CONSTRUCTION OF ATHLETICS PERFORMANCE NORMS FOR PHYSICAL EDUCATION STUDENTS

(**Received on**: 12 June 2013, **Reviewed on**: 13 August 2013 and **Accepted on**: 29 September 2013)

Dr. Gurpreet Singh, Assistant Prof.,
Lovely Professional Studies, Jalandhar, Punjab
Dr. (Prof.) Kanwaljeet Singh, Director (Sports),
Guru Nanak Dev University, Amritsar, Punjab

Abstract
The purpose of the study was to construct norms for evaluating the performance of physical education students in athletics events. A sample of 1400 student was taken from different physical education colleges and department of universities of Punjab and Chandigarh. Subjects were divided in two groups according to their chronological age i.e. 18 to 21 year and 21 to 25 year boys and girls, in each age group 700 students 400 boys and 300 girls' students of physical education served as subjects. The performance data of subjects in athletics through three test items namely 100m, 200m and 400m was collected. Norms were constructed for sprint events (athletics) with four normative scales such as percentile, Hull, Sigma and T scale and standard for evaluation of students also established under Normal Distribution.
Keywords: Sprint, Scale and Physical Education

Introduction

As we all know that Physical Education is a systematic discipline. To teach this subject in various institutes teacher should be well versed with the latest gadgets which is only possible through Colleges and departments of Physical Education in various institutes around the world. Training of teaching, for practical courses of physical education and sports such as games and athletic are given by teachers of Professional colleges and universities. Athletics is a major practical course of physical education curriculum, because activities like running, jumping and throwing takes place only in athletics. Till time all these events are evaluated by only observational technique, which is not a valid test/tool of measurement because it always shows partial and imperfect/biased opinions and teachers are bound to respond to a false impression of teaching and training effects. Teachings of theoretical subjects are evaluated by taking paper pencil test. Curriculum of Physical Education contains both theory and practical aspects. Effective teaching in Physical Education and sports depends largely on the ability of teacher/coach to test and evaluate the students with the help of standardized athletic tests and norms.

Athletics is the one of ancient form of performing physical movements for physiological and psycho-social benefits. On the other way athletics is more important in physical education curriculum. But there is no standardized athletic performance norm for Physical Education students of Punjab. Research scholar feels that if athletic performance norms are made available to teachers/coaches, students and athletes they will definitely improve their performance because they will compare their current performance score with their previous score. It can be a motivational factor to develop the area of sports performance and Physical Education teaching. With the availability of standardized performance norms biased evaluation can be minimized. On the other hand the job of the teacher will be made easier and reliable on the basis of performance norms, which will help to evaluate the students of physical education. In Physical Education, practical teaching plays an important role as it is an integral part of this education system. In every curriculum of physical education programs, practical teaching has equal weightage to theory courses/subjects at elementary and high school level more emphases are given on practical teaching. Therefore objectivity in evaluation is highly required it can be achieved if Teachers of physical education should prepare and evaluate perfectly with a valid test and ideal norms. If teachers have more practical knowledge then development of the nation will be for sure. Therefore objectivity in evaluation is highly required it can be achieve through if Teachers of physical education should prepare and evaluate perfectly with a valid test and ideal norms. Hence, a study was undertaken to Construct Norms of athletic events which are part of the physical education programme at various physical education colleges and department of different universities.

Methodology

The objective of this study was to construct norms for sprints events in athletics, for students of physical education. For this purpose 1400 Subjects, 400 boys and 300 girls between 18 to 21 year and 400 boys and 300 girls between 21 to 25 year age were selected. These Subjects were students of different physical education colleges and department of universities. The performance data of students was taken by

administering three test items namely 100M, 200M and 400M. The collected data analyzed with SPSS 16.0 and Microsoft excels to construct norms for test items. Four normative scales such as percentile, Hull, sigma and T scales were constructed. Further five grades i.e. Excellent, Good, Average, Fair and Poor were also established under Normal Distribution. The Data were collected by administering three test items i.e., 100, 200 and 400 Meters sprint.

Results of the Study

The data was analyzed and the findings were presented in two different sections. The first section deals with percentile scale and evaluation standard of physical education students for both age groups and second section deals with the T-scale, hull scale, and sigma scale. The percentile Scale constructed on the basis of students scores in terms of their standing in specified group. However percentile scale is not considered as standard scale as the mean and standard deviation are not used in constructing the scale and scores are not distributed equally. The T-Scale, Hull scale and sigma scale were constructed because it considers mean and standard deviation values of the distribution, also considered as the standard scale.

