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High-intensity interval training and its role in improving swimmers' speed

-Middle class - from the coaches' point of view

Mohamed Zeghib *¹, Salim Bezziou ²

1/staps u.Biskra - Laboratory of studies and research in the sciences and techniques of physical activity, mohamed.zeghib@univ-biskra.dz

2/staps u. Biskra - Laboratory of studies and research in the sciences and techniques of physical activity, salim.bezziou@univ-biskra.dz

Abstract:

The research aims to reveal the role of high-intensity interval training in developing speed among swimmers from the coaches' point of view. We used the descriptive approach because it suits the nature of the research. The questionnaire was used as a tool for collecting data. The research sample consisted of 12 coaches. The research results revealed that the exercises used by the coaches It contributes to developing speed in swimmers

Keywords:High intensity interval training, speed, athletic trainer, swimming

**Corresponding author*

1. INTRODUCTION

Physical activity plays an important role in the lives of individuals, peoples and countries over time, the motives of people and societies to practice sports varied according to the needs of life and survival, and with the passage of time and years, the goal of sport has become the development of the human personality in terms of physical, mental and social, but sports activities differ in terms of the nature of performance, effort and the medium in which it is practiced, so we find each sports activity a certain specificity, in swimming there are special requirements and these requirements can be clearly observed in swimmers. People with an advanced level, as each activity has characteristics that distinguish it from others that are largely focused on certain physical abilities that depend on them with the relatively permanent change of motor performance resulting from the practice of this activity and the increasing ambition in swimming requires continuous work and effective training methods to develop the swimmer's physical fitness and skill. Many researches have revealed the importance of the science of sports training in raising the level of sports performance and the application of advanced scientific information in this field, which leads and without Doubt to raise the integrated performance.

There have been many methods of sports training that aim to develop the level of physical performance and skill, and coaches seek to choose the best types of appropriate training, and their application, and among these methods we find the method of interval training of high intensity, which is among the methods relied upon by coaches because of its importance as it is based on this training on replay in the exercise does not exceed 10 times with high intensity with giving intervals between them, and sports sources indicated that the use of high-intensity interval training. It is among the ways that contribute to the development of the speed characteristic.

2. Research problem:

Sports training aims mainly to try to reach the individual to the highest level of performance and achieve this goal is closely related to the upbringing and training of this individual and the development of various abilities, skills and knowledge of the individual athlete to reach the highest levels, as well as is a field of sports activity that works to raise the level of sports achievement when athlete high levels in the activity practiced (*Bishtaoui and Khoja, 2010, page 26*)



High-intensity interval training and its role in improving swimmers' speed

Among the sports that impose a training program that seeks to achieve the physical and skill development of the player and athlete is swimming, as it is one of the water sports activities in which the individual uses his body to move through the water medium, which is somewhat strange to him as a medium completely different from the medium in which he used to move "earth", the position he takes in the water is completely different from that in the ground in addition to the effects of water pressure on the swimmer's body, which may cause changes in him Physiological in the internal organs in addition to the psychological effects in this strange medium and its exposure to many emotions (*Hussein and Ahmed, 2000*)

Considering that swimming is the first basis of water sports and by not mastering it, the individual cannot practice any other activity in the water environment, which requires the coach to apply a training program to enable the swimmer to learn swimming and develop the physical and motor qualities that must be available in it, such as speed endurance, which is one of the most important qualities of the swimmer.

In view of this proposal, the researcher finds himself in front of a set of questions that open the way for research and scrutiny on this subject, and perhaps the general and pivotal problem in this study lies in: Does high-intensity interval training contribute to improving and developing the speed characteristic of swimmers class Awsat?

In order to facilitate research and reach accurate results, we have broken down the question into sub-questions:

- ☐ Does high-intensity interval training play a role in the development of speed characteristic in swimmers in the middle class?
- ☐ Does high-intensity interval training give a return during competitions by swimmers of the middle class?
- ☐ Do the exercises followed by the coach contribute to the development of speed characteristic of swimmers in the middle class?

