"*Coach's eye*": psychological and tactical skills discriminate sporting potential of young soccer players

"O olho do treinador": indicadores psicológicos e táticos discriminam o potencial esportivo de jovens futebolistas

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Abstract – Coaches' subjective evaluations are predominantly responsible for talent identification and selection in soccer; therefore, systematizing the "coach's eye" can optimize this process. Our objective was to compare tactical skills, perceived competence, and sport achievement orientation of young soccer players classified as having high or low sporting potential, according to their coaches' opinion. 101 Brazilian U15 soccer players (14.6 ± 0.7 years; practice time: 7.6 ± 2.6 years) participated in the study. Questionnaires were used to assess their tactical knowledge (TACSIS – Tactical Skills Inventory for Sports), sport orientation (SOQ - Sport Orientation Questionnaire), and perceived competence. Compared with the low-potential soccer players (n = 57), the high-potential soccer players (n = 44) showed higher positioning and deciding skills (4.52 ± 0.73 vs. 4.18 ± 0.63; p = 0.02; d = 0.50), knowledge about others (4.25 ± 0.96 vs. 3.81 ± 0.83; p = 0.02; d = 0.49), and sum of tactical skills (4.43 ± 0.72 vs. 4.14 ± 0.65; p = 0.04; d = 0.46) In turn, high-potential athletes showed higher competitiveness (4.76 ± 0.27 vs. 4.55 ± 0.33; p = 0.01; d = 0.72) and greater perceived competence (7.79 ± 1.32 vs. 7.12 ± 1.13; p = 0.01; d = 0.54), respectively. We concluded that the U15 soccer players evaluated by their coaches as having high sporting potential presented better results in indicators of tactical skills, motivation, and perceived competence than their low-potential peers.

Key words: Soccer; Tactical skills; Talent; Talent selection.

Resumo – A identificação e seleção de talentos no futebol são feitas majoritariamente pela avaliação subjetiva dos treinadores. Sistematizar o "olho do treinador" pode otimizar este processo. O objetivo do presente estudo foi comparar as habilidades táticas, a competência percebida e a orientação motivacional de jovens futebolistas classificados como atletas de alto e baixo potencial esportivo, de acordo com a opinião dos treinadores. Participaram 101 futebolistas brasileiros sub15 (com média de 14,6±0,7 anos; e média de tempo de prática de 7,6±2,6 anos). Foram utilizados diferentes questionários para avaliar o conhecimento tático (TACSIS - Tactical Skills Inventory for Sports), a orientação esportiva (SOQ - Sport Orientation Questionnaire) e a competência percebida. Os futebolistas de alto potencial (n=44), quando comparados aos futebolistas de baixo potencial (n=57), apresentaram maior posicionamento e decisão (4,52±0,73 vs. 4,18±0,63; p=0,02; d=0,50), maior conhecimento sobre os outros (4,25±0,96 vs. 3,81±0,83; p=0,02; d=0,49) e um valor maior no somatório de habilidades táticas (4,43±0,72 vs. 4,14±0,65; p=0,04; d=0,46); os atletas de alto potencial apresentaram maior competitividade (4,76±0,27 vs. 4,55±0,33; p=0,01; d=0,72) e maior competência percebida (7,79±1,32 vs. 7,12±1,13; p=0,01; d=0,54), respectivamente. Conclui-se que os futebolistas sub15 avaliados pelos treinadores como alto potencial esportivo apresentaram resultados melhores em indicadores de habilidades táticas, motivação e competência percebida, quando comparados aos de baixo potencial.

Palavras-chave: *Futebol; Habilidades táticas; Talento; Seleção de talentos.*

INTRODUCTION

Clubs and federations invest substantial resources in the search for promising young athletes. Identifying and selecting young soccer players with the potential to become professional athletes is a complex and challenging process due to the multidimensional and non-linear nature of talent development[1]. There are different models of talent identification[2], and the most common approach in soccer is the subjective evaluation made by coaches - "coach's eye"[3,4].

Athletes accessing talent development programs depends on the subjective evaluation by coaches. When evaluating the sporting potential of an athlete, coaches consider their "instinct" based on the experience acquired throughout their career[5], an intuitive decision based on the "overall impression" of the athlete[4]. However, when this process is based only on subjective judgment, the chances of selection bias and errors in the talent development process increase[2]. Therefore, to optimize the process of identifying and developing talented young players, researchers have investigated the complex interaction among anthropometric, physiological, maturational, technical, tactical, and psychological factors[1].