Percentile Norms and Standard of Evaluation

Percentile scales for the students of physical education with age range from 18-21 and 21-25 years have been presented as follow:

Table - 1
EVALUATION STANDARD FOR 100M RUN (In Seconds)

GRADES	BOYS,18-21 AGE GROUP	GIRLS,18-21 AGE GROUP	BOYS 21-25 AGE GROUP	GIRLS,21-25 AGE GROUP
Excellent	11.49 & below	14.66 & below	11.00 & below	13.51 & below
Good	11.48 - 12.86	14.67 – 16.86	11.01 - 12.50	13.50 – 15.80
Average	12.85 - 14.22	16.87 - 19.05	12.51 - 14.00	15.81 - 18.09
Fair	14.23 - 15.60	19.06 – 21.25	14.01 - 15.00	18.10 – 20.38
Poor	Above 15.59	Above 21.26	Above 15.01	Above 20.39

Table - 2
EVALUATION STANDARD FOR 200M RUN (In Seconds)

GRADES	BOYS,18-21 AGE GROUP	GIRLS,18-21 AGE GROUP	BOYS 21-25 AGE GROUP	GIRLS ,21-25 AGE GROUP
Excellent	25.00 & below	31.40 & below	22.38 & below	27.41 & below
Good	25.01 – 28.00	31.41 – 34.56	22.39 - 25.69	27.42 - 31.06
Average	28.01 – 32.00	34.57 – 37.71	25.70 - 29.00	31.07 - 34.71
Fair	32.01 – 35.00	37.72 – 40.87	29.01 - 32.31	34.72 - 38.36
Poor	35.01 & Above	40.88 & Above	32.32 & Above	32.36 & Above

Table - 3
EVALUATION STANDARD FOR 400M RUN (in Minutes)

STANDARDS	BOYS,18-21 AGE GROUP	GIRLS,18-21 AGE GROUP	BOYS, 21-25 AGE GROUP	GIRLS, 21-25 AGE GROUP
Excellent	1.00 & below	1.26 & below	54.63 & below	1.11 & below
Good	1.01 – 1.09	1.25 – 1.35	54.64 – 59.35	1.12 – 1.24
Average	1.10 – 1.19	136 – 1.45	59.36 – 1.04	1.24 – 1.38
Fair	1.20 – 1.28	1.46 – 1.54	1.05 – 1.08	1.29 – 1.51
Poor	1.29 & Above	1.55 & Above	1.08 & Above	1.51 & Above

Three another scales namely, T scale. Hull and Sigma scale were constructed. It is considered as standard scale because it is based on mean and standard deviation values. These scales for the students of physical education with age ranging from 18-21 and 21-25 years have been presented as follow:

Table - 4
NORMS OF 100M RUN FOR AGE GROUP 18 – 21 (IN SECONDS)

BOYS				GIRLS		
T SCALE	HULL SCALE	SIGMA SCALE	PER	T SCALE	HULL SCALE	SIGMA SCALE
7.85	9.56	10.13	0	8.82	11.56	12.48
8.99	10.36	10.81	10th	10.65	12.85	13.58
10.13	11.16	11.5	20th	12.48	14.13	14.68
11.27	11.95	12.18	30th	14.31	15.41	15.77
12.41	12.75	12.87	40th	16.14	16.69	16.87
13.55	13.55	13.55	50th	17.97	17.97	17.97
14.69	14.35	14.23	60th	19.8	19.25	19.07
15.83	15.15	14.92	70th	21.63	20.53	20.17
16.97	15.94	15.6	80th	23.46	21.81	21.26
18.11	16.74	16.29	90th	25.29	23.09	22.36
19.25	17.54	16.97	100th	27.12	24.38	23.46

Table - 5
NORMS OF 200M RUN FOR AGE GROUP 18 – 21 (IN SECONDS)

BOYS				GIRLS		
TSCALE	HULL SCALE	SIGMA SCALE	PER	T SCALE	HULL SCALE	SIGMA SCALE
16.46	20.52	21.88	0	23	26.95	28.26
19.17	22.42	23.51	10th	25.63	28.79	29.84
21.88	24.32	25.13	20th	28.26	30.63	31.42
24.59	26.22	26.76	30th	30.89	32.47	32.99
27.3	28.11	28.38	40th	33.52	34.31	34.57
30.01	30.01	30.01	50th	36.15	36.15	36.15
32.72	31.91	31.64	60th	38.78	37.99	37.73
35.43	33.8	33.26	70th	41.41	39.83	39.31
38.14	35.7	34.89	80th	44.04	41.67	40.88
40.85	37.6	36.51	90th	46.67	43.51	42.46
43.56	39.49	38.14	100th	49.3	45.36	44.04

Table - 6
NORMS OF 400M RUN FOR AGE GROUP 18 – 21(IN SECONDS)

BOYS				GIRLS		
T SCALE	HULL SCALE	SIGMA SCALE	PER	T SCALE	HULL SCALE	SIGMA SCALE
33.88	45.92	49.94	0	60.61	72.6	76.59
41.91	51.55	54.76	10th	68.6	78.19	81.38
49.94	57.17	59.58	20th	76.59	83.78	86.18
57.97	62.79	64.39	30th	84.58	89.37	90.97
66	68.41	69.21	40th	92.57	94.97	95.77
74.03	74.03	74.03	50th	100.56	100.56	100.56
82.06	79.65	78.85	60th	108.55	106.15	105.35
90.09	85.27	83.67	70th	116.54	111.75	110.15
98.12	90.89	88.48	80th	124.53	117.34	114.94
106.15	96.51	93.3	90th	132.52	122.93	119.74
114.18	102.13	98.12	100th	140.51	128.52	124.53

