

The Effect Of A Proposed Training Program Using Weights To Improve The Muscular Strength Of The Lower Part And The Back Kick Skill Of Jumping For Kickboxing Players

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ABSTRACT

This study aimed at identifying The effect of a proposed training program using weights to improve the muscular strength of the lower part and the back kick skill of jumping for kickboxing players. The sample of the study consisted of (20) players who were chosen by purposive sample method from Tiger gym for Self-Defense, The Semi-Experimental technique was used as a research design. The sample of the study was divided into two groups each one had 10 players, control group that applies to the Conventional gym Program, where the Experimental group that applies the suggested Training Program. After the data collection process, descriptive statistics such as means and standard deviation, coefficient of variation, Pearson correlation coefficient, t-test and One Way MANCOVA and ANCOVA.

The results of the study showed that the proposed Training Program exemplifies significant differences in the selected some variables (Explosive force of the lower part , Leg strength) , and skill performance among The sample of the study, where the experimental group improved better than the control group, The researchers recommends to adopt the suggested Training Program by increasing the training units to improve the performance of players.

Introduction:

Our contemporary days have witnessed significant advancements in many various and diverse aspects of life, with sports being one of the most important among them. The remarkable achievements in numerous sports events and contests demonstrate the scope of progress in the sports field in general. In fact, research in the fields of modern scientific applied sports, training science, rehabilitation, measurement and diagnosis, applied sports psychology, sports physiology, learning and

motor control, sports management sciences, and other fields has had a tangible impact on this development in general, and kickboxing is one of the sports that has been impacted by this development thanks to the tireless efforts of the concerned authorities, including academics, researchers, and others, It helped to promote and mature this sport till it got to where it is now at the global, continental, and even local levels.

The science of current sports training, in conjunction with other sports sciences and scientific research findings, is the source of all

success and excellence in sports forums and competitions. It is the comprehensive preparation of an individual to achieve the highest level of sport in the type of sporting activity in which he specializes that his abilities and aptitudes allow, and for this reason it seeks the comprehensive development of all physical and psychological forces as a single unit with the goal of adapting the sporting individual in a way that allows him to achieve them in an appropriate manner. (Awwad, 2019).

When a player has a wide range of physical abilities, he increases his chances of being superior in terms of skill in general. Abu Al-Ula (2012) stated that the current era is marked by a significant increase in the popularity of sports in general, especially competitiveness, and the spread of its spread at the global level, as evidenced by the increase in the number of world championships and the number of countries participating in them, which connotes that the current era is characterized by a significant achievements of the players and exaggerating the number of global numbers that are achieved.

Physical abilities play an effective role at the level of sports performance, whether technical or tactical in the training process or during sports competitions, because the process of sports training based on training physical abilities is established through training the player on basic skills and related tactical aspects and thus works to help in Performing the technique correctly and more effectively in the training process and competitions to reach the desired goal, which is to achieve the achievement that the player seeks (Keshav, Amrinder, Harmandeep & Kamal, 2014).

Riyad (2012) indicated that physical abilities with all their multiple elements are the cornerstone for developing and developing motor skills for sports performance and thus ensuring access to higher levels, as this agrees with what (Hamdi, 2009) indicated, that physical abilities are The most important components on which the motor skills are based and which help in their acquisition and success in performing them well, and this was also confirmed by (Ibrahim, 2004) that the components of physical abilities are a prerequisite for the achievement process in the sports field.

Kickboxing is a martial arts sport that came as a result of the development of some martial arts. The ultimate goal of establishing this game is to come up with a more effective and exciting method than other methods in martial arts, the word (KICK BOXING) is divided into two parts: (KICK), which means kicking with a man, and (BOXING), which means punching by hand. Thus, the end result is the use of kicking and punching in directing blows while playing with the opponent within harmonious movements that make this game a fine art that gives it a distinctive character from the rest of the other combat games (Al-Omar, 2016).

Kickboxing is an excellent combat sport, in which hands and feet are used in the punching and kicking process, so when the athlete practicing this game uses a large number of movements and skills, the physiological and physical requirements are great, so kickboxing is a high-intensity sport that requires complex skills and tactical excellence to succeed in the training process and competitions (slimani et al, 2017) Kickboxing is a sport classified as a fighting game sport. It represents a mixture of combat games combined in one game. These sports are karate, taekwondo and boxing combined with each other, where the player can practice this sport using the upper and lower extremities to make points of contact with the competitor within The physical, psychological and skill capabilities that the player enjoys in playing It is necessary for the kickboxing player to possess a lot of physical and harmonious abilities that distinguish him from other sports, whether represented by muscular strength, speed, agility, flexibility and other elements, so the final result confirms However, kickboxing is not only a sport in which a person defends himself to ward off dangers, but rather it is a new way to enhance his concept of They include various physical, coordination and skill abilities, whether they are related to health or achievement (Ouergui, Hssin, Franchini, Gmada and Bouhlel, 2013).

The safety of functional organs and their ability to work and develop during the training period defines and characterizes the development of anthropometric variables, physical abilities, and skill performance of kickboxing players, and what defines and characterizes the development of

anthropometric variables, physical abilities, and skill performance of kickboxing players is the process of kickboxing training, whether for the physical or skill side. Because kickboxing is a distinct combat sport, it necessitates a significant amount of effort in the training process, which must be well-organized and based on modern foundations, strategies, methods, and tools in order to obtain good technique and tactics during advanced training and battle (Al-Mashrafawi, 2012).

As a result, the researchers believe that the process of developing this sport is largely dependent on training programs developed by sports specialists who take into account all of the game's requirements, and that the process of training to improve physical abilities, as well as the development of skill performance, is critical in order to achieve the main goal of training, which is to get the player to the highest level possible.