3. The general hypothesis of the research:

High-intensity interval training contributes to improving and developing the speed characteristic of swimmers - middle class

3.1 Partial hypotheses:

- ☐ High-intensity interval training plays an important role in the development of speed trait in swimmers



☐ High-intensity interval training gives feedback during matches by swimmers

☐ The exercises adopted by the coach contribute to the development of speed characteristic of swimmers

4. Research Objectives:

☐ Showing that high-intensity interval training has a role in the development of speed characteristic of swimmers class middle.

☐ Find out if the training of high intensity gives a return during competitions by swimmers of the middle class.

☐ Knowing the extent to which the exercises used contribute to the development of speed characteristic

☐ Reveal how important speed is at this age

5. Importance of Research:

☐ High-intensity interval training helps and contributes to raising the level of performance of swimmers - middle -

☐ High-intensity interval training has a distinctive role in developing the swimmer's experience.

☐ High-intensity interval training is reliable in speed development.

☐ Give a clear and comprehensive picture of the role of high-intensity interval training in the development of the speed characteristic.

☐ Inform the reader of the scientific results of this research.

6. Definition of search terms:

1.6 Swimming: It is one of the multiple water activities in which the individual uses his body to move through the water medium, which is somewhat strange to him as a medium completely different from the medium in which he used to move on land). The position he takes in the water is completely different from the land, in addition to the effects of water pressure on the swimmer's body, which may cause physiological changes in the internal systems, in addition to the psychological effects in this strange medium and his exposure to many emotions (*Hussein and Ahmed, 2000, p. 01*).

2.6 Procedurally: It is the movement from point A to point B in the water medium by performing certain movements.

2.6 Sports training: It is all the processes that include building and developing the elements of physical fitness, learning the technique basic skills, technical tactical skills and developing mental aptitude within a scientific program



High-intensity interval training and its role in improving swimmers' speed

aimed at educational foundations in order to reach the athlete to the highest possible sports levels.

3.6 Procedurally: It is an educational process aimed at improving and developing physical, technical, tactical, psychological and other processes of the practiced sports activity.

4.6 High-intensity interval training: It is one of the methods of interval training, which is characterized by an increase in the intensity of the training load and its relative small size, through which the coach aims to develop some physical qualities, and this style is characterized by working under conditions of oxygen debt as a result of the use of high intensity, which may reach 90% of the maximum capabilities of the player (*Rabadi, 2004, page 216*)

5.6 Procedurally: It is a method of training aimed at developing and improving some physical qualities and is characterized by high intensity, low size and the number of repetitions interspersed with interval rest.

6.6 Speed: the ability of an individual to perform repetitive movements of types in the shortest possible time, whether accompanied by body transmission or non-transmission (*Bishtawi and Khoja, 2010, p. 342*)

7.6 Procedurally: The ability of an individual to perform a movement or group of movements in the shortest possible time.

7. Previous studies:

1.7 The first study: the study of Emad Eddin Khalfa, (2016/2017) The effect of high-intensity interval training on the final speed among half-long distance runners class (17/18), where the study aims to identify the extent of the impact of high-intensity interval training that is commensurate with improving the final speed, the sample consisted of 12 runners from the Sidi Hamla Youth Club, the experimental approach was followed in the study, and as study tools, the maximum speed test is 30 m, the speed endurance test is 300 m, and the completion of 800 m run, and the results of the study There are statistically significant differences between the experimental group and the control group in the post-test and in favor of the experiment.

2.7 Second study: Muayad Jassim Mohammed et al. (2004-2005) "The effect of using high-intensity interval training and repetitive training methods on the development of maximum strength of the muscles of the legs. The study aims to develop the maximum forces of the muscles of the legs using high-intensity interval training and repetitive training Find out which of the two methods used in training

is better and more appropriate in the development of maximum forces, the researchers have chosen the experimental approach, the research sample was selected from the students of the first stage (boys) in the College of Physical Education at the University of Baghdad for the academic year 2005-2004, and the number of 52 students, were selected by the deliberate method, the results of the effectiveness of each of the methods of interval training intensity and repetitive training in the development of The muscular strength of the muscles of the legs and the lack of significant difference between the two methods used, which allows the trainer the freedom to choose the type of training method used in the development of maximum strength of the muscles of the legs.

