Physical Fitness Index for Assess Fitness Speed Among Army Reserve Officer Training Unit Cadet in Malaysia

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Abstract. The aim of this study is to develop physical fitness index (PFI) for physical fitness among Army Reserve Officer Training Unit Cadet Malaysia. This study use 30 meter speed run as a physical fitness test battery to develop physical fitness index (PFI) and to evaluate the subject fitness speed. 212 male respondent (N=212) was selected in this study including Army Reserve Officer Training Unit Cadet of National Defence University of Malaysia. 30 meter sprint was used as an instrument for this study. The methodology will be adopted for this study is quantitative research in the form of a quasi-experiment. Quasi-experimental methods is used to measure and evaluate the level of physical fitness and develop Physical Fitness Index especially in speed. The design of this study is quasi-experimental study design with pre-test and post-test. The study design is quasi-experimental research design in which the data is obtained through the practical test in the field. The data were analysed by using the SPSS software version 20 to calculate the mean, standard deviation and t-test for develop physical fitness index (PFI) and to evaluate the fitness speed level for Army Reserve Officer Training Unit Cadet Malaysia. The findings showed mean and standard deviation for develope physical fitness index is (M=4.84) and (SD=0.48). The t-test for evaluate fitness level in speed for pre-test and post-test is significantly difference (p ≤ 0.05). The implication at this study is that the develope of standard physical fitness index is able to identify the level of physical fitness among Army Reserve Officer Training Unit Cadet Malaysia.

Keywords: Physical fitness, Physical fitness index, test battery, Army Reserve Officer Training Unit Cadet, 30 meter sprint.

1. INTRODUCTION

Physical fitness is a foundation of holistic wellness. Physical fitness concepts include of physical, mental, emotional, social and spiritual aspects. Physical fitness is a universal concept that requires an individual to be totally healthy and strong. The life in this modern age, physical fitness is very important for a person.

The perception of which only individuals who play sports only require physical fitness should be denied [2]. The important thing to be taken into account by each individual is deteriorating physical condition will impact on the capacity of individual mental and social aspects. It also meant, in other words, fitness is at the minimum level will influence and affect mental function and ability to react with other things.
Fitness is the ability to compete with a balanced and complete life [7]. But it also involves the whole of the social, psychological fitness and physiology and fitness is determined by environment, heredity, genes and lifestyle [7].

It is generally realized that armed forces require a specific level of by and large or finish the fitness to meet the physical requests of war. Hopping, slithering, moving, ceasing, beginning, jumping, climbing, pushing, sprinting from cover to cover, conveying overwhelming burdens long separations, and as yet having the capacity to finish the current mission speak to a short rundown of the required undertakings put upon a armed forced. The main key measurable fitness components include mobility, strength, endurance and flexibility [4].

The human element and physical fitness of the individuals from military have dependably been and will stay a standout amongst the most imperative objectives and characteristics of the national safeguard in the military around the world, in any case superior and improvement of weapons innovation [5] [6]. Past involvement in history proposes that physical preparing was of awesome significance, through preparing of both troopers and officers for fruitful summon and control. Physical fitness is an important marker of the health of the armed forces and security [3]. The security forces should have a high level of physical fitness due to the exercise of physical activity performed during military exercises and in war [8]. Monitoring of the physical fitness level of the armed forces and security are important from a performance point of view, and also to assess their combat capability. Kassim & Mokhtar (2016) stated that the important of coaches requiring knowledge in the coaching process are important to build up the quality of fitness level using the norms of physical fitness.

Speed is one of the physical fitness elements. It’s involves the muscles of the lower body of the human body. Speed is defined as the capacity and capability of moving a body part or the entire body with the supreme and utmost likely speed or velocity [11]. Speed over various distance is an important quality in many sports. There are many instances in team or racquet sports where the demands of speed are characterised more by rapid changes of direction rather than running in a straight line [12] [13]. These changed of direction movements, often describe as agility, may be initiated to either evade or pursue an opponent, or to react to a moving ball. When reacting, it has been shown that the nature of the stimulus (timing and location) influences performance in agility tasks, and therefore perceptual factors are significant for agility performance [14] [15].

