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Contribution Leg Muscle Strength, Dynamic Balance and Hip Joint Flexibility to the Accuracy of Football Shooting

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Abstract

The purpose of this study was to determine the meaning of the contribution of each independent variable (leg muscle strength, dynamic balance and hip joint flexibility) to the accuracy of football shooting and to find out how meaningful the contribution of the independent variables together to the accuracy of football shooting. This study uses a quantitative descriptive correlational approach with regression analysis design. The sample was extracurricular high school football students in Sidareja with a total of 65 from a total population of 65. Data analysis techniques used regression analysis with the help of SPSS 20. The results of the analysis showed that: (1) X1 made a significant contribution to Y. (2) X2 made a contribution which is significant to Y. (3) X3 gives a significant contribution to Y. (4) X4 gives a significant contribution to Y. In this study it can be concluded that the leg muscle strength variable contributed 22.96%, the variable of diamonic balance is 24 , 28%, the hip joint flexibility variable was 41.26%, while all the independent variables contributed 96.5% to the accuracy of football shooting.

Keywords
strength; balance, flexibility

I. Introduction

Football is a sport that has developed rapidly among the people, all people can enjoy playing football starting from children, young people and even parents. According to (Sadik, 2016) almost all people in the world know and know the sport of football. According to Tarigan (2001) stated that, "Football is the most popular team game in the world and has even become a national game for every country in Europe, South America, Asia, Africa and even today the game is popular in the United States".

Football is a game that requires a lot of energy, stimulates enthusiasm while providing a burst of excitement through cooperation as a team. Smart and successful games are decisive in successful games and only well-trained players can present good, smart and fun games. To become a quality soccer player, you must go through various coaching and learn basic soccer techniques. Hermin (2004: 24-25) included ball familiarization with body parts (a ball of feeling); kicking the ball to other teammate (passing); passing short and long balls or bouncing; kick the ball to make a goal (shooting); dribbling; opposing opponents and free areas; receive and control the ball with legs, thighs and chest; heading the ball for the soar ball or the ball for feinting to get past the opponent, seizing the ball (tackling) when the opponent has the ball, throwing the ball (throw-in) when the ball is out of the field to return to see the game; and the technique of caring for the goal (keep the goal).

The game of football is a big ball game played by eleven players. In a team consisting of goalkeepers, defenders, midfielders and attack players. Of the eleven players have their respective duties and positions. The goalkeeper is tasked with securing the goal from the opponent's attack, the defender is tasked with guarding the opposing player's attack so as not to create a goal, the middle player is tasked with dividing the ball to the attacking player to make a goal opportunity to the opponent's goal. The eleven players must be able to work together and play their respective roles in each match.

Football requires high energy strength. According to (Khuddus, 2017) Football is one of the sports that takes place with a very fast rhythm. Players who perform movements such as running, jumping, kicking and sprinting with a large percentage. Al Hadiqie (2014) states that, "Players must at least master dexterity or skills in playing football, namely: dribbling or dribbling, passing or passing, heading or heading the ball, shooting or kicking the ball, trapping, receinving, moves and control".

The technique of kicking a ball or shooting has an important role in the game of football, which is to increase the chances of goal creation against the opponent's goal. Accuracy in kicking the ball plays a role in scoring goals and is the key to victory in a football match. In this case shooting a ball can be decisive in the net of a football match without compromising the collectivity of teamwork. Supporting elements that support one of the technical skills are physical condition. According to (Hanief, Puspodari, & Sugito, 2017) "Physical condition is a necessary requirement in improving an athlete's performance, and may even be regarded as a basic necessity that cannot be responded to or negotiable" which means that "Physical condition is a necessary requirement in improving athlete performance, and can even be considered a basic need that cannot be postponed or negotiated ". The relationship of physical conditions, football and shooting was stated by Scheunemann (2012), "The physical condition components of football players are speed, strength, endurance, flexibility, accuracy, power, coordination, reaction, balance, agility". To produce accurate ball shooting the physical components that support are leg muscle strength, dynamic balance and hip joint flexibility.

Balance has an important factor in playing football, in this case determining the accuracy of shooting or kicking. Foot rest when making movement moves to maintain balance when shooting. Interference from opposing players during kicks can also upset balance, so balance training to improve kicking accuracy is an important factor. The better the balance of the player when shooting, the more chance of goals that can be created. "One of the bases in kicking a ball is to pay attention to foot rest and balance in order to get the right and directed kick" Ministry of National Education (2010). Balance in football exists in various technique and moment such as when physical contact, relying after heading, running and moving sideways, kicking a ball, use of six-spouled football shoes. According to Sukatamsi (2004: 2.39) when kicking, the footrest must be precise and correct. A fulcrum is a foot that rests on the ground in preparation for kicking a ball and it role as weight point. The position of the footrest will determine the direction of the ball's path and the height of the ball's soar. Flexibility of the hip joint is needed for movement techniques in shooting. Determination according to Bastinus (2009: 20) is the level of space for a joint.

