

THE EFFECT OF KI-HARA EXERCISES ON DEVELOPING MUSCLE STRENGTH, FLEXIBILITY OF THE UPPER LIMBS, AND ACCURACY OF PERFORMING THE SMASHING SKILL FOR VOLLEYBALL PLAYERS

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Abstract

Each game has its own requirements, and volleyball is one of the games that depends on both strength and speed in performance, in addition to skill capabilities, such as serving, smashing, blocking, and other skills that are performed according to various resistances that need to develop the muscles working in the body during performance, which makes skill exercises related to physical effectiveness. It is one of the basic pillars of developing special working muscles for the benefit of the game. These are the exercises specific to the game, which are carried out using training methods and scientific methods in accordance with the goals set and which the coach sets by what he indicates when the players perform exercises or matches, and through them he is able to identify weak points and strong points, choose solutions for the weak points and strengthen the strong points, and thus build his next exercises within his approach. Scientific training leads to reaching a higher level and continues to diagnose these cases because one of the reasons for the success of training is evaluating and measuring the levels of players according to the curriculum prepared by the coach, as completing, modifying or changing the curriculum depends on its suitability to achieve the goals, and perhaps the appropriate training methods and techniques are important elements for achieving Training objectives: Therefore, it is necessary for the number of players in this game to be physically and skillfully prepared in accordance with modern and innovative methods in developing all physical and skill abilities. Since training methods and programs have become diverse and numerous, it has become necessary for the coach to choose training programs and methods that are compatible with the characteristics and capabilities of the players in addition to the tasks and positions assigned to them in playing, which work to develop their physical abilities and motor skills, which in turn leads to improving their achievements. These modern methods of training are the (KI-HARA) method, which is a modern training method that works to develop physical abilities in general and flexibility in particular through stretching with resistance. The researcher decided to delve into this research to find out the feasibility of using modern methods and methods and their impact on the level of muscular strength and skill among the players of the Specialized School of Volleyball, in a way that is consistent with the development taking place in the world, as well as in a way that is appropriate for the great edifice and the efforts made in these schools to come up

with products that raise the ball. The Iraqi aircraft raises its level and results in local and international forums.

Research Aims

1. Preparing training exercises (KI-hara) for volleyball players.
2. Identify the effect of ki-Hara exercises on developing muscular strength and flexibility of the upper extremities of volleyball players.
3. Identify the effect of (ki-Hara) training on the accuracy of performing the volleyball smashing skill.

Research hypotheses

1. There are statistically significant differences between the pre- and post-tests in the muscular strength and flexibility of the upper limbs of volleyball players.
2. There are statistically significant differences between the pre- and post-tests in the accuracy of performing the smashing skill among volleyball players.

Research areas

The human field: Players of the Specialized School for Nurturing Sports Talent in Baghdad.

Time range: from 9/1/2023 to 11/1/2023

Spatial area: The hall of the Specialized School for Nurturing Sports Talent in Baghdad

Research Methodology: The researcher identified the research population for the players of the National Center for Youth Sports Talent Care in volleyball for the season (2023-2024), who numbered (18) players and aged (15-17) years. The research sample was chosen randomly by lottery method, and after excluding the number of players. 1) The number of freestyle players was (2), and their number reached 15 players, representing (83%) from the community of origin, and they were divided into the control and experimental groups. The researcher conducted homogeneity for the members of the research sample in (height, age, and weight)

1. The results showed that exercises using the (KI-HARA) method helped develop the muscular strength, explosive ability, and speed strength of the leg muscles for members of the experimental group.
2. The results showed that exercises using the KI-HARA method helped develop crushing skills as well as develop the flexibility of the upper limbs for members of the experimental group.

recommendations

1. Paying attention to using exercises using the (KI-HARA) method according to codified scientific principles to raise the efficiency of volleyball players.
2. Adopting exercises using the (KI-HARA) method within the components of the training load (intensity, volume, rest) when training muscle strength for its contribution to developing the crushing skill.

Keywords: Explosive power - Power characterized by speed - Flexibility - Accuracy of performance - Crushing hitting - Volleyball

