Construction and Standardization of an Aptitude Test for Selecting Physical Education as a Career

Kamla Devi*

ABSTRACT

The present study was undertaken with a view to construct and standardize an aptitude test for selecting physical education as a career.

The ex-post facto study was initially conducted on 100 college students, 50 boys and girls, undergoing physical education professional courses and 50 non physical education students, of 18+age. Sample was drawn from local colleges of Patiala. The sample was then pruned to 70 students, with expert advice. The final inventory was shortened to 40 items with item analysis covering 6 sub-factors. Each item was to be scored on 5 points (HKERT). The data collected on the initial sample of 100 subjects was statistically treated, analyesed and interpreted. Reliability, validity, internal consistency, mean, SD, tration, co-efficient of correlation were calculated to draw results and make necessary companrisions. Finally, the test was administered to 600 boys and girls in 4 sub samples and norms worked out. The results show that the aptitude test in reliable (89 Cronbach Alfa) and vailid (Axiomatric and item validity).

Physical Education boys and girls are superior in aptitude towards Physical Education to the non-Physical Education boys and girls. The inventory can be used at the time of admission in professional courses of Physical Education.

* Associate Professor, Govt College of Physical Education,Patiala

INTRODUCTION

In simple words, aptitude is a person's ability acquired or innate, to learn or develop knowledge or a skill, in some specific area (Singh,1987). Like intelligence, it is both a concept and a construct; a combination of different factors. Often, we find the people who have some special abilities or potentialities which enable them to do well in certain fields of activity. Such people have special types of aptitude; and therefore, they are able to learn and acquire the necessary skills in a specialized field. They are also interested in such activities as are of their liking. Further success or achievement, in a given field of knowledge or activity, depends to a great extent upon attitude and interests.

Aptitudes are the special skills, knowledge and interests in one or more areas such as business, mechanics, administration, defense service, teaching or anything else. In Webster's Medical Dictionary (2002), aptitude is defined as 'a natural or acquired capacity or ability, especially a tendency, capacity or inclination, to learn or understand'.

Testing Aptitude for Physical Education

Physical education is primarily a programme of activity for children at school. Its status is raised to an academic discipline, and a sport science, at the higher echelons of education. "Since teaching itself is a profession, physical education, no less, It is a profession without any separate cadre for physical educators except work sphere. People drink from its fountain-heads according to their interest and aptitude. Out of hundreds and thousands of individuals engaging in some kind of physical activity and participating in institutionalized sport, at some stage of their education, opt to adopt physical education as a career and become physical education teachers, after going through some training, lies with only a few who have nowhere to go in wide world of careers " (Kamlesh & Sangral, 2011).

'The kind of human stuff', asserts Sandhu (2004), 'that enters the portals of colleges/university departments of physical education in India for admission to one of the teacher training course, may be physically dexterous to some extent, but by and large it is not the kind of stuff that should make high calibre physical educators. The reasons are not very difficult to locate. First, they are the individuals whose academic background is not very sound because they have never been studious. Second, only a few come from above-average socio-economic background; most are from lower side of the average status. Finally, at school, being sportspersons of some consequence, they remain pampered and take no requisite interest in studies. So, they prefer a career in physical education to any other profession'. Ironically, there is no device to check whether a person has genuine interest in being a physical education teacher, no matter at school or college.

Objective of the Study

1. The study aims at construction and standardization of an aptitude test selecting physical education as a career for physical education professional courses (i.e.D.P.Ed, B.P.Ed, M.P.Ed. etc.).

2. To find out that students of Physical Education courses and those studying general subjects (Non Physical Education) have different aptitude for adopting physical education as a career.
3. To prepare norms.

Significance of the Problem

Research with no practical utility is worth pittance. This fact was not been lost sight of while planning this study. The significance of the study lies in the fact that it would pay rich dividends to the profession, the physical educators and the admission seekers to Physical Education course as briefly explained below:

* A long standing need of Physical Education institutions, in the country, is likely to be met with an aptitude test which would help streamlining admission procedure and make the admission criteria more sound.

* Those with no aptitude for Physical Education would not dare to turn up for admission to professional courses, thereby reducing the unnecessary load on admission machinery.

* It would ensure better human stuff joining Physical Education as a profession resulting in upward movement for physical educators in the world of academics and professions.

* Once developed and standardized, using scientific procedures, the test would be a unique contribution to the psychometrics in the field of Physical Education and sports.

Hypothesis

Based on general experience of the people and review of literature undertaken by this investigator, it was hypothesized that the students of Physical Education courses and those studying general subjects shall have different aptitude for adopting Physical Education as a career.

METHODOLOGY

This ex-post-facto study was initially conducted on 100 collegiate youth (50 Physical Education boys and girls undergoing physical education professional courses and 50 non-Physical Education boys and girls) for the construction and standardization of an aptitude inventory for such students who would opt to adopt Physical Education as a career in life. The sample was drawn from local colleges of Patiala.

