



# Sedentary behaviour and clustered metabolic risk in adolescents: The HELENA study<sup>☆</sup>

J.P. Rey-López<sup>a,\*</sup>, S. Bel-Serrat<sup>a</sup>, A. Santaliestra-Pasías<sup>a</sup>,  
A.C. de Moraes<sup>a,b</sup>, G. Vicente-Rodríguez<sup>a</sup>, J.R. Ruiz<sup>c</sup>,  
E.G. Artero<sup>d</sup>, D. Martínez-Gómez<sup>e</sup>, F. Gottrand<sup>f</sup>,  
S. De Henauw<sup>g</sup>, I. Huybrechts<sup>g</sup>, A. Polito<sup>h</sup>, D. Molnar<sup>i</sup>,  
Y. Manios<sup>j</sup>, L.A. Moreno<sup>a</sup>

<sup>a</sup> GENU Research Group, University of Zaragoza, C/Corona de Aragón, 42, Zaragoza E-50009, Spain

<sup>b</sup> School of Medicine of the University of São Paulo, Department of Preventive Medicine – Post-Graduate Program in Science, São Paulo, Brazil

<sup>c</sup> Department of Physical Education and Sport, School of Physical Activity and Sport Sciences, University of Granada, Spain

<sup>d</sup> Department of Exercise Science, Arnold School of Public Health, University of South Carolina, Columbia, USA

<sup>e</sup> Immunonutrition Research Group, Department of Metabolism and Nutrition, Institute of Food Science and Technology and Nutrition (ICTAN), Spanish National Research Council (CSIC), Madrid, Spain

<sup>f</sup> Inserm U995, IFR114, Faculté de Médecine, Université Lille2, France

<sup>g</sup> Department of Public Health, Faculty of Medicine and Health Sciences, Ghent University, Belgium

<sup>h</sup> National Research Institute for Food and Nutrition, INRAN, Rome, Italy

<sup>i</sup> Department of Paediatrics, University of Pecs, Pécs-József, Hungary

<sup>j</sup> Department of Nutrition and Dietetics, Harokopio University, Athens, Greece

Received 31 January 2012; received in revised form 25 June 2012; accepted 27 June 2012

Available online 17 August 2012

## KEYWORDS

Sedentary behaviour;  
Physical activity;  
Clustered metabolic

**Abstract** *Background and aims:* Although sedentary behaviours are linked with mortality for cardiovascular reasons, it is not clear whether they are negatively related with cardio-metabolic risk factors. The aim was to examine the association between time engaged in television (TV) viewing or playing with videogames and a clustered cardio-metabolic risk in adolescents.

<sup>☆</sup> A list with all the HELENA members is shown as Supplementary data.

\* Corresponding author. Tel.: +34 876 554 091; fax: +34 976 400 340.

E-mail address: [jprey@unizar.es](mailto:jprey@unizar.es) (J.P. Rey-López).

risk;  
Videogames

**Methods and results:** Sedentary behaviours and physical activity were assessed in 769 adolescents (376 boys, aged 12.5–17.5 years) from the HELENA-CSS study. We measured systolic blood pressure, HOMA index, triglycerides, TC/HDL-c, VO<sub>2</sub>max and the sum of four skinfolds, and a clustered metabolic risk index was computed. A multilevel regression model (by Poisson) was performed to calculate the prevalence ratio of having a clustered metabolic risk. In boys, playing >4 h/day with videogames (weekend) and moderate to vigorous PA (MVPA) was associated with cardio-metabolic risk after adjustment for age, maternal education and MVPA. In contrast, TV viewing was not associated with the presence of cardio-metabolic risk.

**Conclusion:** In boys, playing with videogames may impair cardio-metabolic health during the adolescence. Adolescents should be encouraged to increase their participation in physical activity of at least moderate intensity to obtain a more favourable risk factor profile.

© 2012 Elsevier B.V. All rights reserved.

## Introduction

Nowadays, the presence of cardio-metabolic risk factors (dyslipidemia, glucose intolerance, hypertension and obesity) is highly prevalent in young people from developed countries. For example, in a recent study carried out with American youth half of them presented at least one cardio-metabolic risk factor [1]. This is of concern for the future population health, as cardio-metabolic risk factors in children and adolescents predict coronary heart disease [2] and mortality in adulthood [3]. Therefore, actions designed to improve cardio-metabolic health during the first decades of life are urgently needed to reverse this situation.

There is increasing evidence that physically active subjects have a better cardio-metabolic profile than less active ones [4]. However, less is known about the impact of behaviours that elicit low energy expenditures, namely sedentary behaviours, on different cardio-metabolic risk factors. Martínez-Gómez et al. [5] found that adolescents with a high level of sedentary behaviour (using accelerometry) had less favourable systolic blood pressure, triglycerides and glucose levels and a higher cardiovascular risk score. In contrast, in a representative sample of US adolescents [6], neither the volume nor pattern of sedentary behaviour (with accelerometry) or computer use were found to be predictors of high cardiovascular risk score. Furthermore, controversial data exist on the association between TV viewing and cardio-metabolic risk [6,7]. On the other hand, no study has examined the association between videogames playing and indexes of cardio-metabolic risk.

From a methodological perspective, the use of a clustered cardio-metabolic risk score is recommended because it can compensate for day-to-day fluctuations observed when using the single risk factors [4]. The Healthy Lifestyle in Europe by Nutrition in Adolescence cross-sectional study (HELENA-CSS) brings with it the opportunity to gain a better insight into the relationship of sedentary behaviours with cardio-metabolic health in adolescents.

The main objective of this study was to examine the relationships between sedentary behaviours (TV viewing and videogames) and clustered cardio-metabolic risk in adolescents.

## Methods

### Study population

The HELENA-CSS aimed to describe the lifestyle and nutritional status of European adolescents. Data collection took place between October 2006 and December 2007 in the following cities: Athens and Heraklion in Greece, Dortmund in Germany, Ghent in Belgium, Lille in France, Pecs in Hungary, Rome in Italy, Stockholm in Sweden, Vienna in Austria, and Zaragoza in Spain. Further information about the study design has been published elsewhere [8]. Participants were recruited at schools. To ensure that the heterogeneity of social background of the population would be represented, schools were randomly selected after stratification by school zone or district. In cases where the selected schools refused to participate, a second list of substitute schools had already been drawn up. Up to three classes from two grades were selected per school. A class was considered eligible if the participation rate was at least 70%. The general inclusion criteria for HELENA were age range of 12.5–17.5 years, not participating simultaneously in another clinical trial, and free of any acute infection during the last week [8].

From a sample of 3528 adolescents who met the HELENA general inclusion criteria, one third of the school classes were randomly selected in each centre for blood collection, resulting in a total of 1089 adolescents. For the purposes of the present study, adolescents with valid data for sedentary behaviour, food habits, accelerometry, cardiorespiratory fitness, total cholesterol, HDL-c, insulin, glucose, systolic blood pressure and triceps, biceps, subscapular and supra-iliac skinfolds were finally included in the analysis ( $n = 769$ ). The study sample did not differ in sex distribution, median age, median body mass index (BMI) and mean values of cardiorespiratory fitness from the full HELENA sample (all  $p > 0.05$ ).

The study was performed following the ethical guidelines of the Declaration of Helsinki 1975 (as revised in 1983). The study was approved by the Research Ethics Committee of each city involved. Written informed consents were obtained from both the adolescents and their parents.

Download English Version:

<https://daneshyari.com/en/article/3002266>

Download Persian Version:

<https://daneshyari.com/article/3002266>

[Daneshyari.com](https://daneshyari.com)