



Effectiveness of Medicine Ball Twist Toss Exercises Against Flick Drag Skills In Hockey Games

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ABSTRACT

The drag flick technique is currently used by following the development of the synthetic field (carpet) with a more flat and slippery surface, so this technique can be used as a strategy to create goals. This study aims to determine the effect of medicine ball twist toss on drag flick skills in hockey games. This type of research is experimental with the treatment variable being medicine ball twist toss (MBT) exercise while the response variable is drag flick (DF) skill in hockey games. The sample was 20 people from the Hockey BKMF FIK UNM athletes, and they were divided into two groups, namely the experimental group (MBT training) and the control group (KK). The data collection technique used the shooting drag flick test instrument. Based on the results of the study, MBT training significantly improved DF skills in hockey ($p < 0.05$). Therefore, improving DF skills can be done through MBT exercises.

Keywords: *Medicine Ball Twist Toss Exercise; Drag Flick Skill.*

INTRODUCTION

The game of hockey is a sport that is competed in the Olympics. In Indonesia itself, this game is quite popular and is widely played among the highest College. In fact, until the College Student Hockey League (Lihoma) was held, both the hockey field (outdoor) and hockey room (indoor).

The development of Indonesian hockey has now begun to show the direction of success, but it still needs to be improved for the development of techniques, tactics, or the creation of new training models in the hope of contributing to the performance aspects of each hockey athlete. In hockey games, there are various techniques including dribbling, passing, push, shooting, tackling, scoop, flick, reverse flick, reverse push, stopping and controlling (Syahrudin, Saleh, and Saleh 2020).

With rapid development, the sport is played on cypress (carpet) fields. There is a change in the field surface to cypress so that the movement of the ball becomes fast and sometimes difficult to control. When the player is about to shoot towards the goal, so that the ball can rise according to the height of the goal, it can be done through the drag flick technique. This technique is very important because it can be easily dragged (dragged) and flicked (flicked) towards the front and pointing upwards. The advantage of the drag flick technique, that is, the direction of the ball is difficult to predict after detaching from the impact stick.

Based on observations at various championships, most athletes have not shown perfection in using drag flick techniques. Besides, interviews with coaches, there is no understanding of how to increase drag flick.

In various sports including hockey, improving performance can be done by increasing the capacity of biomotor and non-biomotor aspects (Syahrudin et al 2019). Biomotor aspects include strength, speed, power, endurance, stamina, coordination, flexibility, and accuracy (Radhi dan Obaid 2020; Zirhli dan Demirci 2020; Dahlan, Hidayat, dan Syahrudin 2020; Syahrudin dan Latuheru 2019; Syahrudin 2016).

In line with the above, hockey games require extra power and rely on superior extremity power. In addition, athletes must also increase power in the abdominal muscles. The superior extremity muscles and the abdominal muscles take on a role when carrying out a drag flick, namely when the body is bent down and then the arm is straightened while holding the stick, when the arm swings the stick with the help of a follow through from the hips, in this case, the abdominal muscle ball can be strongly dragged forward by the flick and optimal speed. Therefore, athletes must train physically in a systematic, measurable and continuous manner.

For athletes to have the strong muscle power in both the superior and abdominal extremities, external weight training can be given, namely medicine ball twist toss (MBT) exercises. According to (Siagian, 2021) the medicine ball twist toss exercise is a form of exercise that involves many organs of the body and is very useful for increasing arm muscle strength and power to obtain good results. The medicine ball twist toss exercise has a close relationship with the forehand movement. The results of the research by Kousuke Hiruma, and Mitsugu Ogata that the ball throwing speed increased significantly in middle and high school baseball players who took part in SSC training. The SSC exercise is a combination of dumbbell exercises and medicine ball twist toss.

METHOD

This research method is *pre-experimental*, with a type *two group pretest-posttest* design (Gumanti, Yudiar, and Syahrudin 2016).

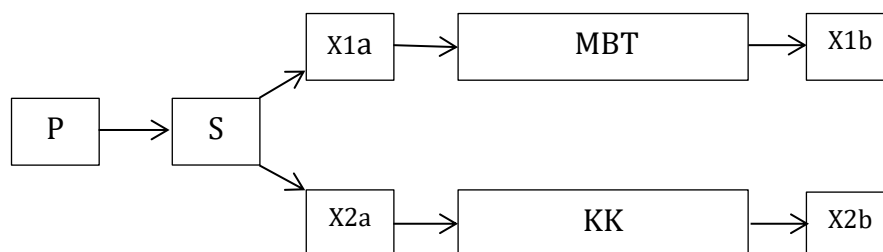


Figure 1.
Research Design

The treatment variable is *medicine ball twist toss* (MBT) exercises and the response variable is *drag flick* skill (KDF). The study population was BKMFF Hockey FIK UNM athletes totalling 50 people, and through *random sampling* techniques collected 20 samples and divided into two groups, namely the experimental group (MBT) and the control group (KK).

MBT training mechanisms such as shooting in a hockey game, with the treatment of both hands straight holding the ball (*medicine ball*) and the position of the *close stand* legs both right and left feet (right foot for the left hand or left foot for the right hand), followed by turning the upper body backwards (*back swing*) then turning *the upper body*. The future is followed by both hands throwing the ball (*medicine ball*) forward. This exercise is carried out with a frequency of three times per week for four weeks (16 times) of meetings (Ariadi 2012).

