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A Study of Constructing Norms and distribution of grades for the selected physical fitness test items of Kayaking University players

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Abstract

The purpose of this study was to construct Norms of Physical Fitness Test Items of Kayaking Players. To obtain data, the investigators had selected forty eight (N=48), male Inter-University level Kayaking Players of Guru Nanak Dev University, Amritsar, Panjab University, Chandigarh Punjabi University, Patiala and Kurukshetra University, Haryana between the age group of 18-28. The Muscular Strength was measured by Handgrip Strength Test, Muscular Power was measured by Vertical Jump Test, Muscular Endurance was measured by Pull-Up Test, Running Speed was measured by 20-Meter Dash, Running Agility was measured by Illinois Agility Test, Jumping Ability was measured by Standing Long Jump Test, Throwing Ability was measured by Overhead Medicine Ball Throw Test, Flexibility was measured by Sit and Reach Flexibility Test and Balance was measured by Stork Balance Stand Test. The data, which was collected by administering tests, was statistically treated to develop for all the test items. In order to construct the norms, Percentile Scale was used. Further, the scores were classified into five grades i.e., very good, good, average, poor and very poor.

Keywords: muscular strength, muscular power, muscular endurance, running speed, running agility, jumping ability, throwing ability, flexibility, balance

Introduction

A physical fitness or condition is the total amount of five motor activities namely, speed, strength, endurance, flexibility and Coordinative abilities. These five motor skills and their complex forms are the fundamental stipulations for human motor action. Thus the sports performance altogether sports depends to an excellent extent on these skills improvement and maintenance of physical fitness or condition is most significant^[1]. All sport have their specific anthropometric and physical characteristics^[2,3]. Study of their characters become popular now a days to determine the sportsperson profile^[2,4,5]. In male kayaking and canoeing, events of optimum performance are appeared to be related with certain physical and morphological qualities^[6]. Studies indications successful paddlers with heavy and taller somatotypes, superior upper body girth and lower skinfolds worth^[1,5,3]. Kayaking and canoeing both are technical sports. Kayaking is more physically difficult sport among all endurance sports^[7]. There are different kinds of kayaking races, like; single seat, double seated, four seat kayak^[8]. The kayak boat is a covered-deck boat consisting a cockpit where the competitor sits by facing forward. A double bladed paddles is used in kayaking^[9]. The somatic type of a competitor is determined by specific physiological requirements. This helps the coaches for the selection procedure of kayaks. Anthropometric characteristics along with other factors like; physical fitness, psychological and physiological factors, specific skills has a very significant role in successful performance of sport^[10]. Various studies identified the relation of physique and performance^[11-15]. Elite level athletes from different sports have different body characteristics. Kinanthropometry study describes analysis of human body size, shape, proportion, composition, and gross motor function. These factors help to understand the growth, exercise performance, of sportsman.

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Table 1: Details for all study subjects of Guru Nanak Dev University, Amritsar ($n_1=12$), Panjab University, Chandigarh ($n_2=12$), Punjabi University, Patiala ($n_3=12$) and Kurukshetra University, Haryana ($n_4=12$).

Sample Size (n=48)		
S. No.	University	No. of Subjects
1	Guru Nanak Dev University, Amritsar	($n_1=12$)
2	Panjab University, Chandigarh	($n_2=12$)
3	Punjabi University, Patiala	($n_3=12$)
4	Kurukshetra University, Haryana	($n_4=12$)

2.2 Variables

The following Physical Fitness Test Items were selected for the present study:

- Muscular Strength;
- Muscular Power;
- Muscular Endurance;
- Running Speed;
- Running Agility;
- Jumping Ability;
- Throwing Ability;
- Flexibility;
- Balance.

2.3 Procedure

The scores of each Physical Fitness Test Items were recorded by the researcher on the basis of performance in tests. The subjects were given adequate demonstration, practice trial and

required instructions for all tests.

