



ISSN: 2456-0057

IJPNPE 2019; 4(1): 2660-2662

© 2019 IJPNPE

www.journalofsports.com

Received: 12-02-2019

Accepted: 18-04-2019

Dr. Rajarshi Kar

Assistant Professor, State

Institute of Physical Education

for Women, West Bengal, India

An analysis of physical activity habits of urban male and female adolescents

Dr. Rajarshi Kar

Abstract

The purpose of the study was to analyse physical activity habits of male and female adolescents from urban area. A self-constructed questionnaire was used to collect responses from 799 adolescents (451 girls and 348 boys) on duration of daily moderate- to vigorous-intensity physical activity (MVPA), weekly aerobic activity, weekly muscle strength activities and weekly bone strength activities. Results indicated that in all four variables related to physical activity, both boys and girls were lower than the recommended guidelines. Independent sample t-tests reveal that in comparison to girls, boys participate in more moderate- to vigorous-intensity daily physical activity and weekly aerobic activity.

Keywords: Moderate- to vigorous-intensity physical activity (MVPA), aerobic activity, muscle strength activity, bone strength activity, Physical Activity Guidelines

Introduction

Sedentary behaviour and physical inactivity are causes of a rise in obesity, high blood pressure, stress, and other conditions (Nader *et al.*, 2008) ^[1]. Whereas physical activity program helps to reduce risk of obesity and diabetes (Archer, 2014) ^[2], improve immune system (Sothorn *et al.*, 1999) ^[3], reduction in depression and improve psychological well-being (Hughes *et al.*, 2013) ^[4], Physical inactivity is associated with several cardiovascular disease risk factors in children and adolescents (Andersen *et al.*, 2006) ^[5].

Developed countries have always been concerned about the right levels of physical exercise that their populations should engage in and have established standards for such levels. Piercy, *et al.* (2018) ^[6] recommended American Children and adolescents of 6-17 years to perform at least 60 minutes (1 hour) or more of moderate-to-vigorous intensity physical activity daily. The UK guidelines on physical activity recommended at least 60 minutes of moderate to vigorous physical activity daily for children and young people (Bull, FC, 2010) ^[7]. Canadian Physical Activity Guidelines recommends at least 60 min of moderate- to vigorous-intensity daily physical activity that includes muscle and bone strengthening activities at least 3 days per week (Tremblay *et al.*, 2011) ^[8].

Health risk factors of Indian people are different from the global population (Nag & Ghosh, 2013) ^[9]. Occurrences of Cardiovascular disease (CVD) rates are extraordinarily high in Asian Indians. (Rajeshwari *et al.*, 2005) ^[10]. Though, Indian Govt. has not yet come up with any official recommendations, Misra *et al.*, (2012) ^[11] prepared Consensus Physical Activity Guidelines for Asian Indians where they recommended physical activity guidelines for healthy adults, Children and Adolescents, Pregnant and Lactating Women, elderly and for different Non-communicable Diseases. Based on self-report, this study collected information regarding physical activity habits of adolescent and attempted to identify if the activity level of urban adolescents are as per physical activity recommendations. An additional aim of the study was to compare physical activity habits of male and female adolescents.

Methods

The participants of the study were 799 adolescents (451 girls and 348 boys) from different schools in Kolkata. The age of the students ranged from 12 to 16 years. Data was collected using a self-constructed questionnaire.

Corresponding Author:**Dr. Rajarshi Kar**

Assistant Professor, State

Institute of Physical Education

for Women, West Bengal, India

The questions included daily duration of moderate- to vigorous-intensity physical activity (MVPA), aerobic exercise sessions performed each week, muscle strength activities performed each week, bone strength activities performed each week. Necessary permission was obtained from school principal and then Physical education teachers in the school helped in collecting data from the respondents.

Results

Descriptive statistics (Mean, Median, Mode, Standard Deviation, Std. Error of Mean, Variance, Skewness, Std. Error of Skewness, Kurtosis, Std. Error of Kurtosis, Range, Minimum Score, Maximum Score) of different variables are presented in table 1.

Table 1: Descriptive statistics of Physical Activity Related Variables

	Daily MVPA Duration (min.)		Weekly Aerobic Activity (days)		Weekly Muscle Strength activity (days)		Weekly Bone Strength activity (days)	
	Female	Male	Female	Male	Female	Male	Female	Male
Mean	34.08	37.56	1.61	1.99	.91	1.13	1.23	1.4
Std. Error of Mean	.904	1.05	.080	0.10	.066	0.08	.088	0.10
Median	29.43 ^a	30	2.00	2	.00	.71	.00	0
Mode	30	30	0	0	0	0	0	0
Std. Deviation	19.20	19.59	1.69	1.92	1.41	1.48	1.86	1.83
Variance	368.56	383.79	2.86	3.67	1.99	2.19	3.47	3.35
Skewness	1.43	1.10	1.11	0.85	1.50	1.16	1.65	1.34
Std. Error of Skewness	0.12	0.13	0.12	0.13	0.12	0.13	0.12	0.13
Kurtosis	2.63	1.38	1.15	0.17	1.75	0.54	2.09	1.19
Std. Error of Kurtosis	0.23	0.26	0.23	0.26	0.23	0.26	0.23	0.26
Range	110	110	7	7	7	7	7	7
Minimum	10	10	0	0	0	0	0	0
Maximum	120	120	7	7	7	7	7	7

