Physical Condition as a Contribution of Shooting Accuracy with Flick Drag Technique

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Abstract

The purpose of this study was to examine how much the contribution of grip strength, arm muscle power, flexibility togok, and eye and hand coordination to shooting accuracy with drag flick technique. This research uses correlational method. A total of 40 men's hockey players were selected as samples in this study. The data analysis technique used multiple regression and coefficient determination test (R2). It can be concluded that the grip strength variable, arm muscle power, togok flexibility, and eye and hand coordination have an effect on shooting accuracy with drag flick technique and produce significant contribution. Relationship with Flick Drag shot accuracy was power muscle arm with a result of 34.6%, then body flexibility of 20.5%, holding strength of 17.9%, and the least contribution of hand-eye coordination of 14.3%.

Keywords:
Physical Condition; Contribution; Drag Flick.

How to Cite


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INTRODUCTION

Exercise is an activity that has many benefits. Sport is not only aiming to be healthy but sports can also measure the achievement of a person or team. Like the sports hockey which is a sport that much in demand. This can be seen with the many holding of hockey cleric either local, national or international level. In a hockey sport every individual or team must outperform the other both technically and strategically to win the game. Increased technique should also be supported by the increase in physical condition (Bompa, 2018). Measurement of physical conditions is important in supporting the practice of a hockey player to achieve excellence in play. A focused hockey player there is a development of physical conditions as part of their preparation in play. Currently the measurement of physical condition becomes a guide for the coach as well as the hockey player itself to create a training schedule to support hockey players in mastering the technique of playing hockey.

A good hockey player must master the basic techniques of sports hockey one of them is shooting techniques. The shooting technique becomes one of the techniques in hockey sport that needs to be mastered properly because shooting is the decisive victory of a team. The more shots are generated the greater the team’s chance to win. The shot in the hockey game is the Attacker’s action trying to score by playing the ball into the goal of the inner circle. "The ball may miss the mark but it is still a " shot on goal " if the player’s intention is to score with a shot towards the goal. (FIH, 2016). The attacking player must be able to put his shot in an accurate position or position that is difficult to reach by the goalkeeper. The quality of the resulting shot depends on how the physical condition is owned by each player. Good physical condition is needed by players to support the success of shooting. Each player has different physical conditions that will affect motor skills, techniques, tactics. The performance of a hockey player depends on the level of motor skills, techniques and tactics during the competition. (Septianto, 2016; Elferink-Gemser et al., 2004)

Drag flick is one of the most commonly used shooting techniques in hockey games. Research conducted by (Rajinikumar, 2015) says that 59% of goals occur because of direct fire, 38% occurred because of penalty corner, and 2.5% occurred due to penalty stroke. Of the three, 34.5% of the techniques used in goal scoring are the drag flick technique. (Hussain, et al 2012) explains further in recent years, the penalty corner, especially with the advent and popular hit drag flick, has gained an important part of the game as a scoring opportunity.

METHODS

The method in this research is correlational research. Correlational research is a study that aims to determine the relationship between two or more variables and to detect the extent to which variables on one factor relate to variations on one or more other factors based on correlation coefficient (Siswanto, 2013). This research is a correlation research, which want to investigate whether or not correlation between independent variables with dependent variable. The independent variables in this study are the holding power (X1), arm muscle power (X2), flexibility posture (X3), and hand eye coordination (X4), while the dependent variable is shooting accuracy with
RESULTS AND DISCUSSION

Based on the results of measurements of grip strength, arm muscle power, flexibility, and hand-eye coordination, and shooting accuracy by drag flick technique in Central Java in June 2017 through a survey with test techniques. In this research, get the respondent counted 40 respondents, with characteristic for first variable that is holding strength biggest result is 52 kg, smallest result is 26 kg and result of power average equal to 37.38. The second variable is the largest arm muscle power yield is 560 cm, the smallest result is 250 cm, and the average 389 cm. The third variable is flexibility of togok largest result is 250 cm, and the average 389 cm. The third variable is flexibility of togok largest result is 250 cm, and the average 389 cm.

The instrument used to measure hand grip strength using handgrip dynamometer is a tool for measuring grip strength (Sri, 2009). To measure the arm muscle power is a medicine ball weighing 2 kg, with the validity of 0.77 and reliability 0.84 (Johnson, 1986). The instrument used to measure toogok flexibility uses sit and reach test (Verducci, 1980). The instrument used for measuring hand eye coordination is a ball-throwing test (Maskum, 2007). The instrument used to determine the accuracy of the shot with the drag flick technique is using shooting test with the validity of 0.89 and the reliability of 0.94 (Puji, 2013).