Problem of the Study

The researchers' knowledge of previous study in this field, as well as their extensive experience in the professional preparation of kickboxing players and coaches, given that one of the researchers was a former member of the Jordanian national team and a champion of the Hashemite Kingdom of Jordan for several years, holds a (Black Belt Degree 4 Dan), and has been a trainer in this sport for more than five years, the second researcher is an expert in preparing sports coaches and a professor of sports training at Hashemite University's Faculty of Physical Education, the problem of the study arose when the researchers noticed a lack of research based on their knowledge and experience, as well as the fact that most coaches focus their training on basic skills and player battles solely for the purpose of improving performance, as well as the lack of use of modern sports methods and means in training this sport to develop physical abilities and skillful performance. As the first researcher formerly was a player and was trained by more than seven coaches at various levels of local and international classifications (A, B, & C), including training for the Jordanian national team, he noticed that modern means, methods, and methods were not employed, in addition to the lack of entry of players into the weight training hall and the use of resistances in the

training process. The first researcher also participated as a coach in the World Club Championship that was held in Jordan in March (2019), where he noticed the superiority of European players over Arab players in terms of physical and skill in fights. On the sidelines of the tournament, an international kickboxing training course was held and the researcher participated in it, and its lecturer was the head of the international trainers (DAIMI AKIN), who focused on the use of weights and resistances in the training process to develop all the elements of strength on which the sport of kickboxing is based, so the researchers believe that if the interest in developing all the elements of the game and its requirements is taken into account in the training process, it will be reflected positively on the fights, as the largest number of points are harvested in it and hinder the opposing player from controlling the course of events. Play and fight.

Importance of the Study

The importance of this study stems from the following points:

- Kickboxing was entered for the first time since its founding on the sidelines of Olympic Games and World Games, requiring training programs for the advancement of all aspects related to this sport to reach advanced positions, whether on the sidelines of the Olympics or in local and international tournaments.
- It is the first study of its kind to be conducted (to researchers' knowledge) and which will address the impact of the suggested training program for using weights in kickboxing in the Hashemite Kingdom of Jordan on some closely related variables.
- This study is one of the few studies at the level of the Arab world that dealt with this subject, (to researchers' knowledge).
- Researchers hope to develop the results of some complex physical abilities and skill performances in kickboxing, as this aspect is important when it comes to winning points from the opponent player as well as breaking the routine of the players.

- In addition to providing information on this subject for research in academic institutions and scientific research centers as well as the Jordanian Federation for Kickboxing Sports, its affiliated clubs, coaches, and those in charge of the sport, researchers hope that this study will enable them to develop future training programs to develop them in all aspects.

Objectives of the study:

This study aims to identify:

- The effect of a suggested training program using weights to improve the muscular strength of the lower part of kickboxing players.
- The effect of a suggested training program using weights to improve the back kick from jumping for kickboxing players.

Study hypotheses:

This study sought to verify the following hypotheses:

- There are statistically significant differences at the significance level ($\alpha > 5 0.0$) due to the effect of a suggested training program using weights to improve the muscular strength of the lower part of kickboxing players.
- There are statistically significant differences at the significance level ($\alpha > 5 0.0$) due to the effect of a suggested training program using weights to improve the back kick from jumping for kickboxing players.

Study Variables:

First: the independent variable: the proposed training program.

Second: the dependent variable: muscle strength, back kick from jumping.

Limitations:

The human determinant: (20 black belt or above kickboxing / men players) from (Tiger Club for Self-Defense) (FULL CONTACT system) were used, located in Zarqa, aged (> 20 years).

Spatial determinant: This study was conducted in (Tiger Club for Self-Defense), located in the Hashemite area - Zarqa city- in Jordan.

Time limit: This study was conducted in the time period between 29/3/ 2022 and 4/6/ 2022.

Terminology:

Weight training: “Exercises that require the muscles of the body to move against resistance and are represented by the use of weights and devices” (Darwish, 2008).

Back kick from jumping: A kickboxer's basic skill represented in the rotation of the body while jumping and kicking the opponent with the foot, which is considered as one of the most technical skills in kickboxing. (**Procedural definition**).

Kickboxing: Self-defense sport that borrows some movements from other fighting games, including **karate, taekwondo, and boxing**, in which kicking with the legs and punching with the hands are allowed within the rules, regulations, and instructions that regulate fights and competitive encounters. (**procedural definition**)

Previous Studies

Many previous research and studies linked to the study variables (training program, physical abilities, skill performance), whether in the sports sector in general or in the field of kickboxing in particular, were cited by the researchers (despite its scarcity in this sport to the knowledge of the researchers), ordered chronologically from the oldest to the most modern, these studies were classified into Arabic and foreign studies as follows:

First: Arabic studies

Al-Wodyan and Shoukah (2009) conducted a study which aimed to identify the physical abilities of Taekwondo players who achieved a black belt in different weights. The sample consisted of (40) players who acquired a black belt (1 dan) at least at eight different weights, five players per weight. The researchers used the descriptive approach for its suitability for the nature and the objectives of the study, after recording the data and information of the study sample in the physical tests and measurements

of the front kick, the researchers reached many results, the most important of which was that there are differences in the special physical abilities of Taekwondo players among all categories of different weights, as it showed that each category is distinguished from other categories in the physical and skill abilities of kicking with the front leg. The researchers recommended the necessity of conducting these and other tests on other technical skills to judge the physical abilities of Taekwondo players.

Al-Abbasi (2014) conducted a study aimed at identifying the effect of a proposed training program on the curve of change in strength characterized by speed in the skills of Giaku Zuki and Oramawashi Jerry among female karate players. The study sample consisted of (15) players practicing karate at Al-Istiqlal University, who were chosen intentionally. The proposed training program was applied for a period of (8) weeks and with (3) training units per week. The researcher used the experimental program with a one-group design and repeated measurement every two weeks for its convenience for the nature of the study. The results showed that the proposed training program affected all the variables of the study, where the percentage of change in the Giaku Zuki punch test was (36 percent), and in the Oramawashi Jerry kick test the percentage of change was (28.67%). The researcher recommended the necessity of holding internal tournaments and training camps in order to raise the level of physical fitness and skill for female players, as well as getting used to play with different competitors.

Abdul Karim (2014) aimed to prepare a program with plyometric water training to reveal its effect on developing some of the motor and functional abilities of young Taekwondo players. The sample consisted of (21) Taekwondo players chosen intentionally and were divided into two experimental groups and one control group, each of which had (7) players. Three weeks of training units per week, and the researcher reached a number of results, the most important of which was that the method of training using the plyometric method is better than the other used methods (the water and the classic used) in developing motor abilities in the sport of Taekwondo. The researcher used the experimental design for its suitability and objectives of the study. The

application of the training program lasted for (8) weeks, at a rate of (3) training units weekly, and the researcher reached a number of results, the most important of which was that the method of training using the plyometric method is better than the other used methods (aqueous and classical) in developing motor abilities in the sport of taekwondo.