Flexibility is very closely related to the elasticity of muscle units, tendons, and ligaments around a joint. The hip joint is a joint formed by two groin bones and a groin bone. Hip joint seen from human anatomy is classified as bullet joint (articulatin globoidea). The hip joint is one of the joints that has the most extensive movement compared to the other joints. The movements carried out by this joint, as explained by Damiri (1994: 93) is

flexor/swinging forward, extention/swinging backward, adduction/deppresin, inward rotation/medial rotation, circumduction.

Flexibility is a support in football playing skills. With good body flexibility football players can play with satisfactory results, can bend easily when doing a kick. The factor of body flexibility can also be a determinant of a player who can play well and finish the match without injury. The combination of flexibility and leg muscle strength can produce precise and powerful kicks.

The average football player has good pelvic flexibility. Players with good pelvic flexibility can maintain the ball and balance when shooting. This elastic movement makes it easy for players to determine the direction of the ball kicking into the opponent's goal. Thus the opportunity to create goals is greater and enlarge the chances of winning football matches.

Leg muscle strength, balance and flexibility of the hip joint become important physical condition components in achieving the results of a football match. To be sure, it is necessary to carry out further research on how much the contribution of leg muscle strength, balance and flexibility of the hip joint to the accuracy of ball shooting in football matches.

II. Research Methods

This study uses the quantitative descriptive correlational approach with the design of regression analysis. The population in this study were 65 high school football extracurricular students in Sidareja. In this study all the numbers from the population were used as samples. The sample in this study were 65 high school football extracurricular students in Sidareja. Data collection techniques using tests and measurements. To get leg muscle strength data, it is tested by leg dynamometer test (Measurement Concepts in Physical Education), Pelvic Joint Flexibility data with Sit and Reach test (Verducci, 1980), dynamic balance data with modified bass test, accuracy of ball shooting with ball shooting test (Fenanlampir & Faruq, 2015). This research was analyzed by regression analysis with correlation studies, (Yulingga & Himawanto, 2017). The testing hypothesis was carried out with a significance level of $\alpha = 0.05$.

III. Discussion

This study is a correlational study, where the technical data analysis used is multiple linear regression analysis. The results of multiple linear analyzes are presented in Yabel 1 below:

Table 1. Results of Multiple Linear Regression Testing

Independent variable	Coefficient	T count	Significance of T count	Information
A constant	-20,58			
Leg muscle strength	0,174	3,75	0,000	Significant
Dynamic balance	0,418	3,69	0,000	Significant
Flexibility of the hip joint	1,286	5,87	0,000	Significant

Dependent Variable = Shooting Ability Ball
F count = 156,701
Sig = 0.000
R = 0,941
Adjusted R2= 0,879
Std error = 3,076

While the discussion of the coordination of each independent variable to the dependent variable is as follows:

3.1 Contribution of Variable X1 (Leg muscle strength) with Variable Y (Ball shooting accuracy)

The regression coefficient value of leg muscle strength variable (X1) is 0.174. This means that each increase in leg muscle strength variable (X1) increases by one unit, then the accuracy of ball shooting (Y) will increase by 0.174 assuming that the other independent variable of the regression model is fixed. The results of the study showed that the leg muscle strength variable contributed effectively at 22.96%. This explains the leg muscle strength has an important role in the accuracy of shooting in football.

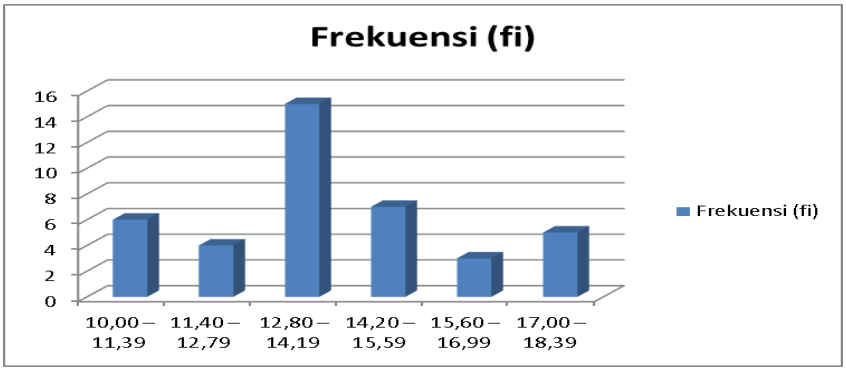

Figure 1. Leg Muscle Strength Variable

3.2 Contribution of Variable X2 (Dynamic Balance with Variable Y (Ball Shooting Accuracy)

The regression coefficient value of the dynamic balance variable (X2) is 0.418 and is positive, this shows that dynamic balance (X2) has a direct relationship with the accuracy of ball shooting. This implies that each increase in dynamic balance variable (X2 increases by one unit, then the accuracy of shooting ball (Y) will increase by 0.418 assuming that the other independent variables of the regression model are fixed. This variable contributes an effective contribution of 24 , 28%.

