



ISSN: 2456-0057
IJPNPE 2018; 3(1): 2015-2018
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www.journalofsports.com
Received: 02-11-2017
Accepted: 03-12-2017

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Norms construction for physical fitness test items of handball players

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Abstract

The present study was conducted to construct norms for selected physical fitness test items of handball players. For the purpose of the present study, forty eight (N=48), male handball players of Punjabi University, Patiala between the age group of 18-25 years were selected. 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. In Muscular Strength, the mean score was 49.854 and standard deviation score was 4.247. In Muscular Power, the mean score was 47.708 and standard deviation score was 3.409. In Muscular Endurance, the mean score was 6.7708 and standard deviation score was 1.475. In Running Speed, the mean score was 4.6854 and standard deviation score was 0.292. In Running Agility, the mean score was 17.612 and standard deviation score was 0.781. In Jumping Ability, the mean score was 2.8093 and standard deviation score was 0.567. In Throwing Ability, the mean score was 13.625 and standard deviation score was 0.970. In Flexibility, the mean score was 4.6666 and standard deviation score was 0.897. In Balance, the mean score was 46.458 and standard deviation score was 1.428 of Punjabi University, Patiala

Keywords: Norms, Muscular Strength, Muscular Power, Muscular Endurance, Running Speed, Running Agility, Jumping Ability, Throwing Ability, Flexibility and Balance.

Introduction

Handball Federation of India (HFI) manages handball in India. Handball is a popular sport in India, played at local level in India but hasn't made it big in domestic level. India has yet to make an impact at international level and the World Cup [1]. The introduction of women's handball to the Games took place in 1976 in Montreal. The Soviet Union won this first women's Olympic competition, taking home two gold medals after the 11-team men's competition and the six-team women [2, 3 & 4]. There are more than fifteen battery tests for the assessment of the physical fitness of children and adolescents and several key components of physical fitness currently in use worldwide [5]. Increasing levels of physical activity in children and adolescents improve physical fitness. A high level of fitness in childhood has a positive effect on health [6] and has a prolonged effect later in life [7 & 8].

Selection of Subjects

For the purpose of the present study, forty eight (N=48), male college level handball players of Punjabi University, Patiala between the age group of 18-25 years were selected as subjects.

Selection of Variables

The research investigator reviewed all the available scientific literature books, journals, periodicals, magazines and research papers pertaining to the study. Taking into consideration of the importance of variables and the relevance of the study the following variables were selected for this investigation.

Physical Fitness Test Items

- Muscular Strength
- Muscular Power
- Muscular Endurance
- Running Speed

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- e. Running Agility
- f. Jumping Ability
- g. Throwing Ability
- h. Flexibility
- i. Balance

Procedure

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.

Design of the Study

This is an exploratory study that has employed method of data collection and analysis quantitatively. The purposive sampling technique was used to attain the objectives of the study.

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.

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 handball players are presented in the following tables:

Table 1: Descriptive Statistics (Mean & Standard Deviation) and Percentile Plot (Hi & Low) of selected Physical Fitness Test Items of Punjabi University, Patiala (N=48).

Sr. No.	Test Items	Mean ± Standard Deviation		Hi	Low
		Mean	SD		
1.	Muscular Strength	49.854	4.247	58	43
		47.708	3.409		
2.	Muscular Power	6.7708	1.475	9	4
		4.6854	0.292		
3.	Muscular Endurance	17.612	0.781	19.5	16.3
		2.8093	0.567		
4.	Running Speed	13.625	0.970	15	11
		4.6666	0.897		
5.	Running Agility	46.458	1.428	49	43
		4.6666	0.897		
6.	Jumping Ability	46.458	1.428	49	43
		4.6666	0.897		
7.	Throwing Ability	46.458	1.428	49	43
		4.6666	0.897		
8.	Flexibility	46.458	1.428	49	43
		4.6666	0.897		
9.	Balance	46.458	1.428	49	43
		4.6666	0.897		

Table-1 shows that in Muscular Strength, the mean score was 49.854 and standard deviation score was 4.247. In Muscular Power, the mean score was 47.708 and standard deviation score was 3.409. In Muscular Endurance, the mean score was 6.7708 and standard deviation score was 1.475. In Running Speed, the mean score was 4.6854 and standard deviation score was 0.292. In Running Agility, the mean score was 17.612 and standard deviation was 0.781. In Jumping Ability, the mean score was 2.8093 and standard deviation was 0.567. In Throwing Ability, the mean score was 13.625 and standard deviation score was 0.970. In Flexibility, the mean score was 4.6666 and standard deviation score was 0.897. In Balance, the mean score was 46.458 and standard deviation score was 1.428 of Punjabi University, Patiala