Al-Nawaiseh (2017), conducted a study that aimed to identify the differences in the level of some elements of special fitness among kickboxing players in the two methods of FULL CONTACT and SEMI CONTACT. The study sample consisted of two groups of players, (50) players for each method, and the researcher used the descriptive approach in a comparative method for its convenience for the nature of the study. The researcher concluded that there are statistically significant differences between the special fitness elements represented by (balance, static, kinetic balance and grip strength test) in favor of FULL CONTACT players. As for SEMI CONTACT players, their physical fitness elements were (the speed characteristic of the front kick, endurance, the speed of performance of the front kick and the kinetic speed of the arms). The researcher recommended the need for kickboxing coaches to focus on the special elements of each method in the training process.

Al- Shloul, Al-Wodyan and Shokah (2018) conducted a study that aimed to identify the effect of plyometric exercises on the skill performance and some physiological variables of Taekwondo players. The study sample consisted of (26) Taekwondo players who had a black belt (1) Dan, they were divided into experimental and control groups, (N=13) for each. The researchers used the experimental method for its convenience to the nature of the study. In order to collect the data needed for the study, the researchers used the following variables: skill performance (turn kick, rice kick, back- kick, back turn) and physiological variables (weight, resting pulse, vital capacity). The researchers concluded that the use of plyometric training showed statistically significant differences on the skill performance variables in favor of the experimental group. The researchers recommended working on the use of plyometric exercises as part of Taekwondo training because of its positive

impact on the development and improvement of skill performance and the physical and physiological characteristics of Taekwondo players.

Al-Omar (2019), aimed to identify the relationship between some anthropometric measurements and physical abilities in the level of skill performance of kickboxing players. The study sample included (12) players from the National Team for kickboxing. The anthropometric measurements included (lengths, width and circumferences), while the physical abilities included (thigh joint flexibility, maximum speed, maximum strength, muscular ability, agility). The researcher used the descriptive approach for its suitability to the nature of the study, and the results of the study showed a statistically significant correlation between anthropometric measurements and physical abilities. The researcher recommends taking anthropometric measurements and new physical abilities to verify their relationship to the skill level.

Al-Ramadin (2019) aimed to identify the effect of mental training on the level of some psychological and skill skills among kickboxing players. The study sample consisted of (20) kickboxing players who were divided into two groups, a control group, and the usual skill program was applied to them. Experimental mental training program was applied to them, where the researcher used the semi-experimental method for its suitability to the nature of the study, and the results of the study were summarized in the presence of a statistically significant relationship in the dimensional measurement of the skill and mental variables of the study between the members of the control and experimental groups and in favor of the experimental group. The researcher recommends the necessity of using the mental training program in developing offensive and defensive skills for all self-defense games because of its effect on developing these skills.

Abu Safiya (2019) conducted a study which aimed to know the effect of using the Muay Thai movement rounds method in developing some of the physical and physiological abilities of the game. The sample was chosen randomly and consisted of (16) players who practice Muay Thai, which was divided into two groups

(experimental and control). The training program was applied for a period of (8) weeks and at a rate of (3) training units per week, the researcher used the experimental method for its suitability for the nature of the study. The results of the study showed that there were no statistically significant differences between the two groups (experimental and control) in all variables of the study (physical and physical abilities) with the exception of the right leg kick test and in favor of the experimental group. The researcher recommends the necessity of increasing the training units of Muay Thai training programs.

Second: Foreign Studies

Tasiopoulos & Nikolaidis (2013) aimed to identify the effect of kickboxing on the strength of hand muscles. The study sample consisted of (31) kickboxing players. A test was conducted for the strength of the most used hand muscles in addition to the hand least used before and after the player practiced a 2-minute, 3-round combat fight, with a one-minute break between rounds, and the test was conducted on the winners and the losers, the researchers concluded that there is a decrease in the strength of the most used hand by (1.9 kg), and the hand least used by (1.6 kg), where it was noted that the most decreases were among the winning players more than the losers. The researchers recommend the necessity of using this study in order to evaluate the training load and determine the neuromuscular loads that are requirements of this game.

Gavrilovic, Petrovic Dopsaj, Kasum, Pajic, & Koprivica (2017) aimed to define a quantitative model of the physiological responses of the cardiovascular system to various technical and tactical situations in kickboxing training; the sample consisted of nine healthy and highly trained people. They are active competitors in kickboxing, as the special variables in this research consisted of age, height, weight, years of training and the number of matches for the player. The researchers used the descriptive approach for its suitability and the nature of the study. The results obtained showed that during the match the contestants achieve what statistically significant higher heart rates when compared to punches and kicks.

Ouergui et al. (2014) aimed to verify the effect of five weeks of kickboxing training on the level of physical fitness. The study sample included (30) people divided into (15) players who practice kickboxing and (15) players who practice sports regularly in general. Each group exercised for one hour a day (3) times a week. The researchers performed tests of muscular strength for the upper and lower parts of the body in addition to some physical abilities. The researchers also used the descriptive approach as it suits the nature of the study. The researchers reached a conclusion confirming that the group practicing kickboxing has showed a significant improvement in all tests compared to the group that exercised in practice sports in general. The researchers recommended that kickboxing should be practiced for those who want to raise the level of physical fitness.

Ouergui et al. (2015) aimed to investigate whether circuit training leads to hormonal, physiological and physical responses to elite kickboxing players. The study sample consisted of (20) kickboxing players at the international level in the United Kingdom, The study was conducted using the descriptive approach by taking some measurements of the players before and after training. The results showed that there was an increase in the rate of Cortisol secretion after the training process, while the rest of the indicators were not affected. These results can be applied to kickboxing competitions as the researchers recommended to identify hormonal, physiological, and physical characteristics of the players.