Drag flick instrument through *test shooting* in hockey games with a validity level of 0.89 and reliability of 0.94 (Septianingrum, Sugiyanto, and Kristiyanto 2018). The drag flight test mechanism is carried out by the testee standing behind a predetermined line in a ready-to-shoot attitude with a position facing the target 10 meters, namely the goal. Then the testee shoots according to the applicable rules, with the opportunity as many as five times and the results are used as data testee who is in a relationship. The score is seen from the predetermined target provisions.

Data research was analyzed through descriptive tests, data normality tests, homogeneity tests and paired and unpaired difference tests at a significant level of 0.95 with the help of the SPSS Version 22 program.

RESULTS AND DISCUSSION

The study involved 20 hockey athletes with different intensities, namely 10 MBT training athletes and 10 athletes without training (KK). A description of the statistical data of each group can be seen in Table 1.

Table 1.

Descriptive Statistics of Each Group

Group	N	Min	Max	Mean	Sd
MBT-1	10	5	10	7	2.582
MBT-2	10	14	17	15.2	1.033
KK-1	10	5	10	7.6	2.171
KK-2	10	5	11	7.9	2.025

Analysis of the influence of each MBT and KK group, both in pairs and unpairs can be seen in Table 2 and Table 3,

Table 2.

Average Differences in Pretes and Posttests of Each Group

Group	Mean	Sd	T	Df	Sig
MBT-1 & MBT-2	-8.2	2.044	12.686	9	0.000
KK1 & KK2	0.3	0.675	1.406	9	0.193

Table 2 shows the average score change from five times 10 shooting drag flicks. According to statistical analysis, there was a significant difference between the experimental group of MBT exercises ($p < 0.05$), while the control group had no difference ($p > 0.05$)

Table 3.

Differences between the Experiential Group and the Control Group

Group	Mean	sd	F	T	Df	Sig
Experiment (MBT)	15.2	1.033	6.962	10.156	18	0.000
Control (KK)	7.9	2.025				

Table 3 shows the difference in average scores of five drag flick shots between the MBT group and the KK group. According to statistical analysis, there was a significant difference between the MBT group and the KK group, and the MBT group significantly increased the KDF in hockey games ($p < 0.05$).

Discussion

Medicine ball twist toss (MBT) exercises are a form of exercise that involves a lot of body organs and are very beneficial for increasing strength and superior power of muscle

extremities to obtain good results (Siagian 2021). Based on the results of data analysis, it is stated that there is a significant influence of MBT exercises on KDF skills. This happens because MBT exercises have movements focused on increasing superior muscle extremity and abdominal exercise. The mapping of the muscles involved in DF skills is the same as the muscles involved during MBT training, namely training the pectoralis major, deltoid, triceps brachial, teres major teres minor, vestus lateralis, rectus femoris, vestus medialis muscle components which are very influential when doing forehand (Siagian 2021). The forehand movement is relatively the same as the muscles used during the DF skill.

MBT training is a form of weight training that uses a weight tool media in the form of a three-kilogram medicine ball. One of the objectives of MBT exercise is to increase muscle strength. (Juntara 2019) suggests the main goal of weight training is to improve the overall level of strength and fitness. Weight training can use one's weight or use free weight. Weight training using free weights, namely weight training using tools as prisoners in training, for example, such as using dumbbells, barbells, medicine balls and weight machines.

Through MBT exercises the body will increase the large size of muscle fibers (muscle hypertrophy) (S, Umar, and Wellis 2019). Hypertrophy will occur after training for 12 or more meetings, so the size of the muscles will be visible (Arhesa and Rudi 2019). The occurrence of muscle hypertrophy is a result of increasing myofibrils in each muscle fiber, increasing the density (density) of capillaries in each muscle fiber, increasing the amount of protein, and increasing the number of muscle fibers.

Hypertrophy will occur in people who do exercises with weights which are characterized by an increase in the size of the white muscles (fast) by approximately 45% when compared to ordinary people or sportsmen who need endurance (Sucipto and Widiyanto 2016).

Adaptation as an effect of exercise on muscles causes changes in the aerobic system and anaerobic systems in the muscles. Changes that occur in the aerobic system include an increase in myoglobin content of 75% - 85%; increased oxidation of glycogen due to increased number and size of mitochondria and increased activity of creed and transport electron circular enzymes; increased number and size of mitochondria; increased activity of the cyclical enzyme crab and electron transfer; increased deposits of muscle glycogen; increased oxidation of fats; increased intramuscular deposits of triglycerides; increased release of free fatty acids; increased enzymes involved in transport activity and fat breakdown. Meanwhile, changes that occur in the anaerobic system include the increasing

capacity of the ATP–PC system; increased glycolytic capacity; relative changes in the fast twitch and slow twitch muscles; increased aerobic capacity; hypertrophy depending on the form of exercise (Lesmana 2019).

MBT exercises use the energy of anaerobic processes because it uses a lot of ATP in a short period to increase muscle strength and endurance by using speed. This is very supportive to increase superior power muscle extremity and muscle obliquis abdominal against DF skills in hockey athletes.

CONCLUSIONS

MBT practice significantly improves DF skills *in* hockey games ($p < 0.05$).

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