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## Evaluation of Penalty Corner Success Rates for Indoor Hockey Players

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### Abstract

**Study purpose.** Penalty corner is a situation that can be used as an opportunity to increase the score in indoor hockey. However, sometimes players cannot take advantage of this situation, so the opportunity to score a goal is lost. One of the reasons is that coaches pay very little attention to penalty corner training, so they don't have data about the abilities of their players. The aim of this research is to determine the success rate of penalty corners for STKIP Pasundan Cimahi indoor hockey players.

**Materials and methods.** The research method used is a quantitative descriptive research method with a survey approach. The research subjects involved were indoor hockey athletes who were members of the STKIP Pasundan indoor hockey team who competed in the National Championship at Jakarta State University in May 2023, totaling 11 men. For the research instrument, the penalty corner test was used, which researchers analyzed starting from feeder-stopper-shooter and also success in putting the ball into the goal. The analysis uses a percentage approach, to see how successful the athletes are in taking penalty corners, and also what category they fall into.

**Results.** The results of research conducted on evaluating the success rate of penalty corners for STKIP Pasundan indoor hockey players were good, based on consideration of the highest frequency in the above average category amounting to 6 people or 54.5%, high amounting to 2 people or 18.2% and in the average category 3 people or 27.3%.

**Conclusions.** Based on the research results obtained in data analysis, it can be concluded that the success rate of penalty corners for STKIP Pasundan room hockey players is included in the good category. It is hoped that the results of this research will open up insight for hockey coaches in evaluating their players' penalty corners.

**Keywords:** Athlete, Hockey Indoor, Penalty Corner

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### Introduction

Indoor hockey is a game in a building or room with 6 players per team (Antonov et al., 2020). The length of time in a room hockey game is 10 minutes in each round and is played over 4 rounds. The equipment used in indoor hockey uses sticks that are thinner than sticks for

outdoor hockey (Hidayattullah, 2021), while the other equipment is the same, namely, hockey ball, shoes, skin defender, leg guard (for goalkeeper). Based on the size of the field, indoor hockey is different from outdoor hockey, the indoor hockey field is somewhat smaller than outdoor hockey with a width of 18 – 22 m and a length of 36 – 44 m. The goal is 2m high and 3m wide. There are 6 players, 5 players and 1 goalkeeper. Game time is divided into 10x4 minutes. However, there are also 2x20 minute ones (Syahrudin et al., 2020).

Looking at the characteristics of the field, it is clear that the hockey game will be quite attractive, this of course requires good stamina (Ferraz et al., 2020), Apart from that, there are components of physical fitness that are important to support the ability to play indoor hockey, such as endurance, strength, speed, agility, balance and coordination (Senaputra, 2017). Apart from requiring good stamina, this game also requires good technical mastery, because good technical mastery in the sport of hockey will be able to display a beautiful game (Morris-Binelli et al., 2020), Providing knowledge of techniques and tactics in the sport of hockey is useful for athletes' understanding of playing (Lord et al., 2022). One of the techniques and tactics in indoor hockey is the penalty corner.

Penalty corner is a special situation in a hockey game given by the referee to one of the teams who commits a hard violation in the 9 meter area or a violation committed in the penalty box area or circle. Penalty corner is a very important method for scoring because of the opportunity to score a goal is huge in that situation (Anam, 2018). Penalty corner is done by the attacking player aiming to score a goal, the hockey player must be able to move the ball to a higher position (Ruscello et al., 2016). The process of executing a penalty corner is that the ball starts from the right or left side of the opponent's goal and must be passed to a teammate who is outside the circle after which the ball can be stopped first or can be shot straight into the opponent's goal (Ramadhan & Faruk, 2021).