Gavrilovic, Petrovic Dopsaj, Kasum, Pajic, & Koprivica (2017) aimed to determine a quantitative model of the physiological responses of the cardiovascular system to various technical and tactical situations in kickboxing training. The sample consisted of nine healthy, highly trained individuals who are active competitors in Kickboxing The special variables in this research consisted of age, height, weight, years of training and the number of matches for the player. The results obtained showed that during the match players achieve statistically significant higher values of heart rate when compared to punching and kicking.

Karadag Gür, Kargün, Savucu, & Eskiyecek (2018) KARADAG GÜR, KARGÜN,

SAVUCU, ESKIYECEK & (2018) aimed to analyze and evaluate the physiological properties of athletes in kickboxing, the study sample consisted of (50) kickboxing players, (39) males and (11) females. The following measurements were taken from the study sample before and after the training process (body mass index, blood samples including Glutamic Acid, Cysteine and Glycine). The researchers used the descriptive approach for its suitability to the nature of the study. The results showed that the results of analyses of men in kickboxing before and after training at the level of Amateurs differ significantly from those of women. Researchers recommend that well-rounded athletes should analyze their metabolic capabilities in response to stress that may result from strenuous exercise, and that exercise should improve performance by detecting biochemical changes.

Volodchenko Podrigalo, Iermakov, Żychowska, & Jagiello (2019) aimed to determine the suitability of kickboxing athletes' saliva test to show changes in biochemical parameters in training dynamics. The sample consisted of (8) male players, indicators of Lipid Peroxidation and Glycolysis were determined. (Concentration of lactic acid and Pyruvic acid) before and after the training process. The researchers used the descriptive approach to study the case. At the end of this study, the researchers concluded the importance of indicators that reflect the existence of a relationship between various biochemical indicators to estimate the adequacy of training loads, the most important of which was significant increases in indicators of peroxide activity. Fat and lactic acid concentration (4 times), and a significant decrease in Catalase (10 times), the researchers recommend the use of such tests in monitoring the functional status of athletes to prevent fatigue.

Comments on Previous Studies

It was discovered through observation and review of prior studies that the researchers were able to access that there are numerous studies and scientific research that dealt with the issue of lower-body muscular strength and back-kick technique from jumping. On the other hand, it is noted that some martial arts such as karate, taekwondo and kickboxing have been studied,

but there are no studies that dealt with the effect of special training programs for kickboxing players in general to develop their physical abilities and skillful performance, which distinguished this research and its uniqueness in the subject.

From their review of previous studies, the researchers benefited from the following:

- Defining the study problem and taking the necessary steps to solve it.
- Determining the objectives and hypotheses of the study correctly.
- Adopting the quasi-experimental approach with two equal groups.
- Choosing the appropriate statistical method to reach realistic results.
- Assisting in selecting the sample within the target study population, and determining the appropriate age group to study.
- Determining some appropriate tests for the study, and arriving at its final form before application.
- Choosing some appropriate means and tools for applying the tests and the proposed training program.
- Benefiting from the discussion and interpretation of the results of this study by comparing them with the results of previous studies.
- The previous studies provided researchers with theoretical information that contributed to the enrichment of this study.
- To be guided by the steps and procedures for designing the proposed training program, and the training content it includes.

Methodology and Design:

The aim of the current study is to know the effect of a proposed training program using

weights to improve the muscular strength of the lower part and the back kick skill from jumping for kickboxing players, and what are the closely related dependent variables that can be developed when applying the program on the experimental sample.

Study Approach:

The quasi-experimental approach was used, the researchers used an experimental design with two groups, the experimental and the control group, due to its consistency to the nature of the study, its objectives and hypotheses.

Study population and sample:

The study population and its sample consisted of all kickboxing male players having a black belt and above in the Tiger Club for self-defense, whose age is more than (20) years, (N=20). The sample was chosen intentionally and was divided into two groups, each group consisted of (10) players, and the study sample members were divided as follows:

The experimental group: the group to which the proposed training program was applied in order to improve muscle strength and the skill of the back kick from jumping.

The control group: the group that continued to train on the (normal) training program in the Tiger Club for self-defense.

Equivalence of groups:

To find out the equivalence between the two study groups (experimental and control) on some of the physical abilities and skill required for kickboxing players, in tribal measurements (T) test was applied for independent samples (INDEPENDENT SAMPLE T. TEST) and the following tables illustrate this.

First: Physical abilities:

Table (1): Results of the t-test for independent samples (to reveal the differences of physical abilities between the two groups in the pre- measurements (N = 20))

Variable	Group	M	SD	T	Df	Sig.
Max muscular strength of the torso	Control	132.90	20.98	.322	18	.751
	Exp.	129.60	24.76			
Maximum muscular strength of the legs	Control	151.70	23.92	.165	18	.871

	Exp.	149.50	34.68			
Explosive force of the lower part	Control	2.24	0.13	.218	18	.830
	Exp.	2.22	0.21			
Speed	Control	5.55	0.22	.627	18	.538
	Exp.	5.49	0.23			
(1rm) for the anterior thigh muscle	Control	68.30	3.86	1.339	18	.197
	Exp.	65.80	4.47			
(1rm) for the back thigh muscle	Control	62.90	5.47	.926	18	.367
	Exp.	61.10	2.81			

Table (1) shows the values of the descriptive statistics for physical abilities. The results show that the mean for the control sample members was as follows: the maximum muscular strength of the torso (132.90 kg), the maximum muscular strength of the legs (151.70 kg), and the explosive force of the lower part (2.24 m), velocity or speed (5.55 m/sec), (1RM) for the front thigh muscle (68.30 kg), as for the variable of (1RM) of the back muscle (62.90 kg), and the results also show that the mean of the experimental sample was as follows The following: maximum muscular strength of the torso (129.60 kg), maximal muscular strength of the legs (149.50 kg), explosive force of the lower part (2.22 m), velocity or speed (5.49

m/sec), (1RM) for the front thigh muscle (65.80) kg), as for the variable (1RM) for the back muscle (61.10 kg).

The same table (1) also shows that there are no statistically significant differences between the two groups (experimental and control) in the pre- measurements of physical abilities of kickboxing players, as the (T) values did not reach the level of statistical significance and this indicates the equality of the two groups in the pre- measurement of all Physical abilities variables of the study.

