**Physical Exercise Model for Tekong Athlet Sepaktakraw**

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**Abstract**

*This study aims to: (1) Determine the effectiveness of the model of physical*

*exercise athlete Tekong sepaktakraw Sriwijaya University to increase leg muscle*

*flexibility. (2) develop a model of physical exercise for athletes Tekong*

*sepaktakraw Sriwijaya University (3) determine the validity of the model of*

*physical exercise for athletes Tekong sepaktakraw Sriwijaya University (3).*

*Subjects were athletes Tekong sepaktakraw Sriwijaya University totaling 20*

*people. The technique data collection using the observation and questionnaire*

*with data analysis techniques while the percentage of physical test data collection*

*techniques to the measurement of physical test measurements of leg muscle*

*flexibility with data analysis techniques t test. The method used is the method of*

*product development research in the form of physical exercise model for Tekong*

*athletes sepaktakraw Sriwijaya University conducted with the following*

*procedures: (1) analysis of the product, (2) develop the initial product (3) to*

*validation of experts (4) test field of small and large scale (5) revision of the*

*product and (5) the final product. Results of the study 1) exercise model developed*

*effective increases the flexibility component leg muscle Tekong athletes*

*sepaktakraw Sriwijaya University, 2) model is a valid exercise developed for*

*athletes Tekong sepaktakraw Sriwijaya University. It can be concluded that the*

*development of models of physical exercise for athletes Tekong sepaktakraw*

*Sriwijaya University produces an effective product that can improve the physical*

*components of athletes*

**Keywords**: *Physical Models, Tekong Athletes.*

**Introduction**

Sepaktakraw as a sports of achievements are required to have a good physical

components in order to achieve peak performance. According to Hanif, S (2011)

players of sepaktakraw can achievement if it has a good physical components in

order to support the appearance of the game. But in the national game match

athlete sepaktakraw Sriwijaya University failed to present a gold medal.

According Iyakrus (2013) the failure of sepaktakraw team Sriwijaya University

get achievement because of poor physical condition of athletes, especially athletes

Tekong, this can be seen several times service launched failing to score points

against an opponent in a match at national or regional level.

In addition to the above problems writer observed, sepaktakraw Sriwijaya

University has not had a physical exercise athlete Tekong models that can be used

as a guide in preparing a form of exercise that is given to athletes, especially inthe physical preparation stage. Because it does not yet have a model of physical

exercise, then every coach has their own form exercise that suits their tastes.

Physical exercise models designed are expected to be used as a guide by coach in

the physical training of athletes sepaktakraw so as to improve the quality of the

physical components that ultimately improve the performance of athletes on the

game.

In the context of this study the term of model is used to show understanding as the

conceptual framework used in the conduct of activities. Further according

Sugiono (2009) that the model is a set of universal sequential procedure to realize

a process, media of the selection and evaluation. Then the opinion Winataputra

Udin S (2005) defined the model as a conceptual framework that is used as a

guideline in conducting activity.

Based on the opinion on the above definition of related models in this study is a

model of development physical training for athlete Tekong is a conceptual

framework on physical exercise of sepaktakraw players systematically arranged

and designed and developed to help achieve the goal of improving the physical

components that include flexibility of leg muscle for athlete Tekong.

Hanif Opinions (2011) in sepaktakraw sports the athletes Tekong so can achieve

peak performance then a coach must prepare the physical components of leg

muscle flexibility. Flexibility (flexibility) is a person's ability to perform

movements with large amplitude (Bompa, 2009). Flexibility exercises are

intended to increase the likelihood of motion in the joints, more space of joint

movement then more flexibel. Besides, the characters of flexibility exercises are

stretching and stretching. The stretched and extended are the connective tissue of

the joints and muscles associated with the possibility of motion in the joints

concerned.

On this occasion, the author examines how to develop the physical training

models for athletes Tekong sepaktakraw that suits what Sepaktakraw needs for

athletes to have good physical component to face a match. It's been quite a lot of

research done on physical exercise, but specifically about the model of physical

training for athletes Tekong sepaktakraw not been investigated.

