

Article

Physical Education and Sport (PES) For Quality Teacher Education

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Abstract: Whereas Physical Education and Sports (PES) have been reported to be crucial to learners, such claims have often been made without empirical support. Given this, this paper reports on a systematic review of the relevance of PES to learners. The review involved 20 empirical studies. Most studies were conducted in the United States, using quantitative research design and focusing on preschool to high school. The studies also demonstrated that PES improves academic performance, motivation, attention, and behaviour. It is recommended that PES be taken seriously at all levels of academics and integrated into the curriculum. While the studies reviewed did not involve higher educational institutions, the benefits can be extended to higher education institutions such as colleges of education and universities.

Keywords: Academic Achievement, Learning, Physical Education, Sports

1. Introduction

This paper reports on a systematic review of empirical research on the significance of Physical Education and Sports in schools (PES). Though related, the concepts of "Physical Education" and "Sports" share some differences that require clarification. Physical education describes the portion of the school curriculum that focuses on helping learners improve their physical competence and confidence and their ability to use these to perform in various activities in many nations, primarily Anglophone ones [1]. On the other hand, the collective noun "sports" describe various activities, processes, social interactions, and anticipated physical, psychological, and sociological results [2]. These two phrases have a rather distinct conceptual difference in this presentation. However, many educational systems use the categories interchangeably or "sports" as a general descriptor [3]. In light of this, and per organisations like the United Nations Educational, Scientific, and Cultural Organization, the all-encompassing term "physical education and sport" (PES) will be used to describe those organised, supervised physical activities that take place at school and during the school day [4].

There are many advantages to participating in Physical Education and Sports (PES). For instance, a study argues that "Physical Education promotes respect for both one's own body and other people's bodies, aids in the integration of mind and body development, fosters an understanding of the importance of aerobic and anaerobic exercise for health, positively boosts self-confidence and self-esteem, and improves social, cognitive, and academic achievement" [5]. It has also been reported that sport offers opportunities to interact with others, adopt various social roles, learn specific social skills (such as tolerance and respect for others), adapt to team/collective objectives (such as cooperation and cohesion), and experience emotions that are unavailable in everyday life [3]. Generally, the literature on the importance of Physical Education and Sports has been theoretical. Thus, it has been criticised for the lack of empirical support [3]. It is, therefore, essential to provide empirical evidence for such theoretical literature. This explains the

How to cite this paper:

Diabor, C. A. (2024). Physical Education and Sport (PES) For Quality Teacher Education. *Universal Journal of Sport Sciences*, 4(1), 1–9.

Retrieved from

<https://www.scipublications.com/journal/index.php/ujss/article/view/1024>

Received: February 13, 2024

Revised: April 16, 2024

Accepted: July 29, 2024

Published: August 11, 2024



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rationale behind the present paper, which seeks to review the benefits of PES as shown by empirical studies. The paper is significant in various ways. Understanding how learners' PES affect academic results has significant ramifications. They include effects on how schools handle health issues.

2. Materials and Methods

Papers for this review were selected through an initial search of ERIC, Expanded Academic Index ASAP, Google Scholar, PsycNET, PubMed, ScienceDirect, Sociological Abstracts, SPORTDiscus and the Cumulative Index to Nursing and Allied Health Literature. The phrase "physical education and sports" served as the primary identifier. The citations and references found in the source documents were then used to locate further journal articles. For this review, published studies that met the following criteria were chosen. Studies had to be written in English, show original data, and be published between 1985 and October 2022; focus on the relevance of Physical Education and Sports (cognitive skills and attitudes, academic behaviours, and academic achievement) and focus on learners. The papers were reviewed, focusing on country of origin, research design adopted, target population, and significance of PES. The findings are summarised in [Table 1](#).

2.1. Countries of Physical Education

The study looked at the countries of origin of the reviewed studies. From the review, it became evident that the United States of America was disproportionately featured in the studies. Specifically, 14 (70%) of the studies were conducted in the USA. Other countries featured in the studies included Australia, Sweden, Israel, and Canada, each with one study. Surprisingly, research of this kind has yet to be conducted in Africa.

