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The impact of modern training programmes on the effectiveness of recovery in football players from the coaches' perspective: A field study of selected teams in the provinces of Guelma and Annaba, Algeria

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Abstract:
This study aimed to identify the impact of modern training programmes on the effectiveness of sports recovery among football players from the coaches' perspective, by highlighting the role of modern recovery methods in reducing fatigue and muscle strain, minimising sports injuries, and improving players' physical readiness.
To achieve the study's objectives, the researcher adopted a descriptive-analytical approach, as this is considered the most appropriate for such studies. A range of research tools, including questionnaires, observation and interviews, were used to collect data relevant to the study's subject. The research sample consisted of 30 football coaches working with various teams and sports clubs in the provinces of Guelma and Annaba; they were selected purposefully due to their experience and direct connection to the subject of the study.
The researcher used SPSS to analyse the data, employing a range of statistical methods, the most important of which were the arithmetic mean, standard deviation, percentages, the t-test and Cronbach's alpha.
The study reached a number of conclusions, the most important of which are:
Modern training programmes help reduce fatigue and muscle strain among football players.
Modern recovery programmes help to reduce sports injuries and improve players' physical readiness.
There are differences in the use of modern recovery programmes due to the coaches' experience and level of expertise.
Modern sports recovery methods have become an essential component of the training process in modern football.
Keywords: Modern training programmes, Sports recovery, Football players, Coaches' perspective, Algeria.

Introduction:

Football is considered the most popular sport worldwide, not only in terms of the number of participants, but also in terms of its social and economic impact. It is characterised by being a team sport that relies on the interaction between individual skills and collective tactics, which places significant physical and psychological pressure on players, particularly in intense competitions that require high physical readiness and rapid recovery after matches.

In Algeria, football occupies a symbolic place in popular culture, serving as a space for community interaction and regional rivalry. In the province of Annaba, football is one of the most widely played and organised sports, with local teams active at various levels (amateur, semi-professional), making it a fertile environment for studying the application of modern training programmes.

In light of the rapid developments the world is witnessing in the field of sport, achieving optimal performance for athletes now requires the adoption of advanced scientific methods that are not limited to training alone, but also encompass the post-match recovery phase, which is a fundamental pillar for maintaining players' fitness, avoiding injuries and enhancing competitive sustainability1 . With the increasing intensity of competition and the rising physical and psychological pressures on athletes, there has been a growing need to adopt modern training programmes based on advanced technologies and scientific methodologies to improve the efficiency of recovery processes, such as the use of wearable technology, biomechanical analysis, and active recoveryprogrammes.2 Despite the scientific consensus on the importance of these programmes, their effectiveness remains linked to the availability of material and human resources, and the ability of coaches to apply them in practice3 . In the context of the Algerian province of Annaba, which is home to numerous sports teams across various disciplines (football, handball, athletics, etc.), questions arise regarding the extent to which coaches have grasped these techniques and utilised them to improve players' recovery, particularly given the scarcity of field studies evaluating this experience locally4 .

Coaches are considered the cornerstone of the design and implementation of modern training programmes, as their role is not limited to tactical planning alone. Post-match physical and technical recovery plays a crucial role in improving athletic performance, reducing the risk of injury and ensuring athletes' ongoing physical readiness. With the rapid development of sports science, reliance on modern training programmes has become an essential tool for promoting recovery following intense physical exertion.

The aim is to improve the efficiency of post-match recovery, as seen through the perspective of coaches in teams in the province of Annaba. The primary objective is to evaluate the methods used and assess their alignment with the latest scientific trends in the field of sports recovery, as well as to monitor differences in players' performance based on the implementation of these training programmes.

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- **Research Problem**:

Following sporting matches, players suffer from fatigue and physical and muscular strain; with packed match schedules, their performance in subsequent matches is affected. Consequently, in recent decades, sports recovery has become a cornerstone of modern sports science, particularly with the growing body of scientific evidence confirming its close link to injury prevention, performance enhancement and the extension of athletes' competitive careers5 . In sports such as football, where the distances covered by players in a single match are estimated at around 10–12 km, with frequent periods of high-intensity intervals (HIIs)