**Physical Exercise**

Physical exercise is a systematic process of preparing athletes at the highest level

performances done repeatedly with more load high / increases. According to Fox,

(2008) Physical exercise in the physiological sense is a repair system and organ

function in its duty to create a performance of athlete. Pate (1999) argues physical

exercise can improve the efficiency of several organs and functions involved in

the implementation of physical latihan.Latihan in principle is to provide the

physical stress on the body regularly, systematically, have a relation that can

cause their ability to do the job (Soekarman, 2000).

From some opinions before, can be concluded that regular physical exercise and

berkesinabungan will be able to increase the ability of the organ work and skill

athletes, thus exercise aims to improve physical appearance.

Bompa (2009) argues that the main in the physical exercise is carried out

repeatedly and increases the resistance to increase strength and muscle endurance,

physical exercise is also aimed at achieving biological adjustment so that the

activity can be displayed optimally. In principle, the exercise must be in

accordance with the needs and biological stress must occur in order to face the

task or job that is heavier. This opinion is consistent with the statement Fox

(2008) if you want to develop strength should exercise the power, if you want to

develop speed must exercise speed, and if you want to develop flexibility should

exercise flexibility. The purpose of physical exercise by Bompa (2009), among

others: 1) To improve the general physical, 2) To develop in accordance with the

special physical sport that occupied, 3) To improve the coordination of movement

and enhance the sport branch technique.

A coach is required to know and have knowledge of the principles of physical

exercise and weight training because the shape is very influential in

mamgembangkan physical condition of athletes. According to O, Shea (2006) is

physiologically the most basic principle of training is specific adabtations to

inposed demand and progressive overload principle. According to Fox (2008) the

basic principles of exercise are as follows: 1) Know the main energy systems are

used, 2) Develop a training program that will further develop the energy system

through exercise done regularly and continuously with sufficient intensity within a

specified time will be able to cause physiological changes and can improve

physical appearance. According to Fox (2008) Physical exercise will cause

physiological changes include: 1) bio-chemical changes that occur in the network,

2) creatine concentration increased 39%, 3) creatine phosphot incerase

concentration increased 22%, 4) ATP concentration increased 66%, 5) increased

glycolytic enzyme activity

**The Components of physical flexibility in Athletes Tekong sepaktakraw**

Sports sepaktakraw is a sport game that requires physical component to support

the appearance of athletes. According Bompa (2009) stages in starting a stage of

conditioning the exercise is to provide a physical exercise to develop, among

others, endurance, explosive power, strength, speed, agility, and flexibility needed

in a sport. Physical components developed in the game of sepaktakraw in this

study were the leg muscle flexibility from athletes Tekong.

Flexibility (flexibility) is a person's ability to perform movements with large

amplitude (Bompa, 2009). According to Fox (2009) flexibility is the distance

range of a joint or group of joints or the distance that may be achieved by a joint

in motion possibility is the quality of these capabilities. The greater the distance

the better achieved the flexibility of joints. Then the opinion Nur Hasan (2006) is

the effectiveness of a person's flexibility to adapt itself to doing all the activities of

the body with stretching widest especially the muscles and ligaments around the

joints. Flexibility can be defined as the range of motion or the degree of

movement that occurs in certain joints are also referred to as range of motion.

From the above it can be concluded opinion of flexibility in this research is the

ability to perform motion joints in the broadest optimally. Flexibility exercises are

intended to increase the likelihood of motion in the joints, more space of joint

movement then more flexibel. Flexibility exercises characters are stretching and

stretching. Stretched and extended are the connective tissue of the joints and

muscles associated with the possibility of motion in the joints concerned.

Soekarman (2000) says that the greater flexibility will benefit in all the numbers,

if it is used appropriately. Besides, a person will not master the perfect technique

when not have the flexibility and the development of techniques that will be

hindered by barriers on certain body parts. Parts of the body is very important for

athletes Tekong regarding flexibility is the crotch or groin and waist. Breadth less

motion will limit the quality of the appearance of movement, so that for an athlete

Tekong sepaktakraw would be difficult to master the technique movement

service.

