



تناولت الأولى ،مقارنة بين استخدام الكاميرات من عدة زوايا لتحليل الاداء الرياضي ، و نظام التتبع GPS، و الثانية تناولت برامج التحليل بالفيديو و اثرها على تحليل الاداء الرياضي ، و الثالثة تناولت دور التكنولوجيا في تقييم عناصر اللياقة البدنية ، من خلال تحليلنا لهاته الدراسات يمكننا ان نستنتج ان الوسائل التكنولوجية الخاصة بالتدريب لها أهمية بالغة في تقييم جميع عناصر الأداء الرياضي من بينها عناصر اللياقة البدنية والاختبارات الخاصة بها ، وكذلك بالنسبة للجانب التقني والتكتيكي. وذلك من خلال تحليل لجميع الوضعيات الخاصة بالجانب الفردي و الجماعي بجزيئاتها بواسطة تقنيات حديثة متمثلة في برامج تحليل الاداء الرياضي بالفيديو، بحيث يمكننا من خلال هذا التحليل ان نحدد نقاط القوة والضعف فرديا و جماعيا بالنسبة للفريق الخصم ولفريقنا ،و بالتالي نستطيع تصحيح الازخطاء المرتكبة ،والاستعداد للمنافسات ، و تخطيط التدريبات من خلال هذه البيانات المتحصل عليها

الكلمات المفتاحية : التكنولوجيا الحديثة ، الاحتراف الرياضي ، تحليل الفيديو ..

## 1. Introduction and problem of research:

Sports have long been important to societies for their health, psychological and social value, but in recent years they have become more widespread, as the states attentions through the media and mass tracking of sports activities has increased, and one of the most important ideas and visions of modern sports is the law of sports professionalism, which brought the philosophy of capitalists through focus and attention to the economic and commercial aspect of sports alongside its civil and social side.

Understanding the phenomenon of professionalism in the modern era, especially if it is a matter of professionalism in the field of sports, must systematically develop a historical approach that tries to identify the historical origins of this phenomenon. (Dadi Abdul Aziz, 2009, p. 75)

Sports professionalism means in the simplest way that an individual is presented by working as a player or working as a hero or working as a coach or assistant to the coach, and has an income from this work according to contracts

or conditions agreed in advance i.e. trafficking and coexistence from sports. (Kamal Darwish, Al-Saidani, 2006, p. 50)

Through professionalism, sports practice has become a profession with its various individual or collective manifestations, which has its professional conditions: (stability, attendance and contracts), professionalism is a small world sports cultural, economic and social, and the first sports activity that has raised the establishment of professionalism and this since the beginning of the last century is football, which is considered the most popular sport in the world, where it has witnessed development It is clear in recent years, especially after the application of the law of professionalism, so that European clubs, for example, became institutions that run themselves through economic and commercial strategies, which contributed to their development, but professionalism in Algerian and Arab football is one of the most serious topics and vital problems on the sports scene, which has directly reflected on the progress of the results and levels of football. (Rakash Kamal, 2010)

In Algeria, the football arena has witnessed many attempts to apply professionalism, but the level of application remains limited and partly due to the reality experienced by Algerian clubs, especially in the absence of financial capacity, which is reflected at the level of the Algerian championship. After 1989, the decline of state support for clubs, which created problems accumulated on despite being ordered by decree 95/09 and decree 99/2000, which is a new beginning for Algerian football in the world of professionalism, it has not lived up to the requirements of sports professionalism as a result of the reality experienced by clubs at the organizational and material level. (Revue Trimestrielle, du Olympique Algérien, N03, 1999)

On the light of all the above, we are trying to answer the following question:

To what extent does the use of modern training technologies contribute to the success of the *process of professionalism in the of football clubs?*

## **2-The importance of the research:**

The significance of this study lies in highlighting the role of modern training technologies in the success of professional sports clubs in general, as well as comparing them to Algerian football, which has been troubled by problems for a long time despite being the best in the Arab and African continents. This reality leads us to seek out solutions and procedures to achieve results at both the clubs and elite levels. The fact that the problems are deep can only be addressed by reconsidering the way the sport is being conducted. In addition to identifying the available possibilities and means, and trying to take advantage of the global experiences and keep up with them to reach the top.

## **3-Research objectives:**

To determine the extent to which modern training technologies contribute to the success of sports professionalism in professional football clubs.

