

Implementation of Specific Physical Conditions Training Models for Student Volleyball Basic Technical Ability

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Received June 10, 2023; Revised September 7, 2023; Accepted October 12, 2023

Cite This Paper in the Following Citation Styles

(a): [1] Erianti, Yuni Astuti, Rosmawati, "Implementation of Specific Physical Conditions Training Models for Student Volleyball Basic Technical Ability," *International Journal of Human Movement and Sports Sciences*, Vol. 11, No. 6, pp. 1320 - 1326, 2023. DOI: 10.13189/saj.2023.110616.

(b): Erianti, Yuni Astuti, Rosmawati (2023). *Implementation of Specific Physical Conditions Training Models for Student Volleyball Basic Technical Ability*. *International Journal of Human Movement and Sports Sciences*, 11(6), 1320 – 1326. DOI: 10.13189/saj.2023.110616.

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Abstract The problem addressed in this study is that students taking volleyball courses are in poor physical condition, resulting in it being difficult for lecturers to teach basic volleyball technical skills. This physical condition is the most crucial factor that a student must possess because it will affect the application of basic volleyball technique exercises taught on the field. Students must have the following physical characteristics: strength, endurance, speed, agility, balance, flexibility, and coordination. To ensure that students are in good physical condition, it is necessary to design or develop a model that is used in lectures to train students in exceptional physical conditions that have a significant impact on their basic volleyball technical skills. Experimental research was used in this study. It means that the treatment provided forms of exceptional physical condition training in 16 meetings during the study's implementation. The impact of the application of these physical conditions on the fundamental technical abilities of volleyball is then examined. The sample in this study were 25 students. Data was gathered by testing basic volleyball technical skills such as service, low pass, and overhead pass. The sample-dependent t-test was used to analyze the data. According to the study's findings, $t_{count} = 19.23 > t_{table} = 2.13$. This means that the research hypothesis can be empirically accepted. As a result, the findings of this study indicate that when students receive the most intensive forms of special physical condition training, their basic volleyball technical skills will improve optimally.

Keywords Specific Physical Condition, Volleyball

Technique

1. Introduction

Volleyball is a prerequisite course for all the students at the Faculty of Sports Science. The learning outcomes for volleyball courses are that students must be able to master and perform basic volleyball techniques well, and they must be able to teach basic volleyball techniques to students later in the field in a methodical and effective manner. Someone may possess the volleyball technique if they consistently perform exercises that provide the basis for movement automation in each of these techniques should be M. Pettoello-Mantovani et al [1]. Such as according to A. Eylen et al. [2] as well as opinions from M.Kok et al. [3], the main goal of each sport is to consistently develop the physical aspects required for each sport. There is a demand for a modern approach to teaching in order to achieve effective movement such as teaching skill practice As stated by M. Soytkürk [4] and according to N. D. Anggraini [5]. The psychomotor development of volleyball technique movements necessitates the development of physical strength through training according to A. Yusmar [6] reinforced by statements from G. Tarantino [7]. Physical fitness is the most crucial fundamental preparation for engaging in physical activities to the fullest. Endurance, agility, speed, flexibility, balance, and coordination are all components of physical condition

in terms of the muscular concept. Cardiovascular and pulmonary endurance abilities, speed, and power must be developed through general physical exercise [8] [9].

The physical conditions for volleyball are almost entirely an absolute must for a student [10], but the concept of development must undoubtedly go through training stages. In other words, there are components that are more dominant to be trained in the general preparatory section, for instance, possessing the physical abilities of strength and speed before developing the physical aspects of power. Thus, lecturers must consider this concept because reversing the training process increases the risk of injury to students and does not improve their basic volleyball technical skills [11] [12].

Based on the author's experience teaching volleyball courses and the findings of the volleyball team teaching in the field, the average student who take course each semester is 250 students, and only 100 people graduate with pure skills test results. It is due to students' poor physical condition, which has an impact on their basic volleyball technical skills. Because the lecturer will have difficulty teaching students who must perform movement activities for 100 minutes at each lecture meeting if the student's physical condition is poor. This is also visible when students do basic volleyball techniques, look tired when practicing basic volleyball techniques, are stiff or their joint movements are limited or less flexible, frequently feel sleepy during lectures due to a lack of oxygen, are easily breathless, or even students chests feel sore when activities and the presence of injured students while lecturing [13].

