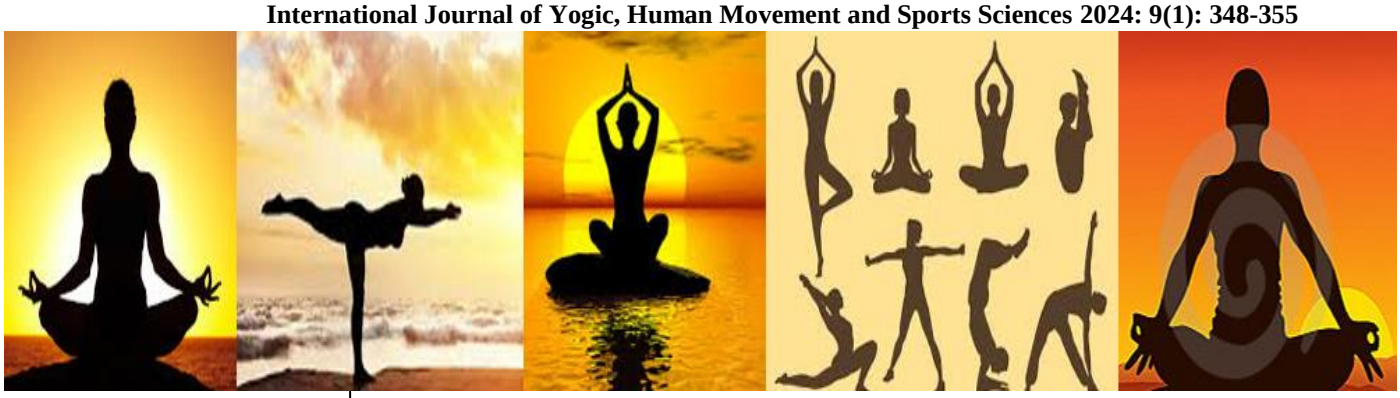

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The impact of kaatsu training on the efficiency of some physical and physiological variables of volleyball players

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Abstract
The research aims to identify the effect of katsuo training on the efficiency of some physical and physiological variables of volleyball players by determining the effect of katsuo training on the efficiency of some physical variables of volleyball players, the effect of katsuo training on the efficiency of some physiological variables of volleyball players, and the researcher used the experimental approach. The researcher selected a random sample of (26) players registered in the Iraqi Volleyball Federation, and one of the most important results was that the proposed katsu training program led to an improvement in the physical capabilities of the research sample of volleyball players, an improvement in physiological variables (vital capacity, blood pressure). Diastolic blood pressure, systolic blood pressure, pulse rate) for a research sample of volleyball players.

Keywords: Katsu, physical and physiological variables

Introduction
Achieving championship-level performance and reaching optimal skill levels in various sports activities, particularly volleyball, requires a systematic and integrated series of scientifically-based measures for player selection, instruction, and training. Attaining such levels necessitates that players possess the prerequisites of the activity, including physical fitness and physiological variables, to reach high levels of proficiency. Khairiya Al-Sukkari and Mohammed Jabir Bariqah (2001) [3] note that most sports teams undergo various training methods aimed at maximizing player effort. However, excessive training repetitions may lead to repetitive injuries due to overuse, as well as psychological issues, particularly emotional difficulties associated with performance monotony and boredom. To overcome these challenges, coaches must integrate diverse exercises within each training session, utilizing movements similar to the performance model to enhance motivation and enjoyment and break the monotony (Al-Sukkari & Bariqah, 2001: 23) [3].
According to Awais Al-Jabali (2000) [6], physical preparation represents the fundamental basis upon which mastery and achievement of technical and numerical performance levels are built. It serves as the primary conduit for players to reach high athletic levels by developing their physical and functional characteristics (Al-Jabali, 2004: 98) [13]. The increasing emphasis on achieving athletic accomplishments has led scientists to research methods and techniques that positively impact performance levels. Variable training methods, including varied training approaches, have garnered attention in recent years for training high-level athletes (Bassetr, 2012: 214; Kravitz, 2010: 37) [8, 10].
Brian Clark *et al*. (2011) [9] state that in recent years, low-intensity resistance training with blood flow restriction has become common in Japan, known as Kaatsu training or occlusion training (Clark *et al*., 2011: 21) [9]. Abu Al-Ala Abdul Fattah (2016) [1] mentions that blood flow restriction training is a new Chinese technology used in sports training and physical therapy to increase strength and muscle hypertrophy using low intensity (20%-30%) of maximum repetition intensity, termed blood flow restriction (BFR) training (Abdul Fattah,

