

The Physical Conditions of Pencak Silat Athletes

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Abstract. SMAN 1 Bluto's Pencak Silat athlete for 5 years has been facing achievement decrease and one factor of influencing achievement is athlete's physical condition. This study identified SMAN 1 Bluto's Pencak Silat athlete's physical condition focusing on arm muscle durability, abdominal muscles durability, cardiovascular durability, speed and agility. This study is a quantitative research with descriptive approach. Through measurement test toward 25 athletes, it was found that the athletes physical condition of; 1.) Arm muscles durability is categories poor; 2.) Abdominal muscles durability is poor; 3.) Cardiovascular durability is poor; 4.) Speed is good; and 5.) Agility is good. From the findings it can be concluded that SMAN 1 Bluto's Pencak Silat athlete's physical condition is categorized bad. Additional exercise schedule is needed to improve Pencak Silat athlete's physical condition.

1. Foreword

Physical education is the strategic way to produce quality human resources. Through physical education, students are given chance to directly involved in various learning experience through physical activity, as playing and sporting can build and develop lifelong healthy and active lifestyle [1][2]. Physical education is also useful to develop physical and mental power, as well as the social life of students [3] and academic performance of students [4], also to avoid any chronic diseases in the future [3][5][6].

One of the ways to achieve the purpose of physical education is by developing talent and interest in the field of sport, for example through extracurricular activity in schools. Self-development through physical activity can inspire the students to build positive perception towards themselves [3]. By improving physical activity in school, students can be more active [7], and it will also enhance their motivation, growth and development, also self-actualization [2]. Therefore, sport development is needed to accomplish the targeted achievement [8].

One of the schools that has implemented extracurricular activity is Bluto 1 State Senior High School (SMAN 1 Bluto) in Bluto village, Bluto sub-District, Sumenep Regency, East Java Province. This school offers several extracurricular activities in the field of sports, amongst them is pencak silat. Pencak silat is defined as martial arts containing the martial arts element of parry, attack, and lock, which is using both hands and feet, that has purpose to develop a faithful and piety person to the Almighty God, noble personality, love friendship and peace, humble, having self-control, and resilient [9]. Pencak silat is the result of Indonesian people's culture which has rules inside, as a tool for self-defense also as national identity's arts [10].



It is hoped that the activity of pencak silat can be developed well, to develop and find the potency of athlete's achievement in the field of pencak silat sport [11]. SMAN 1 Bluto has been proven as able to develop talent and interest of students in pencak silat as they won the East Java National Student Sport Olympics (O2SN) in 2009 and East Java Region Student Sports Week (POPDA) in 2010. However, during observation, in the last 5 years, the achievement of pencak silat extracurricular activity is declining and one of the reasons is Physical Condition.

Physical condition has important role to achieve an achievement in sports [12][13]. Physical preparation shall be considered as required element in training to be able to achieve the highest achievement [14] and as the starting point of competitive sports [8]. Considering that physical condition is one of the elements for athlete's achievement, therefore it is important to look at the physical condition.

To achieve a good physical condition, physical exercise is required. The term physical exercise refers to an exercise which is conducted systematically, planned, and progressive that aim to increase the functional ability of all body system, in order to increase the achievement of participants [14]. Before someone participating in a match, the concerned person must be in the best physical and fitness condition. A good physical condition makes stamina not depleting quickly during the match.

There are 5 categories for an athlete with good physical condition, as follows: (1) increase in the circulation and heart-work system, (2) increase in power, flexibility, stamina, speed, and other aspect related to physical condition, (3) better economic movement during training, (4) faster recovery of body organs after training, and (5) faster response from body organism if such a response is required [14].

Based on the abovementioned issues, this research is investigating the physical condition of pencak silat athlete of SMAN 1 Bluto by focusing on the durability of arm, abdominal, and cardiovascular, speed, and agility. Through this research, the physical condition of SMAN 1 Bluto's pencak silat athlete can be identified and increase for training in the component of lacking physical condition can be implemented.

2. Method

This research is conducted through survey by utilizing data collection and test and measurement technique. In this research, the researcher wants to investigate the physical condition of pencak silat athletes in SMAN 1 Bluto by utilizing test and measurement method. 25 male participants were selected by using purposive sampling, where they are pencak silat athletes of SMAN 1 Bluto, which are the member of pencak silat extracurricular. See table 1.