Overview of the research

Despite the advanced level reached by international sports at various levels in general and volleyball in particular, the field remains open for scientific development to serve the

requirements of the game and advance it to reach the best achievements. Each game has its own requirements, and volleyball is one of the games that depends on both strength and speed in performance, in addition to skill capabilities, such as serving, smashing, blocking, and other skills that are performed according to various resistances that need to develop the muscles working in the body during performance, which makes skill exercises related to physical effectiveness. It is one of the basic pillars of developing special working muscles for the benefit of the game. These are the exercises specific to the game, which are carried out using training methods and scientific methods in accordance with the goals set and which the coach sets by what he indicates when the players perform exercises or matches, and through them he is able to identify weak points and strong points, choose solutions for the weak points and strengthen the strong points, and thus build his next exercises within his approach. Scientific training leads to reaching a higher level and continues to diagnose these cases because one of the reasons for the success of training is preventive evaluation. The levels of players according to the curriculum prepared by the coach, as completing, modifying, or changing the curriculum depends on its suitability to achieve the goals. Perhaps the appropriate training methods and approaches are important elements for achieving the training goals. Therefore, it is necessary for the players in this game to be prepared physically and skillfully according to modern methods. And innovative in developing all physical and skill abilities, as Al-Hayali emphasizes that “the physical and skill requirements are a basic and important element at all times of the match. Players cannot perform well if they are not at a high level of skill and physical proficiency” (Al-Hayali 2009, 196).

Justifications for the research and its importance

Since training methods and programs have become diverse and numerous, it has become necessary for the coach to choose training programs and methods that are compatible with the characteristics and capabilities of the players in addition to the tasks and positions assigned to them in playing, which work to develop their physical abilities and motor skills, which in turn leads to improving their achievements. These modern methods of training are the (KI-HARA) method, which is a modern training method that works to develop physical abilities in general and flexibility in particular through stretching with resistance.

Research problem

One of the most important reasons for not reaching the team level is the simplicity and monotony of the training methods used and the means and methods that are considered old compared to what is modern and used by other teams and national teams in the rest of the Arab and foreign countries.

Therefore, it requires us to stay away from everything that is familiar and old in the training process, in terms of training methods and techniques, and focus on using a modern training method, which is (flexibility - resistance) training (ki-hara), and knowing the extent to which it reflects on muscular strength and skills. Therefore, the researcher decided to delve into this study to find out the feasibility of using modern methods and methods and their impact on the level of abilities and skills of the players of the Specialized Volleyball School, in a way that is consistent with the development taking place in the world, as well as in a way that is appropriate for the

great edifice and the efforts made in these schools to come up with products that support and raise Iraqi volleyball. From its level and results in local and international forums.

Research objectives

1. Preparing training exercises (KI-hara) for volleyball players.
2. Identify the effect of (ki-Hara) exercises in developing muscular strength and flexibility of the upper extremities of volleyball players.
3. Identify the effect of ki-Hara exercises on the accuracy of performing the volleyball smashing skill.

Research hypotheses

1. There are statistically significant differences between the pre- and post-tests in the muscular strength and flexibility of the upper limbs of volleyball players.
2. There are statistically significant differences between the pre- and post-tests in the accuracy of performing the smashing skill among volleyball players.

Research areas

- Human field: Specialized School volleyball players
- Temporal scope: for the period from 9/1/2023 to 11/1/2023
- Spatial area: Volleyball hall - specialized schools in Baghdad

Research methodology and field procedures

Research Methodology

Al-Khafaji (2014, 93) believes that every research has a scientific approach in the light of which it is possible to reach the best way to solve the problem that makes up the research. Therefore, the researcher chose the experimental method to know the research problem and its objectives, as it was represented by designing two equal groups, the control and the experimental, with pre- and post-tests.

The research community and its sample

The researcher identified the research population for the National Center for Youth Sports Talent Care in volleyball for the season (2023-2024), who numbered (18) players and aged (15-17) years. The research sample was chosen randomly by lottery, and after excluding the number of players (1) and the player The number of free players was (2), and their number was 15 players, representing (83%) from the community of origin, and they were divided into the control and experimental groups. The researcher conducted homogeneity for the members of the research sample in terms of (height, age, and weight), which is shown in Table (1)

Table (1) It shows the homogeneity of the individuals in the research sample

Torsion coefficient	Arithmetic mean	standard deviation	Mediator	Variables
0.641	1.82	0.421	1.75	height
0.645	16	1.342	15	the age
0.342	64.26	1.645	72.41	the weight

It is clear from the table that the skewness coefficient for age, weight, and height of the research sample ranged between (-+1), meaning that the total falls under the moderate curve.

Devices and tools used and means of collecting information

Devices and tools used in research

1. Volleyballs (11)
2. Data dump forms.
3. Whistle number (3)
4. Colored adhesive tape (5)
5. A tape measure in centimeters.
6. Signs number (6)
7. Sports cones.

Means of collecting information

1. Arab and foreign sources and references.
2. The Internet.
3. Observation and experimentation.
4. Statistical methods

Field research procedures

Determine the research variables

A group of tests were nominated in a questionnaire form, to seek the opinions of experts on determining muscular strength tests, which are described in Appendix (1). After collecting the forms and transcribing the data, the tests that achieved an agreement rate of (75% or more) were approved as a percentage of the tests, and as shown in Table (2.)