2016: 68) [1].

The researcher perceives that blood flow restriction training (Kaatsu) helps reduce tension and pressures, especially for adults. Athletes also use it during warm-up as a form of challenging training because such exercises improve muscular strength. This type of training is used with healthy individuals who do not suffer from any chronic diseases such as hypertension or diabetes, which are contraindications for blood flow training. Sato (2005) [12] notes that Kaatsu exercises involve closing the artery in the working muscle for a certain period ranging from 10 to 15 minutes with an intensity not exceeding 20%. The maximum number of sets is three sets, with a rest period of 30 to 60 seconds (Sato, 2005: 195) [12].

The researcher observed that most volleyball coaches do not use blood flow restriction training to develop physical fitness elements and immune variables, instead opting for traditional exercises without the ability to establish scientific principles related to load regulation in achieving the desired development. This observation was based on reviewing numerous training programs of Iraqi clubs and personal interviews with some coaches, indicating that the development of physical fitness elements for volleyball players and the development of some physiological variables were not scientifically sound due to the lack of modern training methods aimed at enhancing these specific physical elements and important physiological variables in improving the technical level of volleyball players.

Significance of the Research

A. Scientific Significance

- Identifying and emphasizing the importance of Kaatsu training in the sports domain by enhancing physiological variables to achieve the development of physical capabilities among volleyball players.
- Introducing a novel approach in sports training through the utilization of Kaatsu training and leveraging its positive effects on training volleyball players. B. Practical Significance.
- This study represents a modern approach towards using Kaatsu training to delay the onset of fatigue.

B. Practical Significance

- This study represents one of the modern trends towards using Kaatsu training to delay the onset of fatigue.
- The current study signifies a new step towards employing modern scientific methods to elevate physical, physiological, and skill levels.
- Assisting coaches in enhancing performance efficiency for outstanding numerical accomplishments and economizing effort while achieving better physical fitness levels.

Research Objective

The research aims to identify the effect of Kaatsu training on the efficiency of some physical and physiological variables among volleyball players by determining:

- The effect of Kaatsu training on the efficiency of some physical variables among volleyball players.
- The effect of Kaatsu training on the efficiency of some physiological variables among volleyball players.

Research Assumptions and Questions

- There are statistically significant differences between pre-test and post-test measurements (pre-experimental and post-experimental) of physical variables for the experimental group in favor of the post-experimental measurements.
- There are statistically significant differences between pre-test and post-test measurements (Pre-experimental and post-experimental) of physiological variables for the experimental group in favor of the post-experimental measurements.

Research Terminology

- **Kaatsu Training:** A modern and innovative method in sports training involving the closure of arteries in the working muscle for a certain duration ranging from 10 to 15 minutes, with intensity not exceeding 20%, and a maximum of three sets, with rest periods ranging from 30 to 60 seconds (Hashmat, Mohammed, 2018: 5) [2].
- **Blood Flow Restriction (Kaatsu):** A process of restricting venous blood flow returning from the muscles to the heart in veins through air cuffs calibrated to control the pressure value on the veins using a device (KAATSU NAAO) placed on the upper arms or thighs (Rhianna, 2018: 360) [11].

