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Article

The Role of Resistance Training Machines in Constructing Body Image among Karate Athletes

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Abstract

The research problem was presented as follows: Does resistance training using strengthening machines play a role in constructing body image among karate athletes? The research hypotheses were presented as follows:

General Hypothesis: Resistance training using strengthening machines plays a role in constructing body image among karate athletes.

Partial Hypotheses: Resistance training using strengthening machines plays a role in constructing the external appearance among karate athletes.

- Resistance training using strengthening machines plays a role in constructing motor performance among karate athletes.
- Resistance training using strengthening machines plays a role in constructing health among karate athletes.

Study Sample: 18 karate athletes aged between 15–17 years.

Method: The adopted method is the descriptive method.

Tools: Body Image Scale by Dr. "Nafi Sufyan".

Results:

- Resistance training using strengthening machines plays a role in constructing body image among karate athletes through its proper and effective application.

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- Resistance training using strengthening machines plays a role in constructing the external appearance through the necessary and appropriate appearance for the karate athlete, and it also has a prominent role in constructing the motor performance and health dimensions.

Suggestions: We propose the generalization of using resistance training machines in all karate clubs in the Wilaya of M'sila.

Increase the number of resistance training sessions with a greater number and under longer time periods within a pre-planned training program according to training principles compatible with the modern scientific developments in the sports field, especially in karate clubs.

1. Research Problem:

Sports training in our current era has taken an important place in our society, where it has become a regulated and organized system for every athletic individual or practitioner aiming to develop psychological and motor abilities, especially physical bodily capabilities through developing physical fitness components in the athlete such as strength, agility, flexibility, endurance, and functional safety of the various body systems, where they harmonize and elevate their physical efficiency in a way that enables them to carry out the burdens of their duties under the pressure of the required work and performance without feeling tired and exhausted.

This is confirmed by Mohamed Sobhi Hassanein 1982, as muscular strength is the most important physical ability at all, as it is the basis upon which movement, sports practice, and life in general depend due to its relation with good posture, health, intelligence, productivity, and personality, as comprehensive motor achievement largely depends on it (Mohamed Hassan Allawi, 1994, p. 102).

Its development requires a well-studied program according to scientific principles aimed at the sequential development of strength that gives tangible results, especially the external appearance of the body and to some extent muscular endurance, according to this program which relies on a set of tools and machines provided for this important purpose.

These machines for developing strength that have recently appeared are various types such as weight machines that include a set of devices, including the single muscle group device and the multi-station fitness device. The use of these machines has helped in practical application in fields that are difficult to achieve by traditional methods that include free weights such as iron plates, medical balls, and this requires both safety and security factors to a large extent, and the resistance must be adjusted by selecting the appropriate weights with the possibility of increasing them.

The importance of weight training lies in its ability to raise the capabilities of the athlete and lead him to achieve the best titles, as Mokhtar Salem mentions that all field observations confirmed that the champions and stars from the players who won gold medals or broke records whether at the level of the Olympic Games or the world championships were practicing weight training within the framework of their general training programs for their specialized sport, and it is mentioned

that the results of all studies and opinions of major training experts in the world agreed that there is no better, more effective, and faster method for increasing, developing, and improving muscular strength than weight training. (Mokhtar Salem, no date, p.6)

The Algerian reality also indicates a lack of well-prepared and well-planned resistance training programs either as complementary or integrated exercises in the stages of physical preparation whether for adults or juniors, and we can confirm that most sports teams have not undergone a weight training program throughout the training seasons, especially the juniors. (Katchouk Sidi Mohamed, 2005, p.7)

Resistance training using strengthening machines is a means to achieve many goals, by adapting it to various fields of physical culture, as it serves health objectives if practiced for that, and serves the high-level athletic performance if specialized for that, and through the idea one forms about themselves that becomes clear to others through the projection of body image which they imagine about their body and external appearance, which gives good knowledge about what is going on in their mind and attempts to link it with the requirements of what they aspire to from good, integrated, and interconnected motor performance with all necessary movements for the beauty and precision of movement.

Rosin et al." believe that body image is a positive or negative mental image that an individual forms about their body, and it manifests itself through a set of behavioral tendencies that appear alongside that image. The essential feature in defining the physical appearance of body image is the individual's assessment of their body weight or any other aspect of the body that determines its appearance (Al-Dessouki, 2006, p. 16).

