



## The Effect of Variations in Flexibility Training on the Service Ability of Bengkulu University Sepak Takraw Athletes

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### Abstract

This study aims to determine the effect of variations in flexibility training on the sepak takraw service abilities of Bengkulu University sepak takraw athletes. This type of research is quantitative. The population in this study were 30 athletes who took part in sepak takraw UKM at Bengkulu University. The research design used was one group pre test-post test. The sampling technique used was total sampling. The number of samples in this study was 30 athletes. The treatment given is a variety of flexibility exercises. The data collection technique in this research uses a direct test method, namely using the sepak takraw service ability test. The statistical requirements test meets the homogeneity requirements and the data is normally distributed based on statistical calculations for experimental group one. The results obtained from the analysis results obtained from the t-test show that the data has a significant value of  $0.000 < 0.005$  which can be concluded that there is an influence if compared, then  $H_0$  is accepted. The results of this research show that there is an influence between variations in flexibility training on the sepak takraw service ability of Bengkulu University sepak takraw athletes so that it can influence the improvement of sepak takraw service ability and can be used as a training method to improve athlete performance.



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## INTRODUCTION

Sepak takraw is an original game sport from Asia. (Yudanto dkk., 2022). Indonesia participates in Southeast Asia's sepak takraw legacy. Even though it is a traditional sport, sepak takraw has gained popularity by helping to improve achievements at local and international levels to uplift the region, and especially Indonesia in particular (Arya Wisnu Murti dkk., 2021). Sepak takraw is one of the sports games whose development is quite encouraging, especially in West Sumatra. (Ramadhon, 2020). Sepak takraw is one of the games on the list of sports that are completed using foot media. This game has its way of turning off opponents, namely by serving, smashing using foot, where sepak takraw is very rare and even not yet taught by physical education teachers to students. (Muhyi dkk., 2021). To improve this achievement, Bengkulu University carries out special coaching for athletes who take part in sepak takraw training. In an effort to achieve this achievement, special abilities are needed in the field of sports, especially sepak takraw, but Bengkulu University's sepak takraw athletes do not yet have maximum sepak takraw abilities. Sepaktakraw is a traditional sport owned by the people of Indonesia. Proven in history, its existence is known in several regions with various terms such as Maraga Akraga in South Sulawesi, Rago Tinggi in Riau, Soccerrago in West Sumatra and Bengkulu, and Sepak Raga across Indonesia. (Said & Syam, 2022).

Physical and health conditions, especially in sports, have been carried out according to levels and by having a high level of physical condition, a person is able to carry out daily activities for a long time. So special attention is needed and special motivation is needed in athletes so that they can always maintain their physical condition. Based on the description above,

sports has goals, including achievement. However, this motivation has not appeared in the sepak takraw athletes at Bengkulu University because it was seen when they were doing training that the athletes did not have the enthusiasm within themselves. Sepaktakraw is a traditional sport that was first played by the Malays using a rattan ball by simply forming a circle and trying to keep the ball in the air without touching the ground. (Postgraduate Faculty of Sports, Sebelas Maret University, Surakarta & Hermawan, 2022). Physical education in sports and health is one of the subjects taught to students at each level. (Defliyanto dkk., 2020). The training process carried out at Bengkulu University is not very varied, making athletes enthusiastic and easily bored, so this is one of the obstacles to achieving maximum ability and also an obstacle to achieving achievement. Athletes' achievement can be reached through a systematic training program and complex training. (Lituhayu dkk., 2023).

Flexibility is the capacity for the entire range of joint movement, in this example including the trunk, without experiencing pain. One of the many physical attributes that is very important and highly correlated with the success of the sepak takraw sport is flexibility, especially in the movements of serving and destroying the sepak takraw kedeng. The ability to move a joint or group of joints over long distances is called flexibility in English. It is also often used interchangeably with joint mobility and spasticity. The flexibility of sepak takraw athletes at Bengkulu University, however, is still woefully inadequate, making their service skill level less than ideal. Sepak takraw, as a sport that requires a combination of high physical and technical skills, places a focus on precision. (Ayu & Kiram, 2024). Based on observations in the field, there are several sepak takraw athletes who still do not pay attention and

maintain their level of flexibility, so that the athletes' abilities are not optimal both during training and during matches. This can be seen from when practicing passing, serving and smashing, the athletes look tired quickly, as well as in matches. So this becomes an obstacle to achieving achievements for sepak takraw athletes at Bengkulu University.