Students were asked about the average daily duration of moderate- to vigorous-intensity physical activity (MVPA) performed by them and it was found that the average duration of MVPA of female students is 34.08±19.20 minutes and 37.56±19.59 for male students with a range of 110 where some respondents participated in physical activity for the duration of 10 minutes/day (minimum) and few did it for 120 minutes/day (maximum). It can also be seen that the data of MVPA duration is positively skewed as the value of skewness (1.43 for females and 1.10 for males) is more than twice of its standard error of skewness. Kurtosis is positive in both the cases of females and males indicating a leptokurtic distribution.

Enquiry was also made regarding the number of days in a week when aerobic activities were performed. In average, female respondents performed 1.61±1.69 days and male respondents performed 1.99±1.92 days of aerobic activities per week. Range of days in a week where aerobic activities were performed was 7 (maximum 7 and minimum 0) for boys and girls both. Data of aerobic days is positively skewed as the value of skewness (1.11 for girls and 0.85 for boys) is more than twice of its standard error of skewness. Kurtosis is positive in both the cases of females and males indicating a leptokurtic distribution.

Female participation in muscle strength activities was 0.91±1.41 days in average and for males it was 1.13±1.48 days. Range of days in a week where muscle strength activities were performed was 7 (maximum 7 and minimum 0) for male and female both. Data of muscle strength days is positively skewed as the value of skewness (1.50 for girls and 1.16 for boys) is more than twice of its standard error of skewness. Distribution was leptokurtic in both the cases of females and males as Kurtosis is positive.

When they were asked about bone strength activities, it was found that mean participation in bone strength activities was 1.23±1.86 days for girls and 1.4±1.83 days for boys. Range of days in a week where bone strength activities were performed was 7 (maximum 7 and minimum 0) for boys and girls both. Data of muscle strength days is positively skewed as the value of skewness (1.65 for females and 1.34 for males) is more than twice of its standard error of skewness. Kurtosis is positive in both the cases of girls and boys indicating a leptokurtic distribution.

Independent sample t-test was conducted to analyze the significance of mean difference of physical activity related variables between girls and boys. Results are presented in table 2.

Table 2: Independent sample t-test for means of physical activity related variables

Variable		T	DF	P Value	Mean Difference	Standard Error Difference
Daily MVPA Duration	Equal variances assumed	-2.50	797	0.013	-3.46	1.38
	Equal variances not assumed	-2.50	738.68	0.013	-3.46	1.39
Weekly Aerobic Activity	Equal variances assumed	-2.99	797	0.003	-0.38	0.13
	Equal variances not assumed	-2.94	696.06	0.003	-0.38	0.13
Weekly Muscle Strength activity	Equal variances assumed	-1.80	797	0.072	-0.18	0.10
	Equal variances not assumed	-1.80	740.95	0.073	-0.18	0.10
Weekly Bone Strength activity	Equal variances assumed	-1.32	797	0.188	-0.17	0.13
	Equal variances not assumed	-1.32	752.65	0.187	-0.17	0.13

Independent sample t-test found a significant difference in daily MVPA duration between girls (M=34.08, SD=19.20) and boys (M=37.56, SD=19.59); T (797) = -2.50, p = 0.013. Weekly aerobic activity was also different between girls

(M=1.61, SD=1.69) and boys (M=1.99, SD=1.92); T (797) = -2.99, p = 0.003. Difference in frequency of muscle strength and bone strength activities between boys and girls was non-significant.

Discussion

The aim of this survey study was to analyse the physical activity patterns of boys and girls in the adolescent stage and to find out if the physical activity habits of the adolescents living in urban area are in compliance with the physical activity recommendations.

According to Piercy *et al.* (2018) ^[6], American teenagers should engage in moderate- to vigorous-intensity physical exercise for at least 60 minutes per day. However, our study indicated that the majority of adolescent boys and girls do not engage in the required amount of physical activity. According to the study's findings, 81.4% of girls and 74.1% of boys self-reported engaging in less than 60 minutes of MVPA per day, while 38.1% of girls and 29.6% of boys did not even engage in 30 minutes of moderate- to vigorous-intensity exercise each day.

As per self-report 33% of boys and 38.4% of girls didn't engage in even one aerobic activity session each week. Aerobic activity participation of 77.4% girls 67.2% boys was below the recommended level of at least 3 days per week. The mean aerobic activity was 1.61 days for girls and 1.99 days for boys.

