

The effect of using Kettle bell exercises on the level of skill performance among judo players

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Introduction

Scientific progress in all fields has become a feature of this era, which has prompted many countries to subject all capabilities to scientific research, experimentation and measurement in order to be able to keep pace with the great scientific progress that has touched on various areas of life. Sports activities are considered one of the most important of these fields because they contribute to the progress of... Communities and their development if their practitioners are well prepared, so intense competition emerged between countries to achieve global, international and continental victories, which led to competition in the search for discovering modern scientific theories in the field of sports training to raise the level of technical performance for practicing various sports activities.

Hohmann & Lames & Glatfelter (2002) state that the level of skill performance depends on the player's various motor performance abilities and the extent of their connection to the skill, which in turn is divided into coordination abilities, physical abilities, and mixed abilities, and these abilities are considered the broad base. To achieve optimal skill performance (12: 6)

Essam Abdel Khaleq (2005) believes that success in performing any skill requires the development of physical components that contribute to its ideal performance. (3: 44)

Khaled Farid (2007 AD) points out that judo sport is one of the sports of the Egyptian Olympian Mohamed Rashwan, who won the silver medal in the Olympic Games held in Los Angeles in the United States of America in 1984 AD, which led to an increasing demand among juniors and youth for Practicing judo, and also winning the bronze medal in the Olympic Games held in Beijing, China in 2008, and this in turn places a burden on those in charge of this sport by paying attention to the level of the broad base of juniors and youth by providing the best training programs. Established on scientific foundations to improve the technical performance of judo.(5: 22)

Benefiting from scientific methods is one of the basic pillars of the success of any training program, and it is indispensable in the work of a successful coach. Training programs that are developed in an unregulated manner do not positively affect the level of players' performance, because sports training forms the basis of what is called high-level sports. We find that its primary goal is to try to reach the individual to the highest possible athletic level in specialized activity by using the scientific method in training programs and adapting what science and technological techniques have provided to serve the training process. (10: 63)

For many years, weight training has been associated with some misconceptions, with athletes believing that it leads to muscle stiffness, lack of flexibility and neuromuscular coordination, and a negative impact on some motor skills. However, recent scientific research has revealed that these concepts are incorrect, and weight training has now occupied an important role in training programs directed to preparing Players in various sports activities (4: 56).

Yasser Abdel Raouf (2005) points out that the athlete's acquisition of strength characterized by speed is one of the most important basic abilities in combat sports because it helps to perform skills with maximum speed and strength, as a result of quick, short, and strong contractions of the muscles working during the execution of the skill performance. (11: 19)

The researcher believes that the future outlook for the technical performance of judo has differed greatly from what it was in the past.

Training has developed significantly in recent times, leaving the traditional framework of performance and forming new principles that have contributed to the development of performance. It is the only way to achieve the desired achievement, but it requires innovation. Modern methods and training methods work to achieve the best level during competitions.

The researcher also noted that there is a deficiency in performing the various judo skills in the appropriate time and economy of effort as a result of a deficiency in the level of physical abilities, which directly contributes to improving the performance of the skills, mastering them, and reaching the best possible level for the player during competitions.

Here the research problem appeared, which prompted the researcher to conduct this study by developing a training program using killer exercises to develop and develop physical qualities, which is reflected in the level of skill performance in the sport of judo.

Research aims:

The research aims to design a training program using killer exercises and to know its effect on the level of skill performance among judo players.

Research hypotheses:

1- There are statistically significant differences between the average scores of the pre- and post-measurements of the experimental group in the skill level of the judo players under study in favor of the post-measurement.

2- There are statistically significant differences between the average scores of the pre- and post-measurements of the control group in the skill level of the judo players under study in favor of the post-measurement.

3- There are statistically significant differences between the average scores of the two post-measurements of the experimental and control groups in the skill level of the judo players under study in favor of the post-measurement of the experimental group.

Scientific terms:**Kettle bell:**

It is a metal tool in the shape of a jug ball, with a large diameter at the base and gradually narrowing down to the handle. It is used in many physical and skill exercises. (14: 314)

Research procedures:**Research Methodology:**

According to the nature and problem of the research, to achieve its objectives and test its hypotheses, the researchers used the experimental method using pre- and post-measurements for the experimental and control groups due to its suitability to the nature of the study.