The process of coaching and practicing sepak takraw which is carried out at Bengkulu University is carried out on Mondays, Wednesdays and Fridays after returning from college. Sepak takraw practice starts 30 to 50 minutes after returning home from class so the time for breaks and rest for the Bengkulu University sepak takraw athletes is very limited. This sometimes makes athletes easily bored and bored during training sessions, especially when doing physical training. By using skill tests, we can assess the level of motor skill proficiency in a particular sport of our students. (Barnanda Rizky dkk., 2023). In the training process carried out at the University of Bengkulu, especially in the flexibility training sessions, it is not varied or just monotonous so that the sepak takraw athletes are not enthusiastic and this can cause the flexibility ability of the sepak takraw athletes at the University of Bengkulu to not be optimal so it can affect their service abilities which are not yet optimal. Considering the context mentioned above, researchers are interested in conducting a study with the title "The Effect of Variations in Flexibility Training on the Ability of the Sepak Takraw Service in Bengkulu University Sepak Takraw Athletes."

## METHODS

The form of this research is experimental research, based on the issues that will be discussed in this research. The experimental method, according to, is a

research technique used to ascertain, under controlled conditions, the impact of the independent treatment variable (treatment or action) on the dependent variable (outcome). The design used in this research is a one-group pretest-posttest design, where the pre test is carried out before therapy. Consequently, because it can be compared with the pretreatment state, treatment results can be known with greater accuracy. Various flexibility exercises using the methodology circuit training will be given as treatment. (Donal dkk., 2020). Treatment will be given at 16 Bompa meetings and explained that it was assumed that the researcher tried to take the test for 16 meetings after the practice time limit. (Donal dkk., 2020).

This research was conducted at Bengkulu University. The research was carried out from 21 June to 21 July 2023. Population is a general area consisting of objects and subjects that have certain features and attributes that are defined by researchers to be examined and then concluded. The population is all the objects studied. Based on this knowledge, the population for this study consisted of 30 Bengkulu University sepak takraw athletes. Sampling is a data collection method that involves taking a population sample that represents all current members. Consequently, the sample is a component of the population. Total sampling is the sampling technique used. The sample in this study was 30 Bengkulu University sepak takraw athletes. The most crucial phase in research is the data collection technique because obtaining data is the main goal of. Tests and measurements are the data collection methods used in this research. Prerequisite tests must be performed before hypothesis testing is carried out. The purpose of testing measurement data related to research results is to improve analysis. For this reason, the normality and homogeneity of the data in this study will

be evaluated.

a. Normality test

Simply put, the normality test verifies that the analyzed data has a normal distribution. Depending on the type of variable being processed, testing is performed. utilize SPSS 23 to use the methodShapiro-Wilk to determine the normality of data distribution. FormulaShapiro Wilk looks like this :

(D = Based on the formula below = Shapiro

$$T_3 = \frac{1}{D} \left[ \sum_{i=1}^n a_i (x_{n-i+1} - x_i)^2 \right]$$

Wilk test coefficient, X i = The ith number in the data,  $D = \sum^n (X_i - X)$ ,  $i = 1$ ).

b. Homogeneity Test

Apart from testing the distribution of values to be analyzed, a homogeneity test is needed to be sure that the groups that form the sample come from a homogeneous population.

**RESULT**

a. Presentation of description of initial test data (pre-test) sepak takraw service ability

The average, standard deviation, maximum ability and lowest ability of the sepak takraw service ability test data with 30 samples were calculated. The following table shows the results.

**Table 1.** Statistical DescriptionPre-Test Service Capability.

Source Variable	N	average	SD	Lowest score	Highest score
pre test	30	24.27	2.392	21	29

In table 1 above it can be seen that in the initial test of sepak takraw service ability, the minimum score was 21, the

maximum score was 29, the average was (mean) 24.27, and standard deviation (standard deviation) 2.392.

