# Evaluation of Physical Activity Status among Yazd High School Students on the Model of the World Health Organization in 2015

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**ABSTRACT**

**Introduction:** Physical activity and healthy eating at an early age are two key elements in prevention of Non-Communicable Diseases. Therefore, regular physical activity is recommended to improve public health and to reduce the burden of diseases and medical costs in communities. The aim of this study was to determine the status of physical activity in Yazd high school students

**Methods:** A total number of1018 male high school students participated in this cross-sectional study. They were permanent residents of Yazd city in the school year of 2015-2016.

Multistage cluster classification and stratified sampling methods were applied to collect samples. A validated Persian standardized World Health Organization questionnaire (GSHS) was used as a data collection tool. After completing the questionnaire by students, data were analyzed by SPSS.

**Results:** only 11.6 % of participants reported physical activity for at least 60 minutes a day. Inert activities such as watching television or playing computer games for more than 2 hours during a typical day was reported by 531 participants (55 %). Based on body mass index, 18.23 % of students were obese and 13.22 % were overweight.

**Discussion and conclusion:** The results of this study suggest that the level of students' physical activities is low. Paying more attention to physical activity and designing curriculums that devote more hours for physical activities are recommended. Encouraging physical activity in leisure time and providing proper facilities for adolescents are further suggestions.

**Keywords:** Physical activity, Male students, GSHS

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## Introduction

Physical health is the main prerequisite for mental and social health development. Physical health is related to mental and social health. There are two important problems in dealing with the transitional period of infectious diseases to chronic non-communicable diseases [1]: low physical activity and poor dietary status. These factors are among the main susceptibilities to deal with chronic diseases like cardiovascular disease, cancer, and stroke, that are the three leading causes of death in adults over 18 years [2-5]. Physical activity decreases the risk of obesity, chronic diseases, and potentially could change high risk life styles like inappropriate dietary habits, smoking, and substance abuse to a safer life manner [6]. It is predicted that more than 70 % of obese adolescents will be obese adults in the future that is probably a consequence of continuing inappropriate life style such as lack of physical activity and having a sedentary life style [7]. In addition, high risk and inappropriate behaviors are huge challenges in the field of healthcare which are the leading cause of mortality among the young people and adolescents in each area worldwide [8, 9]. The development of modern technologies and machinery life style has led to lack of physical activity among different age groups especially children and adolescents; this is considered as a serious threat in these groups of society [10]. Low physical activity is expressed as a new health problem by the World Health Organization [11]. According to WHO, 60 minutes of mild physical activity per day is needed for a child or an adolescent to be at a standard level of cardiovascular, respiratory, and musculoskeletal health, respectively [12-14]. Therefore, regular physical activity is recommended to improve public health and to reduce the burden of disease and medical costs among the communities [15]. In adolescence the need for taking dietary elements is increased but the desire for doing some physical activities is reduced [16]. Some studies showed that those adolescents who spend more than 2 hours in a day on a sitting activities like watching TV are prone to mental and physical disorders [17]. Different studies have been conducted on physical activity among children and adolescents so far [10]. Awareness about physical activity status among children and adolescents and its indicators can be helpful in educational and executive planning to encourage the children having more physically active behaviors and life style. World Health Organization recommended a questionnaire for evaluation of adolescents' health and relative risk factors. Since there has been no available report on physical activity status among students in high schools of Yazd city according to GSHS (Global School-based Student Health Survey) questionnaire, we decided to perform the current study to determine the physical activity status among this social group. The purpose of this study was to provide a suitable demographic and statistical data to compare physical activity status in Yazd with other areas and prepare basic information for future interventional studies.

## Methods

This cross-sectional study was conducted on all male students studying at high school level in city of Yazd in educational year 2015-2016.