Table (2) shows tests of muscular strength and striking skill

the exams	Search variables
Test of throwing a 2-kg medicine ball with the hands over the head from a seated position on a chair	The explosive power of the arms
Vertical jump test from stability	The explosive power of the two men
extension test in 20 seconds (for both sexes)	The strength and speed of the legs
Measuring spinal flexibility (anterior torso flexibility measurement).	Flexibility
Testing the accuracy of the diagonal and straight center multiplication skill 2	Crushing skill

Muscular strength tests

Vertical jump test from a standstill (Ali Samoum 2004, 169)

Purpose of the test: - To measure the explosive power of the legs.

Test of bending and extending the knees in 20 seconds (for both sexes) (Hassanin 2003, 327-)

Flexibility test (Hassanin 1979, 327)

.Test of bending the torso back from standing:

Skill tests (Dunia Abdul Hussein 64, 2015)

Testing the accuracy of the diagonal and straight smash skill, center (4)

Testing the accuracy of the centered diagonal and straight smash skill (2)

Exploratory experiments

The first exploratory experiment

Qasim and others (1989, 187) believe that the exploratory experiment is considered “scientific training for the researcher to identify for himself the negatives and positives that he encounters while conducting the experiment in order to avoid them in the future.” The first exploratory experiment was conducted on (Friday), corresponding to (9/1/2023)

The second exploratory experiment

The researcher prepared the exercises (Ki-Hara) and the exercises took into account the development of all physical and skill aspects by using a wide range of exercises that achieve the required goals according to the exercise curriculum, on (Saturday) corresponding to (9/2/2023) on a sample consisting of (4) Volleyball Specialized School players. The purpose of this experiment was-:

1. Ensure that the training unit is completed on time.
2. Verifying the times set by the researcher when implementing the training unit exercises.
3. Verifying the inter-rest time set by the researcher between one repetition and another and another group.
4. Ensure the intensity of the exercise by measuring the pulse of the research sample and measuring the work time to the rest time, which is the best indicator for identifying intensity after exercise.
5. Knowing the obstacles that the trainer encounters in the training unit and avoiding errors

Pretests

The researcher and the assistant work team (on the day) corresponding to (9/4/2023) at the volleyball specialist school conducted muscular strength and skill tests on the research sample, and the data was recorded in its form.

The method used

The researcher prepared a training curriculum for the research sample, which lasted for two months for the period from (9/6/2023) to (10/30/2023), meaning (8) weeks, with (4) units per week, which was implemented on days (Friday, Saturday, Monday, and Wednesday) during the first part. From the main section of the training unit, which lasts (2) hours.

Posttests

On (Friday) corresponding to (11/1/2023) at the Volleyball Specialized School, the researcher and the assistant work team conducted muscle strength and skill tests on the research sample, and the data was recorded in its form.

Statistical methods

The researcher used the statistical software package (SPSS) to extract the results of the current research.

Presentation, analysis and discussion of results

Presentation, analysis and discussion of the results

This section includes presenting the results of the tests that were used in the research and which the control and experimental research sample underwent in the pre- and post-tests according to tables to identify the differences and compare the results of statistical operations to reach the final results and discuss these results.

Presentation of the results of the pre- and post-tests for the experimental group:

Presentation and analysis of the results of the pre- and post-tests of the experimental group for the muscular strength variables under investigation.

Table (3) shows the results of the significance of the differences between the pre- and post-tests for the muscular strength under investigation

indication	Error level	n relative	A F	SF	Posttest		Pretest		measuring unit	Muscular strength
					A	s	A	s		
Functional	0,021	4,474	0.032	0.0722	0.0393	1,905	0.0389	1,833	meter	Vertical jump test from stability
Functional	0,002	9,934	1,258	6,250	0.816	17,777	0.957	10,750	The number of times	Flexion and extension test with two combinations of 20 s
Functional	0.020	3.773	1.3038	2.2000	1.8165	20.4000	0.8366	18.2000		Flexibility

A function under a significance level ≤ 0.05 and under 3 degrees of freedom

Through Table No. (4-1), it is clear that there is a significant difference between the pre- and post-tests, and the researcher attributes these differences to the nature of the exercises prepared by the researcher, which are (ki-hara) exercises, which are a type of resistance stretching training, which is one of the modern techniques. It is used to improve flexibility, and its primary goal is that the muscles become strong in all directions of movement, as it works to improve muscle strength and flexibility side by side. Here, the researcher attributes the development of the muscle strength under research. The researcher believes that in order for a volleyball player to be able to perform a crushing hit, he must possess explosive power - and the speed characteristic of the legs in order to be able to jump and reach the highest possible point and direct the ball to the appropriate place. The exercises prepared using (ki-hara) exercises had a clear and effective impact in developing Muscular strength (strength, flexibility), the effects of which were clearly reflected in skill performance, represented by crushing striking skills and achieving the desired goals in training, and this is consistent with what Youssef (1999, 30) mentioned that explosive

