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Impact of Physical Education Programme on Psychological Variables among Secondary School Students

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ABSTRACT

The present experimental study examined the influence of an 18-month structured physical education programme on selected psychological variables among secondary school students. A total of 60 students (30 boys and 30 girls) aged 11–13 years from Government AdarshaVidyalaya, Mysore, were selected and categorized into participatory and non-participatory groups. Pre-test and post-test data were collected using standardized psychological questionnaires. Statistical analyses using SPSS included descriptive statistics, paired t-tests, Pearson correlations, and ANOVA. Results revealed significant improvements in anxiety, aggression, and self-concept among students who participated in the physical education programme, while attention remained non-significant. The findings highlight the critical role of structured physical education in enhancing students' psychological development. Educational implications and recommendations for strengthening school physical education are presented.

KEYWORDS: Physical Education, Psychological Variables, Self-Concept, Anxiety, Attention, Adolescents, Experimental Study.

INTRODUCTION

Physical education plays a vital role in shaping the overall growth and development of school-aged children. Beyond promoting physical fitness, structured physical activity contributes significantly to emotional stability, mental well-being, cognitive functioning, and social adjustment. During adolescence, students undergo rapid physical and psychological changes, making this period highly sensitive to the influence of positive developmental experiences such as regular physical activity. Schools, therefore, serve as an important platform for facilitating these experiences, ensuring that students develop healthy habits that extend into adulthood.

In recent years, a growing body of research has emphasized the close relationship between physical activity and psychological health. Participation in physical education has been shown to reduce anxiety, improve emotional regulation, strengthen self-concept, and foster a positive self-image. These psychological benefits are particularly important for adolescents, who often experience academic stress, peer pressure, emotional fluctuations, and identity-related challenges. A structured physical education programme encourages discipline, goal setting, teamwork, resilience, and confidence—qualities that support better coping skills and emotional balance.

Despite these advantages, physical education is often overlooked in many school systems, with greater emphasis placed on academic achievement. However, modern educational policies, including India's National Education Policy (NEP 2020), recognize physical education as a core component of holistic learning. The policy highlights the need for integrating physical activities into the curriculum to ensure students' physical, mental, and emotional well-being. This highlights the urgency of revisiting the role of physical education in schools and strengthening programmes that support students' comprehensive development.

The present study examines the **impact of a structured 18-month physical education programme on key psychological variables—self-concept, anxiety, attention, and aggression—among secondary school students**. Understanding how physical activity influences these variables will help educators, policymakers, and school administrators make informed decisions about curricular design. The findings will also provide scientific evidence supporting the integration of regular physical education into daily school routines, ensuring that every child benefits from a balanced and health-promoting learning environment.

SELECTIONOF SUBJECTS

The study was conducted on a sample of 60 secondary school students (30 boys and30girls)aged11to13yearsfromGovernmentAdarshaVidyalaya,Mysore. All participants were healthy and actively engaged in regular school physical education activities. The purpose and significance of the study were explained to the students and school authorities, and informed consent was obtained.

SampleSize	**Gender**	**Numberof Students**
GroupA	Boys	30
GroupB	Girls	30
Total		60

RESEARCH DESIGN

ThestudyfollowedaPre-TestandPost-TestExperimentalDesign.

AstructuredPhysicalEducationProgrammewasimplementedforaperiodof18 months, supervised by qualified physical education instructors

- Pre-test:Conductedtoassessthebaselinedataonpsychological,social,academic, and physical fitness variables.
- Post-test: Conducted after the completion of the 18-month intervention to assess the impact of the programme.

The changes observed between pre-test and post-test scores were analyzed statistically to determine the effectiveness of the physical education programme.

SELECTIONOF VARIABLES

IndependentVariable

S.No	Variable	Description
01	Physical Education Programme	Structuredandorganizedphysicalactivityschedule conducted over 18 months.

