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Yulingga Nanda Hanief
Department Of Physical Education, Health and Recreation, Faculty of Education, University of Nusantara PGRI Kediri, Indonesia

Puspodari
Department Of Physical Education, Health and Recreation, Faculty of Education, University of Nusantara PGRI Kediri, Indonesia

Sugito
Department Of Physical Education, Health and Recreation, Faculty of Education, University of Nusantara PGRI Kediri, Indonesia

Profile of physical condition of Taekwondo Junior Athletes Pusklatkot (Training centre) Kediri city year 2016 to compete in 2017 east java regional Competition

Yulingga Nanda Hanief, Puspodari and Sugito

Abstract
This study aimed to analyze the profile of physical condition of taekwondo junior athletes pusklatkot (training centre) Kediri City year 2016 to compete in 2017 East Java regional competition. The type of research is non experiment with technique of data collection using survey method and testing technique. Subjects were all Taekwondo junior athletes either boys or girls who are members of the Puslatkot (Training Centre) Kediri totaling 15 athletes. Instrument of physical condition used was the test of: leg muscle strength, power, back muscle strength, speed, endurance, flexibility, and endurance of abdominal muscles. The data obtained for each of the test items were raw data and transformed into a value of t-score with the formula t-score and then the data were interpreted, by categorizing data. Based on the research results it can be concluded that physical condition of taekwondo junior athletes pusklatkot (training centre) Kediri City year 2016 to compete in 2017 East Java regional competition athlete is 0 (0%) in the category of excellent, 7 athletes (46.7%) in good category, 7 athletes (46, 7%) in average category, one athlete (6.6%) in poor category, and 0 athlete (0%) in the category of very poor.

Keywords: physical condition, sports performance, taekwondo.

1. Introduction

Taekwondo is a Korean martial art that is growing rapidly in Indonesia and learned by all walks of life throughout the world. Suryadi (2002) [1] revealed that Taekwondo itself has been included and developed in Indonesia for more than 30 years with proof that at that time Taekwondo was affiliated to ITF (International Tae Kwon Do Federation), it also developed WTF (The World Taekwondo Federation) 1982 joined into Taekwondo Indonesia (TI). Taekwondo enthusiasts are not only attractive to adults but also teenagers and children because Taekwondo membership is open to the public.

Physical condition is a necessary requirement in improving an athlete's performance, and may even be regarded as a basic necessity that cannot be postponed or negotiable. Yudiana (2012) [2] revealed physical condition is an integral part of the components that cannot be separated either its increase or maintenance. In addition, it is also known as the four kinds of fittings that need to be held, if someone attempts to achieve an optimal performance. Yudiana (2012) [2] revealed in improving physical condition important components for the sport of Taekwondo consists of strength, flexibility, speed, agility, endurance, muscle strength, and power. True talent and ability can never be measured directly but must be inferred from match performances varying over time, there will always be some degree of uncertainty about the true abilities of players on each of the criteria. Decision support tools can provide assistance with decisions involving uncertainties such as these (Clader and Durbach, 2015) [3].

This article aims to analyze the profile of physical condition of taekwondo junior athletes pusklatkot (training centre) Kediri City year 2016 to compete in 2017 East Java regional competition. The results of this study will be the basis for coaches to determine the training load and considerations of coaches to participate in a sporting event at the provincial level in 2017.

2. Materials and Methods
2.1 Participants

Participants in this study were all taekwondo junior athletes either boys or girls who are

Correspondence
Yulingga Nanda Hanief
Department Of Physical Education, Health and Recreation, Faculty of Education, University of Nusantara PGRI Kediri, Indonesia

members of the Puslatkot (Training Centre) Kediri totalling 15 athletes. Puslatkot (Training Centre) Kediri is a taekwondo club with talented athletes of various regions in Kediri. Then this study was using saturation sampling technique in which the entire population were used as a sample. Sugiyono (2015) [4] revealed "Saturated sampling is sampling technique when all members of the population are used as a sample. This is often done when the population size is relatively small, less than 30 people".

