

Normative Study on Motor Fitness Test for University Boys

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Abstract

The purpose of the study was to construct a motor fitness test for identification and selection of talent at university level. Various test items were selected in the initial phase which was finally reduced to a four test item battery after scientific evaluation of the items selected. The study involved 258 college boys between the age group of 17-25years belonging to various colleges of Delhi NCR, India. Percentile norms were constructed for the evaluation of motor fitness level, which could be used as standard criteria for identification and selection of potential talent at the university level.

Keywords: Motor fitness, physical fitness, motor abilities, university.

1. Introduction

University boys can be an asset for working towards excellence if identification, selection and nurturing of psychomotor abilities required for selection and nurturing of talent are done through a systematic and scientific process. Such a process requires standard measurement tools in the form of motor fitness test battery instrument which can measure the aspects of youth which are desirable traits and qualities to pursuit towards excellence. Toward this endeavor, general fitness test to assess the ability to carry out daily task without fatigue (Davis 2000) and to measure capability to meet successfully the present and potential challenges of life (Lamb 1984) are not valid for meeting the particular objective. Instead motor fitness test batteries are required which could include elements that involve more abilities than those of basic fitness components of cardio endurance, muscular endurance, strength, flexibility (Johnson & Nelson, 1974) and emphasis on assessment of motor qualities that enhance performance (Bucher & Wuest, 1987).

2. Methodology

258 university boys ranging between the age group of 18-25 years were consented for the study from various colleges of Delhi NCR, India who had participated in one or more inter college, state, national sports competitions. Selection of test components involved a systematic and scientific approach, as the process was divided into various phases. Initial phase included identification of five components and nine test items basis on:

- (a) The items ability to measure the motor fitness component based on previous research studies.
- (b) The items administrative feasibility
- (c) Established validity and reliability of the test items.

Second phase was of expert opinion for content validity, which involved the opinions of six experts who were having research experience in physical education and sports sciences, actively involved into training and coaching at university level. The process led to merger of four items namely coordinative ability, coordination, balance, agility into one item named as coordination ability. Strength and power were clubbed into one item named as explosive strength. The process led to identification of five test items from the existing nine. No test for flexibility was selected as it was considered as a bi-product of fitness (Johnson & Nelson, 1974), hence not considered to be measured directly. Third phase included focus group discussion involving five experts. All items were discussed and debated logically. The discussion resulted in retaining and sequencing of the test items as agility, speed, strength, endurance and explosive strength to be used as part of motor fitness test battery.

The following items were considered as measures of the motor fitness components selected for inclusion in the study.

Table No. 1 Motor fitness test battery and measuring test items

S.N.	Test Item and ability measured	Ability measured	Reference test Battery
1	Illinois Agility test	Agility and speed test	Illinois Agility test
2	Muscular strength test	Push-ups	Marine Corp Physical Fitness Program
3	Explosive strength	Standing broad jump	AAHPER
4	Cardio-vascular endurance	12 min. run/walk	Cooper test

Final phase was of scientific authenticity through reliability and objectivity. Test re-test method was used on 30 subjects for reliability and inter-tester consistency was performed on 30 subjects.

Table No. 2 Reliability and Inter Tester Reliability Scores

S. No.	Reliability (Test-Retest)	Inter tester Reliability
Illinois agility test	.815	.803
Push-up	.982	.896
Standing Broad Jump	.865	.618
Cooper 12 min. run/walk	.852	.165

Norms Development

Table No. 3 Norms for Motor Fitness Test Battery in Percentile

Percentile	12 min. run-walk	Standing broad jump	Illinois test	Push-ups	Composite Score
100	<2748	<2.42	>16.57	<41	10
90	2748-2482	2.41-2.34	17.32 - 16.58	35 - 40	9
80	2482-2402	2.26 - 2.33	17.65 - 17.33	31 - 34	8
70	2402-2213	2.23 - 2.25	17.86 - 17.66	27 - 30	7
60	2213-2061	2.13 - 2.22	18.23 - 17.87	25 - 26	6
50	2061-1958	2.09 - 2.12	18.58 - 18.24	21 - 24	5
40	1958-1816	2.01 - 2.08	18.89 - 18.59	16 - 20	4
30	1816-1639	1.96 – 2	19.38 - 18.9	15 - 18	3
20	1639-1546	1.82 - 1.95	19.73 - 19.39	12 - 14	2
10	1546-1115	1.49 – 1.81	20.27- 19.74	4 - 11	1

3. Out Come

All four test items of the motor fitness battery are converted into percentile and class is formed using the interval between every tenth percentiles starting from 0 till 100th percentile. Hence, total ten tables were formulated. The percentile on top of the table was 100th percentile and 10 points were assigned to the subjects scoring between 90th – 100th percentiles.

4. Conclusions

In India, the institutional pattern, student behavior, food habits, lifestyle etc together contribute in deciding the physical fitness standard of university boys. Motor fitness standard existing in Indian students may differ from the existing standards due to change in geographic location (Barrow & McGee, 1979) to a very large extent, hence norms developed and followed within different geographic location would not support in making inferences on the Indian population. Considering these issues, the construction of motor physical fitness test for university boys of Delhi NCR, India with Indian standards and the setting up of norms in grading the motor fitness level at university will help in making valid judgments regarding the motor fitness level of the students at university and could create a sound foundation towards effective evaluation system of youth who at present constitute a major percentage of the total population in India.

References

- Barrow, H., & McGee. (1979). *A practical approach to measurement in physical education*. London: Henry Kimpton.
- Bucher, C., & Wuest, D. (1987). *Foundation of physical education and sport*, (vol. 10th). St.Louis: Mosby College Publishing.
- Clarke, H. Harrison. (1976). *Application of measurement of physical education and sport* (10th ed). St. Louis: Mosby College Publishing.
- Davis. (2000). *Physical Education and the Study of Sport*. UK: Harcourt Publishers Ltd.
- Johnson, B. L., & Nelson, J. K. (1974). *Practical measurements for evaluation in physical education*. Minnesota: Burgess publishing company.
- Lamb. (1984). *Physiology of Exercise: Responses & Adaptations* (2da. ed., pp. 1-9). New York: Macmillan Publishing Company.

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