



**UNIVERSITI PUTRA MALAYSIA**

***PHYSICAL PERFORMANCE, ANTHROPOMETRIC MEASUREMENTS  
AND BASIC SKILLS OF FOOTBALL PLAYERS IN KARBALA, IRAQ***

**MOTHNA MOHAMMED ABDULAMEER**

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AND BASIC SKILLS OF FOOTBALL PLAYERS  
IN KARBALA, IRAQ**

By

**MOTHNA MOHAMMED ABDULAMEER**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,  
in Fulfillment of the Requirements for the Degree of Master of Science**

**November 2016**

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## **DEDICATION**

To

My parents Mohammed Abdulameer & Ahlam Abbas,

My beloved brother Munaf and beloved sisters Mina, Mayameen & Farah

For their endless love support and encouragement

My friends and all the people in my life who touch my heart,

I dedicate this thesis.



Abstract of thesis presented to the Senate of Universiti Putra Malaysia in  
fulfillment of the requirement for the Degree of Master of Science

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**November 2016**

**Chairman : Associate Professor Soh Kim Geok, PhD**  
**Faculty : Educational Studies**

This study aimed to identify and determine the most related tests to measure the physical performance, anthropometric measurements, and basic skills in the first division football club in Karbala, Iraq. In addition, this study aimed to identify the level of selected physical performance, anthropometric measurements and basic skills and compare the mean difference among the study variables for football players based on the three playing positions. Descriptive method was used for its suitability to the study objectives by testing 92 football players (mean age  $M = 20.8$ ,  $SD = 1.83$ , mean height  $M = 172.75$ ,  $SD = 7.28$ , mean body weight  $M = 65.26$ ,  $SD = 7.01$ ). Questionnaires were adapted from previous research to identify more related variables and tests. Later, experts' opinions were used to select the suitable tests for physical performance, anthropometric measurements, and basic skills. The test that has score above 70% was chosen as the test to measure the selected variables. All of the four clubs in Karbala, Iraq were invited to participate in this study. The players were divided based on the three playing positions (defense, midfield and offensive). The results showed that Shuttle test 40x5, 30 m sprint, passing with wall, Nelson speed of movement, sit down and stand up, vertical jump and dribbling 25 m are the selected tests for physical performance in football. For anthropometric measurements, total weight, total length, lower limb length, and chest circumference are selected, whereas passing accuracy, receiving ball, ziz-zag dribbling, competitor evasion, heading the ball and accuracy test for shooting are the selected tests for basic skills in football. The results based on playing positions showed that the defense group has the highest mean score for all the tests. The tests are passing with the wall for physical performance, width chest for anthropometric measurements and dribbling 25m between cones for basic skills. However, Welch test only showed significant results for Nelson speed of movement (Welch statistic = 3.437,  $p < 0.05$ ) and dribbling 25m between cones (Welch statistic = 7.358,  $p < 0.05$ ) for physical performance, total length (Welch statistic = 4.475,  $p < 0.05$ ) and chest circumference (Welch statistic = 3.510,  $p < 0.05$ ) for anthropometric measurements, and passing (Welch statistic = 9.921,  $p < 0.05$ ) and

controlling (Welch statistic = 4.896,  $p < 0.05$ ) for basic skills among groups. Selected tests can be used as a practical way for the coaches, not only in Karbala but also in other parts of Iraq and other countries to select the players and to monitor and compare their performance with themselves and other players.



Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk Ijazah Master Sains

**MENGenalPASTI DAN MENENTUKAN PRESTASI FIZIKAL,  
PENGUKURAN ANTHROPOMETRIK DAN KEMAHIRAN ASAS DI  
KALANGAN PERMAIN BOLA SEPAK DI KABALA, IRAQ**