Second: skill performance:

Table (2): Results of the T-test for independent samples (**Independent Sample T. Test**) to reveal the differences in skill performance between the groups in pre measurements (n = 20)

Variable	Group	M	SD	T	Df	Sig.
skill performance	Control	6.66	1.17	-.993	18	.334
	Exp.	6.23	0.72			

The values of the descriptive statistics for skill performance are shown in Table (2). The results show that the mean of the experimental sample members reached (6.23), while the mean of the control sample members reached (6.66). The table also shows that there are no statistically significant differences between the two groups in the pre measurements of the skill performance of kickboxing players, as the values of (T) did not reach the level of statistical significance. This indicates the equivalence of the two groups in the pre - measurement of all skill performance variables in the study.

Scientific Treatments of the study tests:

The researchers verified the scientific treatments of the study tests according to the following:

Tests of Validity:

The researchers presented a set of tests that measure physical abilities and skill performance, in addition to the proposed training program, to a group of arbitrators with experience and expertise in sports training, resistance training, measurement, evaluation, physical diagnosis, kickboxing training, in addition to training various self-defense sports related to kickboxing in the faculties of Physical Education in Jordanian universities, their number was (8).

Tests of Reliability:

The researchers verified the reliability of the tests selected by the arbitrators using the **(test, re-test)** method, where the tests were applied to a pilot sample of (10 players) over 20 years old, who were selected intentionally from Tiger Club for self defense Games and are brown belt holders (the belt closest to the black belt) and

the candidates to pass the black belt test due to the small number of members of the study sample, then the same tests were re-applied again on the exploratory sample under the same conditions and with a one week interval of time, and then a correlation coefficient was extracted for stability (Test, Re-test) for measuring instruments and tables (3 and 4) show this.

Table (3): Pearson's correlation coefficient of reliability for physical abilities (N = 10)

Variable	Pearson's coefficient
Trunk strength	0.754 **
Leg strength	0.789**
Lower explosive strength	0.747 **
Speed	0.712 **
1RM of the anterior thigh	0.693 **
1RM of the back thigh	0.815**

** Statistically significant at the level of statistical significance (0.01).

It appears from Table (3) that the values of the repetition stability coefficients for physical abilities ranged between (0.693 - 0.815) for all the study variables, the most prominent of which was 1RM for the hind thigh muscle, and

the lowest for the tolerance variable 1RM for the anterior thigh muscle, which are high correlation coefficients and indicate a high and acceptable degree of stability to apply for study purposes.

Table (4): Pearson's correlation coefficient for reliability Test Re-Test (N = 10) for skill performance

Variable	Pearson's coefficient
Skill performance	0.954**

** Statistically significant at the level of statistical significance (0.01).

It appears from Table (4) that the value of the repetition reliability coefficient for the skill performance was (0.954), which is a high correlation coefficient and indicates a high and acceptable degree of reliability for the purposes of the study.

Study tools:

The study included a set of devices and tools that were used to implement the training program and conduct the identified tests, and through the researchers' review of the theoretical literature and previous studies, in addition to seeking the opinions of experts in the field of sports training, resistance training, measurement, evaluation, physical diagnosis, kickboxing training, The study tools include training different self-defense sports related to

kickboxing, as well as the researchers' experiences in the field of training. The study tools were divided into three groups:

Tests used to measure the physical abilities and skill performance of the study sample members, the proposed training program to improve these variables, the tools and devices used in the application of the tests and the training program. The following is an explanation for them.

First: Physical abilities

The researchers measured the physical abilities of the study sample for the two groups and for the pre and post tests to identify the differences that occurred as a result of the training process, whether it was for the proposed training program that was applied to the experimental

group, or to the training program used in Tiger Club for the control group, and the following is an explanation of the physical abilities and the unit used in the measurement process, In

addition to the devices and tools that the researcher used in the process of taking measurements for this study, and Table (5) shows this:

Table (5): Physical abilities, units, devices and tools used to measure them.

No.	Variable	Unit	devices and tools
1	Trunk strength	Kilo gram (kg)	dynamometer
2	Leg strength	Kilo gram (kg)	dynamometer
3	Lower explosive strength	Meter (m)	Measuring tape, (Salox)
4	Speed	Meter\ second (m\sec.)	digital stopwatch cones
5	1RM of the anterior thigh	Kilo gram (kg)	Leg Extension Machine
6	1RM of the back thigh	Kilo gram (kg)	Leg Cur Machine

Second: Skill Performance

With the help of three accredited evaluators, the researchers measured the skill performance of the study sample for the two groups and for the pre and post tests to identify the differences that occurred as a result of the training process, whether it was for the proposed training program that was applied to the experimental group, or for the training program used in Tiger Club for the control group. The following is an explanation of the

process of measuring the skill performance variable that the researchers used in the process of taking measurements for this study:

Back kick skill was used for the jump to the punching bag during which the player applied back kicks, and the table (14) reflects the scores of the assessors as well as the arithmetic mean of each player's evaluation.

Table (6): Table of the assessor's scores and their mean with the assessment

assessor player	1 st assessor	2 nd assessor	3 rd assessor	Mean	assessment

This skill was confirmed as being difficult by informing some experienced kickboxing coaches of its components and offering them some advice on how to apply it. This was demonstrated through the results of the averages of the skill performance of the two groups in the pre-test as mentioned previously, where the mean of the skill performance in the experimental group was (6.23) and the control group reached was (6.66), and the assessment for both groups on the evaluation criterion was very good.

The researchers, with the assistance of members of the evaluation committee, which consisted of some experienced international trainers in kickboxing who were approved by the Jordanian Kickboxing Federation, and

whose number was three, assigned a score to each player when they performed the skill; the evaluation began with (zero) and ended with (ten) degrees. Each coach assigns a grade to the player's performance. The mean for each player is calculated after the evaluation procedure is done. The player demonstrated the skill three times in front of the assessors, with the best performance being recorded. Criteria were built to judge this evaluation, which were reviewed by the evaluation committee before starting the evaluation process and agreed on all the items in it and arbitrated in a manner that suits the level of the players to put the mark that the player deserves based on it, and the evaluation (arithmetic average) was calculated digitally and described by dividing it into categories As the conjugation of the largest integer, which

started with class (≤ 2), and its description was weak, and ended with class (≥ 8), and its description was excellent.