The Research population and sample:

The current research population included judo players enrolled in the specialty of wrestling and individual sports at the Faculty of Physical Education for the academic year 2022/2023 in the fourth year, and registered with the Egyptian Judo Federation, and their number is (28) players. The research sample was chosen in a deliberate manner and its number is (20) players, and they were divided into two equal and balanced groups. Each group has (10) players, and the exploratory sample includes (8) players from the research community and from outside the research sample.

Homogeneity of the research sample:

The researchers measure the moderation of the distribution of the research sample members considering the growth variables and the physical and skill tests under study. The skewness coefficients for the sample under study in the growth variables were limited to between (-3, +3), which indicates the moderation of the values. Thus, the initial measurements in the growth tests under investigation for the research sample as a whole fall within the normal moderate curve. The skewness coefficients for the sample under study in the physical and skill variables were limited to between (-3, +3), which indicates the moderation of the values. Thus, the initial measurements in the physical tests under investigation for the research sample as a whole fall within the natural moderation curve.

Equivalence between the two research groups:

The researchers found equality between the control and experimental groups considering the variables under study. There are no significant differences in the “t” value calculated for the pre-measurement between the experimental and control group in growth variables, which indicates parity between the two research groups before applying the basic research experiment. There are no significant differences in the “t” value calculated for the pre-measurement between the experimental and control group at the skill level, which indicates parity between the two research groups before applying the basic research experiment to the judo players under study.

Third, data collection methods:

In collecting data and information related to the variables under research, researchers relied on the following tools:

A- Reference survey:

B- Preparing registration forms:

C- Measurements and tests for the skill variables under investigation:

- Ippon Seo Nagi's skill
- Tai Otoshi's skill
- Ojoshi skill
- Ostogari skill

Scientific transactions for the tests under investigation:

The researcher conducted scientific procedures for the tests under study on a sample from the same research community and from outside the original sample, which consisted of (8) eight players, in the period from 6/1/2023 AD until 6/10/2023 AD, as follows:

Honesty:

The validity of the tests under study was calculated using discriminant validity on a survey sample similar to the research community and from outside the basic research sample, numbering (10) ten players. They were divided into two groups after ranking their scores in the

variables under study (a distinct group), numbering (5) players. (Less distinguished group), numbering (5) players. The significance of the differences between the two groups in the tests under study was calculated using the non-parametric Mann-Whitney test. It became clear that there were statistically significant differences between the distinguished and less distinguished groups in the tests under study, and in the direction of the distinguished group, as the error probability values Significant at the level of significance (0.05), which indicates the validity of these tests and their ability to distinguish between groups.

Stability:

The tests under study were applied and re-applied to a sample of (10) players, which is a sample similar to the research sample and other than the original sample, with a time difference of (7) seven days for the effect of the application to disappear. Correlation coefficients were found between the first and second applications, and it became clear that the correlation coefficients between the application and re-application For the skill level tests under investigation, they ranged between (0.82, 0.98), and all of them have statistically significant correlation coefficients, as the calculated (R) values are greater than the tabulated (R) value at the significance level (0.05), which indicates the stability of these tools.

A- Pre-measurement:

Pre-measurements were conducted on the basic research sample, which consisted of (20) players in the period from 6/20/2023 AD to 3/21/2023 AD.

B- Program implementation:

The program was applied to the primary research sample, which consisted of (20) players, in the period from Saturday, corresponding to 6/24/2023 AD, until Thursday, corresponding to 9/14/2023 AD, for a period of (12) weeks, with a number of (3) units per week, and the time of the training unit ranged from about (60: 90) minutes. The intensity rates during the program ranged between (60: 85%), the number of sets was (2: 5), the training frequency was (6: 12) repetitions, and the inter-rest period was (1: 2) between Groups.

C- Dimensional measurement:

Post-measurements were applied to the primary research sample, which consisted of (20) players in the period from Saturday, corresponding to 9/16/2023 AD, to Monday, corresponding to 6/18/2023 AD, under the same conditions that were followed in the pre-test measurements.