Anthropometric and physiological indicators are frequently used for selecting athletes for soccer[6,7]. However, considering the multifactorial nature of sporting talent, there has been increasing interest in research on tactical and psychological skills in young soccer players[8-11]. Psychological characteristics, such as motivation, self-efficacy, and perceived competence[11,12] and perceptual-cognitive skills[10,11,13], for example, should be assessed and developed in the long-term training process, as they are indispensable for resolving constraints before, during, and after the games.

Generally, enhanced tactical skills are demonstrated by selected young soccer players[14] of higher competitive level[15], showing great sporting potential[16] and progressing in their careers[10]. Similarly, psychological indicators such as competitive achievement behavior and perceived competence are predictors of sporting talent in soccer[17,18]. However, the use of psychological indicators for performance prediction is still uncertain[11]. In this context, further research on this scope should be developed based on the results of systematic reviews[1,10,11] and considering the need to better understand the "coach's eye"[3].

Therefore, this study aimed to compare the tactical skills, perceived competence, and sport achievement orientation of young soccer players classified as having high or low sporting potential, according to the coaches' perspective . Our study hypothesizes that young soccer players with high sporting potential have higher tactical skills, higher motivation, and higher perceived competence than low-potential soccer players.

METHODS

Participants

This study includes 101 soccer players under 15 (14.6 ± 0.7 years old; practice time: 7.6 ± 2.6 years; 43 defenders; 31 midfielders; 27 forwards) from the Talent Development Program of the Soccer Project of the Universidade Federal de Juiz de Fora (Projeto Futebol UFJF). The soccer players were subjected to a selection process to join the development program, trained three to five times a week, and competed in regional and state championships throughout the

year. The sample was divided into two groups based on the assessment of the sporting potential of the athletes by the coaches: Group 1) high-potential (n = 44); Group 2) low-potential (n = 57). The following inclusion criteria were applied: athletes enrolled in the Soccer Project – UFJF who were evaluated between 2015 and 2020 and had trained regularly over the last six months. The exclusion criteria considered the presence of an injury and/or acute illness on the day of the tests. Three coaches evaluated the sporting potential, aged between 23 and 32 years (27.3 ± 3.7), with experience between two and eight years (5.3 ± 2.5), and a degree in Physical Education. The participation in the study was confirmed after obtaining the consent by the legal guardians and the consent by the athletes. This research was approved by the UFOP Research Ethics Committee (CAAE: 32959814.4.1001.5150) and is an integral part of the Projeto Atletas de Ouro®[2].

Instruments and procedures

The questionnaires and anthropometric measurements were carried out in a reserved room. We collected information regarding the athletes' sports experience, such as the age when they started playing soccer, practice time, number of weekly training sessions, duration of each training session, and competition experience. Body mass and height measurements were taken for the anthropometric assessment, following standardized procedures[19]. Somatic maturation was assessed by the percentage of predicted adult height (%PAH), according to the Khamis and Roche protocol[20]. Using reference values, the z-score was calculated to classify the maturational status as delayed ($z<-1.0$), on-time ($-1.0 \leq z \leq 1.0$), or early ($z > 1.0$).

Three coaches graduated in Physical Education and with soccer experience were interviewed to evaluate the sporting potential of the young soccer players. The evaluation was based on a questionnaire that was answered inside a reserved room before applying the series of tests. The coaches were asked to assign a subjective rating related to their success expectation for each of their athletes. They ranked each athlete's potential for future performance according to the following 5-point Likert scale: 1-Poor, 2-Reasonable, 3-Good, 4-Very Good, and 5-Excellent[19]. Each athlete's final rating was reached by consensus among the coaches. Previous studies have demonstrated the validity of this process to estimate the coaches' sporting potential evaluation[16] and to predict the young players' career progression[6]. Those evaluated as "very good" and "excellent" were classified as high-potential athletes and the others as low-potential athletes.