To recognize the importance of having a specialist in modern training technologies and its positive impact on the success of sports professionalism.

To know the importance of using various methods and equipment of modern training technologies in the success of sports professionalism.

## **4-Identify the basic concepts contained in the research:**

### **4.1- Professionalism:**

The person's activity as a craft by initiating it in a regular form in order to achieve a reliable material return as a means of living. (KamalDarwish, Al-Saidani, 2006, p. 41)

### **4.2- Sports professionalism:**

*It is a profession initiated by the sports person from a specialized sports activity in a regular and continuous form through the practice of a particular activity with*

*the aim of achieving a reliable material return with full-time and commitment to implement the terms of the agreed contract and the fixed duration.*

(KamalDarwish, Al-Saidani, 2006, p. 42)

### **4.3-Modern technologies:**

*Technology is the appropriate combination of technology outputs or products to achieve specific production goals or knowledge embodied in the material reality to achieve certain goals, while technology is concerned with applying scientific knowledge to manufacture certain products. Technology is the processes, techniques, machinery and business used to convert inputs (materials, information and ideas) into outputs (Products and Services).(Khoja Bassem, 2018 p. 14)*

Each use of modern methods helps to obtain data quickly and accurately and helps in the training process to obtain accurate results to see how effective the training programs are applied.

### **5-Previous and similar studies:**

#### **5.1. First study:**

Yacoubi Adama's study entitled "Diagnostic Study of the Status of Professionalism in Algeria" - The State of Football - at the Institute of Physical Education and Sports in Algeria for the year (2004-2005).

The researcher was interested in the financial conditions of the structure and the sports facility as well as the training of Algerian football clubs for the excellent section and their relationship to the provisions stipulated in the terms book of conditions related to professionalism and the diagnosis of the compatibility of the real circumstances of these clubs with the minimum conditions stipulated in the terms book.

The descriptive approach was used in its study using a questionnaire (question form) through which it aims to collect real data and information for the

appearances of professionalism, and then compare the realism of the data with the provisions provided by the conditions book, and this form was addressed to the marchers of private clubs, which affects the sixteen (16) that play in the national championship of the excellent division, and the questionnaire contained 31 questions and this to address several aspects, which represent the variables that it retained in its study and can summarize the most important The results of this study include:

- There is a difference in the financing of clubs compared to what was mentioned in the terms book and the order 09/95 dated 25 February 1995, in particular article 112, through which the project hinted at giving professional teams the possibility of forming them on the basis of nature-wide quotas provided by natural persons, and above all with the return of their business partners with a sporting objective, as stated in article 103-104 of the same order.
- Among the sources of funding, trading in advertising spaces within sports venues, especially advertising on athletes' clothing, as well as incomes resulting from direct incomes (windows), this recorded difference explains the instability of the social and economic environment as well as the lack of applied texts and insurance, as well as the decline in youth incomes, which translates into public interest.

### **5.2- Second study:**

Hadjidj Mouloud's study entitled "The Obstacles to Professionalism in Algerian Football" is a master's degree in the Institute of Physical Education and Sports in Algeria in 2006-2007.

This study dealt with the reality of football in Algeria on one hand and the obstacles and shortcomings that prevent the application of the law of sports professionalism on the other hand, which affected the sports results at the level

of clubs and elite in recent years, and the researcher in this study, which is a graduation note for the master's degree on the descriptive curriculum aimed at collecting data and facts using the questionnaire as a tool to research a sample of administrators of the clubs of the first section of football.

The results of this study can be summarized as follows:

- Neglecting the social aspect of players and coaches leads to the failure of the professional process, which is reflected in the level of Algerian football, which calls for focusing on the social aspect by focusing on the requirements needed by the player and coach to raise the level of the sport by activating the law of sports professionalism.
- The lack of an economic vision for football through the absence of financing mechanisms at clubs prevents the establishment of the law of professionalism, due to the importance of the economic aspect of sports in general and football in particular, it is difficult for clubs to achieve their goals, and maintain their balance in the absence of financial resources and sports facilities that help to develop the sport. It is not in line with the requirements and requirements of the Sports Professionalism Act.