2.2 Procedure
To obtain the corresponding data then in this study it was using survey method and testing technique. This method is intended to collect data about the physical condition by using testing technique. Nurhasan (2001) [6] revealed various tests of physical condition, among others:
1. The strength of leg muscles with leg dynamometer.
2. Power by using vertical jump.
3. The strength of the back muscles by using sit and reach.
4. Speed using 30 meter run.
5. Durability (endurance) using Balke test.
6. Flexibility using flexometer.
7. Durability of the abdominal muscles with sit ups test.

Data obtained from each items of test are raw data from the results of each test acquired. The raw results are changed into the value of t-score with formulation of t-score as follows:

$$T = 10 \left(\frac{M-X}{SD} \right) + 50 \qquad \text{(inversion data)}$$

$$T = 10 \left(\frac{X-M}{SD} \right) + 50 \qquad \text{(regular data)}$$

Description
T = value of t score
M = raw average value
X = raw data value
SD = standard deviation of raw data

Data that has been converted into t-score, then then the data is interpreted, by categorizing the data. Categorizing is grouped into five categories: excellent, good, fair, poor, very poor. The categorization was using 5 reference limit of normal, as follows:

Table 1: Raw Score of Category

No	Range of Norm	Category
1	$X \geq M + 1{,}5\ SD$	Excellent
2	$M + 0{,}5\ SD \leq X < M + 1{,}5\ SD$	Good
3	$M - 0{,}5\ SD \leq X < M + 0{,}5\ SD$	Average
4	$M - 1{,}5\ SD \leq X < M - 0{,}5\ SD$	Poor
5	$X < M - 1{,}5\ SD$	Very Poor

(Anas, 2010)[8]

The next step after the data obtained is to analyse the data to draw conclusions from the research conducted. The analysis of data used from this study was quantitative descriptive analysis technique with percentage [4, 7, 8]. A formula used is as follows:

$$P = \frac{f}{N} \times 100\% \qquad [3]$$

Description
P = percentage sought
f = frequency

N = total of respondents

3. Results and Discussion
This study is a descriptive research, thus the condition of objects will be described based on the data obtained. A research on the profile of physical condition of taekwondo junior athletes pusklatkot (training centre) Kediri City year 2016 to compete in 2017 East Java regional competition is intended to describe the profile of physical condition of taekwondo junior athletes pusklatkot (training centre) Kediri City year 2016 to compete in 2017 East Java regional competition overall.

Data obtained from 7 (seven) item of tests, thus the unit of score obtained varied. To overcome this matter, the data were changed into the form of T-score, thus obtained data with the equal units. Data of T–score then obtained its average, and then the data were categorized into five categories based on the formula in the previous chapter. In each item of tests, it was also conducted a calculation, thus it will obtain the profile ofphysical condition of athletes on each item of tests. Below is the description of data from the results of the research.

1. Components of leg muscle strength of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 obtained maximum score = 62 kg, minimum value = 30 kg, average (mean) = 47.47 kg, and SD = 9.65.
2. Components of power of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 obtained maximum score = 64 kg m / sec, minimum value = 27 kg m / sec, average (mean) = 47.73 kg m / sec, and SD = 8.85.
3. Components of back muscle strength of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 obtained maximum score = 85 cm, minimum value = 50 cm, average (mean) = 62.13 cm, and SD = 9.03.
4. Components of taekwondo junior athletes speed of Puslatkot (Training Centre) Kediri city in 2016 obtained maximum value = 5.57 sec, minimum value = 7.82 sec, average (mean) = 6.87 sec, and SD = 0.61.
5. Components of abdominal muscle endurance of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 obtained maximum value = 27 times, minimum value = 17 times, average (mean) = 24.67 times, and SD = 2.795.
6. Components of flexibility of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 obtained maximum score = 55 cm, minimum value = 26 cm, average (mean) = 46.60 cm, and SD = 7, 28.
7. Components of endurance of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 obtained maximum score = 9.9, minimum value = 4.9, average (mean) = 7.53, and SD = 1.44.