Oleh

**MOTHNA MOHAMMED ABDULAMEER**

**November 2016**

**Pengerusi : Profesor Madya Soh Kim Geok, PhD**  
**Fakulti : Pengajian Pendidikan**

Kajian ini adalah bertujuan untuk mengenalpasti dan menentukan ujian – ujian yang paling berkaitan dalam mengukur prestasi fizikal, pengukuran anthropometrik dan kemahiran asas bagi kelab bola sepak dalam divisyen satu di Karbala, Iraq. Selain itu juga, tujuan kajian ini adalah untuk mengenalpasti tahap bagi prestasi fizikal, pengukuran anthropometrik dan kemahiran asas melalui ujian yang dipilih dengan membandingkan perbezaan min di antara pemboleh ubah – pemboleh ubah kajian berdasarkan tiga posisi permainan bagi pemain bola sepak. Kaedah penyelidikan diskriptif telah digunakan untuk menyesuaikan dengan objektif kajian dengan menilai (N=92) pemain – pemain bola sepak (Min umur M= 20.8, SD = 1.83, min tinggi M= 172.75, SD = 7.28, min berat M= 65.26, SD = 7.01). Soal selidik yang digunakan telah di adaptasi dari kajian yang lepas untuk mengenalpasti pemboleh ubah – pemboleh ubah dan ujian – ujian yang berkaitan. Seterusnya, pandangan pakar – pakar dalam bidang telah digunakan dalam penentuan ujian –ujian yang berkaitan dengan prestasi fizikal, pengukuran anthropometrik dan kemahiran asas. Dalam ujian pengukuran bagi setiap pemboleh ubah yang dipilih telah memperoleh skor markah lebih daripada 70%. Kesemua pemain dari empat pasukan di karbala Iraq telah menyertai sebagai responden kajian ini. Pemain – pemain ini telah dibahagikan kepada tiga posisi permainan (permain pertahanan, pemain tengah dan pemain penyerang). Dapatan kajian menunjukkan ujian lari berganti (Shuttle Run) 40 x 5, 30 m pecutan, hantaran dinding, ujian pergerakan kelajuan Nelson, duduk dan berdiri, lompatan menegak dan mengelik bola 25 m adalah ujian yang dipilih bagi mengukur prestasi fizikal dalam bola sepak. Manakala bagi pengukuran anthropometrik ujian yang dipilih adalah jumlah berat, jumlah panjang, jumlah panjang kaki dan ukur lilit dada, sementara itu bagi kemahiran asas ujian yang dipilih adalah ketepatan hantaran, penerimaan bola, menggelecek zig – zag, mengelakkan lawan, menanduk bola dan ketepatan rembatan ke arah pintu gol dalam permainan bola sepak. Keputusan ujian berdasarkan posisi pemain menunjukkan kumpulan pertahanan memperoleh nilai min skor yang tinggi dalam ke semua ujian yang dilakukan. Bagi ujian hantaran ke dinding bagi prestasi fizikal, ukur lilit dada bagi pengukuran anthropometric dan menggelecek 25m di

antara kon bagi kemahiran asas. Walaubagaimanapun, ujian Welch hanya menunjukkan keputusan yang signifikan terhadap ujian pergerakan kelajuan Nelson (Welch statistic = 3.437,  $p < 0.05$ ) dan menggelecek 25 m di antara kon (Welch statistic = 7.358,  $p < 0.05$ ) dalam prestasi fizikal, jumlah panjang (Welch statistic = 4.475,  $p < 0.05$ ) dan ukur lilit dada (Welch statistic = 3.510,  $p < 0.05$ ) dalam pengukuran anthropometrik dan hantaran (Welch statistic = 9.921,  $p < 0.05$ ) dan mengawal bola (Welch statistic = 4.896,  $p < 0.05$ ) dalam kemahiran asas di antara kumpulan. Ujian yang dipilih boleh digunakan oleh jurulatih – jurulatih dalam bahagian pratikalnya, bukan sahaja di Karbala malah di seluruh bahagian Iraq dan juga negara – negara lain dalam memilih pemain – pemain, memantau dan membandingkan prestasi seseorang pemain dengan pemain yang lain.





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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfillment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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Date:

## Declaration by Members of Supervisory Committee

This is to confirm that:

- the research conducted and the writing of this thesis was under our supervision;
- supervision responsibilities as stated in the Universiti Putra Malaysia (Graduate Studies) Rules 2003 (Revision 2012-2013) were adhered to.