2. PROBLEM STATEMENT

Physical fitness index is a criterion that can be used to help interpret the physical fitness level of a person in a sports skills [2]. Physical Fitness index can help coaches learn military physical performance levels of physical fitness army officers who participated in physical activities. Through Fitness index also, army physical trainer can identify the strengths and weaknesses of military officers who served in the armed forces of Malaysia.

Knowledge of the physical fitness level of military officers to help army physical fitness trainers provide appropriate military training to increase the level of physical fitness for a military officer. Developing Physical Fitness index among military officers in Malaysia indispensable at present for view and maintain the performance level of physical fitness and military officials in Malaysia.

Difficulty obtaining a Physical Fitness index lead our country still using tests that do not have a standard procedure for measuring the performance of physical fitness. This can cause major problems to the Physical Trainer of the armed forces. So far, no Physical Fitness index can be adopted for determining the level of physical fitness achievement army officer in Malaysia. So far, don’t have any test procedures and standard physical fitness index that can be introduced and implemented in the armed forces of Malaysia.

So far, the military officers who underwent physical training or physical fitness cannot know the performance level of physical fitness because their performance is not measured and assessed systematically. Physical trainer of the armed forces are not successful using a consistent measurement
tests because there is no Physical Fitness standard index, therefore achievement test scores were not able to demonstrate the level of physical fitness to the actual military officers.

Thus, the researchers plan to investigate the level of physical fitness among the Army Reserve Officer Training Unit (ROTU) Cadet in Malaysia through the development of a physical fitness standard index for Army ROTU Cadet.

3. THE AIM OF RESEARCH

This paper conducted research to develop physical fitness index for fitness speed and evaluate the fitness speed level among Army Reserve Officer Training Unit (ROTU) Cadet in Malaysia.

4. METHOD OF RESEARCH

This study conducted a quantitative research in the form of a quasi-experiment. Quasi-experimental methods is used to measure and evaluate the level of physical fitness and develop Physical Fitness index. This experimental observation study use a speed physical fitness test battery that best suits the activity.

The design of this study is quasi-experimental study design with pre-test and post-test. The study design is quasi-experimental research design in which the data is obtained through the practical test in the field [1].

Population that used to conduct this research is composed of Army Reserve Officer Training Unit (ROTU) Cadet aged 19 to 21 years. The sample was made up of Army Reserve Officer Training Unit (ROTU) of National Defence University of Malaysia aged 19 to 21 years. A total 212 male Army Reserve Officer Training cadet were selected as a study subjects. The purpose of this study is to develop a physical fitness index of fitness speed by using 30 meter sprint test battery for Army Reserve Officer Training Unit Cadet, National Defence University of Malaysia. The sample size needed for the creation of physical fitness index should be at least 200 people for each variable [9].

| Physical Fitness Component | Test battery |
|----------------------------|--------------|
| Speed                      | 30 meter sprint |

A pilot study was conducted to determine the reliability and validity of the instruments to be used in the study. A pilot study is a small study or trial version that has been done in preparation for a larger study or major. The main purpose of this pilot study was to determine the validity and reliability of the instrument. This pilot study is also a pre-test to try a special instrument.

This research will conduct a pilot study to test the validity and reliability of the physical fitness test battery selected for forming the standart physical fitness norm standards for officers of the Army Reserve Officers Training Unit Cadet Malaysia. This study use the test repetition to get the coefficient of reliability. A total of 50 military cadets Officer National Defence University of Malaysia who are not involved with the study respondents used as a pilot study. In this study, the objective of the pilot study is to ensure the validity and reliability of the battery of tests chosen to form indices standart physical fitness index of Malaysian armed forces.
Table 2: Method of data analysis

| Part A | Analysis type                                      | Measurement tool          |
|--------|---------------------------------------------------|---------------------------|
| A      | Background data of respondent                     | Frequency, percentage     |
| B      | Develop physical fitness index for speed          | Mean, standard deviation  |
| C      | Pre-test and post-test fitness level for speed    | Paired sample T-test      |

5. RESULT AND DISCUSSION

All raw data that will be gathered will be collected and analyzed by the scores of selected physical fitness test battery by using SPSS version 20. The raw data that be analyzed by the scores of physical fitness test batteries to get the mean and standard deviation for develop speed physical fitness index and T-test for evaluate pre test and post test speed fitness level for Army Reserve Officers Training Unit Cadet Malaysia. This study are used a battery of physical fitness test 30 meter speed for speed fitness.

