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THE EFFECT OF EYE-FOOT COORDINATION, LEG MUSCLE STRENGTH AND MENTAL SKILLS ON THE SHOOTING SKILLS OF BANGKA FOOTBALL SCHOOL ATHLETES

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Abstract

This study aims to determine the effect of eye-foot coordination, leg muscle strength, and mental skills on the shooting skills of Bangka Football School athletes. This research was conducted at SSB Selindung 89, Bangka, aged 9-12 years, totaling 36 people. To measure shooting skills, use a ball shooting skill test which is placed at a point 8 m in front of the goal/target. Test your eye-foot coordination by kicking the ball against a wall or the Threebox Wall Soccer Test. Test leg muscle strength using a leg dynamometer with three trials. While the mental skills test uses a questionnaire. Conclusions from the results of the study 1) Eye-foot coordination has a direct effect on shooting skills by 34.1%. 2) Leg muscle strength has a direct effect on shooting skills by 45.3%. 3) Mental skills directly affect shooting skills by 35.4%. 4) Eye-foot coordination has a direct effect on mental skills by 23.5%. 5) Leg muscle strength has a direct effect on mental skills by 44.8%. 6) Eye-foot coordination has an indirect effect on shooting skills of athletes through mental skills of 50.7%. 7) Leg muscle strength has an indirect effect on athletes' shooting skills through mental skills of 43.8%.

Keywords: Eye-Foot Coordination, Leg Muscles, Mental Skills, Shooting

INTRODUCTION

On April 10, 2021 in the context of the Babel Football Academy (BFA) 2021 Anniversary at the Babel Field, Sahabuddin Sport Arena held a Football Festival for Kids Ages 10, 12 and 14 years which was opened by the Governor of the Bangka Belitung Islands (BABEL), Mr. Erzaldi Rosman. Through this activity, the Bangka Belitung footballers will be selected and trained by the Babel Football Academy (BFA). This year's BFA will also be encouraged to be promoted in the PSSI League III (Pass, 2021).

The continuation of the 10, 12 and 14 year old Football Festival for Kids which was previously held at the Babel Sports Department field, Sahabudin Sports Center is the Grassroots League. The Bangka Belitung Grassroots League was first held in 2021 which took place at the Selindung Baru football field, Pangkalpinang. This league competed as many as 14 football school in the U-12 category and 9 football school in the U-10 category.

The characteristics of children aged 9-10 years are visual memory, coordination that begins to increase, speed and endurance increase, hunger to learn, team spirit, discussion ability, and self-confidence. While the characteristics of children aged 11-12 years are hunger to learn, increased coordination, physical changes, competitive spirit, assertiveness of visual and sound memory, team spirit, increased attention, ability to discuss (FIFA, 2010).

The key to victory in football is to score as many goals as possible. Goals themselves are created from shooting. In terms of training, the researchers saw that the children's training at Bangka football school on average only came to training, warming up, technical training, games, evaluation and cooling down. It is rare for football school athletes to do physical training, especially for mental training. Of course, the purpose of establishing football school is for coaching and also to achieve achievements.

Judging from sports coaching which is a continuous and integrated process, which requires professional management and the right support for science and technology in order to achieve maximum results. In sports, science and technology is known as sport science which has five branches,

namely physiology, psychology, biomechanics, nutrition and sport medicine (Abidin, 2012).

Mental training is needed by athletes, because mental factors are very influential during matches and during practice, athletes who have mental readiness when competing tend to have calm in making decisions in the field and will perform better and maximally than athletes who do not have mental readiness.

The psychological aspect is one of the areas of sport science in sports development in all branches including football. Psychology deals with the thoughts, feelings, emotions of athletes which are usually referred to as mental. This area is also related to motivation, self-confidence, emotions that can affect the performance and behavior of athletes both in training and in competition. The development of the field of psychology in achievement sports is growing rapidly because it is believed to be able to improve the performance of athletes. Even in various sports psychology writings it is said that "80% of athlete wins is determined by mental factors". This means that mental factors have a very important role in determining the achievement of an athlete (Abidin, 2012).

According to Loehr, there are seven aspects of mental skills, namely: self-confidence, negative energy control, concentration, visualization and imagery skills, motivation, positive energy and behavioral control. Meanwhile, according to Juriana in (Yunita, 2018), the mental skills are grouped into 3, namely: 1) dominant affective aspects (self-confidence, positive energy, negative energy control, and motivation); 2) dominant cognitive aspects (concentration, visualization and imagery abilities); and 3) dominant psychomotor aspect (behavioral control). Aspects of mental skills affect young players or youth football, because they are in a period of growth and development. The mental skills aspect of young athletes is different from other age athletes where growth and development occurs very quickly.

