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## Comparison of body mass index and leisure activities among school students

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### Abstract

Physical inactivity and reduced physical fitness contribute to the rising burden of chronic diseases in India keeping this in view the present study was planned with the aim to find out the differences on BMI and Leisure time activity. For the purpose of the study total sample consisted of Two thousand Two Hundred and Ten (N=2210) subjects, which include Eight hundred five (N=805) Government and Fourteen hundred five (N=1405) Private students who were studied at various government and private schools of Haryana state during the session 2014-15. The age of the sample were ranged between 13 to 19 years. All the subjects for the present study were selected by using random sampling technique. To measure height and weight Stadiometer and weighing machine was used respectively and the Godin Leisure-Time Exercise Questionnaire (GLTEQ) developed in the year 1997 was used to assess physical activity. Results showed significant differences across the sample. The results were further discussed on the basis of previous researches.

**Keywords:** BMI, leisure time activity, students

### Introduction

Research shows the amount of time young people spend in sedentary behaviours has increased in recent years, and while this includes TV time, it is a dramatic increase in other types of screen time, such as computers and video games, that appears to be driving the trend. There also has been an increase in the percentage of kids who spend an excessive amount of time (2 or more hours per day) in sedentary behaviours. A number of studies link TV viewing with increased risk for overweight and obesity among children and teens (Robert Wood Johnson Foundation, 2014) [2].

Being physically active plays an essential role in ensuring health and well-being, and there is a large body of research investigating the benefits of exercise. Physical activity benefits many parts of the body – the heart, skeletal muscles, bones, blood (for example, cholesterol levels), the immune system and the nervous system – and can reduce many of the risk factors for NCDs. These risk factors include:

- reducing blood pressure;
- improving blood cholesterol levels;
- lowering body mass index (BMI).

The role physical activity plays in many diseases, such as type 2 diabetes, heart disease and many cancers, means that the World Health Organization (WHO) estimates that:

- Physical inactivity is the fourth-leading risk factor for global mortality (World Health Organization, 2004)
- physical inactivity is responsible for 6% of deaths globally – around 3.2 million deaths per year, including 2.6 million in low- and middle-income countries, and 670,000 of these deaths are premature (WHO, 2011) [6].

Because of the many benefits for health of physical activity, recent analysis has suggested that reaching the recommended minimum level of physical activity compared with no activity was found to lead to a reduction in all-cause mortality of 19 per cent – and this rises to 24 per cent if an hour a day is spent in physical activity (Woodcock *et al.*, 2011) [4]. In addition, there is a 31 per cent lower risk for all cause mortality in active individuals (Warburton *et al.*, 2010) [3].

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This demonstrates a positive dose-response – in other words, that the benefits of physical activity increase as the amount and intensity of the activity increases (C3 Collaborating for Health, 2011) [1].

As evident by the pervious researches the importance of physical activities are very important and it is not getting as much attention as it needed. The present study was designed with the aim to assess the differences of school children from Haryana state on BMI and Leisure time activity. Significant differences were expected on both the variables.

**Method  
Sample**

For the purpose of the study total sample consists of Two thousand Two Hundred and Ten (N=2210) subjects, which include Eight hundred five (n=805) Government and Fourteen hundred five (n=1405) Private students who were studied at various government and private schools of Haryana state during the session 2014-15. The age of the sample were ranged between 13 to 19 years. All the subjects for the present study were selected by using random sampling technique.

**Measures**

The following tests and tools were used:

**Table 1:** Showing the variables, Tests / Tools and unit of measurements for Anthropometric variable

S. No.	Sub-Variables	Test/Tools Administered	Unit of Measurement
1	Height	Stadio- Meter	Centimeters
2	Weight	Weighing Machine	Kilograms

The Godin Leisure-Time Exercise Questionnaire (GLTEQ) developed in the year 1985 was used to assess physical activity. Participants were asked to report the number of times they participated in light, moderate and vigorous activity for at least 15 min over a typical 7-day period.

Independent t-test was applied to assess the differences on the variables.

**Results and Discussion**

Results are shown in the following tabulated form.