As a result, based on the problems encountered in the field, lecturers must be creative or innovative in order to create models of physical condition training that easible to implement in courses, So that students are in good physical condition to support student in developing basic volleyball technical skills and learning to run effectively and efficiently. According to D.E Putro et al. [15], an effective learning model is required for students to obtain effective learning. The research objective is to develop valid, practical, and effective models of physical condition training for volleyball courses that will be implemented in lectures to improve students' basic volleyball technical skills so that students graduate with high grades and good physical condition and volleyball technical skills.

Volleyball is a sport that involves the body in order to remain healthy and fit and enhance performance. Every sport focuses on a different set of physical conditions. Physical conditions that have an enormous influence on volleyball, for example, are leg muscle explosive power, arm muscle explosive power, flexibility, agility, and endurance [16]. A volleyball player's main requirement is to be in good physical condition so that they can perform these activities without becoming excessively tired. Conversely, if a person is in poor physical condition, it will be difficult to engage in these sports activities, resulting in excessive fatigue. The elementary ability to develop the

body's performance abilities, which include the components of strength, speed, endurance, and flexibility, is known as general physical condition.

Furthermore, in order to achieve the highest level that accomplishment, a model of physical condition training is structured and efficient in its implementation is necessary. The intended training model is one that can improve the physical, technical, tactical, and mental or psychological conditions of volleyball students during lectures. The following are the objectives of the four aspects of the exercise: (1) Physical exercise is an exercise aimed at improving physical condition. (2) A technique is an exercise that aims to improve a sport's mastery of motion. (3) Tactic is an exercise that aims to develop and foster the development of interpretive power in athletes while they perform the sport in question. 4) Mental training is an exercise that concentrates on students' maturity and emotional development. Physical conditions in sports refer to all physical abilities that determine learning achievement and are realized through individual skills. Physical condition is the primary focus for coaching students to excel in a branch of volleyball which is a compulsory subject to graduate with excellent grades.

It becomes knowledge that a specific sports teacher must possess. According to I Gede et al. [17], physical condition is no less crucial and serves as the foundation for developing techniques, tactics, and strategies. It becomes essential in a sports game, such as volleyball. Volleyball is a sport played by two teams on a rectangular court separated by a net. The purpose and goal of this game is to put the ball into the opponent's area through an obstacle in the form of a rope or net and try to win the game by turning off the ball in the opponent's area [18]. Consequently, the more basic skills a student needs to have, the higher their level of learning achievement in volleyball skills.

It ought to be acknowledged that in order to support skill in volleyball, a student must first master his physical condition. As stated by Y. Kharisma et al [19] the physical condition components of volleyball players are endurance (both general and local endurance), strength, power, speed, and flexibility. It is because when the physical condition is not stable or good enough, it affects the stability of the volleyball skill pattern. Should be a to A. Muchlisin et al. [20] explored the physical condition is good, there will be an increase in the ability of the circulatory system and heart to work, a boost in strength, flexibility, stamina, speed, and other components of physical condition, greater efficiency of movement at exercise duration, a faster recovery in the organs of the body after exercise and an instantaneous reaction from our body's organisms whenever we exercise [21]. Some of the physical conditions mentioned above are mastery of physical condition elements.

As stated by Bompa [22], the overall physical condition of an athlete is called the biomotor component. Strength, endurance, speed, coordination, and flexibility are the most fundamental biomotor components. Other components are formed by combining two or more components or their

derivatives. Agility is a combination of speed and coordination, whereas explosiveness (power) is a combination of strength and speed.