Physiological and neuromuscular recovery is crucial for maintaining performance throughout a demanding season. Consequently, scientists are constantly striving to develop and update physical recovery programmes. Among the modern techniques used by fitness trainers is biometric monitoring via wearable devices such as heart rate monitors and GPS trackers to measure training load (Training Load) and muscle fatigue levels, which helps in tailoring individual recovery programmes6 . For example, a study by Gabbett et al. (, 2017) (2017) showed that the use of these devices reduced player injuries by 28% in Australian rugby teams7 . Similarly, active recovery techniques such as hydrotherapy, specialised sports massage (Sports Massage) and localised cooling (Cryotherapy) accelerate the removal of lactic acid and the regeneration of muscle fibres 8 . According to Barnett (2006), combining cryotherapy and massage reduces delayed onset muscle soreness (DOMS) by 40% compared to passive rest.9 Furthermore, regarding recovery nutrition, nutrition experts such as Louise Burke emphasise the need to consume proteins and carbohydrates within 30 minutes after exercise to replenish glycogen and repair tissues10 .

Conversely, Algeria is considered one of the leading Arab and African countries in the field of sport, particularly in football, which holds a significant popular and cultural status11 . Nevertheless, the sports system faces structural challenges reflected in:

- Poor infrastructure: According to a report by the Ministry of Youth and Sport (2021), 65% of sports grounds in Algerian provinces (including Annaba) lack specialised recovery facilities such as cold rooms or therapeutic pools.12

Despite their high level of activity, sports teams in the province of Annaba face a challenge that hinders the adoption of these programmes, as demonstrated by a field study by Boudiba&Marghen (2020):

- Lack of infrastructure: 80% of clubs lack specialist rehabilitation facilities (such as cold chambers or therapeutic pools)13 .

5Bishop, P. A., et al. (2008). Recovery from training: a brief review. *Journal of Strength and Conditioning Research*.
6Akenhead, R., &Nassis, G. P. (2016). Training Load and Player Monitoring in High-Level Football. *Sports Medicine*.
7Gabbett, T. J., et al. (2017). The training-injury prevention paradox. *British Journal of Sports Medicine*.
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10Burke, L. M., et al. (2011). Carbohydrates for training and competition. *Journal of Sports Sciences*.
11Algerian Football Federation (FAF). (2022). Report on Algerian football
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- Reliance on traditional methods: 70% of coaches still rely on traditional methods such as rest and simple manual massage14 .
- Lack of funding: Reports from Algerian sports federations indicate that 60% of clubs in Annaba do not have a budget allocated for the purchase of modern equipment15 . In light of the above, we pose the following question:

What is the impact of using modern training programmes on the effectiveness of sports recovery among football players from the coaches' perspective?

- **Sub-questions**:
- Do modern training programmes help reduce fatigue and muscle strain in football players?
- Do modern training programmes help to reduce injuries and improve the physical fitness of football players?
- Are there differences in the use of modern recovery programmes attributable to coaches' experience and level of expertise?

- **General hypothesis**:
- Modern training programmes contribute to improving players' recovery efficiency after matches from the perspective of coaches of teams in the province of Annaba, given the local material and human resource challenges

- **Specific hypotheses**:
- Modern training programmes contribute to reducing fatigue and muscle strain in football players.
- Modern training programmes help to reduce injuries and improve the physical readiness of football players.
- There are statistically significant differences in the use of modern recovery programmes attributable to coaches' experience and academic level. - - **Research objectives**:

This study aims to achieve a set of objectives, namely:
- To analyse the current use of modern training programmes to improve post-match recovery efficiency in teams in the province of Annaba.
- To assess the effectiveness of these programmes from the coaches' perspective, and to identify the factors influencing their success or failure.
- To identify the types of modern training programmes used by teams in the province of Annaba (e.g. physiological recovery techniques, tactical analysis, sports nutrition).
- To measure coaches' satisfaction with the impact of these programmes on reducing recovery time, lowering injury rates and improving sporting performance.
- To identify the practical challenges hindering the implementation of modern programmes (e.g. lack of financial resources, insufficient specialist training).
- To compare coaches' views on the effectiveness of programmes based on sport type (team sports versus individual sports) and coaching experience (novice coaches versus experienced coaches).

