Identification of Training Activities and Body Porportions of Athlete Students in Sports Schools

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Abstract. Student-athletes have tremendous potential to be developed into elite athletes. Special sports schools provide opportunities for student-athletes to develop their potential more optimally. The implementation of boarding schools in sports-specific schools provides adequate facilities for student-athletes to focus on careers in sports and education. The COVID-19 pandemic has raised concerns about how the physical activity and body proportions of student-athletes undergo programs in special sports schools. For this reason, the purpose of this study was to describe the condition of physical activity and body proportions of student-athletes in special sports schools. This research is included in the descriptive type. A total of 66 student-athletes (29 boys and 27 girls) were involved in the study. The research instrument uses a physical activity questionnaire that measures physical activity according to the FITT principle and reports height and weight. Body composition was determined using BMI. Data analysis used descriptive, t-test, and ANOVA. The results showed that 6.1% of student-athletes felt that their exercise frequency was insufficient, 84.8% felt it was appropriate, and 9.1% felt it was too much. As many as 50% of student-athletes feel the intensity of their exercise is moderate, and 50% feel heavy. As many as 80.3% of student-athletes felt that the duration of their training was sufficient, and 19.7% felt that it was long. As many as 84.8% of student-athletes felt that the training they got was sufficient and 15.2% found it difficult. BMI shows that as many as 24.2% of student athletes are thin, 56.1% are normal, and 19.7% are obese. Evidently, the variable frequency of exercise affects BMI ($F = 5.1$, $p = 0.009$), BMI and exercise activity correlated ($r = 0.34$, $p = 0.005$) non-linearly ($F = 9.149$, $p = 0.004$).

Keywords: Di Student-athlete · Sport schools · Boarding school · Potential athletes

1 Introduction

In journey to become elite athlete, it started from recreation, amateur athletes or student athletes and become elite athletes. Research suggests it takes 10 years or 10,000 h of practice to develop a skill at an advanced level in various sports [1]. Development to become elite athlete was not easy although must continue to be developed. There were

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lots of studies to address student-athlete development [2]. Sport schools offer athletes the opportunity to do education without leaving training. To become an student athlete, there two choices provided such as, entering a special sports class and a specialized sports school. Students usually choose schools that have strong teams at their schools and become athletes there [3]. One of the specialized sports schools, for example the State Sports High School (SMANOR) East Java, offered the concept of a boarding school. Where athletes started training, eating, sleeping and school in one place. The goal was to make student athletes more focused on sport achievements but not leaving education. The training schedule was five times a week starting from Monday to Friday with a minimum of one to two training sessions a day for a total of 12 to 15 sessions per week. The student athletes also hope to be successful on both of the academic and sport [4].

To become student athletes was not an easy options, because they have to leave their families and focus on pursuing a career as an athlete. Various challenges was found on the field, such as student athletes had not well adapted and managed their time between exercise and education such as stress and burnout. Stress and burnout however it did not happen on sport but also on academic [5]. Most of the student athletes had a hard time to adapt and could lower the motivation to exercise and to study. These need to be anticipated because they had the bright future and high potential. The success of fostering young athletes begins with positive involvement between coaches, athletes, parents and schools. Young athletes who focus on one sport for many years have positive and negative impacts on physiology and psychology throughout their lives [6]. In addition, student-athletes have various academic and social demands (such as assignments, social self-development exams) and must meet challenges in competition and academics [7].

The training program provided to student-athletes is clearly different from that of elite athletes. The adjustment of this program can refer to student-athletes whose majority are aged 14–18 years [8]. During this age, athlete had Peak Height Velocity (PHV) and there were anatomical and physiological changes. If the training intensity was very heavy and overtraining, the risk of injury was high. On other side, if the training intensity was very light, athlete was not well developed. During exercise periodisation, teenage athlete was involved in stage of specialized training [9].

Students athlete with good sport careers have the choice and the potential to get scholarships to enter the campus, they could continue to be student athletes in their respective universities. On the other hand, a study [10] that found that scholarship levels "have little or no impact on the selection process as a student-athlete. Despite these advantages, factors such as pressure to succeed, frequent travel and intense training can result in stress and an unfavorable response in the athlete [4].

The purpose of the research was to identidy the responde of student athletes who just entered the sport school for two weeks in receiving the training program.

2 Method

The research study was a cross-sectional study [11]. The subject of the research were 66 student athletes (gender: m = 39, f = 27; age: mean = 15.8, min = 15, max = 17). The student athletes were students in sport high school.

The data was collected include body height, body weight and body mass index [12], also physical activity student athletes using FITT (frequency, intensity, time/duration, and type) [13]. The physical activity instrument using FITT had factor loading 0.433–0.916 and the Construct Reliability (CR) 0.834. So, the instrument that used had fulfilled the validity score ($\lambda \geq 0.3$) and reliability score ($CR > 0.7$) [14].

Instrument through google form had two sections: (1) section I identity, gender, class, birth date, body height, body weight, and sport type; (2) section II exercise type according FITT principle. Data analysis was descriptive, t-test, and ANOVA.