3.7 Third study: Aziz Karim and Ounas (2007) The effect of using high-intensity interval training for the development of speed prolongation and some physiological variables among football referees; The experimental approach was used, and the research community was represented for the international football referees of the Premier League in the Iraqi country for the year, which numbered 16 international referees, so that the study sample reached (8) referees, and as a research tool used the physical test 160 m prolonged speed and the results of the study found:

- The speed prolongation is a developed characteristic of the members of the research sample due to the scientifically based approach based on the physiological analysis of the rulers.

- At rest time, speed stretching exercises did not affect the pulse rate, i.e. anaerobic exercise did not affect cardiovascular activity and activity.

- Systolic and diastolic blood pressure are affected when using stretched speed development exercises in a standard way.

Methodological methods used in the study:

1. Methodology of the study:

No researcher can do without the study method for any topic, and can not reach honest and objective results unless it depends on a specific method, the method is the way or is a set of processes and steps followed by the individual researcher in order to achieve his research (Zerouati, 2002, page 23) The researcher has relied in this study on the use of the descriptive approach that tries to describe the phenomenon subject of research and interprets and evaluates in the hope of reaching useful generalizations increase the balance of knowledge.



High-intensity interval training and its role in improving swimmers' speed

2. Study sample: In order for the study to be acceptable and achievable, it is necessary to define the research community that we want to study and to clarify the measures used in order to limit this community, and the study community consists of a group of trainers, who number 12 trainers, according to the information obtained through the exploratory study.

The study population as defined by (*Obeidat and Kayed, 2001*); as all the vocabulary of the phenomenon that it studies, and thus the study population is all the individuals or things who are the subject of the study problem. Reaching generalizations of the phenomenon, where the researcher relied in this study on the method of comprehensive survey, due to the small size of the study population.

3- Fields of study:

3.1 Human Sphere

The sample of the testers targeted by the research was represented in the swimming coaches of the middle category, where their number reached 12 coaches distributed over the team of the Future Swimming Club of the Municipality of El Alame, the Youth Sports Club for Staifi Swimming, the Youth Club of the Future of Setif, the Police Union, and the Plateaus Swimming Club.

3.2 Spatial domain: Future Swimming Club Team of El Alamah Municipality, Youth Sports Club for Staifi Swimming, Future Setif Youth Club, Police Union, Al-Hadab Swimming Club.

3-3 Time Domain: The study period extended from the end of January until the end of the study for the theoretical side, as for the applied side, the researcher visited some training centers on 18/03/2023, in order to conduct an exploratory study, and then the researcher distributed the questionnaire form to the research sample and lasted from 05/04/2023 to 10/04/2023.

4. Exploratory study:

The exploratory study is the step that helps the researcher in taking an overview of the aspects of the field study of the research, where the researcher organizes field visits to the study to see his study or see some aspects of its field study. On this basis, the exploratory study is one of the most important stages that the researcher must carry out in order to ensure the suitability of the place of study for research and the validity of the tool used on the subject of research, and for this we have conducted an exploratory study at the level of different clubs and the aim

of this study was to collect information that has a link and trusts and direct variables of the study.

In this study, in which we dealt with "the role of high-intensity interval training in the development of speed characteristic among swimmers - middle class -", we conducted a written exploratory study (questionnaire) with 12 swimming coaches.

This study included several steps:

- ☐ Identify the clubs under study.
- ☐ Identify the study population
- ☐ Know the appropriateness of the questionnaire tool with the study population.
- ☐ Identify the field of application and conduct of this study.
- ☐ Know the difficulties that the researcher may face while conducting the study.