**Table 2.** Frequency DistributionPre-Test Service Capability.

Interval class	Absolute frequency	F (%)	Category
0 -10	0	0%	Less Once
11 - 20	0	0%	Less
21 - 30	30	100%	Enough
31 - 40	0	0%	Good
41 - 50	0	0%	Very well
Amount	30	100%	

From the table 2 above, it can be concluded that the service ability test that was taken by 30 athletes practicing sepak takraw had a score category of 21-30 (sufficient), as many as 30 athletes. It can be seen that overall or 100% of athletes only have the ability to serve sepak takraw at intervals of 21-30 (sufficient).

b. Presentation of final test data (post-test) sepak takraw serviceability

After being given treatment Variations of flexibility training were carried out again while collecting data on service ability test results. With descriptive statistic The final test is as follows.

**Table 3.** Statistical Description Post-Test Service Capability.

Source Variable	N	average	SD	Score the lowest	Score Highest
Post test	30	30.93	1.999	28	35

In table 3 above, it can be seen that the minimum score in the final test is different, where there is an increase after being treated with a variety of flexibility exercises. Obtained minimum value 28, maximum value 35, average (mean)

30.93, and standard deviation (standard deviation) 1.999.

**Table 4.** Frequency Distribution post-test service capabilities.

Interval class	Absolute frequency	(F) %	Category
0 – 10	0	0%	Less once
11 – 20	0	0%	Less
21 – 30	14	49%	Enough
31 – 40	16	51%	Good
41 – 50	0	0%	Very well
Amount	30	100%	

From table 4 above, it can be concluded that the service ability test that was taken by 30 athletes practicing sepak takraw showed an increase in service ability, as many as 14 athletes had a score category of 21-30 (fair), as many as 16 athletes had a score category of 31-40 (good).

- c. Presentation of description of initial test data (pre-test) and final test (post-test) sepak takraw service ability

Description of result datapre test and post test obtained from the sepak takraw service ability test with 30 samples, the average, standard deviation, highest ability and lowest ability were calculated. The results can be seen in the following table.

**Table 5.** Presentation of Preliminary Test Data Description (Pre-Test) And Final Test (Post-Test).

Source variance	N	Flat-flat	SD	Score lowest	Score Highest
pre test	30	24.27	2.39	21	29
post test	30	30.93	1.99	28	35

In table 5 above it can be seen that in the initial test of sepak takraw service ability, the minimum score was 21, the maximum score was 29, the average was (mean) 24.27, and standard deviation (standard deviation) 2.392 and in the final test of sepak takraw service, a minimum score of 28 was obtained, a maximum score of 35, the average (mean) 30.93, and standard deviation (standard deviation) 1.999.

**Table 6.** Frequency Distribution pre-test and post-test service capabilities.

No	Interval	Category	Pre test		Post test	
			F	%	F	%
1	0 - 10	Less once	0	0%	0	0%
2	11 - 20	Less	0	0%	0	0%
3	21 - 30	Enough	30	100%	14	49%
4	31 - 40	Good	0	0%	16	51%
5	41 - 50	Good once	0	0%	0	0%
Amount	30	100%	30	100%		

Based on table 6 above, it can be seen that there is an increase in the ability of the sepak takraw service, which before being treated with variations in flexibility training when performing pre test The service ability of all athletes is only in the sufficient category and then there is an increase when performing post test namely, 14 athletes had the fair category, and 16 athletes had the good category. it can be seen that there is an increase in the service ability of sepak takraw where when carrying out the pre test because 100% of the athletes have service ability only at 21-30 intervals (sufficient), then after being given a variety of flexibility training and carrying out a post test, there is an increase service ability because as many as 49% of athletes have the sufficient category and 51% of athletes have the good category.