Data analysis are involve several steps of storing data, not code, isolate the data, make calculations and analyse data. All the measurements of the test battery are collected and recorded. Revisions to data of fitness tests will be done to ensure that the data is complete and in accordance with established procedures. Structural of data in this study was a score and the data is a quantitative design.

This normative research will be used to develop physical fitness index through a selected test battery and statistical inference will be used to analyse the level of physical fitness according to age and gender. Paired sample T-test are used to see the difference between physical fitness in pre-test and post-test of fitness level of the subject. The achievement level of physical fitness of subjects are analysed by looking at the score data by officers Cadet Force Army Reserve Officers Training Unit Cadet Malaysia during battery tests performed.

For this study, researchers have set three levels of measurement that must be taken by the subject. Firstly is a pre measurement level, the researchers will give a briefing to a selected sample of the purpose of this measurement is carried out.

Secondly is a level measurement, for this stage the sample will be classified into three groups based on age (19 years, 20 years and 21 years) on Army Reserve Officers Training Unit Cadet Malaysia will be selected randomly. With these three groups, the researchers set out two steps to carry out the measurement. First, the researchers will deliver forms to sample score sample which is required to fill in the required information and the second one is a researchers will describe how the test is carried out on a sample, the procedure to be followed and how the measures will taken.

Thirdly is a test procedure will be done by each test battery to be measured according to the components of fitness. After the test battery conducted, researchers analyze the data taken from measurements made during the pre-test and post-test. Researchers will analyze the data to determine the fitness level of the subject.
5.1 Background data for respondent

Table 3: Descriptive data for age

| Subject | N  | Age | Frequency | Percentages | Valid percent | Cumulative percent |
|---------|----|-----|-----------|-------------|---------------|-------------------|
| Male    | 212| 19  | 94        | 44.3        | 44.3          | 44.3              |
|         |    | 20  | 75        | 35.4        | 35.4          | 79.7              |
|         |    | 21  | 43        | 20.3        | 20.3          | 100.00            |

Table 4: Descriptive data for race

| Subject | N  | Race  | Frequency | Percentages | Valid percent | Cumulative percent |
|---------|----|-------|-----------|-------------|---------------|-------------------|
| Male    | 212| Malay | 189       | 89.2        | 89.2          | 89.2              |
|         |    | Chinese | 2       | 0.9         | 0.9           | 90.1              |
|         |    | Indian  | 19      | 9.0         | 9.0           | 99.1              |
|         |    | Others  | 2       | 0.9         | 0.9           | 100.00            |

5.2 Data for develop physical fitness index for speed

Table 5: Descriptive statistic on respondent’s 30 meter sprint test score

| Descriptive statistic | Test score |
|-----------------------|------------|
| Minimum               | 4.00       |
| Maximum               | 6.73       |
| Mean                  | 4.84       |
| Standard deviation    | 0.48       |
| Skewness              | 0.881      |
| N                     | 212        |

Table 6: Physical Fitness Index for speed

| Category      | Duration (ss) | Score |
|---------------|---------------|-------|
| Excellent     | < 4.11        | 5     |
| Good          | 4.12-4.60     | 4     |
| Fair          | 4.61-5.08     | 3     |
| Poor          | 5.09-5.57     | 2     |
| Very poor     | 5.58 ≤        | 1     |