Analytical techniques in this study using multiple regression analysis because the independent variable has more than two variables. Regression equation in this research is to know how big influence of independent variable or free that is handheld strength (X1), flexibility of strike (X2), eye coordination (X3) and power of arm muscle (X4), to shooting accuracy by Drag Flick Technique Y). The mathematical formulas of the multiple regression used are:

\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e \]

To measure how far the whole independent variable can explain the dependent variable using the coefficient of determination (R²).

\[ R^2 = \frac{\sum (Y - \bar{Y})^2}{\sum (Y - \bar{Y})^2} \]

To measure how far the whole independent variable can explain the dependent variable using the coefficient of determination (R²).

Pol = 0.064 + 0.015 KM + 0.150 KOM + 0.054 FT + 0.015 KOM + e

Based on the above equation can be interpreted as follows:

1) Coefficient value of grip strength of 0.064. This implies that the variable holding power has a positive relationship with the result of shooting with drag flick technique which means that every increase of power holds one unit then the accuracy of firing with drag flick technique will increase by 0.064 with the assumption that the other independent variable from the regression model is fixed.

2) Regression coefficient of arm muscle power equal to 0.015. This implies that the arm muscle power variable has a positive relationship with the results of shooting with drag flick technique which means any increase in arm muscle power of one unit then the accuracy of shooting with drag flick technique will rise by 0.015 with the assumption that other independent variables of the regression model is permanent.

3) The regression coefficient of posture flexibility is 0.054. This means that the variable flexibility of body has a positive relationship with the result of shooting with drag flick technique which means any increase in flexibility body one unit then the accuracy of firing with drag flick technique will rise by 0.054 with the assumption that other independent variables of the regression model is fixed.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstandardized Coefficients Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.763</td>
</tr>
<tr>
<td>Gripping Power</td>
<td>0.064</td>
</tr>
<tr>
<td>Arm Power</td>
<td>0.015</td>
</tr>
<tr>
<td>Body Flexibility</td>
<td>0.054</td>
</tr>
<tr>
<td>Eye and Hand Coordination</td>
<td>0.150</td>
</tr>
</tbody>
</table>


The regression equation is known:

Shooting Results = 1.763 + 0.0,0 KM + 0.015 POL + 0.054 FT + 0.150 KOM + e

The constant of 1.763 with positive parameters indicates that grasping power, arm muscle power, body flexibility, and hand eye coordination will improve shot accuracy by drag flick technique. Based on the above equation can be interpreted as follows:
4) Regression coefficient of hand eye coordination of 0.150. This implies that hand eye coordination variables have a positive relationship with the results of shooting with drag flick technique which means any increase of eye hand eye coordination then the accuracy of firing with drag flick technique will rise by 0.150 with the assumption that other independent variables of the regression model is permanent.

The following table 2 shows how much power the relationship with the accuracy of the drag flick technique shot

<table>
<thead>
<tr>
<th>Equation</th>
<th>R</th>
<th>R Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gripping Power</td>
<td>0.423</td>
<td>0.179</td>
</tr>
<tr>
<td>Arm Power</td>
<td>0.589</td>
<td>0.346</td>
</tr>
<tr>
<td>Body Flexibility</td>
<td>0.453</td>
<td>0.205</td>
</tr>
<tr>
<td>Eye and Hand Coordination</td>
<td>0.378</td>
<td>0.143</td>
</tr>
</tbody>
</table>


1) The Power of Grasping
The value of correlation relationship (R2) is 0.179. The effect of gripping force on firing accuracy with drag flick technique is equal to R value of 0.423 indicates that the proportion of contribution of power variable grips against shoot accuracy variable with drag flick technique of 17.9%. This means that the contribution of power gripping the shoot with drag flick technique contributes 17.9%.

2) Power Sleeve Muscles
The value of correlation relationship (R2) is 0.346. The effect of Powerotot lengantherhadap shooting with drag flick technique is equal to R value of 0.589 indicates that the proportion of variable contribution of arm muscle to shoot accuracy variable with drag flick technique of 34.6%. This means that the arm muscle power contribution to the accuracy of shooting with drag flick technique contributes 34.6%.