5. Psychometric properties (honesty and reliability) of the study tool:

The questionnaire was formulated in its initial form and must be subjected to the tests of honesty and reliability.

1.5 Validity of the questionnaire: The truthfulness of the study tool means that the questionnaire questions measure what they were developed to measure, and we have verified the validity of the questionnaire through; the apparent honesty of the questionnaire (the veracity of the arbitrators)

2.5 Stability of the scale: The stability of the questionnaire means that it gives the same result if the scale is redistributed more than once, under the same conditions and conditions, or in other words, that the stability of the scale means stability in the results of the questionnaire, and not to change significantly, if they were redistributed to the sample members, several times, during certain periods of time, and the stability of the study scale was verified, through the Cronbach alpha coefficient using the SPSS program, shows the Cronbach alpha coefficient to measure the stability of the scale.

A/ Stability: Cronbach's alpha:

The stability of this measure was calculated by internal consistency using the Cronbach alpha equation based on calculating the correlation rate between the questionnaire statements as a whole, which amounted to 0.49, and from it we can say that the stability value for this questionnaire is acceptable, as shown in the following table:



High-intensity interval training and its role in improving swimmers' speed

Table No. (01): Showing the stability of the personality trait scale by Cronbach's alpha

| <i>Questionnaire phrases as a whole</i> | <i>Alpha Cronbach</i> | <i>Number of phrases.</i> |
|---|-----------------------|---------------------------|
| | 0.49 | 14 |

B/ Honesty: Honesty of internal consistency: Correlation between the interlocutor and the overall score of the questionnaire as a whole:

The correlation between the total scores of the axes with the total score of the questionnaire as a whole was calculated, as it was also all statistically significant, as the value of the correlation of the total score of the first axis with the total score of the questionnaire as a whole was (0.88), while the correlation of the total score of the second axis with the total score of the questionnaire as a whole amounted to (0.60), while the correlation of the total score of the third axis with the total score of the questionnaire as a whole amounted to (0.49), and this means that the questionnaire is honest, as shown in the following table:

Table (02): Shows the matrix of correlations of the total scores of the axes with the total score of the scale as a whole

| <i>Themes and overall grade</i> | <i>Total Grade</i> |
|--|--------------------|
| <i>The first axis</i> | 0.885** |
| <i>The second axis</i> | 0.601* |
| <i>Third axis</i> | 0.648* |
| <i>Correlation D at alpha significance level (0.01)**</i> | |

2. Analysis and discussion of the results of the study:

Question 01: During the training sessions, do you rely on high-intensity interval training?

Purpose of the question: to look for the percentage of high-intensity interval training utilization.

Table (03): Percentage of high-intensity interval training use.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka2 Calculated</i> | <i>Ka2 Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|-----------------------|----------------------|---------------------------|--------------------------|
| <i>always</i> | 10 | 76.92% | 12.78 | 5.99 | 0.05 | 2 |
| <i>sometimes</i> | 2 | 23.8% | | | | |
| <i>rarely</i> | 0 | 0% | | | | |

| | | | | | | |
|--------------|----|------|--|--|--|--|
| <i>total</i> | 12 | 100% | | | | |
|--------------|----|------|--|--|--|--|

From the table, we note that the percentage of trainers' opinions based on high-intensity periodic training is always higher than sometimes while the percentage is rarely non-existent. From the table, we note that C_2 calculated at 12.78 is greater than K_A Scheduled 5.99 at the indicative level of 0.05 and freely 1, which indicates that there are statistically significant differences. Through the table we conclude that most trainers rely on high-intensity periodic training during training sessions.

Question 02 : During the training process do you give great importance to the development of speed ?

