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Impact of Sports Participation on Intelligence among Boys of Age 14 -17 Years

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Abstract: Sports are a meaningful context in which many young people participate, and youth sports teams may be a viable way to promote optimal development. Sports comprises all forms of physical activities that contribute to physical fitness, mental well-being and social interaction. Participation in sport improves the development of peer relationships, establishes the notion of trust and builds teamwork skills. The purpose of this study was to see the impact of sports participation on intelligence among boys. The present study was conducted on 300 male subjects between age group 14 and 17 years. Subjects were divided into following three groups (Group 1—Team Sports Group, Group 2—Individual Sports Group, Group 3—Non-participant Group) using a questionnaire for Sports Activity participation survey. Each group has 100 students. To assess intelligence of the selected subjects, verbal intelligence test prepared by Dr. P. Srinivasan was adopted. Appropriate tool was used to assess the parameters. The results show that majority i.e. 64.7% of the subjects were found to be average intelligent and 22.7 superiorly intelligent. It was revealed that sports participation has no association withrelation to intelligence (IQ) and revealed that there was no significant effect found on intelligence level of the subjects who participated in sports as well as the non-participants.

Keywords: Sports participation, intelligence quotient(IQ), sports players, non-participants.

1. Introduction

Sports are a meaningful context in which many young people participate, and youth sports teams may be a viable way to promote optimal development. Research exists suggesting the value of consciously designed sports programs for positive youth development [1]. Positive youth development refers to the acquisition of competencies and skills needed for optimal youth development that continues into adulthood. These assets include cognitive, social, emotional, and intellectualcompetencies, such as confidence, character, or perseverance. Incorporating physical activity during every school day is essential for numerous reasons. Physical activity has physical and mental health benefits. In addition, physical fitness and physical activity have been linked to positive effects on cognition and concentration in the classroom [2]. Physical activity has also been linked to higher levels of self-esteem and lower levels of anxiety. Other studies have shown a positive relationship between the amount of time in physical education class and classroom performance based on grades [3]. Additionally, several studies have found positive associations between physical fitness and academic performance [4] People know that most children are innately curious and physically active. Physical movements of the body are vital for normal brain development [5]. It is imperative that teachers increase the amount of physical activity opportunities that children have during the school day. More than ever before, children today find themselves playing video games, watching television, or occupying themselves on the computer on the weekends and after school. In fact, there is a growing concern regarding the number of children who are living a sedentary lifestyle [6].

Keeping in view of such need, the impact of sports participation on intelligence has been studied in this

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endeavor. This study will motivate academicians to integrate sports into school curriculum.

2. Materials and Methods

The present study was conducted on 300 male subjects between age group 14 and 17 years. The subjects were class IX to XII students. Permission was obtained for conducting research from the respective school after explaining the details of the study. Informed signed consent was obtained from the participants of the study after explaining all the details of the study. Subjects between 14-17 years were contacted personally by the researcher. Subjects were divided into following three groups (Group 1—Team Sports Group, Group 2—Individual Sports Group, Group 3—Non-participant Group) using a questionnaire for Sports Activity participation survey. Each group has 100 students.

2.1 Measurement of Intelligence

To assess intelligence of the selected subjects, verbal intelligence test prepared by Dr. P. Srinivasan was adopted. This test is divided into four sections with 15 questions in each section having four optional answers of which one is correct answer. The subjects have to tick one of the options as a correct answer.

Scoring was done using an answer key. Every right answer is scored as 1 mark and incorrect answer is given 0. Total raw score was then converted to mental age (MA) in months using Table 1. Higher the score, better the general mental ability is the direction of scoring in this test.

The chronological age (CA) was calculated by converting the age given by the student into months. Finally, the intelligence quotient(IQ) of the students was obtained using mental age (MA) and chronological age by using the following formula:

$$IQ = MA/CA \times 100$$

where MA is mental age and CA is chronological age.

Further, the students were further divided into categories on the basis of IQ score (Table 2).

2.2Statistical Analysis

The computation of data was done with the help of statistical derivatives like mean, standard deviation and standard error of mean for intelligence.To test the impact of various sports groups, and intelligence, paired *t* test was applied. The results obtained were

Table 1 Conversion of raw test score to mental age (in months).