### **5-3- Third study:**

Salim Zabar's study entitled "Rituals for Sports Psychosomatic Preparation for Algerian Professional Footballers" at the Institute of Physical and Sports Education in Algeria for the year (2001-2002)

The researcher in this study relied on the descriptive and interpretive approach to the phenomenon where he described the rituals by their specifications and sources and the way they perform and then explain their functions and effectiveness on the psychological side to obtain psychological comfort.

To verify the research hypotheses, the researcher distributed questionnaires to the 42 professional players from clubs in the center of the country, which was aimed at knowing the opinions of the players' attitudes about rituals in the field of football, as well as knowing the effectiveness of various ritual functions such as emotional and organic situations among professional players in football.

The results of the study obtained from the performance of the questionnaire and the scale have shown that there is a broad practice of various rituals, which have multiple sources, and we have drawn from the data of the tools used after statistical treatment, that there is more practice of rituals of religious origin than rituals of a non-religious source.

It has been clear that competitive sports practice produces a lot of psychological pressures on the athlete, which leads to the emergence of an initial emotional state such as fear, anxiety, tension and confusion, and these emotions and bets of emotions are linked to concentration and attention, which drives and provokes mental abilities, especially during the individual practice of rituals.

The professional player resorts to these ritual practices to prepare for a competition, so it is not free of any purpose, and its function is clearly manifested in these turbulent competitive situations to create a kind of feeling, satisfaction and security.

#### 5.4. Fourth study:

Kamal Darwish and Saadani Khalil Al-Saadani's study entitled "**Professionalism in Football**" is a book from the Book Publishing Center, First Edition, Cairo, 2006.

This study, represented by this book focusing on the law of sports professionalism as a law on sports from hobby to sport of wider and broader dimensions, which made sports valuable in societies by relying on the economic aspect that is the new philosophy of sport through this law, and in this book



focused on indicators that helped the sport of football to develop through sports professionalism, such as marketing, investment, sports media and the legislative and legal aspect, as well as I have reached the repercussions and results of professionalism, including steroids in football players.

### **5.5. Fifth study:**

The Ben QassadAli Hadj Mohamed's study, under the title: "Evaluation of programs to prepare players in the smaller groups at the level of some Algerian football schools" for the year (2004-2005).

This research aims to reveal the reasons for the failure of Algerian football schools in achieving their goals, evaluation of training programs for football school coaches, the researcher in this study relied on two curriculum survey syllabus and experimental curriculum, each of which was used in its own field, and the sample of research in the survey consists of three groups each group containing 12 teams, the researcher distributed questionnaires to evaluate the programs of preparing players for these categories (drafters, cubs, middle) to all coaches The sample consisted of 118 coaches, the research sample in the pilot study included 12 teams from the Western Regional Championship and the number of players from the original community of the regional championship (2003-2004) for all categories 768 players, while the research sample consisted of 16 players in the category of juniors, 20 players in the category of cubs, 18 players in the middle category.

The results obtained by the researcher in his research for the survey showed any evaluation of trainers, there was a significant weakness among the trainers in the professional preparation as well as a lack of knowledge of trainers in the sciences related to training sciences and the lack of criteria for selecting young coaches, as well as a lack of training culture from trainers in sports

planning, or for the evaluation of training programs for young people as well as the lack of training plans and lack of consideration of individual differences between players, limited and insufficient pedagogical means, lack of interest in medical care, as well as There are no objective criteria for selecting facilitators as well as practical committees that oversee the follow-up to the achievement of training programs.

The pilot study, however, corresponds to the direction of physical and laboratory tests, reflecting the positive impact of the proposed training programme.

Through our analysis of similar studies we find that all studies talk about professionalism and the laws that control it and its requirements, which are studies that open the door for us to go into the problem of our research, which is in keeping with what is done in international clubs from its use of modern technologies in all kinds of preparation, to reach good results and achieve titles.

#### **6- Applied aspect: content analysis**

From this point of view, we will present in this part an analysis of the content of three experiments that have used modern technologies in evaluating fitness elements, analyzing matches and comparing data on the physical aspect obtained from GPS sensors, video cameras and analysis software, in order to prove the effectiveness of cameras and analysis programs in giving us accurate information related to physical data.

All this through **the analysis** of the content of the results of some scientific studies that dealt with these technologies and their uses in sports training.