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## LIST OF ABBREVIATIONS

FIFA	International Federation of Association Football
UAFA	Union of Arab Football Associations



## CHAPTER 1

### INTRODUCTION

#### 1.1 Overview

Chapter one starts with an introduction and background of the study. This chapter provides a contextual perspective on the study by presenting an orientation to the topic, identification and description of the problem statement, along with stating the main aim of this study, significance, limitations and delimitations of the study. The operational definitions of terms used in the study are presented at the last section of this chapter.

#### 1.2 Introduction

Football is a popular sports in most countries around the world, and it is played practically in every nation at various levels of competence. It becomes well-known and attracts a number of individuals, especially the young, to play this game. Physical performance and basic skills of the footballers, as well as anthropometric measurements which play an important role in successful performance (Cho, 2013a; Collet, 2013) should be measured precisely based on the standardized tests.

Physical performance, basic skills and anthropometric measurements of a successful football player are investigated by different methods in a number of studies (Fry & Kraemer, 1991). Based on the obtained results of those studies, the coaches know how to select the players as well as modify training and help players have a good preparation for the game. Therefore, it is important that all players should achieve a high level of performance and improvement in basic skills such as kicking, passing, trapping, dribbling, tackling and heading, based on the standardized tests, chosen by the coaches.

Moreover, it is vital to know valid and reliable tests to measure the physical performance, anthropometric measurements and basic skills because they are the most important components of football (Ghraiiri et al. 2013; Willardson & Burkett, 2008). Then, based on these results, the coaches need to know the most accurate and related tests to select and only compare based on the standard norms for any different position among football players. Reliable results provide the opportunity for the coaches to compare their players with standard norms or other players (Deprez et al., 2015; Griffin, Everett, & Horsley, 2015).

Anthropometry has been used to understand physical performance of athletes in the field of sports science which targets improvements in athletic performance. It is important for any coach to know the standardized tests to measure the anthropometric measurements, physical performance and basic skills among football player. Players

should have their ability to make decisions, recognize space and players, and coordinate physical movement within a limited time and space. During each 90-minute game, average per-player ball possession is approximately two minutes (Buchheit et al., 2013; Giulianotti, 2012; Rösch et al., 2000). In the remaining time, players stand, walk, jog, stride or run at low speed, sprint, and turn (Rossignol et al., 2014). For this reason, players require interim endurance and aerobic capacity for long distances, and anaerobic capacity for sprinting as well as short rests and light movements (Johnston et al., 2016; Saner et al., 2011). However, in Iraq, there is still a lack of standardized tests among coaches to measure the abilities of football players.

At competitive and organized levels, football is an endurance sports that incorporates periods of intense exercise interspersed with lower levels of activity over a 90-minute period (Reilly & Ball, 1984). Therefore, a huge amount of aerobic power is essential to a footballer (Nilsson & Cardinale, 2015b). According to profiles exhibited by professional players, the physical performance requirements for football are flexibility, speed, speed endurance and aerobic endurance (Iaia et al., 2015; Mayhew et al., 1989). Ball control is a foundation for all aspects of the game and a source of motivation for young players because it feels good to be at ease with the ball (Buryta, 2013; Stracuzzi et al., 2011). The ability to control the ball is the key to many other skills; and juggling is also a very good way to practice ball control, getting familiar with the ball and gaining confidence. Generally speaking, it is not difficult to master technical skills, but it becomes harder when the game conditions change. Therefore, a player can only master the technique of controlling the ball if he coordinates the various parts of his/ her body (Buryta, 2013; Leung, et al., 2015). However, these skills are not currently measured in the same way among coaches as there are no standard tests in Iraq. Thus, they measure the same skills in different ways.

Knowledge of the types of tests and their comparisons is still limited in Iraq. Today, there is a growing interest in research on football among scientists related to determining suitable tests to measure the anthropometric and physical performance and basic skills (Sampaio & Maças, 2012). The federation of football, other related association, and the coach community are seeking evidence-based solutions to find the standard and updated tests for football players in Iraq in different positions. It is, in actual fact, necessary to conduct studies on the measurements of anthropometric and physical performance and also basic skills, as well as to evaluate the effectiveness of these tests in finding the suitable players for different positions.

