The effect of double leg cone hop plyometric exercise on long pass accuracy in soccer

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Abstract. This research background is based on observations in the field, both at the time of training and only some work that is still lacking from the technique in the connection between all the accuracy and distance carried out by the students. The research was conducted to find out the effect of double leg cone hop plyometric exercise on long pass accuracy in soccer, student soccer school BASIS FC U-15. Double leg cone hop plyometric exercise is a form of exercise to maximize the muscle strength of the legs of an individual who does it. This research uses an experimental method with one-group pre-test and post-test design. This research population is student soccer school BASIS FC U-15. Where in experiments using paired sample t-test, the value of P value (sig.2 tailed) is 0.000. Therefore, 0.000 < α = 0.05 so H0 rejected and H1 accepted. So there is a significant influence given to double leg cone hop plyometric exercise to the long pass accuracy in soccer. The SSB students who initially when did long pass accuracy in soccer not reach on target and did not accurate, with given the double leg cone hop plyometric exercises students were able to reduce these errors.

1. Introduction

Based on observations at the Basis FC Soccer School, both during training and official matches some students have mastered the basic techniques in football including controlling ball (ball control), dribbling (dribbling), heading (heading), but when students going to do far stomach bait still lacks mastery of the technique in terms of the accuracy and distance of the kicks made by the students so that the far stomach bait is not as expected by the coach. Each student's leg muscles are weak, because the trainer only focuses on basic techniques and not paying attention to physical conditions, so to train the leg muscle strength to the maximum, physical training is needed, one of which is plyometric exercise. muscle, muscle endurance, endurance general, flexibility, speed, coordination, agilities, and balance. Improving physical conditions means increasing athlete’s physical abilities [1].

This research is relevant to the results of previous studies such as research conducted by Reza Arshad Yanuar [2] in 2012 entitled "Effect of Double Leg Cone Hop Exercise on Long Shot in Soccer School of New Salatiga Football Club". With the results obtained in the study that there was the effect of double leg cone hop training on the results of long hull ball kicks. Based on the results of the study it can be concluded that the results of testing the data obtained significant value (P-value) of 0.0001 in the treatment group and the value of 0.835 in the control group. Based on these criteria, it shows that there is the influence of double leg cone hop plyometric exercises on significant gastric ball results.
In this study the aim was to find out the effect of double leg cone hop plyometric exercise on long pass accuracy in soccer. My research is a research that is categorized as easy to do by all the coaches in soccer schools because only by using cones, whistles, stop watch, and rope the trainers can already do it. Maximum muscle strength training and precision training is very suitable to be done at a soccer school in Indonesia because it will improve the ability to accurately feed the stomach, this is caused by the right and maximum movements carried out by students when making bait.

2. Method
This research is using experimental method because to know the effect of a treatment carried out by a researcher. The research design used in this study was Pre-Experimental Designs. And the form is one-group pretest and posttest design [3].

![O1 X 02]

**Figure 1.** One-group pre-test and post-test design.

Participants in this study were researchers, observers and students. The characteristics of the first research participant, a researcher who was 22 years old, were final year students at Indonesia University of Education Campus in Sumedang who were conducting research at the Football School (SSB) to complete their final assignments. Secondly, the 21-year-old observer is one of the trainers at the soccer school (SSB) that the researcher is careful about. Third, there are students whose age ranges from 10-15 years. Data processing and analysis is a step used to summarize data that has been collected accurately. Data obtained from research results are quantitative data (numerical forms). Quantitative data obtained from the results of the pre-test and post-test obtained were identified first and then analyzed. After obtaining the pre-test and post-test data, then the calculation of the average, standard deviation, the biggest score and the smallest score is carried out. The pretest data was taken before the participants received treatment to find out the students' initial ability to do the accuracy of the football's long stomach bait. This data was obtained from the results of the accuracy test of football far hull bait by doing 4 kicks from a distance of 30 meters and the number of the four occasions used as data pretest. After students were treated for 12 meetings then posttest was conducted to find out the final ability of students by carrying out the same test at the pretest.

3. Result and discussion
Based on the results of the analysis of the data above, conclusions can be made on the hypothesis made that the double leg cone hop plyometric exercise given to the experimental class has a significant influence on the accuracy of the far hull football bait. This is evidenced from the results of data analysis that has been done on the pretest experimental class data has a P-value of 0.164 with an average value of 181.33, while for the posttest data has a P-value of 0.172 with an average value of 248.00 and for different pairs of tests (paired sample t-test) obtained P-value (sig. 2-tailed) of 0,000. Thus 0.000 <α = 0.05 then H0 is rejected and H1 is accepted. Thus, the plyometric double leg cone hop exercise has a significant influence on the accuracy of the football's long stomach bait. Based on the findings in the field it can also be seen from the feeding techniques carried out by soccer school students who had previously fed it incorrectly and the distance was not until after being given a planned and orderly double leg cone hop plyometric training the technique they performed was better as the foot of the foot to be right, the imposition of the ball with its right foot and the accuracy and distance are in accordance with what the researcher expected. In line with Subarjah [1] who stated "The physical exercise training program must be well planned and systematic and aimed at increasing physical fitness and functional abilities of the body system, so that it is possible for athletes to achieve better performance". Players based on U-15 F are used in five categories, very good, nice, enough, less and very less. the categorization is based on the formula [4]:

\[ \text{Rating} = \frac{\text{Score}}{10} \times 100 \]
Very good : $X > M + 1.5\ SD$
Nice : $M + 0.5\ SD < X \leq M + 1.5\ SD$
Enough : $M - 0.5\ SD < X \leq M + 0.5\ SD$
Less : $M - 1.5\ SD < X \leq M - 0.5\ SD$
Very less : $X \leq M - 1.5\ SD$