Sample selection was done on 1018 high school male students through multi-stage cluster and stratified sampling method. Stratified sampling in each educational area was performed considering the proportion of students in public schools / private school according to their educational grade. Clusters were determined at school levels (first or second) and 25 students were estimated as the size of each cluster. The sample size was calculated ultimately as 1000 according to cluster sampling method to achieve proper estimation of physical activity status (confidence level 95 %, frequency of proper activity in student 25 % [10], margin of error 3.3 %, and cluster coefficient 1.5). A list of all high schools was obtained and randomly 10 schools were selected in each statistical zone. One class of middle grade was select randomly from each school. In other words, 40 clusters consisting of 25

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students were selected in which every school classes were considered as a cluster and all students in that class entered the study.

Data collection was done in cooperation with a team of trained physicians for completion of questionnaires under standardized protocols of the World Health Organization in all phases18) [18]. The Persian translation of GSHS version 2013 was used as the study questionnaire which its validity and reliability was approved by Ziaei [19]. The collected questionnaires had identification codes instead of students' names. Questionnaires contained demographic data and 9 other classifications of information regarding alcohol consumption, nutritional behaviors, substance abuse, healthcare issues, psychological health, physical activities, supportive factors, smoking, and violence. These questionnaires were completed with verbal consents expressed by the participants. Physical activity was defined as any kind of activity that leads to an increase in breathing and pulse rate. It was classified in three categories: less than two times per week as low physical activity, between 2-4 times per week as moderate activity, and more than 5 times as severe physical activity. For those sedentary activities like watching TV, less than 2 hours was considered as trivial time waste while more than 2 hours was taken as time wasting. After completing the questionnaire by students, information was analyzed by software SPSS and comparative tests like chi-squared and spearman correlation were conducted. In all cases the significant level were considered as 0.05.

## Results

Totally 1018 high school students participated in this study. All of them were permanent residents of Yazd city. Totally, 52 % of students were studying at private schools and 48 % at public schools.

The frequency distribution based on parental education status revealed that 28 % of mothers and 36.4 % of fathers had university educational degrees (Table 1)

An average of 6 - 7 hours of night sleep was reported by 47.3 % of participants before going to school; however, 25.1 % of them had more than 7 hours of night sleep.

Furthermore, it was observed that 59.1 % of participants had a normal BMI and 17.8 % had a BMI more than 30 (considered as obese).

**Table 1.** Summary results of parental education level among the students

| Education level | Education level of mother | | Education level of Father | |
|---|---|---|---|---|
| | Percentage | Number | Percentage | Number |
| Illiterate | 4.5 % | 41 | 2.2 % | 22 |
| Primary school | 21 % | 190 | 15.3 % | 140 |
| Middle school | 19.2 % | 174 | 19.5 % | 178 |
| High school | 27.3 % | 247 | 26.6 % | 243 |
| Bachelor degree | 21.3 % | 193 | 25.2 % | 230 |
| Higher educations | 6.7 % | 61 | 11.2 % | 120 |

According to participants' self-reports, 11.6 % had a regular physical activity for at least 60 minutes per day during last year.

The frequency distribution of physical activity among students is shown at Table 2.

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**Table 2.** Frequency Distribution of Physical Activity among Students in Educational Year 2014-2015

| VARIABLES | The amount of physical activity during last 7 days* | | | |
|---|---|---|---|---|
| | Low Number (Percentage) | Intermediate Number (Percentage) | High Number (Percentage) | Total® Number (Percentage) |
| Minimum 60 minutes walking in a day | 363 (37.5) | 402(41.4) | 204 (21.1) | 969 (100) |
| Go to school on foot or by a bicycle | 433 (45.1) | 240 (25) | 288 (29.9) | 961 (100) |
| Going to body fitness classes | 561 (57.9) | 231 (23.8) | 177 (18.3) | 969 (100) |
| Doing some exercises in order to muscular strengthen | 542 (61.8) | 216 (24.6) | 119 (13.5) | 877 (100) |
| Doing stretching exercises | 569 (64.9) | 213 (24.3) | 95 (9.3) | 887 (100) |

*less than two times per week as low physical activity, between 2-4 times per week as moderate activity and more than 5 as severe physical activity.
®All participants have not answered all questions.