The body image that an individual forms about their body varies from one sport to another. While training with muscle-strengthening devices clearly uses the body to perceive this image as a primary goal for good and positive perception in a specific sport, dissatisfaction with the body shape arises due to the nature of physiological, psychological, and social changes. Karate is considered one of the most sensitive and fundamental sports for perceiving body image, considering its physical and educational foundations.

Based on various backgrounds that addressed the role of training with muscle-strengthening devices, and what it carries in terms of physical, educational, and psychological goals, which stem from several studies making the execution and application of these devices central in shaping the athlete's personality, meaning preparing them physically, educationally, and psychologically, as well as providing the essence of body image and its perception. Hence, this study focused on the "role of training with muscle-strengthening devices in shaping body image among karate athletes" and understanding the role this training plays in shaping the athlete's body image. From here, as researchers, we raised the following question:

Does training with muscle-strengthening devices play a role in building body image among karate athletes?

Sub-questions:

- Does training with muscle-strengthening devices play a role in building the external appearance of karate athletes?
- Does training with muscle-strengthening devices play a role in improving the motor performance of karate athletes?
- Does training with muscle-strengthening devices play a role in enhancing the health of karate athletes?

2/ Research Objectives:

There is a general aim for the research, along with some practical objectives that fall under the following points:

- The aim is to explore body image among karate athletes during training with muscle-strengthening devices.
- To identify body image among karate athletes during training with muscle-strengthening devices.
- To explore whether there is a difference in body image among karate athletes.
- To understand whether body image plays a role through the dimensions of external appearance, motor performance, health, and overall body shape coordination during training with muscle-strengthening devices among karate athletes.
- To investigate whether training with muscle-strengthening devices contributes to improving the health dimension of body image among karate athletes.
- To explore whether training with muscle-strengthening devices contributes to enhancing the external appearance dimension of body image among karate athletes.
- To explore whether training with muscle-strengthening devices contributes to improving the motor performance dimension of body image among karate athletes.
- To understand the relationship between training with muscle-strengthening devices and body image development among karate athletes.

3/ Research Importance:

The importance of this research lies in understanding the role that training with muscle-strengthening devices plays in shaping body image among karate athletes and in understanding the human personality of the athlete. The study of body image is one of the most important contemporary studies. This research is significant because it highlights the importance of athletes understanding their physical self, both in terms of external appearance and internal components.

This is done through the concept of body image, which includes the following dimensions: external appearance, motor performance, and health.

From what has been presented, we can observe that the research will address a highly important issue, as it will use body image as an indicator to understand the role that training with muscle-strengthening devices plays in developing it through actual practice. The research will examine body image at an important stage in the athlete's career, accompanied by a set of changes, including psychological, physical, and physiological changes. However, what caught our attention as researchers is the significant role that body image will play in karate athletes during training with muscle-strengthening devices.

4/ Hypotheses:

4-1-General Hypothesis:

Training with muscle-strengthening devices plays a role in shaping body image among karate athletes.

4-2/ Sub-Hypotheses:

- Training with muscle-strengthening devices plays a role in shaping the external appearance of karate athletes.
- Training with muscle-strengthening devices plays a role in improving the motor performance of karate athletes.
- Training with muscle-strengthening devices plays a role in enhancing the health of karate athletes.

5/ Previous and Similar Studies:

- First Study: A study conducted by researcher "Hachaychi Abdel Wahab," Master's thesis titled "Perception of Body Image and Its Relationship to the Formation of Psychological Attitudes Toward Physical Activity Among Secondary School Students," which was discussed in 2000. The study aimed to reveal the type of relationship between the formation of attitudes toward physical activity and the perception of body image among secondary school students. To achieve the research objectives, the researcher used the "Kenyon" scale for attitudes toward physical activity, the "My Body As I See It" body image scale prepared by the researcher, along with other scales such as the "Hassan Alawi" scale for body self-concept and the Kenyon body image scale. The sample included 69 male and 80 female students from the second year of secondary school at Saleh Bay Secondary School in Setif. The researcher found a correlation between adolescent body image perception and its dimensions and the formation of attitudes toward physical activity. This correlation varied based on the dimensions of physical activity. Perception of body self-concept and its dimensions positively correlated with social experience, aesthetic experience, tension and risk, and athletic excellence. It negatively correlated with health preservation, fitness, and stress

reduction. This means that those with lower body self-concept tend to engage in physical activity as a means to preserve health and fitness and to reduce stress. These results apply to both males and females. The researcher concluded that body image perception influences the formation of attitudes toward physical activity within the beliefs and cultural and social norms of that society.