The typical steps in the construction of the test are given below:

1. Defining the domain in specific terms
2. Defining the population on which test is meant to be used
3. Collecting and creating pool of items which adequately cover the domain
4. Validating the items (using the panel of experts who may add or delete some items and suggest changes, if deemed necessary)
5. Pilot testing of the items
6. Validating and norming the items (after pilot test)

First a pool of 100 statements (in English & vernacular) was developed which was then pruned to 70 (seventy) with item analysis. The final inventory was shortened to 40 items covering six sub factors.

RESULTS & DISCUSSION

Table-1 : Internal Consistency of the Sub-factors

Sr. No.	Name of the Sub-Factor	Validity Coefficient Raw and Standardized
1	The Influence of the personality of school physical education teacher	.47 (.49)
2	Inherent interest in physical activity	.67 (.69)
3	Attraction towards active teaching profession	.52 (.52)
4	Faster job opportunity	.15 (15) *
5	Expansive social canvas for recognition	.54 (.55)
6.	Opportunity for keeping healthy and fit	.47 (.50)
7	Making sports as career	.53 (.55)
8	Individual personality (Body Build)	.26 (.29) *

Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1	2	3	4	5

Table-2 : Mean, SD and t ratio of the Sample Initial Trial

GP No.	Groups	N	Mean	SD	SE Mean	t ratio at 0.05 level
1	Phy. Edu. Boys	25	259.20	20.16	4.03	1 and 3 0.09*
2	Phy. Edu. Girls	25	266.92	12.61	2.52	2 and 4 0.40*
3	Non- Phy.Edu. Boys	25	243.36	27.39	5.47	1 and 2 9.40 NS
4	Non -Phy.Edu. Girls	25	258.76	20.97	4.19	3 and 4 0.003 NS
	Combined	100	266.98	22.32		

* indicates the significant value at .05 level and NS = Not Significant

Table-3 : Item validity (Internal Consistency)

1.0.35	2.0.49	3.0.30	4.0.20*	5.0.11*	6.0.25	7. 0.07	8. 0.31	9. 0.31	10. 0.20
11.0.18*	12.0.22	13.0.23	14. 035	15. 0.49	16.0.41	17.0.16*	18.0.10*	19.0.37	20.0.01*
21.0.40	22.0.15*	23.10*	24.0.43	25. -21*	26.0 .20*	27. 0.50	28.-0.1*	29.0.14*	30. 0.44
31.-0.14*	32. 0.41	33. 0.41	34.0.25	35.0.16*	36. 0.11*	37.0.10*	38.0.17*	39. 045	40. 0.38
41. 0.26	42. 0.25	43. 0.55	44.0.39	45.0.36	46. 0.06*	47. 0.53	48.0.09*	49.-.22*	50. 0.25
51.0.19*	52.0.19*	53. 0.51	54.0.21*	55.0.51	56. 0.09*	57.0.16*	58.0.13*	59. 035	60. 0.52
61. 0.27	62. 0.51	63. 20*	64.0.55	65.043	66.0.19*	67.-.08*	68.0.57	69.0.01*	70. 0.48

* indicates deleted items

Table 1 depicts internal consistency of all the components of the instrument. The validity coefficient of correlation in raw and standardized form are in almost perfect conformity indicating that the exercise was well carried out. The results reveal a very low consistency 0.15 and 0.26, respectively, in respect of item 4* (faster job opportunity) and item 8 (Individual personality i.e. body build). Hence, these two sub-factors were deleted from the inventory, meaning that the final 40-item instrument was based on only six sub-factors of aptitude for physical education career.

The reliability coefficient of the whole test was worked out by cronbach Alfa (SAS System) was 0.89 which is quite high and it can be said that the test is quite reliable.

Each item was to be scored on 5- point Likert Scale. The scoring scale was reversed in case of items which ran in the opposite direction.

The mean and SD of the whole test (N=100) i.e. 266.98 (±) 22.32 and 4 sub-groups (Physical Education boys and girls and non-Physical Education boys and girls N=25 each group) were calculated (Table-2) using an advanced technique SAS system, The mean score on each of the 70-items was correlated (cronbach coefficient Alfa Table-3) with the total test score, consequently, the test items no. 4, 5, 11, 17, 18, 20, 22, 23, 25, 26, 28, 29, 31, 35, 36, 37, 38, 46, 48, 49, 51, 52, 54, 56, 57, 58, 63, 66, 67, 69, were found to have less than 0.21 correlation with the total test mean score, were deleted from the inventory for having low discriminating power.

Thus, the 70-item inventory for Aptitude for selecting Physical Education career was legitimately shortened to 40-item inventory.

The data collected on the initial sample of 100 subjects were statistically treated , analyzed and interpreted with the purpose of the study, reliability, validity, mean, SD, t ratio, coefficient of correlation and percentile were calculated to draw results and make necessary comparisons.

Finally, the test was administered to 600 boys and girls in four sub-samples and norms were worked out.