Table 1. Norm of Physical Condition Test

Norm	Arm Muscle durability (times/mnt)	Abdominal Muscle durability (times/30s)	Cardiovascular durability (ml/kg/mnt)	Speed (second)	Agility (second)
Very good	> 70	> 70	51 – 55	3.58 – 3.91	< 12.10
Good	54 – 69	54 – 69	45 – 50	3.92 – 4.34	12.11 – 13.53
Average	38 – 53	38 – 53	38 – 45	4.35 – 4.72	13.54 – 14.96
Poor	22 – 37	22 – 37	38 – 35	4.73 – 5.11	14.97 – 16.39
Very Poor	< 21	< 21	< 35	5.12 – 5.50	> 16.40

Data is obtained by measuring the physical condition of pencak silat athlete, comprising of arm muscle, abdominal muscle, and cardiovascular durability, speed, and agility [15][16] (1) in the measurement of arm muscle durability, a 1 minute push-up test was conducted; (2) in the measurement of abdominal muscle durability, a 1 minute sit-up test was conducted; (3) in the measurement of cardiovascular durability, a bleep test was conducted; (4) in the speed measurement, a 30-meter run test was conducted; and (5) in agility measurement, shuttle run test was conducted. The result of test series is compared to the norms appropriate to the test (Table 1) [17].

3. Finding and Analysis

After the measurement test towards physical condition of 25 pencak silat athletes that comprising of arm muscle, abdominal muscle, and cardiovascular durability, speed, and agility was done, therefore the result of the aforesaid measurement test is explained in Table 2.

Table 2. Result of Physical Condition Measurement

Athlete	Arm Muscle durability (times/mnt)	Abdominal Muscle durability (times/30s)	Cardiovascular durability (ml/kg/mnt)	Speed (second)	Agility (second)
1.	25	31	35.6	4.75	17.64
2.	34	25	33.2	4.7	17.01
3.	40	25	36	4.45	14.24
4.	32	20	37.2	4.32	13.43
5.	35	40	38.7	4.41	13.14
6.	54	31	32.6	4.4	12.50
7.	36	54	31.8	4.1	10.89
8.	30	19	34.7	3.98	11.56
9.	37	19	35.7	4.27	12.87
10.	36	30	37.1	4.15	12.01
11.	38	25	37.5	4.36	12.89
12.	40	29	39.8	4.43	12.30
13.	37	31	34.7	4.6	12.50
14.	23	35	40.5	4.12	12.18
15.	25	32	37.1	4.54	12.21
16.	20	23	34.7	4.37	13.55
17.	26	27	39.1	4.5	13.57
18.	40	29	39.2	4.5	12.12
19.	45	22	38.5	3.94	12.15
20.	50	36	38.2	4.51	13.60
21.	49	38	35.7	4.54	13.21
22.	55	41	34.7	4.82	14.90
23.	54	29	37.1	4.39	14.81
24.	40	21	32.4	3.94	12.20
25.	36	41	32.9	3.97	12.27
Total	937	753	904.7	105.08	329.75
Average	37.48	30.12	36.19	4.20	13.19
Category	Poor	Poor	Poor	Good	Good

Based on the measurement, it is discovered that the average of arm muscle durability of pencak silat athlete in SMAN 1 Bluto is 37.48 times per minute that this result shows that the arm muscle condition of pencak silat athlete in SMAN 1 Bluto belongs the “poor” category. Moreover, in the abdominal muscle durability, the average is 30.12 per minute and this result shows that the abdominal muscle condition of pencak silat athlete in SMAN 1 Bluto belongs the “poor” category. Furthermore, the cardiovascular condition of pencak silat athlete in SMAN 1 Bluto also belongs to the “poor” category with average of 36.19 ml/kg/minute. Nevertheless, the result of the aforesaid physical condition is different in terms of speed and agility. The speed average of pencak silat athlete in SMAN 1 Bluto is 4.20 second per 30 meters and belongs to the “good” category. Meanwhile the agility average of pencak silat athlete in SMAN 1 Bluto is 13.19 second per 40 meters and belongs to the “good” category.

Difference in the result of athlete's physical condition can be affected by several factors like body condition, nutrition, motivation, mental health, individual skills, and ability which are different with each individual and also different in their daily life [18].

4. Conclusion

The physical condition of pencak silat athlete in SMAN 1 Bluto falls in to poor category and such a condition can be seen from measurement result: (1) arm muscle durability belong to poor category, (2) abdominal muscle durability belong to poor category, (3) cardiovascular durability belong to poor category, (4) speed belong to good category, and (5) agility belong to good category. Considering physical condition is one of the elements for the achievement of athlete, therefore it is important to pay attention to the physical condition. To achieve a good physical condition, a physical condition by pencak silat athletes are required, especially for the durability of arm muscle, abdominal muscle and cardiovascular. Therefore pencak silat athletes are able to obtain food durability during a match and able to achieve the highest achievement.

5. Limitation

This research is limited to the measurement of 5 physical components, as follows: (1) arm muscle durability, (2) abdominal muscle durability, (3) cardiovascular durability, (4) speed, and (5) agility. The said matter is caused by the limitation of available measuring instrument. Therefore, a further research can investigate other physical components.

Aside from that, this research only focuses on the aspect of athlete physical condition exercise. Beside physical condition, there are 3 other aspects that can affect achievement, which are (1) technical exercise aspect, (2) tactical exercise aspect, and (3) mental exercise aspect [19] therefore a further research can investigate other aspects from the degradation of athlete's achievement [20].

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