- Second Study: A study by researcher "Naafi Sufyan," Master's thesis titled "Physical Education and Sports Practice and Its Impact on the Body Image of Adolescents in the Third Stage of Basic Education (12-15 Years)," which was discussed in 2001 in Algeria. The study aimed to investigate how physical education and sports sessions affect adolescents' body image and whether the effect differs based on the gender of the participants. The researcher proposed the following hypotheses:

- The effect of physical education and sports practice on body image varies according to the gender of the participants.

- Physical education and sports practice positively affect the body image of adolescents.

The researcher used the descriptive method in his study, and the research sample consisted of 76 male and female students from the three levels of basic education (7th, 8th, and 9th grades) at the Sir Rashid School in the Wilaya of Boumerdes. The researcher used a body image scale developed by himself, based on the body self-concept scale "My Body as I See It" created by "Mohamed Hassan Alawi," the "Tenesse" scale for self-concept, and the "Nelson-Allen" scale for motor satisfaction. The researcher used the following statistical methods: Pearson correlation coefficient, T-test to study the significance of differences between male students practicing physical education and sports and those not practicing physical education and sports with regard to their body self-concept and its dimensions. The researcher also concluded from the study of differences in body image and its dimensions between male and female practitioners and non-practitioners that physical education and sports practice within the school environment for his sample had a weak or statistically insignificant effect on the motor performance dimension. This is attributed to the limited content of the class itself in terms of diverse motor activities. For male students practicing physical education and sports, even when the class includes some activities related to motor performance, the intensity is low or insufficient. On the other hand, male students practicing physical education and sports may find outside the school (physical education and sports sessions) another opportunity to compensate for the motor deficiency, as adolescents feel the need for movement for self-practice and the desire to explore and overcome themselves, as well as strengthen their connections with their surroundings. The researcher also found that the adolescent in his sample, whether practicing physical education and sports or not, has a very limited motor field due to their social and cultural environment, which limits their expression and psychological stability within a formal school framework, which is dictated by laws and provides all

the necessary resources for enriching the experience for students in general and adolescents in particular.

- Third Study: A study by researcher "Hachaychi Abdel Wahab," a doctoral thesis in the theory and methodology of physical education and sports, titled "Body Image and Its Relationship to Participation in Physical Education and Sports Activities Among Secondary School Students," discussed in 2011 at the Institute of Physical Education and Sports at Sidi Abdallah, University of Algiers 3. The researcher posed the following questions:

- Is there a correlation between body image and participation in physical education and sports lessons at the secondary school stage?

- Is there a correlation between body image and high participation in physical education and sports lessons at the secondary school stage?

- Is there a correlation between body image and low participation in physical education and sports lessons at the secondary school stage?

The researcher relied on the descriptive method, with the research community consisting of 556 male students. The research sample was estimated at 72 students, chosen randomly. The researcher used a body image scale for adolescents, designed by himself, and used statistical analysis software (SPSS) for data processing (T-test, correlation coefficient). The researcher found the following results:

- A statistically significant correlation exists between body image and participation in physical education and sports lessons among male students in secondary education.

- A statistically significant correlation exists between body image and high participation in physical education and sports lessons among male students in secondary education.

- A statistically significant correlation exists between body image and low participation in physical education and sports lessons among male students in secondary education.

