Liu et al., 2015; Vales Vázquez et al., 2015), as individual (Dellal et al., 2011).

Technology is currently helping to measure the performance of the soccer player (Ballesta Castells et al., 2015). While a few decades ago the hand notation, also known as "pencil and paper", was used to account for PI, new technologies applied to the development and control of training and competition have now been developed (Starkes, 2008), such as pulesemeters, GPS, portable gas and lactate analyzers, as well as technologies focused on physical capacities, hypoxia generating devices, vibratory platforms, and electrostimulation (Ballesta Castells et al., 2015; Moya Ramón et al., 2007) which help to control the performance of the player. This, with the advances in the development of digital systems, allows a deep evaluation of the soccer player (Alonso and Casáis, 2012; González-Villora et al., 2015; Pino et al., 2008).

An example of the use of these indicators, in addition to the studies cited above, can be seen in the databases data created by companies as AMISCO, InStat, WhoScored, ProZone, whose purpose is to collect data from a large number of players with the purpose of evaluating the function of a series of PI that they consider essential for game performance in football (table 1).

Table 1. Information of each database.

Database	Information you can get
Opta	Matches played, starting minutes, entering from the bench, substituted matches, earned dribbles, aerial duels won, ball recoveries, goals, total shots / shots, goal shots / shots, minutes per goal, goals from within the area, goals from Off points, total passes, percentage of long passes, accuracy in passes, passes every ninety minutes, total centers, completed centers, chances generated, assists, absences Received, fouls committed, yellow cards, red cards
InStat	Matches played, minutes played, earned dribbles, won aerial duels, ball recoveries, goals, total shots / shots, total passes, percentage of long passes, total centers, completed centers, assists, yellow cards, Defense, counterattack, game creation, kicks, bad leg, distant shots, penalty kick, shots, unmarked, completion of play
Whoscored	Matches played, minutes played, earned dribbles, ball recoveries, goals, total shots / shots, total innings, innings won, punts, assists, fouls received, fouls, key passes, foul play, Ball, throwing fouls, own goal
FourFourTwo	Dribbles won, aerial duels won, ball recoveries, goals, total shots / shots, goal shots / shots, clearances, total passes, percentage of long passes, accuracy in passes, occasions generated, assists, fouls received, fouls committed, Distant shots, penalty kick, free kick, blocked shots, blocked shots, blocked shots, inside shots, left shots, left-footed shot, right-footed shot, Shots at goal,

	goal kicks, goal kicks, set-up opportunities, set-up opportunities, set-up opportunities, set-up opportunities, Passing, short passes, goalkeeper distribution, received passes, free kick, throws, game changes, corners, offside passes, legal charge, head clear, unmarked block, errors that result in goal, errors that Result in shots, blocked shots, failed load, failed clearance, intercept game change, blocked shot (defensive)
Football Database	Minutes played, goals, percentage of effectiveness goals, yellow cards, red cards, key passes, goals in own gate, percentage of games won, percentage of games lost, percentage of matches tied
Football Manager (prozone recruiter)	Winning dribbles, won aerial duels, ball recoveries, total shots, total tackles, total centers, distant shots, penalty, uncheck, free kick, controls, corner kicks, scoring

However, the only sport in which reliability of PI has been proven has been handball (Blanco et al., 2015), concluding that these PI are reliable to measure athlete performance and can be used in the field of research. For that reason, we consider it's very important to check whether these performance indicators can discriminate between the performance of a top soccer player worldwide, with others who have not reached that level. Otherwise, the studies carried out through these PI would be biased in the selection of the evaluation instrument.

Thus, the aim of this work has been to verify the reliability of the most used PI in soccer to measure the performance in competition. For this reason, the performance of the players nominated for the Golden Ball in function of the times that they have been nominated, and the performance of a talented football player with his teammates not nominated for Golden Ball, have been compared.

