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Development And Validation Of The Physical Education Attitude Scale For Indian Students

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Abstract

Understanding student attitudes about physical education (PE) can help PE teachers to improve the curriculum and it also helps to design good activities for the students during PE classes. This research aims to develop and validate the Physical Education Attitude Scale for Indian Students (PEASIS). As a starting framework for identifying important aspects of students' attitudes toward engaging in PE classes, researchers used the previously developed multi-factor efficacy standardized scales. Initially, 28 items were subcategorized and finalized as true and false, where; a total of 16 items were true and 12 false items. The convenience sampling method was used to collect data from 2093 participants and the survey was completed by the participant through the google form (N=400) and offline (N=1693). All the selected subjects were from the different academic boards in different locations of India and studied through grades 10 to 12 class. To address the aim of the present study researchers conducted an exploratory factor analysis using a principal components analysis with a Varimax rotation and the results revealed a six-factor scale comprised of 20 items with factor loadings ranging from .347 to .701. Six factors were named; Learning, Obstacle, Interest, PE teacher behavior, Psychological usefulness, and School support. The results of this study provided psychometric support with reliability, representativeness, and homogeneity showing that PEASIS is a valid measurement tool for examining school students' attitudes toward PE.

Key Words: Physical education, attitude, NCDs, physical education teachers, physical activity.

Introduction

It is believed that the present students are the future guardians of the country. The foundation of the developed country rests on the healthy citizens residing in it but not the materials of cemented buildings standing in it. The feelings of pride in the developed country are its healthy citizens, especially the teenagers and youths of the nation. Bansal (2019) claims that obesity in children has spread across the country to epidemic proportions, this finding corroborates with the new WHO study carried out by Guthold et al. (2019) which revealed that India is among the beat 10 positioning nations with the most reduced level of deficient physical activity (PA) among young people. India is positioned 8th with a general predominance of deficient PA in an adolescent at 73.9%.

The recent report of the World Bank on 'Obesity: Health and Economic Consequences of an impending global challenge (2020), states that obesity-related diseases are now among the top three killers across the globe. In a school context, physical education (PE) is a crucial setting where students can develop all facets of their

physical health along with their cognitive, social, and emotional growth. (Hilborn, Merki, Merki, Cleary, and Middleton, 2004). The recent findings of Kuhr et al. (2020) suggest that over five years, teaching three times as many physical education classes each week significantly reduced BMI and the likelihood of becoming overweight or obese.

Physical education seems to be one of the most loved subjects by students almost in every part of the country and has shown enormous benefits to young and ad ult people as well. Primary PE contributes to the development of a child's fundamental movements, skills, and physical competencies (Chen, Bennett, and Hypnar,2017). It supports physical and cognitive development, affective skills, and behaviors; and develops lifetime PA patterns (Rink and Hall 2008; Bailey et al. 2009). However, international studies and reports continue to show that PE continues to be a marginalized subject in sc hool curricula. Children are not able to find all the
opportunities to experience the benefits of PE subject. PE teachers are also struggling to get proper recognition in the school system. The work of Hardman et al. (2014) revealed that in approximately one-fifth of countries worldwide, PE teachers are not recognized in equal position as other subject teachers similarly in an attempt to identify the occupational stress of Indian PE teachers, Shirotriya & Quraishi (2015) also identified the same issues.

For school-age children to develop at their best, PE is crucial, along with other PA opportunities in the classroom. Formal education from the school lays the foundation of socio-cultural roots in students and plays a pivotal role to build a good human being. The child's growth and development at school depend on nutrition and well-planned PE programs (Kohl III et al.,2013). For many students who have few opportunities to be active outside of school, quality PE becomes the only option for achieving good health. PE classes serve as a safe and healthy environment for students. They get the opportunity to be physically active under the supervision of a trained PE teacher.

Nevertheless, the realization of the need for PE became the central ideology of most schools to curb NCDs. Physical activity through PE programs in schools paved the way to improve the child's physical and physiological growth. Many parents now believe that school PE is an effective way to curtail their child's involvement in a sedentary lifestyle. Physical activity also helped them to keep their ward away from playing computer games, internet browsing, using a smartphone for a longer duration, and watching movies. A plethora of research studies suggests that Positive PA behavior is influenced by attitudes about PA, which is influenced by PE in schools. In this context, understanding PA intentions requires looking at attitudes toward PA and perception of PE classes because these factors can affect whether a student starts or continues participating in PE activity. The exploratory work of Silverman and Subramaniam (1999) reminds us that teachers can play a major role by providing the right opportunities and experiences for children to improve their disposition toward PE which may in turn help improve their attitude toward PE. Understanding student attitudes about PE can help teachers improve the curriculum and instill good attitudes in students about PE. In the area of PE, various scales for measuring student attitudes have been developed by researchers. Recently, Kruz, Kim, and Kim (2021) empirical study revealed that PE attitudes are almost non-existent in students. Concomitantly, they found among school-aged teenagers around the world, have the second-highest frequency of insufficient PA. This finding is very relevant to identifying the causes of students' poor or negative attitudes to PE so that the proper measures can be taken by the government to laid down the issues of PE.