- Fourth Study: A study conducted by researcher "Abd al-Nasser Ben Toumi," a doctoral thesis titled "Body Image in the Pedagogical Relationship of Physical Education and Sports Lessons," discussed in 1998. The study aimed to identify the various physical problems faced by adolescents during physical education and sports lessons and the role of the physical education teacher in emotional relationships. To achieve the objectives, the researcher used the body image questionnaire by Chweitzerbrachon to identify the nature of body perceptions. This tool allowed the researcher to understand the main aspects of body image perceptions and also relied on scientific research in this field, including works by Secord et al. and Jourared. Since the research aimed to invest the body in the pedagogical relationship within physical education and sports lessons, the researcher modified the dimensions, content, and form of the questionnaire to align more closely with the topic of the research. The sample of the study consisted of 120 male

adolescents and 80 female adolescents from the final years of secondary education in the Wilayas of Algiers, Mostaganem, and M'sila. The researcher concluded that the three dimensions of the pedagogical relationship (teacher's personality, pedagogical method, and the type of physical activity practiced) allow students to form emotional relationships and invest their bodies. The adolescent's desire for an attractive body and the emotional relationships carried by that body plays an important role through body image in the student. The teacher plays an important role in assisting the adolescent psychologically through the changes of puberty and helps them overcome their psychological state resulting from these changes, thus surpassing their struggles through a sense of a comfortable body image.

5-1. Application of Previous Studies to the Current Study: From the review of the studies, it is clear that most of them do not address our topic except through the variable of body image, and most are directed at secondary and middle school students, which represent the target age group. However, we did not find any study addressing our current research in the city of M'sila. From the previous and similar studies, we will be able to benefit in terms of shaping the theoretical framework of the study topic. We will also benefit from the procedures used in those studies, such as methodology, sample selection, building tests, and statistical methods suitable for the research topic. Additionally, we will compare the results of those studies with the results we are aiming to achieve and consider how hypotheses related to the research problem were formulated.

6/ Methodology:

Choosing the research methodology is one of the most important stages in the research process, as it determines how data and information are gathered on the topic, based on specific rules for each methodology in terms of its usage and application. Based on the research topic, which focuses on the study of the "Role of Training with Muscle-Strengthening Devices in Building Body Image among Karate Athletes," the methodology used in this study is the descriptive method. This method is considered the study of prevailing facts related to a phenomenon, specific situation, group of individuals, or set of events.

The descriptive method is defined as: "A set of research procedures that work together to describe a phenomenon or subject based on all facts and data, classifying, processing, and analyzing them sufficiently and accurately to extract their implications and reach conclusions." (Ali Mohammed, 2010, p. 181).

The researcher uses this methodology to open new areas of study that lack sufficient knowledge, aiming to obtain detailed and accurate information about the elements of the research phenomenon, which helps in understanding it or developing future actions related to it. The descriptive method is considered one of the best methodologies that ensures objectivity, as

respondents are free to express their opinions. Moreover, the nature of this topic requires this methodology, which is why we chose it.

7/ Research Community:

The research community is defined as: "The original group from which the sample is drawn. This group could be teams, populations, schools, or other units." (Radwan, 2003, p. 14). The community includes all the units of the phenomenon under study, which in this case involves some karate clubs in M'sila. After contacting some of these clubs in M'sila, they provided us with the number of athletes, which amounted to 50 athletes distributed across 6 clubs, as shown in the following table:

Table No. (01): Represents the number of athletes in the six clubs (2015|2016).

Club Name	Age	Total
	15–16	16–17
N/Mouloudia El M'sila	8	4
N/Mustakbal El M'sila	4	4
N/Olympic Shabab El M'sila	4	6
N/Afaq El M'sila	2	4
N/Civil Protection	3	3
Shabab El M'sila	5	3

7-1/ Research Sample:

A sample is considered a representation of the community. For example, a doctor can take a sample of a person's blood to examine it and make conclusions about the entire blood composition. The sample is a part of the whole. However, in psychological and social research, and generally in human studies, the researcher cannot take a sample of the entire population, but rather a part of it. The selection of this part is conditional on the chosen method. Using the entire population would take a long time, which could lead to errors. Research through sampling is a method that studies a specific case or a particular percentage of the individuals in the original community, and then generalizes its findings to the entire population. (Boudawad, Ata Allah, 2008, 67-68).

The sample for this research consisted of 18 karate athletes out of a total of 50 athletes, representing 35% of the total sample. The athletes were distributed across 6 clubs, and the sample was selected using a non-random purposive method.