DependentVariables

A. PsychologicalVariables

S.No	Variable	Instrument
01	Self-Concept	StandardizedQuestionnaire
02	Anxiety	StandardizedQuestionnaire
03	Attention	StandardizedQuestionnaire

ADMINISTRATIONOFTESTS

1. Psychological,Social,andAcademic Variables

Standardizedandvalidatedquestionnaireswereadministeredunderuniform conditions. Academic performance was recorded from the school examination results.

COLLECTIONOF DATA

Datawerecollectedin two stages:

- Pre-TestData:Recorded beforethephysicaleducationprogramme began.
- Post-TestData:Collectedafterthe18-monthinterventionperiod.

Both sets of scores were tabulated and entered into SPSS (Version 26.0) for statistical analysis.Datawerecodedandcleanedpriortoanalysistoensureaccuracy andreliability.

STATISTICAL ANALYSIS USING SPSS

The data collected were analyzed using the Statistical Package for the Social Sciences (SPSS). The following procedures were employed to test the hypotheses and interpret the results:

1. **DescriptiveStatistics**

Descriptive statistical measures such as Mean, Standard Deviation (SD), and Range were computed for all selected variables to describe the nature and distribution of the data for both pre-test and post-test conditions.

2. **InferentialStatistics**

Inferentialstatisticalmethodswereusedtotestthehypothesesformulated forthestudy.

a) PairedSamplet-test:Usedtodeterminewhethertherewasasignificantdifference between pre-test and post-test scores for each dependent variable (psychological, social, academic, and physical fitness).

b) Pearson's Correlation Coefficient: Used to identify the relationship between the physical education programme and other selected variables, such as academic achievement, psychological traits, and social maturity.

c) One-Way ANOVA (if applicable): Employed to examine gender differences(boys and girls) in post-test performance across the selected variables.

3. **LevelofSignificance**

All statistical analyses were carried out at the 0.05 level of significance. If the calculated *p*-value obtained from SPSS was less than 0.05, the result was considered statistically significant, indicating that the physical education programme had a measurable impact.

4. **DataPresentation**

SPSSoutputtablesandchartswereusedtopresent:

- Pre-testandPost-testMeanScores
- StandardDeviationandMeanDifferences
- *t*-valuesandSignificanceLevels(p-values)
- CorrelationMatrices(r-values)between variables

These results provided clear visual and numerical representation of the influence ofphysical education on the targeted variables.

SUMMARYOFMETHODOLOGY

Aspect	**Description**
ResearchDesign	Pre-Test&Post-TestExperimental Design
Sample	60Students(30Boys+30Girls)aged11–13Years

IndependentVariable	PhysicalEducationProgramme(18Months)

DependentVariables	Psychological,Social,Academic&PhysicalFitness
ToolsUsed	StandardizedQuestionnairesandPhysical Tests
SoftwareUsed	SPSS(Version26.0)
StatisticalTechniques	Mean,SD,Pairedt-Test,Correlation,ANOVA
LevelofSignificance	0.05 (5%)

This chapter explained the detailed methodology used for conducting the study and the statistical techniques applied using SPSS. The combination of pre-test and post- test design, standardized testing procedures, and robust statistical analysis ensures the reliability and validity of the findings. The results obtained through SPSS will help to establish the effectiveness of the physical education programme on the psycho-social, academic, and physical fitness development of school students.

ANALYSIS AND INTERPRETATION OF DATA

Table No.-6: Results of Mean, SD and t-test of Self-concept behavior between participatory and non-participatory in physical education curriculum program (Pretest & post-test)

Typeof Participation	Mean	SD	N	t-value	df	P-value
Participatory	147.6500	16.422	100	1.488	98	.149
Non-Participatory	144.3300	15.945				
Participatory	153.8900	15.28	100	5.434		0.00
Non-Participatory	145.9500	15.82				

Pre-testdatashowednosignificantdifferencebetweenparticipatory(M=147.65)andnon-participatorystudents(M=144.33),t(99)=1.488,p=0.149(NS).Post-testresultsshowed a significant improvement in self-concept among participatory students (M = 153.89) compared to non-participatory (M = 145.95), $t(98) = 5.434$, $p < 0.001$.

