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A study on relationship between two different methods of endurance test

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Abstract

Now a day's different test are developed to measure cardio respiratory fitness, among them Beep Test, Cooper test, Harvard step test, Queen's college step test, Astrand-Rhyming Cycle Ergometer Test are very common. The researcher want to examine the cardio-respiratory efficiency of the physical education professional students and the relationship between queen's college step test score and 12min.run and walk test as a measurement of Cardio-respiratory fitness.

The researcher collect the data of 30 male physical education professional students from PGGIPE, Banipur, and age range from 21-26 years. They perform Queen's college step test and 12 min. run and walk test with an identical condition in same time and same place for collecting data. The correlational result of this study is positive, which means ($r = 0.36$) the subject secure high score in step test was also secure high marks in 12min run and walk test.

Keywords: Cardiorespiratory fitness, VO₂ max, Endurance run

1. Introduction

Physical fitness is a state of well-being with low risk of premature health problems and energy to participate in a variety of physical activities (Howley & Franks, 1997). While either is a good definition, most experts agree that physical fitness is both multidimensional and hierarchical (Corbin, 1991). Bouchard, Shephard, and Stephens (1994) presented a comprehensive model for physical fitness that includes morphological fitness, bone strength, muscular fitness, flexibility, motor fitness, cardiovascular fitness, and metabolic fitness.

Health-related physical fitness consists of those components of physical fitness that have a relationship with good health. The components are commonly defined as body composition, cardiovascular fitness, flexibility, muscular endurance, and strength. (Dr. Charles B. Corbin and Dr. B. Don Frank, 2000)^[2].

Cardiovascular endurance is the most important aspect of fitness because it serves as a barometer for the overall health of our heart. Cardio-respiratory fitness is a health-related component of physical fitness that relates to ability of the circulatory and respiratory systems to supply oxygen during sustained physical activity.

More active or fit individuals tend to develop less coronary heart disease (CHD) than their sedentary counterparts. If CHD develops in active or fit individuals, it occurs at a later age and tends to be less severe. (Jonathan Myers, 2003)^[3].

Few studies have investigated the association between maximal cardiorespiratory capacity (fitness) and the clustered cardiovascular disease (CVD) risk in children and youth from culturally diverse countries. Low cardiorespiratory fitness is strongly associated with the clustering of CVD risk factors in children independent of country, age and sex. (Anderssen SA1, 2007)^[1].

Cardiovascular fitness can be tested in a variety of ways. There are many types of standardized tests developed by professionals to test cardiovascular endurance. Some of these tests require specialized equipment in order to be performed properly and accurately. This tests are categorised in three way, one is maximal test, submaximal test and non-performance test and this are also subdivided.

So, intention of the researcher is to find out there any relationship exist between two different endurance test method.

2. Method and materials

2.1 Selection of Subjects: Thirty physical education professional students, age ranging from 21 to 26 years were selected as subjects from PGGIPE, Banipur, West Bengal. In this study only queen's college step test and 12min. run and walk test were administered for the collection of data in their institutional grounds with identical condition in same time.

2.2 Criterion Measure

a. Queen's College Step Test: The queen's college step test was performed on a stool of 16.25 inches (or 41.3 cm) height for a total duration of 3 min at the rate of 24 cadence / min which was set by a metronome. After completion of the exercise, the subject was asked to remain standing and the carotid pulse rate was measured from 5 to 20 seconds of the recovery period.

This 15 second pulse rate was converted into beats/min and the following equation was used to predict the maximum oxygen uptake capacity.

Predictive $\text{VO}_{2\text{max}}$ (ml/kg/min)= $65.81 - (0.1847 \times \text{pulse rate in beats per min})$

b. 12min Run and Walk: The 12 min. Run and Walk Test was administered on an outdoor 400-meter athletic track. Markers are set at after every 25 mt. intervals around the track to aid in measuring the completed distance. Students were run for 12 min. with comfortable peace in groups of 10 students and the distance covered by the subject in 12 min. is recorded as score.

2.3 Statistical Procedure: For the purpose of understanding the relationship between queen's college step test and 12 min. run and walk, Pearson coefficient of correlation statistical technique was used (Excel-2013). The level of significance was set at $p<0.05$ level.

3. Results & Discussion

The correlation coefficient computed between Queen's college step test with 12 min run and walk test is presented in Table 1.

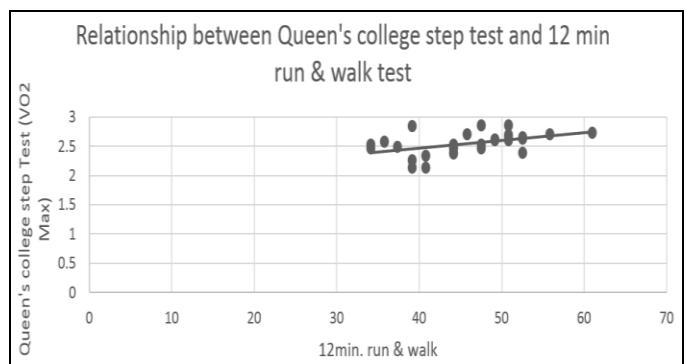
Table I: Relationship of Queen's college step test with 12 min. run & walk test (N=30)

Queen's college step test(ml/kg/min)	12 min. run & walk test (k.m)		Correlation Coefficient
	Mean	Sd	
45.64	6.45	2.54	0.47 *

*Statistically significant at 0.05 level. df (28) r = 0.35(Table value)

Table no. 1 indicates the descriptive statistics i.e. Mean, SD and correlation coefficient (r) of selected variables. The Mean and SD of selected variables are i.e. Queen's college step test (45.64 ± 6.45) and 12 Min run and walk test (2.54 ± 0.18).

It clearly indicate that there exists a positive significance relationship between Queen's college step test and 12 min. run and walk test.



From the outcomes of the above findings, it may be interpreted that students who secure good marks in queen's college step test was also score good marks in 12 minute run and walk test.

4. Conclusion

Within the limitation of the present study and on the basis of the findings following conclusions have been drawn:

- Significance relationship was observed between Queen's college step test and 12min run and walk test.

There is significant relationship between Queen's college step test and 12min run and walk test therefore, Queen's college step test would be a good alternative in situation where running track is not available or when there is little room for testing.

5. References

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