8/ Data and Information Collection Tools:

Every study relies on research tools as the cornerstone to gather the necessary information to achieve the facts and objectives of the research. The research tools used in this study include:

• Body Image Scale: This scale was developed by "Dr. Nafi Sufyan" based on the body image scale and self-concept, including: the body self-concept scale "My Body as I See It" developed by "Mohamed Hassan Alawi," the "Tenesse" scale for self-concept, and the "Nelson et Allen" scale for motor satisfaction.

The researcher standardized the scale and calculated its reliability and validity coefficients, finding that the scale was statistically significant for both validity and reliability.

To ensure that the scale fits the current environment, the researcher used a pilot study to calculate the reliability and validity coefficients of the body image scale.

Description of the Scale:

The scale includes 25 traits and their opposites, phrased in a "Likert" style, where the sample members respond to each trait according to how much it applies to their body image. The scale includes a key for correction. The following table presents the statements related to each dimension:

Table No. (02) Represents the Distribution of Body Image Scale Statements

Dimensions	Statement Numbers and Directions	Number of Statements	Degree
External Appearance	(+) 1, 2, 10, 16, 17, 20, 21, 25	11	33 as the highest degree, 11 as the lowest degree
	(-) 3, 9, 12		
Motor Performance	(+) 4, 5, 6, 18, 23	7	21 as the highest degree, 7 as the lowest degree
	(-) 15, 19		
Health	(+) 8, 11, 13, 14, 22, 7	7	21 as the highest degree, 7 as the lowest degree
	(-) 15, 19, 24		

Scientific Conditions of the Tool:

Reliability: Reliability is one of the important factors or characteristics that must be present for the validity of using any test. A reliable scale will give nearly the same result for the same person when the measurement is conducted multiple times on the same day or on different days.

To calculate the reliability of the scale, we relied on the test-retest method, which calculates the correlation coefficient representing reliability. In this method, the research tool was distributed twice to the same sample under similar conditions as much as possible. Then, the correlation coefficient between the results of the first and second applications was calculated. This reflects the

reliability of the tool, also known as the stability coefficient. The scale was applied to a sample of 10 athletes practicing karate at the Mouloudia M'sila club. The following table shows the reliability coefficients for the scale dimensions.

Table No. (03) Represents the Reliability of the Body Image Scale

Dimensions of the Scale	Reliability Coefficient	Significance Level
External Appearance	0.86	0.01
Motor Performance	0.91	0.01
Health	0.83	0.01

It can be observed from the previous table that the correlation coefficients for each dimension, which represent the reliability of this scale, are high and strong, reflecting the reliability of the scale to a certain degree.

Validity: Validity refers to "whether the scale includes all the elements that should be part of the analysis, and the clarity of its items and phrases, such that they are understandable to everyone who uses it." (Mohamed Ali, previous reference, p. 118).

To ensure the validity of the study tool and its relevance to the current environment, we used the following:

Internal Validity: This refers to the internal validity of the test, which is the experimental scores of the test relative to the true scores free from measurement errors. It is measured by calculating the square root of the reliability coefficient of the tool using the following formula:

Table No. (04) Represents the Internal Validity of the Body Image Scale

Scale Dimensions	Internal Validity
External Appearance	0.92
Motor Performance	0.95
Health	0.91

9/ Field Application Procedures:

After selecting and determining the sample, the Body Image Scale was applied to the sample members. This was done by requesting the participant's responses, as they are the qualified individuals to provide us with this information. Additionally, the type of response was chosen to reflect their opinion, and it was emphasized that there are no right or wrong answers, but rather how much their opinion aligns with the given statements.

Finally, the responses of the participants were reviewed to ensure they answered all the items and recorded all the necessary data. The scale was distributed and collected within the same time frame (the same day) in order to capture spontaneous responses from the sample members.

10/ Statistical Methods Used in the Study:

The following statistical methods were used to verify the study hypotheses:

- Pearson Correlation Coefficient.
- Chi-Square Test (χ^2).

11/ Discussion of the Study Hypotheses:

Presentation of the External Appearance Dimension:

Table No. (05) Shows the Chi-Square Test (χ^2) Regarding the Role of Strength Training Equipment in Building External Appearance

Dimension	Sample N	²	Significance Level α	Significance Probability (sig)	Statistical Decision
External Appearance	18		0.05	0.02	Statistical significance

Presentation of the Table Results:

From the previous table, we observe that the value of χ^2 was (3) and the significance probability (sig) was (0.02), which is statistically significant at the significance level of (0.05) with a sample size of (18) athletes. This indicates that training with strength equipment significantly contributes to the development of external appearance for athletes.