Joints can be moved by muscles as active components (drive). Strength and speed

of movement is also determined by the active components that need to be trained

to achieve maximum strength and speed. In addition, the breadth of motion is

determined by passive components, namely the joint surface and structures around

crate ligaments and muscles and tendon (as stabilizer joints).

Soekarman (2000) argues about the limiting factors are the most important of

flexibility, such as muscle movement, joint capsule, tendons, skin. While Fox

(2008) stated that the prisoners were most to the flexibility derived from the joint

capsule is 47%, 41% of muscle, tendon and skin 10% 2%. Fox (2008) also states

that the degree of flexibility of the joints is determined by: 1) The structure of the

anatomy of joints, 2) extend the capability of the soft tissues, 3) ligaments.

Michael (1999) states that a good flexibility will significantly support the

efficiency of the movement and the amplitude of the motion and prevent injuries

on the network as well as an important factor to learn a movement.

Movement at a joint will be limited, if the ligaments and tendons surrounding

become stiff. As we know, that increasingly up a age of a person, the less

precisely the elasticity of tissue, include tendons and ligaments, thus increasing

the breadth of motion is limited. Therefore, to increase and maintain the breadth

of the movement started as early as possible to let a young age, and this exercises

should also be maintained on a regular and ongoing secra (Bompa, 2009).

Michael (1999) specifying the 4 ways for how to improve and maintain flexibility,

namely 1) The movement to limit the breadth of active or the movement active, 2)

Movement to limit the breadth of passive or the movement passive, 3) Exercise is

active in the final position, 4) Exercise passive in the final position. According to

Fox (2008) that the best form of exercise to improve flexibility is stretching

exercises. Stretching exercises can be divided into 2 types: 1) Static Stretching

(static stretching) is a form of exercise that is repeated without any movement, so

just to maintain its position within a specified period, 2) Stretching active (active

stretching) is a form of exercise with an active movement. Both are excellent

forms of exercise to improve one's flexibility

From the results of research conducted showed that between static stretching with

active or dynamic stretching exercises no differences were convincing to increase

a person's flexibility, or in other words the two kinds are equally effective to

stretching exercises increase flexibility someone (Fox 2008). Likewise, the results

of research that both types are equally effective to stretching exercises increase

flexibility person. Flexibility is not an end. The final assessment of flexibility is

how to incorporate them into an appropriate technique to sports like doing service

in game of sepaktakraw by players Tekong.

According to Fox (2008) whether or not a person is determined by space motion

joints the widespread or not, thus flexible athlete is an athlete who is able to move

through the body member or part of the motion, because the element of flexibility

will determine the extent in space motion, whether or not elastic muscles, tendons

and ligaments. So the main factor that determines the flexibility is muscle

elasticity.

Flexibility that will be developed for athletes Tekong sepaktakraw in this study is

the flexibility of leg or groin. The good groin flexibility is can trained by split

exercise. According to Michael (1999) split is a form of exercise with a stand up

position and slowly one of foot open to backward and laterally.

**METHODS**

This research is the development of a type of research that the user is used in

solving practical problems in the field of sport with the following procedures:

**1. Analysis Requirement**

a) Assess the general physical characteristics of the athletes Tekong sepaktakraw.

b) Survey of training at the University of Sriwijaya Palembang training camp.

**2. Develop Initial Product Model Athlete Physical Tekong sepaktakraw**

a) Analyzing needs and product characteristics

b) Analyzing the character of the game

c) Determine the purpose and form of exercise

d) Establish strategies penggorganisasian exercise

**3. Validation Expert**

The initial product of model physical exercise athlete Tekong before tested on a

small scale validated by experts in accordance with the field. In the research

model of physical exercise athlete Tekong sepaktakraw involves two experts from

the University of Srivijaya and coach sepaktakraw.

