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The Effect of Zig-zag Run Exercise on Increasing Agility in the Soccer Players

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Abstract

This study aimed to determine the effect of zig-zag run exercise on increasing agility in the soccer players of SMP Negeri 11 Makassar. The type of research used is Quasy-experimental by using pretest posttest two-group design with independent variables is zig-zag run exercise and the dependent variable is agility. The study population was all football players at SMP Negeri 11 Makassar. The sampling technique uses a purposive sampling technique with a sample of 40 people divided into 2 groups, 20 people in the treatment group and 20 people in the control group. Determination of the sample based on inclusion and exclusion criteria. The instrument used in this study was Illinois Agility Run. This research was conducted for 2 months, August - September 2018. The result showed that zig-zag run exercise effective on increasing agility in the soccer players of SMP Negeri 11 Makassar. It is recommended for coach to give zig-zag run exercise to their soccer players to increase their agility.

Keywords: zig-zag run exercise; agility; soccer players.

1. Introduction

Soccer is probably the world's most popular sport in the world with millions of licenses [1]. The basic techniques that a soccer player needs to have are kicking, stopping or stopping, dribbling, heading or heading, and tackling the ball [2].

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One of the most common and critical skills to the outcome of the game in soccer is dribbling [3]. Dribbling requires agility and speed [4]. Agility is the ability to ability to maintain and control a correct body position while quickly changing direction [5, 6]. Agility is needed to be able to avoid obstacles from opponents in order to scoring goals and a significant determinant of success in soccer[7, 8]. Agility is also very important to move quickly when the player is attacking or defending. Strikers must have good agility, because the striker must be able to enter the opponent's defense area to score goals and the striker must also be able to one-on-one with the opposing goalkeeper. In this case, a striker must have more agility than other players. Strikers must be able to move quickly, break away from opponents quickly. This is consistent with the Soccer Agility quote which explains that with agility, a striker will be able to run fast using the ball or without the ball without losing balance. Not only the striker, the midfielder and defender must also have good agility. Midfielder must also be able to quickly flow the ball to the striker with the aim of being able to attack quickly. And also the defender here his job must be agile and fast when defending because of an attack from the opponent. In accordance with a quote taken from Soccer Agility which explains that with agility the defender can dribble properly and quickly when counterattacking, the defender must also exit the defense quickly, forming an offside line, thereby increasing acceleration with agility training. For left and right midfielders with agility will make it easy for them to make an amazing combination with the player's vision, so they quickly control the ball. In accordance to the explanation above about the importance of agility for each player in the sport of football, the researcher is interested in researching more about agility.A physiotherapist is responsible for impaired motion and function caused by speed, muscle strength, reaction speed, balance, flexibility, and neuromuscular coordination in decreasing a player's agility. One form of intervention carried out by physiotherapy is to provide a regular and directed exercise to improve the ability of agility. Exercises that can be used to improve one's agility are shuttle run, zig-zag run. If you have a high level of agility, then the speed of the foot to change position in determining the direction of the ball [9].Based on the observations data carried out at the SMP Negeri 11 Makassar in February 2018, there are 45 young amateur soccer players. The researcher are interested in examining whether there is an effect of effect of zig-zag run exercise on increasing agility in the soccer players there.

2. Materials and Methods

2.1. Description of the Study Area

The study was conducted at SMP Negeri 11 Makassar for 2 month, August - September 2018. Data processing and analysis using SPSS, then presented in the form of tables and narratives.

2.2. Population and Sample

The study population was 45 football players at SMP Negeri 11 Makassar. The research sample was 40 players divided into 2 groups, 20 people for the treatment group and 20 people for the control group. The sampling technique uses purposive sampling technique, which is in according to inclusion and exclusion criteria. The instrument used for data collection in this study was the ilionist agility run test to measure the agility of soccer players before and after treatment.

2.3. Inclusion Criteria

The inclusion criteria were ages 13-16 years, male.

2.4. Exclusion Criteria

The exclusion criteria was sick or injury

2.5. Collecting Data and Procedure Intervention

The researcher makes a letter of approval, and the respondents must sign the contents of the report that the respondent is willing to be a sample of this research until the end of the research. Data is collected by measuring the agility of players using ilionist agility run test.

2.6. Data Analysis

The collected data is analyzed using the analysis of paired sample t test and independent sample t test that performed computerized.

2.7. Ethical consideration and clearance

Ethical approval for this study was obtained from the Ethics Committee, Health Polytechnic of Makassar, Indonesia.

3. Results

This research is a quasi-experimental conducted to determine the effect of zig-zag run exercise on increasing agility in the soccer players of SMP Negeri 11 Makassar who meet the inclusion criteria in this study. Gender distribution soccer players of SMP Negeri 11 Makassar was 40 subjects (100,0%) male.