2.2. Research Design

Crucially, all the studies reviewed were quantitative in design, involving a variety of approaches. Of essence are studies that adopted the experimental quantitative research design [6, 7]. Previous studies adopted a quasi-exploratory, multivariate analytical approach, used a quantitative survey, and utilised analysis of covariance technique, while some studies involved a longitudinal survey [8-11]. Other approaches used were intervention studies and multiple treatment reversal [12, 13-15]. A multiple baseline across-classrooms design, 2 x 2 x 2 factorial, repeated-measures factorial analysis of variance design, a multilevel multivariate model [16-18].

2.3. Target Population

The studies reviewed involved learners from various academic levels. Two of the studies used kindergarten learners [11, 15]. A study focused on grade seven learners [10]. Other levels that have been the subjects of research are all levels of primary school, grade eleven, grade eight, grade two, and grade one [9, 11-14]. Surprisingly, none of the studies focused on secondary or tertiary-level learners.

Table 1. FINDINGS OF PHYSICAL EDUCATION AND SPORTS PAPERS REVIEWED.

Country	Author	Academic Level	Sports/Physical Education	Design	Findings
USA	Fredricks and Eccles (2008)	7 th grade	school clubs, an organised school sports team, and an out-of-school recreational activity	analysis of covariance techniques	Organised activity participation was associated with higher than expected grades, school value (i.e. perception of the importance of school for the future), self-esteem, resiliency, and prosocial peers, and lower than expected risky behaviour
USA	Pellegrini et al. (1995)	Kindergarten, Grade 2, and Grade 4.	Recess	Experimental	inattention rates were higher before recess than after
Australia	Dollman et al. (2006)	All 450 South Australian government primary schools	PE curriculum time	Survey	There was a strong positive relationship between SES and academic attainment. There was no evidence that schools with relatively high PE time are disadvantaged learners in traditional academic subjects.
USA	Fredricks and Eccles (2006)	11th graders	participation in school clubs and organised sports	community-based longitudinal study	In general, when some prior self-selection factors were controlled, 11th graders' participation in school clubs and organised Sports was associated with concurrent indicators of academic and psychological adjustment and with drug and alcohol use. In addition, participation in 11th-grade school clubs and prosocial activities was associated with educational status and civic engagement 1 year after high school.
USA	Hawkins and Mulkey (2005)	The data collected from the 24,599 eighth-grade learners in 1,052 participating schools	Athletic participation	It is a quasi-exploratory, multivariate analytical approach.	These data offer evidence that athletic participation can and often does positively impact student motivation and engagement and that these positive benefits accrue to both male and female athletes.
USA	Pellegrini et al. (2002)	All of the first grade classrooms in the two schools agreed to participate.	variety of boys' games	Longitudinal	The study found that facilities with games forecast boys' social competence and both boys' and girls' adjustment to first grade.
USA	Stephens and Schaben (2002)	136 eight graders	Athletic	Quantitative	Scholastic Sports participation increases GPA

Sweden	Ericsson (2006)	The study comprised 251 pupils, 152 and 99 in the intervention and control groups, respectively.	physical education and motor training	Intervention study	The results confirm the hypothesis that learners' motor skills improve with extended physical activity and motor training. However, the hypothesis that learners' attention will improve has yet to be confirmed. Although learners in the intervention groups have better attention in school year two than in the control group, the differences do not remain in school year 3. Several results in Swedish and Mathematics confirm the third hypothesis concerning academic achievements.
USA	Maeda and Randall (2003)	second-grade class in an elementary school (N=19) in Hawaii.	Physical activity	a multiple treatment reversal design	First, although there was a small positive effect on math fluency, there was no adverse effect. Second, the classroom teacher noted positive changes in learners' behaviour.
USA	Sallis et al. (1999).	Seven public elementary schools (1,538 learners participated)	Physical education	Experimental design	Despite devoting twice as many minutes per week to physical education as Controls, the health-related physical education program did not interfere with academic achievement. Health-related physical education may have favourable effects on learners' academic achievement.
USA	Mahar et al. (2006)	All kindergarten through fourth-grade learners (15 classes; three classes per grade level) at a public school	a classroom-based physical activity program called Energizers	A multiple baseline across-classroom design	A classroom-based physical activity program was effective for increasing daily in-school physical activity and improving on-task behaviour during academic instruction.
USA	Jarrett et al. (1998)	The participants were learners from 2 fourth-grade classes, each having 25 to 30 learners.	recess	Quantitative	A recess break appeared to have a renewing effect, decreasing their off-task and fidgety behaviours to below their prerecession levels.
USA	Harrison and Narayan (2003).	50,168 ninth-grade public school learners	School team sports	Quantitative	In summary, while participation in any activity generally appears to be better than nonparticipation, participation in Sports (alone or in conjunction with other activities) has a unique association with adequate exercise, milk consumption, healthy self-image, and a lower likelihood of emotional distress, suicidal behaviour, familial substance abuse, and physical and sexual abuse histories.

