A methodology for football players selection problem based
on multi-measurements criteria analysis

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ABSTRACT

Football is one of the most popular sports in the world. Professional football has become a significant contributor to global economics and business. The game attracts considerable funds, which motivate participants of the sporting process (players, coaches, club owners, administration, etc.) to strive for better athletic results. However, such a motivation simultaneously promotes internal and external rivalry. The increasing number of players, the teams' desire to attract better team members, and the improved athletes' performance boost the use of assessment and rating processes. The most popular and widely used player rating systems are based on performance statistics, which reflect situational factors of the game. Most specialists believe that such systems lack objectivity. Thus, this paper presents a new methodology to assess and rank football players based on multi-criteria decision making (MCDM). A hands-on study is conducted for the assessment. A sample of 24 players is grouped into four separate groups consisting of six players for each group. The age of U17 is examined by 12 tests distributed as follows: three anthropometrics, five fitness, and four skills tests. Players are ranked on the basis of a set of measurement metric outcomes using the technique for order performance by similarity to ideal solution (TOPSIS) method to select the appropriate player using a one-shot experiment. Then, this study utilizes the mean and standard deviation to ensure that the four groups of players undergo systematic ranking, respectively. Findings are as follows: (1) systematic: TOPSIS is an effective tool used to solve player selection problems, and (2) statistics: group number one is the best group among the four groups, identical to the results of the system.

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1. Introduction

Football is one of the most popular sports in the world, and its number of players annually increases at an explosive rate [1]. Soccer is a multi-player game. Accordingly, coaches are continuously seeking the most efficient technique for identifying outstanding players to form an elite team [2,3]. A team is adequately described as a small number of people with particular skills dedicated to a common goal, purpose, and approach for which they believe themselves mutually responsible.

The player selection process for professional soccer teams is crucial in the quest for winning. Such a process is so important that a wrong selection can cost a football team the championship and even millions of dollars if the player fails to live up to the team’s expectations. Traditionally, professional soccer teams use various sports psychological assessments for evaluating players. Undoubtedly, these assessments are significantly beneficial and are extremely useful when attempting to form a winning soccer team. However, this process is only one part of the huge puzzle when attempting to assess a player's suitability for a team. The ability to select suitable players and arrange an effective team formation is indispensable in attaining the highest point for team sports [4].

The player selection process for a particular team intends to choose the most suitable player for a particular play position and role [5,6]. The procedure for player selection in n-player sports such as soccer is a complex multi-factor problem with multi-objectives. Player selection within a team is a difficult decision-making task with several measurements. Assessing several qualitative and quantitative factors is compulsory for coaches and their technical committee to produce the most elite players [7]. These factors may include the player's individual, anthropometric, fitness, and skills [8,6].