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The Effect of the two Handed Reverse HIT Training Model on Reverse HIT Speed and Accuracy in Hockey

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ABSTRACT: The aim of this research is to determine the training model for the two-one-hand reverse hit technique and the speed and accuracy of reverse hits in the game of hockey. Experimental research method with pre-test and post-test testing on one sample group. The samples in the research were athletes who were members of the Hockey Student Activity Unit and students who took hockey courses at Surabaya State University. Data collection techniques include testing punch speed and punch accuracy. The data analysis technique uses t-test statistical testing of test results before and after being given the training model. The research results show that the Sig. (2-tailed) speed is 0.001 < 0.05, so it is stated that there is a significant difference in the speed of the two-handed backhand in the pre-test and post-test. The sig value. (2-tailed) speed is 0.000 < 0.05, so it is stated that there is a significant difference in the two-handed reverse punch in the pre-test and post-test.

KEYWORD: training model, two handed reverse hit, speed, accuracy

INTRODUCTION

Sports can change due to changes in the participant's physique or when participants test the limits of the sport's rules. As support for scientific analysis increases, the training system also continues to be improved to increase participation. Rules can be adjusted regarding cheating or professional errors, the number of players, substitutions, speed, or changing technology and equipment (Tromp & Holmes, 2011). One of the distinctive features of hockey rules is the possibility of unlimited substitutions, meaning there is no limit to the number of players who can be replaced at the same time or the number of times a player can be replaced along the field. during a match ((Linke & Lames, 2017). The distribution of matches over a certain period of time presents a complex challenge when planning the competitive demands of recovering from one match and preparing for the next. Each player has a unique stroke that can take on a different color when they start playing.

Hockey is a sports game played by two teams with the aim of getting as many goals as possible by putting the ball into the opponent's goal (Chaudhary et al., 2021). Field hockey is a physically and mentally challenging sport. Many movements and skills are involved, so a high level of physical and mental ability is required in the match (Abou-bakr & Mostafa, 2016). In the sport of hockey, there are three popular game categories, namely field hockey, indoor hockey, and ice hockey. As the name suggests, field hockey is played on a field measuring 47 meters by 94 meters using a synthetic grass-water-based system (Prasetyo Utomo et al., 2019).

Since the use of synthetic fields using water-based system technology, which has resulted in faster ball speeds, coupled with changes in regulations, both standard and mandatory, many changes have occurred in the game of field hockey, both in terms of program preparation. Training on the impact of changes in match times to the basic techniques that must be mastered by a player playing on a carpet court. This change has the consequence that the game of hockey is now very fast and thrilling from the start of the game until the game is finished (Shailesh Kumar & Mehrotra Akhil, 2015).

Several new techniques have begun to be introduced due to changes in this type of field (which of course cannot be done on grass fields), including the slap hit (Prasetyo Utomo et al., 2019), drag flick (Ibrahim et al., 2017), and new difficult techniques. mastered, namely reverse hit (Thiel et al., 2012), which consists of two-handed reverse hit (THRH) and one-handed reverse hit (OHRH) techniques. The two-handed reverse hit (THRH) and one-handed reverse hit (OHRH) techniques can be used for passing or shooting. In a game, the THRH technique is considered very effective for putting the ball into the goal because this technique can make the ball fly very quickly, both horizontally and upwards, without the goalkeeper being able to anticipate it properly. Even

though the THRH technique is currently being used more and more often to score goals, in reality, this technique is difficult to master, especially for novice athletes, because there is no training model that can be used as a reference for training it. With the typical movements in the THRH technique, whether done statically or dynamically, it requires guidance so that it can be trained, especially for novice athletes, so that all the techniques in the game of hockey can be mastered well.

The push-and-flick method in the shooting zone needs to be applied during training (Antonov et al., 2020). Although this THRH technique is often carried out by an attacker, so far it seems to have been carried out haphazardly and by chance. This is proven by the many incidents in the field that only a few times hit the target, especially when done by novice athletes. If the ball hits the desired part of the stick, the ball will quickly fly to the target. However, what happens is that often the ball does not hit the contact area of the stick, so the results obtained are not as expected, namely that the ball does not exactly hit the contact area of the stick, the ball travels slowly, and the ball that is hit does not hit the specified target.