USA	Uhrich and Swalm (2007)	Grade 5 students from two classes in a K-8 parochial school in the mid-Atlantic region (N= 41)	bimanual activity (sport stacking)	Experimental	participation in a bimanual coordination program, using sport stacking as the activity, may improve Grade 5 learners' reading comprehension skills, regardless of sex.
Israel	Raviv and Low (1990)	Ninety-six learners, who were between the ages of 11 and 12 yr. and from junior high school,	physical education activities	The research design was 2 x 2 x 2 factorial	
USA	McNaughten and Gabbard (1993)	120 sixth-grade learners (60 boys and 60 girls; mean age 11.3 yr.)	Physical education	repeated-measures factorial analysis of variance design	The present findings suggest that physical exertion affects the immediate arithmetic performance of sixth-grade learners.
UK	Dexter (1999)	the records and scripts for a sample of candidates for the 1995 GCSE examination in Physical Education administered by the Midland Examining Group, together with the candidates' GCSE grades for English and Mathematics.	Physical education	a multilevel multivariate model	Football, badminton, hockey, netball and athletics all had low but highly significant positive correlations with GCSE English and GCSE Mathematics grades; rounders were significant for GCSE Mathematics, but basketball was not.
Canada	Ahamed et al. (2007)	All grade 4 and 5 learners (aged 9–11) who normally participated in school PE and returned signed consent forms were eligible to participate in the study. At baseline, parental consent was obtained for 396 learners (N = 198 boys, 198 girls).	Physical activity	a cluster randomized, controlled, school-based intervention trial	Despite dedicating approximately ten additional minutes of daily physical activity, we found that learners' academic performance was not compromised. C
USA	Wallhead et al. (2010)	Participants were 192 learners (97 boys, 95 girls; age range 9–15 years, M age = 10.9 years) and five teachers from four elementary and one junior high school in the Rocky Mountain region of the United States.	Sport Education	A single group pre/post-test prospective design	Physical Education Curriculum Model (SE) would increase autonomous motives in a Physical Education context, which would transfer in part into autonomous motivation to participate in the sports activity opportunity, especially when controlling for the effect of perceived support from other sources
Australia	Spittle & Byrne (2009)	Participants were 115 (male ¼ 97, female ¼ 18) Year-8 learners (aged 13-14 years) in a Sport Education condition (n ¼ 41) and a Traditional condition (n ¼ 74).	Sports Education	is a non-equivalent control group design with pre- and post-test procedures.	The Sport Education condition was more successful in maintaining high levels of intrinsic motivation, task orientation, and mastery climate than the Traditional condition. That is, the Traditional condition was associated with a decrease in adaptive aspects of

					motivation for learners, whereas the Sport Education condition maintained existing levels of motivation.
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3. Results and Discussion on Significance of Physical Education and Sports to Learners

This section presents the findings of the studies concerning the relevance of Physical Education and Sports in school. There is evidence that PES improves academic performance [13]. A previous study revealed a case in point: "Participation in sports is a determinant of higher grades" [10]. Similarly, researchers discovered a significant positive relationship between SES and academic attainment, arguing that no evidence exists that schools with relatively high PE time are disadvantaging learners in traditional academic subjects [9]. Previous research confirmed this: "Generally, 11th graders' participation in organised Sports was associated with concurrent indicators of academic and psychological adjustment and with drug and alcohol use. In addition, participation in 11th-grade school clubs and prosocial activities was associated with educational status and civic engagement at one year after high school" [10]. Another study confirmed that "scholastic Sports participation increases GPA" [19]. Other scientific study also found that "there was a small positive effect of PES on math fluency" [14]. Researchers supported this assertion that "participation in a bimanual coordination program, using Sport Stacking as the activity, may improve Grade 5 learners' reading comprehension skills, regardless of sex" [7].