## DISCUSSION

Determine and address research hypotheses, research findings are discussed in many ways. Research findings, including findings of normality tests, homogeneity tests, and research hypothesis tests, are explained in depth. A summary of each research-related variable is provided by pre-test and post-test data, which are the results of this research. There are several ways to smash, including cross smash, straight smash, sole of the foot smash and cross smash, which need to be learned and mastered if you want to become a sepak takraw player. (Yunitaningrum, 2023). Sepak takraw is a skillful sport which consists of three different playing positions i.e., spiker, tekong and feeder. The feeder and server were mainly restricted to receiving and passing the ball, whilst the spiker performed explosive jumps to block and spike the ball. (Sarkar dkk., 2019). The factors that affect the basic skills of playing sepak takraw are physical condition, technique, tactics/strategy and mental. (BAIS dkk., t.t.). The experiment, which was carried out at Bengkulu University, was carried out in 16 meetings, the population of this study was all 30 Bengkulu University sepak takraw athletes. This research was conducted for one month from June to July 2023. Sports training is the process of honing exercises using a scientific approach based on the principles of organized, regular and scheduled training to improve the abilities and preparation of athletes.

The game of sepak takraw can be played by anyone, but in relation to the game of sepak takraw, one must master the basic techniques of playing sepak takraw well and correctly. The basic techniques of the sepak takraw game consist of: service, sepak sila, sepak cungkil, sole kick, sepak badek, memaha, using the head, smash, bait

and block. Therefore, practice is needed in order to master the basic techniques of the sepak takraw game. Skills are the processes involved in acquiring motor skills and the variables that encourage or inhibit such acquisition. (Rizky dkk., 2019). Stated that exercise is not only an adaptation process in the sense of a stimulus response or stimulus reaction which only results in reactions of the heart, blood circulation, muscles and nervous system but more than that, sports training can also improve thinking power, attitude and behavior as well as the attitude and personality of the person practicing. Sports success requires a training process and time; Training is the methodical development of an athlete's abilities and skills over time, carried out repeatedly over several days with increasing training loads. Training programs can be designed and implemented taking into account training principles and through staging, regularly, continuously and continuously without interruption. Learning methods using PjB2L model teaching materials can increase athletes' creativity in learning sepak takraw, this is because athletes will be directly involved or involved in this learning model. Therefore, with this training, athletes' abilities can continue to increase. The importance of basic movements has a major impact on academic progress to improve a child's growth and development. (Rizky dkk., 2023).

Previous studies that stress technical training to enhance movement abilities lend credence to this. (Huda dkk., 2023). Flexibility is the capacity to move within a joint's range of motion. In bending is also influenced by the elasticity of Harsono's muscles, tendons and ligaments in addition to space. Therefore, people with elastic muscles are more flexible. Joint flexibility is its capacity for the greatest amount of movement. If a person can sit with their legs apart, bend over

perfectly, or bend to the point where they can kiss their knees, that person is said to be flexible. Age, gender, muscle cross-sectional volume, and psychological factors (exercise) can all impact flexibility. Similar to this, flexibility plays an important role in sepak takraw service skills. When carrying out these movements, the flexibility of the muscles in the legs and feet must be flexible so that they do not feel stiff and tense, which would have fatal consequences for those who do them. Because flexible limbs will have a wider range of motion, serving in sepak takraw requires extraordinary physical qualities in flexibility. Likewise, when performing service movements, flexibility plays a big role, where when carrying out these movements the muscles in the upper legs and feet must be flexible. Flexibility is very important in the game sepak takraw. (Rizky et al., 2024) if a person has good flexibility in the joints and muscles of the legs, they will make wider leg movements when kicking in narrow spaces without any movement obstacles or restricted movement and ultimately will make their basic kicking skills better. (Azhar dkk., 2023) said a sepak takraw competitor's ability to serve is greatly influenced by their level of flexibility, which is one of the qualities they must have. Based on the opinions above, it can be concluded that if the level of flexibility is good then this will greatly influence the athlete's sepak takraw abilities. So providing variations in flexibility training is an effort to increase flexibility in sepak takraw athletes. Seeing this phenomenon, groin flexibility exercises really contribute maximally to improving the athlete's skills to become the spearhead to loosen the opponent's defense. (Nurhidayat dkk., 2022).