The statistical method used:

Considering the objectives and hypotheses of the research, the researchers used the following statistical methods:

- Median arithmetic mean, standard deviation, skewness coefficient, percentage, "t" test for significance of differences, "t" test for independent samples, Pearson correlation coefficient

The researcher accepted a significant level of (0.05). The researchers also used the Spss program to calculate some statistical coefficients.

Presentation and discussion of results:

Researchers will review the research results in the following order:

1. The significance of the differences between the average scores of the pre- and post-measurements of the experimental group in the skill level of the judo players under investigation.
2. The significance of the differences between the average scores of the pre- and post-measurements of the control group in the skill level of the judo players under investigation.
3. The significance of the differences between the average scores of the two post-measurements for the experimental and control groups in the skill level of the judo players under investigation.

Table (1)

The significance of the differences between the means of the pre- and post-measurements for the control group Skill level under investigation (n = 10)

| Skill variables | measuring unit | Pre-measurement | | Dimensional measurement | | Differences between the averages | Improvement rate | Statistical significance | |
|---------------------------------|----------------|-----------------|---------------|-------------------------|---------------|----------------------------------|------------------|--------------------------|------------|
| | | Average | St. Deviation | Average | St. Deviation | | | value (T) | indication |
| murti syunagi (throw with arms) | degree | 4.65 | 0.875 | 6.40 | 0.843 | 1.75 | 37.63 | 5.075 | sig |
| Ojoshi (waist throw) | degree | 4.90 | 0.876 | 6.60 | 0.843 | 1.70 | 34.69 | 7.965 | sig |
| Sumo gaichi (back drop throw) | degree | 4.80 | 0.919 | 6.80 | 1.033 | 2.00 | 41.67 | 6.000 | sig |

The tabular (t) value is at a significance level of (0.05) = 1.833

It is clear from Table (1) that:

- There are statistically significant differences between the average scores of the pre-measurements and the post-measurement of the control group in the skill variables under study, in favor of the post-measurement, as the calculated (t) value is greater than the tabulated (t) value at the significance level (0.05).

Table (2)

The significance of the differences between the means of the pre- and post-measurements for the experimental group Skill level under investigation (n = 10)

| Skill variables | measuring unit | Pre-measurement | | Dimensional measurement | | Differences between the averages | Improvement rate | Statistical significance | |
|---------------------------------|----------------|-----------------|---------------|-------------------------|---------------|----------------------------------|------------------|--------------------------|------------|
| | | Average | St. Deviation | Average | St. Deviation | | | value (T) | indication |
| murti syunagi (throw with arms) | degree | 4.70 | 0.949 | 7.60 | 0.843 | 2.90 | 61.70 | 5.749 | sig |
| Ojoshi (waist throw) | degree | 4.80 | 0.919 | 7.80 | 0.919 | 3.00 | 62.50 | 5.582 | sig |
| Sumo gaichi (back drop throw) | degree | 4.60 | 0.843 | 7.90 | 0.876 | 3.30 | 71.74 | 6.659 | sig |

The tabular (t) value is at a significance level of (0.05) = 1.833

It is clear from Table (2) that:

- There are statistically significant differences between the average scores of the pre-measurements and the post-measurement of the experimental group in the skill variables under study and in favor of the post-measurement, as the calculated (t) value is greater than the tabulated (t) value at a significance level (0.05), except for the Ojoshi skill, where differences were found. Not statistically significant in favor of the post measurement.

Table (3)

The significance of the differences between the means of the two post-measurements for the experimental and control groups in The skill level under investigation (N1 = N2 = 10)

| Skill variables | measuring unit | Pre-measurement | | Dimensional measurement | | Differences between the averages | Improvement rate | Statistical significance | |
|---------------------------------|----------------|-----------------|---------------|-------------------------|---------------|----------------------------------|------------------|--------------------------|------------|
| | | Average | St. Deviation | Average | St. Deviation | | | value (T) | indication |
| murti syunagi (throw with arms) | degree | 7.60 | 0.843 | 6.40 | 0.843 | 1.20- | 15.79 | 3.043 | sig |
| Ojoshi (waist throw) | degree | 7.80 | 0.919 | 6.60 | 0.843 | 1.20- | 15.38 | 3.043 | sig |
| Sumo gaichi (back drop throw) | degree | 7.90 | 0.876 | 6.80 | 1.033 | 1.10- | 13.92 | 2.569 | sig |

The tabular (t) value is at a significance level of (0.05) = 1.833

It is clear from Table (3) that:

- There are statistically significant differences between the means of the two post-measurements for the experimental and control groups in the skill variables under study, in favor of the post-measurement, as the calculated (t) value is greater than the tabulated (t) value at a significance level of (0.05).