Table 2: Details for all Physical Fitness Test Items and its tests applied

S. No.	Physical Fitness Test Items	Tests
1.	Muscular Strength	Handgrip Strength Test
2.	Muscular Power	Vertical Jump Test
3.	Muscular Endurance	Pull-Up Test
4.	Running Speed	20 Meter Dash
5.	Running Agility	Illinois Agility Test
6.	Jumping Ability	Standing Long Jump Test
7.	Throwing Ability	Overhead Medicine Ball Throw
8.	Flexibility	Sit and Reach Flexibility Test
9.	Balance	Stork Balance Stand Test

3. Statistical Technique

The data, which was collected by administering tests, was statistically treated to develop for all the test items. In order to construct the norms, Percentile Scale was used. Further, the scores were classified into five grades i.e., very good, good, average, poor and very poor.

4. Research Findings

For each of the chosen variable, the result pertaining to Descriptive Statistics (Mean & Standard Deviation) and Percentile Plot (Hi & Low) of selected physical fitness test items of Kayak players are presented in the following Tables-2:

Table 2: Descriptive Statistics (Mean & Standard Deviation) and Percentile Plot (Hi & Low) of selected Physical Fitness Test Items of Kayak Players.

S. No.	Test Items	Mean \pm Standard Deviation		Hi	Low
		Mean	SD		
1.	Muscular Strength	Mean	33.65	55.6	12.6
		SD	11.31		
2.	Muscular Power	Mean	44.04	65	30
		SD	11.30		
3.	Muscular Endurance	Mean	7.66	15	2
		SD	4.26		
4.	Running Speed	Mean	3.81	4.2	3.3
		SD	3.08		
5.	Running Agility	Mean	18.61	21.9	13.05
		SD	3.01		
6.	Jumping Ability	Mean	2.01	2.44	1.6
		SD	2.11		
7.	Throwing Ability	Mean	7.08	14	3
		SD	3.25		
8.	Flexibility	Mean	13.37	20	6
		SD	4.18		
9.	Balance	Mean	19.35	29	13
		SD	4.67		

Table-2 shows that in Muscular Strength, the mean score was 33.65 and standard deviation score was 11.31. In Muscular Power, the mean score was 44.04 and standard deviation score was 11.30. In Muscular Endurance, the mean score was 7.66 and standard deviation score was 4.26. In Running Speed, the mean score was 3.81 and standard deviation score was 3.08. In Running Agility, the mean score was 18.61 and standard deviation was 3.01. In Jumping Ability, the mean

score was 2.01 and standard deviation was 2.11. In Throwing Ability, the mean score was 7.08 and standard deviation score was 3.25. In Flexibility, the mean score was 13.37 and standard deviation score was 4.18. In Balance, the mean score was 19.35 and standard deviation score was 4.67 of Kayaking Players. The graphical representation of Descriptive Statistics (Mean & Standard Deviation) of selected physical fitness test items is exhibited in Figure-1:

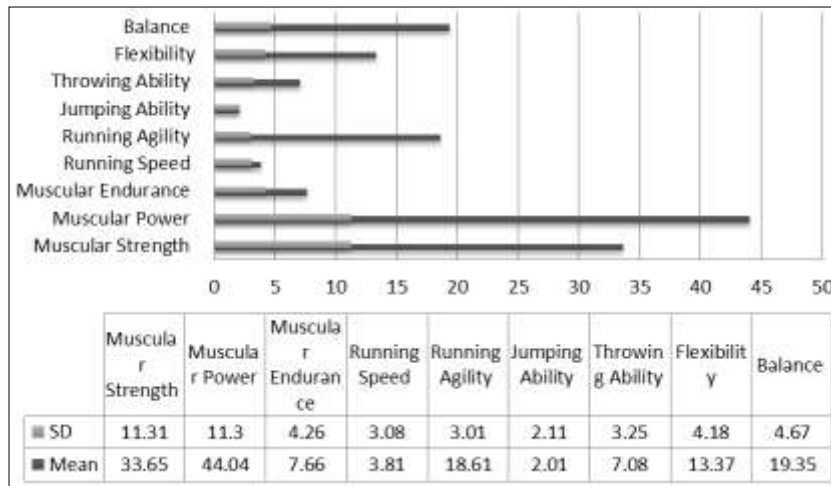


Fig 1: Descriptive Statistics (Mean & Standard Deviation) and Percentile Plot (Hi & Low) of Physical Fitness Test Items of Kayaking University Players (N=48).

4.1 Grades under Normal Distribution

For each of selected Physical Fitness Test Items of Inter-University level kayaking players (N=48), the five types of

classification/grades i.e., Very Poor, Poor, Average, Good & Very Good have also been prepared under Normal Distribution. Grades have been presented in Table-3.