TABLE - 7
DIFFERENCES IN THE PERFORMANCE OF BOYS STUDENTS IN SPRINTS VIS--VIS THEIR AGE GROUP

Variables	Age Group	Mean	SD	df	t-value
100M RUN	18-21	13.55	1.14	798	4.644*
	21-25	13.17	1.17		
200M RUN	18-21	30.01	2.71	798	13.683*
	21-25	27.36	2.76		
400M RUN	18-21	74.03	8.02	798	27.381*
	21-25	61.77	3.96		

*significant at the.01 level of significance t_{01} (798) =2.57

The table 1.10 shows the differences in the performance of male athletes belonging to two age groups i.e. 18-21 and 21-25 years in 100,200 and 400 meter sprints. The mean scores in 100,200 and 400 meter sprint of the subjects of two groups have been found to be 13.55, 30.01, 74.03 and 13.17, 27.36 and 61.77 respectively. The t-values being 4.644, 13.683 and 27.381 of the groups of 100,200 and 400 meter sprint have been found to be significant at .01 levels. It indicates that there is a significant difference in the performance of 100,200 and 400 meter sprint of the above said two groups. The result shows the subjects of 21-25 years of age group performed better in sprints events as compared to the subjects of 18-21 years of age.

Table - 8
DIFFERENCES IN THE PERFORMANCE OF FEMALE STUDENTS IN SPRINT RACES VIS-À-VIS THEIR AGE GROUP

Variables	Age Group	Mean	SD	t-value
100M RUN	18-21	17.97	1.83	6.675*
	21-25	16.95	1.91	
200M RUN	18-21	36.15	2.63	14.059*
	21-25	32.89	3.04	
400M RUN	18-21	100.56	7.99	11.460*
	21-25	91.41	11.21	

The t- value significant at the.01 level t_{01} (598) =2.57

The table 1.11 shows the differences in the performance of male athletes belonging to two age groups i.e. 18-21 and 21-25 years in 100, 200 and 400 meter sprint. The mean scores in 100, 200 and 400 meter sprint of the subjects of two groups have been found to be 17.97, 36.15, 100.56 and 16.95, 32.89 and 91.41 respectively. The t-values being 6.675, 14.059 and 11.460 of the groups of 100,200 and 400 meter sprint have been found to be significant at .01 levels. It indicates that there is a significant difference in the performance of 100,200 and 400 meter sprint of the above said two groups. The result shows the subjects of 21-25 years of age group performed better in sprints events as compared to the subjects of 18-21 years of age.

Discussions

Constructions of norms were done with the help of four scales namely Percentile, Hull, Sigma and T-scales were constructed for students of both age groups 18 to 21 and 21 to 25 year. The Percentile scale construct on the basis of students scores in terms of his standing in specified group. The major drawback of Percentile scale is that it is not considered as standard scale because it is based on the specified group of specified session/term. Keeping in mind the said drawback, three standardized scale Hull, Sigma and T-scales were constructed. Which are considered as standard scales because these are based on mean and standard deviation values of events. Observing the drawbacks of above scales the performance of subjects was categorized in to five standards i.e. Excellent, Good, Average, Fair and Poor. These standards of evaluation proved under normal distribution with the help of mean and standard deviation values of events. Keeping in mind, the modern educational reforms to awarding of standards/grades instead of marks/score reduce the depressive state of students.

References

Clarke, H. Harison (1976) Application of Measurement to Health and Physical Education, Englewood Cliffs: N.J. Prentice Hall International Inc. P. 179, pp.240-241.

Johnson, Barry L.and Nelson, Jack K.(1988) Practical Measurements For Evaluation in Physical Education, (Third Edition), Surjeet publication, New Delhi, India.

Kamlesh, M.L. Field Manual of Games and Sports (2nd Ed, Nageen Prakashan Pvt. Ltd, Western Kutchery Road, Meerut, U.P.

Kamlesh,M.L.(1984) Methodology of Research in Physical Education and Sports, Metropoliton Book Co. Pvt.Ltd., Netaji Subsash Marg, New Delhi.

Verma, Parkash J. (2000) sports statistics, Venus publication, Gwalior, India.

Waghchoure, Madhuri T. (2006) Measurement and Evaluation in Physical Education, Friends Publication, New Delhi, India.

Veeraswami, B.M. (1973). "A Normative Study of the Youth Physical Fitness Test for the Boys in Grade Ninth through Eleven in Greater Gwalior". Unpublished Master's Degree Thesis, Jiwaji University, Gwalior,

The Central Advisory Board of Physical Education and Recreation, (1964), .A National Plan of Physical Education and Recreation, Delhi: The Manager of Publications, Government of India

University Grants Commission, (1987), Guideline for the Development of Infrastructure for Physical Education and Sports under the National Sports Organization (NSO) Programme. New Delhi : Nutech Enterprises 1.1,