The above description provides an overview of the general physical condition that must exist in every sport. In a sport, however, there is a priority system for the need for physical conditions that are prioritized based on the characteristics of the movement. As stated by D. F. Gucciardi et al. [23], volleyball games require specific physical conditions such as strength, explosive power, speed, and flexibility, while aerobic capacity allows them to compete. Technique mastery is closely related to movement, physical condition, tactics, and mentality [24]. A player must be in good physical condition to improve the quality of his technique; with good technique, he can undoubtedly develop a good mentality; and with a good mentality, a player can easily carry out good tactics when competing. The technique is the first element that every volleyball player must understand and master to play well. Volleyball techniques involve serve, pass, smash, and block. Volleyball relies heavily on physical aspects in every movement technique, so if the volleyball technique is executed correctly, it will be very draining. According to A.S Hidayat [25], ability to use the body's organs to perform physical activities. Good physical ability will aid in the development of psychomotor activity, which will affect movement skills further. Achievement is the accumulation of physical qualities, techniques, tactics, and psychological or mental maturity, so these aspects must be thoroughly prepared because one aspect defines the other [26]. As a result, students in good physical condition will perform better in basic volleyball technical skills.

2. Material & Methods

The type of research used is an experiment conducted to determine the relationship between variables. This method is used because the nature of experimental research is to try something in order to determine the effect or effect of a treatment or treatment. Furthermore, the author is curious about the impact of the independent variable on the dependent variable being studied or observed in this experimental method. This study's variables consisted of one independent variable, namely special physical conditions. The dependent variable in this study is volleyball's fundamental technical ability.

In this study, data were analyzed by testing the hypothesis with inferential statistics and the t-dependent sample test formula. The analysis requirements test is performed first, namely the normality of the data, and the t-test can only be used to test the difference in the mean of two samples drawn from normal populations and homogeneous groups. According to A. Irianto [27] explored the a t-test analysis is performed after the analysis requirements test. A t-value of less than 0.05 was considered statistically significant.

According to the data analysis technique described above, the t-test formula is used to calculate the t-observation value, which is then compared to the t-value in the table. The t-value in the table is the significant limit for the t-value, which can be seen using degrees of freedom $N - 1$ at a significant level of 5%. If the t observation coefficient is equal to or greater than the t table value, it indicates that there is a significant effect between the pre-test and post-test following the application of special physical conditions with the goal of improving basic volleyball technical skills for students Department of Sports Education, Faculty of Sports Science.

3. Results

The specific form of physical condition training that is applied is about strength training such as: (1) Push-ups (pushing the stomach up) are meant to strengthen the arm muscles. What to do: (A) Lay on your stomach with your toes on the floor and your legs straight behind you. With fingers pointing forward and elbows bent, both palms should be flat on the floor next to the chest. (b) Raise the body until the head, body, and legs are in a straight line and both arms are straight. (c) The head, body, and legs are kept straight and do not touch the floor when the body is again lowered by bending the arm this movement is repeated until the stamina runs out. (2) Strengthening abdominal muscles (sit-ups). The objective is to strengthen the arm and shoulder muscles. What to do: (a) Begin by lying on your back, legs bent, fingers intertwined behind your head, and a friend holding your ankles. (b) Raise your body to a sitting position while retaining both hands behind your head. (c) The corpse is placed back in its original posture. This motion is repeated as many times as feasible. (3) Strengthen your back muscles (as a backup). The purpose is to strengthen the muscles in the back. How to Go About It: (a) Lie face down with both legs securely packed straight back, both hands entwined behind the head, and the ankles grasped by the training partner. (b) Raise the body, maintaining both hands behind the head, until the human body the chest and stomach are no longer touching the floor. This motion is performed as many times as possible.

Dynamic neck flexibility exercises. The objective is to improve the flexibility of the neck muscles. (a) Tilt your head to the left and right, touch your left ear to your left shoulder and your right ear to your right shoulder, and do the movement for 2x8 counts (b) Move your head down forward, chin touches your chest, and backward until you look up, do 2x8 counts (c) turn your head to the right and left, do 2x8 counts. (d) Rotate your head left and right. Do 2x8 counts of movement in one round of 4 counts.

Dynamic shoulder joint flexibility. The goal is to strengthen the shoulder joints and muscles and increase shoulder movement. How to Go About It: (a) First, stand

straight, feet shoulder-width apart, and hands beside the body. (b) Next, stretch both arms straight to the sides, then rotate both arms, beginning with a slow rotation, then a fast rotation, and a small rotation, then enlarging. (c) This movement is performed by first rotating the arm to the right for 8 counts, then rotating the arm to the left for 8 counts.