Each sport contains a number of special technical elements that an athlete must master, where the level of performance determines competitive success (Struzik et al., 2014). Physical fitness refers to an athlete's ability to perform successfully in their sport. Components of physical fitness include agility, balance, energy, speed, reaction time, and so on, which support a person's performance (Singh, 2018). In the game of hockey, a player's agility when breaking through an opponent is important. Agility is the ability to move the whole body quickly in various directions (Farley et al., 2020). Players will try to pass opposing players who are trying to block them with agility and good body balance so that they have the opportunity to get closer to the goal and try to score. Efforts to improve athletic performance can be done with a thorough analysis of the functional performance of movement characteristics (Ibrahim et al., 2017). A player's body size, which consists of age, height, and weight, has a significant influence on the player's performance (Rabia & Iqbal, 2022). So far, research in the sport of hockey has been dominated by studies related to physical conditions such as physiological changes during competition (Lin et al., 2023), physical training methods on athlete performance (Thiel et al., 2012), and types of injuries. hockey athletes and their handling (Mason et al., 2022; Van Vliet et al., 2022). Meanwhile, the development of training models that contain syntax (stages) for technical mastery has not received any attention at all. In reality, in the field, coaches actually need a standard model that can be used as a reference for training, especially beginner athletes. However, what has been happening so far is that the technical skills mastered by the coach are being given to the athletes. What the coach masters is what is given to the athletes. So athletes' skills in mastering the two-handed reverse hit technique are, of course, different.This research measures the results of implementing a training model that can be used as a guide for coaches and athletes to master this technique, which is known to be difficult. The training stages (model) are analyzed using biomechanics to train the reverse hit technique, which can be used by coaches to train this technique on novice athletes so that it is easier for athletes to master the technique being taught. From the description above, researchers have developed a training model for the two-handed reverse hit technique in the game of hockey. In this study, researchers examined whether there was an influence of the training model on the speed and accuracy of punches.

METODE

Experimental research method with pre-test and post-test testing on one sample group. The samples in the research were athletes who were members of the Hockey Student Activity Unit and students who took hockey courses at Surabaya State University.

Data collection techniques using punch speed and punch accuracy test instruments. The sample is given the opportunity to hit nine balls, and the time and score obtained are measured.

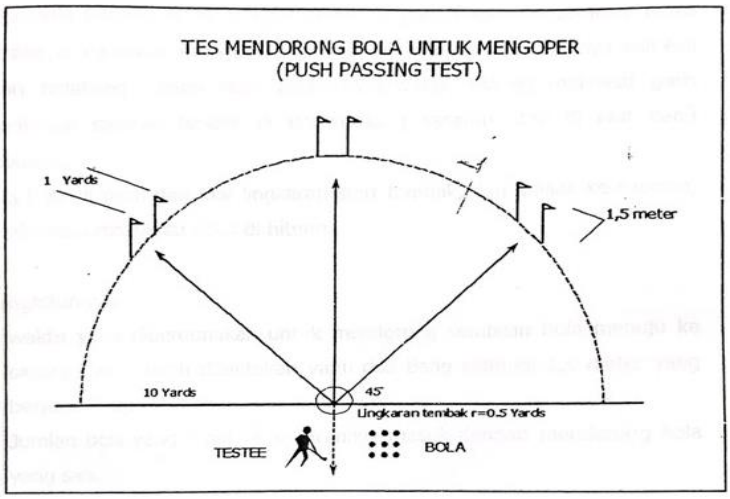

Figure 1. Pre test & Post test desain

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The data analysis technique uses the average t test statistic before and after being given the training model treatment. The collected data was analyzed using the average t test statistic before and after being given the training model treatment. To see whether there was any influence from the results of the treatment given in the form of a training model resulting from the development that had been carried out on the speed and accuracy of reverse hits in the game of hockey. The basis for decision-making is:

1. If the Sig (2-tailed) value is <0.05, then there is a significant difference between the speed and accuracy of the two-handed reverse hit in the pre-test and post-test.
2. If the Sig (2-tailed) value is > 0.05, then there is no significant difference between the speed and accuracy of the two-handed reverse hit in the pre-test and post-test.