The purpose of the question : to know the importance that the trainer attaches to developing the quality of speed.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 12 | 3.84 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

Through the table, it shows us that the percentage of yes answers is 100% and the answer is no 0%. That is, the total number of trainers recognize that they give great importance to the development of speed. And through the table we note that Ka^2 calculated 12 is greater than the scheduled Ka^2 , This indicates the high incidence of statistically significant differences that the yes answer represents the opinion of the trainers through the table, we conclude that trainers during the training process attach great importance to the development of speed, that is, speed is an important quality that trainers seek to develop.

Question 03 What is the goal of using high-intensity period training?

The purpose of the question: to know the purpose of using high-intensity interval training.



High-intensity interval training and its role in improving swimmers' speed

Table No. 05 shows the distribution of trainers' ratios by objective of using high-intensity interval training.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|---------------------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>improve performance</i> | 2 | %15.4 | 7.53 | 5.99 | 0.05 | 2 |
| <i>Speed Development</i> | 7 | %61.5 | | | | |
| <i>Physical Development</i> | 3 | %23.1 | | | | |
| <i>total</i> | 12 | %100 | | | | |

From the table, we note that the percentage of responses to the development of physical qualities 61.5% greater than the percentage of responses of trainers improved performance level 15.4% as well as 23.1% of the use of this training is the development of physical abilities. The table shows us that Ka^2 calculated 7.53 greater than Ka^2 scheduled 5.99. This indicates statistical differences that the aim of the use of high-intensity period training is to develop physical qualities. We conclude that the majority of trainers recognize that the use of periodic training is highly intense to develop physical qualities, including speed.

Question 04: Rank these physical qualities which you see as highly important to swimmers?

The purpose of the question: to know the quality that the trainer relies on to develop according to priority.

Table No. (06): Explains trainers' opinions on the quality they see as important.

| <i>Proposals</i> | <i>level</i> | <i>repetition</i> |
|--------------------|--------------|-------------------|
| <i>endurance</i> | 1 | 12 |
| <i>speed</i> | 2 | 12 |
| <i>force</i> | 3 | 12 |
| <i>agility</i> | 4 | 12 |
| <i>flexibility</i> | 5 | 12 |

From the table we note that I rank as follows Endurance is the first physical quality that coaches see as highly important through 12 coaches and then speed second through the opinion of 12 coaches, while in the third position my girls power

class and in the fourth position agility with flexibility came fifth through the opinion of 12 coaches. Through the table we conclude that the majority of trainers see a very important physical quality that they give great importance and then comes speed and then strength, that is, swimming depends on endurance, speed and strength.

Question 05: When using a high-intensity period training method, are swimmers enthusiastic about this method?

The purpose of the question: the trainer realizes how excited swimmers are to work in a high-intensity period training method.

Table No. (07): Explains the opinion of sample members on the extent of swimmers' enthusiasm for work.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 13 | 3.84 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

According to us, the percentage of the answer yes is through table number and the answer is no 0%. That is, the total number of trainers acknowledges that swimmers are enthusiastic about the method of periodic training is high, and through the table we note that Ka^2 calculated 12 is greater than Ka^2 scheduled. Ka^2 scheduled at the indicator level of 0.05 and degree of liberty 1, this indicates the high presence of statistically significant differences that the yes answer represents the opinion of the trainers. During the table we conclude that the trainers acknowledge that the swimmers are excited about the method of high-intensity interval training during exercises, i.e. that this training helps swimmers to do exercises.

Second axis: Period training gives a return during competitions by swimmers

Question 6: What is the nature of your results?

The purpose of the question is to know the nature of the results obtained.

Table No. (08) shows trainers' answers about the nature of the results obtained.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|



High-intensity interval training and its role in improving swimmers' speed

| | | | | | | |
|-----------------|----|--------|------|------|------|---|
| <i>negative</i> | 0 | 0% | 7.65 | 5.99 | 0.05 | 2 |
| <i>medium</i> | 4 | %38.46 | | | | |
| <i>positive</i> | 8 | %61.54 | | | | |
| <i>total</i> | 12 | %100 | | | | |

From the table shown above, it is clear that a large proportion of trainers estimated at 61.54% consider the nature of the results obtained positive, while 38.46% finds that there are average results while not at negative results. From the results obtained, it is clear to us that most trainers acknowledge that the results obtained are positive and through the table we note that Ka^2 calculated 7.65 is greater than Ka^2 schedule 5.99. This indicates that there are statistically significant differences. We therefore conclude that most trainers consider the results obtained to be often positive.