Table-4 : Subject sample break up

Sr. No.	Group Type	Gender	No.
1	Physical Education (Professional)	(Boys)	150
		(Girls)	150
2	Non-Physical Education	(Boys)	150
		(Girls)	150

Table-5 : Descriptive Statistics of the Sample-Groupwise and Combined

Group No	Type of Group	N	Mean	Median	SD	SE	Skewness	Score Range
1.	Physical Education Boys	150	154.22	155.50	17.37	1.41	-0.32	85
2.	Non-Physical Education Boys	150	146.09	140.00	22.47	1.83	0.18	90
3.	Physical Education Girls	150	168.23	169.00	12.51	1.02	-0.44	66
4.	Non-Physical Education Girls	150	152.75	155.00	14.81	1.21	-0.10	79
5.	Combined	600	155.33	157.00	18.96	0.75	-0.39	99

Table-6 : Analysis of variance

Source	DF	Sum of Squares	Mean square	F value	Pr>f
Model	3	38939.7661	12979.9220	43.86	<.0001
Error	595	176103.1220	295.9716		
Corrected Total	598	215042.8881			

Table-7 : Reliability of Aptitude Test

Sr No	Type	N	Coefficient of r
1.	Cronbach Coefficient Alfa	600	0.89
2.	Split -half	600	0.79*

*Pearson Correlation coefficient

Table-8 : Mean Difference and t ratio matrix of subject sample groups (N=150 Each Group)

		1	2	3	4
Group No.	**Type of group**	**Physical Edu. Boys**	**Non Phy. Edu. Boys**	**Phy. Edu. Girls**	**Non-Phy. Edu. Girls**
1.	Physical Education Boys	-	(8.13) 2.87*	(14.00) 8.74*	(1.46) 3.79 N.S
2.	Non-Physical Education Boys	(8.13) 2.87*	-	(22.14) 16.88*	(6.66) 1.39*
3.	Physical Education Girls	(14.00) 8.74*	(22.14) 16.88*	-	(15.47) 10.20*
4.	Non-Physical Education Girls	(1.46)-3.79 NS	(6.66) 1.39*	(15.47) 10.20*	-

* significant at .05 level and NS= Not Significant

Table-9 : Test Reliability Group wise and Combined

GP NO	Type of group	N	Type	Coefficiennt of Correlation
1	Physical Education Boys	150	Cronbach Coefficient Alfa split-half	0.87 (0.88 std) 0.75
2	Non-Physical Education Boys	150	Cronbach Coefficient Alfa split-half	0.92 (0.92 std) 0.83
3	Physical Education Girls	150	Cronbach Coefficient Alfa split-half	0.80 (0.82 std) 0.67
4	Non-Physical Edu. Girls	150	Cronbach Coefficient Alfa split-half	0.84 (0.86 std) 0.67
	Combined	600	Cronbach Coefficient Alfa split-half	0.89 (0.89 std) 0.79

Table-10 : The comparable percentile Norms

Percentile Point	Total Test N=600	Physical Edu. Boys N=150	Physical Edu. Girls N=150
100th	193	184	193
90th	179	175	182.5
80th	170	168	179
70th	166	163	173
60th	161	159.5	170
50th	157	154.5	168
40th	153	149	166
30th	147	145	162
20th	137	140	156
10th	129	130	151.5
0	94	103	129

CONCLUSION

Within the limits and limitations of the study, the following conclusions may be drawn :

1. The investigator is conscious of the fact that the Aptitude Inventory constructed and standardized by her is highly reliable (0.89 Cronbach Alfa) and valid (Axiomatic & Item validity).
2. The statements included in it have discriminate value and the inventory can be utilized at the time of admission in professional courses of physical education.
3. Descriptive statistics both at the pilot trial (sample) and main study, clearly reveal the superiority of physical education boys and girls in aptitude towards physical education over non-physical education boys and girls.
4. High variance (f= 43.86) in the mean score for aptitude for four sub-samples is a natural outcome of difference among them on this variable due to sampling error.
5. The t ratio among four sub-samples shows that the aptitude test is capable of differentiating between those who have aptitude for choosing physical education as a career and those who do not have such aptitude.

SUGGESTIONS

On the basis of the procedure followed in completing the study, the following suggestions are hereby made for further research on the subjects:

* It is suggested that the similar study with greater number of subjects be conducted for the second looking at the norms.
* The aptitude inventory can be utilized at the time of admission in physical education professional courses (i.e. D.P.Ed, B.P.Ed (IV year course), BP.Ed. (One year) and M.P.Ed. Courses.
* It is also recommended that class-to-class comparisons-on an aptitude towards physical education, may be made.

REFERENCES

Anastasi, A. (1988). Psychological Testing (6th Edition), New York; MacMillan.

Anastasi, A. & Urbina, S. (1997). Psychological Testing (7th Ed) Upper Saddle River, N.J. Prentice Hall

Kamlesh, M.L. & Sangral, M.S. (2011). Principles and History of Physical Education (2nd Edition), New Delhi; Friends Publications (India).

Singh, I.M. (1987). A Comparative Study of Creative and Non-Creative B.Ed. Pupil Teachers in Relation to Teaching Effectiveness, Self Concept and some personal values in M.P. Unpublished Doctoral Thesis, Edu. Bhopal University.

Sandhu, K. (2004). Professional Preparation and Career Development in Physical Education and Sports, New Delhi; Friends Publications (India).

----0----