15Ministry of Youth and Sports (Algeria). (2021). Report on sports infrastructure

- Providing practical recommendations to improve the uptake of modern programmes, aimed at coaches local sports federations and sports policymakers.
- Reasons for choosing the topic:

- **Personal motivations**:
- The subject of our research relates to our field of study and our passion for sports science, as well as our keenness to follow developments in sports science in the areas of modern training and sports recovery. It also stems from our desire to develop and promote Algerian sport in this field, and our observation of the increasing number of matches in recent seasons, which led us to consider how players adapt to thisand what plans physical trainers put in place to improve recovery efficiency.

- **Objective motivations**:
- These stem from the realisation that there are no field studies in Algeria focusing on the role of coaches in implementing modern recovery programmes, despite their global importance and the need for practical solutions to local challenges, given that clubs in Guelma and Annaba suffer from a lack of financial resources and infrastructure, as highlighted in reports by the Ministry of Youth and Sport. Through our monitoring of matches and media coverage in Algeria, we were concerned by the alarming rise in the injury rate . According to a study by Zargini (2017), Algeria has a higher injury rate than the global average, which calls for an investigation into the causes and the development of solutions16

- **Significance of the research**:

In light of the rapid developments the world is witnessing in the field of sport, it has become a reality that optimal performance by athletes requires the adoption of advanced scientific methods that are not limited to training alone, but also include the post-match recovery phase, which is a fundamental pillar for maintaining players' fitness, preventing injuries and enhancing long-term competitiveness. With the increasing intensity of competitions and the rising physical and psychological pressures on athletes, there has been a growing need to adopt modern training programmes based on advanced technologies and scientific methodologies to improve the efficiency of recovery processes, such as the use of wearable technology, biomechanical analysis, and active recovery programmes. The significance of our study lies in our attempt to ascertain the extent to which coaches in the province of Annaba have embraced these modern technologies and programmes, and how they are utilised in practice, given the scarcity of field studies evaluating this experience locally.

- **Defining concepts and terminology**

Modern training programmes

Linguistic definition: Organised plans comprising specific procedures to achieve training objectives using advanced methods.

Terminological definition: A set of scientific methods based on technology and modern research to improve athletic performance and recovery
Procedural definition: Programmes used by Annaba team coaches (such as active recovery or computerised tactical analysis), as mentioned in questions (1–5) of the questionnaire.

-Recovery Efficiency:
Linguistic definition: A player's ability to return to their normal state following physical exertion.
Technical definition: The speed and effectiveness of the restoration of physical and psychological functions after matches, measured by indicators such as recovery time and fatigue levels.
Procedural definition: Coaches' self-assessment of the extent to which players' recovery has improved following the implementation of programmes (based on the Likert scale in the questionnaire).

- **Coaches**:
Lexical definition: Persons responsible for coaching teams and improving players' performance.
Terminological definition: Qualified experts in designing integrated training programmes covering physical and tactical planning.
Procedural definition: Coaches working with teams in the province of Annaba who participated in the study via the questionnaire or interviews.

- **Previous studies**:
The scientific research process forms a continuous link in a chain known as the development of knowledge, and its distinguishing feature is scientific accumulation. From this perspective, we can say that previous studies are important because they help the researcher to delve deeper into the research, understand the core problem and control the variables. Among these previous studies, we mention:

The first study
Vladimir Platonov's study on athletic recovery and physical adaptation
This study aimed to highlight the importance of sports recovery in improving athletes' physical adaptation and reducing the effects of fatigue resulting from high training loads.
The researcher adopted a descriptive-analytical approach, and the study concluded that the proper organisation of recovery periods and the use of modern methods of sports recovery contribute effectively to improving physical performance and accelerating the process of muscle recovery.
Benefits of the study We utilised this study to reinforce the theoretical aspect regarding the importance of sports recovery and its role in improving physical performance.

The second study
Entitled **'The Effectiveness of Recovery Methods Compared to Physical Exertion in Algerian Professional Football Clubs (Top Division)',** this is an online article in the Journal of Arts and Social Sciences by Dr Radwan Boubaker.

The study aims to determine the effectiveness of the recovery methods used by Algerian professional football clubs compared to the physical exertion during training sessions and weekly matches, in terms of the nature of the employed, as well as the extent to which they are provided by the management of these clubs on the one hand, and the players' commitment to using recovery methods on the other. The findings concluded that the methods used are underdeveloped compared to the necessary for recovery, both in terms of their availability and how they are used, if available.
A descriptive approach was used, and the research tool consisted of a questionnaire for the players containing a set of 20 questions.

