

## **The effect of "S.A.Q" training on physical efficiency and speed of foot work of the first- class boxers**

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### **Introduction and research problem:**

Sports training is one of the modern sciences that has made great progress through its connection with other sciences and benefiting from its theories, laws and results of its research.

The nature of the structure of the human body allows it to make changes in its organs and organs if it is subjected to an effective physical effort. These changes aim to raise the efficiency of the body to meet this effort.

S.A.Q training is a modern training system that produces integrated effects for many physical abilities within a single training program.

Remco Polman, et al. (2009) believes that S.A.Q training is an integrated training system that aims to improve acceleration, eye-hand coordination, explosive ability, and response speed.

S.A.Q training has become one of the most popular training recently in the sports field, and it has proven its effectiveness in improving the physical and motor abilities of players in many sports events.

Velmurugan & Palanisamy (2012) adds that S.A.Q training is one of the modern forms of training in the sports field, and that the studies that dealt with its physical and

physiological effects on young and adult players differed in their results due to the different method of dealing with them in the sports field.

Filmorgan & Palanisamy (2012) add that S.A.Q training is one of the modern forms of training in the sports field, and that the studies that dealt with its physical and physiological effects on young and adult players differed in their results due to the different method of dealing with them in the sports field.

The boxer needs muscular ability, agility and balance greatly when making quick defensive and offensive movements when moving to deliver punches during the match.

Both experts and specialists believe that the speed of foot work and the ability to estimate distances while shooting punches plays an important role in paying punches on the ring, and the exchange of foot movements between defense and attack makes it easier for the boxer to move on the ring with strength, speed, balance and agility to maintain a position of readiness during the match.

The researcher believes that the boxer faces during the match on the ring rapidly changing situations and he must be characterized by physical efficiency and the ability to control his defensive and offensive movements.

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This is confirmed by "Abdul Rahman Seif" (2011) (6) that the results of matches are among the most important indicators that reflect the level of sporting achievement for players in reaching higher levels, as the sport of boxing is characterized by a sudden rapid change during play and when punching or avoiding punches in attack and defense, Which requires quick and accurate responses that require a high level of speed of movement of the two legs.

The researcher believes that the speed and surprise of the opponent with the attack, the speed of moving to the different punch modes, and linking the defense to the counter-attack in a lightning manner, faster than the opponent, is one of the most important factors that help the boxer to win matches.

In light of the above, the results of many previous scientific studies and research have agreed on the importance of using "S.A.Q" training in developing physical competence and improving skill performance in some different sports activities, Among that, the S.A.Q training is considered one of the modern training methods in the field of sports training, such as the study of Mahmoud Okasha (2020 AD) (11), "Marwa Hussein" (2019 AD) (13), "Laila Jamal" (2018 AD) (9), and Medhat Shawqi, Muhammad Hammam" (2017) (12), "Mohammed Hosni" (2016 AD) (10), Akhil Mehrotra, et al (15) (2011) Remco Polman et al, (2009) .

The researcher believes that the speed of the good foot work of the two men is one of the important basic

requirements for the boxer to win the match, with the presence of some other factors that cause success in the match, such as the high physical efficiency of the boxer.

Also, the speed of foot work has an effective impact on the results of matches, as shown by the results of the study of "Sami Moheb" (2005 AD) (4), "El-Sayed Shabib" (2018 AD) (3) In the event that the boxer is unable to continue to move to attack and defend effectively Physical fitness is lost during the match.

Through the researcher's work as a trainer for the college and university team for boxing, attending university tournaments, and reviewing many scientific references and previous studies specialized in the field of training in general and boxing training in particular, such as (1, 3, 4, 5, 6, 7, 8, 9, 10 , 11, 12) It became clear to him, to his knowledge, that there are few studies that used S.A.Q training to improve the physical efficiency and speed of the foot work , which prompted the researcher to conduct a study aimed at developing the S.A.Q training for the research sample in order to raise the physical efficiency and speed of the foot work of the first class boxers. And the impact of this on the results of the matches.