Table 1: distribution of agility category the pre-test and post-test

Category of agility	**Pre test**		**Pre test**	
	n	**%**	**n**	**%**
Intervention Group				
Average	3	15,0	3	15,0
Below average	8	40,0	11	55,0
Poor	9	45,0	6	30,0
Total	**20**	**100,0**	**20**	**100,0**
Control Group				
Average	2	10,0	2	10,0
Below average	7	35,0	8	40,0
Poor	11	55,0	10	50,0
Total	**20**	**100,0**	**20**	**100,0**

Table 1 shows that in the treatment group at pre test, 3 subjects (15,0%) were average, 8 subjects (40,0%) were below average and 9 subjects (45,0%) were poor and at the post test, 3 subjects (15,0%) were average, 11 subjects (55,0%) were below average and 6 subjects (20,0%) were poor. Another results showed in the control group, at pre test, 2 subjects (10,0%) were average, 7 subjects (35,0%) were below average and 11 subjects (55,0%) were poor and at the post test, 2 subjects (10,0%) were average, 8 subjects (40,0%) were below average and 10 subjects (50,0%) were poor.

Table 2: The results of paired sample t-test analysis both in the treatment and control group

Condition	**n**	**Mean**	**SD**	**Different Mean**	**p**
Intervention group					
Pre test	20	19,350	19,350	0,217	0,011
Post test	20	19,027	19,027		
Control group					
Pre test	20	19,84	1,195	0,19	0,011
Post test	20	19,65	1,125		

Table 2 above showed the results of the paired sample t-test both in the treatment and control group. The results analysis showed mean difference value was 0.217 ($p=0,011<0.05$), which statistically meant that there was a significant difference in agility before and after intervention of zig-zag run exercise. This result showed that giving zig-zag run exercise can have a significant effect on increasing agility at the soccer player. In the controlled group, the results analysis showed mean difference value was 0.19 ($p=0,011<0.05$).

Table 3: The results of independent sample t-test

Group	n	Mean	Different Mean	p
Treatment	20	0,217	0,027	0,009
Controlled	20	0,190		

Table 3 showed analysis results of t independent sample test the differences between treatment and controlled group $p=0,009<0,05$ stated that there was an influence of zig-zag run exercise on increasing agility in the soccer players. Subjects in the treatment group showed increase higher (mean=0,217) than in the controlled group (mean=0,190).

4. Discussion

Zig-zag run is a method of training that is done by changing positions directly by zig-zagging with the aim of increasing agility. Zig-zag run exercise is very necessary in football games because it has an element of agility in soccer players, especially in dribbling. Zig-zag run exercise is one of the preventive efforts to increase agility and prevent injury. During training, the body will experience a physiological response. The training will have an

acute or momentary effect on the neuromuscular system, hormonal system, cardiovascular system, respiratory system, and metabolism. Effects on the neuromuscular system can increase soccer players' agility. This is because regular physical training will cause muscle hypertropy. The occurrence of hypertropy is caused by increasing the number of myofibrils in each muscle fiber, increasing capillary density in muscle fibers and increasing the number of muscle fibers. Not all muscle fibers experience the same increase, a greater increase occurs in white muscle fibers or fast twitch, resulting in an increase in the speed of muscle contraction. Increasing the size of the muscle fibers increases the rate of contraction of the muscles causing increased agility [10]. With zig-zag run training, the muscles will become more elastic and the joint space will be wider and the joints will become very flexible, causing the swinging limbs to make the steps become very wide. Dynamic balance will also be trained because in this training must be able to control the state of the body when moving. Synergistic muscles contract more precisely, and antagonistic muscles increase. With the increase of these components, the agility will increase [10]. In addition, the adaptation of innervation is determined by the level of the ability of the recipient of stimulation to deliver stimulus to the CNS, the delivery of stimulus through nerves until a signal occurs, the delivery of signals from the central nervous system to the muscles and the speed of the muscles receiving stimuli to respond in the form of motion [11]. This study was in line with research by Gusti and Ahmad which said there is a significant effect of zig-zag run training on increasing agility in male students aged 16-18 years [12]. Zig-zag run training has a significant effect on increasing agility and zig-zag run training methods can be used as a form of training to improve agility in Soccer which uses a lot of agility. This research also in line with research conducted by Nursadi Ahmad which said zig-zag run training improving the agility of athlete pencak silat [13]. Zig-zag run can increase agility, because this exercise trains the muscles of the lower extremities and helps in improvising various aspects of the movement.

5. Limitation of The Study

The factors that influence the agility of soccer player in this study are only zig-zag run exercise, while there are many other factors that affect it such as body mass index, and flexibility.

6. Conclusions

The researcher concluded that there was an effect of effect of zig-zag run exercise on increasing agility in the soccer players of SMP Negeri 11 Makassar.

7. Abbreviations

SMP: Sekolah Menengah Pertama/ Junior High school.

8. Competing interest

The authors declare that they have no competing interest at the result of this study.

9. Recommendation

Based on the results of this study, it is recommended to zig-zag run in increasing agility of soccer players.

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