The third study:
Essam Abdel Khalek's study on modern sports recovery methods The study aimed to identify the role of modern sports recovery methods in reducing muscle fatigue and enhancing athletic performance.
The results showed that the use of modern recovery methods, such as sports massage, cryotherapy and active recovery exercises, contributes to accelerating the recovery process and improving the physical readiness of athletes.
Benefits of the study We have drawn on this study to identify the most important modern sports recovery methods used in football.

The fourth study
Mohammed Hassan Alawi's study on training loads and sports recovery The study aimed to identify the relationship between training loads and the effectiveness of sports recovery among players.
The researcher adopted a descriptive approach and concluded that the scientific use of sports recovery programmes helps maintain players' functional and physical balance and reduces the likelihood of sports injuries.
Benefits of the study We have benefited from this study in understanding the relationship between training loads and sports recovery processes.

- **Research methodology**:
The researcher adopted a descriptive-analytical approach, as it is the most suitable for studying, describing and analysing social and sporting phenomena as they are in reality, as well as revealing the relationship between the use of modern training programmes and the effectiveness of sports recovery among football players.

- **Research variables**:
- **Independent variable**: **modern training programmes**( ), which the researcher posits influences the other variable; this comprises the various modern programmes and methods used in training and sports recovery.

- **Dependent variable**: **the effectiveness of sports recovery**, which is the variable influenced by the independent variable.

- The exploratory study:

The pilot study helped to refine the research instrument and fine-tune the fieldwork procedures. It also enabled the researcher to address various shortcomings and difficulties prior to the final administration of the questionnaire to the main sample. We distributed the questionnaire to members of the pilot sample, then collected the questionnaires and analysed the comments regarding the clarity of the statements, the order of the sections, and the extent to which the sample members understood the questions posed. The questionnaire was also presented to a group of professors and experts specialising in sports training, measurement and evaluation, to ensure the scientific accuracy of the wording and the suitability of the statements for the subject of the study. We concluded the following:

- Most of the questionnaire's statements were clear and easy for the sample to understand.
- The questionnaire's themes are appropriate to the study's objectives and hypotheses.
- The questionnaire can be administered to the main sample without significant difficulties.
- The questionnaire achieved a good level of reliability and validity.

Consequently, the pilot study contributed to improving the research instrument and refining the fieldwork procedures, whilst also enabling us to avoid various shortcomings and difficulties prior to the final administration of the questionnaire to the main sample.

- **Research population**:

The research population consists of active football coaches at various sports clubs in the provinces of Guelma and Annaba, Algeria, who oversee the training of sports teams at various competitive levels.

- **Research sample**:

The research sample was selected using a purposive sampling method, comprising 30 football coaches active in various teams and sports clubs in the provinces of Guelma and Annaba, given their experience and knowledge regarding the use of modern training programmes and sports recovery methods in football.

In selecting the sample, we took into account the diversity of the coaches' experience and training levels, in order to serve the objectives of the study and help achieve more accurate and objective results. The following table illustrates this

Table 1 shows the distribution of the sample (coaches) across the various clubs

Club	Number of coaches at the club	Years of experience
Sidi Ammar Union	6 coaches	3 to 20 years
Al-Shallala Union	5 coaches	Ages 4 to 10
Taraji Guelma	6 coaches	Ages 4 to 15
Al-Hajar Union Team	6 coaches	Ages 5 to 20

Omni Sport Corner	4 coaches	Ages 4 to 8
Sari Al-Boni	3 coaches	Ages 3 to 5
Total sample	30 coaches	

- **Research tools**:

In this study, we relied on a set of scientific tools and methods appropriate to the nature of the subject, with the aim of collecting data and information regarding the impact of modern training programmes on the effectiveness of athletic recovery among football players from the coaches' perspective.

First: **The questionnaire**

The questionnaire is the main tool relied upon by the researcher to collect field data, given its suitability to the nature of the study and the methodology used; a questionnaire form was designed specifically for football coaches.

The questionnaire included a set of topics related to the study's hypotheses, and its questions were formulated in a clear, scientific manner appropriate to the research objectives.

Survey themes

The first topic: Modern training programmes and their role in reducing fatigue and muscle strain among football players.

Theme 2: Modern training programmes and their role in reducing injuries and improving players' physical readiness.