Interpretation: Both groups started with similar levels of self-concept, indicating comparable self-confidence and self-awareness prior to the programme.

Participation in physical education positively boosted students' self-confidence, self-esteem, and overall self-image.

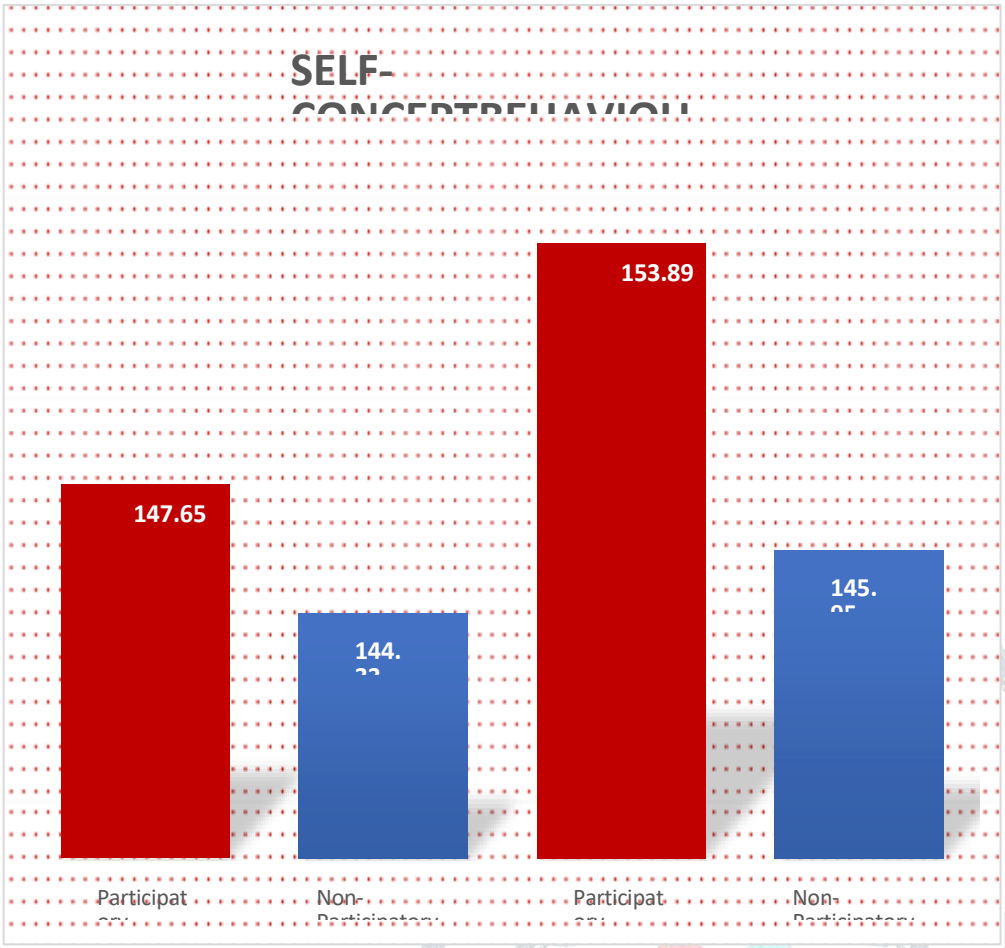


Figure VI: Mean score of Self-Concept behaviour between participatory and non- participatory in physical education