Efforts of the Indian Government to promote PE activities in schools

The modern world is facing a health-related problem via various types of non-communicable diseases (NCDs spreading rapidly all over the world. India has also gripped it for a long time, and many citizens were negatively affected (Arokiasamy,2018). In order to curb NCDs in India, PE is currently a required component in most schools' curricula. The schools and parents have also recognized and realized the role of PE for human health. Earlier, it was common to observe the behavior of parents insisting their children pay more attention to academic subjects rather than participating in sports or taking PE classes. As a strategic goal to encourage PE or sports in schools, the Indian government has taken the following steps:

1. Recently, the Central Board of Secondary Education (CBSE) has announced to make one period of sports per day compulsory for classes 1 to 12 from session 2019-20 (Chaubey, 2019).
2. National Council of Educational Research and Training (NCERT) has recently submitted (2020) a working frame line on learning outcomes of health and PE to the ministry (Govt. of India) for the possible changes in the curriculum of PE health education, sports, and yoga education (National Education Policy, 2020).
3. Department of School Education and Literacy has launched an Integrated Scheme for School Education-Samagra Shiksha, with effect from April 1, 2018. Under this scheme, the Sports and PE component has been introduced for the encouragement of Sports, PA, Yoga, Co-curricular activities, etc. (Samagra Shiksha,2019)
4. The genesis of "Khelo India School Games", a part of the revamped National program for the development of sports 'Khelo India' (2017-2018) aims at strengthening the ecosystem by promoting the twin objectives of mass participation and promotion of excellence in sports. The Khelo India School Games will act as an avenue for the identification of budding sports talent in specific sports disciplines (Khelo India,2018).
5. As per the National Curriculum Framework 2005, health and PE is a compulsory subjects from classes 1 to 10. In this regard, the NCERT and CBSE have introduced a streamlined and well-designed Health and Physical Education (HPE) Programme to mainstream health and PE in schools for students of classes 1 – 12 (NCERT,2005).

The objective of the Study

All the efforts of the government are being appreciated by the parents and school management. However, there is a need to assess the gap between students' priorities in terms of their likes and dislikes about PE classes. To date, many Indian researchers have examined students' attitudes toward PE with foreign standardized tools. We observed that there is no standardized and reliable tool is available for evaluating the attitude of school students in India towards PE. The main objective of the present study was to develop and validate a psychometric tool to assess students' attitudes toward PE. This attitude scale will help to Ministry of Education and academic boards to frame a policy for the students to decide on the imperative PE course structure according to their choice and interests.

METHODOLOGY

Development and Validation of PEASIS

As a starting framework for identifying important aspects of students' attitudes toward engaging in PE classes, researchers used the previously developed multi-factor efficacy

standardized scales such as the physical education attitude scale (PEAS,2017) and Students'Attitudes toward Physical Education Scale (SPEA, 2000). Some discussions were also made with the experienced PETs to identify some other variables. Continuous efforts of getting involved in the question and answer with well-versed teachers, helped researchers to decide the 07 factors i.e., Learning and Enjoyment (5 items), Fun and Enjoyment (5 items), PET behavior and Professional approach (5 items), Society barriers (5 items), Content and Curriculum (5 items), Health and Fitness (5 items), and Psychological needs (5 items). As a secondary process, a version of the instrument was provided to 4 experts from the school PE Teachers, university faculty, and researchers in PE to determine whether the things produced by the researcher in each factor were adequately clear
and significant.
They assessed each thing relative to the clarity of the explanation, the degree to which each thing reflected the substance validity, and each
item's significance for consideration within the instrument relative to other comparable things. Changes were made based on their feedback and 05 items were removed. Next, a convenience sample of 60 students completed a pilot survey of 30 items. Based on their responses and feedback analysis was done and the outcome suggested removing 02 items from the scale. Further, the selected 28 items were subcategorized and finalized as true and false, where; a total of 16 items were true and 12 false items. With the help of these 07 factors, 28 items with 5 points Likert scale (Strongly disagree, Disagree, Undecided, Agree, Strongly Agree) were finalized.