#### **research aims.**

#### **The research aims to study the effect of "S.A.Q" training on:**

- 1- The physical competence of the first-class boxers.
- 2- The speed of the foot work of the first class.

### **Research hypotheses.**

1- There are statistically significant differences between the mean scores of the two measurements, the tribal and remote measures, in the physical efficiency of the research sample in favor of the post-measurement.

2- There are statistically significant differences between the mean scores of the pre and post measurements in the speed of foot work in the research sample in favor of the post measurement.

### **Research procedures:**

#### **Research Methodology :**

The researcher used the experimental method using the "experimental design for one group through the pre and post measurements" due to its relevance to the nature and objectives of the research.

#### **research community :-**

The research community represented in the boxers of the first class registered in the records of the Egyptian Boxing Federation, "Assiut Branch" for boxing for the sports season 2020/2021, and their number (20) boxers attached. (2).

#### **The research sample :-**

The main research sample was chosen in a deliberate way from the boxers of the first degree registered in the Egyptian Boxing Federation "Assiut Branch", and they are (10) boxers of different weights, and (10) boxers for the pilot sample. Table No. (1) shows a description of the research sample members.

The researcher made the measurements of homogeneity in order to find the coefficient of skewness and

flatness for the members of the basic research sample before starting the application of the proposed training program, in order to indicate the homogeneity of the members of the basic research sample to ensure moderation in the research variables, the basic, which may affect the results of the research. The value of the skew coefficient in the variables under consideration ranged between (0.42 - 0.90), which is less than twice the standard error of the skew coefficient (significance limit), and the value of the flattening coefficient ranged between (-1.03,-1.73). which is less than twice the standard error of the flatness coefficient (significance limit), which indicates the moderation of the sample distribution in the variables (age, height, weight, training age), which indicates the homogeneity of the sample.

#### **Data collection tools:**

##### **Used equipment's:**

- Boxers data registration form: (name - age - height - weight - training age), **Attachment. (3)**
- Expert opinion survey form on determining the axes and time periods for S.A.Q training. **Attachment (4)**
- Expert opinion survey form on determining the most appropriate S.A.Q training. **Attachment(5)**
- Physical aptitude test (for Harvard). **Attachment (6/A)**
- Physical competency registration form (for Harvard) (designed by the researcher). **Attachment (6/b)**
- The test of the speed of the movements of the two legs is **Attachment (7/a).**
- A form for recording the speed of the foot work (designed by the researcher). **Attachment (7/b).**

**Devices used:**

- Medical scale to measure weight in kilograms.
- A rheostat for measuring height (centimeters).
- Stopwatch for measuring time.
- Buller watches. – Jump box.
- Legal gloves. - baffles. - repression.

**Scientific transactions used in the research:**

The researcher conducted scientific transactions on a sample of the research community (exploratory sample), which did not participate in the basic experiment, and it consisted of (10) boxers, and the physical efficiency and speed of the foot work were measured.

**honesty:**

The researcher used the validity of the differentiation, by making measurements on a distinct sample of the boxers of the military establishment and the Nasser Youth Center, and it consisted of (5) boxers. Calculating the significance of the differences between the distinct and non-distinguished groups to verify the validity of the physical efficiency and the speed of the foot work., And it was confirmed that there were statistically significant differences at the level of significance of 0.05 between the privileged group and the undistinguished group in favor of the privileged group through the tabular "t" value at the level (0.05) = 1.86, which is less than the calculated "t" value,

which indicates the validity of the variables. under consideration.

**Stability:**

The researcher calculated the stability of the tests on the method of applying the test and re-applying it ((Test - Re test 15/2/2021 to 28/2/2021 on a sample of (5) boxers from the research community and outside the main research sample, who are boxers at the Muslim Youth Club and at Nasser Youth Center and the military institution in assiut, and the stability of the physical and skill variables was confirmed through \* the tabular "r" value at the level (0.05) = 0.805 and that the correlation coefficients between the first and second application were statistically significant at the level (0.05), which indicates the stability of physical efficiency and physical skill tests. (under consideration).