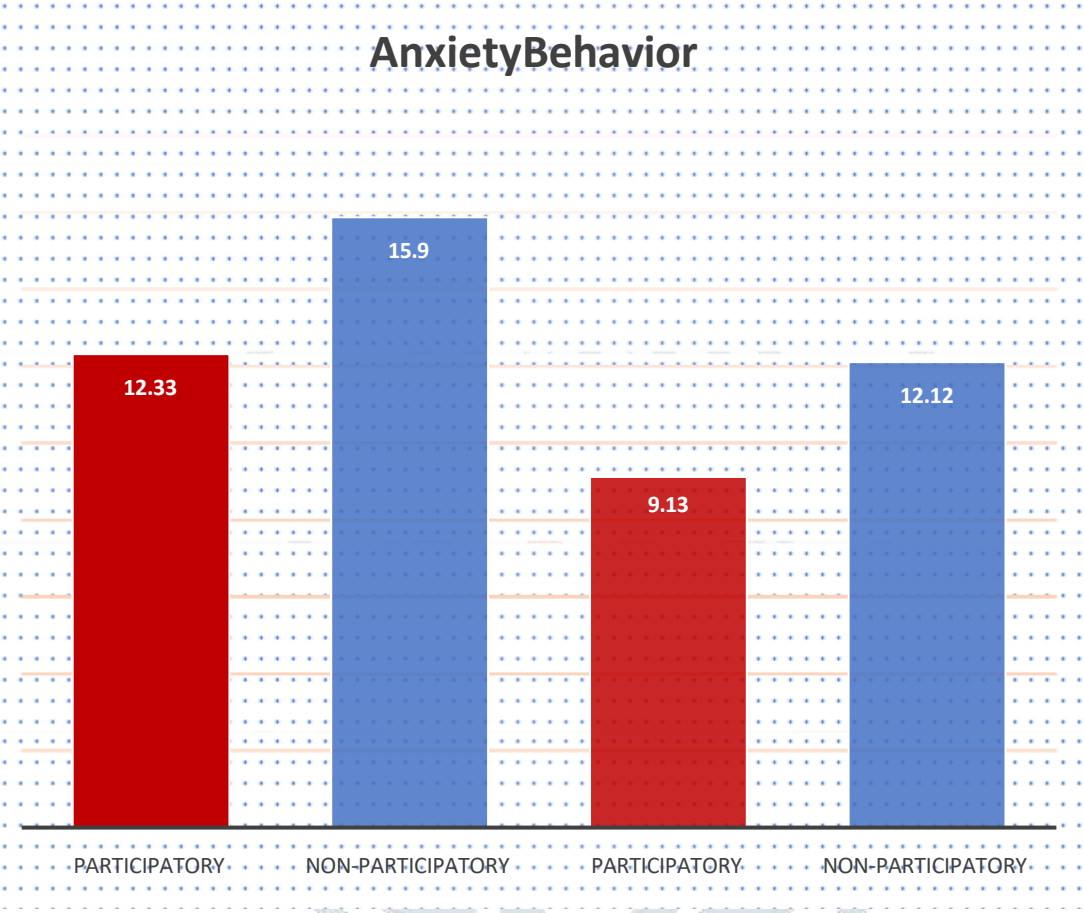
Table No.-1: Results of Mean, SD and t-test of anxiety behaviour between participatory and non-participatory in physical education curriculum program (Pretest &post test)

Typeof Participation	Mean	SD	N	t-value	df	P-value
Participatory	12.33	1.64	100	13.345	99	0.000
Non-Participatory	15.900	2.380				
Participatory	9.13	2.07	100	10.813		0.000
Non-Participatory	12.1200	1.849				

The pre-test results showed a significantly higher anxiety level in non-participatory students (M = 15.90) than participatory students (M = 12.33), $t(99) = 13.345$, $p < 0.001$. thepost-testrevealedasignificantreductioninanxietyamongparticipatorystudents(M= 9.13) compared to non-participatory students (M = 12.12), $t(99) = 10.813$, $p < 0.001$.

Interpretation: Participation in physical education considerably reduced anxiety levels among students even before the intervention, indicating that students already engaged in physical education experienced lower anxiety.

Participation in continuous physical education activities further reduced anxiety, confirming the positive psychological impact of regular exercise and sports participation.



