

Need Assessment of Software Preparation for Pencak Silat Physical Test in Early Age

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Abstract—the physical condition is one of the few components necessary to achieve maximum performance in sports. It needs to be improved from early ages and evaluated over the years. Usually, with the aim to improve performance, physical condition tests are used to determine the initial conditions. A general physical condition can be tested, but, there is no evidence of physical tests used to measure the physical condition at the early age. The purpose of this study is to describe the needs of trainers related to the use of pencak silat at the early age. The method used was descriptive exploratory. The subjects involved were 44 trainers in Yogyakarta and surrounding areas. The technique of collecting data was the application of indirect questionnaire through google documents. The data analysis techniques used descriptive statistics according to the applicable procedures. The results have been shown that the partial systems and test items used for early age pencak silat are balke, push-ups, sit-ups, back-ups, 20- and 30-meter runs, side split, ball-throwing, shuttle run, and standing board jump. Based on the highest percentage, the use of test items by trainer's activity obtained 93% of push up, 98% of back up, 91% of sit-ups, and 84% of a side split. The other tests were only used by the average of 8.5% of trainers, whereas theoretically physical conditions include endurance, strength, speed, flexibility, and coordination. Lack of trainer knowledge was evident in non-certified trainers (52%), having regional certification only (39%), having provincial certification (9%). Furthermore, 89% of trainers said they need guidance on early age pencak silat test and 80% of trainers need a data processing software. Based on these results it is necessary to prepare the physical test of pencak silat at the early age. Physical tests will be composed as a battery test equipped with guidebooks and software applications with the aim to facilitate the process of the data results.

Keywords— need assessment, software, physical test, pencak silat.

I. INTRODUCTION

Physical condition is an integration of health and skills [1] [2]. It is influenced by muscle type, age, gender and training [3,4,5]. Training is useful for improving health, but it is also at risk of injury often secondary to an intensive, high-frequency training program [6]. To avoid injury, it is necessary to do some examinations before the beginning of a training program with the aim to classify the individuals and develop a program according to the specific requirements [7].

The physical condition can be evaluated throughout physical tests. For example, teachers perform physical tests to elementary school students using the Fitness Gram Battery Test, ALPHA School Fitness Battery with the objective of analyzing the relationship between physical condition and self and mental concepts [8,9]. Modified ASSO Fitness Test Battery (FTB) is used to determine the physical condition of

school children and the influence of age on children's fitness level [10]. Also, physical tests are evaluated in persons with disabilities. Individuals with Autism can be evaluated using a Measurement of children's fitness with Autism Spectrum Disorder (ASD) with 20 meters of a multistage shuttle, sit and reach test, handgrip strength, dan body mass index [11].

The sports competitions require sustainable physiology, psychology, and biomotor assessments with the aim to evaluate performance improvement, efficiency, and effectiveness of training, and mental strength from children to adults [12]. The psychological measurements of athletes need to be done by looking at anxiety, burnout, and optimism to reduce the risk of injury in intensive training [6]. Also, biomotor components need to be measured, for example, using a validly modified Barrow test to measure agility in 11- and 13-year old soccer players [13]. Other biomotor capabilities such as flexibility are measured using Lafayette goniometer on gymnastics athletes [14].

Physical tests for children, adults, athletes, and non-athletes are certainly different. Physical tests should be appropriate for age and physical needs. However, physical tests for early age pencak silat have not yet been compiled. It is necessary to analyze the needs of preparing for physical test guidance of early age martial art. In addition, is very important the use of a software for the analysis and process of the test results. Preparation of test guides can be used as one of the tools to identify and develop the talents of martial arts athletes from the early age.

II. METHOD

The subjects used in this research were elementary school pencak silat trainers in Yogyakarta and surrounding areas. The subject consisted of 44 trainers: 32 men and 12 women. The instrument used in this research was an indirect questionnaire. The questionnaire contains questions relating to trainer's knowledge about training, the trainer's certificate, the trainer's knowledge of the measurement test and its benefits, the measuring tools used, the need for the preparation of early age martial arts tests, and the need for application software used to process data of test result. The trainers were requested to fill out the questionnaire within google documents.

Data analysis technique used in this study was descriptive statistics. The procedure was initiated by analyzing the result of each point of the questionnaire. After the obtained results, the data was processed in percentages according to the

applicable procedures. Then the results obtained were described in the study, with a consequent conclusion.