Study design, setting, and participants

The researchers first identified some of those schools where the authorities were known to them for comfortable access to ensure the referential support to conduct the survey. A total of 135 schools from 17 states and 01 Union Territory of India were identified by the researchers for the data collection. Before the data collection, all the ethical matters were discussed with the concerned PETs/coaches. The convenience sampling method was used to collect data from 2093 school students and the survey was completed by the participant through the google form (N=400) and offline (N=1693). A large number of responses were obtained from the state of Uttar Pradesh, Madhya Pradesh, Orissa, Telangana, Tripura, and New Delhi. A significant number of responses were also obtained from Gujarat, Haryana, and Uttarakhand as well. Data were collected from June 2019 to December 2019 with the help of the school's PETs and sports coaches. The participant characteristics are displayed in table 1.

DATA ANALYSIS AND RESULT

Before the data analysis, responses to the PEASIS were checked and collated and all negative items were reverse-coded. To address the aim of the present study researchers conducted an exploratory factor analysis using a principal components analysis with a Varimax rotation with R software to provide factorial validity evidence for this scale. Analysis of Eigenvalues in the scree plot was used to determine the number of factors to retain in the instrument. In all factors solutions, the 08 items were excluded because they had factor loadings of $\leq .300$ and fit less conceptually with other factors items making the factor difficult to justify hence, these items were removed and the factor solution was re-analyzed. The final results revealed a six-factor scale comprised of 20 items with factor loadings ranging from .347 to .701 (Table 2). The purpose of analyzing the data with the help of Varimax-rotation was to check the appropriateness of test items for the given population. The squared loadings (SS) of all six factors suggested the values of 2.411, 1.785, 1.668, 1.249, 1.231, and 1.164 respectively. Subsequently, Cronbach's alpha was employed to assess inter-item reliability,

where reliability co-efficient was calculated for full scale and sub-factors (Table 3).

Table 1: Sociodemographic characteristics of the participants (n=2093)

		N	%	M	SD
Gender				1.34	0.47
	Male	1338	66.3		
	Female	705	33.7		
Grade				2.23	0.74
	10	377	18.0		
	11	833	39.8		
	12	883	42.2		
Age				1.38	0.48
	11-16	1286	61.4		
	17-22	807	38.6		
Board				1.51	1.27
	CBSE	1772	84.7		
	ICSE	45	2.2		
	IGCSE	24	1.1		
	IB	41	2.0		
	State (07)	211	10.1		
Nature				1.96	0.54
	Government	340	16.2		
	Public	290	69.9		
	Private	1463	13.9		

Table 2: Principal Component Analysis with VARIMAX Rotation on PEASIS (N=2093)

		Factors with Loadings					
No. (as in the original tool	**Item**	**1**	**2**	**3**	**4**	**5**	**6**
3	PE class often helps me to learn new skills in sports.	.638					
4	PE develops leadership ability.	.679					
5	PE develops my knowledge of fundamental movement skills.	.625					
13	PE class teaches me socialization and sportsmanship.	.408					
14	The equipment provided by my school is not appropriate for the ratio of class size.		.491				
15	Sometimes PE class gets boring for me.		.478				
18	Too much exercise in PE practical class bothers me.		.349				
21	My parents are not in favor of my PE class.		.432				
17	I don't want to skip my PE class.			.411			
19	PE classes are not only bound to improve the health and fitness in my school but also create recreation during our hectic academic schedule.			.434			
23	I like PE class because I get more chances to play.			.347			
28	PE class is helpful to know the rules of major games and sports.			.500			
7	My PET has some communication problems.				.681		
8	My PET is not able to manage the class.				.629		
9	My PET is not giving me enough PE classes due to his engagement in other responsibilities in school.				.520		
11	After participating in PE activities, I became psychologically strong to tackle real-life situations like; anger management, stress, tension, anxiety, fear, etc.					.701	
12	PE activities improve my attention, concentration, and self-confidence which further leads to academic development.					.498	
20	Other subject teachers often stop us to attend PE class.						.578
22	My school does not give importance to the						.499

	PE subject and its related activities.						
27	The allotted time duration for PE class is not enough.						.469
	Eigenvalue	5.44	3.14	1.31	1.26	1.14	1.04

1= Learning, 2= Obstacle, 3=Interest, 4= PET behaviour, 5= Psychological usefulness, 6= School support