Previous Studies

- Sahar Gamal Mohammed Abdullah (2021) [5] conducted a study titled "The Effect of Kaatsu Training on Some Biochemical Variables Associated with Muscle Contraction in Swimmers" and found that Kaatsu training had a positive effect on improving biochemical variables associated with muscle contraction. Additionally, Kaatsu training showed positive effects on improving physical variables associated with muscle contraction, indicating a clear development in chemical variable functioning through enhanced performance efficiency.
- Rasha Essam El-Din and Abeer Mamdouh Issa (2021) [4] conducted a study titled "The Effect of Kaatsu Training on Blood Microelements and Some Physical Variables and the Performance Level of Shot Put Competition," which aimed to identify the effect of Kaatsu training on blood microelements. The study selected a sample of (32) first-year female students, and the results revealed statistically significant differences between the three measurements (Kaatsu training group, resistance training group, control group) for physical variables under investigation, favoring the Kaatsu training group.

Research Procedures

Research Method: The researcher employed the experimental method suitable for the research nature and utilized the pre-experimental and post-experimental design for a single experimental group.

Research Population and Sample: Research Population

The research population comprises volleyball players registered with the Iraqi Volleyball Federation.

Research Sample

The researcher selected a random sample of (26) players registered with the Iraqi Volleyball Federation. The research sample was divided into:

- **Survey study sample:** Consisting of (16) players for standardizing the physical and physiological tests under investigation for validity and reliability.
- **Basic study sample:** Consisting of (10) players for

implementing the physical and physiological tests under investigation on them, as illustrated in Table (1).

Table 1: Illustrates the numerical distribution of the research sample.

Classification	Number of Players	Players Percentage
Survey Study	16 Players	61.53%
Primary Study	10 Players	38.47%
Total Sample	26 Players	100%

Criteria for Selecting the Research Sample

- Registered with the Iraqi Volleyball Federation.
- Not participating in other programs.
- Regular attendance in training sessions.
- Training experience of at least 3 years.
- Participation in some local tournaments.
- Agreement to participate in the proposed training program under study.

Data Collection Methods

Primary Measurements

The basic variables of the sample (under study) were measured, including age, height, weight, and training age, to adjust for variables that may affect the research procedures. Table (2) below illustrates this.

Table 2: Statistical Indicators of the research sample in basic variables before the experiment. n = 26

Variable	Unit	Mean	Median	Standard Deviation	Skewness	Kurtosis
Age	Years	18.9	18.5	1.11	0.50	0.89
Height	Meters	1.84	1.85	0.06	0.40	2.10
Weight	kg	74.70	74.50	5.80	1.25	0.29
Training Age	Years	4.20	4.00	1.48	0.54	-0.33

From Table (2), which pertains to the homogeneity of data in the primary basic measurements of the research sample, it is evident that the overall data of the research sample is moderate, non-dispersed, and characterized by a normal distribution of the sample. The values of the skewness coefficient range between (0.40 to 1.25). This value approaches zero, indicating that the distribution is close to being symmetrical. Additionally, the kurtosis coefficient ranges from (-0.33 to 2.10), indicating that the oscillation of the normal curve is acceptable and, on average, not oscillating excessively upwards or downwards. This confirms the similarity of individuals in the research group in the primary variables before the experiment.

Physical and physiological tests used in the research

The researcher conducted a comprehensive review of references, scientific studies, and previous research, such as those by Sahar Gamal Mohamed Abdullah (2021) [5], Abu Alaa Ahmed Abdel Fattah (2016) [1], Hussein Hashmat and Mohamed Salah El-Din Mohamed, to determine the physical and physiological tests. The researcher utilized a total of (6) tests to measure the physical capabilities of volleyball players and (4) tests to measure physiological variables. The tests identified by the researcher are as follows:

Physical Capability Tests

1. Prone Incline Test (Agility).
2. Pull-Up Test (Strength).
3. Leg Strength Endurance.
4. Arm Strength Endurance.

Physiological Measurements

1. Vital Capacity, Diastolic Blood Pressure, Systolic Blood Pressure and Pulse Rate.

Data Collection Devices and Tools

Based on a review of numerous similar references and studies, the researcher identified devices and tools that contribute to completing the research procedures and achieving its objectives, including:

- Rest Meter for measuring total body height to the nearest centimeter.
- Medical scale calibrated to measure weight to the nearest kilogram, Swedish benches, Stopwatch, Measuring tape, Volleyballs, Modern computer, Printer, Whistle, Compression bands (For Katsuo exercises) and Physiological measurement device.