Theme 3: Differences in the use of modern recovery programmes according to coaches' experience and academic level.

Validity of **the instrument:** To ensure the validity of the questionnaire, it was presented to a group of professors and experts specialising in sports training, measurement and evaluation, with the aim of verifying the accuracy of the statements and their relevance to the subject of the study.

Reliability of the instrument: The reliability of the questionnaire was calculated using appropriate reliability coefficients, such as Cronbach's alpha, to ensure the consistency of the sample participants' responses.

Table 2: Shows the psychometric properties of the study questionnaire

	Reliability	Internalconsistency
First axis	0.89	0.94
Second axis	0.87	0.93
Third axis	0.85	0.92
The questionnaire as a whole	0.86	0.93

From Table No. 2..., we observe that the Pearson correlation coefficients for the questionnaire dimensions and the questionnaire as a whole fall within the range [0.85, 0.89], whilst the internal consistency coefficients ranged between 0.92 and 0.94. This indicates that our questionnaire possesses high levels of reliability and validity.

Second: Observation
We relied on observation as a complementary tool to the questionnaire, by attending some training sessions and reviewing the sports recovery methods used by coaches within sports clubs, which helped to form a realistic picture of the subject of the study.

Third: Interviews
We used unstructured interviews with some coaches to obtain additional information regarding modern recovery programmes and their effectiveness in improving athletes' performance and recovery.

- **Areas of research**:
Human aspect: The human aspect of the study focused on active football coaches in various sports clubs and teams, with the research sample comprising 30 coaches overseeing the training of football teams at different competitive levels.
Geographical scope: The field study was conducted at the level of clubs and sports teams in the provinces of Guelma and Annaba.
Temporal scope: The study was conducted during the 2024/2025 sporting season, from the preparation of the questionnaire and preliminary study through to data collection and analysis of the results.

- **Statistical analysis**:
After collecting and retrieving the questionnaires from the research sample, the researcher entered, organised and statistically analysed the data using SPSS software, with the aim of obtaining accurate results that would help to interpret the phenomenon under study and test the research hypotheses. We relied on a set of statistical methods appropriate to the nature of the study, namely:
- Frequencies and percentages, to describe the characteristics of the research sample and analyse the responses of the sample members.
- Arithmetic mean, to determine the degree of response of the sample members to the questionnaire items.
- Standard deviation, to measure the degree of dispersion of the sample members' responses around the arithmetic mean.
- t-test, to identify statistically significant differences between the responses of the sample members according to certain variables.
- Cronbach's alpha coefficient, to ensure the reliability of the study instrument and its internal consistency.
A significance level of $\alpha \leq 0.05$ was adopted to assess the significance of the statistical results obtained.

- **Presentation, discussion and analysis of the questionnaire results**:
We will present, analyse and discuss the results obtained through the various research tools used, namely the questionnaire, observation and interviews, with the aim of revealing the impact of

modern training programmes on the effectiveness of athletic recovery among football players from the coaches' perspective.

Statistical analysis of the questionnaire results was employed, alongside field observations and coaches' views gathered from interviews, in order to arrive at more accurate and objective findings.

Presentation, analysis and discussion of the results of the first hypothesis:

Text of the first hypothesis: Modern training programmes contribute to reducing fatigue and muscle strain in football players.

First: Presentation of the questionnaire results

Table No. (03):

Number	Statement	Arithmeticmean	Standard deviation	Grade
1	Modern recovery programmes help reduce muscle fatigue	4.35	0.62	High
2	Modern recovery methods help restore physical activity quickly	4.21	0.70	High
3	Players rely on recovery methods after intense matches	4.10	0.74	High
4	The absence of recovery programmes leads to increased physical stress	4.40	0.59	Very high

Secondly: **Results of the observation**: Through the field observation we carried out whilst monitoring some training sessions, it became apparent that most coaches rely on modern recovery methods following matches and high-intensity sessions, particularly active recovery exercises, stretching exercises and sports massage.

We also noted that coaches dedicate part of the training session to recovery procedures with the aim of reducing muscle fatigue and maintaining the players' physical readiness.

Third: **Interview findings:** Interviews conducted with some coaches confirmed that the use of modern training programmes for sports recovery has become a necessity in modern football, particularly given the intensity of sporting competitions.

A number of coaches pointed out that modern recovery methods help players regain their physical fitness more quickly, whilst also reducing the effects of fatigue resulting from high training loads.