The most dominant motion in football is kicking the ball. As Sucipto and Sudradjat stated, “that: kicking the ball is one of the characteristics of the game of football. Kicking the ball is a dominant feature in the game of football. Kicking is done to provide a

pass (passing) and shoot towards the goal (shooting).

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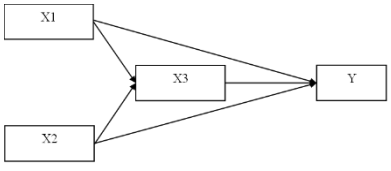
In football game, leg muscle strength is a very important component, it is the driving force of every physical activity. Football players who do not have strong leg muscles will result in weak physical activity. Strength does have an important role in protecting athletes from possible injuries. With leg muscle strength, athletes can run faster, throw or shoot the ball further and more efficiently as well as strengthen joint stability (Khadianto, 2015). Then the player must have good leg muscle strength so that in carrying out sports movements, especially in the technique of shooting the ball at the goal in football games, it can be done effectively and efficiently.

The coordination needed by every player in playing football is coordination between the ankles, because the eyes are the center where the view is to see the conditions around the field and the role of the feet as ball processors (Anwari, 2016). Aligning between eye sight and foot movement in a football game that is dominated by the use of the foot makes the role of leg muscle strength and eye-foot coordination very important.

METHOD

This study was made using an associative quantitative approach, with non-test techniques, while the analysis technique used a path analysis approach, which is a technique for analyzing causal relationships that occur in multiple regression if the independent variable affects the dependent variable not only directly but also indirectly (Supardi, 2012, 263).

So, "Path analysis model is the relationship of influence between independent variables, intervening variables and dependent variables where the researcher clearly defines that one variable will be the cause of other variables which are usually presented in the form of diagrams (Noor, 2011)." The variables studied consisted of four variables consisting of three exogenous variables and one endogenous variable. Exogenous variables consist of eye-foot



coordination (X1), leg muscle strength (X2). Mental Skills (X3) and the endogenous variable is Shooting Skill (Y). The pattern of interrelationships between research variables is shown in the following figure:

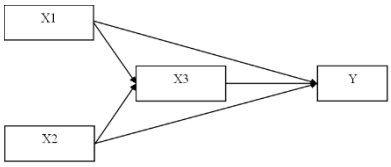


Figure 1. Research design

Description:

X_1 : eye-foot coordination

X_2 : leg muscle strength

X_3 : mental skills

Y : shooting skills

The purpose of the study was to determine whether or not there was an effect of eye-foot coordination (X1), leg muscle strength (X2), and Mental Skills (X3) on the shooting skills of Bangka football school athletes (Y). To measure shooting skills using a ball shooting skills test which is placed at a point 8 m in front of the goal/target. Test eye-foot coordination by kicking the ball against a wall or Threebox Wall Soccer Test). Test leg muscle strength using a leg dynamometer with three trials. While the Mental Skills Test uses a questionnaire.

This research was conducted at Bangka football school 89 Selindung, Bangka, aged 9-12 years (36 people). The research implementation time is divided into two stages, namely: The first stage of testing the instrument in March 2022, then the data is tested for normality. The second phase of the research was actually carried out in April 2022

RESULTS AND DISCUSSIONS

There are four variables in this study, consisting of three exogenous variables or independent variables and one endogenous variable or dependent variable. These variables include: Eye-foot Coordination (X1), Leg Muscle Strength (X2), Mental Skills (X3) and Shooting Skills (Y). The study was conducted at football school Selindung 89 with a total of 36 football athletes aged 9-12 years.

1. There is a direct effect of eye-foot coordination on mental skills

From the results of the analysis of research data, it was found that the significance value of the effect of eye-foot coordination on mental skills was 0.031 < 0.05, so eye-foot coordination had a significant direct effect on mental skills with the percentage of direct influence being (0.341) or 34.1%. and

the remaining 65.9% is influenced by other factors outside the variables studied.

So, it can be concluded that there is a direct effect of eye-foot coordination on mental skills in athletes of SSB 89 Selindung with athletes aged 9-12 years. From the results of the study, it was found that SSB 89 Selindung athletes with athletes aged 9-12 years had good eye-foot coordination. Mubarok (2016) states that a player in a soccer match is equipped with good technique and mentality but is not supported by good eye-foot coordination, so the accuracy of the ball will decrease.

Coordination is the ability of the body to carry out activities or movements efficiently and precisely. Someone who has good coordination, the cooperation his body does will also be good. Concentration can also be done easily even while moving the body alternately(Ricky, 2021). Concentration is part of mental skills. According toE. Loehr, 1986 *mental skills*itself includes several things, namely, self-confidence, negative energy control, concentration, visualization and imagery abilities, motivation, positive energy and behavioral control. Therefore, in carrying out eye-foot coordination, an athlete must have strong mental skills to be able to concentrate easily even while moving the body alternately and in harmony. So that eye-foot coordination affects the mental skills of soccer athletes.