3) Flexibility of Strike
The value of correlation relationship (R2) is 0.205. Effect of togok flexibility on firing accuracy with drag flick technique is equal to R value of 0.453 indicates that the proportion of contribution of body flexibility variable to shoot accuracy variable with drag flick technique is 20.5%. This means that the contribution of body flexibility to shoot results with drag flick technique contributes 20.5%.

4) Speech Coordination
The value of correlation relationship (R2) is 0.143. The effect of hand eye coordination on shooting accuracy with drag flick technique is equal to R value of 0.378 indicates that the proportion of contribution of hand eye coordination variable to shoot yield variable with drag flick technique is 14.3%. This means that hand eye coordination donation to the accuracy of shooting with drag flick technique contributes 14.3%.

Multiple regression analysis of grip strength measurement, arm muscle power, body flexibility, hand eye coordination have a positive relationship to shooting accuracy with drag flick technique. The biggest contribution in the accuracy of shooting with drag flick technique is the arm muscle power with the result of 34.6%, then the flexibility of togok is 20.5%, the holding power is 17.9%, and the least contribution is hand eye coordination of 14.3%.

The arm muscle power is required to provide the strength and speed of the ball speed while performing the ball pushing motion. (Nurhidayah, 2014). Movement of the arm by the hockey player when firing using drag flick technique causes the ball to escape from the stick and slide toward the target. While the strength of the arm muscles when carrying the stick and pushing the ball will produce accurate shots if in pelaksamannya accompanied by the speed. A hockey player with a good togok flexibility will easily make drag flick moves and produce the perfect movement, otherwise if the hockey player has the flexibility togok the less well will eat difficulty in doing drag flick movement. as it is said (Ibrahim, 2009) in his research concludes that the flexibility of body is an underlying ability of a person’s motion. The low body flexibility causes rigid movement, thereby reducing flexibility and flexibility of movement, which is a critical determinant element in successful field hockey shooting. A hockey player who has high body flexibility has the ability to perform better skill moves, rather than players who have low body flexibility.

Body flexibility is required when the ball is released or loose, the stick is on the body of the stick, because when the ball is in the shape of the shot more quickly and accurately different if the ball feels at the end of the stick when it is released then the shot becomes weak and widened. (Mohd et al., 2014) states that after crossing the foot the player is forced to position his body as low as possible and advocate the stick as low as possible with the ground. In addition, in the movement to release the ball from the hip, chest, and shoulder sticks to rotate to produce the right target shot.

In addition, the strength of the grip is also influential to determine the direction of the ball, with a good grip then the stick will not be easily separated because if the stick is released during the shot then will change the position of the stick face and will change the target of the targeted shot. Verma (2014) in his research reveals that holding power helps
players defend angles.

Coordinate when doing drag flick technique is on the accuracy of placement of the ball on the body of the stick so that the ball can be pushed to the maximum then gouged and placement of the shot to enter the goal in accordance with the desired target. The eye receives the first stimulus of the brain to do the motion and then the hand gives an answer in the form of the movement. Both of these tasks must be done jointly.

Seeing the usefulness of drag flick is important for any hockey player to master this technique and can be applied during the competition. Physical condition factors are needed to support success in performing this technique. In addition technical factors become supporters in doing drag flick. Increased exercise especially for body parts used to perform drag flick techniques need to be done by players and coaches to assist players in supporting success in training and in competitions that will impact on improving hockey achievement.

CONCLUSION

The conclusions in this research are (1) There is a positive relationship between grasping power to the accuracy of shooting with drag flick technique which means the stronger grip the stick the accuracy of the shot more accurate. Contribution of power variables grasping to shoot yield variable with drag flick technique equal to 17.9%. (2) There is a positive relationship between arm muscle power to shooting accuracy with drag flick technique which means bigger arm muscle power then accuracy of fire more accurate. Contribution of variables of arm muscle power to shoot yield variables with drag flick technique of 34.6%. (3) There is a positive correlation between togok flexibility to shooting accuracy with drag flick technique which means better body flexibility then accurately more accurate shot accuracy. Contribution of variable body flexibility to variable result of firing with drag flick technique equal to 20.5%. (4) There is a positive relationship between hand eye coordination to the accuracy of shooting with drag flick technique which means the better hand eye coordination then the more accurate the shots. The contribution of hand eye coordination variable to shoot yield variable with drag flick technique is 14.3%.

REFERENCES