Discussion of results:

It is clear from Table (1) that there are statistically significant differences between the average scores of the pre-measurements and the post-measurements of the control group in the skill tests (Murti Seyonage skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaishi skill (throwing by falling on the back))) In favor of the post-measurement, the percentage improvement between the average scores of

the pre-measurements and the post-measurement for the control group in the skill tests under study ranged between (34.69%: 41.67%).

The researcher attributes the improvement of the skill tests (Murti Seyonagai skill (throwing with arms) - Ojoshi skill (throwing with the waist) - Sumo Gaishi skill (throwing by falling on the back)) among members of the control group to the commitment to attend all training units in the traditional training program, which contributed to the clarity of the method of performance. The sound performed by the trainer through explanation and model and using various training methods helped to impart a sense of enthusiasm among the members of the control group, which made them more keen to attend all training units and thus improved their skill tests.

Thus, the first hypothesis has been fulfilled, which states that “there are statistically significant differences between the average scores of the pre- and post-measurements of the control group in some physical tests and the skill level of the judo players under study.”

It is also clear from Table (2) the following: There are statistically significant differences between the average scores of the pre-measurements and the post-measurements of the experimental group in the skill tests (Murti Seyonage skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaishi skill (throwing by falling on Back)) and in favor of the post-measurement, the percentage improvement between the average scores of the pre-measurements and the post-measurement for the experimental group in the skill tests under study ranged between (61.70%: 71.74%).

The researcher attributes the significance of the differences in favor of the post-measurement in the judo skills under study (Murti Seyonaggi skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaichi skill (throwing by falling on the back)) among the members of the experimental group to the integrated training program and the subject according to scientific foundations. The various skill exercises for the skills under study overlapped with the KETTLEBELL training, which effectively contributed to developing the judo skills under study (Murti Seyonaggi skill (throwing with arms) - Ojoshi skill (throwing with waist) - Sumo

Gaishi skill (throwing by falling on the back).) among members of the experimental group.

In this regard, Abu Al-Ela Abdel Fattah (2003 AD) indicates that in order to ensure the achievement of the goals and objectives of sports training, the coach must organize and plan it well. Therefore, the planning process in training represents the scientific procedures planned and organized in a very precise manner that helps the athlete to achieve high indicators in training. Accordingly, planning is the important tool that the trainer uses in his endeavor to manage organized training programs. An efficient and effective trainer is an organized trainer (1:90)

Using the Kettlebell has many benefits, including developing strength, endurance, agility, balance, and aerobic and anaerobic ability. It helps reduce the chances of injury as a result of its use in improving muscle tone. It is used to develop muscle balance and muscle strength of different muscle groups. It is used to develop physical fitness better than regular forms of barbell weights. Dumbbells and improving these abilities have a positive effect in improving the skill tests related to the practiced split, the results of which appeared in the improvement of the skill tests under study among judo players.

This is consistent with what Mufti Ibrahim (2020) stated that exercises performed in conditions similar to skill performance, especially in conditions similar to the muscular work of skills, contribute to improving the skill level and physical fitness at the same time and achieve synchronization between physical characteristics and the level of skill performance. (10: 53)

The results reached by the researcher are consistent with the findings of the studies of Mahmoud Amer (2023), Ahmed Hamdi Sadiq (2022), Hadeer Hosni Abdel Maqsood (2021), John Kay and others (JEON, KYE (2024), on the positive and effective effect of killer training. (KETTLEBELL) in improving the elements of physical fitness and skill tests for the samples being studied, and this is consistent with the current study.

Thus, the second hypothesis has been fulfilled, which states that “there are statistically significant differences between the average scores of the pre- and post-measurements of the experimental group in some elements of physical fitness and the skill level of the judo players under investigation.”