Profiling the anthropometric and physical performance and basic skills of sports athletes is a valuable means to recognize the players for different positions and critical for the development of individual strengths and weaknesses (Bilsborough et al., 2015). In previous studies, several new methods of choosing the players were used to identify the level of some physical performance, anthropometric measurements and basic skills for footballer and finding out the difference levels among them based on their positions and scientific bases by coaches. Nevertheless, previous research lacks the introduction of some standardized tests to the football coaches.

### 1.3 Problem Statement

With the development and industrialization of Iraq in recent decades, a large number of athletes in various fields are engaged in football. Iraqi football team is one of the best national teams in Arab countries, and it is one of the strongest teams in the Asian level, participated for the first time in the qualifying for World Cup in 1974 (FIFA, 2014). Then the Iraqi football reached the peak from 1970 to 1989. However, these achievements did not continue due to the wars that started since 1990 which caused the Iraq to be blocked from participating in Asian and most of Arab competitions (UAFA, 2013). In 1996, the international classification of Iraq was 139 ranking in the world, which is the worst in the history of Iraqi football (FIFA, 2012). This leads to the hindering of the performance. Therefore, Iraqi football team needs a new start. However, it was difficult when they were far from international matches, and there was still no agreement among coaches related to standardized tests. The skills are measured by football players and any coaches' own opinions. Because of this, they cannot compare the improvement or deficits of their players among themselves in Iraq and with other elite football players in other countries.

Good performance is evaluated through the tests and measurements nominated by experts and coaches in the field of football, which helps develop football, leading to the development of football game (Drevel & Diachenko, 2015). In order to achieve this goal, Iraqi football team needs a new start from identifying, selecting and compare the athletes and their abilities based on the standard tests in an objective way. However, this is considered as a current problem because coaches have different views about the tests.

A number of provinces in Iraq are unaware of the modern scientific bases for the football game advancement, especially Karbala province, where there are many clubs. Indeed each club has their own coach and own program to select the tests and measurements based on their own experiences. In particular, each coach uses his own opinion to select the tests for measuring the variables, which negatively affects the game in Karbala (Cho, 2013; Younghan Cho, 2016).

In addition, some of the common problems are that no specific method in football clubs in Iraq is used to determine the performance level of each player for the teams. In football, there are different positions for players; therefore, different tests are required. However, unfortunately, in Iraq, no series of standard tests were used for this purpose. In reality, coaches usually used wrong tests to measure the same skills and abilities based on their own experiences. They also use the same tests for different positions. This problem is highlighted by the studies conducted by Baron et al. (2012) and Narizuka et al. (2014). Hence, this study was conducted to identify and determine the most related tests to measure the physical performance, anthropometric measurements, and basic skills of football players in the first division football clubs in Karbala, Iraq. This study also aimed to identify the level of selected physical performance, anthropometric measurements and basic skills and compare the mean difference in the study variables of football players based on the three playing positions.

## **1.4 Objectives of the Study**

The main aim of this research was to identify and select standard tests for measuring physical performance, anthropometric measurements and basic skills for football players in Karbala. The objectives of this study are stated as follows:

- 1) To identify and select the tests to measure physical performance, anthropometric measurements and basic skills for the football players based on suggestion by football coaches and experts in Karbala.
- 2) To determine the level of selected physical performance, anthropometric measurements and basic skills among the football players of the first division clubs in Karbala based on the selected tests.
- 3) To compare mean difference in physical performance, anthropometric measurements and basic skills among football players in the first division clubs in Karbala regarding the three positions (defensive, midfield, offensive) based on the selected tests.

## **1.5 Research Questions and Hypotheses**

In order to achieve the objectives one and two, research questions were addressed to identify the best test to measure the variables for the football players based on what is suggested by coaches and experts in Karbala. On the other hand, determining the level of the variables among the football players of the first division clubs in Karbala, the hypotheses is also drawn based on the measured variables. The details of research questions and hypotheses based on research objectives are presented as follows:

### **1.5.1 Research Question for Objective 1**

What is the best test to measure physical performance, anthropometric measurements and basic skills for the football players based on the suggestions by coaches and experts in Karbala?

