

Original Research Article

Physical Activity Levels in Children in Age Groups of 10 To 15 Years

Thakur Anuprita¹, Yardi Sujata², Baduni Kanishka³, Kothari Hima³

¹Professor, ²Ex-Director & Professor, ³BPT,
School of Physiotherapy, D. Y. Patil University, Navi Mumbai.

Corresponding Author: Thakur Anuprita

Received: 14/09/2015

Revised: 28/09/2015

Accepted: 15/10/2015

ABSTRACT

Objective: This study assesses the level of physical activity in children in the age groups of 10 to 15 years.

Method: This was cross sectional study design. 358 children between 10 to 15 years of age were selected by convenient sampling from various schools in and around Navi Mumbai. The physical activity level was assessed using a validated questionnaire and compared across the age groups.

Results and Conclusion: The boys were observed to have moderate physical activity levels (2.909 +/- 0.411) while the girls exhibited lower scores of physical activity (2.302 +/- 0.171). No significant differences in the activity levels were observed across the age groups in both the sexes. No significant association was observed between physical activity and body mass index, although socioeconomic status had some effect on the scores.

Key words: Physical activity, children, socioeconomic status.

INTRODUCTION

A famous advertisement states that 'Kids should not grow up feeling that play is a button on the remote control, cricket is a multiplayer game on Xbox, run is a command on the windows and hide and seek is a biscuit'

But with the kind of lifestyle the children of this generation live in, it is possible that this could be their way of thinking.

Physical activity is defined as any bodily movement that is produced by contraction of skeletal muscles and that substantially increases energy expenditure. [1] Physical activity is necessary for the sustenance of life; however, the amount of physical activity performed by an individual depends upon one's personal preference and varies from person to

person as well as for an individual over time. [1]

Physical inactivity at any stage of life is a major modifiable risk factor contributing to higher non-communicable diseases like obesity, diabetes, heart disease and stroke.

Major physiological and psychological changes occur during the critical periods of childhood and adolescence. Each of these changes influence adolescent participation in physical activity. [2] Certain healthy and unhealthy lifestyles behaviours are cultivated during these growing years that can influence performance and health condition in adulthood. [3] Regular physical activity during adolescence has been repeated through research for a better health status in adulthood. [4]

However, physical activity levels seem to be on a decline. The decrease in physical activity in children in the current era could be because of many reasons ranging from biological to psychological to social and to environmental. [5]

Thus the aim of this study was to determine the level of physical activity in children in the age group of 10 to 15 years.

MATERIALS AND METHODS

Ethical approval for conducting the study was taken from D. Y. Patil University, Navi Mumbai. Informed consent from parents of the participating students was also obtained. 358 school students between the ages of 10 to 15 years i.e grade 5th to 10th were selected from schools in and around Navi Mumbai in a cluster sample. The Physical Activity Questionnaire (PAQ-A), [6] a self-administered, 7-day recall questionnaire was used to measure general physical activity levels in the school children during the school year.

The questionnaire consisted of 9 questions. Question 1 was based on physical activity performed during spare time in the last 7 days. The students were asked to mark a score on a 5 point scale ranging from 'No' to '7 times or more'. This question included the various activities like sports which were likely to be played by the children. A mean of the activities participated in was calculated as the score for the first question.

Questions 2 to 6 asked the children about their activities performed during physical education (PE) class in school, recess, immediately after school, evenings and weekends respectively. The scoring for each of this question ranged between 1 for no activity and score 5 for maximum activity. The 7th question scored the child in general for his activity level for the last 7 days. The 8th question enquired about the day-wise participation in physical activity and the average physical activity was calculated as the score for question 8. The

9th question was about presence of any sickness that prevented participation in physical activity in the previous week. The final physical activity score was calculated by taking a mean of scores of questions 1 to 8. [6]

Children with scores between 1 to 2.33 were categorised as having low physical activity level, 2.34 to 3.66 as moderate physical activity level, and 3.67 to 5 as high physical activity level. [2]

In addition to this questionnaire, questions regarding their activities at home were also noted. Body mass index and socioeconomic score were also assessed for each child.

RESULTS

A total of 358 children (201 boys and 157 girls) were assessed in this study. The demographics and the PAQ scores of these children are given in Table 1.