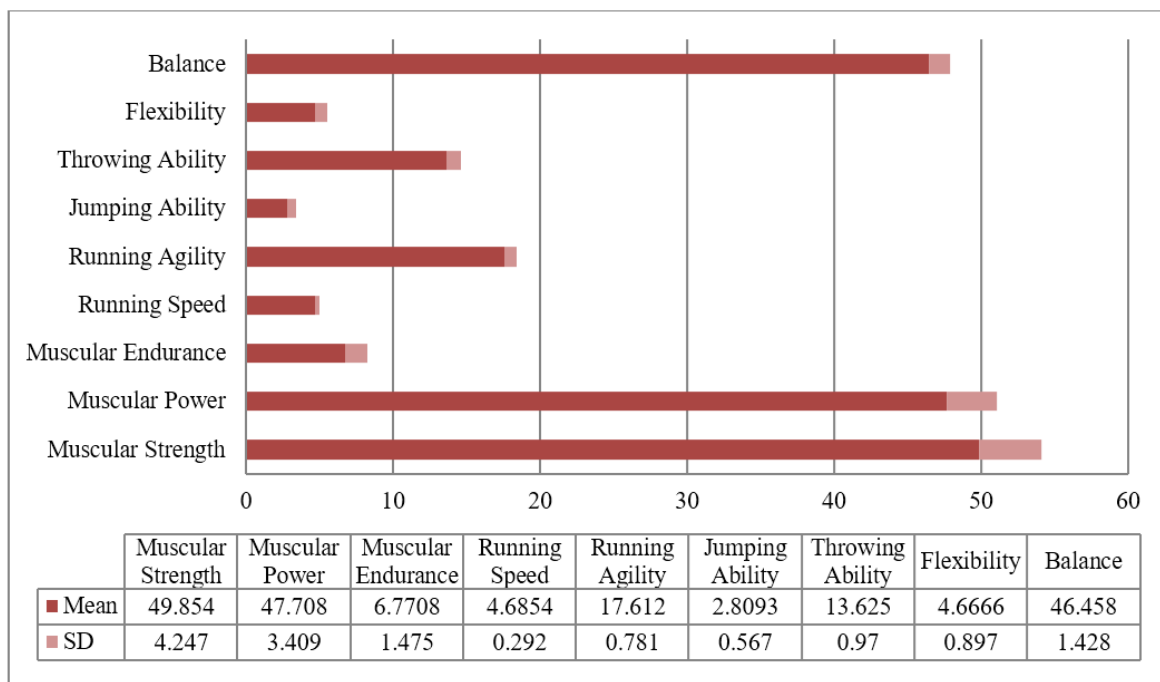


Fig 1: Descriptive Statistics (Mean & Standard Deviation) and Percentile Plot (Hi & Low) of selected Physical Fitness Test Items of Punjabi University, Handball players.

Table 2: Grading for the selected Physical Fitness Test Items of Punjabi University, Patiala (N=48) handball players.

Test Items	Very Poor	Poor	Average	Good	Very Good
Muscular Strength	Less than (<) 41.36	41.36-45.607	45.607-54.101	54.101-58.348	Greater than (>) 58.348
Muscular Power	Less than (<) 40.89	40.89-44.299	44.299-51.117	51.117-54.526	Greater than (>) 54.526
Muscular Endurance	Less than (<) 3.821	3.821-5.296	5.296-8.246	8.246-9.721	Greater than (>) 9.721
Running Speed	Greater than (>)5.269	5.269-4.977	4.977-4.393	4.393-4.101	Less than (<) 4.101
Running Agility	Greater than (>)19.174	19.174-18.393	18.393-16.831	16.831-16.05	Less than (<) 16.05
Jumping Ability	Less than (<) 1.675	1.675-2.242	2.242-3.376	3.376-3.943	Greater than (>)3.943
Throwing Ability	Less than (<) 11.685	11.685-12.655	12.655-14.595	14.595-15.565	Greater than (>)15.565
Flexibility	Less than (<) 2.873	2.873-3.77	3.77-4.564	4.564-6.461	Greater than (>)6.461
Balance	Less than (<) 43.602	43.602-45.03	45.03-47.886	47.886-49.314	Greater than (>)49.314