As can be seen from Table (3) the following: There are statistically significant differences between the averages of the two post-measurements for the experimental and control groups in the skill tests (Ippon Seo Nagi skill - Tai Otoshi skill - Ostogari skill) and in favor of the post-measurement for the experimental group, the percentage improvement ranged between the averages The two post-measurements for the experimental and control groups in the physical elements under study ranged between (13.92%: 15.79%)

The researcher attributes the significance of the differences in favor of the experimental group’s post-measurement in the judo skills under study (Murti Seyonaggi skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaishi skill (throwing by falling on the back)) among the members of the experimental group to the use of killer exercises, but (KETTLEBELL) in the content of the training program, which, including high-intensity exercises, contributed to improving the functional efficiency of the body and thus had a positive impact on the skill performance of the members of the experimental group in developing the judo skills under study (murti syunagi skill (throwing with arms) - ojoshi skill (throwing). With the waist) - Sumo Gaishi skill (backfall throw)).

The results reached by the researcher are consistent with the findings of the studies of Mahmoud Amer (2023), Ahmed Hamdi Sadiq (2022), Hadeer Hosni Abdel Maqsoud (2021), Hani Mamdouh Abdel Moneim (2020), John Kay and others (JEON, KYE (2024), JAISWAL, PRATIK & RAMTEKE, SWAPNIL (2024) On the positive and effective effect of KETTLEBELL training in improving the elements of physical fitness and skill tests for the samples under their studies, and this is consistent with the current study.

Thus, the third hypothesis has been fulfilled, which states that “there are statistically significant differences between the averages of the two post-measurements for the experimental and control groups in some elements of physical fitness and the skill level of the judo players under study, and in favor of the post-measurement for the experimental group.”

Conclusions:

1. Using KETTLEBELL training has a positive effect in improving the skill level (Murti Seyonaggi skill (arm throw) - Ojoshi skill (waist throw) - Sumo Gaichi skill (back throw) for the judo players under investigation.
2. The KETTLEBELL training contributed to the development of skill tests (Murti Seyonagai skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaishi skill (throwing by falling on the back) among members of the experimental group with improvement rates ranging between (61.70%) : 71.74%).
3. The traditional training program contributed to the development of skill tests (Murti Seyonagai skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaishi skill (throwing by falling on the back) among members of the control group with improvement rates ranging between (34.69%: 41.67%))
4. There were statistically significant differences between the means of the two post-measurements of the experimental and control groups in the skill tests (Murti Seyonaggi skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - Sumo Gaichi skill (throwing by falling on the back) and in favor of the post-measurement of the experimental group with improvement rates that ranged from Between (13.92% : 15.79%)

Recommendations:

1. Using KETTLEBELL training to improve the skill level (Murti Seyonagai skill (arm throw) - Ojoshi skill (waist throw) - Sumo Gaichi skill (back throw) for judo players.
2. Educating coaches about the importance of KETTLEBELL exercises in developing the functional efficiency of the body and its positive role in improving the skill level of judo players.
3. Holding training courses and workshops for judo coaches to train them on how to use the KETTLEBELL training among judo players.
4. Conducting similar studies that include identifying the effect of using KETTLEBELL exercises on players in wrestling and other individual sports.

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The effect of using Kettle bell exercises on the level of skill performance among judo players

Abstract

Background: The researchers aimed to design a training program using killer exercises and to know its effect on the level of skill performance among judo players. The experimental approach was used using pre- and post-measurements for the experimental and control groups due to its suitability to the nature of the study. The current research population included judo players and those enrolled in the wrestling and individual sports specialization at the College of Physical Education. For the academic year 2022/2023 in the fourth year, registered with the Egyptian Judo Federation, and their number is (28) players. The research sample was chosen intentionally and numbered (20) players, and they were divided into two equal and equal groups, the strength of each group being (10) players. The exploratory sample: They numbered (8) players from the research community and from outside the research sample. The most important results were that the KETTLE BELL training contributed to the development of skill tests (Murti syunagi skill (throwing with the arms) - Ojoshi skill (throwing with the waist) - skill Sumo jaishi (back throw) among members of the experimental group, with improvement rates ranging between (61.70%: 71.74%).

KEYWORDS: skill level, Judo, KETTLE BELL