MATERIALS AND METHODS

Participants

A total of 103 soccer players nominated to Golden Ball in the last five years have been considered. (47.6% nominated 0 times, 23,3% nominated 1 time, 13.6% nominated 2 times; 8.7% nominated 3 times, 2,9% nominated 4 times, and 3.9% nominated 5 times for the Golden Ball).

Mesaures

After a review of the literature on the PI most used in previous studies, the indicators chosen to evaluate the performance of the player in this work, have been the following:

- Influence on the team: it is measured as the probability that the team has for winning if this player is playing
- Goals/shots: number of goals per shot on target
- Dribbles: dribbles won x 100 / total dribbles
- Aerials: aerials won x 100 / total aerials
- Penalties: penalties scored x 100 / total penalties kicks thrown
- Tackles: tackles won x 100 / total tackles
- Short passes: short passes effectives x 100 / total short passes
- Long passes: long passes effectives x 100 / total long passes

Procedures

The information has been obtained from the database WhoScored, and the competition that has been analyzed was the 2014-15 Champions League, because it is the club competition with most international prestige in Europe.

Analysis

Statistical analysis was performed using the SPSS program v. 22.0. The statistical average (mean) have been used for descriptive analysis and the Pearson bivariate correlation for inferential analysis. The level of confidence has been 95%.

RESULTS

This work has aimed to verify the reliability of the most used PI in soccer to measure the performance in competition, through a sample of talented football player and his comparison with his teammates not nominated for Golden Ball.

Thus, the comparison between players nominated to Golden Ball (figure 2) pointed out that those players nominated more times scored higher in games, played more minutes and had more influence on his team (number of wins with the player on the field) and goals / shots. However, indicators such as dribbling, successful aerial duels won, penalties scored marked, successful tackles and short / long passes were similar.