The values listed in Table-2 gives a guide to expected scores of Punjabi University, Patiala for the selected Physical Fitness Test Item. In Muscular Strength, the scores below 41.36 are considered very poor, from about 41.36-45.607 is considered poor, 45.607-54.101 is considered average, 54.101- 58.348 is considered good and the scores above 58.348 are considered very good. In Muscular Power, the scores below 40.89 are considered very poor, from about 40.89-44.299 is considered poor, 44.299-51.117 is considered average, 51.117-54.526 is considered good and the scores above 54.526 are considered very good. In Muscular Endurance, the scores below 3.821 are considered very poor, from about 3.821-5.296 is considered poor, 5.296-8.246 is considered average, 8.246-9.721 is considered good and the scores above 9.721 are considered very good. In Running Speed, the scores above 5.269 are considered very poor, from about 5.269-4.977 is considered poor, 4.977-4.393 is considered average, 4.393-4.101 is considered good and the scores below 4.101 are considered very good. In Running Agility, the scores above 19.174 are considered very poor, from about 19.174-18.393 is considered poor, 18.393-16.831 is considered average, 16.831-16.05 is considered good and the scores below 16.05 are considered very good. In Jumping Ability, the scores below 1.675 are considered very poor, from about 1.675-2.242 is considered poor, 2.242-3.376 is considered average, 3.376-3.943 is considered good and the scores above 3.943 are considered very good. In Throwing Ability, the scores below 11.685 are considered very poor, from about 11.685-12.655 is considered poor, 12.655-14.595 is considered average, 14.595-15.565 is considered good and the scores above 15.565 are considered very good. In Flexibility, the scores below 2.873 are considered very poor, from about 2.873-3.77 is considered poor, 3.77-4.564 is considered average, 4.564-6.461 is considered good and the scores above 6.461 are considered very good. In Balance, the scores below 43.602 are considered very poor, from about 43.602-45.03 is considered poor, 45.03-47.886 is considered average, 47.886-49.314 is considered good and the scores above 49.314 are considered very good.

Conclusions

1. To conclude, it is evident that in Muscular Strength, the scores below 41.36 are considered very poor, from about 41.36-45.607 is considered poor, 45.607-54.101 is considered average, 54.101- 58.348 is considered good and the scores above 58.348 are considered very good.
2. To conclude, it is evident that in Muscular Power, the scores below 40.89 are considered very poor, from about 40.89-44.299 is considered poor, 44.299-51.117 is considered average, 51.117-54.526 is considered good and the scores above 54.526 are considered very good.
3. To conclude, it is evident that in Muscular Endurance, the scores below 3.821 are considered very poor, from about

3.821-5.296 is considered poor, 5.296-8.246 is considered average, 8.246-9.721 is considered good and the scores above 9.721 are considered very good.

4. To conclude, it is evident that in Running Speed, the scores above 5.269 are considered very poor, from about 5.269-4.977 is considered poor, 4.977-4.393 is considered average, 4.393-4.101 is considered good and the scores below 4.101 are considered very good.
5. To conclude, it is evident that in Running Agility, the scores above 19.174 are considered very poor, from about 19.174-18.393 is considered poor, 18.393-16.831 is considered average, 16.831-16.05 is considered good and the scores below 16.05 are considered very good.
6. To conclude, it is evident that in Jumping Ability, the scores below 1.675 are considered very poor, from about 1.675-2.242 is considered poor, 2.242-3.376 is considered average, 3.376-3.943 is considered good and the scores above 3.943 are considered very good.
7. To conclude, it is evident that in Throwing Ability, the scores below 11.685 are considered very poor, from about 11.685-12.655 is considered poor, 12.655-14.595 is considered average, 14.595-15.565 is considered good and the scores above 15.565 are considered very good.
8. To conclude, it is evident that in Flexibility, the scores below 2.873 are considered very poor, from about 2.873-3.77 is considered poor, 3.77-4.564 is considered average, 4.564-6.461 is considered good and the scores above 6.461 are considered very good.
9. To conclude, it is evident that in Balance, the scores below 43.602 are considered very poor, from about 43.602-45.03 is considered poor, 45.03-47.886 is considered average, 47.886-49.314 is considered good and the scores above 49.314 are considered very good.

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