Information tabulated in Table 2 represent that 55 % of participants had sedentary activities like watching TV or playing computer games for more than 2 hours in an ordinary day. However, 44.2 % of them did not play any kind of sports games in a sports team during last year. Of 1018 students, 66 (7.5 %) had a regular daily exercise program and physical activity to strengthen their muscles, while 336 students (38.3 %) had no stretching exercise during last week. Regarding design of a physical health plan, 61.3% of students reported that they did not receive any training in extraordinary or ordinary classes. For education on prophylaxis in the case of physical traumas in sports activities, 502 students (57.6 %) had not received any kind of education.

More than half of the students (50.5 %) had no training regarding the benefits of physical activities in any of their classes and 52.9 % of them had no experience in learning about opportunities of developing physical activities in their societies.

Based on the achieved data in this study, there is a significant association between educations around benefits of physical activities and having any of these 3 experiences: being physically active for at least 60 minutes continuously during last 7 days, attendance in a body fitness classes during last 12 months, or having stretching exercises accompanied by playing in a sports team during last 12 months ($p<0.05$). (Table3).

According to Table 3, there is a significant correlation between receiving any kind of education on benefits of physical activities and doing stretching exercises or passing the distance between home to school by a bicycle or taking a walk ($p<0.05$).

Based on the data revealed in the current study, there is a significant association between studentship physical activities and parental educational status as well as the maternal educational status ($p<0.05$). But there was no significant correlation between the studentship physical activities and the type of their schools, that is public or private school ($p>0.05$) (Table 3).

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**Table 3.** Correlation between physical activity and receiving relevant education from school, type of school, educational grade, sleeping time, parental educations, and BMI of students during educational year 2014 - 2015

| | | Types of physical activity in terms of number of days per week | | | | |
|---|---|---|---|---|---|---|
| | | **60 minutes walking per day** | **Passing the distance between school and home by a bicycle or on foots** | **Attendance in body fitness classes** | **Doing sedentary activities** | **Playing in a sports team** |
| Learning to design a healthcare plan | Test statistic*<br>P value | 26.077<br>0.025 | 18.710<br>0.176 | 25.787<br>0.004 | 15.917<br>0.102 | 16.011<br>0.014 |
| Benefits of physical activities | Test statistic*<br>P value | 11.290<br>0.663 | 29.870<br>0.008 | 9.892<br>0.450 | 14.477<br>0.152 | 7.757<br>0.256 |
| Opportunity in the society | Test statistic*<br>P value | 22.187<br>0.075 | 23.998<br>0.046 | 30.104<br>0.001 | 9.681<br>0.469 | 8.162<br>0.227 |
| Type of school | Test statistic*<br>P value | 13.572<br>0.059 | 7.336<br>0.395 | 1.646<br>0.896 | 7.628<br>0.178 | 2.212<br>0.530 |
| Grade | Test statistic**<br>P value | -0.108<br>0.007 | -0.022<br>0.586 | -0.005<br>0.894 | 0.073<br>0.072 | 0.030<br>0.481 |
| Sleeping time | Test statistic**<br>P value | 0.125<br>0.000 | 0.057<br>0.050 | 0.102<br>0.003 | 0.029<br>0.398 | 0.122<br>0.000 |
| Father education | Test statistic**<br>P value | 0.027<br>0.431 | -0.082<br>0.007 | 0.060<br>0.077 | -0.007<br>0.845 | 0.016<br>0.655 |
| Maternal Education | Test statistic**<br>P value | 0.031<br>0.365 | -0.156<br>0.000 | 0.075<br>0.027 | 0.111<br>0.001 | 0.021<br>0.550 |
| BMI | Test statistic**<br>P value | 13.572<br>0.059 | 7.336<br>0.395 | 1.646<br>0.896 | 7.628<br>0.178 | 2.212<br>0.530 |

Chi-value*
Spearman's rho**

## Discussion

This study was conducted through WHO method to evaluate the correlation between physical activity status and sedentary behaviors with educational contexts about physical activity among male high school students

Despite reaching the optimum level of sports benefits after around 30 minutes of continued walking in adults, this rate is at least 60 minutes of continued physical activity among children aged between 5 to 17 [20].