2. There is a direct effect of leg muscle strength on mental skills

From the results of the analysis of research data, it was found that the significance value of the influence of leg muscle strength on mental skills was 0.005 <0.05 so that leg muscle strength had a significant direct influence on the mental skills of SSB 89 Selindung athletes with the percentage of direct influence of leg muscle strength on mental skills as much as 0.453 or 45 .3% and 54.7% the rest are influenced by other factors outside the variables studied.

So, it can be concluded that there is a direct effect of muscle strength on the mental skills of SSB 89 Selindung athletes aged 9-12 years. Because, muscle strength is related to the performance of running speed, football speed and others. Leg muscle strength is a combination of strength and speed is an important aspect in sports that use a

lot of legs(Asep Dedi Paturohman, 2018).

Where in the game of football, when shooting to be right on target, the athlete must be able to control the strength of the leg muscles when kicking the ball, both into the opponent's goal and the ball bait to his teammates. In controlling the strength of the leg muscles in situations where there is a lot of pressure from the opponent, high concentration, self-confidence, attention and firmness and good self-control are needed. So, leg muscle strength affects the mental skills of soccer athletes.

Leg muscle strength results from the work of the muscles of the upper and lower limbs. Leg muscles work or resist the load by exerting maximum force(Yatno, 2009). To exert the strength of the leg muscles, self-control is needed so that the force exerted is maximal and in accordance with the wishes. Therefore, leg muscle strength has a significant influence on the mental skills of soccer athletes.

3. There is a direct effect of eye-foot coordination on shooting skills

From the results of the analysis of research data, it was found that the significance value of the direct effect of eye-foot coordination on shooting skills was 0.002 <0.05, it can be concluded that eye-foot coordination had a significant direct effect on the shooting skills of SSB 89 Selindung athletes. With the percentage of direct influence as much as 0.354 or (35.4%) and the remaining 64.6% is influenced by other factors outside the variables studied.

So it can be concluded that there is a direct effect of eye-foot coordination on shooting skills in SSB 89 Selindung athletes with athletes aged 9-12 years. in the book(FIFA, 2010), Improved sports coordination makes it easier for players to learn various soccer moves. The basic techniques can be divided into three categories: 1) Ball control, 2) Running with the ball, 3) Kicking the ball/shooting. To have good shooting skills, good coordination is needed too, especially eye-foot coordination in soccer.

Eye-foot coordination is the ability of the eyes to integrate the stimuli received and the feet as a driving function to perform the desired movement(Suhartoyo et al., 2019). Good eye-foot coordination certainly makes it easier to make accurate shooting against the goal, because the

ball that is kicked will be directed to the desired target.

Every athlete has a different eye-foot coordination ability. Shooting at the goal in a soccer game requires hitting the ball with the feet so that the results of the kicks taken can be in accordance with the desired target. Therefore, eye-foot coordination affects shooting skills.

4. There is a Direct Effect of Limb Muscle Strength on Shooting Skills

From the results of the analysis of research data, it was found that the significance value of the direct influence of leg muscle strength on shooting skills was 0.037 <0.05, then leg muscle strength had a significant direct effect on the shooting skills of SSB 89 Selindung athletes with beta values of 0.235 or 23.5% and 76, respectively. 5% is influenced by other factors outside the variables studied.

So, it can be concluded that there is a direct effect of leg muscle strength on shooting skills in SSB 89 Selindung athletes with athletes aged 9-12 years. Strength is a basic ability of physical condition. According to Rosita in(Ardiansyah, 2020)Leg muscle strength is the tension exerted by the leg muscles against tension or load through maximum effort to move the muscles. If a soccer player has strong leg muscle strength, it means that he will increasingly have the opportunity to score better goals than those who lack leg muscle strength.

Joseph A. Luxbacher's opinion in(Rizky, 2020)stated that shooting skill is one of the individual abilities in the game of football with the aim of kicking the ball hard towards the goal. In shooting, you must need strength to be able to kick the ball with all your might and hard towards the goal. Strength is a basic ability of physical condition.

The strength of the leg muscles has a significant direct effect on the shooting skills of SSB 89 Selindung athletes because the legs provide balance to the body when they are about to take a shot, and also provide a strong boost when shooting a goal. So, an athlete who has good leg muscle strength has good shooting skills so that he can maximize his shooting.

5. There is a Direct Effect of Mental Skills on Shooting Skills

From the results of the analysis of research data, it was found that the significance value of the influence of mental skills on shooting skills was 0.000 <0.05, so mental skills had a

significant direct effect on shooting skills in SSB 89 Selindung athletes with a direct influence percentage of 0.448 or 44.8% and 55, 2% is influenced by other factors outside the variables studied.