Question 07: Are the exercises you rely on during training sessions applied in competitions?

The purpose of the question: To know the extent to which reliable exercises are applied in competitions.

Table No. (09) shows trainers' answers as to whether exercises are applied in competitions.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 13 | 3.84 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

It is clear from the table below that all trainers recognize that the exercises approved during the training sessions are fully applied in official competitions by 100%. Through the table, we note that the 12 Ka^2 is greater than the 3.84 Ka^2 schedule at the indicative level of 0.05 and freely, 1. This indicates that there are statistically significant differences.

Question 08: Do you consider that the method used during training affects swimmers and gives their return in competitions?

The purpose of the question: to know how important the coach's approach is and its impact on swimmers through good performance.

Table 10 shows trainers' answers as to whether the method used affects swimmers.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 13 | 4.83 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

Through the results recorded in table 14, it is clear to us that there are statistically significant differences in favour of the greater value. The calculated 13 c2 is greater than the value of the scheduled 3.84 Ka², at the indicative level of 0.05 and the degree of freedom 1. This indicates that trainers see the method used during training as positively affecting swimmers and giving a return during competitions; It concludes that the method used during training positively affects swimmers and gives their return in competitions.

Question 09: Where do you rely on your training exercises?

The purpose of the question: to know the source of the exercises performed in the training process.

Table 11 shows trainers' opinions on the source of reliance on exercises.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|---------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>Tribal gains</i> | 8 | %61.59 | 4.76 | 5.99 | 0.05 | 2 |
| <i>of books</i> | 2 | %15.39 | | | | |
| <i>Internet</i> | 2 | %23.08 | | | | |
| <i>total</i> | 12 | %100 | | | | |

From the table shown above, we note that 61.59% represents the percentage of tribal earnings and approved exercises books represent 15.39% and 23.08% represents the exercises relied on from the Internet. Through the table, we note that Ka² calculated 4.76 is smaller than Ka² scheduled 5.99. This indicates the lack of statistical function. It concludes that the most reliable exercises are tribal gains and a small proportion of books and the Internet.

Question 10: Are you keeping pace with developments in sports training?



High-intensity interval training and its role in improving swimmers' speed

The purpose of the question is to understand how the coach is keeping abreast of developments in sports training.

Table No. 12 shows the sample's opinions on the appropriateness of exercises.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 13 | 3.84 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

Through the table shown above, we show that the percentage of YES responses is 100% and the answer is NO is 00%. That is, the total number of trainers recognize that they are keeping up with developments in the field. From the table we note that the proportion of Ka^2 calculated at 4.76 is greater than Schedule 5.99. This indicates that there are individual differences of statistical significance to the fact that the answers yes represent the opinion of the trainers, and from the Table we conclude that there is a correlation with developments in the field of sports training by the trainers.

Question 11: Are the exercises you rely on compatible with available and available liquid?

The purpose of the question: To know and realize the appropriateness of available means with the quality of exercises.

Table 13 shows individuals' opinions on the appropriateness of exercises with available means.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 13 | 3.84 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

From the table, the percentage of yes answers is 100% and the answer is not 00%, i.e. the total number of trainers recognize that the exercises on which they rely is in line with the available means. Through the table, we note that the proportion of Ka^2 calculated 12 is greater than Ka^2 scheduled 3.84 at the level of 0.05 indication and to the degree of freedom 1 This is an indication of individual

differences of statistical significance that yes represents the opinion of the trainers. And therefore we conclude that the exercises on which the trainers rely are in line with the means available and available in the teams.

Question 12: Do you rely on the principle of diversity of intensity and size in the implementation of exercises?