Discussion of Hypothesis One:

As mentioned previously, the first hypothesis states: "Strength training equipment plays a role in building the external appearance of karate athletes." The results obtained from Tables No. (06), (07), (08), (09), (10), (12), (13), (14), (15), (16) indicate that strength training equipment significantly contributes to the development of the external appearance of karate athletes. This is evident through the actual physical training sessions where strength training equipment is used. Since most of the results in the previous tables indicate that most athletes have lean, muscular, and well-proportioned bodies, and considering the influence of the physical education teacher on the athletes—since each athlete desires to have a body like the teacher's—it can be concluded that strength training equipment plays a vital role in enhancing the external appearance. Since the significance probability (sig) in Table No. (17) was (0.02) and the significance level α was (0.05), comparing these two values shows that the significance probability (sig) of (0.02) is less than α (0.05). Therefore, we accept the hypothesis that "Strength training equipment plays a role in building the external appearance of karate athletes," thus confirming the hypothesis.

Presentation of the Motor Performance Dimension:

Table No. (06) Shows the Chi-Square Test (χ^2) Regarding the Role of Strength Training Equipment in Developing Motor Performance

Dimension	Sample N	^{2}	Significance Level α	Significance Probability (sig)	Statistical Decision
Motor Performance	18	.77	0.05	0.016	Statistical significance

Presentation of the Table Results:

From the previous table, we observe that the value of χ^2 was (4.77) and the significance probability (sig) was (0.016), which is statistically significant at the significance level of (0.05) with a sample size of (18) karate athletes. This indicates that strength training equipment contributes to the development of motor performance in karate athletes.

Discussion of Hypothesis Two:

The second hypothesis, as mentioned previously, states: "Strength training equipment plays a role in building motor performance in karate athletes." The results obtained from Tables No. (18), (19), (20), (21), (22), (23), (24) indicate that strength training equipment contributes significantly to the development of motor performance in karate athletes. This is evident through practical training sessions where strength training equipment is used. Since the majority of results indicate that karate athletes can easily learn new movements and maintain body balance during motion, and the variety of training sessions enhances the beauty of their body movements, it can be concluded that strength training equipment significantly influences motor performance. Since the significance probability (sig) in Table No. (25) was (0.016) and the significance level α was (0.05), comparing these two values shows that the significance probability (sig) of (0.016) is less than α (0.05). Therefore, we accept the hypothesis that "Strength training equipment plays a role in building motor performance in karate athletes," thus confirming the hypothesis.

Presentation of the Health Dimension:

Table No. (07) Shows the Chi-Square Test (χ^2) Regarding the Role of Strength Training Equipment in Enhancing Health

Dimension	Sample N	^{2}	Significance Level α	Significance Probability (sig)	Statistical Decision
Health	18	7.55	0.05	0.03	Statistical significance

Presentation of the Table Results:

From the previous table, we observe that the value of χ^2 was (7.55) and the significance probability (sig) was (0.03), which is statistically significant at the significance level of (0.05) with a

sample size of (18) athletes. This indicates that training with strength training equipment contributes to building health in karate athletes.

Discussion of Hypothesis Three:

As mentioned previously, the third hypothesis states: "Strength training equipment plays a role in building health in karate athletes." The results obtained from Tables No. (27), (28), (29), (30), (31), (32) indicate that strength training equipment contributes significantly to the health development of karate athletes through actual training sessions. The majority of the results from the previous tables suggest that karate athletes possess good health, feel comfortable most of the time, and have the ability to relax freely. These factors were achieved through structured training sessions. Since the significance probability (sig) in Table No. (33) was (0.03) and the significance level α was (0.05), comparing the obtained significance probability (sig) of (0.03) with the significance level α (0.05) shows that the significance probability (sig) is less than α (0.05). Therefore, we accept the hypothesis that "Strength training equipment plays a role in building health in karate athletes," and thus the hypothesis has been validated.