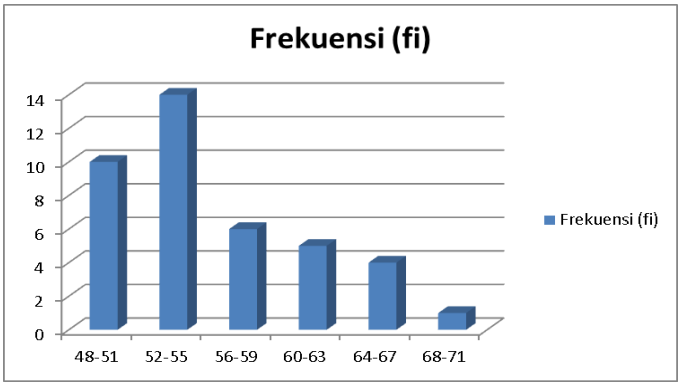

Figure 2. Frequency of Dynamic Balance Variables

3.3 Contribution of Variable X3 (Flexibility of the hip Joint) with Variable Y (Accuracy of Shooting a Ball)

The regression coefficient value of the hip joint flexibility variable (X3) is 1,286 and is positive, this shows that the flexibility of the hip joint (X2) has a direct relationship with the accuracy of ball shooting. This implies that each increase in hip joint flexibility variable (X2) increases by one unit, then the accuracy of ball shooting (Y) will increase by 1,286 assuming that the other independent variable of the regression model is fixed. Flexibility of the hip joint provides an effective contribution to the accuracy of ball shooting by 41.26%. This shows how important the role of hip joint flexibility in improving shooting accuracy.

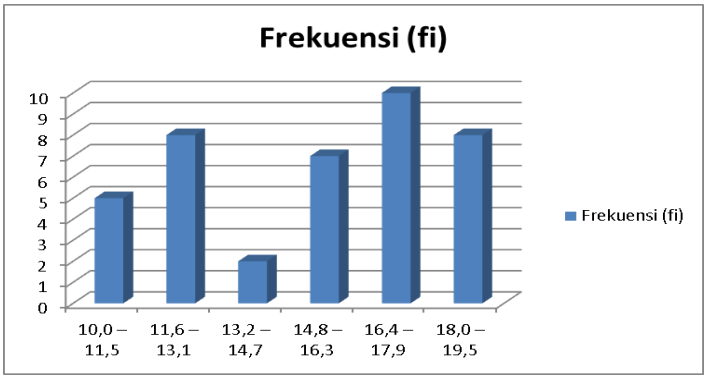

Figure 3. Variable Frequency Flexibility of the hip Joint

3.4 Contribution Together (Leg Muscle Strength, Dynamic Balance and Flexibility of the Joints) to the Accuracy of Shooting Balls

The statistical F calculation results obtained F count value of 156.701 while Ftable of 2.61, because F count (156.701)> F table (2.61) then Ho is rejected, meaning that the independent variables (leg muscle strength, dynamic balance and hip joint flexibility) together same (overall) effect on the dependent variable (accuracy of ball shooting).

Table 2. Relative and Effective Contributions

Variable	(SR)	(SE)
Variable leg muscle strength (X1) Dynamic balance variable (X2) Variable flexibility of hip joint (X3)	22,96 % 24,28 % 41,26 %	26,85 % 28,40 % 48,25 %

This study aims to determine how meaningful the contribution of each and simultaneously of the independent variables (leg muscle strength, dynamic balance and hip joint flexibility) to the accuracy of ball shooting. Based on the results of the study, related to hypothesis testing needs to be studied in depth by providing an overview between the results of the analysis obtained with the theory that underlies this research. This is intended to be able to know the suitability of the theory that has been described with the results of research obtained.

Leg muscle strength has an effective contribution of 22.96%. If the results of this analysis are linked to theory, then basically the results of this study support and strengthen existing theories. The leg muscle strength possessed by an athlete supports the speed of the ball. The better the strength of leg muscle strength possessed, the shooting produced will be even harder.