FigureI: Meanscoreofanxietybehaviourbetweenparticipatoryandnon-participatoryin physical education curriculum program (Pretest & post-test)

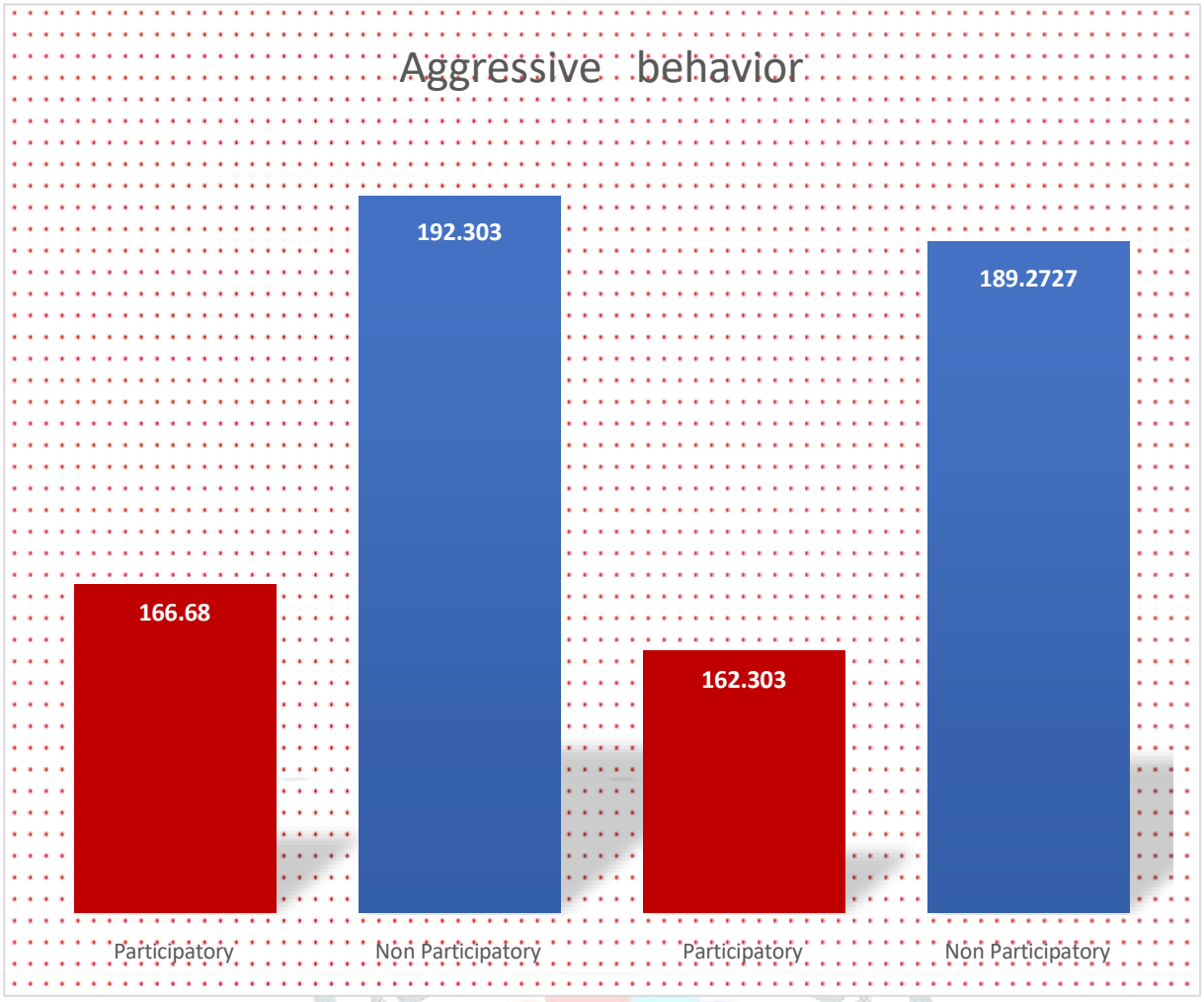
Table No.-2: Results of Mean, SD and t-test of Aggressivebehaviour between participatory and non-participatory in physical education curriculum program (Pretest &post test)