RESULT & DISCUSSION

The research data was processed using SPSS with the following results:

Table 1. Pre- and Post-Test Statistics

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Time Pretest	28.4727	41	6.03640	.94273
	Time Posttest	26.4507	41	5.46162	.85296
Pair 2	Score Pretest	2.76	41	2.034	.318
	Score Posttest	3.85	41	1.918	.300

The average pre- and post-test times have a difference of 2.022 seconds, whereas in the post-test, the average time needed to finish 9 balls is 26.4507, while the average pre- and post-test scores have a difference of 1.09 points higher than the pretest. These two things show that there is an increase in sample speed in performing two-handed reverse hits as well as an increase in accuracy scores.

Table 2. Paired Samples Test

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Time Pretest - Time Posttest	-2.02195	3.54640	.55385	-.90257	-3.14133	-3.651	40	.001
Pair 2	Score Pretest - Score Posttest	-1.098	1.411	.220	-1.543	-.652	-4.982	40	.000

The table shows that the Sig value. (2-tailed) speed is 0.001 < 0.05, so it is stated that there is a significant difference in the two-handed reverse hit speed in the pre- and post-test. The sig value. (2-tailed) speed is 0.000 < 0.05, so it is stated that there is a significant difference in the accuracy of the two-handed reverse hit in the pre- and post-test. The two-handed reverse hit training model was declared effective as an alternative training program in an effort to increase the speed and accuracy of reverse hits.

Field hockey is a sport that uses a stick and prioritizes stick speed and ball control (Thiel et al., 2012). Anthropometric and kinematic components have a significant influence on sports performance (Wali et al., 2023). The distance of the foot from the ball and the speed of the shot have a correlation with the results of the ball hit (Palaniappan & Sundar, 2018). The angle of the knee and elbow when hitting the ball affects the speed of the ball (Wali & Iqbal, 2022a). Ball speed can be increased by increasing the length of the stick, the speed of the stick, and reducing the left-right knee angle (Wali & Iqbal, 2022). Speed and accuracy in hockey can be improved at the same time (Manaf et al., 2021). The two-handed reverse hit training model can be a training program in an effort to increase the speed and accuracy of punches.

CONCLUTION

The conclusion from the results of this research is that there is a significant difference in the accuracy of the two-handed reverse hit in the pre-test and post-test. The two-handed reverse hit training model is effective as part of a training program in an effort to

increase a player's reverse hit speed and accuracy. Research data shows that there is an increase in the average sample speed and an increase in accuracy scores by implementing the two-handed reverse hit training model.

