



The Effect of Reaction Variations on Increasing the Reaction of SSB Gumarang's Goalkeepers

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Abstract

This study aims to determine the effect of variations in reaction training on the increase in reaction speed of the 2019 Gumarang SSB goalkeeper. The research method used is an experimental method. This sample was taken by means of purposive sampling technique of 4 people. Furthermore, the overall sample was given the same treatment, namely doing exercise variations of reaction exercises. This research was conducted for 6 weeks, with a frequency of training 3 times a week. Hypothesis analysis, from the pre-test data and post-test data, the goalkeeper's reaction speed obtained tcount of 20.32. Furthermore, this value is compared with the ttable value with $dk = n-1$ ($4-1 = 3$) at the significant level = 0.05 is 3.18, thus $tcount > ttable$ ($20.32 > 3.18$). This means that H_0 is rejected and H_a is accepted. The conclusion of this study is that there is a significant effect on the variation of reaction exercises on the increase in the reaction speed of the 2019 Gumarang SSB goalkeeper.

Keywords: *Reaction Exercise Variations, Increased Reaction Speed, Goalkeeper*

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INTRODUCTION

Football is one of the most popular sports in various countries, both in developing and developed countries. The game of football is classified as an activity that is actually old in age, although it is still in a simple form, but football has been played thousands of years ago (Li et al., 2022). Until now there has been no unity of opinion from where and who the creator of the football game was (Tarigan & Winata, 2020). If we read the literature on the history of football, then we will get the impression that the origin of football is colored by the interference of the historical writer or the author of the literature.

Soccer is a game between two teams trying to get as many balls as possible with their body parts other than their hands (Chloé Nurik, 2017). Those who put in more, will come out the winner of the football. A quality football player obviously needs some abilities. Some of these abilities

are physical and technical. Without putting aside the physical, the factor that really determines the game of a team is the mastery of the basic techniques of playing football.

In coaching at an early age or youth, there are many basic technical skills to play football that must be mastered (Fadilah & Wibowo, 2018). Several techniques are studied systematically such as dribbling, passing, stopping, and shooting (Mistahul Ulum, I. K. B. Asra, 2022). From some of the techniques of playing football skills in youth development, it is necessary to carry out systematic and intensive training, because basic technical training in adolescents will have a major impact on the ability of players at the next age.

Guidance for basic football movement skills in the city of Medan at this time is SSB Gumarang which is quite well known in the city of Medan and produces many athletes who excel. The Gumarang FC football school is taken from the name Kuda Raja in the era of the Minangkabau kingdom in West Sumatra which earned the nickname "Child of Rantau" which means Minang people who migrated out of the Minang realm. Gumarang FC football school is an association in the field of football which was founded on January 10, 2005 initiated by Hengki Ahmad, S.H who is also the owner. The birth of this football association was to fill the development in the field of sports, especially football for the Minang community in the city of Medan and other communities. Gumarang FC aims to foster and develop an advanced and modern football sport in the city of Medan for both amateur and professional football, has 3 coaches consisting of one main coach, one physical and technical coach, and one goalkeeper coach. Gumarang FC football school conducts training three times a week, every Monday afternoon, Wednesday afternoon and Friday afternoon, which is located at Medan Estate Field and the secretariat is on Jalan Ismailiyah Gg. Rahayu No. 1A Medan. For ages 12-14, training is given, starting from the basic introduction of the ball which leads to the game, basic technique training and leg work skills to the more complex training menus provided such as technique, physicality, team skills and tactics.

From the results of observations on Thursday, February 21, 2019 at the training session for athletes aged 15-17 years. All the players were very enthusiastic in participating in the training according to the coach's instructions. The trainer is divided into 3 parts in the training session and focuses on the area of the coach's ability. The trainer's technical training session applies the form of paired passing exercises and several combination techniques. The physical training session of

the coach applies a form of agility and coordination training to each player. And a special goalkeeper coach or goalkeeper applies a form of exercise to improve the goalkeeper's ability to block or parry the ball. Then at the final stage of training the players conduct group trials in playing football with modified rules, namely by reducing the football field.