Dynamic torso flexibility exercise. The goal of this exercise is to improve the flexibility of the torso muscles. How to perform it: (a) Place your hands on your waist, then bend your body to the left and right for 8 counts (b) Place your hands above your head, palms together, arms straight, then bend your body to the left and right for 2x8 counts (c) Place your hands on your waist and rotate left and right for 8 counts, and (d) Place your hands on your waist and rotate left and right for 8 counts 2x8 equals (d) Place your hands above your head, palms together, arms straight, and bend to the left and right. 2x8 tally.

Speed training is the ability to perform continuous movements in the same form in the shortest amount of time. Speed is required in sports that rely heavily on speed, such as the 100-meter and 200-meter sprints. In this case, speed refers to the rate at which the leg muscles contract. Exercises include (a) a 50-meter sprint, (b) a 100-meter sprint, and (c) a 200-meter sprint.

Endurance training is the ability to use one's heart, lungs, and circulatory system effectively and efficiently to perform continuous work. In other words, it is related to the aerobic system's energy fulfillment process. Endurance exercises are the polar opposite of strength exercises. Endurance can be trained with low or light loads, but with a high frequency and for a long period of time. Exercises for endurance include: (a) a 2.4 km run, (b) a 12-minute run, (c) a multistage run, (d) light weight lifting with lots of repetitions and sets, and (e) running up and down a bench or stairs.

This study was carried out after identifying problems through experience and interviews with a team of volleyball lecturers afterward, investigate in depth what

special physical conditions are required to perform volleyball technical abilities. The author's analysis of the physical conditions given the application of physical conditions, namely endurance, agility, speed, the explosive power of the arm muscles and explosive power of the leg muscles, and movement coordination.

The basic volleyball technical skills of 25 students were obtained with the highest score of 78, the lowest score of 35, an average score of 50, a median of 56.5, and a standard deviation of 6, 28 based on the results of the analysis of the initial test data before undergoing treatment with the application of special physical conditions. Meanwhile, the highest score was 110, the lowest score was 70, the average score was 76.92, the median was 90, and the standard deviation was 9.06 based on the results of the final test data analysis after being treated with the application of special physical conditions for 16 meetings. For purposes of explanation, table 1 shows the results of data on the basic volleyball technical abilities of students at the Department of Sports Education after being treated with the application of these physical conditions.

As shown in Table 1, the results of the initial test data analysis on basic volleyball technique abilities were two people or 8% in the excellent category, five people or 28% in the good category, and in the fair category, there are seven people or 28%. There are nine people in the poor category or 36% and two people in the bad category or 9%. Furthermore, the basic volleyball technique score with an excellent category was six people or 24%, and a good category, include nine people or 36% for the final test results. There are five people in the fair category or 20%, three people in the poor category or 12%, and only two people in the bad category or 8%. Based on the frequency distribution of the data results displayed, it is clear that the application of special physical conditions increases students' basic volleyball technical abilities. This is demonstrated by the final test interval class, which has increased since the initial test results.

Table 1. Frequency Distribution of Preliminary Test Data Results and Final Tests of Student Volleyball Fundamental Techniques Ability

Interval Class	Category	Preliminary Test		Final Test	
		Absolute Frequency	Relative Frequency	Absolute Frequency	Relative Frequency
84	Excellent	2	8	6	24
72 – 84	Good	5	28	9	36
59 – 71	Fair	7	28	5	20
46 – 58	Poor	9	36	3	12
46	Bad	2	9	2	8
Total		25	100	25	100

Furthermore, after entering the data into the data description category, the data normality test is performed using the Liliefors test to test the hypothesis. The normality results are obtained through statistical testing, as follows:

Table 2 reveals that the test results for the initial test data before being treated with special physical conditions found $L_{\text{observation}} 0.198$ $L_{\text{table}} 0.206$, indicating that the data is normally distributed. Furthermore, the results of testing the final test data after being subjected to special physical conditions revealed a $L_{\text{observation}}$ of 0.187 L_{table} of 0.206. This means that the data has been concluded to be normally distributed. According to the above description, the variables are normally distributed. Based on the above description, the variables are normally distributed. If the $L_{\text{observation}}$ criteria (L_o) is less than or equal to L_{table} (L_t), the population data is normally distributed; if the $L_{\text{observation}}$ criteria (L_o) is greater than L_{table} (L_t), the population data is not normally distributed, because each probability variable meets the criteria $L_{\text{observation}} < L_{\text{table}}$. Following the requirements analysis test, it was discovered that all of the research variable data met the requirements for further statistical testing, namely hypothesis testing. The t-test was used based on the results of the statistical test to see the effect of the average count in the same group with a significant level of 0.05. The initial test results for students' basic volleyball technical abilities with the application of special physical conditions obtained an average count of 50.00 and a standard deviation of 7.32 with a sample of 25 people. Meanwhile, the final test's mean score was 78.92, with a standard deviation of 10.08

Table 3 demonstrates that $t_{\text{count}} = 19.23 > t_{\text{table}} = 2.13$. This means that the research hypothesis is viable. Thus, it can be concluded that the application of physical conditions has a significant influence on the basic volleyball technical abilities of students at Universitas

Negeri Padang, Department of Sports Education, Faculty of Sports Science. The improvement in basic volleyball technique ability was 28.92, with the average score of the initial test being 50.00 and the final test being 78.92. Physical fitness is the most important fundamental preparation for peak performance. Endurance, strength, power, speed, flexibility, agility, balance, and coordination are the basic components of physical condition in terms of the muscular concept [28]. Heart and lung endurance, speed, strength and power must all be developed through general physical exercise [29]. Some of the physical components specified above must be owned by every athlete for the sport of volleyball; nevertheless, the concept of development must undoubtedly go through training stages; in other words, there are more dominant components to be trained in the general preparation section, for example, before developing the physical components. If a student is to have power, they must have the physical abilities of strength and speed, and every teacher must consider this concept. Because if the training process is reversed, or if power is trained first without strength, the student will most likely sustain an injury, making the exercise impossible to continue optimally when entering the next training stage. Training is a program for developing athletes to compete in the form of increasing skills and energy capacity [30]. Training is a systematic process to improve athlete fitness according to the chosen sport [29] over the burden is increasing by the day [31]. Training, exercise, and practice are all terms used in foreign terminology [32]. The general physical exercise aimed at increasing the cardio-pulmonic system and specifically aimed at establishing high achievement is referred to as exercise [10]. Training is a student process for achieving a desired learning outcome; therefore, a student must be serious about progressively training himself.

Table 2. Data Normality

Data	Lobservation	Ltable	Exp
Preliminary Test of Basic Volleyball Technique Ability	0,198	0,206	Normal
Preliminary Test of Basic Volleyball Technique Ability	0,187	0,206	Normal

Table 3. Summarizes The Results Of Hypothesis Testing

Implementation Of Physical Conditions	Mean	SD	tcount	ttable	Test Result	Exp
Preliminary Test	50	7,32	19,23	2,13	Significant	Ho was rejected and Ha was accepted
Final Test	78,92	10,08				

4. Conclusions

The implementation of programmed physical condition training based on basic exercise principles can increase the strength of arm muscles, abdominal muscles, and leg muscles in volleyball students. Students will gain the maximum physical ability required to perform basic volleyball movements such as serving and passing by increasing muscle strength in the arms, abdomen, and legs. Physical training based on basic exercise principles may additionally enhance cardio-pulmonary endurance in college students. As the outcome of increasing heart-lung endurance, students will not feel tired while attending lectures because they are constantly performing basic volleyball movements. Both will be able to benefit the students themselves with planned physical training for strength and endurance. So that educators can be recommended programmed training patterns that take into account the unique physical conditions of volleyball and can be applied to lectures for their students. In previous studies, there was no specific physical condition training program for volleyball in lectures. So that with this research, it can be a guideline for educators in teaching volleyball courses in order to achieve the learning objectives.

Acknowledgement

The authors would like to thank the Lembaga Penelitian dan Pengabdian Masyarakat Universitas Negeri Padang for funding this work with a contract number: 1330/UN35.15/LT/2023

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