Survey Study

The survey study was conducted from June 6, 2023, to June 12, 2023, using the same sample as the initial survey study but outside the main sample. Its purpose was to calculate the scientific parameters of the tests (Validity and reliability) and to organize and distribute the training program according to the specified time for each training unit.

The objectives of the survey study were

- To verify the scientific parameters (validity and reliability) of the tests under study, as illustrated in Tables (3, 4).
- To arrange the training exercises from easy to difficult and adjust the training load.

Results of the Survey Study

- The training exercises were distributed to each unit.
- The validity coefficient was determined using the comparative method. Table (3) illustrates this.

Validity

To determine the validity coefficient of the physical and physiological tests for volleyball players under study, the researcher used the differentiation validity by comparing the average difference values between the upper quartiles and the lower quartiles of the survey sample results, comprising (16) players from the research community and outside the main research sample. Table (3) clarifies this.

Table 3: Significance of differences between upper and lower quartiles to determine discriminant validity in the tests under study N = 16

Physical and Physiological Variables	Tests	Upper Quartile		Lower Quartile		"t" Value
		Negative Quartile	Positive Quartile	Negative Quartile	Positive Quartile	
Physical Tests	Tilted standing agility test	25.95	0.955	12.58	1.216	*13.485
	Pull-up test (strength)	15.50	0.141	10.30	0.354	*6.270
	Strength endurance (For men)	66.54	2.20	71.56	2.44	*4.908
	Strength endurance (For arms)	28.04	2.95	33.22	4.74	*3.769
	Muscle power (For men)	17.56	1.59	22.78	1.33	*5.341
	Transition speed	3.89	0.07	3.09	0.10	*4.225
Physiological Variables	Vital capacity	3712.470	6.269	3614.502	77.020	*4.958
	Diastolic blood pressure	75.000	0.000	69.000	0.000	*6.301
	Systolic blood pressure	117.500	0.707	111.500	0.707	*4.500
	Pulse rate	64.000	0.000	59.500	0.707	*5.474

The tabular (t) value at a significance level of (0.05) = 3.182 * significant From Table (3), statistically significant differences are evident between the upper and lower quartiles in the compatibility capacities and digital achievement level, where the calculated (t) values ranged between (3.769: 13.485), which are greater than the tabular (t) value at a significance level of 0.05, indicating the validity of the tests.

Reliability: To determine the reliability coefficient for the physical and physiological tests, the researcher used the test-retest method. The tests were reapplied to the same survey sample (16 players) one week after the initial application. This was done to assess the correlation coefficient between the first and second applications of the tests for the survey sample under study, as shown in Table (4).

Table 4: The coefficient of stability by establishing the correlation between the first application and the retest in the tests under study N=16

Physical and Physiological Variables	Tests	Upper Quartile		Lower Quartile		"t" Value
		Negative Quartile	Positive Quartile	Negative Quartile	Positive Quartile	
Physical Tests	Tilted standing agility test	16.40	1.355	16.00	0.988	*0.867
	Pull-up test (Strength)	13.00	0.645	12.50	1.330	*0.904
	Strength endurance (For men)	71.56	2.44	72.23	2.10	*0.884
	Strength endurance (For arms)	33.22	4.74	34.22	3.95	*0.905
	Muscle power (For men)	22.78	1.33	24.78	1.60	*0.821
	Transition speed	3.09	0.10	3.08	0.08	*0.996
Physiological Variables	Vital capacity	3712.47	6.269	3614.502	77.020	*0.709
	Diastolic blood pressure	75.000	0.214	74.000	0.152	*0.847
	Systolic blood pressure	117.500	0.707	111.500	0.707	*0.902
	Pulse rate	62.000	0.000	61.500	0.707	*0.854

The value (ρ) of the tabular at the significance level (0.05) = 0.482 * significant.