Statistical analysis also shows that the research conducted provides results that can support existing theories. an indicator of leg muscle strength is shown by a player when shooting without losing balance. In match situations, players are often required to make quick decisions to pass or shoot at goal. If the flexibility is not good, it also influences the direction of the shot without being accompanied by a good balance, then it is certain that the resulting kick is not optimal and leads to the opponent's goal. The contribution of balance shows a significant role in the accuracy of football shooting. From statistical analysis, dynamic balance contributes effectively to 24.28%. The results of this calculation show that dynamic equilibrium has almost as much contribution as leg muscle strength variables.

In addition to dynamic balance it has another supporting element, namely hip joint flexibility. The ability to direct the rotation of the direction of the ball, aiming at the empty goalpost requires perfect balance so that the position of the body comfortable when shooting is greatly supported by the flexibility of the hip joint.

Together, tugkai muscle strength, hip joint flexibility and dynamic balance make a significant contribution to the accuracy of shooting the ball in football. From the results of statistical analysis shows the value of F count is 156.701 while F table is 2.61, because F count (156.701)> F table (2.61) then Ho is rejected, meaning that the independent variable (dynamic balance leg muscle strength and hip joint flexibility) together affect the dependent variable (accuracy of ball shooting). All components, both leg muscle strength, hip joint flexibility and dynamic balance, affect the success or failure of the player in the kick, especially on the accuracy of ball shooting. Of the four components, will produce a good ball shooting accuracy. If one of the components has a low degree or level of ability (for example, leg muscle strength), then shooting the ball will not be maximized and not in accordance with the wishes of the kicker, as well as other elements of the component. So the supporting role of the accuracy of the ball kick must be mastered properly, namely the four elements above.

IV. Conclusion

Proving that the physical condition component has a significant influence, it is necessary to consider ways to improve the physical condition of a soccer player to be more able to excel. With the proof that the physical condition component of leg muscle strength, hip joint flexibility and dynamic balance greatly influence the improvement of ball shooting accuracy, then the physical condition component must be considered in an effort to increase the accuracy of ball shooting in soccer. The search for soccer players should prioritize the components of the physical condition, in this case the flexibility of the hip joint which is one component that can make a good contribution to the accuracy of shooting the ball in a football game that has been proven by this research with the greatest effective contribution value. Followed by eye-foot coordination, leg muscle strength and dynamic balance that make a good contribution to the accuracy of shooting the ball in soccer.

Leg muscle strength, dynamic balance and hip joint flexibility make a significant contribution to the accuracy of ball shooting in extracurricular students. The benefits that are felt are the football extracurricular players especially in SMA Negeri 1 Sidareja and SMK Yos Sudarso Sidareja. This research can still be developed by adding additional variables so

that the results of ball shooting accuracy are more accurate and certain. The weakness of this research is the limited number of population which should be added to the scope at the district level. Of course so that the validity of research results can be greater. Thus the results of this study can be used as a reference source for high school level players in order to produce more talented players in the future it is strongly recommended to further identify leg muscle strength, dynamic balance and flexibility of the hip joint.

References

Al Hadiqie, Z, M. 2014. *Become a Professional Soccer Player.* Yogyakarta: Pena words

Diputra, R. 2015. *Effects of Three Cone Drill, Four Cone Drill and Five Cone Drill Exercises on Agility and Speed.* SPORTIVE Journals, 1 (1), 41-59.

Damiri.1994. *Anatomi Manusia.* Bandung : Buku Ajar FPOK UPI.

Hanief, Y.N., & Himawanto, W. 2017. *Education Statistics.* Yogyakarta: Deepublish

Hanief, Y. N., Puspodari, P., & Sugito, S. 2017. *Profile of physical conditions of Taekwondo Junior Athletes Pusklatkot (Training center) Kediri city year 2016 to compete in 2017 East Java Regional Competition.* International Journal of Physiology, Nutrition and Physical Education, 2 (2), 262-265.

Hermin. 2004. *Diklat Pembelajaran Ketrampilan Sepak Bola Dasar.*Yogyakarta : Jurusan Pendidikan Kepelatihan, Fakultas Ilmu Keolagragaan, UNY.

Kerlinger. 2006. *Behavior Research Principles*. Yogyakarta: Gadjah Mada University Press.

Khuddus, L. A. 2017. *Eating Disorders and Protein Energy Adequacy Levels on Physical Fitness of Football Players* IKIK FIK UNESA. SPORTIVE Journals: Journal of Learning Research, 3 (1), 44-54.

Scheunemann, Timo. 2012. *Indonesian football curriculum for Early Childhood (u5-U12), (U13-U20) & Senior*, Jakarta: PSSI

Tarigan, Beltasar. 2001. *Tactical Skills Approach in Soccer Learning. Jakarta: Ministry of National Education.* Directorate General of Primary and Secondary Education. Collaborate with the Directorate General of Sports.

Verducci, F. M. 1980. *Meaasurement Concepts in Physical Education.* St. Louis: Mosby.