Table 3: Descriptive Statistics (Mean & Standard Deviation) and Percentile Plot (Hi & Low) of Physical Fitness Test Items of Kayaking University, Players (N=48).

Test Items	Very Poor	Poor	Average	Good	Very Good
Muscular Strength	Less than (<) 11.03	11.03-22.34	22.34-44.96	44.96-56.27	Greater than (>) 56.27
Muscular Power	Less than (<) 21.44	21.44-32.74	32.74-55.34	55.34-66.64	Greater than (>) 66.64
Muscular Endurance	Less than (<) 0.86	0.86-3.4	3.4-11.92	11.92-16.18	Greater than (>) 16.18
Running Speed	Less than (<) 9.97	9.97-6.89	6.89-0.73	0.73- -2.35	Greater than (>) -2.35
Running Agility	Less than (<) 24.63	24.63-21.62	21.62-15.6	15.6-12.59	Greater than (>) 12.59
Jumping Ability	Less than (<) -2.21	-2.21- -0.1	-0.1-4.12	4.12-6.23	Greater than (>) 6.23
Throwing Ability	Less than (<) 0.58	0.58-3.83	3.83-10.33	10.33-13.58	Greater than (>) 13.58
Flexibility	Less than (<) 5.01	5.01-9.19	9.19-17.55	17.55-21.73	Greater than (>) 21.73
Balance	Less than (<) 10.01	10.01-14.68	14.68-24.02	24.02-28.69	Greater than (>) 28.69

The values listed in Table-3 gives a guide to expected scores of Kayak players for the selected Physical Fitness Test Item. In Muscular Strength, the scores below 11.03 are considered very poor, from about 11.03-22.34 is considered poor, 22.34-44.96 is considered average, 44.96-56.27 is considered good and the scores above 56.27 are considered very good. In Muscular Power, the scores below 21.44 is considered very poor, from about 21.44-32.74 is considered poor, 32.74-55.34 is considered average, 55.34-66.64 is considered good and the scores above 66.64 are considered very good. In Muscular Endurance, the scores below 0.86 are considered very poor, from about 0.86-3.4 is considered poor, 3.4-11.92 is considered average, 11.92-16.18 is considered good and the scores above 16.18 are considered very good. In Running Speed, the scores above 9.97 are considered very poor, from about 9.97-6.89 is considered poor 6.89-0.73 is considered average, 0.73- -2.35 is considered good and the scores below -2.35 are considered very good. In Running Agility, the scores above 24.63 are considered very poor, from about 24.63-21.62 is considered poor, 21.62-15.6 is considered average, 15.6-12.59 is considered good and the scores below 12.59 are

considered very good. In Jumping Ability, the scores below -2.21 are considered very poor, from about -2.21- -0.1 is considered poor, -0.1-4.12 is considered average, 4.12-6.23 is considered good and the scores above 6.23 are considered very good. In Throwing Ability, the scores below 0.58 are considered very poor, from about 0.58-3.83 is considered poor, 3.83-10.33 are considered average, 10.33-13.58 is considered good and the scores above 13.58 are considered very good. In Flexibility, the scores below 5.01 are considered very poor, from about 5.01-9.19 is considered poor, 9.19-17.55 is considered average, 17.55-21.73 is considered good and the scores above 21.73 are considered very good. In Balance, the scores below 10.01 are considered very poor, from about 10.01-14.68 is considered poor, 14.68-24.02 is considered average, 24.02-28.69 is considered good and the scores above 28.69 are considered very good. The Normal distribution of selected Physical Fitness Test Items (i.e., a. Muscular Strength, b. Muscular Power, c. Muscular Endurance, d. Running Speed, e. Running Agility, f. Jumping Ability, g. Throwing Ability, h. Flexibility & i. Balance) for Kayak players are exhibited in Figure-2:

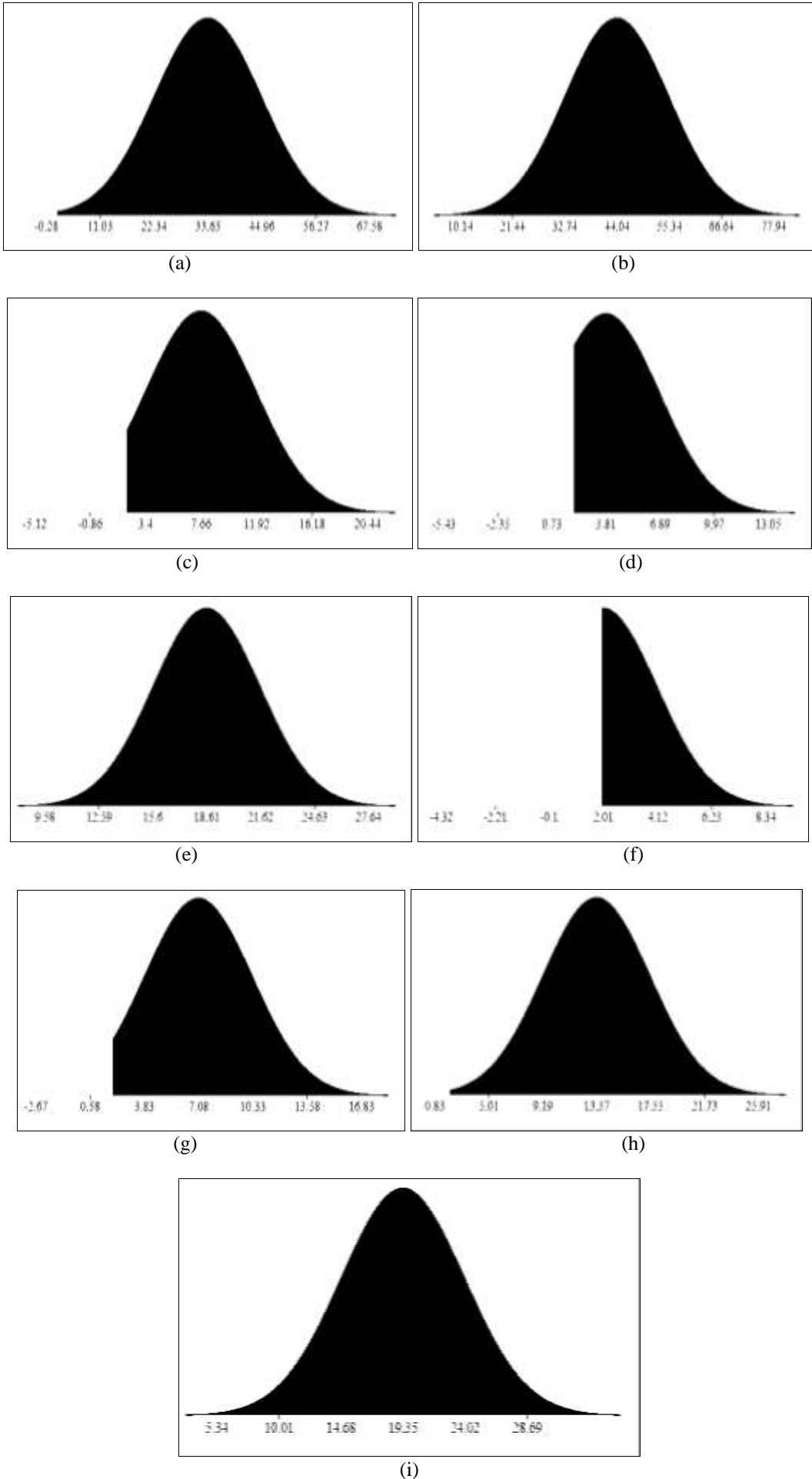


Fig:2 Normal distribution of Physical Fitness test items (i.e., a Muscular Strength, b. Muscular Power, c. Muscular Endurance, d. Running Speed, e. Running Agility, f. Jumping Ability, g. Throwing Ability. Flexibility, & i Balance.) Items of Kayaking University, Players (N=48).

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Recommendations

Physical Education teachers, coaches and athletic trainers may utilize the findings of the present study by preparing or modifying the existing training schedules for Kayaking Players. Normative data regarding Physical Fitness Test Items will help the coaches and trainers to regulate the training programme for elite athletes.

Furthermore, future research could also explore the other variable namely, physical, physiological, anthropometrical and biomedical in addition to the variables chosen in the present study.

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