So, it can be concluded that there is a direct influence of mental skills on shooting skills in SSB 89 Selindung athletes with athletes aged 9-12 years. There is an expression that says that "humans are a unity of body and soul," a "psychosomatic unity" so that the two always influence each other.(Harsono, 2019). It is undeniable that the athlete's achievement is determined not only by physical ability and skill but also by psychological factors, especially the mentality of the athlete concerned.

In sports psychology, mental toughness (MT) is usually defined as a resource that enables a person to maintain or improve performance in challenging situations.(Beattie et al., 2020). Mental development in the sport of soccer means maintaining and strengthening the relationship between the sources of mental abilities. A harmonious relationship between cognitive, affective, and psychomotor aspects will keep away the possibility of mental disorders or disorders, and encourage the optimal functioning of mental functions.

Mental skills are the ability to optimally regulate thoughts, feelings, and behavior so that they can act in a purposeful and consistent way, able to face and cope with many demands. So, to maximize the shooting skills of athletes, athletes must have good mental skills in the field.

6. There is an indirect effect of eye-foot coordination through mental skills on shooting skills

From the results of the analysis of the research data, it was found that the total indirect effect of the eye-foot coordination variable through mental skills on shooting skills, the percentage of the indirect effect of eye-foot coordination through mental skills on shooting skills was (0.507) or 50.7%. shows that there is an indirect effect of eye-foot coordination through mental skills on shooting skills.

The results showed that the SSB 89 Selindung athletes aged 9-12 years eye-foot coordination variables could significantly affect shooting skills through mental skills. Eye-foot coordination is an integration between the eyes as the sense of sight which functions to see the ball and the game

situation at hand and the feet as the lower limbs which function to kick the ball.(Zawawi, 2016). Shooting at the goal in a soccer game requires hitting the ball with the feet so that the results of the kicks taken can be in accordance with the desired target.

The characteristics of people who have special good coordination in displaying technical skills can be harmonious, fast, easy, perfect, precise, and flexible.(Aji, 2016). When carrying out eye-foot coordination, high concentration, positive energy control and confidence are needed so that the movements carried out become one harmonious movement so that they can shoot well. Therefore, eye-foot coordination affects shooting skills through mental skills. Athletes who have good mental skills will have good eye-foot coordination so they can shoot in any situation on the field.

7. There is an indirect effect of leg muscle strength through mental skills on shooting skills

From the results of the analysis of the research data, it was found that the total indirect effect of the variable leg muscle strength through mental skills on shooting skills, it was obtained that the percentage of indirect influence of leg muscle strength through mental skills on shooting skills was 0.438 or 43.8%, this indicates that there is an influence indirect leg muscle strength through mental skills to shooting skills.

According to(K. Saputra, 2019)Factors that affect the success of shooting include: 1) Muscle strength is a very important component to improve overall physical condition. 2) Body posture when shooting, that is, the body behind the ball is slightly leaning forward, the foot is placed next to the ball with the toe facing the target, and the foot is slightly bent. 3) Concentration and eye gaze. 4) The touch or touch of the foot on the ball right on the full back of the foot and right in the middle of the ball.

*Mental skills*itself includes several things, namely, self-confidence, negative energy control, concentration, visualization and imagery abilities, motivation, positive energy and behavior control.(E. Loehr, 1986). The results showed that the SSB 89 Selindung athletes aged 9-12 years, the variable leg muscle strength had a positive influence on shooting skills as well as through mental skills. Athletes with good leg muscle strength and mental skills will affect the shooting

skills of athletes so that they can shoot according to the athlete's wishes.

CONCLUSION

Conclusions were drawn based on the results of research and hypothesis testing carried out with exogenous variables consisting of eye-foot coordination (X1), leg muscle strength (X2), mental skills (X3) and endogenous variables consisting of shooting skills (Y), namely:

1. Eye-foot coordination (X1) has a direct effect on mental skills (X3) by 34.1%.
2. Leg muscle strength (X2) has a direct effect on mental skills (X3) by 45.3%.
3. Eye-foot coordination (X1) has a direct effect on mental skills (X3) by 35.4%.
4. Leg muscle strength (X2) has a direct effect on mental skills (X3) by 23.5%.
5. Mental skills (X3) has a direct effect on shooting skills (Y) by 44.8%.
6. Eye-foot coordination (X1) has an indirect effect on athletes' shooting skills (Y) through mental skills (X3) by 50.7%.
7. Leg muscle strength (X2) has an indirect effect on shooting skills of athletes (Y) through mental skills (X3) by 43.8%.

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