It is evident from Table (4) the presence of statistically significant correlation between the first application and the retest in the physical and physiological tests, where the calculated values of (ρ) ranged between (0.821: 0.905), which is greater than the tabular value at the significance level of 0.05, indicating the stability of the tests under study.

Design Steps of the Proposed KAATSU Training Program Attached in Table (5).

Steps for Designing the Proposed KAATSU Training Program: The researcher reviewed specialized scientific references and relevant studies related to the research topic in order to design a training program using the KAATSU method for volleyball players. The following steps were taken:

Identifying the objective of the proposed KAATSU training program

The objective of the KAATSU training program for volleyball players is as follows:

- Improving resistance (mental and muscular) for players.
- Increasing the range of motion of the lower extremity joint.
- Stimulating muscles and achieving greater muscle mass.
- Improving the metabolic process.
- Equipping the player with more strength and endurance.
- Slowing down the heart rate and increasing glycogen stores.
- Improving the player's overall balance.

Determining the Foundations of the Proposed KAATSU Training Program

- Ensuring that the proposed training program content achieves its intended goal.
- Suitability of the proposed KAATSU exercises for the research sample while considering scientific principles.
- Feasibility and practical applicability of implementing the KAATSU training program and its flexibility and acceptance.
- Ensuring that the content of the proposed KAATSU training program aligns with the total time and number of training units specified.
- Maintaining a sequence and continuity in the parts of the proposed KAATSU training program.
- Proper regulation of load variables for the proposed KAATSU training program.
- Considering safety and security factors when implementing the proposed KAATSU training program.

Performing KAATSU Training

To perform KAATSU training correctly, you should choose compression bands between five and nine centimeters and place them on the limbs as follows:

- **On the arm:** Identify the narrowest part of the arm and apply pressure at only five to six degrees at this point. At this level of pressure, we ensure that only the veins are occluded, but not the arteries.

Fig 1: Compression Band for the Arm

On the leg: Identify the narrowest area and apply pressure of about seven to ten degrees only.

Fig 2: Compression band for the leg

Once the bands are placed and secured, the planned exercises begin. It is important to create intervals to release the tension for about 30 seconds. Flexible bands are preferred to enhance the training, and the exercise can be performed continuously for 15 minutes with a 30-second rest interval.

Risks and precautions before starting KAATSU training

It should be noted that blood flow restriction exercises involve impairing blood circulation in the limbs of the human body, and such exercises carry risks such as subcutaneous bleeding, numbness, or decreased sensitivity in the areas being worked on.

These types of training procedures may pose a risk to individuals with a history of blood clotting disorders and varicose veins, as well as pregnant women. While the Japanese method of KAATSU training has been shown to improve athletic performance when applied correctly, due to the existing risks, it is recommended to include it under strict procedures, especially during training, and always have the player supervised by a qualified and properly certified specialist.

Experimental Basic Research

1. Preliminary Measurements

The researcher conducted preliminary measurements from June 14, 2023, to June 15, 2023, on a research sample of 10 volleyball players. 2- Implementation of the Basic Research Experiment: The proposed KAATSU training program was implemented on the basic research sample from June 16, 2023, to August 15, 2023, for all sample members. Measurements were taken before, during, and after the program, considering the following:

- All sample members were measured (pre and post) simultaneously.
- Sequence and arrangement of measurement procedures were observed.
- The same measuring tools were used for all sample members. 3-Post-Intervention Measurements: The researcher conducted post-intervention measurements from August 16, 2023, to August 17, 2023, on the experimental research sample consisting of 10 players.