3.1 Physical Condition of Taekwondo Athletes Puslatkot (Training Centre) Kediri City Year 2016
The data analysed has been converted into the form of t-score, so that the units are equal. Research results obtained maximum values of 379.52 and 302.91 minimum value. Mean obtained by 350.0007 and a standard deviation of 24.083. Based on the formula of pre-defined categories, the analysis of data obtained physical condition of taekwondo junior athletes Puslatkot (TrainingCentre) Kediri city in 2016 as follows:

Table 2: Frequency Distribution of Physical Condition of Taekwondo Athletes in Junior Category

Interval Class	Frequency	Category	Relative Frequency
> 386,13	0	Excellent	0%
362,04 s/d 386,12	7	Good	46,7%
337,96 s/d 362,03	7	Average	46,7%
313,88 s/d 337,95	1	Poor	6,6%
> 313,87	0	Very Poor	0%
Total	15		100%

Based on table 2, obtained data of taekwondo athletes with category of excellent amounting to 0 (0%), good category of 7 athletes (46.7%), average category of 7 athletes (46.7%), poor category of 1 athlete (6, 7%) and very poor category of 0 athlete (0%). The highest frequency contained in good category and average with a frequency of 7 athletes.

The physical condition of taekwondo junior athletes Puslatkot (Training Centre) Kediri city in 2016 in accordance with the information in Table 2 can be presented in histogram as follows:
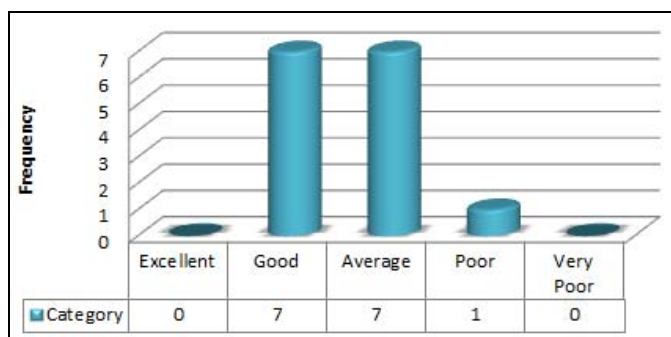

Fig 1: Profile Of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition

3.2 Profile of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition by Respective Test Item
a) Based on Speed Factor

Table 3: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based Speed Factor

Interval Class	Frequency	Category	Relative Frequency
> 7,80	2	Excellent	13,33%
7,18 s/d 7,79	5	Good	33,33%
6,56 s/d 7,17	4	Average	26,67%
5,94 s/d 6,55	3	Poor	20%
< 5,93	1	Very Poor	6,67%
Total	15		100%

Based on Table 3, obtained data of taekwondo athletes with excellent category by 2 athletes (13.33%), good category by 5 athletes (33.33%), average category of four athletes (26.67%), poor category of 3 athletes (20%) and very poor category of 1 athlete (6.67%). The highest frequency contained in good category with a frequency of 5 athletes.
b) Based on Flexibility Factor

Table 4: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based on Flexibility Factor

Interval Class	Frequency	Category	Relative Frequency
> 57,45	0	Excellent	0%
50,22 s/d 57,44	5	Good	33,33%
42,99 s/d 50,21	7	Average	46,67%
35,76 s/d 42,98	2	Poor	13,33%
< 35,75	1	Very Poor	6,67%
Total	15		100%

Based on Table 4, obtained data of athletes with excellent category of 0 athlete (0%), good category by 5 athletes (33.33%), average category of 7 athletes (46.67%), poor category by 2 athletes (13, 33%) and very poor category of 1 athlete (6.67%). The highest frequency contained in average category with a frequency of 7 athletes.
c) Based on Power Factor

Table 5: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based on Power Factor

Interval Class	Frequency	Category	Relative Frequency
> 61,01	1	Excellent	6,67%
52,16 s/d 61,00	5	Good	33,33%
43,31 s/d 52,15	5	Average	33,33%
34,46 s/d 43,30	3	Poor	20%
< 34,45	1	Very Poor	6,67%
Total	15		100%

Based on Table 5, obtained data of athletes with excellent category of 1 athlete (6.67%), good category by 5 athletes (33.33%), average category of 5 athletes (33.33%), poor category of 3 athletes (20%) and very poor category of 1 athlete (6.67%). The highest frequency contained in good category and average with a frequency of 5 athletes.
d) Based on Back Muscle Strength Factor