Note: ss = second

Table 6 shows the physical fitness index produced based on the 30 meter sprint test results which the mean and standard deviation is (M=4.84, SD=0.48). There are 5 categories that are classified in the grade production of a physical fitness index which are: Excellent (5), Good (4), Fair (3), Poor (2), and Very Poor (1). Grading a test in the production of physical fitness index enables different levels of potential in a particular group according to the abilities of each one of the individuals. Every category of accomplishment states the scores achieved starting from the highest score which is 5 to 1, which 1 indicates the lowest score [10]. From the table, the highest achievement...
which is Excellent with the score of 5 starts from 4.11 second and below, the next level is Good with the scores of 4 is from 4.12 to 4.60 second, the Fair level with the score of 3 is from 4.61 to 5.08 second, and the Poor level with the score of 2 is from 5.09 to 5.57 second and lastly, the Very Poor level with the score of 1 is from 5.58 second and above.

5.3 Data for fitness level of speed

Table 7: Frequency and percentages for fitness level of speed among Army Reserve Officers Training Unit Cadet National of Defence University of Malaysia

| Frequency  | Percent | Valid percent | Cumulative percent |
|------------|---------|---------------|--------------------|
| Excellent  | 13.7    | 13.7          | 13.7               |
| Good       | 39.6    | 39.6          | 53.3               |
| Fair       | 37.7    | 37.7          | 91.0               |
| Poor       | 8.0     | 8.0           | 99.1               |
| Very poor  | 0.9     | 0.9           | 100.0              |
| Total (N)  | 100.0   | 100.0         |                    |

Table 8: Paired Samples Statistic for pre-test and post-test fitness speed level

| Mean       | N     | Std. Deviation | Std. Error Mean |
|------------|-------|----------------|-----------------|
| Pair 1     |       |                |                 |
| Pre-test fitness speed | 4.8497 | 212 | .48424 | .03326 |
| Post-test fitness speed | 4.5942 | 212 | .39537 | .02715 |

Table 9: Paired samples test for pre-test and post-test fitness speed level

| Paired Differences | t    | df  | Sig.(2-tailed) |
|--------------------|------|-----|----------------|
| Mean               | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | Lower | Upper |                |
| Pre-test fitness speed – Post-test fitness speed | .25552 | .50916 | .03497 | .18659 | .32445 | 7.307 | 211 | .000 |

Paired sample T-test analysis is used to compared mean score pre-test fitness speed and post-test fitness speed for Army Reserve Officers Training Unit Cadet National of Defence University of Malaysia. The findings showed mean score post-test fitness speed (M=4.59, SD=0.39) is more speed and it's significant compared to mean score pre-test (M=4.84, SD=0.484), t (211)=7.30, p ≤ 0.05

6. CONCLUSIONS

Physical fitness is generally include physical, mental, emotional, intellectual, spiritual and social aspects. Physical fitness is a comprehensive concept and it allows individuals to live better, energized and confident. Therefore, in this more advanced age, physical fitness is very important for a person's health. Deterioration of the physical condition of the person will give a real impact on individual social mental strength. It also meant, in other words, less active physically can affect mental function and ability to react with other things.

The ability to identify the performance of physical fitness can benefit the individual to choose the type of sport and career interest. Through the results of the test and measurement, allowing coaches and sports science practitioners use physical fitness performance information as a basis for placing groups of individuals based on actual physical fitness level during a training session in
progress. Knowledge of the performance of individual physical fitness can help coaches and sports science practitioners to design strategies and methods that are effective in delivering sports training sessions and games.

This study will be done is to establish physical fitness index against the Army Reserve Officer Training Unit Cadet Malaysia accordance with demographic factors in Malaysia. In fact, this study also, is to help army physical trainer assess the level of physical fitness among Army Reserve Officer Training Unit Cadets Malaysia especially in the National Defence Universities of Malaysia. Even with the establishment of a standard physical fitness index, it can improve the quality of physical fitness level among army officer, especially the Cadet Officer of Army Reserve Officer Training Unit. Not only that, the army physical trainer can plan and identify the types of training according to Cadets officer of Army Reserve Officer Training Unit.

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