The proposed training program DUI575: (Design and Application):

In order to achieve the objectives of the study, the researchers prepared a training program aimed at improving the muscle strength of the lower part and the skill of the back kick from jumping, after referring to many previous studies, sources and references specialized in sports training, resistance training, and self-defense sports training. The researchers distributed the training program to (4) training units, namely (1- the use of equipment and weights in the training process, whether for the body or in integrating it with kickboxing, 2- physical fitness using kickboxing, 3-training skill movements in kickboxing, 4-confrontations between players in kickboxing. The researchers used many training methods, tools and devices within the training units.

In order to achieve all the objectives of the study in an ideal way, the researchers built

the proposed training program for a period of (8) weeks and at a rate of (3) training units for each week. The training program consisted of (24) training units, and the duration of one training unit was (90) minutes, and the training unit was divided into three parts:

The warm-up (the introduction): It lasted for fifteen minutes.

The main segment (content of the training) lasted (60) minutes.

Finally, the final section (cooling down) lasted for ten minutes.

The transitional rest times between the three elements of the training unit were two minutes between the introductory part and the main part, and three minutes between the main part and the closing part.

Tools and devices used in the application of the training program:

The researchers used a set of tools and devices to implement the proposed training program for this study, and Table (7) shows this.

Table (7) Tools and devices used in the training program.

No.	Device used	Device Type	N.	Reason for using the device
1	Weight Training Equipment	Life fitness (American)	6	Training the players using weight tools for the muscle groups supported by each device
2	Hand, legs and head guards	COMBAT (Pakistan)	10	Protect players from any expected injuries. Punching bag training. Practice with a colleague.
3	Electronic stopwatch	CASIO	2	- Measurement of exercise intervals. - Measuring the rest periods during the application.
4	whistle	Fox 40	2	Instructing to start and end exercises within the proposed program.
5	Medicine balls	Adidas	10	Apply some suggested training program.
6	TRX	Life fitness (American)	2	Implementation of some of the proposed training program.
7	Round training cones	Nike	25	Implementation of some of the proposed training program.
8	3- meter training ladder	Relefree	2	Implementation of some of the proposed training program.
9	(Dumbbells)	Life fitness (American)	10 pairs	Implementation of some of the proposed training program.
10	Combat sacks	COMBAT	5	Implementation of some of the proposed training program.

		(Pakistani made)		
11	Bar	Life fitness (American)	3	Implementation of some of the proposed training program.
12	Training ropes	-----	10	Implementation of some of the proposed training program.
13	Training Ball	-----	10	Implementation of some of the proposed training program.
14	Elastic Training Ropes	-----	10	Implementation of some of the proposed training program.
15	Kettle Bell	Life fitness (American)	5	Implementation of some of the proposed training program.
16	Step - Exercise Box		10	Implementation of some of the proposed training program.

Statistics used

To accomplish the study's objectives and test its hypotheses, the following statistical methods were used:

- Means and standard deviations for all study variables.
- Pearson's reliability coefficient (test, re-test) for measuring instruments, which was applied to the pilot sample.
- Applying the T-test for independent samples to detect the differences in the study variables between the two groups (experimental, control) in the tribal measurements.
- Accompanying one-way analysis of variance (ANCOVA) test to reveal the differences between the experimental and control groups on all study variables.

Results and discussion

The results below are presented according to the study's hypotheses sequence:

First hypothesis: There are statistically significant differences at the significance level ($\alpha > 0.05$) of the effect of a proposed training program using weights to improve the muscular strength of the lower part of kickboxing players. To test this hypothesis and to verify its validity, the appropriate statistical treatment was employed, to extract the Means and standard deviations of physical abilities among the study sample members of kickboxing players on the pre and post measurements of the two experimental control groups, in addition to the accompanying one-way analysis of variance (ANCOVA) for each variable separately according to the group, and the following is a presentation of the results.

Table (8): Means and standard deviations of physical abilities of kickboxing players, in the pre and post measurements, according to the **group** variable

Group	Control				Experimental			
	Pre		Post		Pre		Post	
Measurement	M	SD	M	SD	M	SD	M	SD
Trunk strength	132.90	20.98	135.60	20.23	129.60	24.76	156.20	16.63
Leg strength	151.70	23.92	154.40	23.87	149.50	34.68	176.50	22.39
Explosive force of the lower part	2.24	0.13	2.29	0.13	2.22	0.21	2.42	0.20
Respiratory cyclic endurance	2190.20	73.29	2196.30	73.02	2195.30	95.12	2262.70	48.30
1RM for the chest muscle	81.90	8.23	82.20	9.21	76.20	11.49	86.60	11.51
1RM for the back muscle	81.60	8.92	82.80	7.19	78.00	10.87	92.60	9.04

1RM for the anterior thigh muscle	68.30	3.86	69.40	4.81	65.80	4.47	74.20	5.37
1RM for the back muscle	62.90	5.47	64.10	2.23	61.10	2.81	71.20	3.42

After determining the effect of kickboxing players' pre-measurement on all variables, as shown in the previous table, ANCOVA was performed for each variable separately according to group after determining differences between the two measurements, before and after, as shown in Table (9).

Table (9): Accompanying one-way analysis of variance (ANCOVA) to reveal the differences in the post measurement of physical abilities of kickboxing players according to group variable

Variables	Variable	Sum of squares	Df	Mean of squares	F	Sig.	Eta η value
Group	-----						
	Trunk strength	546.635	1	546.635	9.582	.090	.827
	Strength of legs	1060.917	1	1060.917	29.096	.033	.936
	Lower explosive strength	.004	1	.004	182.417	.005	.989
	Speed	.003	1	.003	16.076	.057	.889
(pre) Accompanying	-----						
	Trunk strength	101.718	1	101.718	1.783	.313	.471
	Strength of legs	334.260	1	334.260	9.167	.094	.821
	Lower explosive strength	.006	1	.006	318.721	.003	.994
	Speed	.093	1	.093	445.696	.002	.996
Error	-----						
	Trunk strength	114.092	2	57.046	---	---	---
	Strength of legs	72.926	2	36.463	---	---	---
	Lower explosive strength	.00004	2	.00002	---	---	---
	Speed	0.000	2	0.000	---	---	---
Total of Corrected	Trunk strength	8293.800	19		---	---	---
	Strength of legs	12080.95	19		---	---	---
	Lower explosive strength	.578	19		---	---	---
	Speed	.972	19		---	---	---
	Respiratory cyclic endurance	91019.00	19		---	---	---

It appears from Table (9) that:

-At the significance level ($\alpha \leq 0.05$) there is no statistically significant effect of the proposed training program on the group variable (strength of trunk) at the post measurement, as the values of (F) reached (9.582) and with statistical significance (0.090), and the effect size reached 82.7%, which corresponds to Eta square of 0.827.