Basically flexibility can be seen from several points of view. If viewed from the perspective of the needs of a sport, flexibility can be divided into

general and specific flexibility. In the game sepak takraw, the flexibility referred to is flexibility in the upper legs, lower legs and also the feet. Kuda serve is a kick made by servis, using the back of the foot or a kuda with the ball position to be kicked by the flank higher than the head. (Marpaung dkk., 2022). This flexibility is really needed because in the game of sepak takraw almost every basic technique used requires flexibility, especially when serving because when serving sepak takraw the upper legs and feet play a big role therefore the level of flexibility in these parts must be It's good to be able to serve sepak takraw well. According to Michle, flexibility is related to the presence of joint space and broader muscle elasticity. Flexibility is the ability to move joints and muscles throughout their range of motion. (Syafaruddin & Ramadhan, 2020). Service is a crucial work action in the sepak takraw game because points are almost always scored by the serving team; Failure to serve results in the team losing opportunities to score more points and can even give points to the opposing team. (Kurniawan, t.t.). (Akbaruddin & Hasanuddin, 2023) stated that mastery of service techniques is very important for the following reasons: (1) using service, a team can produce values or numbers; (2) By using service, the team can lead the match according to the desired team serving; and (3) service is a type of initial attack on the opposing team. Upper service and lower service are two categories of service.

Top service is done by kicking the ball in a high position from the ball thrower's pass. The characteristics of this service are usually hard and sharp straight towards the opponent. In order to be able to make a hard and sharp and well-directed service movement, the contact with the ball when hitting must be right on the back of the foot so flexibility is also needed in the legs, however, to get maximum service

you also need leg muscle power and speed. Looking at the needs and dimensions of the athlete's leg muscle power in performing the sepak takraw service, it is still minimal due to the physical condition and the method or form of training which has sufficient intensity, inadequate facilities and infrastructure, and coaches who contribute in training and training which is still in the traditional form without Collaborate according to current developments. (Sukamti, 2023). In sepak takraw, flexibility is really needed because when performing service or smash movements, flexibility plays a role in the strength of the blows made. In this study, researchers created variations of flexibility training using an exercise model circuit training. Athletes or athletes are given variations of flexibility training in the form of posts and have five posts where each post will carry out several types of flexibility training movements, both active flexibility and passive flexibility, each post has a distance of 2 meters.

This exercise was carried out over 16 meetings. The types of flexibility that will be included or carried out in each post are active and passive flexibility, especially in the upper legs and feet, where active flexibility takes the form of kissing the knee while sitting, kissing the knee while standing, split, split while kissing your knees, split while bending your body forward. Then for passive flexibility it is split assisted by friends face to face, split with the body bent forward while being pushed by a friend, lifting the other leg up while being helped by a friend. The quality of physical condition is an ability possessed by every athlete in every sport. Quality means the level of knowing a condition. The conditions adopted in this study are physical conditions and basic techniques possessed by sepak takraw players. (Purwanto, 2022). The series of sepak takraw service movements are performed by relying on one leg. Muscle

strength functions as support for all body components and also stabilizes the balance point when a kick is made with one leg. (Arya Wisnu Murti dkk., 2021). Providing variations in flexibility training can improve the sepak takraw service abilities of Bengkulu University sepak takraw athletes. There is an increase in the capability of sepak takraw services as evidenced by the results of calculations from the datapre test and post test which shows the analysis results obtained from the t-test showing significant value data  $0,000 < 0,005$  It can be concluded that there is an influence from the variations in flexibility training given. There is an influence from the training given because during the training there is continuous repetition of flexibility movements for 16 meetings so that there is an increase in the flexibility level of the Bengkulu University sepak takraw athletes and this can improve the sepak takraw service ability.

## CONCLUSION

Based on the discussion above, the application of variations in flexibility training aims to increase the flexibility of athletes so that their sepak takraw service abilities can increase. This shows that there is a significant influence on the results obtained in the initial test and final test. The results of the calculations that have been carried out have obtained significant values  $0,000 < 0,005$  Ha accepted. So it can be concluded that there is an influence of variations in flexibility training on the service ability of sepak takraw athletes at Bengkulu University.

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