Table 1: Average BMI and PAQ scores in study subjects

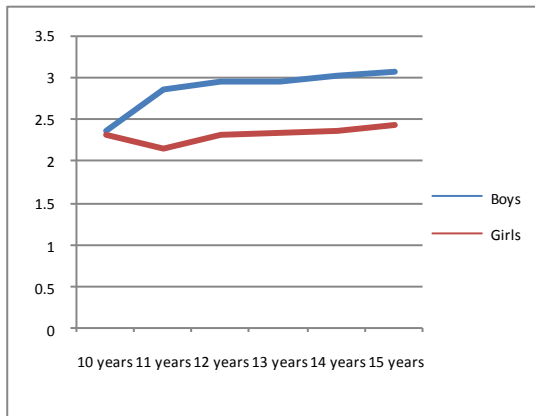
	Age (years)	BMI	PAQ
Boys n=201	13.17 +/-2.252	18.67 +/-0.449	2.909 +/- 0.411
Girls n=157	13.06 +/- 1.972	18.81 +/- 2.47	2.302 +/- 0.171
		P>0.05	P <0.0001

The analysis of data shows about 15% of the boys in low physical activity category, 79% in the moderate category and only 6% in the high physical activity category. Amongst the girls, 59% showed low physical activity while 40% showed moderate and only 1% showed high physical activity level. Physical activity was observed to be more in boys as compared to girls (p<0.0001).

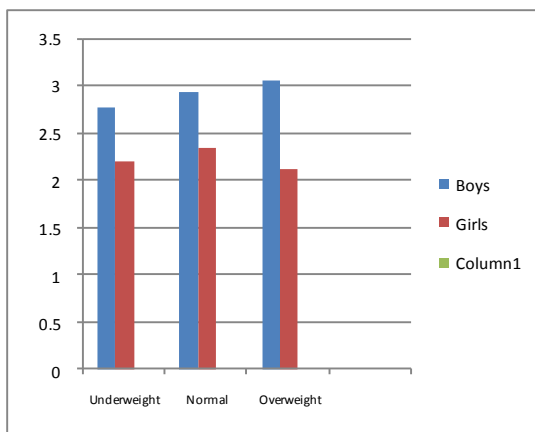
The comparison of PAQ scores across various age groups using ANOVA showed no statistical significant difference as the age increased from 10 years to 15 years in both the sexes (p=0.2361 for boys, p=0.8977 for girls). (Graph 1)

Similarly, physical activity level was also observed not to have any association with the body mass index (BMI). When the data was analysed based

on the BMI levels using ANOVA, the physical activity levels were found to be almost similar whether the children were underweight, normal weight or at risk of overweight ($p=0.2674$ for boys, $p=0.3359$ for girls). (Graph 2)



Graph 1: PAQ scores across the study age groups



Graph 2: Comparison of PAQ scores based on body mass index (BMI)

Table 2: Comparison of the PAQ scores based on socioeconomic status

	Boys	Girls
Low	2.980+/- 0.289	2.185+/- 0.135
Medium	2.589+/- 0.683	2.337+/- 0.741
High	2.976+/- 0.067	2.560+/- 0.156

The Kuppaswamy's Socioeconomic Status Scale [7] was used to classify the children in five classes of socioeconomic status i.e. Upper, Upper middle, Lower Middle/Middle, Upper lower and Lower class. In this study, the children from Upper and upper middle were clubbed together in upper class and those from Upper lower and Lower class were clubbed under lower SES class for

data analysis. The PAQ scores based on the socioeconomic status are given in Table 2.

Comparison of PAQ scores based on socioeconomic classes was done using ANOVA. The p values for the scores were 0.0243 and 0.0213 in boys and girls respectively which was not significant overall. However, they were found to be significantly different between the low and medium SES in boys and low and high SES in girls.

DISCUSSION

Overall the scores in this study reveal low to moderate physical activity scores (table 1) in children with not even 10% exhibiting high activity level. Various reasons can contribute to this decreased level of physical activity. One of the most likely reasons could be the easy availability of television and computer games which the children prefer over outdoor games. [11] The decrease in participation in outdoor games could be due to lack of open spaces to play freely or difficulty in access to parks or playgrounds. Also children from nuclear families with both the parents working found conveyance to activity facilities unfeasible which also contributed to restriction in their physical activities.

Moreover the children spend a better part of their day in school. But, when asked about their physical education (PE) classes in school, most of the children reported of having only one half an hour PE class in a week. In other words, most of their time in school and in extension in a day was spent in a relatively inactive manner. In addition, some of the schools did not have adequate playgrounds for the children to play during the recesses which compelled them to either chat with their peers or play in the corridors.

The other reasons cited by the children for lack of activity after school hours were academic pressures and the need to excel in academics which force

them into attending classes or tuitions after school hours. This was also supported by the fact that the children showed relatively more activity on weekends than school days as most of these schools weekly holidays on Saturday and Sunday.

Additionally, due to unsafe roads, children are discouraged from walking or cycling to school. Private vehicles or buses are popular and they are perceived to be quicker and safer for transport.^[8] This also contributes to reduction in the amount of physical activity.