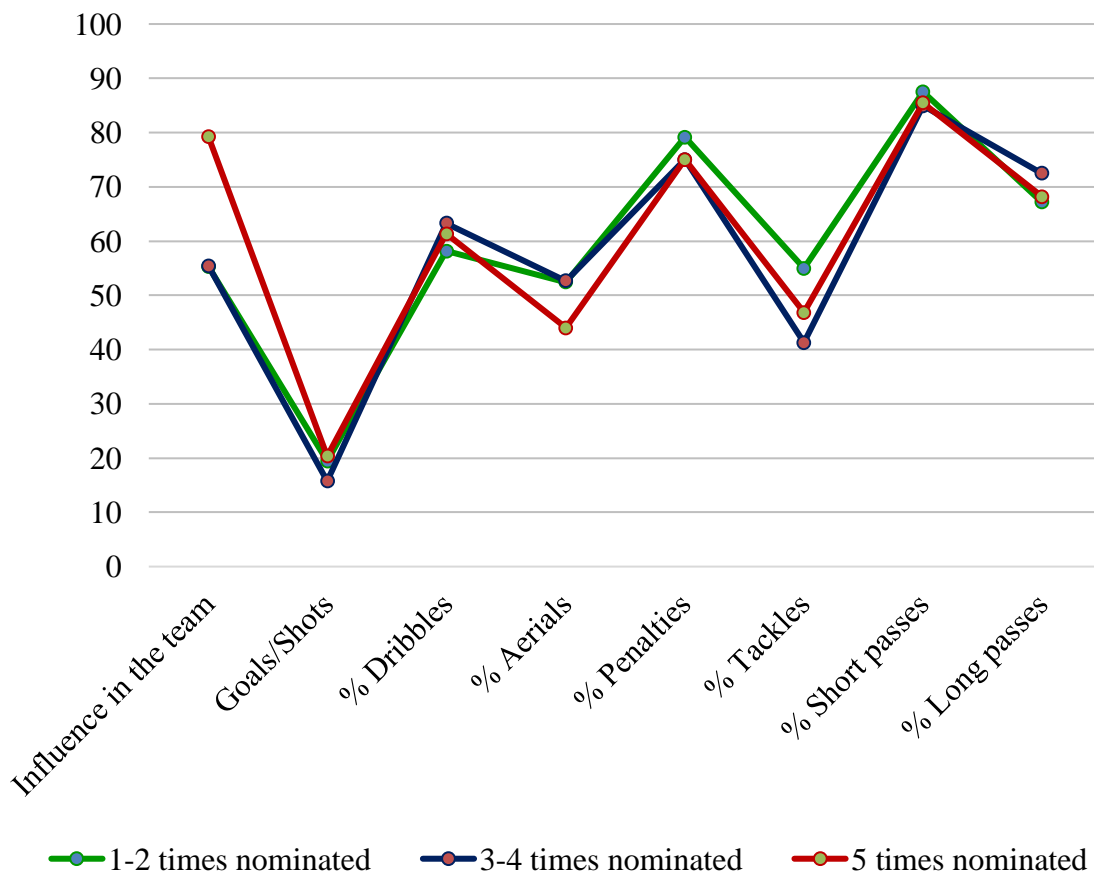


Figure 2. Comparison between players nominated to Golden Ball.

Regarding the comparison between a talented player and his teammates who were not nominated for the Golden Ball (figure 3), PI such as influence on the team, goals / shots, dribbling, penalty and long passes were those that showed better results. Meanwhile, aerials, tackles and short passes had higher marks those nominated zero times to Golden Ball.