There are several aspects required in carrying out a penalty corner, firstly good technique, secondly a feeder must be able to send a pass with the right ball release, thirdly stop the ball correctly, fourthly the shooter must have the right accuracy, and fifthly tactical accuracy. In order to score goals, all players must have good technique, such as the feeder must pass the ball correctly, the stopper must stop the ball correctly, and the shooter must shoot with the right accuracy (Novitaria et al., 2014). The importance and magnitude of the opportunities resulting from penalty corners is so important that players must be able to carry out this technique, so that they will hopefully have the opportunity to score goals (Ariff et al., 2015).

The importance of the penalty corner in the sport of hockey certainly requires a lot of research about it. However, based on empirical and theoretical studies, there are very few studies regarding this penalty corner, especially in Indonesia. Coaches also sometimes only focus on basic techniques and physicality, without finding out how successful the athlete is in executing this penalty corner. Although there are several studies that have discussed penalty corners in the sport of hockey (Ariff et al., 2015; Klatt et al., 2021; Moon et al., 2018; Ruscello et al., 2016), however, it seems that there is very little or no research in Indonesia that discusses this, let alone one that focuses on the success of penalty corners which are evaluated in stages, starting from feeder-stopper-shooter. In this research, an attempt will be evaluated in terms of time effectiveness and also success, so that the novelty of this research can be seen from previous research.

## **Materials and Methods**

### ***Study participants***

The research subjects involved were indoor hockey players who were members of the Sekolah Tinggi Keguruan dan Ilmu Pendidikan (STKIP) Pasundan indoor hockey team who competed in the National Championship at Jakarta State University in May 2023, totaling 11 men.

**Study organization**

The research method used is a quantitative descriptive research method with a survey approach. For the research instrument, the penalty corner test was used, which the researchers analyzed starting from the feeder-stopper-shooter time records and also the success in getting the ball into the goal with a shot distance of 9 meters from the point of the shot to the goal. Each subject was given the opportunity to repeat five times, whether in the role of feeder, stopper or shooter. A 3x2 meter goal is given a number with a score range of 1 – 4, where when the subject shoots towards the goal and hits one of the scores, that is the score obtained. This instrument is the result of the researcher's own development and has met the validity and reliability testing criteria. The following [table 1](#) displays the calculation results for the degree of validity and reliability of the penalty corner instrument in this research:

**Table 1.** Summary of Validity and Reliability Test Results

Calculation Type	Feeder		Stopper		Shooter		Summary
	r count	r table	r count	r table	r count	r table	
Validity	0.957	0.811	0.959	0.811	0.896	0.811	Valid
Reliability	0.87		0.89		0.83		Very Reliable

**Statistical analysis.**

The analysis uses a percentage approach, to see how successful the athletes are in taking penalty corners, and also what category they fall into. For this reason, in order to describe the athlete's level of success in shooting through the penalty corner, the assessment range was created as follows [table 2](#):

**Table 2.** Criteria for Penalty Corner Assessment Norms

Score Range	Criteria
> 16	High
12 – 15	Above Average
9 – 11	Average
6 – 8	Below Average
< 5	Low

Source: Researcher Made

**Results**

Based on the results of the research that has been carried out, the evaluation of the success of STKIP Pasundan indoor hockey athletes in taking penalty corners can be outlined in the following [table 3](#):

**Table 3.** Average Penalty Corner Results

No Subject	Measurement					Criteria
	Feeder (s)	Stopper (s)	Shooter (s)	Amount	Shot Score	
1	1.28	2.11	2.82	6.21	13	Above Averager
2	0.91	1.53	2.22	4.66	14	Above Averager
3	0.97	1.67	2.52	5.16	12	Above Averager
4	1.27	2.13	3.02	6.42	16	High
5	0.84	1.42	2.14	4.4	10	Averager