Raw score	Mental age in months	Raw score	Mental age in months	Raw score	Mental age in months	Raw score	Mental age in months	Raw score	Mental age in months
11	116	21	142	31	162	41	179	51	200
12	121	22	144	32	163	42	181	52	203
13	123	23	146	33	165	43	183	53	206
14	125	24	148	34	166	44	185	54	210
15	128	25	150	35	168	45	187	55	213
16	130	26	152	36	170	46	190	56	216
17	132	27	154	37	172	47	192	57	219
18	135	28	155	38	174	48	194	58	223
19	137	29	157	39	175	49	196	59	227
20	139	30	159	40	177	50	199	60	230

Table 2 Categories on the basis of (intelligence quotient) IQ score.

IQ range	Categories	IQ range	Categories
140 and above	Genius	75-89	Border line
125-139	Very superior	50-74	Feeble minded
110-124	Superior	25-49	Imbecile
90-109	Average	0-24	Idiot

Table 3 Frequency distribution of students according to the intelligent quotient score.

IQ	Feeble minded	Borderline	Average	Superior	Total
Frequency(*N*)	2	36	194	68	300
Percentage of subjects	0.7	12.0	64.7	22.7	100

Table 4 Relationship between sports participation and intelligence (IQ).

	Sports vs. IQ			
	Mean (IQ)	S.D. (IQ)	Within &between groups *F*-value	Within &between groups Sig.
Group-1(team sports group)	103.32	11.90		
Group-2(individual sports group)	99.96	10.75	2.81	0.06
Group-3(non-participant group)	99.84	12.63		

Table 5 Effect of sports participation on intelligence (IQ) between different groups.

Effect of sports participation on intelligence		
IQ	*t*-value	*p*-value
Group 1 (team sports) & Group 3 (non-participants)	2.01	0.05
Group 2 (individual sports) & Group 3 (non-participants)	0.07	0.94
Group 1 (team sports) & Group 2 (individual sports)	2.1	0.04

tabulated and wherever necessary, help of suitable figures was taken.

3. Results

The results of Table 3 show that 0.7% participants were feeble minded having IQ 50-74, 12% were found to be on borderline having IQ 75-89, there were 64.7% of the participants were having average IQ i.e. 90-109 IQ, whereas 22.7% students were superior having 110-124 IQ. It shows that majority i.e. 64.7% of the subjects were found to be average intelligent and 22.7 superiorly intelligent.

FromTable 4 it was interpreted that the mean IQ in Group 1 (team sports) was more i.e. 103.32 as compared to Group 2 (individual sports) and Group 3 (non-participants) which is 99.96 and 99.84 respectively. It shows that team sports participants are more intelligent as compared with other twogroups (individual sports and non-participants). The results also show that differences between means of intelligence (IQ) in all three groups of sports participations were non-significant,which means participation in sports is not positively associated with intelligence level of the subjects.

FromTable 5 it was shown that theintelligence quotient (IQ) between Group 1 (team sports) and Group 3 (non-participant) was found to be significant i.e. with *p*-value 0.05. The subjects who participated in team sports were found intelligent as compared with the non-participants in sports.This means participation in team sports is positively associated with intelligence as compared to non-participants. The effect of sports participation between Group 2 (individual sports) and Group 3 (non-participant) of sports participation was found to be 0.94 which is insignificant. Participation in individual sports was not associated with intelligence as compared to non-participants. IQ between Group 1 (team sports) and Group 2 (individual) of sports participation was found to be significant i.e. with *p*-value of 0.04, which means participation in team sports is positively associated with intelligence as compared to participants in individual sports.

4. Discussion and Conclusion

The present study was performed to analyze the effect of sports participation on intelligence. The result shows that the majority i.e. 64.7% of the subjects found to be average intelligent and 22.7% superiorly

intelligent. It was observed from the results that the difference between means intelligence quotient (IQ) of all three groups i.e. team sports, individual sports and non-participant group found to be insignificant. That means sports participation has no association with relation to intelligence (IQ), which revealed that there was no significant effect found on intelligence level of the subjects who participated in sports as well as the non-participants. This result further strengthens the thoughts in the way that sports participation itself helps to improve the grades in academics. This implicates that the students who are having low to higher IQ levels tend to improve on academics by participation in sports.

It was concluded from the study that future research should be conducted in this area to validate or refute the results of this study.

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