**4. Field Trial**

Field trials conducted to obtain feedback and revision of the product in the form

of physical exercise models athlete Tekong sepaktakraw players. The test can be

done: 1) Implement a small scale trial, 2) Implement wide-scale testing. In testing

the product on the study of design used is the design of pre ekprimental design

with form one group pretest posttest design. According Sugiono (2009) pre

eksprimental design with form one group pretest posttest design is by comparing

before and after being treated. In this study, the treatment given is a model of

physical exercise for athletes Tekong sepaktakraw be split exercise active and

passive split.

**5. Revised Product**

Product revision is done based on the input of experts to improve the product

before the product is used.

**Subject Test**

Target product usage is Tekong sepaktakraw athletes Sriwijaya University

numbered 20 people.

**Type of Data**

The data used in this study is qualitative data and quantitative. The qualitative

data obtained from interviews of experts and trainers orally mapun written asinput for product revision material. Quantitative data obtained from test taking

physical component leg muscle flexibility.

**Data Collection Instrument**

Instrument for collecting data in this study using the observation and

questionnaires and measurements of physical ability test leg muscle flexibility

with sit reach test.

**Data Analysis Techniques**

The qualitative data obtained through observation and questionnaires were

analyzed by percentage to assess the feasibility and quality of the product, while

the quantitative data obtained from the flexibility measurements were analyzed by

t-test to determine the effectiveness of the product.

Below are the steps being taken to generate models of physical training

athletes Tekong sepaktakraw.



Figure 1: Stages To Do In Generate Physical Model Products

For Athletes sepaktakraw.

**RESULTS**

**Analysis Requirement**

Needs analysis performed to identify the problems faced in the process of physical

exercise for athletes Tekong sepaktakraw by observing physical exercise activities

for athletes sepaktakraw, followed by a literature study / review of the literature.

Observations have been made to 20 athletes on Pelatda sepaktakraw Sriwijaya

University (training camp area). Emperis observed that physical exercise alit

Tekong do not specifically point to the needs of athletes in the field, based on the

physical component is dominant in the game sepaktakraw. Besides, the initial

survey using a questionnaire to 20 (twenty) people involved in the training

consists of 2 (two) sepaktakraw coaches and 18 athletes can be seen training

needs physical components necessary for sepaktakraw namely flexibility,

explosive power, speed, agility, flexibility and durability as in the table below.

Diagram 1: Needs Questionnaire Results Physical Components Tekong athletes

by coaches and athletes Sepaktakraw



Based on the above data the researchers developed a model of physical exercise

sepaktakraw the required flexibility aspect for athletes Tekong in the game of

sepaktakraw through split exercise active and passive split.

**Draft Description Product Selection**

After determining which products will be developed in a form of physical

exercise for athletes Tekong sepaktakraw, then the next step is to create a product

using the following steps: (1) analysis of the purpose and character of the product

(2) to analyze the character of the game (3) set goals and form of exercise (4)

establish the strategy of organizing training. After going through the design and

production process, the resulting product can improve the physical abilities of

athletes leg muscle flexibility Tekong sepaktakraw.

**Initial Product Validation**

The initial product development models of physical exercise sepaktakraw before

tested in small-scale test should be validated by experts ie expert lecturers and two

trainers sepaktakraw Sriwijaya University.

Validation is done by providing a draft of the initial product development of

physical training model for athletes Tekong sepaktakraw with accompanying

evaluation sheet the experts. Evaluation sheet in the form of questionnaires which

contains aspects of quality development of physical exercise models for

sepaktakraw as well as advice and comments from experts on the model of the

development of physical exercise for athletes Tekong sepaktakraw. The results of

the evaluation in the form of the value of the quality aspects of the development

model of physical exercise using a Likert scale sepaktakraw 1 to 4.

**Description Data Validation Expert**

Data obtained from the questionnaires by experts is a guide to whether the product development model of physical exercise for athletes Tekong sepaktakraw can be

used for small-scale testing and wide scale.

**Revised Draft Preliminary Product Before Trial Small Scale**

Based on the advice of experts Lecturers and Trainers sepaktakraw on the

model of physical exercise for athletes Tekong sepaktakraw as described above,

then held product revision.