Analysis of results: Based on the results of the questionnaire, observations and interviews, there is a high degree of agreement among the sample regarding the positive role of modern training programmes in reducing fatigue and muscle strain among football players.

The statistical results showed an increase in the arithmetic means for all statements relating to this theme, and field observations supported these findings by noting the coaches' reliance on modern recovery methods within the training process.

The interviews helped to explain the results, with coaches confirming that sports recovery has become a key element in maintaining players' physical readiness.

Discussion of results: The findings confirm that modern training programmes for sports recovery have become of great importance in modern football, given their effective role in reducing muscle fatigue and accelerating the physical recovery process.
These findings are consistent with Platonov's observations regarding the importance of sports recovery in improving physical adaptation and minimising the effects of training loads.
They also align with the study by Essam Abdel Khalek, which confirmed that the use of modern recovery methods contributes to improving the functional and physical condition of athletes.

Verification of the first hypothesis: Based on the results of the questionnaire, observation and interviews, it can be said that the first hypothesis, which states:
"Modern training programmes contribute to reducing fatigue and muscle strain in football players" has been verified

Presentation, analysis and discussion of the results of the second hypothesis
Text of the second hypothesis: Modern training programmes help to reduce injuries and improve players' physical readiness.
First: Presentation of the questionnaire results
Table No. (04):

Number	Statement	Arithmeticmean	Standard deviation	Grade
1	Modern rehabilitation programmes help to reduce sports injuries	4.18	0.71	High
2	Recovery methods help improve players' physical readiness	4.33	0.60	High
3	Modern recovery programmes lead to improved performance	4.26	0.68	High
4	Good recovery helps maintain physical stability	4.38	0.57	Very high

Secondly: Findings: We observed that coaches pay clear attention to post-match recovery methods, particularly those relating to stretching, cooling down and sports massage, with the aim of reducing muscle injuries and improving players' physical readiness.
It also emerged that some teams rely on regular recovery programmes during periods of intense competition.
Third: Interview findings: During the interviews, coaches confirmed that the consistent use of modern recovery programmes helped to reduce injuries resulting from fatigue and physical strain, and also contributed to maintaining the players' physical performance throughout the sporting season.

Analysis of results: The results of the various study tools indicate a positive correlation between the use of modern training programmes and improved physical readiness and a reduction in sports injuries among football players.

Observation and interviews supported the statistical findings, confirming a growing interest among coaches in modern recovery methods.

Discussion of results: These results are consistent with recent trends in sports training science, which emphasise the importance of sports recovery in injury prevention and the improvement of physical performance.
These results also reflect coaches' awareness of the importance of scientifically planning recovery processes within the training programme.

Verification of the second hypothesis: Based on the results of the questionnaire, observation and interviews, the second hypothesis has been verified.

Presentation, analysis and discussion of the results of the third hypothesis
Text of the third hypothesis: There are statistically significant differences in the use of modern recovery programmes attributable to the coaches' experience and scientific level.

First: Presentation of the questionnaire results
Table 5: Shows the differences according to trainers' experience

Experiencecategory	Number of trainers	Arithmeticmean	Standard deviation	Level of use
Lessthan 5 years	8	3.68	0.81	Average
5 to 10 years	12	4.12	0.66	High
More than 10 years	10	4.45	0.53	Very high

Table No. (06): Shows differences by academic level

Number	Statement	Arithmeticmean	Standard deviation	Grade
Secondary	7	3.74	0.77	Average
University	15	4.20	0.61	High
Postgraduate	8	4.48	0.50	Very high

Secondly: Results of the observation: Through field observation, it became apparent that coaches with long experience relied more on modern recovery methods compared to less experienced coaches, as they were observed to pay attention to organising recovery periods and using modern methods such as cooling, sports massage and active recovery exercises.
We also noted that coaches with a higher level of academic qualification were more aware of the importance of scientific planning for sports recovery processes.

Third: Interview findings: Interviews conducted with some coaches confirmed that professional experience and academic training contribute to a better understanding of the importance of modern recovery programmes.
Some coaches also noted that keeping up to date with scientific developments and attending training courses had contributed to the development of their working methods within the training process.