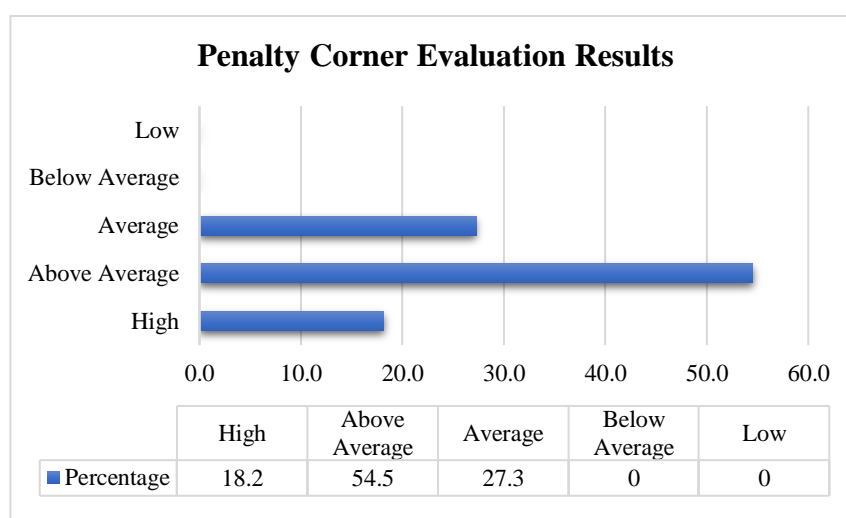
6	0.87	1.77	2.24	4.88	15	Above Averager
7	1.09	2.13	2.98	6.2	12	Above Averager
8	0.8	1.74	2.69	5.23	11	Averager
9	0.79	1.45	2.31	4.55	14	Above Averager
10	1.15	1.23	2.59	4.97	16	High
11	1.21	1.35	2.81	5.37	11	Averager
$\bar{X}$	<b>1.02</b>	<b>1.68</b>	<b>2.58</b>	<b>5.28</b>	<b>13.09</b>	
s	<b>0.19</b>	<b>0.32</b>	<b>0.31</b>	<b>0.71</b>	<b>2.07</b>	

(s) : units in seconds;  $\bar{X}$  : average; s : standard deviation

Based on [table 4](#), it appears that the athletes' abilities in carrying out each stage of the penalty corner (feeder, stopper and shooter) have differences, although not significant. It can be seen that the average athlete's ability to perform the feeder technique is 1.02 seconds, while for the stopper the average time is 1.68 seconds, and for the shooter the average time is 2.58 seconds, so that the overall average results are obtained. The athlete's time to take the penalty corner is 5.28 seconds. Then looking at the success of shots on goal, the average athlete got a score of 13.09 with a standard deviation of 2.07.

**Table 4.** Evaluation of Penalty Corner Percentage Results

Score Range	Criteria	F	%
> 16	High	2	18.2
12 – 15	Above Averager	6	54.5
9 – 11	Averager	3	27.3
6 – 8	Below Averager	0	0
< 5	Low	0	0
<b>Total</b>		<b>11</b>	<b>100</b>



**Figure 1.** Penalty Corner Percentage Chart

Then, based on the data in [table 4](#) regarding the percentage results, it can be seen that the largest percentage value is in the good category or criteria, with a percentage achievement of 54.5% or there are 6 people out of a total of 11 people, while for the sufficient criteria there

are 3 people or 27.3% and the remaining 2 people or 18.2% have very good criteria, and for more details regarding the differences in achievement criteria can be seen in [figure 1](#).

## **Discussion**

Based on the results of the penalty corner test that has been carried out, a decision can be made that the average success evaluation results are in the good category. This of course cannot be separated from several supporting factors, such as physical, psychological, and also the athlete's habits or experience in executing, because there is an influence between experience and the athlete's confidence in performing ([Primita & Wulandari, 2014](#)). From the research results, there are differences in the percentage of each athlete caused by several factors, namely: due to lack of experience, both when practicing and experience when participating in competitions ([Sufriyanto & Putra, 2019](#)). The success of a team or individual cannot be separated from the goals of the team or individual, because the success of a team can be seen from good communication, and that communication is formed because they/the team often train together ([Al Hafidz & Sofyan, 2023](#)). However, what is actually expected is that the average ability of the athletes has the same ability. It can be seen from the results that there are some whose abilities are very good, some are quite good.