III. RESULT

TABLE I. LIST OF PHYSICAL TEST INSTRUMENTS WHICH ARE ALREADY USED BY TRAINERS

No	Components	Test	Yes	%	No	%
1	Resilience	Balke (15 M Running)	22	50%	22	50%
2	Strength	Push Up	41	93%	3	7%
3	Strength	Back Up	39	89%	5	11%
4	Strength	Sit Up	40	91%	4	9%
5	Speed	20 M-Running	36	82%	8	18%
6	Speed	30 M-Running	24	55%	20	45%
7	Flexibility	Side Split	37	84%	7	16%
8	Coordination	Throw and Catch with Tennis Ball	29	66%	15	34%
9	Agility	Shuttle Run	31	70%	13	30%
10	Power	Standing Broad Jump	22	50%	22	50%

TABLE II. THE PERCENTAGE OF CERTIFICATE LEVELS THE TRAINER HAS

	Trainers' Certificates			
	None	Regency	Province	National
Total	23	17	4	0
Percentage	52%	39%	9%	0%

TABLE III. PERCENTAGE OF QUESTIONNAIRE FILLING RESULT

No	Already/Needed		Not Yet/Not-Needed	
	Total	%	Total	%
1	41	93%	3	7%
2	33	75%	11	25%
3	27	61%	17	39%
4	32	73%	12	27%
5	39	89%	5	11%
6	35	80%	9	20%

Table 1 showed a list of physical test instruments given to early age martial artist. As we can observe that averagely trainer used physical tests such as 93% of push up, 89% of back up, 91% of sit up, 82% of 20-meter sprint and 84% of the split side. Another instrument was only done under 80% by the trainer.

Table 2 showed the certificates owned by the trainer. Based on the analysis it is known that there are 52% of non-certified

trainers, 39% of regency-certified trainers, and 9% of provincial-certified trainers.

Table 3 has shown the percentage of trainers who have provided physical training to early-stage pencak silat. Based on the analysis it is known that 93% of trainers have provided physical training to students and 7% of trainers have not done yet. In case of the element " shows the trainer's knowledge of understanding the physical tests given to early age pencak silat", 75% of trainers already understand about physical condition test but the remaining 25% have not. The analysis of the percentage of trainers who have performed physical tests for early age pencak silat shows that 61% of trainers have done physical tests for early age pencak silat and 39% of whom have not. The evaluation of the percentage of trainer knowledge about the availability of physical test guidebook for early martial artists revealed 73% of trainers stated that there is no guidance on physical tests for the early-stage martial artist and 27% stated the opposite. The trainer's need for physical test guides for early age pencak silat revealed 89% of trainers need physical test guides for early stage physical skill tests and the rest does not. The analysis of the need for a software with the aim to process the physical test results revealed 80% of trainers require software for processing the physical test results.

IV. DISCUSSION

Some trainers have done physical tests to the early age martial artists according to our study. However, the test is a partial test, because it has been only performed in some parts of the motor components. Generally, the tests provided by the trainers refer to the strength biomotor, such as push-ups, back-ups, and sit-ups. Whereas the important biomotor component for the martial art is not only a strength. There are other important elements such as resistant, strength, speed, coordination, and flexibility [15].

Lack of trainers' knowledge of physical tests makes physical tests less appropriate to the literature review. The lack of knowledge of the trainers is one of the reasons to justify why more than 50% of the trainers do not have a training certificate. Training certificates are obtained after a course training. Less knowledge is secondary to the absence of a training course. In addition, the lack of physical test guidance for early age art guidance makes the trainer with no reference in performing physical tests.

Based on the analysis, 89% of trainers really need the physical test guidance for early age martial arts. This physical test guide will be a reference for trainers conducting an accurate assessment. In sports, the achievement of this assessment is very important. The physical test is a landmark for assessing the strength and development of the athlete's fitness and is considered a parameter for setting individual goals to improve performances. This process needs to be evaluated two or three times a year [12]. The form of physical tests provided is certainly tailored to the age.

In addition to the results of the training, physical testing is one way that can be used to identify and develop the talents of children. There are two main pathways in talent development, the specialization from an early age where the children have focused on one sport and the introduction of several sports before they specialize in a specific sport. [16]. Physical tests need to be done in the development of talent from the early age. With the existence of physical tests from the early age, every

athlete has a record of physical conditions. This record can be used as a landmark for the coach.

Pencak silat is one of the sports whose development can be done from the early age. The categories of martial arts match consist of a single category, double category, and squad category [17]. Therefore, it is imperative that the early age martial art physical tests been developed. After that, the trainer needs to confront the results with the data processing test and sometimes can take a long time.

The analysis also shows that 80% of trainers need software applications to process test results. Time and high accuracy are needed to process the results of tests conducted manually. The test guides prepared need to be equipped with software applications that can be used to process the results of physical tests. Applications created in the form of software can be accessed through a web page. The page can be accessed by the trainer to process the test results only by inputting the data of the test result.

V. CONCLUSION

The physical condition test for early age pencak silat can be used as a reference in the provision of training program and avoid the risk of injury. This test can be used as a reference in the provision of the accurate training program with low risk of injury. The physical test guidance for early age pencak silat equipped with guidebooks and software applications can be used to facilitate the processing of data test results.

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