



Anthropometry of Private Junior High School Basketball Extracurricular Participants in Sukoharjo

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Abstract. Body shape has an important role in playing basketball. The position of players in basketball can be determined by their height. There is some information that can be inferred from height. Body mass index, the ratio of leg to body length, and the ratio of arm length to height. This is valuable information for extracurricular coaches because they can find out if a player has the ideal body shape as a basketball player. Through this research, it can be seen the body shape of the basketball extracurricular participants in the junior high school category. This research also helps extracurricular trainers to identify extracurricular participants who have the ideal body shape. The method used in this research is a survey using a measuring tape, measuring height and weight. The samples involved in the study were 104 boys and 48 girls with an age range of 12–15 years. The measurements taken were height, weight, arm span, and sitting height. The measurement results show that 55% have an ideal height, 34% have a normal body mass index, 5% have an ideal leg length, and 99% have an ideal arm span. Basketball extracurricular participants at private junior high schools in Sukoharjo have the potential to be hampered in performing movements using the legs and potentially easier to perform movements using the arms.

Keywords: basketball · potency · anthropometry · junior high school

1 Introduction

Basketball is one of the industrial sports in the design of major sports in Indonesia. Basketball is also developing in the scope of junior high school. As a popular sport, basketball has always been the object of research [1]. Basketball offers many advantages for those involved [2]. Basketball players in general have their respective roles, usually using height as a reference [3]. This is a natural thing because the basketball hoop is placed on the field, in contrast to football and handball, which has the goal right on the surface of the field. The basketball hoop is at a height of 10 feet from the court surface [4].

Basketball is a sport that has demands on the physical aspect [5]. Basketball requires special criteria for height, body mass index (BMI), leg length and arm span. The ideal height for children aged 13–15 years in Indonesia is determined by the Ministry of Health. Height is one aspect of nutritional adequacy in Indonesia. The ideal height for children aged 13–15 years in Indonesia is 155 cm for female and 162 cm for male [6]. The ideal BMI can be known through the ratio of height and weight through a certain formula. BMI that is not ideal can prevent a person from moving [7].

Basketball uses the arms and legs to play. The arms are used by basketball players in processing, protecting or capturing the ball. The ideal arm span has a ratio of at least 1:1 to height [8, 9]. Playing basketball a lot of running, jumping and hooping. The ideal limb can allow a player to move more efficiently. The ideal leg-to-body ratio is at least 1:0.5 [10, 11]. The ideal arm span and leg ratio are important requirements in determining talent in basketball.

The basketball coaching process does not only depend on the interests of the participants. It is better if extracurricular participants are also selected based on anthropometric aptitude. Analysis of the characteristics of players in basketball can help coaches to make decisions [12]. The significant role of anthropometry in sports performance is well known [13]. Anthropometry is one of the important aspects in sports performance in addition to fitness, technique and psychological preparation [14].

2 Method

The method used in this research is a survey. The survey involved 104 boys and 48 girls participating in extracurricular basketball. The instrument used for the survey is an anthropometric test. The anthropometric test is part of an aptitude test belonging to the Indonesian ministry of youth and sports. Giftedness is determined through anthropometric standards for basketball at the age of 13–15 years. The tests carried out were measurements of height, weight (to determine BMI), sitting height (ratio of legs to body) and arm span.

3 Result

The results showed that none of the extracurricular participants of private junior high school basketball in Sukoharjo were anthropometrically gifted. The results per test item can be seen in the Table 1.

More than half of the extracurricular participants are of ideal height. However, no more than half have the ideal BMI. Almost all of the participants had an ideal arm span, but for the leg-to-body ratio none had an ideal ratio. From the overall survey results, none of the participants met the ideal standard in all aspects.

The fulfillment of anthropometric standards for each participant tends to be on a standard 2 of 4 scale, 48% male and 60% female. Only 23% of males and 17% of females met 3 of the 4 standards. The rest only meet 1 of 4 standards, some even do not meet at all.

Table 1. ANTHROPOMETRY TEST RESULTS

Aspect	Male		Female	
	Ideal	Not Ideal	Ideal	Not Ideal
Height	53%	47%	60%	40%
BMI	43%	57%	35%	65%
Leg Ratio to Body	8%	92%	0%	100%
Arm Span	100%	0%	96%	4%
All Aspect	0%	100%	0%	100%

Table 2. PERCENTAGE OF COMPLIANCE WITH STANDARDS

Fulfillment Scale	Male	Female
4 of 4	0%	0%
3 of 4	23%	17%
2 of 4	48%	60%
1 of 4	29%	21%
0 of 4	0%	2%

4 Discussion

Height is one of the most important attributes in basketball [15]. Height is also an important factor in successful basketball shooting [16]. At the age of 13–15 years is a good time to state that someone is too short to play basketball. At the age of 13–14 years in males and 11–12 years in females, the growth spurt stops and height gain tends to be stable [17]. After the age of 15 years, the increase in height in males is 3.64% per year and in females 0.19% per year [18].

BMI has an important role in any sport. Being overweight or underweight can affect sports performance [19]. BMI in basketball affects performance in every position and affects how to play [20]. BMI also determines health and life expectancy, a person with a BMI that is not ideal may have malnutrition, diabetes or cancer [21]. Coaches certainly want athletes who are healthy and do not have the potential to have disease. BMI also affects active participation in sports, someone with an ideal BMI tends to be more active in participating in sports activities [22].

Aesthetically, well-proportioned limbs are more suitable for exercise [23]. Including basketball, which involves a lot of running, jumping and hooping. The activity also showed that knee injuries are common in basketball. Disproportionate leg to body ratio is also a cause of knee injury [24]. A proportional limb ratio also allows a person to be more successful in basketball [25].

Basketball is a sport that predominantly uses both arms. Arm length affects movement mechanics [26]. Height is indeed an important aspect in basketball. Height has no effect

when it is not supported by adequate arm span [27]. Arm span is also an indication of whether a person is growing normally or not [28]. Arm span can also provide information on what positions are suitable for extracurricular participants in playing basketball [29].

5 Conclusion

Anthropometrically, the participants of the private junior high school basketball extracurricular in Sukoharjo can be said to have no potential in basketball. There are several things that can be used as advantages, such as more than half of the participants have an ideal height and almost all participants have an ideal arm span. The BMI of the participants is still very likely to be improved. The participants need to maintain their diet in order to have an ideal BMI. The only drawback that is impossible to fix is that almost all participants had disproportionate leg ratios. The impact of this deficiency can be minimized by adjusting the technique involving leg length according to the participant's leg ratio.

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