Researchers found that "despite devoting twice as many minutes per week to Physical Education as Controls, the health-related Physical Education program did not interfere with academic achievement" [6]. Health-related Physical Education may have favourable effects on learners' academic achievement. Physical exertion affects the immediate arithmetic performance of sixth-grade learners [17]. A study found that "football, badminton, hockey, netball and athletics, all had low but highly significant positive correlations with GCSE English grade and GCSE Mathematics grade; rounders' was significant for GCSE Mathematics but basketball was not [18]. An earlier study found that "despite dedicating approximately ten additional minutes of daily physical activity, learners' academic performance was not compromised" [10].

Moreover, some studies reviewed found that PES is associated with increased motivation, attention, and adjustment. Research revealed that "both male and female athletes can and frequently benefit from participating in athletics in terms of learner motivation and engagement" [8]. A study found that the "Physical Education Curriculum Model (SE) would increase autonomous motives in a physical education context, which would transfer in part into autonomous motivation to participate in the sports activity opportunity, especially when controlling for the effect of perceived support from other sources" [20]. Researchers reported that "the Sport Education condition was more successful in maintaining high levels of intrinsic motivation, task orientation, and mastery climate than the Traditional condition. That is, the Traditional condition was associated with a decrease in adaptive aspects of motivation for learners, whereas the Sport Education condition maintained existing levels of motivation" [21].

This implies that "inattention rates were higher before recess than after" [11]. Similarly, learners' motor skills improved with extended physical activity and motor training, with learners in intervention groups having better attention in school year two than in the control group [13]. This posits that "boys' ability in games predicted their social skills and both boys' and girls' adaptability to first grade" [11]. By this, researchers posit that "involvement in organised activities was associated with school value (i.e., perception of the future value of education), personality, perseverance, and prosocial companions, as well as less unsafe conduct" [10].

A study found "positive changes in students' behaviour following consistent involvement in PES" [14]. This indicates that "a recess break appeared to have a renewing effect, decreasing their off-task and fidgety behaviours to somewhat below their prerecession levels" [22]. A classroom-based physical activity program effectively improved on-task behaviour during academic instruction [15]. A similar study reported

that participation in Sports (alone or in conjunction with other activities) has a unique association with adequate exercise, milk consumption, healthy self-image, and a lower likelihood of emotional distress, suicidal behaviour, familial substance abuse, and physical and sexual abuse histories [23].

4. Conclusion

PES have the potential to significantly impact young people's education and development in a variety of ways. At the same time, more analysis and study will help us better grasp the specifics of these contributions. Nevertheless, there is evidence that PES can have a beneficial and significant impact in each category covered—physical, lifestyle, emotional, social, and cognitive. Due to the different situations in which PES occur, such an effect is unique in some ways. Therefore, those who teach and appreciate PES must fight for its inclusion as a crucial component of every child's general education. They need to make the case to administrators, parents, and policymakers not just for the inclusion of PES in the curriculum and for allocating adequate time, but also, to emphasise the significance of the program's quality.

It is also wise to ring the alarm. The scientific data do not support the assertion that these impacts will occur automatically. There is no reason to think that simply encouraging PES engagement will inevitably result in improvements for learners or their communities. Children and young people perceive these excellent characteristics of PES, and whether they fulfil their immense potential largely depends on the actions and interactions of instructors and coaches. Fundamentally important are environments that prioritise good PES experiences, defined by delight, diversity, and participation of all, and that are run by dedicated and qualified teachers, coaches, and parents.

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