This ability does not seem to be surprising, because in the field sometimes they are reluctant to carry out training independently and this is a contributing factor to why athletes' abilities are not the same, especially as penalty corners have difficulties in each movement. The penalty corner process requires all athletes to be in good condition, starting from the feeder, stopper and shooter ([Laird & Sutherland, 2015](#)). In team sports games, it is not only necessary to have good qualities from one individual, but the qualities of all the players must be good ([Mitchell et al., 2020](#)). Games such as hockey are attractive games that require players to have equal abilities, so that the quality of the game can be directed according to the desired strategy ([Nadeau et al., 2017](#)). Of course, to produce all this, you need something called well-programmed training, and to perform at their best, athletes must be technically, tactically, and physically prepared ([Abdul Muhaemin M et al., 2023](#)).

Achievement is obtained through programmed and continuous training over a long period of time, because achieving maximum sporting performance requires high discipline and training ([Wibowo et al., 2017](#)). Basically, the training process carried out aims not only to create a good game, but also to improve physical and mental quality, because every physical and mental sport plays an important role in supporting game performance ([Verner-Filion et al., 2017](#)). Especially in hockey, the dominant physical aspect is the arms, especially when shooting, of course the arm power must be of good quality. It is said that the power in a hockey athlete's arms really influences their shooting speed, because besides being accurate, a hockey athlete also needs to have accurate shooting speed to support their game ([Maulana, 2023](#)). Apart from that, mental aspects such as anxiety and self-confidence have an impact on the shooting process at the penalty corner ([Chröisty et al., 2018](#); [Morris-Binelli et al., 2020](#)), Moreover, anxiety is sometimes always a problem in an athlete's performance ([Hambali, 2022](#)). Achievement cannot be separated from science and technology.

To achieve peak performance, support is needed from various fields and scientific disciplines that are able to support this achievement. And the success of a team cannot be separated from the cooperation of all elements starting from the administrators who provide training facilities, coaches and athletes. One of them is optimizing muscle strength, speed and coordination through explosive movements, which is important for improving athlete performance ([Rahmadi et al., 2024](#)). And if the coach does not have good knowledge then the sports training program that is created is often based on experience from the past. It turns out that the majority of existing coaches are sports practitioners who have not received education in the sports field. The role of the trainer in developing talent is very necessary because whether

the results of the training are good or not is also influenced by his role and the material provided (Putra, 2018).

Therefore, trainers need to have certification standards for training expertise from professional institutions or agencies. The formation of good character can also support athletes' achievements, therefore every coach must be able to shape the character of their athletes so that they can excel. Sports achievements are not only caused by physical and technical factors, but also by personality factors or the individual character of an athlete (Wojciechowska-Maszkowska et al., 2020). The results of this research show one of the impacts of the training that has been running so far, especially for the indoor hockey sport at STKIP Pasundan. However, this research has weaknesses that seem to need to be used as a basis for conducting further research. Weaknesses such as the research subjects involved seem to be small and only limited to one institution, then the scope of the evaluation is only limited to the penalty corner, not covering everything.

### **Conclusions**

Based on the results of the research and discussion that have been described, it can be concluded that after evaluating the success of STKIP Pasundan indoor hockey athletes, it is proven that the results are in the above average category. These results also prove and illustrate the impact of the training program that has been carried out by the athletes together with their coaches. Even though in detail there are still differences in ability in carrying out each stage of the penalty corner, this should be used as an evaluation to carry out updates in the training process, so that the athletes' abilities are at least equal. Here too, athletes should have their own ability to train their abilities, not just rely on instructions from the coach and training schedule, so that their abilities can be as expected.

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### **Conflict of interest**

There is no conflict of interest in this research.

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