#### **7- Analysis of data obtained from comparison of video analysis and GPS programs:**

##### **7.1. Devices used in these studies:**

Traffic requirement data was collected using the Media coach system. It is a series of GPS-based K-HDR4 super cameras, which record from several angles and record X and Y positions for each player, leading to 3D tracking.

Validated in other studies, it was also used to collect data. In order to determine spatial location, speed and acceleration, GPS and multiple cameras have been compared.

## 7.2. What are the measured variables:

Data on the following variables related to movements and speeds were collected:

**Total distance:** Distance travelled by the footballer during the game, regardless of the busy position on the pitch.

**Distance per minute:** The distance travelled per minute (m) during the time the footballer plays is expected. It's a relative variable that refers to pregnancy.

**Average speed:** The average speed (km/h) that the footballer moves during the game at the time he participated in the game.

**Top speed:** The maximum speed (km/h) reached by the footballer in the game.

According to Carling, the distance travelled was determined by six different degrees:

- Speed 0–6 Km/h: Walking;
- Speed 6–12 Km/h: Jogging;
- Speed 12–18 Km/h: Running.
- Speed 18–21 Km/h: Intense running.
- Speed 21–24 Km/h: Sprinting at low intensity.
- Speed more than 24 Km/h: Sprinting at high intensity. (Eduard Pons, 2019; P04)

The main objective of this study was to compare two systems designed to measure the requirements of the football movement. Using two different

methods, and considering the terms of the agreement between systems, similar data was obtained from Mediacoach System and GPS in total distance, distance per minute, average running, maximum speed and distance travelled in several speed sections. These results are in line with those reported by other authors in various studies focused on step analysis- and loads during football matches in this sense, very similar results were recorded in total distances travelled and distances travelled at different speed intervals recorded by two systems compared to other results found in previous research.

According to the results obtained in this study, we systematically highlight the Mediacoach System and its importance in estimating the grades of the above-mentioned distance variables, except for the distance travelled at 0-6 km/h.

Both GPS technology and computer-based tracking system include systematic errors, estimating total distance, although this is the first study to focus on evaluating performance indicators with professional footballers during official matches and in a full season.

We emphasize that these errors are relatively small and predictable, so they are considered to be so, the use of any of these techniques must be enhanced in order to monitor the movements of players and obtain data on the above-mentioned physical indicators. (Eduard Pons;2019;05)

### **8-Analysis of data obtained from video analysis programmes:**

On the other hand, video analysis devices and programs have been used to dismantle sports performance indicators for football players in order to use them to analyze competition, prepare training and prepare programs.

However, there are several points to be detailed and discussed after obtaining data that are considered in Taher simple and easy to evaluate and interpret (the

attacker with his goals or passing statistics or defenders who have won bilateral conflicts), it is clear that there are many nuances to interpret the data accurately.

For example, a striker who has scored 35 goals a season in a top-3 team with 6 clear chances per game beats a striker who has 12 but only two clear chances per game.

What criteria determine the net opportunity? All these questions explain why it's so difficult to make use of data in a useful way.

There are simple statistics, such as the number of passes, the winning binary conflicts, successful forward passes, missed balls, decisive passes.

But in a ballless game creating spaces, closing spaces, pressing, and all races that allow his partners to recover the ball or take advantage of the space to receive it, the evaluation remains more complex.

Should we also think about the type of play that the player's team is evaluating?

An attacker who plays in a team that matches his physical and technical characteristics will necessarily be more efficient.

The expected objectives are a standard developed over the past few years that makes it possible to assess registration prospects according to several criteria:

The area of the stadium where the player is present at the time of the shot. The part of the body used (head or foot), the pass or sequence that led to the shot (center, pass, lost ball defense)

Position (organized attack, counterattack, fixed kick).

"The expected goals are part of the data that gives value to each shot on goal, which basically answers the question of whether the player should score based on the opportunity he has had.