From the results of observations at all stages of the exercise, the researchers saw and observed specifically the training for goalkeepers or goalkeepers. At the training stage the goalkeeper is not ready to anticipate the incoming ball. Then in the games session, the trainer divides and categorizes according to age criteria. The competition was carried out in 3 stages, namely a match between the age of 15, a match between the age of 16, and a match between the age of 17. Consists of 3 matches with a length of 2 x 20 Minutes. The main problem in this initial observation is that the goalkeeper of each team is less effective in stemming or anticipating the direction of the ball. This is evidenced by the score in each match. In the 15-year-old match, the two teams scored 5-4, then the 16-year-old match with both teams 7-3, and the 17-year-old match scored 3-4. Within 2 x 10 minutes the goalkeepers of each team conceded 26 goals in all three matches. This proves that the goalkeeper of SSB Gumarang aged 15-17 years has a lack of ability in anticipating the direction of the ball. A goalkeeper must have the ability of physical and technical components that must be mastered by each goalkeeper.

Furthermore, an initial test was carried out to determine the goalkeeper's ability to anticipate the direction of the ball using a penalty test 10 times. The initial test was carried out by 5 goalkeepers and the test results obtained that the overall achievement of the goalkeeper only reached a percentage of 44% in the "not good" category. This proves that the level of goalkeeper ability of SSB Gumarang still needs to be improved through a varied training process related to the skill of the goalkeeper in anticipating the direction of the ball.

Then an initial test was carried out using the Whole Reaction Time Test to 5 SSB Gumarang goalkeepers on September 9, 2019 at 14.30 at the Laboratory of the Faculty of Sports, State University of Medan. Table 1. The results of tests and measurements on 5 SSB Gumarang athletes are as follows:

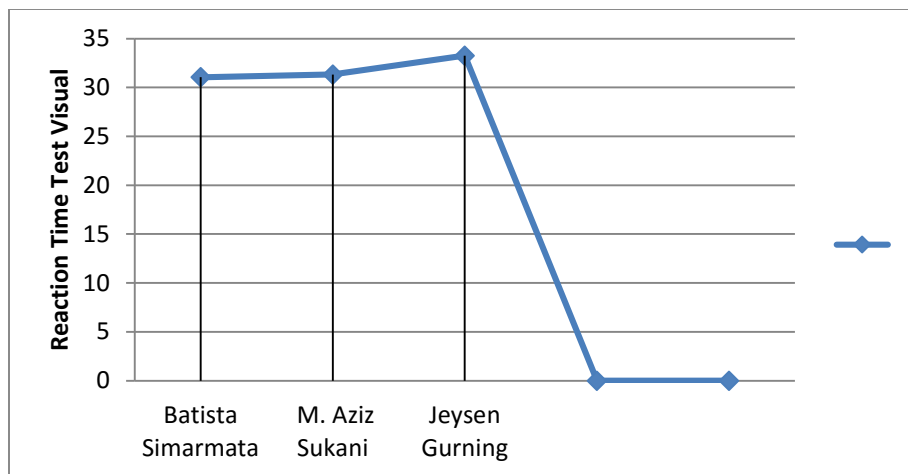


Figure 1. Histogram of the Goalkeeper Initial Ability Visual Reaction

From the data above, it can be concluded that in the implementation of the Whole Body Reaction Test on visual reaction abilities, 4 people have the "adequate" score criteria and 1 person has the "less" criteria. Furthermore, in the implementation of the audio test, there were 3 people with "enough" criteria and 2 athletes having "less" criteria. The data above is significantly related to the penalty test in order to determine the goalkeeper's ability to anticipate the ball entering the goal. To get a good goalkeeper, of course, it is not enough with the current ability of SSB Gumarang's goalkeeper. The coach certainly has to work hard to think about the form of training that must be applied to the SSB Gumarang goalkeeper. For this reason, the researcher sees from the data above, the researcher concludes that the reaction speed of the SSB Gumarang goalkeeper really needs to be improved to support the achievement of the SSB Gumarang goalkeeper in 2019.

From the data above, the researcher can conclude that the importance of reaction speed for the goalkeeper of SSB Gumarang in order to be effective and responsive in anticipating the direction of the ball. For this reason, the coach must pay attention to the form of training that is in accordance with the current problems in the field by making various forms of exercise so that the goalkeeper can be more motivated and maximal in doing exercises. For this reason, the researchers set the title of this research, namely *The Effect of Variations in Reaction Exercises on Increasing the Reaction Speed of SSB Gumarang Goalkeepers in 2019*.