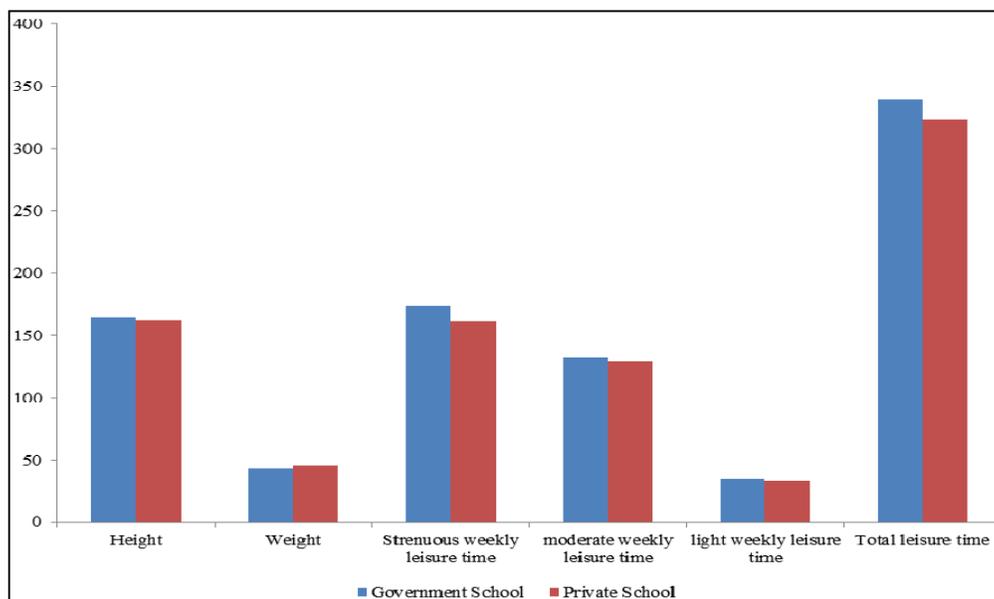
**Table 2:** Mean, SD and t value between government and Private for height among children

	Government school (n=805)		Private school (n=1405)		t value	df	p value
	Mean	SD	Mean	SD			
Height	164.40	13.08	162.14	13.30	3.875	2208	0.00**
Weight	43.74	8.72	45.70	10.03	-4.629	2208	0.00**
strenuous weekly leisure time	173.78	88.50	161.47	85.57	3.214	2208	0.00**
moderate weekly leisure time	131.55	40.51	129.02	41.34	1.393	2208	0.16
light weekly leisure time	34.52	9.58	33.00	9.76	3.551	2208	0.00**
Total leisure time	339.86	116.04	323.50	112.44	3.253	2208	0.00**

\*\* Significant at 0.01 level (t=2.58)

It was revealed from table 2 that Government school students were taller than Private school students with mean scores of 164.40 and 162.14 and further t value (3.875) came out to be significant at 0.01 levels. As far as their weight is concerned the mean scores revealed that Private school students were heavier than Government school students with mean scores of 45.70 and 43.74 respectively furthermore t-test also came out to be significant (-4.629). On Leisure time activities i.e. strenuous weekly leisure time, moderate weekly leisure time,

light weekly leisure time and Total leisure time Government school scored higher as compared to Private school students with mean scores of 173.78, 131.55, 34.52, 339.86 for Government school students and 85.57, 41.34, 9.76 and 112.44 for Private school students. t-test revealed significant t-values for strenuous weekly leisure time (3.214), light weekly leisure time (3.551) and Total leisure time (3.253). Mean comparison of all the variables of the students between Government and Private schools is shown in Figure 1.



**Fig 1:** Showing the mean difference on different variables of the children between government and private schools

The results of this study indicated that increased Physical activities during leisure time leads to greater overall participation by school children in structured physical activity and more physical activity overall. Beyond its impact on youth weight, this is important because increased physical activity by youths is associated with cardiovascular benefits such as a reduction in low-density lipoproteins (bad cholesterol) and the prevention or delay of hypertension; musculoskeletal benefits such as increased bone-mineral density and increased strength and endurance; mental and emotional benefits such as reduced stress and anxiety; and prevention of chronic disease (IOM, 2005).

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