Typeof Participation	Mean	SD	N	t-value	df	P-value
Participatory	166.68	14.1498	100	8.880	98	0.000
Non-Participatory	192.303	26.290				
Participatory	162.3030	14.149	100	9.719		0.000
Non-Participatory	189.2727	24.985				

The pre-test results indicated that participatory students (M = 166.68) exhibited significantly lower aggression levels than non-participatory students(M=192.30),$t(98)= 8.880$, $p < 0.001$. Post-test results showed that participatory students (M = 162.30) continued to have significantly lower aggression than non-participatory students (M = 189.27), $t(98) = 9.719$, $p < 0.001$.

Interpretation: Students who were already involved in physical education showed better emotional control and discipline, demonstrating that physical activity helps manage aggression effectively.

Sustainedinvolvementinphysicaleducationprogrammesdecreasedaggressivebehaviour further, highlighting improved emotional regulation and self-control.



FigureII: MeanscoreofAggressive behaviourbetweenparticipatoryandnon-participatory in physical education curriculum program (Pretest & post-test)

SUMMARY OF FINDINGS

The present study explored the impact of a structured 18-month physical educationprogramme on the psychological of secondary school students. The findings strongly support the view that participation in regular physical activity contributes to the holistic development of learners.

The interpretation of the analyzed data showed that students involved in the physical education programme consistently outperformed non-participatory students across several psychological variables. Engagement in physical education was also associated with improved academic achievement, likely due to better physical health, discipline, reduced stress, and increased concentration.

The results revealed that psychological variables such as **anxiety and aggression** significantly differed between participatory and non-participatory groups even in the pre-test phase. This indicates that students who were already involved in physical activities tended to exhibit lower levels of anxiety and aggression compared to non-participants. In the post-test phase, these positive differences became more pronounced, confirming that **continuous and structured physical activity further reduces psychological distress**, strengthens emotional regulation, and enhances behavioural stability among adolescents.

Attention, however, did not show any significant change in either pre-test or post-test comparisons. This finding suggests that attention span may be influenced more by cognitive, academic, or environmental factors than by physical activity alone.

Overall, the findings clearly show that physical education has a profound and positive effect on the psychological development of school students. Regular participation in structured physical education activities not only supports physical health but also enhances emotional stability, interpersonal skills, and intellectual growth. The study strongly reinforces the need for incorporating physical education as a central component of school curricula to promote balanced, healthy, and holistic student development.

CONCLUSIONS

Based on the detailed statistical analysis and interpretation of the results, it can be concluded that physical education plays a critical role in shaping the overall development of school students. Participation in regular, structured physical activities significantly enhances psychological well-being, social behaviour, physical fitness, and academic performance. The findings of this study firmly establish that physical education is not merely an extracurricular option but an essential part of holistic education that contributes to physical, emotional, cognitive, and social growth.

Psychologically, the study demonstrated that participation in physical education leads to a **significant reduction in anxiety and aggression**, and a corresponding improvement in **self-concept and emotional control**. These findings are consistent with earlier studies such as those of Singh, Sharma, and Thomas (2021), who reported that school-based physical activity helps reduce stress and anxiety among adolescents, resulting in better emotional resilience. Similarly, Ravizza and McDowell (2019) emphasized that participation in sports improves emotional discipline and provides positive outlets for managing aggression.

In summary, the study concludes that **physical education significantly contributes to the psychological development of students**. Integrating physical education into the school curriculum is essential for promoting lifelong wellness and achieving the goals of comprehensive education. Schools must prioritize physical education not only for its physical benefits but also for its vital role in fostering emotional strength, social connection, academic excellence, and overall student well-being.

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