Tactical skills

The tactical skills were assessed based on translated and validated version for the Brazilian Portuguese of the TACSIS – Tactical Skills Inventory for Sports – [21]. The Brazilian version of the TACSIS encompasses 22 items and the following four sub-scales: positioning and deciding, knowledge about ball actions, knowledge about others, and acting in changing situations, in addition to the average of the four scales (ΣTACSIS). When evaluating their soccer performance, the athletes were instructed to compare themselves with the best player in the same age group by scoring the items on a 6-point Likert scale, ranging from 1-very bad to 6-excellent or 1-almost never to 6-always. The items

of the sub-scales 'knowledge about ball actions' and 'knowledge about others' refer to declarative knowledge. The sub-scale 'positioning and deciding' and 'acting in changing situations' refer to procedural knowledge. Furthermore, the sub-scales 'positioning and deciding' and 'knowledge about ball actions' refer to situations in which the team has the ball (attack situations). The items of the sub-scales 'knowledge about others' and 'acting in changing situations' refer to moments when the opposing team has the ball (defensive situations). In this study, the internal consistency was satisfactory (positioning and deciding = 0.89; knowledge about ball actions = 0.83; knowledge about others = 0.78, and acting in changing situations = 0.78).

Sports achievement orientation

The Sport Orientation Questionnaire (SOQ) was developed as a multidimensional and sport-specific questionnaire to measure individual differences in sport achievement orientation[22]. Herein, we applied the translated and validated version for Brazil by Gallegos et al.[23]. The instrument encompasses 25 items to be answered on the following ordinal scale: A-Strongly agree (5 points), B-Slightly agree (4 points), C-Neither agree nor disagree (3 points), D- Slightly disagree (2 points), and E-Strongly disagree (1 point). The SOQ has the following three sub-scales: competitiveness (13 items), win orientation (6 items), and goal orientation (6 items). The interpretation is based on the mean of each of the sub-scales, where the higher the mean the higher the sports orientation in the respective sub-scale. The internal consistency of the scales was satisfactory (competitiveness = 0.78, goal orientation = 0.73, and win orientation = 0.70).

Perceived competence

Perceived competence refers to the individual's perception of their abilities in a specific domain[24]. To assess perceived competence, a scale adapted from Sheldon and Eccles[25] by Werneck et al.[19] was applied. The athletes answered two questions on a 5-point Likert scale (1-Poor to 5-Excellent): how they perceived their soccer performance and how they perceived themselves compared to other athletes in the same age category. The final score corresponded to the sum of the answers, ranging from 2 to 10 points. The internal consistency of the scale was satisfactory (r = 0.68).

Statistical analysis

The data were presented as mean and standard deviation. The parametric assumptions of normality and equality of variances were assessed through the Komolgorov-Smirnov test and the Levene test, respectively. Differences between the groups were analyzed through the student's t-test for independent samples. The effect size was analyzed by Cohen's d according to the the following classification: low 0.20-0.50, moderate 0.50-0.80, or high ≥ 0.80. The internal consistency of the questionnaires was assessed based on the Cronbach's alpha correlation coefficient. All analyses were performed on the statistical software SPSS (IBM SPSS Statistics 24.0), with a significance level of 5%.

RESULTS

Table 1 presents the general characteristics of the sample for the following variables: decimal age, practice time, body mass, height, and somatic maturation indicators. Most athletes were ranked as on-time (79.2%) and 20.8% were classified as early-mature.

Table 1. Anthropometric and maturational characteristics of young Brazilian U15 soccer players (n = 101).

Indicators	Mean ± Standard Deviation
Chronological age (years)	14.6 ± 0.7
Practice time (years)	7.6 ± 2.6
Body mass (kg)	56.0 ± 9.1
Height (cm)	168.4 ± 8.3
Predicted adult height (PAH) (cm)	177.8 ± 5.0
PAH (%)	94.4 ± 3.3
z-score PAH	0.62 ± 0.64

Table 2 presents the values of tactical skills, perceived competence, and sport orientation of young soccer players classified as having high or low sporting potential by their coaches. The soccer players with high sporting potential present better results in tactical skills than the low-potential soccer players. Statistically significant differences and moderate effect sizes were observed in the following tactical skills: positioning and deciding, knowledge about others, and the sum of scales. Regarding sport orientation, high-potential soccer players showed greater competitiveness and a higher perceived competence. From a practical point of view, the differences observed between the groups had a moderate magnitude. An effect size of 0.50, for example, indicates that 69.1% of the high-potential athletes' group demonstrate superior results compared with the low-potential athletes. This means that, from a practical point of view, the larger the effect size the greater the importance of the difference between the groups.