Based on the instructions for physical activities among children and adolescents, a minimum of 60 minutes of physical activities is required in an ordinary day which should be planned from moderate to severe intensity in an aerobic condition for at least 3 days in a week. This is the standard for physical activity among these age groups [21].

The reported results showed that 37.5 % of participants had a low level of physical activity and 41.4 % have mentioned an intermediate level of physical activity. These findings were similar

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to those of Kelishadi et al. who classified the amount of physical activity among Iranian students into 3 levels: level 1 for those students who had a low physical activity (34.4 %), level 2 for students with a moderate physical activity (38.9 %), and level 3 for those who had a high physical activity (25.1 %) [22].

The amount of physical activity among 13-year old Malaysian teenagers was investigated by Dawn et al. They categorized participants into three categories: 22 % with low physical activity, 73.1 % with moderate physical activity, and 4.8 % with high physical activity [23]. It seems that the difference is due to different culture, scoring methods, and classification strategies as well as application of different questionnaires.

The achieved results from this study revealed that nearly 55 % of participants spent more than 2 hours per day on sedentary hobbies like watching TV or playing computer games. This finding was similar to the one indicated by Magnosanet et al. who reported a time duration of more than 3 hours per day for watching TV or playing computer games among the participants. Based on their findings, girls more than boys were involved in time consuming sedentary hobbies like watching TV [24].

The study conducted by Ziaei et al. revealed that totally 8 - 9 hours per day had been spent on sedentary hobbies like watching TV or playing computer games by the participants. This amount contains nearly the half of activities with mild intensity [10].

There is a huge amount of physical inactivity and this can be considered as an alarm point to the healthcare providers and managers. The development of urbanization, modern technologies availability, lack of suitable places specified for education, and also free time and undeveloped culture of public exercise are all among the leading factors to sedentary and physical inactivity among the students.

Our findings revealed that 80 % of participants were in intermediate or low physical activity groups that could be considered as an important indication for educational necessity on the issue of physical activity in schools [25]. So, based on this finding, an urgent need is felt for school staffs to ratify some obligatory rules on the issue of giving information about the importance of exercise and physical activities.

The collected data showed that level of physical activity is low in both public and private schools. This finding was the same as the results revealed by Khodamoradi et al. who have expressed that the physical activity in Iranian schools is extremely low whether at public schools or a private ones [1].

There was a significant relationship between physical activity (e.g., going to school by foot or bicycle, exercising in sports team etc.) and parents' education ($P<0.05$) . this finding is different from some studies in which no significant effect was found for frequency of physical activity [7, 26] and is similar to some others [27]. This conflicting results may be related to socio-cultural context of communities or difference in design procedure.

A significant relationship was found between the average amount of sleep before going to school and physical activity, but there were no significant relationship among the amount of time spent on watching TV, playing computer games, talking with friends, and other variables in this study.

Our findings showed that there is an inverse significant relationship between physical activity and body mass index which is similar with some other studies [28, 29].

No significant association was observed between sedentary behaviors such as watching TV and using a computer with a BMI in our study, that is in contrary to some other findings [29].This study was faced with some limitations, such as use of self-report questionnaires. The other limitation was that enrollment of students in schools out of Yazd was not possible. So, researchers could not assess the relationship between location and physical activity. Additionally, similar studies among female students can help to analyze gender differences in physical activity.

## Conclusion

According to the findings of the current study, there is a great crisis on the issue of physical

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activity among the high school students in Yazd. So, it is preferred to employ a multi directional strategy to overcome the undesirable situations which exist among Iranian schools. This strategy should provide students with appropriate and continues information about the benefits of physical activities. It also requires to prepare all sports' facilities needed to improve the physical activity status among the students.

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## Conflict of interest

The authors declare that there is no conflict of interests.

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