Table 3: Cronbach's alpha Reliability

	No. of items	α
PEASIS	20	0.91
Factor 1: Learning	4	0.76
Factor 2: Obstacle	4	0.63
Factor 3: Interest	4	0.52
Factor 4: PE teacher behavior	3	0.69
Factor 5: Psychological usefulness	2	0.72
Factor 6: School support	3	0.60

Construct Validity

Good factor loadings were obtained based on the 6-factor CFA using the full sample (N=2093). All factor loadings were statistically significant ($p<.001$) and ≥ 0.3, indicating that these items reflected their latent constructs. Correlations between the latent variables were significant ($p<.001$) and in the range of .54 to .64 indicating correlated but distinct constructs. The chi-square test was statistically significant ($\chi 2 = 840.59$, df =225, $p<.001$) and the overall results indicate that the 6-factors model fits the data adequately: CFI= 0.894, TLI= 0.875, RMSEA= 0.051 (CI= 0.048- 0.053), and SRMR (Standardized Root Mean Square) = 0.049.

Discussion

The purpose of this study was to develop and validate the PEASIS in a large sample of school students. The findings support previously developed multi-factor efficacy standardized scales results that this is a reliable and valid scale. The strengths of the study were that each subscale correlated strongly with the total scale as well as with all other sub-scales. PCA statistical study, 6 factors were extracted from a pool of items. The learning factor was saturated by items related to developing important skills like leadership and teamwork, these skills are required to make them responsible citizens of the nation. Prochaska et al. (2003) have found that students who participate in some form of PA and sports have more positive attitudes regarding PE than those who do not, which is in line with earlier research. In line with these findings, the suggested factor learning demonstrated good reliability (.76) among other factors. We believe that students are also learning new sports-related skills and techniques during their PE classes. The Obstacle factor comprised the items which always hamper students' efforts to take part in PE class. Morgan and Hansen (2008) have concluded that barriers within schools that restrict teachers from providing PE programs have been classified as being either institutional (outside the teachers' control) or teacher-related (arising from the teachers' behavior). All these barriers create hurdles to organizing successful PE classes. The third factor, Interest, covered motivational, and enjoyment processes related to participating in PE classes. Recently, interest in the association between students' attitudes toward PE and

their participation in extracurricular PA has been increasing. (Pereira, Santos & Marinho,2020). PE Teacher's behavior factor comprised items measuring the student's view of the PE teacher. Shirotriya (2020) opined that PE teachers are the real craftsmen who are responsible to craft the future of a healthy nation by designing PE activities. The PET's consistent behavior with all student s can encourage them to attend PE classes regularly In line with this thinking, Cruz, Kim, and Kim (2021) have concluded that to strengthen students' positive attitudes toward PE, PE teachers should consider how they interact with students of the same and different gender. Psychological usefulness comprised items of somewhat more specific emotions toward PE, like relaxation, stress, or anxiety related to PE. The student perceives positive emotions, like joy, if he/she evaluates the task as attractive (Beni et al. 2017; Säfvenbom et al.,2015).

Students appreciate PE class as a stress relieve r since they may have fun while learning impo rtant values that will help them become good c itizens of the country. The last factor, School support, items are related to the school's priorities and understanding of PE for the students for their wholesome development. The work of Fairclough and Stratton (2015) suggests that a context for frequent and systematic PA engagement is provided by school PE. To this purpose, it is frequently argued that the inclusion of PE in the curriculum benefits students' health, and fitness should be an important part. School support by rendering regular sports and fitness can be instrumental in developing positive attitudes toward PE in the students.

CONCLUSION

Physical education teachers must have good knowledge to identify the students' attitudes toward different aspects of PE as it is necessary to them modify their teaching practice and keep in mind the significance of positive attitudes toward PE for the involvement of students in PE classes is important to have reliable and valid instruments for its measurement which is standardized in the Indian population. In this study, the psychometric PE attitude scale was developed for Indian students (PEASIS) for measuring the attitudes of students in school settings. The statistical findings support the reliability, representativeness, and homogeneity of PEASIS.

LIMITATIONS

Although the PEASIS show encouraging results, researchers acknowledge some limitations. The alpha coefficient was below that recommended for a new scale. Marsh et al. (1998) suggest that a minimum of three items per scale is usually recommended, as this number will reliably yield convergent solutions in confirmatory factor analysis. But keeping in mind the importance of items and good factor loadings we decided to retain two items in factor 5 i.e., psychological usefulness.

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