METHOD

This research was carried out at SSB GUMARAN, precisely at Ladon Medan Estate, Jalan Captain Batu Sihombing Medan Estate on 27 August 2020 to 12 October 2020 starting at 15.30 WIB until finished and carried out for 6 weeks with a frequency of 3 times a week, on Monday, Wednesday and Friday. 'at. The sample of this research is the goalkeeper of SSB Gumarang as many as 5 people. This research method is experimental research (Rustiawan, 2020); (Ramadani et al., 2021). The independent variable in this study is the variation of reaction training and the dependent variable in this study is the result of the goalkeeper's reaction speed. To collect data from research samples, a tool called an instrument is needed. Research instruments are tools used in research, especially those related to the data collection process. The tool used in this research is Hand and Foot Speed Reaction.

RESULTS AND DISCUSSION

Results

This study aims to determine the effect of variations in reaction training on increasing the reaction speed of SSB Gumarang goalkeepers in 2019. The results of the measurement tests carried out in the field are research findings for 6 weeks. Done to reveal the truth of the hypothesis that has been proposed. The results of tests and measurements that have been processed through statistical formulas show a description of the data as follows:

Table 1. Results of Pre-test and Post-test Reaction Speed of SSB Gumarang Goalkeeper

Data Description	Reaction Speed	
	<i>Pre-test</i>	<i>Post-test</i>
Range	175,91-195	203,34-225,57
Average value	183,32	216,67
Standard deviation	9,02	10,11
Average difference		33,35
Different standard deviation		5,19
t-count		20,32
t-table		3,18

Based on the table above, the results of the pre-test and post-test data on the reaction speed of SSB Gumarang goalkeepers can be described which have been analyzed using the dependent T

test. The results of the pre-test data on the reaction speed of the goalkeeper were in the range of 175.91-195, the average value was 183.32 and the standard deviation was 9.02. The results of the post-test data on the speed of the goalkeeper's reaction were in the range of 203.34-225.57, the average value was 216.67 and the standard deviation was 10.11. The results of hypothesis testing carried out obtained an average difference of 33.35, standard deviation of difference obtained by 5.19, t-count obtained by 20.32 and t-table obtained by 3.18.

Hypothesis testing was carried out with a t-test to determine the effect of variations in reaction training on increasing the reaction speed of SSB Gumarang goalkeepers in 2019. Based on the results of calculations carried out, a tcount of 20.32 was obtained. Furthermore, this value is compared with the ttable value with $dk = n-1$ ($4-1 = 3$) at the significant level = 0.05 is 3.18, thus $tcount > ttable$ ($20.32 > 3.18$). This means that H_0 is rejected and H_a is accepted. Thus, it can be concluded that the variation of reaction training has a significant effect on increasing the reaction speed of the SSB Gumarang goalkeeper in 2019.

Discussion

Football is a team game, each team consists of eleven players and one of them is a goalkeeper. . A quality football player obviously needs some skills. Some of these abilities are physical and technical.

Guidance for basic football movement skills in the city of Medan at this time is SSB Gumarang which is quite well known in the city of Medan and produces many athletes who excel. The team's victory did not escape teamwork, including the goalkeeper's ability to defend his own goal so as not to concede the ball. Goalkeepers are closely related to aspects of physical fitness, namely reaction speed. Goalkeepers who have good reaction speed will be more effective in blocking attacks towards the goal. Reaction speed is the ability of the body or limb to act as quickly as possible with the time required since the stimulus is received by the five senses to the muscles that react to the stimulus. The reaction speed of the goalkeeper is very useful in assisting the technique of catching and blocking the ball that comes into the goal. The ability of good reaction speed really helps the football team in obtaining team wins apart from their technical skills.

This study carried out a variation of reaction training to increase the reaction speed of SSB Gumarang goalkeeper which was applied for 16 core meetings and 2 meetings to conduct pre-test and post-test tests. To be able to find out the increase in the speed of the goalkeeper's reaction, the initial stage before taking action is to test the initial ability before the action, namely the pre-test. Furthermore, treatment was given for 16 meetings using variations of reaction exercises and after completion, a test was carried out to see the increase in reaction speed after being given treatment, namely post-test. The pre-test and post-test data were adopted and analyzed using the T-Dependent hypothesis test after the analysis prerequisite test was carried out, namely normalizing the raw score data into T-score, normality test, and homogeneity test.