**Data Results from Pilot Small Scale and Scale Size**

After product development model of physical exercise for athletes Tekong

sepaktakraw validated by a team of experts and revision then tested products to

athletes sepaktakraw Sriwijaya University amounting to 8 people on a small scale

and 20 athletes on a wide scale. The trial aims to determine weaknesses,

shortcomings or effectiveness of the product to be used for athletes sepaktakraw.

Data obtained from this test are used as a basis for revising the product before

using it on a large scale trials.

Measurement of flexibility as well as the percentage increase is one of the

indicators used to assess the effectiveness of the product to be used for athletes

sepaktakraw. Flexibility measurements made before and after the exercise carried

out for 4 weeks with a frequency of 3 times a week for 8 athletes on a small scale

showed the following results:

The above data indicate that the increase in the aspect of physical flexibility

athletes before and after exercise increase of 1.05%. This case shows that the

practice of physical exercise for athletes models Tekong sepaktakraw effectively

increase leg muscle flexibility and can be continued on a large scale group trial.

**Frequency Distribution Aspects of flexibility**

After testing a wide scale for 6 weeks with a frequency of 4 times a week with a

split workout treatment of active and passive split to 20 athletes Tekong showed

the following results:

38.000

40.000

42.000

44.000

Sebelum Sesudah

**Mean (rata-rata)**

Mean (rata-rata)

**Table 2: Frequency Distribution Aspects of flexibility**

No Category Scores Range

Frekuency

Absolut

(F)

Prosentase

(%)

1 Less < 38.15477 2 10

2 Good 38.15477 - 54.14523 14 70

3 Very Good > 54.14523 4 20

Sum 20 100

**Figure 2: Frequency Distribution Aspects of flexibility**

Based on the frequency aspect of flexibility aspect can be concluded that 14 of the

20 athletes, or about 70% are good, whereas 4 of 20 people or about 20%

including karegori very good and 2 of 20 people or about 10% of athletes

including categories less.

**DISCUSSION**

Models of physical exercise for athletes Tekong sepaktakraw in this study is to

develop a model exercise physical aspect needs players in the sport sepaktakraw

the flexibility aspect through active split exercise or passive split.

Models of physical exercise for athletes sepaktakraw Tekong is in line with the

opinion of Hanif (2011) that the form and manner of physical exercise is very

dependent on the components that are trained, so it is important to know the

components necessary to improve the physical players sepaktakraw. Then

according Dervish (1992) sepaktakraw athletes to excel is not enough to simply

practicing techniques but also have to practice physical mainly for physical

aspects related to the technique of playing the field. Then Opinion Bompa (2009)

Stages to start an exercise program is konditioning stages that develop in

accordance with the physical aspects of the sport in question. Then Iyakrus

opinion, (2010) physical exercise that develops aspects in accordance with the

needs of the field athletes will be able to support athletic performance, causing a

sense of confidence in a match.

0

5

10

15

Kurang Baik Sangat baik

2

14

4

**Model Physical Exercise Effective For sepaktakraw Athletes to Improve**

**flexibility**

Below are the results of the t test on aspects of flexibility after doing physical

exercise models athlete Tekong sepaktakraw as in the table below.

**Table 2: Test t test aspects of flexibility**

**CONCLUSION**

Based on the analysis of the results of research on the development of models of

physical exercise for athletes Tekong sepaktakraw Sriwijaya University, it can be

concluded as follows:

1) The model of physical exercise for athletes Tekong sepaktakraw is a form of

exercise based on the needs of the physical components of athletes Tekong in

sepaktakraw game that includes a form of exercise flexibility designed in a string

of physical exercise.

2) The model of physical exercise for athletes sepaktakraw has good effectiveness

in improving the physical components Tekong flexibility athlete in the game

sepaktakraw

Models of physical exercise for athletes Tekong on sepaktakraw game as a

product that has been produced in this study can be used as an alternative in

preparing the athletes training program to prepare the athlete physical components

sepaktakraw.

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