Statistical Procedures Used in the Research: The researcher used the following statistical methods to process the data using the SPSS VR 25 statistical program to find:

1. Mean.
2. Standard deviation.
3. Percentages.
4. t-test.

Presentation and Discussion of Results

The results of the first hypothesis, which states "there are statistically significant differences between the pre and post measurements for the experimental group for physical variables in favor of the post measurement," were presented and discussed.

Table 5: Statistical significance of differences (t-test) between pre and post measurements in physical tests for volleyball players (N=10)

Statistical Data Tests	Measurement Unit	Experimental Group				t value	Significance Level
		Pre-test		Post-test			
		M ± SD		M ± SD			
Tilting prone from standing (Agility)	Number	15.12	1.355	22.31	0.988	7.254	7.254
Pulling on the handle (Strength)	Number	13.05	0.645	19.52	1.330	6.836	6.836
Strength endurance (For men)	kg	72.85	2.3	81.57	2.22	5.975	5.975
Strength endurance (For arms)	kg	34.56	3.09	40.20	2.89	4.535	4.535
Muscle power (For men)	cm	23.87	1.32	34.62	1.43	6.341	6.341
Transitional speed	sec	3.10	0.21	2.90	0.58	3.954	3.954

The tabulated data shows the following

- There is a statistically significant difference at the 0.05 significance level between the mean scores of the pre-test and post-test measurements for the experimental group, in favor of the post-test mean, in the physical tests (Tilting prone from standing (Agility), Pulling on the handle (Strength), Strength endurance (For men), Strength endurance (for arms), Muscle power (for men), Transitional speed). The calculated t values ranged between 3.954 and 7.254.
- These findings are supported by the results of the study conducted by Rasha Essam El-Din and Abeer Mamdouh Issa (2021) [4], which indicated statistically significant differences between the post-test measurements of the three groups (the first experimental group - Kaatsu training group, the second experimental group - resistance training group, and the control group) in the physical variables under investigation (Strength

endurance for men, muscle power for arms, static strength of leg muscles, static strength of back muscles) in favor of the Kaatsu training group.

- The results of the study by Mohamed Saad Ismail (2020) [7] confirmed statistically significant differences in all physical variables (muscle power for men, muscle power for arms, leg muscle strength, back muscle strength, acceleration time) in favor of the post-test measurements for the experimental group. Additionally, there were statistically significant differences in the level of performance of compound offensive kicks in favor of the post-test measurements for the experimental group. Furthermore, there were statistically significant differences between the post-test measurements for the experimental and control groups in all protein energy variables in favor of the post-test measurements for the experimental group, except for uric acid measurements.

Presentation and discussion of the results of the second hypothesis, which states: "There is a statistically significant difference between the pre-test and post-test measurements for the experimental group for physiological variables in favor of the post-test measurement."

Table 6: Statistical significance of differences for t-test between pre-test and post-test measurements in physiological tests for volleyball players (N=10)

Statistical Data Tests	Experimental Group				t value	Significance Level
	Pre-test		Post-test			
	M ± SD		M ± SD			
Vital Capacity	3283.084	4.56	3800.934	4.25	12.365	0.00
Diastolic Blood Pressure	76.500	3.62	71.875	2.21	7.854	0.00
Systolic Blood Pressure	117.125	1.25	113.875	1.02	9.55	0.00
Heart Rate	63.000	0.52	58.250	0.63	4.623	0.00

The t-value at a significance level of 0.05 is 2.262.

It is evident from the results of Table (6) the following:

- There are statistically significant differences at the 0.05 significance level between the mean scores of the pre-test and post-test measurements in physiological tests for the experimental group in favor of the post-test mean in the following physiological measurements (Vital Capacity, Diastolic Blood Pressure, Systolic Blood Pressure, Heart Rate), where the calculated "t" values ranged between (4.623: 12.365).
- The results of the study conducted by Sahar Gamal Mohamed Abdullah (2021) [5] confirm that the proposed program based on KAATSU training has a positive effect on improving the biochemical variables related to muscle contraction and that KAATSU training has a positive effect on improving the physiological variables related to muscle contraction, and there is a clear improvement in the function of biochemical variables through increased performance efficiency.