In the present investigation, average participation of girls in muscle strengthening activities is 0.91 days per week and 1.13 days per week for boys whereas 54% boys and 64.3% girls did not participate in any weekly muscle strength activities. As muscle strengthening activities are recommended to be included at least 3 days per week (Tremblay *et al.*, 2011; Misra *et al.*, 2012) ^[8, 11], urban adolescents in Kolkata are far less than the recommended level.

As per self-report, average weekly bone strengthening activities performed by girls are 1.23 days per week and by boys are 1.4 days per week. This level is way less than the recommended level of minimum 3 days per week of bone strengthening activities (Piercy, *et al.*, 2018; Misra *et al.*, 2012) ^[6, 11]. Among boys 50.6 % and among girls 58.5% did not participate in any weekly bone strengthening activities and participation of 80.9% was below the recommendation of at least 3 days per week.

Another purpose of the study was to compare boys and girls of adolescent age in different variables related to physical activity habits. Boys displayed higher mean values than girls in case of MVPA, aerobic activities, muscular strength activities and bone strength activities. Boys were significantly higher in moderate- to vigorous-intensity daily physical activity and weekly aerobic activity. Although some studies indicated that females were more active at specific intensities (Al-Hazzaa, HM, 2007) ^[13] and in particular age groups (Telama and Yang, 2000) ^[12], the majority of studies in this age group revealed results that were similar to those (Caspersen *et al.*, 2000; Van Mechelen *et al.*, 2000) ^[14, 15] of this study. Therefore, the literature review and our findings are consistent. Positive skewness indicates that the data distribution is tilted to the lower side which is also a matter of concern.

References

1. Nader PR, Bradley RH, Houts RM, McRitchie SL, O'Brien M. Moderate-to-vigorous physical activity from ages 9 to 15 years. *Jama*. 2008;300(3):295-305.
2. Archer T. Health benefits of physical exercise for children and adolescents. *Journal of Novel Physiotherapies* 2014;4(2):203.
3. Sothorn MS, Loftin M, Suskind RM, Udall JN, Blecker U. The health benefits of physical activity in children and

adolescents: Implications for chronic disease prevention. *European Journal of Pediatrics*. 1999;158:271-274.

4. Hughes CW, Barnes S, Barnes C, Defina LF, Nokonezny P, *et al.* Depressed Adolescents Treated with Exercise (DATE): A pilot randomized controlled trial to test feasibility and establish preliminary effect sizes. *Ment Health Phys Act*; c2013. p. 6. DOI: 10.1016/j.mhpa.2013.06.006.
5. Andersen LB, Harro M, Sardinha LB, Froberg K, Ekelund U, Brage S, Anderssen SA. Physical activity and clustered cardiovascular risk in children: a cross-sectional study (The European Youth Heart Study). *The Lancet*. 2006;368(9532):299-304.
6. Piercy KL, Troiano RP, Ballard RM, Carlson SA, Fulton JE, Galuska DA, *et al.* The physical activity guidelines for Americans. *Jama*. 2018;320(19):2020-2028.
7. Bull FC and the Expert Working Groups. Physical Activity Guidelines in the U.K.: Review and Recommendations. School of Sport, Exercise and Health Sciences, Southborough University; c2010.
8. Tremblay MS, Warburton DE, Janssen I, Paterson DH, Latimer AE, Rhodes RE, Duggan M. New Canadian physical activity guidelines. *Applied Physiology, Nutrition, and Metabolism*. 2011;36(1):36-46.
9. Nag T, Ghosh A. Cardiovascular disease risk factors in Asian Indian population: A systematic review. *Journal of Cardiovascular Disease Research*. 2013;4(4):222-228.
10. Rajeshwari R, Nicklas TA, Pownall HJ, Berenson GS. Cardiovascular diseases: A major health risk in Asian Indians. *Nutrition Research*. 2005;25(6):515-533.
11. Misra A, Nigam P, Hills AP, Chadha DS, Sharma V, Deepak KK. Gupta, for the Physical Activity Consensus Group S. Consensus physical activity guidelines for Asian Indians. *Diabetes Technology & Therapeutics*. 2012;14(1):83-98.
12. Telama R, Yang X. 'Decline of Physical Activity from Youth to Young Adulthood in Finland', *Medicine and Science in Sports and Exercise*. 2000;32:1617-1622.
13. Al-Hazzaa HM. Health-enhancing physical activity among Saudi adults using the International Physical Activity Questionnaire (IPAQ). *Public Health Nutrition*. 2007;10(1):59-64.
14. Caspersen CJ, Pereira MA, Curran KM. 'Changes in Physical Activity Patterns in the United States, by Sex and Cross-Sectional Age', *Medicine and Science in Sports and Exercise*. 2000;32:1601-1609.
15. Van Mechelen W, Twisk JWR, Post GB, Snel J, Kemper HCG. Physical Activity of Young People: The Amsterdam Longitudinal Growth and Health Study, *Medicine and Science in Sports and Exercise*. 2000;32:1610-1616.