3 Result and Discussion

3.1 Data Distribution Based on Exercise Type

Table 1 showed the student athlete based on exercise type FITT principle.

Based on Table 1, it can be explained that as many as 6.1% of student-athletes feel their exercise frequency is insufficient, 84.8% feel appropriate, and 9.1% feel excessive. As many as 50% of student-athletes feel the intensity of their exercise is moderate, and 50% feel heavy. As many as 80.3% of student-athletes felt that the duration of their training was sufficient, and 19.7% felt that it was long. As many as 84.8% of student-athletes felt that the training they got was sufficient and 15.2% found it difficult.

3.2 Descriptive Statistic and Data Distribution of BMI.

The results of the statistical descriptive analysis of BMI and the distribution of data by category can be seen in Table 2.

Based on Table 2, it could be explained that the average BMI is 20.8, standard deviation of 3.97 is in the normal category. The lowest score of 14.7 is in the thin category and the highest score of 35.6 is in the fat category.

Table 1. Data distribution based on exercise type

Principles (FITT)	Categories	F	%
Frequencies	Deficient	4	6.1
	Adequate	56	84.8
	Excessive	6	9.1
Intensity	Moderate	33	50
	Heavy	33	50
Time	Moderate	53	80.3
	Excessive	13	19.7
Type	Moderate	56	84.8
	Heavy	10	15.2
Total		66	100

Table 2. Descriptive statistic and data distribution of BMI

Descriptive statistic	Score	Categories	F	%
Mean	20.8	Underweight	16	24.2
SD	3.97	Normal	37	56.1
Min	14.7	Overweight	13	19.7
Max	35.6	Total	66	100

Table 3. Effect of gender, sport, and training principle (FIIT) on BMI

Variabel	Kategori	N	Mean	SD	F/t
Gender	Female	27	21.3	4.50	t = 0.916
	Male	39	20.4	3.58	p = 0.363
Prinsip latihan FITT					
Frequency	Deficient	4	18.7	1.66	F = 5.1
	Normal	56	20.5	3.67	p = 0.009
	Excessive	6	25.3	5.15	
Intensitas	Heavy	33	21.6	4.81	t = 1.72
	Moderate	33	20.0	2.74	p = 0.09
Time	Excessive	13	22.1	5.06	t = 1.178
	Moderate	51	20.6	3.63	p = 0.243
Type	Heavy	13	22.1	5.06	t = 1.306
	Moderate	53	20.5	3.65	p = 0.196
Sport					
Type of sport	Martial	33	21.4	4.41	F = 0.713
	Measured	19	20.2	2.22	p = 0.494
	Game	14	20.2	4.73	

The distribution of data showed that 16 student-athletes (24.2%) are in the underweight category, 37 student-athletes (56.1%) are in the normal category, 13 student-athletes (19.7%) are in the overweight category.

3.3 Effect of Gender, Sport, and Training Principle (FIIT) on BMI

Effect of gender, sport, and training principle (FIIT) on BMI could be seen on Table 3.

Based on Table 3, it could be explained that gender didn't affect BMI with a t-test value of 0.916, $p = 0.363$. The FITT principle that affects BMI is frequency with a value of $F = 5.1$, $p = 0.009 < 0.05$. Less $<$ excessive frequency ($\Delta = 6.54$, $p = 0.026$), inadequate $=$ appropriate frequency, appropriate $<$ excessive frequency ($\Delta = 4.79$, p

Table 4. The correlation of BMI and Exercise

Variabel	Correlations			Linearity	
	N	r	p	F	p
Exercise→BMI	66	0.34	0.005	9.149	0.004

= 0.012). Other training principles did not affect BMI, namely, intensity (t = 1.72, p = 0.09), time (t = 1.178, p = 0.243), and type (t = 1.306, p = 0.196). The type of sport practiced by student-athletes also did not affect BMI (F = 0.713, p = 0.494).

3.4 The correlation of BMI and Exercise

The correlation of BMI and exercise could be seen on Table 4.

Based on Table 4, it can be explained that there is a significant relationship between exercise activity and BMI (r = 0.34, p = 0.005). The results of the linearity test showed that the relationship was not linear (F = 9.149, p = 0.004).

4 Conclusion

Being a student athlete has various challenges ranging from competition, training and academics. Athletes must be able to adapt to new conditions that require increased sports skills and school skills. The majority of athletes feel that the frequency, intensity, time and type of exercise fall into the appropriate and sufficient category. This is very important to know because it prevents the occurrence of loading that is not in accordance with the age of growth and development of an athlete and reduces the risk of injury. In addition, in the body mass index, student-athletes are dominated in the normal category, then thin and fat. This needs to be a concern for coaches and schools in providing a balanced portion of nutrition to student-athletes in order to support life while at the sport school.

4.1 Authors' contributions

Setiyo Hartoto: preparing concepts; Bayu Budi Prakoso: formulating methods and conducting research; Awang Firmansyah: processing results and interpretation and conclusions; Satwika Arya Pratama: editing the final; Fajar Eka Samudra: conducting research.

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