After conducting the scientific transactions, the researcher performed homogeneity between the basic research variables "physical efficiency - and the speed of the foot work." (significance limit), and the value of the flatness coefficient ranged between (0.18 - 0.98), which is less than twice the standard error of the flatness coefficient (significance limit), which indicates the moderation of the sample distribution in the basic variables (physical efficiency - speed The foot work ), which indicates the homogeneity of the sample.

**Search steps:**

The researcher carried out the "S.A.Q" training (on the basic sample of the research) as follows:

**A- Conducting pre-measurements.**

The researcher carried out the tribal measurements of the variables under study on Monday, 1/3/2021, which included the measurement of:

- ❖ Physical efficiency .
- ❖ the speed of foot work of the first-class boxers.

**B- Implementation of the proposed training program:**

The researcher applied the proposed training program in the period from Tuesday, 2/3/2021 to Sunday 25/4/2021 (for a period of eight weeks, with three training units per week).

**The general framework of the proposed training program:****Steps to prepare the proposed training program:**

The researcher has developed special for "S.A.Q" training for first-class boxers, through:

- ❖ Reference survey of Arab and foreign references, which are concerned with the foundations of "S.A.Q" training.
- ❖ Examining the research and studies that dealt with the "S.A.Q" training.

**The objectives of the proposed training program.**

The proposed training program using "S.A.Q" training aims to try to:

- 1- Increasing the physical efficiency of first-class boxers.
- 2- Increasing the speed of the foot work in first-class boxers.

**Foundations for the development of the proposed training program.**

The researcher conducted a survey study of many scientific sources

as well as special studies that include "SAQ" training, and a set of training were identified and designed. In this form, the researcher extracted a set of "SAQ" training according to the opinions of experts. **Attachment (8)**

**The researcher relied, when designing "S.A.Q" training , on the following bases:**

- 1- Observe the goal of "S.A.Q" training.
- 2- Taking into account the individual differences between boxers.
- 3- Providing technical capabilities and designing tools and auxiliary devices.
- 4- Taking into account the principle of gradual pregnancy from easy to difficult during the application of the training.

After the expert opinion poll, the researcher reached the number of repetitions and the percentage of the opinions of the experts. About the topics of the proposed training program. Where the number of iterations was limited between (9) to (10) iterations, and the researcher satisfied with the percentage of the variables between (90%) or more of the experts' opinions. **Attachment (1).**

The time period for the proposed training program was determined for a number of (8) weeks, starting on Tuesday, corresponding to 2/3/2021 and ending on Sunday 25/4/2021, and three units per week. The time of "S.A.Q" training ranged between (30-40 s) and the method of training High and low intensity, and "S.A.Q" training were applied in the main part.

**Performing dimensional measurements:**

It was taken into account that all measurements are carried out in the manner that was done in the tribal measurement.

The researcher made the dimensional measurements of the variables under study, on Monday, 26/4/2021, which included the measurement of:

- ❖ Physical efficiency .
- ❖ the speed of the foot work of the first-class boxers.

**Statistical treatments used:**

The researcher used the following statistical method:

(average - Mediator - standard deviation. - coefficient of skewness'-test for the significance of statistical differences. - Coefficient of improvement ratios for the averages.

**Presentation and discussion of the results:**

(First): Show the results:

Presentation of the results of the first hypothesis:

\* Physical efficiency "under investigation".

**Table (1)**

**The significance of the differences between the average scores and the percentage of improvement in the tribal and dimensional measurements in the physical efficiency of the research sample n = (10)**

improvement rate%	Calculate d (t) value	Differences between averages	After measurement		Befor measurement		measruing unit	Measurements
			±S	M	±S	M		
16.79%	15.74	6.84	0.65	47.58	1.12	40.74	point	physical efficiency

\* Tabular value (T) at the level (0.05) = 1.83

It is clear from Table (3) and that there are statistically significant differences between the mean scores of the tribal and remote measurements in the physical efficiency of the research sample in favor of the post-measurement, where the calculated (T) value reached (15.74%) and the percentage of improvement (16.79%) Which indicates that the calculated (t)

value is greater than the tabular (t) value at the (0.05) level and the percentage of improvement in favor of the dimensional measurement in the research sample.