Based on the research hypothesis testing, variations in reaction training have a significant effect on increasing the reaction speed of SSB Gumarang goalkeepers in 2019. The results prove that by giving reaction training actions to goalkeepers, it can increase the goalkeeper's reaction speed. Goalkeepers can be more effective in stemming the opponent's attacks into their own goal. This will help a lot for the victory of the Gumarang football team.

Single reaction speed is a person's ability to respond to stimuli that have a known direction and target in the shortest possible time (Ulfiansyah et al., 2015). That is, before carrying out the movement in the athlete's mind, there is already a perception and direction and target for the motor plan to be carried out (Artyhadewa, 2017). So that the condition of the stimulus can be predicted before the motion is carried out. The speed of reaction is needed by the goalkeeper in anticipating the direction of the ball. Goalkeepers who have good reaction speed are certainly able to make it difficult for opponents to score goals (Akhmad Taufiq & Dewi, 2021).

Because the goal of the game of football is to be able to maintain its own goal so as not to concede the ball. Football is a game played by kicking, which has the aim of getting the ball into the opponent's goal by defending the goal so as not to concede the ball. Football matches are played by two teams of 11 people each. Each team defends the goal and tries to break into the opponent's goal. From the above opinion, it can be concluded that the speed of reaction and the ability of the goalkeeper in anticipating the direction of the ball so that the ball does not go into the goal are very important when viewed from the goal of football. For this reason, attention and action from the coach are needed so that the ability of the goalkeeper needs to be improved.

CONCLUSION

Based on the results of the research above, it can be concluded in this study, namely "There is a significant effect of variations in reaction training on increasing the reaction speed of SSB Gumarang goalkeeper in 2019.

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REFERENCES

- Akhmad Taufiq, & Dewi, R. (2021). Pengembangan Variasi Latihan Kecepatan Reaksi Penjaga Gawang Futsal. *Journal Physical Health Recreation*, 1(2), 107–116.
- Artyhadewa, M. S. (2017). Pengembangan model permainan sepak takraw sebagai pembelajaran pendidikan jasmani bagi anak SD kelas atas. *Jurnal Keolahragaan*, 5(1), 50. <https://doi.org/10.21831/jk.v5i1.12804>
- Chloé Nurik. (2017). Collegiate Masculinity and the Rise of American Youth: Culture During the Roaring Twenties. *New Errands: The Undergraduate Journal of American Studies*, 5(1). <https://doi.org/10.18113/P8ne5160476>
- Fadilah, M., & Wibowo, R. (2018). Kontribusi Keterampilan Gerak Fundamental Terhadap Keterampilan Bermain Small-Sided Handball Games. *Jurnal Pendidikan Jasmani Dan Olahraga*, 3(1), 60. <https://doi.org/10.17509/jpjo.v3i1.7667>
- Li, H., Cui, C., & Jiang, S. (2022). Strategy for improving the football teaching quality by AI and metaverse-empowered in mobile internet environment. *Wireless Networks*, 1. <https://doi.org/10.1007/s11276-022-03000-1>
- Mistahul Ulum, I. K. B. Asra, I. G. S. (2022). Pengembangan Media Pembelajaran Berbasis Video Tutorial Teknik Shooting Petanque pada Mahasiswa Prodi Penjaskesrek. *INDONESIAN JOURNAL OF SPORT & TOURISM*, 4(1), 24–30.
- Ramadani, R., Padli, P., Mariati, S., & Irawan, R. (2021). Pengaruh Latihan Circuit Training Terhadap Peningkatan Vo2Max. *Jurnal Performa Olahraga*, 5(2), 122–129. <https://doi.org/10.24036/jpo162019>
- Rustiawan, H. (2020). Pengaruh Latihan Interval Training Dengan Running Circuit Terhadap Peningkatan Vo2Max. *Jurnal Wahana Pendidikan*, 7(1), 15. <https://doi.org/10.25157/wa.v7i1.3108>
- Tarigan, J. F., & Winata, D. C. (2020). Efforts to Improve Learning Outcomes in Dribbling

Football Games through Learning Variations with Audiovisual Media. *Jumper: Jurnal Mahasiswa Pendidikan Olahraga*, 1(1), 27–36.

Ulfiansyah, F. N., B, K. S., & Kriswantoro. (2015). Pengaruh Latihan Reaksi Bervariasi Dan Tetap Terhadap Kecepatan Reaksi Penjaga Gawang. *Unnes Journal of Sport Sciences*, 4(2), 18–22.