The purpose of the question: to know how much the trainer controls the intensity and size of the exercise.

Table 14 shows the sample individuals' opinions on dependence on the principle of diversity in intensity and size.

| Proposals | Duplicate | Percentage | Ka ² Calculated | Ka ² Scheduled | Significance level | Degree of freedom |
|-----------|-----------|------------|-------------------------------|------------------------------|-----------------------|----------------------|
| yes | 12 | 100% | 13 | 3.84 | 0.05 | 1 |
| no | 0 | % 0 | | | | |
| total | 12 | %100 | | | | |

From the table shown above, the percentage of yes answers is 100% and the answer is less than 00%. The table also notes that the percentage of Ka² calculated 4.76 is greater than the scheduled Ka² 5.99 at the indicator level of 0.05 and the degree of freedom 1. This indicates that there are individual differences of statistical significance. Through the table, we conclude that all trainers rely on the principle of diversity, showing the intensity and magnitude of exercises.

Question 13: Does the training method used to perform exercises give their feedback in competitions according to your opinion how you see them

The purpose of the question: to know the training method adopted in the implementation of exercises is given its feedback in competitions

Table 15 shows trainers' answers as to whether the approved training is appropriate in giving feedback.

| Proposals | Duplicate | Percentage | Ka ² Calculated | Ka ² Scheduled | Significance level | Degree of freedom |
|------------------------|-----------|------------|-------------------------------|------------------------------|-----------------------|----------------------|
| inappropriate | 0 | %0 | 12.78 | 5.99 | 0.05 | 2 |
| Relatively suitable | 2 | %23.08 | | | | |
| well suited | 12 | %76.92 | | | | |
| total | 12 | %100 | | | | |

From the table shown above, it is clear to us that a large proportion of coaches, estimated at 76.92%, consider the method of training relied upon to be well suited and give its return in games, while a 23.08% proportion of coaches consider it relatively appropriate. Through the table, we also find that the calculated Ka² 12.78

High-intensity interval training and its role in improving swimmers' speed

greater than the scheduled Ka^2 5.99 which is indicative of the existence of statistically significant differences; We conclude from the foregoing that a large number of trainers consider that the training method adopted in the conduct of exercises is perfectly appropriate and gives its return in competitions.

Question 14: From interview to interview Do you see that there has been an improvement in swimmers' speed?

The purpose of the question: To know how much improvement and evolution there are competitions.

Table 16 shows trainers' answers as to whether there has been an improvement from competition to competition in speed.

| <i>Proposals</i> | <i>Duplicate</i> | <i>Percentage</i> | <i>Ka² Calculated</i> | <i>Ka² Scheduled</i> | <i>Significance level</i> | <i>Degree of freedom</i> |
|------------------|------------------|-------------------|--------------------------------------|-------------------------------------|-------------------------------|------------------------------|
| <i>yes</i> | 12 | 100% | 13 | 3.84 | 0.05 | 1 |
| <i>no</i> | 0 | % 0 | | | | |
| <i>total</i> | 12 | %100 | | | | |

Through the results recorded in table 13, it is clear to us that there are statistically significant differences in favour of the greater value: Ka^2 , calculated at 13, is greater than Ka^2 , calculated at 3.84, at the indicative level of 0.05 and the degree of freedom of 1. This indicates that trainers acknowledge that there is an improvement and development in the speed of swimmers from one interview to another, justified by the approved training method as well as well as the degree of absorption of swimmers' From the foregoing, we conclude that there has been an improvement in swimmers' speed from one interview to another through the insight of trainers.

3. Presentation, analysis and discussion of hypotheses:

1.3 Presentation, analysis and discussion of the first hypothesis:

After statistical processing, we found that there were statistically significant differences. and, in the light of these findings, we find that the majority of trainers are unanimous in their reliance on always high-intensity interval training during training sessions, We also found that while trainers rely on high intensity when used in training, this is what Mohanad Hussein Al-Bashtawi pointed out. Sports training is done in this way with high intensity and may reach the maximum) And swimmers are enthusiastic about this method and easy to do the exercises offered to them as

the response to understanding and implementation is quick when using this type of training, so it can be said that the first partial hypothesis has been validated.