11-1/ Presentation, Analysis, and Discussion of the General Hypothesis: General Hypothesis: Strength training equipment plays a role in building body image among karate athletes.

Table No. (08) Shows the Chi-Square Test (χ^2) Regarding the Role of Strength Training Equipment in Developing the Three Dimensions of Body Image

Dimensions	Sample N	²	Significance Level α	Significance Probability (sig)	Statistical Decision
-External Appearance					
-Motor Performance					
- Health	18	.88	0.05	0.00	Statistical significance

Presentation of the Table Results:

From the previous table, we observe that the value of χ^2 was (6.88) and the significance probability (sig) was (0.00), which is statistically significant at the significance level of (0.05) with a sample size of (18) athletes. This indicates that strength training equipment plays a role in building body image in karate athletes.

Discussion of the General Hypothesis:

As previously mentioned, the general hypothesis states: "Strength training equipment plays a role in building body image among karate athletes." The results obtained from Tables No. (05), (06), (07), and those in Table No. (08) indicate that strength training equipment contributes significantly to building body image among karate athletes. This is evident as strength training enhances the external appearance, motor performance, and health aspects of the athletes, thereby contributing to a healthy body image. Since the significance probability (sig) in Table No. (08) was (0.00) and the significance level α was (0.05), comparing the significance probability (sig) of (0.00) with the significance level α (0.05), we find that the obtained significance probability (sig) is less than α (0.05). Therefore, we accept the hypothesis that "Strength training equipment plays a role in building body image among karate athletes," and thus the general hypothesis has been validated.

The results obtained in this study are consistent with previous similar studies, especially in terms of certain aspects related to the age group, as most samples in studies share the same developmental stage. This also means they share similar views on their body image and the motivation behind why they prioritize it.

12/ Study Results (Conclusions):

After analyzing and enriching the variables of the research theoretically, applying the Body Image Scale to karate athletes, and after collecting and processing the data statistically, discussing the results, and comparing them with previous related studies, we concluded from the study sample the following:

⇔ Strength training equipment plays a role in building body image in karate athletes through its proper and effective application.

⇔ Strength training equipment plays a role in building the external appearance dimension in karate athletes by providing the necessary appearance and features, whether for the athlete themselves, the community they live in, or the athletic environment they interact with, thus gaining a positive perception from their peers in the environment where they train, especially in the competitive environment. The sports educator or coach also plays a significant role in this by selecting appropriate strength training exercises that help the athlete show the required image, aiding them in building a good external appearance.

⇔ Strength training equipment plays a significant role in building the motor performance dimension in karate athletes. The athlete seeks to acquire the necessary skills through their strength training sessions using strength training equipment as part of the other aspects of their training program. These activities help the athlete achieve good motor performance through their motor imagery, which is stored in long-term memory. The athlete constantly tries to focus on exciting athletic activities and motor performances that showcase the beauty of body movements.

⇔ Strength training equipment plays a significant role in building the health dimension in karate

athletes by greatly contributing to the athlete's overall health, especially considering modern science, which highlights the necessity of engaging in various physical sports activities due to their benefits for the health of athletes.

⇔ There is a relationship between strength training equipment and body image in karate athletes. The more motivated the athlete is toward strength training, the better their body image becomes.

Suggestions:

1.We suggest the widespread use of strength training equipment in all karate clubs in M'sila province.

2.Increase the number of strength training sessions for a longer duration within a well-planned training program, in accordance with training principles that align with the latest scientific developments in sports, especially in karate clubs.

3.Conduct further studies to develop different types of muscle strength with strength training equipment using various training methods that meet the athlete's goals, especially for groups that require the development of a physical structure that aligns with their activity and contributes to building the athlete's personality.

4.Design individual strength training programs for athletes to achieve their specific goals and apply the principle of personalization.

5.Coaches and educators in karate training halls should focus on the aspects that create the appropriate body image for each athlete, based on their aspirations.

6.It is important for officials at all levels to equip the clubs with modern training tools and provide shared training halls for clubs to use according to a predetermined program.

7.We recommend conducting further studies that aim to provide new anthropometric measurements specifically for karate athletes, especially this category, as well as measurements of muscle strength using modern equipment. We also recommend that officials at our institute provide these devices for use in research and studies.

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