Table 6: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based on Back Muscle Strength Factor

Interval Class	Frequency	Category	Relative Frequency
> 75,68	1	Excellent	6,67%
66,65 s/d 75,67	7	Good	46,67%
57,62 s/d 66,64	4	Average	26,67%
48,59 s/d 57,61	3	Poor	20%
< 48,58	0	Very Poor	0%
Total	15		100%

Based on table 6, obtained data of athletes with excellent category of 1 athlete (6.67%), good category of 7 athletes (46.67%), average category of 4 athletes (26.67%), poor category of 3 athletes (20%) and very poor category of athletes 0 (0%). The highest frequency contained in good category with a frequency of 7 athletes.
e) Based on Limbs Muscle Strength Factor

Table 7: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based on Limbs Muscle Strength Factor

Interval Class	Frequency	Category	Relative Frequency
> 61,95	1	Excellent	6,67%
52,30 s/d 61,94	4	Good	26,67%
42,65 s/d 52,29	5	Average	33,33%
33,00 s/d 42,64	4	Poor	26,67%
< 32,99	1	Very Poor	6,67%
Total	15		100%

Based on table 7, obtained data athletes with excellent category of 1 athlete (6.67%), good category of 4 athletes (26.67%), average category of 5 athletes (33.33%), poor category of 4 athletes (26.67%) and very poor category of 1 athlete (6.67%). The highest frequency contained in average category with a frequency of 5 athletes.

f) Based on Abdominal Muscle Endurance Factor

Table 8: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based on Abdominal Muscle Endurance Factor

Interval Class	Frequency	Category	Relative Frequency
> 28,86	0	Excellent	0%
26,07 s/d 28,85	6	Good	40%
23,28 s/d 26,06	7	Average	46,67%
20,49 s/d 23,27	0	Poor	0%
< 20,48	2	Very Poor	13,33%
Total	15		100%

Based on Table 8, obtained data of athletes with excellent category of o athlete (0%), good category of 6 athletes (40%), average category of 7 athletes (46.67%), poor category of 0 athlete (0%) and very poor category of 2 athletes (13.33%). The highest frequency contained in average category with a frequency of 7 athletes.

g) Based on Endurance

Table 9: Frequency Distribution of Physical Condition of Taekwondo Junior Athletes Pusklatkot (Training Centre) Kediri City Year 2016 to Compete in 2017 East Java Regional Competition Based on Heart Lung Endurance

Interval Class	Frequency	Category	Relative Frequency
> 9,69	2	Excellent	13,33%
8,25 s/d 9,68	5	Good	33,33%
6,81 s/d 8,24	5	Average	33,33%
5,37 s/d 6,80	2	Poor	13,33%
< 5,36	1	Very Poor	6,67%
Total	15		100%

Based on table 9, obtained data of athletes with excellent category of 2 athletes (13.33%), good category of 5 athletes (33.33%), average category of 5 athletes (33.33%), poor category of 2 athletes (13.33%) and very poor category of 1 athlete (6.67%). The highest frequency contained in good category and average with a frequency of 5 athletes.

The findings show that the physical condition based on the factor of speed in good category (33.33%), factor of flexibility in average category (46.47%), factor of power in good category and average (33.33%), factor of back muscle strength in good category (46.67%), leg muscle strength factor in average category (33.33%), abdominal muscular endurance factor in average category (46.67%), and factor of endurance in good category and average (33.33%). This

motivates athletes to improve for the better. It can also be an evaluation for the coach to draw up appropriate exercise program pertaining about improvement of the physical condition of taekwondo junior athletes Pusklatkot (Training Centre) Kediri city.

4. Conclusion
Physical condition of taekwondo junior athletes Pusklatkot (Training Centre) Kediri city in 2016 is 0 athlete (0%) in excellent category, 7 athletes (46.7%) in good category, 7 athletes (46.7%) in average category, 1 athlete (6.6%) in poor category, and 0 athlete (0%) in very poor category.

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