-There is a statistically significant effect of the proposed training program to develop some physical abilities at the significance level ($\alpha \leq 0.05$) on the group variable (leg strength) in the dimensional measurement, where the values of (F) reached (29,096) and with statistical significance (0.033), and the effect size was (93.6%), which represents the value of the Eta square (0.936).

-There is a statistically significant effect of the proposed training program for the development of some physical abilities at the significance level ($\alpha \leq 0.05$) on the group variable (the explosive power of the lower part) in the post measurement, as the values of (F) reached (182.417) and with statistical significance (0.005), and the size of The effect (98.9%), which represents the value of the Eta square (0.989).

-There is no statistically significant effect of the proposed training program to develop some physical abilities at the significance level ($\alpha \leq 0.05$) on the group variable (speed) in the post measurement, as the values of (F) reached (16,076) and with statistical significance (0.057), and the effect size was (88.9%), which represents the value of the Eta squared (0.889).

Table (10): Accompanying one-way variance analysis (ANCOVA) to reveal the differences in the post measurement of physical abilities of kickboxing players due to the group variable

Variables	Variable	Sum of squares	Df	Mean of squares	F	Sig.	Eta η value
Group	-----	---	--	---	---	---	---
	1RM for the anterior thigh muscle	9.119	1	9.119	4.991	.155	0.714
	1RM for the back thigh muscle	19.609	1	19.609	69.172.	.014	0.972
(pre) Accompanying	-----	---	--	---	---	---	---
	1RM for the anterior thigh muscle	37.806	1	37.806	20.694	.045	0.912
	1RM for the back thigh muscle	5.656	1	5.656	19.952	0.047	.909
Error	-----	---	--	---	---	---	---
	1RM for the anterior thigh muscle	3.654	2	1.827	---	---	---
	1RM for the back thigh muscle	0.567	2	0.283	---	---	---
Total of Corrected	-----	---	--	---	---	---	---
	1RM for the anterior thigh muscle	583.200	19	---	---	---	---
	1RM for the back thigh muscle	402.550	19	---	---	---	---

It appears from Table (10) that:

-The proposed training program to develop some physical abilities has no statistically significant effect on the group variable (1RM for the anterior thigh muscle) in the post-measurement, as the values of (F) reached (4.991) and with statistical significance (0.155), which amounted to The effect size (71.4 %), which represents the value of the Eta square (0.714).

- As the values of (F) reached (19.609) and statistical significance (0.014), and the size of

the effect (97.2 %), which represents the value of the Eta square, there is a statistically significant effect of the proposed training program to develop some physical abilities at the significance level ($\alpha \leq 0.05$) on the group variable (1RM for the hamstring muscle) in the post-measurement (0.972).- There are no statistically significant differences in the tribal measurement for all variables in the pre measurement, as the (F) values did not reach the level of statistical significance ($\alpha \leq 0.05$), and this confirms the equality of the two groups in the pre measurement.

- As (F) values did not reach the threshold of statistical significance ($\alpha \leq 0.05$), there are no statistically significant differences in the pre measurement for all variables, confirming the equality of the two groups in the pre measurement.

It appears from Table No. (10) that:

The results related to this hypothesis showed a statistically significant effect of the proposed training program to develop some muscle strength at the significance level ($\alpha \leq 0.05$) on each of (leg strength variable, explosive force variable for the lower part and 1RM variable for the front thigh muscle), only in the post measurement in favor of the experimental group that received the training program. This result, according to the researchers, is due to the fact that the training program included a large number of important physical and skill exercises through which many physical abilities could be developed, as well as the development of anthropometric variables, which are important and complementary factors in the development of these abilities. The physical abilities that were measured are closely related to all of the anthropometric factors that have been developed (Al-Sheikh and Al-Sadiq, 1996). As a result of the direct relationship between anthropometric variables and physical abilities, the proposed training program was characterized by variety and repetition of exercises, with a focus on high-intensity exercises with appropriate rest periods to develop physical performance, as well as the introduction of special skills. Along with the introduction of kickboxing skills in physical fitness training, which resulted in the development of physical abilities in general and an emphasis on kickboxing skills in particular, as well as the introduction of modern sports means and tools in the training process to reach the players to the maximum degree of abilities that a kickboxing player can possess, and the results of the current study agreed with the results of another study, the results of the

current study agreed with the results of The results of the current study agreed with the results of (Kang & Hoffman, 2003; Jabbar, 2011; Chelly, 2014; Hermassi, Aouadi, & Shephard) and the study of (Al-Waisi and Fayez, 2015).

The results related to this hypothesis also showed that there was no statistically significant effect of the proposed training program to improve muscle strength at the significance level ($\alpha \leq 0.05$) on the following physical abilities: (trunk strength, speed strength, 1RM for the back muscle, 1RM for the front thigh muscle) in the post measurement for the experimental group that received the training program. The researchers attribute this result to the fact that the proposed training program had a clear impact on these variables without statistical significance, by noting the differences between the means of the pre and post tests for the two groups and comparing them with each other. When calculating the difference between the mean for each variable separately, we see that there is an apparent difference in favor of the experimental group, as the reason for the lack of any statistical significance for these variables was that all the pre tests of the control sample were high in the pre test, as the training program followed in Tiger Club did not effectively affect the post results of the control sample, but these results remained high compared to the results of the experimental group, and the most important factor is that the number of sample members is very small for the two groups, so no statistical significance of these variables appeared, given that there has been significant development in them as we mentioned previously, the results of these results in the current study did not agree with the results of (Kang & Hoffman, 2003; Ismail, 2003; Jabbar, 2011; Hermassi, Chelly, Aouadi, & Shephard, 2014; Al-Waisi and Fayez, 2015; & Al-Shlloul, Shoka and Al-Wodyan, 2018). The adjusted averages and standard errors of the dimensions were calculated according to the group, as shown in Table No. 11).