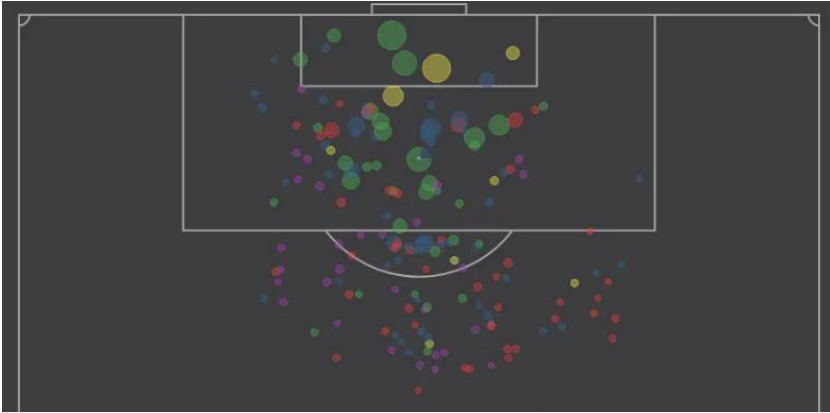
In short, it is a way to give each result a qualitative value, based on the details we know about that result.

The special data map (expected goals) also allows you to evaluate a team's performance beyond a result that often depends on the "success" that a player may or may not achieve.

Thus, it allows for a more detailed analysis that goes beyond the result in the game and get a more medium-range view of the dynamics and progress of the team.

In the data map of graphics in the stadium found in most technological analysis programs, the footage is represented in larger or smaller circles in different colors depending on the probability that the shot will end up in the network and score goals. The color determines the result of the shot: as shown in the drawing below.(Jean Paul;2020)

**A graph showing the various locations in which one player was shot in several matches .(Jean Paul;2020)**



Green: Shots that lead to a goal

Yellow: Shot on the post.

Blue: Shots on target.

Red: Shots off target.

Purple: Shots were stopped by the goalkeeper .(Jean Paul;2020)

By analyzing the data in the form of a pitch drawing with points and circles in different colors and for each color of its own significance, we can build a training strategy to limit these kinds of dangerous shots in the upcoming matches. This is for one shot of one player from the opposing team, imagine the size of the shots that we can analyze and for each player individually depending on the position, performance, strengths and weaknesses, here it is clear to us the importance of using modern technologies for performance analysis.

## **9- Analysis of data obtained from a study following the use of the physical record of modern technologies in the development of fitness elements:**

The use of modern techniques in evaluating fitness elements provides maximum speed and accuracy, because the results of this study resulted in the ability of modern technologies to evaluate fitness elements in a short time and with the least effort and accuracy and evidence of this is the data obtained with the use of devices, where modern techniques to measure and evaluate fitness elements help to retrieve stored information in the shortest possible time, which helps to solve many problems facing the training process.(Khoja Bassem,2018, p.266)

By analyzing the results of the study obtained from the application of tests with modern techniques and comparison without the use of techniques, the results of the study came to the conclusion that the evaluation process using modern techniques occupies an important place in the educational process, especially during the measurement and evaluation of fitness elements of football players, where tests and measurements are the main component of :

- 1- Making the right scientific decisions in the training process such as diagnosis, guidance and selection.
- 2- **Using** tools and equipment to measure and evaluate fitness elements.
- 3- Dividing players into groups according to their level of performance.
- 4- Analyzing technical performance.
- 5- Helping the predict the level of players in the future by determining their progress at different stages of training and comparing results and grades to determine the expected grades of individuals and sports teams.
- 6- Contributing to the evaluation of training programs and players and prepare the appropriate tests for them.



7- Helping coaches and sports specialists to diagnose the condition of players and identify weaknesses and strengths, which helps to prepare appropriate training programs (Khoja Bassem,2018, p.268)

8. Helping to obtain information in the shortest possible time, which helps to solve many problems in the training process.

Design training programs for athletes.

10- Encoding the standard specifications of sports heroes (functions, profile) in different games.

11- Criticizing and guiding players during training.

12- Determining the number of training hours suitable for each player to relieve the player of the excess burdens.

### **Conclusion:**

All of this leads us to the conclusion that technical training methods are crucial in evaluating all aspects of sports performance, including fitness elements and their tests, the results of which we can compare the results of classic tests without the use of technological means, as well as for the technical and tactical aspect, through an analysis of all the situations of the individual and collective side in their segments by modern techniques represented in video sports performance analysis programs, through this analysis we can identify strengths and weaknesses individually and collectively for the opposing team and our team, so we can correct the mistakes made, prepare for competitions, and plan the exercises through these data obtained, whether they are statistics or videos. Thus, the coach can control all components of sports performance, which depend on the molecules and create the difference via his use of the contemporary technologies, and keep pace with what is done in professional teams.

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