Remarks:
M = Mean
$M$ (mean) pre-test $= 181,33$
$SD$ (standard deviation) pre-test $= 38,705$
X = Score

Chu in Duda [5] state: Describes a plyometrics as exercise or drills that combine speed and strike to produce an explosive-reactive movement, or increased power. Chu, a lecturer and writer on plyometrics defines plyometric training as "any exercise that uses the natural all elastic recoil elements of human muscle and the neurological stretch or myotatic, reflex are inherent in all muscle to produce a stronger, faster muscle response. Radcliffe and Farentinos [6] suggest: Double-leg hop progression to properly execute the hop exercise, use a teaching and performance progression. Develop proper takeoff and landing mechanisms, and remains consistent throughout. Using cones or small hurdles helps foster technique in the beginning stages. “Starting position: Assume a relaxed, standing position with knees slightly bent and arms at sides. Stand directly in front of a series of three to five hurdles spaced approximately three feet apart.

![Figure 2. Double-leg hop progression.](image)

Caligiuri (in Katis and Kellis) [7] states: Basic soccer technique books underline the importance of avoiding opponent’s pressure and suggest that several exercises should be performed in the training process in order to simulate realistic game conditions. For this reason, a series of movements such as quick running, stopping, dribbling and changes in running direction (cutting maneuvers). Kicking is the defining action of soccer (also known as association football or simply football in many countries), so it is appropriate to review the scientific work that provides the basis of our understanding of this skill [8]. Ball [9] “...Kicking and a desired element of any player’s skill set is the ability to kick the ball long distances. This ability allows for goals to be scored from a greater distance and for passes to be longer”. Passing ability is of great importance in the development of young football players [10].

And we can also understand that given the exercise can improve the gastric bait ability of students in soccer schools, because students who have already done the exercise understand the correct technique in performing gastric bait as shown below.

![Figure 3. Kick with inner legs.](image)
Seen from figure 3 from the leftmost image is a preparatory motion, where when going to the hull bait the foot of the foot must be behind the ball and the kicking foot is behind the foot, then the execution movement where the foot has to remain firm in place and leg kick do a swing or kick with the ball regarding the inner leg of the kicker, and the last follow through is a follow-up motion to perfect the kick done by the kicker. Radcliffe and Farentinos [6] suggest: Follow-through is important in plyometric movements involving upper-body muscle groups. You should apply force continuously and emphasize quickness of action. In repetitive throws, such as the medicine ball chest pass or the heavy bag thrust, try to prevent the recovery or catch phase from going beyond the point of full extensions or flexion. This will ensure that limb and trunk musculature is properly stretched (loaded), initiating a more forceful, reactive explosion. In terms of biomechanical science, the three movements are movements that should be carried out by all students in soccer schools because the results of the movement have been proven based on this research. Because with the knowledge and understanding of the coach and every athlete can help improve learning and good performance in football. Lees and Nolan [11] suggest “The biomechanical factors relevant to success in the game of soccer are those which relate to the technical performance of skills, to the equipment used and to the causative mechanisms of injury”.

Drust and Green [12] suggest: Success in football is frequently explained by the “artistry” of both managers and players. As a consequence, terms such as intuition, imagination, quick decision-making and personality are more likely to be associated with victories than any principles and processes associated with scientific investigation. In this study the main target is young players who are 15 years and under, because in youth coaching football is very important to do, because it will be used as provisions for every child to practice at the next level. In line with Sugiyama et al [13] Grassroots football is fundamental to football. It is a fundamental part of top-level football as well as all aspects related to football. It is a fundamental part of top-level football as well as all aspects related to football. So that this renewable training can be beneficial for all soccer school coaches and can be carried out throughout the soccer schools in Indonesia which will later make soccer school athletes can compete with superior achievements in junior football. And make qualified stock to continue to the next level.

4. Conclusion
Based on the results of the pre-test and post-test as well as data analysis and the discovery of facts in the field that have been carried out for approximately 2 months for students of SSB Basis FC U-15 in Sukamukti Village, Tanjungmedar District, Sumedang Regency, conducted for 14 meetings, including 12 treatments and 2 times the test, it can be concluded that the double leg cone hop plyometric exercises has a significant on long pass accuracy in soccer. The SSB students who initially did long pass accuracy the ball incorrectly and did not arrive, with given the double leg cone hop plyometric exercises students were able to reduce these errors. The effect is seen from the results of the analysis of pre-test and post-test data on students who were treated.

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