2.3 Presentation, analysis and discussion of the second hypothesis:

In order to ascertain the second hypothesis in which we assume that high-intensity interval training gives a return during matches by swimmers. Through the results obtained, and after statistical processing, there is a statistical indication. And we found most of the coaches that the results they get during the games are average and positive through the results achieved in the matches and the method of training plays a role in achieving good and positive results and positively affects the swimmers and gives its feedback, This training also contributes to improving swimmers' speed and consider that exercises during training sessions are applied during competitions, There has also been an improvement in swimmers' speed from one interview to another, and through this the second hypothesis has been achieved.

3.3 Presentation, analysis and discussion of the third hypothesis:

The third hypothesis states that trainer's exercises contribute to the development of swimmers' speed status. Through the results obtained and after statistical processing, there are statistically significant differences and we have reached a Training of Trainers ", recognized that the exercises on which they rely and which they apply in training classes are appropriate in the development of speed, These exercises are carried out and applied by tribal gains as well as books and the Internet. Trainers keep abreast of developments in the field of training by knowing the modern exercises and their contribution to speed development. and the use and implementation of such exercises, as the exercises are commensurate with available and available means and, through this, the third hypothesis has been validated.

4.3 Presentation, analysis and discussion of the general premise:

Through the table, we found that partial hypotheses have been realized. This shows that the general hypothesis that revolves around high-intensity interval training contributes to the development of swimmers' speed from the point of view of trainers has been achieved.

General conclusion:

In the light of the findings of this study and through the hypotheses presented, you can conclude:

□ Swimmers' speed rated mid-evolution and increased by high-intensity interval training through the perception of trainers.



High-intensity interval training and its role in improving swimmers' speed

□ We also concluded that high-intensity period training plays a role in developing swimmers' speed, through results obtained in theoretical study and applied aspect.

□ We also found that high-intensity interval training yields a return during competitions by swimmers through results achieved, exercises applied and existing improvements.

□ We have also concluded that trainers' exercises contribute to the development of swimmers' speed through rationed exercises, their sources and available means.

□ The theoretical study also demonstrated that the use of high-intensity interval training improves and develops speed and achieves positive results. In addition, the middle category is skeletal, maximized, optimized speed in adolescence and then maintained the same level until the age of 30, and then began to decline. Through all these results, we have validated the hypothesis that high-intensity interval training contributes to the development of speed at the trained.

Suggestions and recommendations:

Through the results obtained through our study, we will try to make some suggestions that will benefit trainers.

□ More attention to the method of periodic training is high intensity and its use in all different sports.

□ Taking care of the trainer and giving him value by holding forums, seminars and patrols of interest more to develop the quality of speed in the swimmers as they become the ones that resolve the results.

□ Attention to the coach's formative aspect by highlighting the importance of training.

□ Use high-intensity interval training exercises to develop physical qualities, including speed.

□ When using high-intensity interval training, you should select exercises that are commensurate with the quality to be improved and developed.

□ Conduct similar studies in other sports games and different age levels.

□ Emphasize the use of high-intensity interval training for its importance and role in the process of developing different physical traits.

□ Opening seasonal training patrols for trainers to take advantage of everything new, as well as to exchange experiences for swimming.

Conclusion:

Sports training has become a science in itself. Training derives its laws from certain sciences and knowledge. It seeks to form a systematic psychological, physical and social composition of the individual. The athlete has gone through several stages in swimming. The aim is to constantly search for the best methods and curricula that will enhance physical, psychological and planning capabilities by preparing them at all levels for various competitions and obtaining the best results. Understanding and assimilation are easy.

Through this study, we found that high-intensity interval training contributes to the development of swimmers' speed from the point of view of trainers.

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