Table (11): Modified means, and standard errors for the dimensional measurement of some physical abilities, among kickboxing players according to group

Dependent variable	Group	Adjusted Mean	Criterion error
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Strength of trunk	experimental	172.451	8.742
	Control	119.349	8.742
Strength of legs	experimental	202.439	6.989
	Control	128.461	6.989
Explosive power of the lower part	experimental	2.423	.005
	Control	2.289	.005
Speed or velocity	experimental	.370	.017
	Control	5.501	.017
1RM of the front thigh muscle	experimental	75.229	1.564
	Control	68.371	1.564
1RM of the back thigh muscle	experimental	72.679	.616
	Control	62.621	.616

It is clear from Table (11) that the significant differences between the modified means for the post measurement of some physical abilities of kickboxing players were in favor of the experimental group in the variable (leg strength, explosive power of the lower part, 1RM of the hamstring muscle), who were exposed to the proposed training program to develop some Physical abilities of kickboxing players compared to members of the control group.

The second hypothesis: There are statistically significant differences at the significance level ($\alpha > 5 0.0$) of the effect

of a suggested training program using weights to improve the back kick from jumping for kickboxing players. To test this hypothesis, the means and standard deviations of the skill performance of kickboxing players were calculated. On the pre and post measurements of the two experimental control groups, the accompanying one-way analysis of variance (ANCOVA) was applied to the variable according to the group after determining the effect of their pre-measurement, and the following is a presentation of the results.

Table (12): Means and standard deviations in the pre and post measurements of the two groups for skill performance (n = 20).

Group	Measurement	Mean	SD
Control	Pre	6.23	0.72
	Post	6.65	0.89
Experimental	Pre	6.66	1.17
	Post	7.95	0.99

It is apparent from Table (12) that there are obvious differences between the means of the skill performance of kickboxing players in the pre and post measurements, according to the two groups (experimental, control). In order to find out whether these apparent differences are statistically significant, the accompanying one-

way analysis of variance (ANCOVA) was used to measure the post-measurement of skill performance as a whole according to the two groups (experimental and control) after determining the effect of their pre-measurement. Table (13) presents these results.

Table (13): Results of the ANCOVA analysis to reveal the effect of the proposed training program in developing the skill performance between the two groups in the post-measurement with the presence of an accompanying pre-measurement

Source of variance	Sum of squares	Df	Average of sum of squares	F value	Sig.	Eta squared
Pre measurement	10.228	1	10.228	29.767	.000	.636
Group	4.489	1	4.489	13.065	.002	.435
Error	5.841	17	.344	----	----	----
Total	24.623	19	----	----	----	----

It appears from Table No. (13) the following:

There is a statistically significant effect of the training program in developing the skill performance according to the group variable at the significance level ($\alpha \leq 0.05$), where the value of (F) reached (13.065) and with statistical significance (0.002), and the effect size was (43.5%), which represents the value of (Eta square (0.435).

In relation to this hypothesis, the results showed a statistically significant effect of the training program at the significance level ($\alpha \leq 0.05$) on the skill performance variable after the post-measurement and in favor of the experimental group that received the training program as the value of (F) was (13.065) and with statistical significance (0.002), and the effect size was (43.5%), which represents the value of the Eta square (0.435). The results related to this hypothesis also showed a statistically significant effect of the training program at the significance level ($\alpha \leq 0.05$) on the skill performance variable in the post measurement and in favor of the experimental group that received the training program.

These results were attributed to the fact that most of the training units included imaginary and actual combat in which different skills and motor skills were used by the players, which allowed them to improve their performance, Along with the introduction of all basic kickboxing skills into the training process and incorporating them as skills and training the players on them, the training units are not devoid of kickboxing skill movements, which helped the players master some skill movements and use them automatically in mock fighting in the advanced training units. Aside from hosting some clubs and various centers where players can fight with each other and gain experiences by competing with each other, as well as giving them the opportunity to participate in real tournaments. the current study agreed with (Ismail, 2003; Al-Shloul, Shawka and Al-Wodyan, 2018; & Al-Ramadin, 2019). Table (14) shows the adjusted means and their standard errors based on the group, to determine to whom the differences were attributed,

Table (14) The modified arithmetic means and standard errors for skill performances in some kickboxing groups (experimental, control)

Group	Post modified Mean	Criterion Error
Experimental	7.787	0.188
Control	6.813	0.188

Table (14) indicates that the differences were in favor of the experimental group which followed the proposed training program in order to develop some skill performance among kickboxing players compared to the control group.

Conclusions

- The proposed training program was distinguished in improving the muscular strength under study as well as the skill performance of the study members, as the experimental group improved better than the control group.
- The difference in the impact size of the training program in the variables under study in physical abilities, the highest

effect size of the proposed training program was in favor of the explosive force variable for the lower part by (98.9%) and the least was in favor of the two-leg strength variable by (93.6%), as it was found that for the training program Effectiveness in developing skill performance when the effect size was (43.5).

- The training program showed a progress for the study members of the experimental group for kickboxing players as a result of the presence of differences between the arithmetic averages of all relevant study variables, and this indicates the potential improvement experienced by the players from the sample members.

Recommendations

- It is important to maintain pace with the training process in kickboxing, which emphasizes physical abilities and skillful performance as a means of raising the performance of players in meetings and competitions.
- Adopting the proposed training program with the possibility of increasing the number of training units in it as a means to improve the performance of players, especially in the age group chosen in this study.
- Using an existing database, conducting a correlational analysis to demonstrate the association between physical talents and skill performance among kickboxing players.
- The importance of hosting more internal tournaments and participating in training courses and camps to improve kickboxing players' physical condition, talent, and experience.
- Conducting comparable experiments with various variables, taking into account the rise in the number of individuals in the samples and examining the differences in sex and taxonomic groupings.

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