Analysis of results: The questionnaire results indicate clear differences in the use of modern recovery programmes depending on the coaches' experience and academic level, with the most experienced and best-educated coaches recording the highest mean scores.
Field observations supported these findings, noting the regular use of modern recovery methods by experienced coaches.
The interviews, meanwhile, explained these differences through the coaches' confirmation that experience and academic background play an important role in the development of scientific knowledge related to sports recovery.

Discussion of results: The findings confirm that professional experience and academic training have a direct influence on the extent to which coaches use modern training programmes for sports recovery.
This can be explained by the fact that coaches with long experience are more familiar with sporting competitions and better informed about scientific developments in the field of sports training.
Furthermore, academic training helps coaches understand the physiological and physical aspects associated with the sports recovery process.

Verification of the third hypothesis: Based on the results of the questionnaire, observation and interviews, it can be concluded that the third hypothesis, which states: "There are statistically significant differences in the use of modern recovery programmes attributable to coaches' experience and academic level", has been confirmed.

Comparison of results with hypotheses: The findings of this study indicate a positive relationship between the use of modern training programmes and improved athletic recovery among football players, from the coaches' perspective.
The results of the first hypothesis confirmed that modern training programmes contribute to reducing fatigue and muscle strain in players, as evidenced by the increase in arithmetic means, in addition to what was confirmed by field observations and interviews with coaches.
The results of the second hypothesis also showed that modern recovery programmes help to reduce sports injuries and improve players' physical readiness, reflecting the importance of sports recovery in maintaining physical performance during sporting competitions.
As for the third hypothesis, the study's findings revealed statistically significant differences in the use of modern recovery programmes attributable to the coaches' experience and academic qualifications, with more experienced and better-qualified coaches relying more heavily on modern methods of sports recovery.
Based on the verification of the sub-hypotheses, the general hypothesis stating that:
"Modern training programmes contribute positively to improving the effectiveness of sports recovery among football players from the coaches' perspective" has been confirmed.

General conclusion: Through this study, which examined the impact of using modern training programmes on the effectiveness of sports recovery among football players from the coaches'

perspective, it was found that sports recovery has become an essential component of the modern training process, given its significant role in maintaining the physical and functional readiness of players.

The results also showed that the use of modern training programmes for sports recovery contributes effectively to reducing fatigue and muscle strain, minimising sports injuries, and improving the ability to recover physically after training loads and competitions.

The study also indicated that professional experience and academic background play a significant role in the extent to which coaches rely on modern recovery methods, reflecting the importance of academic and professional training in the development of the training process.

Consequently, it can be said that modern training programmes have become a scientific and practical necessity dictated by the demands of modern football, particularly in light of the significant developments taking place in the field of sports training.

Future hypotheses and suggestions:

Future hypotheses

There is a relationship between the use of modern recovery programmes and the improvement of technical and tactical performance among football players.

Modern sports technology contributes to the development of the effectiveness of sports recovery among players.

There are differences in the effectiveness of sports recovery programmes depending on the competitive level of sports clubs.

Psychological recovery, alongside physical recovery, influences the improvement of players' sporting performance.

Recommendations

The need to adopt modern sports recovery programmes within sports clubs.

Training courses for coaches in the field of sports rehabilitation should be intensified.

Provide modern facilities and equipment for sports recovery.

Recovery programmes should be integrated into the annual sports training plan.

Encouraging coaches to keep up to date with scientific developments in the field of sports training and recovery.

Paying attention to sports nutrition and sleep as essential components of the recovery process.

Conducting future studies on the impact of recovery programmes on technical and tactical performance in football.

Conclusion:

Given the significant developments in modern football, modern training programmes have become one of the most important scientific tools for improving sporting performance and maintaining players' physical readiness. Sports recovery is considered one of the fundamental pillars of the training process, due to its effective role in reducing fatigue and muscle strain and minimising sports injuries.

Through this study, it was concluded that the use of modern training programmes contributes positively to improving the effectiveness of sports recovery among football players; it also showed that coaches have become more aware of the importance of sports recovery in achieving physical stability and improving performance.

The study also highlighted the importance of professional experience and scientific training in developing the use of modern recovery methods within the training process, which underscores the need to focus on the continuous training of coaches and to keep pace with the latest scientific developments in the field of sports training.

Finally, the topic of sports recovery remains an important one that warrants further scientific study and research, given its direct link to the development of sporting performance and the achievement of success in modern football.

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