**Presentation of the results of the second hypothesis:**

The speed of the movements of the two men "under investigation".

**Table (2)**  
**The significance of the statistical differences and the percentage of change**  
**between the averages of the tribal and dimensional measurements in the speed of**  
**movement of the two men in the research sample n = (10)**

improvement rate%	Calculated (t) value	Differences between averages	After measurement		Befor measurement		measruing unit	القياسات
			±S	M	±S	M		
48.06%	12.62	5.08	0.50	5.49	0.85	10.57	time	Stepping zigzag between the cones from a standby.
45.19%	17.10	4.98	0.54	6.04	0.62	11.02	time	Left straight punch with zigzag movement between cones.
40.81%	15.09	4.71	0.76	6.83	0.70	11.54	time	Right straight punch with zigzag movement between cones.
33.52%	29.67	4.11	0.52	7.15	0.44	12.26	time	Left and right straight punch with zigzag movement between the cones.
53.49%	23.67	9.2	1.07	26.40	0.63	17.20	point	Lateral step (10 s).

The speed of the movement of the legs

\* Tabular value (T) at the level (0.05) = 1.83

Table No. (4) and Figure No. (2) show that there are statistically significant differences between the mean scores of the tribal and dimensional measurements in favor of the dimensional measurement in the speed of foot work for the research sample. Where the value of (t) calculated in the zigzag step between the cones was from the standby. (12.62), the percentage change (48.06%), and in the shot of the left

straight punch with the zigzag movement between the cones. The percentage change (48.06%), and in the left straight punch with zigzag movement between the cones. (17.10), and the percentage of change (45.19%), and in shooting the right straight punch with the zigzag movement between the cones. (15.09) and the percentage change (40.81%), and in the left and right straight punch with zigzag movement between the

cones. (29.67), and the percentage change (33.52%). And in the side step (10 s). (23.67) and the percentage of change (53.49%), which indicates that the calculated (t) value is greater than the tabular (t) value at the level (0.05) and the percentage change in favor of the dimensional measurement in the research sample.

(Second) Discussing the results:

### **Discussing the results of the first hypothesis.**

In order to verify the objectives of the research through the validity of the hypotheses, the researcher compared the results of the differences between the mean scores of the tribal and dimensional measurements in the measurements of physical efficiency and the variable "physical skill" in favor of the dimensional measurements of the sample under research, if any, and to find out the significance of the statistical differences between the averages of the tribal and dimensional measurements using the statistical program. SPSS".

Through that, the researcher discussed the results. To verify the validity of the first hypothesis, which states that "there are statistically significant differences between the mean scores of the two pre and post measurements in physical competence in favor of the post measurement."

It is clear from Table (3) and Figure (1) that there are statistically significant differences between the mean scores of the two measurements,

the pre and post measurements, at the 0.05 level of physical competence in favor of the post measurement.

where the calculated (T) value in physical efficiency was (15.74%) and the percentage of improvement (16.79%), which indicates that the calculated (T) value is greater than the tabular (T) value at the level (0.05) and the percentage of improvement is in favor of the dimensional measurement I have a sample search.

This agreed with the study of Mahmoud Okasha (2020) (11), "Marwa Hussein" (2019) (13) and "Laila Jamal" (2018 AD) (9) that the SAQ training had an effective impact on developing and raising Physical fitness of the players.

The researcher explains that, "S.A.Q" training are considered one of the most important modern training that lead to raising the physical efficiency that guarantees the element of strength, speed and balance during the performance of its test for boxers. Remco Polman, et al. (2009) agree that S.A.Q training is an integrated training system that aims to improve acceleration, eye-hand coordination, explosive ability, and response speed. (19:494)

This is confirmed by the results of the study of Mahmoud Okasha (2020) (11), "Marwa Hussein" (2019) (13), "Laila Jamal" (2018) (9), and Medhat Shawqi, Muhammad Hammam (2017) (12), "Mohamed Hosni" (2016) (10) states that SAQ training lead to

improving balance, strength, speed and agility during skill performance in matches, which leads to a positive result for players.