### **1.5.2 Research Question for Objective 2**

**RQ2.** What is the level of specific physical performance, anthropometric measurements and basic skills among the football players of the first division clubs in Karbala based on the selected tests?

### **1.5.3 Research Hypothesis for Objective 3**

**Ha1** There is a significant difference in specific physical performance among football players of the first division clubs in Karbala regarding the playing positions (defensive, midfield, offensive) based on the selected tests.

**Ha2** There is a significant difference in specific anthropometric measurements among football players of the first division clubs in Karbala regarding the playing



positions (defensive, midfield, offensive) based on the selected tests.

**Ha3** There is a significant difference in specific basic skills among football players of the first division clubs in Karbala regarding playing positions (defensive, midfield, offensive) based on the selected tests.

## **1.6 Significance of the Study**

The current study aimed to identify reliable and valid tests and measurements to measure physical performance, anthropometric measurements and basic skills that nominated by a group of experts and coaches in the field of football in Karbala province. In fact, many club coaches expect to know the best tests and measurements to measure physical, anthropometric and skills for football players. These tests and measurements can be used in other Iraqi provinces for developing football game in Iraq. Another benefit for this study is using it as a scientific source in future studies in football field. Indeed, determining the suitable tests will help the coaches to determine the most suitable athletes for different positions. Therefore, those tests will be used as a standard pattern in Iraq.

Basically, the extent of standard test usually reflects the coaches' philosophy on how players should be trained and how they play as well as how their condition should be measured. As known, testing is important when it is standardized and specific for a specific game and player position. Standard testing is used to confirm the coaches' thoughts in an objective way. It is, therefore important to assess physical performance, anthropometric measurements and basic skills of football players using the most suitable test to measure their true physical performance, anthropometric measurements and basic skills ability. In order to achieve this aim, it is necessary to establish the programs and schedules. Studying the effect of training program, turning weakness to strength, motivating players and giving them objective feedback based on selected test is also essential.

A set of tests and measurements should be determined by a group of experts and specialists in the field of football to measure physical performance, anthropometric measurements and basic skills. Through these tests and measurements, the level of football players in the physical performance, anthropometric measurements and basic skills can be identified, and this will help the coaches to know the level of the variables of the performance of football players. The tests will be used to standardize their improvements by comparing the players with standard norms defined for any parameters or characters, based on their positions. Moreover, the changes in performance of players will be comparable during the time.

Since this study aimed to identify the best test to measure physical performance, anthropometric measurements and basic skills, but there was no theory used in this study to support the test. The contribution of this study to the body of knowledge is selecting the right test to measure the physical performance, anthropometric measurements and basic skills ability among the football players. Selecting the right

test would allow the coaches to assess their players' ability correctly, and this played an important role in achieving the success and the best level of performance in the future. Beside, these standard tests and measurements can also be used for monitoring the improvements of players based on physical performance, anthropometric measurements and basic skills for different positions based on standardized results. In addition, football players at different positions in football may have different levels in physical performance, anthropometric measurements and basic skills. Defining these differences based on standard tests for the footballers may assist further in the selection of players for specific positions. Also, based on the results of standardized tests, the coaches and athletes can confirm their improvements better because the measures are standardized among the clubs in Karbala.

### **1.7 Limitations of Study**

Although the results of this research are practical and have useful implications, some limitations should be considered when interpreting the results as listed below:

First, it is very difficult to control any other factors such as personal attitude of coaches, as it is based on their previous years of working with football players, which may affect their opinions about choosing the best test for any skills. Indeed, some coaches in Karbala province are not interested in the scientific basis. Consequently, they rely on their personal experience, which causes a significant weakness in football game in Karbala, Iraq. The researcher attempted to explain the importance of these tests to them. The coming benefits of using standardized tests are also introduced to them so that they agree to cooperate with the researcher (Chalmers et al., 2013; Nilsson & Cardinale, 2015a).

Second, noticeably, coaches have different background of education/professional qualification. Some of them participated in some courses or international workshops. Hence, their knowledge and understanding of the selection of standard tests are based on scientific reasons rather than other groups who just learned coaching based on their experiences. However, the selected coaches for this study had at least 10 years of experience in coaching, and they had at least a master degree; therefore, they were qualified enough to consider their opinions.