Table 2. Indicators of tactical skills, sport orientation, and perceived competence of young U15 soccer players classified as having high or low sporting potential by the coaches.

Indicators	High-potential (n= 44)	Low-potential (n = 57)	p-value	d
Tactical skills				
Positioning & deciding	4.52 ± 0.73	4.18 ± 0.63	0.02*	0.50
Knowledge about ball actions	4.60 ± 0.91	4.23 ± 0.91	0.053	0.41
Knowledge about others	4.25 ± 0.96	3.81 ± 0.83	0.02*	0.49
Acting in changing situations	4.34 ± 0.82	4.34 ± 0.91	0.97	0.01
Sum of scales	4.43 ± 0.72	4.14 ± 0.65	0.04*	0.46
Sport orientation				
Competitiveness	4.76 ± 0.27	4.55 ± 0.33	0.01*	0.72
Win orientation	4.58 ± 0.43	4.46 ± 0.57	0.39	0.23
Goal orientation	4.62 ± 0.49	4.50 ± 0.47	0.35	0.24
Perceived competence	7.79 ± 1.32	7.12 ± 1.13	0.01*	0.54

*Statistically significant difference, $p \leq 0.05$. Values are expressed as mean ± standard deviation.; d: effect size assessed by Cohen's d.

DISCUSSION

This study aimed to compare tactical skills, perceived competence, and sport achievement orientation of young U15 soccer players classified as having high

or low sporting potential, according to their coaches' subjective perception. The results showed that compared with the low-potential, high-potential soccer players have greater positioning and deciding skills, knowledge about others, and the sum of tactical skills, in addition to higher competitiveness, and perceived competence. This means that these indicators discriminate the athletes' sporting potential, according to the coaches' subjective evaluation.

As for the tactical skills, our results demonstrated that the high-potential young soccer player has a better interpretation of attacking actions (positioning and deciding), where the team has the ball, and a better interpretation of defending actions (knowing about others), where the team does not have the ball. Perceptual-cognitive functions related to decision-making are especially important for soccer players as they increase the capacity for quick responses in unpredictable environments[11]. Knowing "what to do" and "how to do it" in each situation differentiates the high-potential player, which implies game intelligence. Thus, athletes who has such an above-average capacity will have their defensive and offensive actions performed with a greater chance of success[16].

The TACSIS is a self-report instrument that is easy to apply and measures the athletes' cognitive and procedural skills concerning declarative and procedural tactical knowledge[21]. Previous studies using the TACSIS to assess the tactical skills of young soccer players found that athletes selected for the national teams presented better positioning and deciding skills than non-selected players[14]. Kannekens et al.[13] found that positioning and deciding skills was the best predictor of future success in young elite soccer players. In contrast, another research indicated that tactical skills did not contribute much to career progression in young Finnish footballers[26]. Such diverging results may be partly explained by the varying tactical skills between playing positions[15] and the talent development system, where there may be a greater emphasis on developing defensive and/or attacking skills[26].

Regarding psychological skills, our results showed that the high-potential young soccer players have a competitive achievement behavior and higher perceived competence. This means that they take pleasure in competing in any situation, striving to maximize their success in competitive sports scenarios[23], in addition to perceiving themselves as excellent players concerning their soccer performance and compared with other athletes in the same age group[24]. Individuals who perceive themselves as competent in one skill invest more effort in trying to further improve their skills. At the same time, their developed abilities enhance their intrinsic motivation and the positive feeling of competence[24].

There has been growing scientific evidence on the importance of psychological factors in talent identification and development, as well as in predicting future success in soccer[1]. In young German U12 soccer players, selected players showed higher competitiveness and higher self-concept regarding motor performance soccer[12]. Furthermore, competitiveness was found to be associated with motor performance and potential assessment by coaches, in addition to increasing their chance of being selected to enter a professional club from U16 to U18. Positive correlations between perceived competence and motivation were observed with physical aspects of speed and agility in young U14 soccer players in Finland[24]. In Switzerland, it was found that U15 players with a better motivational orientation were more likely to be selected for the national team[17].