Based on the foregoing results of Table (3) and Figure (1), the researcher concludes that the use of "S.A.Q" training within the program led to an improvement in physical efficiency, and these results verify the validity of the first hypothesis of the research, which states that.

**There are statistically significant differences between the mean scores of the two pre and post measurements in physical competence in favor of the post measurement.**

## **2- Discussing the results of the second hypothesis.**

Table No. (4) and Figure No. (2) show that there are statistically significant differences between the mean scores of the tribal and dimensional measurements in favor of the dimensional measurement in the speed of the two men's movements for the research sample. Where the value of (T) calculated in the zigzag step between the cones was from the standby. (12.62), the percentage change (48.06%), and in the shot of the left straight punch with the zigzag movement between the cones. (17.10), and the percentage of change (45.19%), and in shooting the right straight punch with the zigzag movement between the cones. (15.09) and the percentage of change

(40.81%), and in the left and right straight punch with the zigzag movement between the cones. (29.67), and the percentage change (33.52%). And in the side step (10 s). (23.67) and the percentage of change (53.49%), which indicates that the calculated (t) value is greater than the tabular (t) value at the level (0.05) and the percentage change in favor of the dimensional measurement in the research sample.

The researcher believes that this improvement in the speed of the two men's movements may be due to the improvement in the training status of the boxers as a result of their subjection to the training program using "S.A.Q" training , which led to an increase in the speed of foot work during the match.

This is consistent with what was stated by Sami Moheb (2005) (4), and Mr. Shabib (2018) (3) that the speed of foot work was positively affected as a result of "SAQ" training, which is a modern training system that results in integrated effects for many Among the physical abilities such as transitional speed, agility and motor speed within the same training program, and that there is a positive correlation between speed, agility and speed of movement of the legs of boxers, where the motor speed of the foot work with the improvement of their agility.

The results of the research also agreed with the results of the study of Mahmoud Okasha (2020) (11),

“Marwa Hussein” (2019) (13) and “Laila Jamal” (2018) (9), which indicated that “SAQ” training led to an improvement Physical and skill abilities in gymnastics, karate and strength games.

This is confirmed by "Amr Saber Hamza, Naglaa Al-Badri Nour Al-Din, Badia Ali Abdel-Sami" that S.A.Q training have become one of the most commonly used training recently in the sports field, and have proven their effectiveness in improving the physical and motor abilities of players in many sports events. (8:9)

Based on the foregoing results of Table (4) and Figure (2), the researcher concludes that the use of "S.A.Q" training within the program led to an increase in the speed of the foot work

**Thus, the validity of the second hypothesis, which states that:**

There are statistically significant differences between the mean scores of the two pre and post measurements in the speed of foot work in favor of the post measurement.

**Conclusions and Recommendations:**

First: Conclusions:-

Within the limits of the objectives, hypotheses and procedures of the research, presentation and discussion of the results, the researcher reached the following:

- The proposed "S.A.Q" training have a positive effect on improving and raising physical efficiency, which led to an improvement in the element of

speed, agility and skillful performance of first-class boxers.

- The proposed "S.A.Q" training have a positive and effective effect on improving and increasing the speed of the two legs' movements, which led to an improvement in the element of speed, agility and skillful performance of first-class boxers.

**Second: Recommendations:**

- The necessity of using the proposed "S.A.Q" training because of their positive impact on improving and raising physical efficiency, which led to an improvement in speed, agility and skillful performance of boxers.

- The necessity of using "S.A.Q" training for first-class boxers because of its positive and effective impact on improving and increasing the speed of the foot work during matches.

- Interest in developing training programs using "S.A.Q" training according to the scientific bases of the different age levels for boxing players.

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