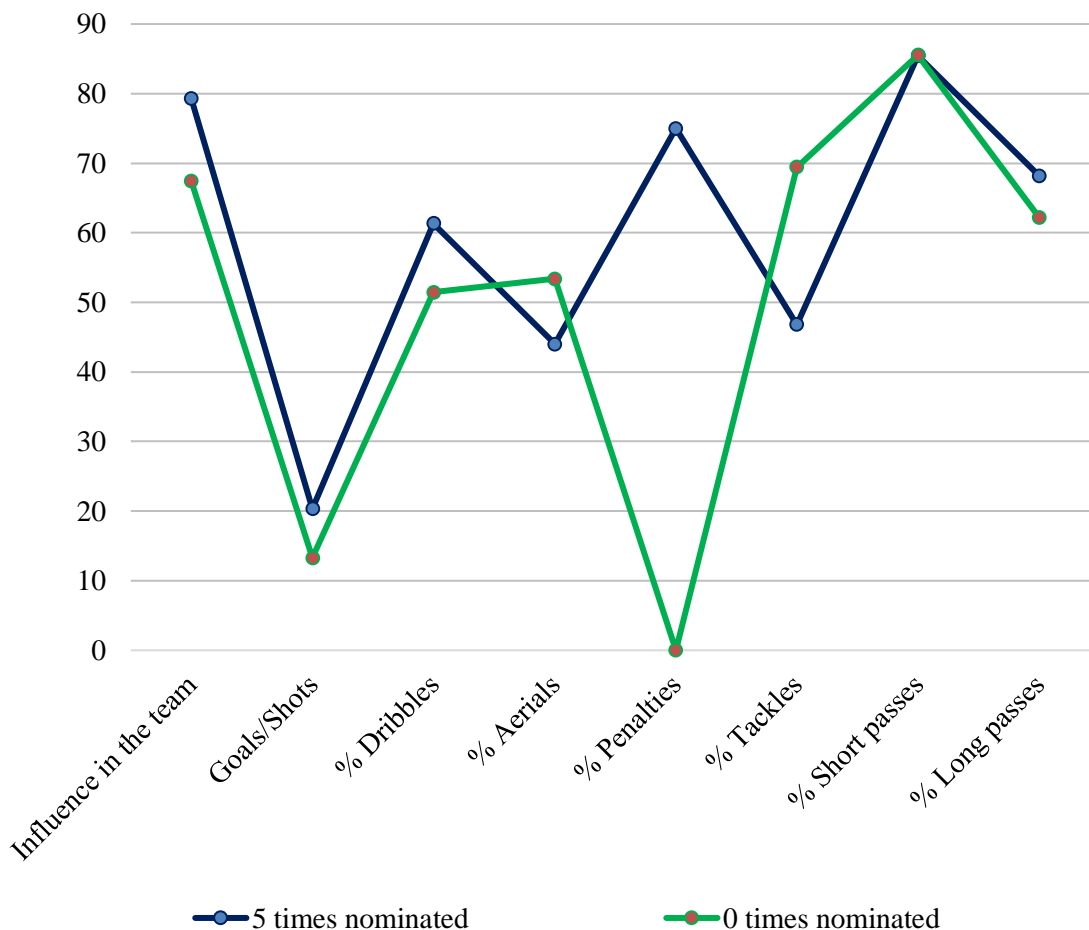


Figure 3. Comparison between players nominated and no-nominated to Golden Ball.

Finally, the correlational analysis showed that as the number of goals, shots on goal, dribbles won, thrown penalties scored and key passes increase the chance of being nominated for the Golden Ball also increased (table 2).

Table 2. Correlation coefficient and statistical significance of the PI

	Probability of being nominated to Golden Ball	
	Coeff.	Sig.
Number of goals	.596	p<.05
Shots on goal	.668	p<.05
Dribbles won	.509	p<.05
Penalties scored	.799	p<.05
Key passes	.510	p<.05

DISCUSSION

The study has had as general objective to verify the reliability of the most used PI in soccer to measure the performance in competition. For that, first of all, it has been compared the performance of the players nominated for the Golden Ball in function of the times that they have been nominated, and secondly, the performance of a talented football player with his teammates not nominated for Golden Ball, have been compared.

One of the innovations and originality that this study contributes to the scientific literature has been to question the reliability of these PI commonly used. Prior studies use PI as a means of assessing the talented footballer, but their reliability has never been shown. In this sense, we have only found a study that has tried to verify the reliability of the performance indicators in handball, such as the one carried out by Blanco et al. (2015), concluding that these PI are reliable to measure athlete performance and can be used in the field of research.

The results found in the descriptive analysis show that there are no big differences between the performance of those nominated 5 times in the last 5 years, or those not nominated at all. For that reason, the exclusive use of PI as a single method of selection of players must be supplemented by other qualitative tools (González-Villora et al., 2015), to measure the tactical soccer player aspect. Previous studies have founded the importance of assess the tactical side of footballer (Craig and Watson, 2011; Serra-Olivares et al., 2016). According to Mackenzie and Cushion (2013), due to non-evaluation of tactical side it might be possible to question the findings of previous studies, in relation to the influence on external factors (Relative Age Effect) that can skew the proper selection of the player (Gutiérrez-Díaz del Campo et al., 2010).

The inferential analysis has shown how number of goals, shots on goal, dribbles won, penalties marked and key passes, are those that most correlate with the probability of being nominated to the Golden Ball. These results reveal the profile of what experts understand as a good player, thus highlighting the authors of the article the importance of taking into consideration other aspects very decisive in the evaluation of the talented footballer. An example is the work carried out by Prieto-Ayuso et al. (2015), in which they found how the defenses are those that have a greater influence on the equipment. Therefore, other PI should be taken into account in the evaluation of the talented footballer, due to the most used exclude demarcations as they are

mainly defenses. In this sense, progress is being made by trying to clarify the profile of each position in the field (Nikolaidis et al., 2014).

As prospective research, futures studies should take into account the use of other validated tools (González-Villora et al., 2015) for an integral evaluation of talented football player.

CONCLUSIONS

As a conclusion of the study, and responding to our research objective, we can stand-out the demystification of performance indicators such a talented player assessment. The results after the comparison between those nominated and no nominated was not very clear. Moreover, it can also be concluded that it is not only useful to be guided by the statistics offered by the players' databases, but also to take into account other factors, such as tactical elements and environmental aspects (family and friends), to be more precise in the selection.

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