force takes the primary role in developing the art of performance and improving the level of sports, such as football. The plane in which the process of jumping upward is carried out with the maximum force and the shortest possible time. Ki-hara exercises are called loaded stretching exercises, and they work to cause contraction and lengthening at the same time by lengthening a muscle group through its entire range of motion during contraction, and for this reason Ki-hara exercises are related to strengthening muscle groups as much as they are related to lengthening them. (BRAD WAIKER 2011, 24) This type of training works directly on the muscle fascias. It is a form of stretching with two basic elements: resistance and movement, where the resistance comes from tightening the muscles and the movement comes from moving the limbs, the torso, or both together in a specific way for each stretch. The exercises that were prepared by the researcher had a clear effect in increasing flexibility and muscle lengthening, and thus their effect was reflected in the performance of crushing skills. This was confirmed by Hamdan and Abdel Razzaq (2001, 54) “that stretching exercises increase the range of motion of the joints that need To which the player can perform the required movements.” This is consistent with what Hamza (2021, 5) mentioned, as he emphasizes that (ki-hara) training provides immediate, cumulative, and permanent increases in flexibility. It focuses on matching flexibility with strength, and this means lengthening the muscles, the effectiveness of which is estimated from contraction. At one time only, the active contraction (contraction) of the muscles in the stretching position helps the body become more flexible and stable.

Presentation and analysis of the results of the pre- and post-tests of the experimental group for the crushing multiplication skill under study.

Table (4-2) shows the significance of the differences between the pre- and post-tests of the experimental group for the overwhelming multiplication skill among the research sample.

Statistical significance	Error level	Calculated t value	A F	SF	Posttest		Pretest		Crushing skill
					A	s	A	s	
Functional	0.004	6.095	3.9623	10.8000	2.121	20,000	2.2803	9.2000	Center 2
Functional	0.001	8.703	2.7748	10.8000	2.9154	21,000	0.8366	10.2000	Center4

It is evident from Table (4-2) that there are significant differences between the pre- and post-tests among the research sample for the variable of the overwhelming multiplication skill. The researcher attributes the significant differences to the nature of the exercises that were prepared by the researcher, which are the stretching exercises [ki-hara] that are approved by Researcher in her training position. The basic concept of [ki-hara] training is that the muscles become strong in all their ranges of movement when strength and flexibility are developed side by side, based on the individual's own resistance, using shortening exercises for strengthening with eccentric and lengthening movements of the muscles, which makes the muscles become more vegetative. (Hamza 2021, 71) Here, the researcher confirms that the exercises prepared according to resistance training (ki-hara) had a clear impact on developing muscular strength (strength, flexibility), which was clearly and positively reflected in the performance of the crushing skill.

The researcher believes that the explosive power and speed characteristic of the muscles of the legs is an important physical ability for volleyball players to perform a smash hit, as without it players cannot jump to a higher level of the net or perform a smash hit that earns them a point. It is an important factor and the basis and necessity for most volleyball skills, and any weakness in strength leads to a weak skill level and this is what Confirmed by Saleh Amin ((The physical level is the basic base upon which the skill level is built. If the physical level is weak, it leads to a weak skill level)) This development of the players in the crushing skill is due to the exercises that the researcher used in the approach, which was distinguished by diversification and change in exercises and avoiding monotony in training, and this is what Amr Saber (2021) confirmed, stating that “Ki-HARA exercises provide unprecedented efficiency compared to traditional strength training that It relies on the use of machines, free weights, elastic bands, or negative body weight to produce resistance and produce force and overcome it, while in KI-HARA exercises we find that the athlete is the one who produces force and resistance together.

Conclusions and recommendations

Conclusions

Based on the research results that were reached within the limits of the research community, it was possible to reach the following conclusions:

1. The results showed that exercises using the (KI-HARA) method helped develop the muscular strength, explosive ability, and speed strength of the leg muscles for members of the experimental group.
2. The results showed that exercises using the KI-HARA method helped develop crushing skills as well as develop the flexibility of the upper limbs for members of the experimental group.
3. The development of muscular strength reflected positively and significantly on the accuracy of the crushing skills of the experimental group members.

Recommendations

In light of the conclusions reached by the researcher, which demonstrated the effectiveness of using high-intensity interval training exercises, the researcher recommends several recommendations:

1. Paying attention to using exercises using the (KI-HARA) method according to codified scientific principles to raise the efficiency of volleyball players.
2. Adopting exercises using the (KI-HARA) method within the components of the training load (intensity, volume, rest) when training muscle strength for its contribution to developing the crushing skill.
3. Conduct similar studies on different age groups.

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