REFERENCES

1) Abou-bakr, H. M., & Mostafa, M. E. (2016). The Impact of Mental Toughness Training on Speed and Accuracy of Some Offensive Skills of Field Hockey Junior Players. *Journal of Applied Sports Science*, *6*(3), 16–22. https://doi.org/10.21608/jass.2016.84571
2) Antonov, A., Zoteva, D., & Roeva, O. (2020). Influence of the "Push & Flick" Methodology on the Accuracy of the Indoor Hockey Penalty Corner Shooting. *Journal of Applied Sports Sciences*, *1*(2020), 64–76. https://doi.org/10.37393/jass.2020.01.5
3) Chaudhary, N. I., Sheikh, M., Kahile, M., Chaudhary, S., & Gawande, V. (2021). Specific Speed and Agility Drills to Improve the Performance of Field Hockey Players: An Experimental Study. *International Journal of Current Research and Review*, *13*(09), 16–21. https://doi.org/10.31782/ijcrr.2021.13915
4) Farley, J. B., Stein, J., Keogh, J. W. L., Woods, C. T., & Milne, N. (2020). The Relationship Between Physical Fitness Qualities and Sport-Specific Technical Skills in Female, Team-Based Ball Players: A Systematic Review. *Sports Medicine - Open*, *6*(1). https://doi.org/10.1186/s40798-020-00245-y
5) Ibrahim, R., Faber, G. S., Kingma, I., & van Dieën, J. H. (2017). Kinematic analysis of the drag flick in field hockey. *Sports Biomechanics*, *16*(1), 45–57. https://doi.org/10.1080/14763141.2016.1182207
6) Lin, L., Ji, X., Zhang, L., Weng, H., & Wang, X. (2023). Peak Running, Mechanical, and Physiological Demands of Professional Men's Field Hockey Matches. *Journal of Human Kinetics*, *87*(April), 133–141. https://doi.org/10.5114/jhk/161551
7) Linke, D., & Lames, M. (2017). Substitutions in elite male field hockey - A case study. *International Journal of Performance Analysis in Sport*, *16*(3), 924–934. https://doi.org/10.1080/24748668.2016.11868939
8) Manaf, M. I. A., Mohamad, N. I., Malek, N. F. A., Jahizi, A. A. M., & Nadzalan, A. M. (2021). The Relationship between Ball Speed and Shooting Accuracy during Field Hockey Hit. *Journal of Physics: Conference Series*, *1874*(1). https://doi.org/10.1088/1742-6596/1874/1/012014
9) Mason, J., Rahlf, A. L., Groll, A., Wellmann, K., Junge, A., & Zech, A. (2022). The Interval between Matches Significantly Influences Injury Risk in Field Hockey. *International Journal of Sports Medicine*, *43*(3), 262–268. https://doi.org/10.1055/a-1577-3451
10) Palaniappan, R., & Sundar, V. (2018). Biomechanical Analysis of Penalty Corner Drag Flick in Field Hockey. *36th Conference of the International Society of Biomechanics in Sports*, 690–694. https://sprinz.aut.ac.nz/__data/assets/pdf_file/0009/203130/239_1515_Palaniappan.pdf
11) Prasetyo Utomo, E., Widyah Kusnanik, N., & Y, F. (2019). Analysis of Biomechanics Slap Hit and Push in The Field Hockey. *Advances in Health Science Research (AHSR)*, *7*(2), 17–21. https://doi.org/10.2991/icssh-18.2019.4
12) Rabia, & Iqbal, Y. (2022). Effect Of Body Size And Gender On Drag-Flick Performance In Field Hockey : A Study On National Elite Players. *Webology*, *19*(3), 1234–1241.
13) Shailesh Kumar, & Mehrotra Akhil. (2015). Construction of Skill Based Test Item for Measuring Flick Ability in Field Hockey. *Physical Education*, *4*(3), 21–23. http://pe.lsrj.in/UploadedArticles/283.pdf
14) Singh, H. (2018). Investigating relationship between motor abilities and smash skill of volleyball players. *Human Movement and Sports Sciences*, *3*(1), 1265–1269. www.theyogicjournal.com
15) Struzik, A., Rokita, A., Pietraszewski, B., & Popowczak, M. (2014). Accuracy of replicating static torque and its effect on shooting accuracy in young basketball players. *Human Movement*, *15*(4), 216–220. https://doi.org/10.1515/humo-2015-0014
16) Thiel, D. V., Tremayne, M., & James, D. A. (2012). Monitoring stick speed and ball control in field hockey drills using a stick-mounted inertial accelerometer. *Procedia Engineering*, *34*, 574–579. https://doi.org/10.1016/j.proeng.2012.04.098
17) Tromp, M., & Holmes, L. (2011). The effect of free-hit rule changes on match variables and patterns of play in international standard women's field hockey. *International Journal of Performance Analysis in Sport*, *11*(2), 376–391. https://doi.org/10.1080/24748668.2011.11868557
18) Van Vliet, K. E., Brand, H. S., Lobbezoo, F., & de Lange, J. (2022). Knowledge about the emergency management of dental injuries among field hockey coaches. *Dental Traumatology*, *38*(6), 526–531. https://doi.org/10.1111/edt.12774
19) Wali, R., & Iqbal, Y. (2022a). Influence of kinematic and anthropometric factors on drag–flick performance in field hockey. *Journal of Physical Education and Sport*, *22*(4), 1072–1078. https://doi.org/10.7752/jpes.2022.04135
20) Wali, R., & Iqbal, Y. (2022b). Relationship Between the Kinematical Factors and The Ball Velocity of the Penalty Corner

Drag-Flick in Field Hockey. *Global Social Sciences Review*, *VII*(II), 100–107. https://doi.org/10.31703/gssr.2022(vii-ii).10

21) Wali, R., Zahra, S. ., & Nazeer, M. . (2023). Effect of anthropometric and kinematic components on drag-flick performance: a study on national field hockey players. *Russian Journal of Biomechanics*, *26*(June), 49–56. https://doi.org/10.15593/RJBiomech/2022.3.04