### **1.8 Delimitations of the Study**

This study was limited to be conducted in the first division clubs of Karbala province where the participants were playing in the three positions (defensive, midfield, offensive), in the first division league season (2015-2016). As known, although there are many variables such as physical performance, anthropometry and skills for footballers that can be adopted and tested, this study only selected seven specific physical performance, five specific anthropometric measurements and seven specific basic skills for studying. All these variables were nominated by experts and specialists in the field of football. The component which got 85% and above were selected based on studies conducted by many researchers (Vescovi et al., 2011; Al-So'ud, 2013;

Beilke et al., 2013; Brahim et al., 2013). Various tests were used to measure these variables. The tests were presented by the same experts and specialists in the field of football to nominate the best tests to measure physical characteristics, anthropometry and skills where the test got 70% and above were selected (Vescovi et al., 2011; Al-So'ud, 2013; Beilke et al., 2013; Brahim et al., 2013). All of these variables and tests nominated by experts and coaches are very important and more related to football game.

## **1.9 Operational Definitions of Terms**

The following definitions contribute to a better understanding of the basic terms used in the current study.

### **1.9.1 Physical Performance**

According to Castellano et al., (2014) physical performance is mainly defined as a function of an individual's size, shape, sex, and age. It refers to a success in football at whatever level depending's on fitness. Nevertheless, fitness for any sports has five common elements including - strength, speed, endurance, flexibility, and agility. In various types of sports the relative contributions of each of these to the specific fitness are not equal. Training time devoted to each of these elements therefore varies between sports depending's on the level of participation. However, improved physical fitness allows skillful athletes to extend their performance by delaying the onset of fatigue. In the current study, physical performance includes speed endurance, transition speed, performance speed, reaction speed, power (AKA speed strength), explosive strength and agility. Experts and coaches in the field of football nominated these variables, which are very important and more related to football game, and all of the experts and coaches have training and teaching experiences. Some of them have more than 10 years of experience. In addition, the components that got 85% and above were accepted and selected (Khasawna et al., 2010; Singh, 2013; Vescovi et al., 2011; Al-So'ud, 2013; Brahim et al., 2013)

### **1.9.2 Anthropometric Measurements**

Verducci et al. (1980) defined anthropometric measurements as a science that deals with the measurements of human body parts from outside. In this study, anthropometric measurements includes the total weight, total length, the lower limb length, chest width, and chest circumference. These variables which are nominated by the same group of experts and coaches in the field of football. The components got 85% and above were accepted and selected (Khasawna et al., 2010; Singh, 2013; Al-So'ud, 2013; Beilke et al., 2013; Brahim et al., 2013).

### **1.9.3 Basic Skills**

Sharab (2011) defined basic skills as all the movements made by the player within a law of game, whether by the ball or without it. In the present study, basic skills include

passing, controlling, receiving, dribbling, evasion, head kick, and shooting. These variables are nominated by same group of experts and coaches in the field of football. The components got 85% and above were accepted and selected (Khasawna et al., 2010; Vescovi et al., 2011; Al-So'ud, 2013; Beilke et al., 2013; Brahim et al., 2013).

#### **1.9.4 Football Players**

Sharab (2011) defined a football player as someone who plays football, especially who considers playing football as their job (Sharab, 2011). In this study, football players include the first division clubs in Karbala province. The clubs include Al-jamaher club, Al-hur club, Al-gadharah club and Al-hindiea club. The average age of footballer is 21 years old and has different playing positions (defensive, midfield, offensive). The total football players of the four clubs in season (2015-2016) were (n=114), but due to the injury, 12 players and the 10 goalkeepers could not remain their positions. Therefore, the total number of players in the study was (n=92), and the number of defense included 33 players, midfield with 42 players, and offensive with 17 players.

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## LIST OF PUBLICATIONS

- Mothna, M., Soh, K.G., Tengku Fadilah, T. K., & Farah, L. (2016). Identify the Tests to Measure Physical Characteristics and Basic Skills for the Football Players in Iraq. *International Journal of Kinesiology and Sports Science*, 4(3), 18-23.
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