

Correlation Between Hand Grip and Achievement in Indonesian Female Floorball Athletes

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Keywords: Achievement, Female, Floorball, Hand Grip, Indonesian Athletes.

Abstract: Floorball is a sport that is played using a stick. One of the skill that a player needs is hand grip. The aim of this research is to understand the relation between hand grip and achievement in Indonesian female floorball athletes. This research was performed by observational analytic design. The subjects of this study were 38 female floorball semi-finalists at the national championship Dekan Cup Unesa II in 2017. The subjects were aged 16–31 years old. The result of the hypothesis test proves that there is no correlation between hand grip and achievement in Indonesian female floorball athlete.

1 INTRODUCTION

Floorball is a sport that was developed in Sweden and that has been played since the mid-1970s. Floorball was first played in Indonesia in 2010 (IFA, 2010). According to the Indonesian Floorball Association (IFA), at Southeast Asian-level competition, Indonesian female floorball athletes got a bronze medal at the Myanmar SEA Games. The following year, Indonesian floorball athletes won bronze medals in the male and female categories at the Southeast Asia Championship in Singapore. In 2017 the Indonesian team came fourth at the Men's Asia Floorball Championship in Thailand. She results indicate that this sport has the potential to be developed to help Indonesian sporting accomplishment at the international level. Physical condition is one of the requirements that are needed to increase what can be achieved by an athlete, it can even be said to be a basic necessity that cannot be delayed (Sudarmono, 2007). Physical condition development is needed in floorball sports to enable maximum performance in the field.

The dominant physical condition components in floorball include speed, flexibility, aerobic endurance, and agility (Agustin, 2017). According to the International Floorball Federation (IFF), a good

floorball player must have motor skills, speed, endurance, strength, agility, ball control, passing skills, mental capacity, and different roles in game play (Oksanon, 2017). In passing skills, hand grip is necessary for the floorball player in holding the stick in order to be accurate and control the strength when making a pass. An explanation of anthropometry and the impact of hand grip strength on players who had achieved in a competition had never been done before. Knowledge of anthropometry and hand grip for Indonesian female floorball athletes will be quite important in providing a description of potency and a reference for athletes and coaches in this sport. This research will investigate the correlation between hand grip and achievement in Indonesian female floorball athletes.

2 METHODS

2.1 Research Design

This research was conducted by analytic observational design with cross sectional observation. The research objectives were achieved

by measuring the anthropometry of height, body weight, leg length, sitting height, and hand grip in relation to the achievement result.

2.2 Research Subjects

The subjects of this research were female floorball semi finalists at the national championship Dekan Cup Unesa II in 2017. The subjects were 38 females aged 16–31 years old.

2.3 Anthropometric Measurement

Body weight was measured using body scales. Height, sitting height, and length of leg were measured using tape portable.

2.4 Hand Grip

Hand grip was measured using a grip strength dynamometer. The measurement procedure was carried out by asking the athlete to stand upright with the foot in an open position as wide as the shoulder. The hand was holding the grip strength dynamometer straight at the side of the body. The palms were facing the thighs, while the dynamometer scale was facing outwards. The grip strength dynamometer was squeezed as tightly as possible. The hand that was holding the grip strength dynamometer could not be in contact with other objects. The squeezing results could be seen on the dynamometer scale.

2.5 Achievement Results

Achievement results in this championship were first, second, third, and fourth positions. To facilitate the statistical analysis, the result was converted as follows: 1st position was awarded 100 points, 2nd position was given 75 points, 3rd position was given 50 points, and 4th position was awarded 25 points.

2.6 Data Analysis

Data was analyzed using SPSS to present the descriptive distribution, a Oneway ANOVA test to get the mean comparison, and a Pearson correlation test to measure the relationship between variables.

3 RESULTS

The characteristics of the research subjects can be seen in table 1. The height range of the subjects was 145–168 cm. The body-weight range was 39–68.5 kg. The age range was 16–31 years. The leg-length range was 89–97 cm. The right-hand-grip range was 15.7–36.1 kg, while the left-hand-grip range was 18.4–33.2 kg. The sitting-height range was 77–90 cm.

Table 1: The research subjects' characteristics.

Variable	N	Mean±SD
Height (cm)	38	157.74±5.74
Body weight (kg)	38	53.78±8.90
BMI	38	21.53±2.76
Age (year)	38	20.79±3.24
Leg length (cm)	38	91.14±3.79
Right grip (kg)	38	26.73± 4.21
Left grip (kg)	38	26.22±4.01
Sitting height (cm)	38	82.99±3.40

To reach the research objectives, a correlation test was performed for the overall variables. The result of the correlation test can be seen in table 2.

Table 2: Correlation.

	Height	BW	BMI	Age	Leg length	Right grip	Left grip	Sitting height	analysis
Achievement	757	268	282	641	706	340	408	218	p
	.052	.184	.179	.078	063	159	138	38	Corr elati on

4 DISCUSSION

4.1 Characteristics

Floorball is a type of floor hockey played on an indoor field sized 20 x 40 m, where two teams that consist of six players (one goalkeeper, two defenders, and three forward players) try to score a goal against the opponent (Angel, 2013). Floorball is a quick game that is played for three periods of 20 minutes each without excessive body contact (Pasanen et al., 2008). Floorball sports training is

related to chronological age. The link between sports chronological age based on the Canadian model and the Long Term Athletes Development (LTAD) model suggests that athlete training is divided into seven stages: stage 1- Action Kids (0–5 years old); stage 2-Fundamental (6–9 years old); stage 3-Learn to practice (9–12 years old); stage 4-Exercise to practice (12–16 years old); stage 5-Exercise to compete (16–18 years old); stage 6-Exercise to win (18+ years old); and stage 7—7-Pension or rest (Nurjaya, 2009). Physiologically, peak performance is achieved at stage 6, the age of 18+, because at this stage skills, speed, stamina, and strength are continuously improved to get maximum performance (Nurjaya, 2009). Meanwhile, based on the research, Nurhidayah (2013) stated that in sports such as hockey, the firing power of the penalty time is affected by arm muscle power, grip strength, wrist flexibility, and hand grip, which contribute to the ability to shoot by 85.20%, while leg strength contributes most to the ability to shoot compared with arm muscle power, grip strength, and wrist flexibility. Table 2 shows no significant correlation between height, body weight, age, leg length, sitting height, or hand grip and achievement result. The average height of the subjects was 157.74 ± 5.74 cm, while that of international female athletes is 81.6 ± 8.6 cm (Karlson, 2015). The mean of body weight of the subjects was 53.78 ± 8.90 , while that of international female athletes is 7.7 ± 15.6 (Karlson, 2015). The mean of BMI of the subjects was 21.53 ± 2.76 , while the average BMI of international female athletes is 6.4 ± 3.1 (Karlson, 2015).

5 CONCLUSION

There is no correlation between height, body weight, age, leg length, sitting height, or hand grip and achievement results. It could be that in addition to these factors, floorball achievement results are influenced by leg muscle strength (Nurhidayah, 2013) and social factors between people (Suryabrata, 2002)

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