UNIVERSIDADE NOVA DE LISBOA
Escola Nacional de Saúde Pública

Revista portuguesa de saúde pública

www.elsevier.pt/rpsp

Original article

Type and quantity of physical activity and screen based activities of students from the 7th to the 12th grades: Characterization and association

Anabela G. Silva[a,b,*], *Alexandra Queirós*[a,c], *Maritza Neto*[d], *Nelson P. Rocha*[c,e]

[a] *School of Health Sciences, University of Aveiro, Aveiro, Portugal*
[b] *Center for Health Technology and Services Research (CINTESIS.UA), Aveiro, Portugal*
[c] *Institute of Electronics and Telematics Engineering of Aveiro (IEETA), University of Aveiro, Aveiro, Portugal*
[d] *Primary Healthcare Center, Ílhavo, Portugal*
[e] *Department of Medical Sciences, University of Aveiro, Aveiro, Portugal*

ARTICLE INFO

Article history:
Received 14 February 2016
Accepted 19 July 2016
Available online 20 October 2016

Keywords:
Physical activity
Students
Screen time

ABSTRACT

Aim: To examine the association between self-reported physical activity and self-reported screen based time.
Materials and methods: 969 high school students filled in a questionnaire on physical activity and screen based activities. Correlation analysis between time spent in moderate/vigorous physical activities and time spent in screen based activities were performed.
Results: No association was found between physical activity and time spent watching TV, playing or using computers. A low correlation was found between time using mobile phones and time spent performing moderate physical activities ($r = 0.09$, $p < 0.05$), and vigorous physical activities ($r = 0.13$, $p < 0.05$).
Conclusions: These findings suggest that screen time is not displacing physical activity.

Tipo e quantidade de atividade física e uso de dispositivos eletrónicos de estudantes do 7.° ao 12.° ano: caracterização e associação

Palavras-chave:
Atividade física
Estudantes
Dispositivos eletrónicos

RESUMO

Objetivos: Explorar a associação entre o nível de atividade física e o uso de dispositivos eletrónicos.
Materiais e métodos: Novecentos e sessenta e nove alunos do secundário preencheram um questionário sobre atividade física e uso de dispositivos eletrónicos. Foi realizada uma análise de correlação entre o tempo despendido em atividade física moderada e intensa e o uso de dispositivos eletrónicos.

* *Corresponding author.*
E-mail address: asilva@ua.pt (A.G. Silva).
http://dx.doi.org/10.1016/j.rpsp.2016.07.001

Resultados: Não há correlação entre a atividade física e ver televisão, jogar ou usar computadores. Há uma correlação baixa entre o uso de telemóveis e a atividade física moderada ($r = 0,09$, $p < 0,05$) e vigorosa ($r = 0,13$, $p < 0,05$).

Conclusões: Estes resultados sugerem que o uso de dispositivos eletrónicos não interfere com a prática da atividade física.

Introduction

The evidence of the benefits of physical activity in maintaining good health and function is unquestionable. For children and adolescents in particular, physical activity has been shown to be associated with positive changes in adiposity, skeletal health, psychological health, improved self-esteem, fewer depressive symptoms[1] and improved cardiorespiratory fitness.[2] Furthermore, it appears to have long term influence on preventing weight gain, obesity, coronary heart disease, type 2 diabetes mellitus, Alzheimer's disease and dementia.[3] Despite the consensual benefits of physical activity across the lifespan, studies have shown a decline in physical activity and an increase in sedentary behaviors during adolescence.[3,4] Increased sedentary behaviors in adolescence have been associated with time spent using electronic devices such as mobile phones, computers, television (i.e., screen time), which in turn, has been shown to be related with hyperactivity/inattention problems, less psychological well-being, less perceived quality of life,[5] obesity[6] and increased pain prevalence.[7]

The hypothesis that screen time could displace physical activity has been proposed.[8] However, the evidence on the association between increased screen time and decreased physical activity is conflicting. A few studies have found an inverse association between physical activity and screen time,[9–11] while others have found no association between these factors.[12,13] A recent systematic review identified a negative association between screen time and physical activity/fitness,[11] while a longitudinal study found an inverse but non-substantive association between TV/DVD use and leisure physical activity and no association between computer/game use and leisure physical activity,[14] suggesting that the association might depend on the type of screen based activity. Furthermore, a cross country study[9] suggests that the strength of the association between screen based activities and physical activity depends on gender, country/region, type of screen-based activity and intensity of physical activity. For example, watching television, gaming and using a computer showed different patterns of association with physical activity and the strength of association depended on whether vigorous physical activity or moderate to vigorous physical activity was considered in the analysis. In addition, the strength and direction of the association varied between the South European countries and the Nordic European countries.[9] Therefore, more research is needed in Portugal investigating the potential association between screen time and physical activity for students, in particular whether an association between these variables might depend on the intensity and type of physical activity or type of screen based activity. The main aim of this study is to investigate whether an association exists between self-reported physical activity and self-reported screen based time when considering the intensity (moderate or vigorous) and type (e.g. football, skating, cycling) of the physical activity and the type of screen based activity (watching TV/DVD, playing, using mobile phones and computers) in a sample of Portuguese students from the 7th to the 12th grades. Secondary aims are to characterize the type of physical activities and screen based activities in which students are involved and time per week spent performing them.

Methods

This study received Ethical approval from the Council of Ethics and Deontology, University of Aveiro. Written consent was obtained from the students or from both the students and their parents if students were younger than 16 years old.

Study design and population

This study took place in the Council of Ílhavo. This Council spent approximately 1.002.6 euros in the year of 2012 in games and sports, an investment that is higher than the National average (data retrieved from http://www.pordata.pt/ on the 30th of May 2016) and its offer in terms of sports/physical activity includes: swimming, athletics, handball, basket, football, martial arts, ballet, tennis, sailing, surf and canoeing. This Council has 5 schools with the 7th or higher grades. These 5 schools had approximately 1330 students from the 7th to the 12th grade at the time of data collection. All these students were invited to participate in the study. A questionnaire was administered using an Electronic Data Capture (uEDC^{TM}) Solution developed for this study. This uEDC^{TM} solution (uedc.iuz.pt) is an Electronic Data Capture solution for the healthcare field, using an information system to collect and process clinical data, involving patients, researchers and healthcare professionals. It enables the setup of a clinical study, in accordance with an established protocol defined by the study promotor. During a physical education lesson each student was given an individual password and login and asked to complete the online questionnaire. Students not at school on the day of data collection were invited to participate on another day. Data were collected between March and June 2014.