Considering the diversity of questionnaires available, the SOQ seems to be a more reliable assessment for motivational indicators in the context of sports talent research[10]. Murr et al.[10] stated that despite the well-investigated

physical characteristics of young soccer players, there is a lack of information on psychological indicators and their adjustment during the first years of athlete's development. Although psychological factors can explain only part of an athlete's potential, such aspects are relevant for allowing understanding the athlete's behavior, in addition to being trainable[11]. By developing psychological factors, such as motivation and perceived competence, young soccer players may have better opportunities to reach the elite performance level in the future[26].

The U15 category represents a decisive moment for both soccer players, who should already have well-developed performance indicators, and coaches, who should make selection and development decisions based on the athlete's potential. Scientific evidence has shown that coaches are increasingly involved in talent identification[5] and that their assessment is multidimensional, reliable, and valid[3]. Our study found that the psychological indicators and tactical skills indicated in the questionnaires answered by the athletes corroborate the coaches' evaluation potential. The "coach's eye" is essential to identifying talents for the following two main reasons: a) there are certain characteristics of sporting talent that are difficult to observe and measure, except through the coach's eye; b) unlike tests, which measure current performance, coaches can estimate the potential for athlete development and the chance of future success[19].

From a practical point of view, the information provided herein can support scouts and technical committees in creating criteria for identifying and selecting talent, in addition to developing multifactorial competencies of young soccer players. The tests used in this study (TACSIS, SOQ, and perceived competence) were able to quantify the "coach's eye", albeit partially, and discriminate the athletes' sporting potential. Within one year, perceived competence, tactical skills, and motivation have high stability[24]. Thus, these factors should be used as a criterion in the decision-making process for the recruitment or selection of soccer players[11]. According to Werneck and Coelho[2], tests are useful to assess sporting potential, guide young players to the tactical positions that best suit their profile, monitor training effects, motivate athletes, and predict future success. The best talent identification and development practices are those that manage to analyze the largest amount and best quality of information possible about the sporting potential of young players, monitoring the evolution of multiple indicators and performance improvement longitudinally.

In the process of young soccer players' training, coaches should pay attention to the positioning and deciding skills of their players. If a soccer player cannot develop this tactical skill, they are most unlikely to become a professional player in the future. Therefore, training sessions should include skill exercises geared towards decision-making and tactical behavior. Furthermore, Silva et al.[27] conducted a systematic review with meta-analysis and suggested that coaches should intervene with psychological skills training in the periodization of the teams, in a consistent and structured way, thus stimulating different environments and motivational atmospheres, as a strategy, for example, to control the stress of the players before, during, and after the games. According to these authors, combining cognitive training focused on improving memory-related processes, through feedback and video analysis, may improve the athletes' knowledge and increase their capability of differentiating information.

Moreover, this study has a limitation referring to the psychological and tactical skill indicators showing to discriminate only the U15 soccer players' sporting potential at the regional/state competitive level, according to their coaches' opinion. Hence, our findings should not be extrapolated to other age categories

or samples of higher competitive levels. Therefore, we recommend further studies with samples from elite clubs, investigating possible differences between age categories and playing positions, as well as measuring other indicators of sporting potential. Additionally, further longitudinal studies should be conducted to identify prognostic variables of future success in young Brazilian soccer players.

CONCLUSION

The young soccer players classified by coaches as having high sporting potential present better results in indicators of tactical skills (positioning and deciding skills and knowledge about others) and psychological abilities (competitiveness and perceived competence) than the low-potential soccer players. These indicators should be considered in the multidimensional assessment process for young soccer players' sporting potential to assist coaches in the development of tactical skills, perceived competence, and young soccer players' motivation.

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COMPLIANCE WITH ETHICAL STANDARDS

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Ethical approval

Ethical approval was obtained from the local Human Research Ethics Committee from the Federal University of Ouro Preto, and the protocol (no. 817.671) was written following the standards set by the Declaration of Helsinki.

Conflict of interest statement

The authors have no conflict of interest to declare.

Author Contributions

Conceived and designed the experiments: ECV, MOM, DBRJ, EFC, FZW; Performed the experiments: ECV, FFS, TLAR, EFC, ANB, FZW; Analyzed the data: ECV, FFS, TLAR, FZW; Edited the manuscript: ECV, FFS, TLAR, DBRJ, MCG, FZW.

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