A gender difference in the physical activity score was also observed wherein boys generally exhibited an average moderate physical activity while the girls had physical activity score in the lower range (table 1). Previous studies also corroborate these findings that generally boys of all ages participate in more physical activity than girls.^[9-11]

It was generally observed that girls preferred watching television, going shopping with friends, or hanging out with a family member, over participating in physical activities.^[11] The reasons for this could be lack of motivation or interest, low self-esteem, fear of injury and/or embarrassment and being shy in participating in physical activities. Barriers like negative comments from boys with regards to inability to play games, lack of skills or understand rules contributed to lesser participation in games and activities in school.^[11]

Family or parents can be another possible barrier for lesser participation by girl child. A girl child may be restricted by the family or parents from playing outside as a way of shielding them from any kind of harm, while boys may be allowed to play outside because they are traditionally viewed as being physically tough.^[2] Additionally, parental beliefs that certain activities are only “male dominated sports” may restrict girls from being more active.^[11]

When the PAQ scores were compared based on the socioeconomic status, it was observed that in girls, the scores increased as the SES moved from lower to higher class while in boys the score was more in the lower and higher classes as compared to the middle class. The reasons for a higher score in girls of upper socioeconomic could be their relatively higher participation in outdoor activities as against the girls from lower SES. It was reported by most of girls from lower SES that they were expected to help with household chores after school hours which may be restricting the time for outdoor activities. At the same time, no such expectations were demanded from the boys.

Many boys from the upper SES stated involvement in some sporting activities. On the contrary, boys from the lower SES probably were more restricted in their choices and opportunities, when physical activity may involve more financial costs (e.g. club memberships) compared with informal play.^[12] However they did report walking to school and playing outdoor activities. This may contribute to their physical activity levels.

One of the limitations of this study was that it did not include the elite schools in the areas due to lack of sanction from the administrations concerned. Reasons cited were that testing would interfere with school curriculum and that they did not allow research projects as a matter of policy.

CONCLUSION

This study assessed the physical activity scores in children in the ages of 10 to 15 years. It was observed that the physical activity was about low to moderate levels in these children with boys performing better than girls. The body mass index did not have any role in the physical activity scores while socioeconomic status did have some effect.

REFERENCES

1. Caspersen C, Powell K., Christenson G. 'Physical activity, exercise and physical fitness: definitions and distinctions for health-related research.' Public Health Report March-April 1985; 100:126-131.
2. Dan SP, Mohd. Nasir, Zalilah MS 'Determination of Factors Associated with Physical Activity Levels among adolescents Attending School in Kuantan, Malaysia' Malaysian Journal of Nutrition 2011; 17(2): 175 – 187.
3. Ortega FB, Ruiz JK, Castillo MJ, Sjostrom M. 'Physical fitness in childhood and adolescence: a powerful marker of health' International Journal of Obesity, 2008, 32: 1-11.
4. Raghavendra M. 'Prioritizing research on multi-stakeholder approach to improve physical activity among adolescents in India' Global Journal of Medicine and Public Health July-August 2012; 1(4): 1-2.
5. Bailey R., Wellard I., Dismore H. 'Girls' participation in physical activities and sports: benefits, patterns, influences and ways forward' 2005 Centre for Physical Education and Sport Research, Canterbury Christ Church University College, U.K. for the World Health Organisation (WHO).
6. Kowalski KC, Crocker RE, Donen RM. 'the Physical Activity Questionnaire for Older Children (PAQ-C) and Adolescents (PAQ-A) Manual' August 2004, College of Kinesiology University of Saskatchewan, Saskatoon, Canada: 1–37. (29 in index for resources)
7. Oberoi S. 'Updating Income Ranges for Kuppuswamy's Socio-Economic Status Scale for the Year 2014' Indian Journal of Public Health April-June 2015; 59(2),156-157.
8. Bhave S., Bavdekar A., Otiv M. 'IAP National Task Force for childhood prevention of adult diseases: Childhood obesity' Indian Paediatrics, June 2004; 41: 559-575.
9. Armstrong N., Spurway N., MacLaren D. 'Paediatric Exercise Physiology-Advances in Sport and Exercise Science Series' Churchill Livingstone Elsevier, 1st Edition 2007, Pg 175-176
10. Greiser M., Vu M., Bedimo A., Neumark D., Moody J., Young D. 'Physical Activity Attitudes, Preferences, and Practices in African American, Hispanic, and Caucasian Girls' Health Education and Behaviour, February 2006; 33(1): 40-51.
11. Vu M., Murrie D., Gonzalez V., Jobe J. 'Listening to Girls and Boys Talk about Girls' Physical Activity Behaviours' Health Education and Behaviour, February 2006; 33(1): 81-96.
12. Kirby J., Kate A. Inchley J. 'Socio-environmental influence on physical activity among young people: a qualitative study' Health Education Research, 2013; 28(6): 954-969.

How to cite this article: Anuprita T, Sujata Y, Kanishka B et al. Physical activity levels in children in age groups of 10 to 15 years. Int J Health Sci Res. 2015; 5(11):193-197.