Conclusions and Recommendations

Firstly: Conclusions

In light of the research objectives and assumptions, and within the scope of the study and the nature of the sample studied, the researcher reached the following conclusions:

- The proposed KAATSU training program led to improvement in the physical capacities of the research sample of volleyball players.
- The proposed KAATSU training program led to improvement in physiological variables (Vital Capacity, Diastolic Blood Pressure, Systolic Blood Pressure, Heart Rate) for the research sample of volleyball players.

Secondly: Recommendations

Within the scope of the study and based on the results obtained, the researcher may recommend the following:

- Consulting the proposed KAATSU program for other sports.
- Utilizing the study procedures and the program used in building and designing other programs based on scientific principles.
- Paying attention to KAATSU exercises during various training stages due to their effective impact on improving the biomechanical characteristics of physical and physiological performance under study.
- Considering individual differences between different cases when conducting KAATSU exercises for athletes in other sports.
- Focusing on safety measures and not neglecting them during the implementation of the proposed KAATSU training program.
- Emphasizing the importance of KAATSU exercises according to the athlete's condition to avoid injury.

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Attachment (1)
Kaatsu Device

Attachment (2)
Electronic Spirometer Device

Attachment (3)
Electronic Pulse and Blood Pressure Monitor

Attachment (4) Kaatsu Proposed Training Program Plan: The proposed training program using venous blood flow restriction (Kaatsu) was implemented with (3) training units per week for a duration of (8) weeks, totaling (24) training units, with each training unit lasting (90 minutes) on Saturdays, Mondays, and Wednesdays of each week. The researcher followed the following points during the implementation of the proposed training program:

- Developing muscle strength, mass, and structure, which are important in speed endurance activities, achieved through short-distance running and short rest periods.
- The initial period of Kaatsu training is done with weights not exceeding 65% to 80%.
- The second period (two weeks) involves increasing the volume of running (repetition) with moderate intensity, using some interval training for short distances (100 - 200 - 300 - 400 m) with short rest periods.
- Training continues with natural load until the end of the proposed training program, but without reaching maximum intensity.
- Training methods used to develop speed endurance involve using the same volume (repetition) with reduced running speed and short rest periods.
- Continuous performance of non-aerobic exercises aimed at speed (short distances - short rest periods - low volume).
- (4) to (6) training units out of the total number of training units should be characterized by high intensity for their strong effect on the players' vital systems.
- The proposed training program includes all elements of physical preparation.

Attachment (5)
Sample of Three Training Units
Proposed Kaatsu Training Program

Unit Numbers	Weeks	Duration
(4,5,6)	Second	90 minutes

Program Parts		Content			Intensity	Sets	Repetitions	Rest	Time
Warm-up		**1600 m running + flexibility + speed exercises ABC**							**15 min**
Units	Main parts	Training Unit Number (4)	Main part of unit (4)	6 × 406 × 40 m resistance using kaatsu training starting from the bottom and from the top: 3 × 203 × 20 m × 3 × 3, 3030 m × 2 × 2, 4040 m × 2 × 2, and 5050 m. Additionally, 4040 m × 2 × 2, 3030 m × 2 × 2, and 2020 m × 2 × 2. Starting with a response speed without blocks from 4−64−6 sets of 2525 m.	65%	2	6-4	4-1	70 min
		Training Unit Number (5)	Main part of unit (5)	2 sets ×× 4−64−6 sets ×× 6060m running with rest between 1−21−2 minutes of light running and between each set 55 minutes. The static set with the use of kaatsu training.	65%	2	6-4	4-1	70 min
		Training Unit Number (6)	Main part of unit (6)	22 sets ×× 6−86−8 sets ×× 100100m with 55 minutes rest between sets. Gradual inclines using kaatsu training. 1010 minutes of light jogging.	65%	2	8-6	4-1	70 min
Cool-down		End-of-training exercises "abdomen-back" - stretches							5 min