

Moderate-to-vigorous physical activity as a mediator between sedentary behavior and cardiometabolic risk in Spanish healthy adults: A mediation analysis

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Background: Public health strategies for cardiovascular prevention highlight the importance of physical activity, but do not consider the additional potentially harmful effects of sedentary behavior. This study was conducted between 2010 and 2012 and analyzed between 2013 and 2014. The aim of the study was to analyze the relationship between sedentary behavior and cardiometabolic risk factors in the Spanish adult population and to examine whether this relationship is mediated by moderate-to-vigorous physical activity (MVPA). **Methods:** The cross-sectional study included 1122 healthy subjects belonging to the EVIDENT study. Sedentary behavior was objectively measured over 7 days using Actigraph accelerometers. We assessed waist circumference (WC), triglycerides-to-HDL-C ratio (TG/HDL-C), and mean arterial pressure (MAP), and undertook homeostasis model assessment (HOMA-IR). Linear regression models were fitted according to Baron and Kenny procedures for mediation analysis. **Results:** TG/HDL-C and HOMA-IR were significantly higher in adults who spent more minutes in sedentary activities after adjusting for potential covariates. However when MVPA was added to the ANCOVA models as covariate the effect of sedentary time on HOMA-IR disappeared. In addition, MVPA acted as a full mediator of the relationship between sedentary time and HOMA-IR. In contrast, subjects with lower levels of MVPA presented worse cardiometabolic profiles than those from higher MVPA categories, even after

controlling for sedentary time and other potential confounders. Conclusions: These results suggest that both MVPA and sedentary time should be considered when developing cardiometabolic risk guidelines. Trial registration: NCT01083082. © 2015 García-Hermoso et al.

Insulin resistance

Mediation analysis

Moderate-to-vigorous physical activity

Sedentary lifestyle

glucose

high density lipoprotein cholesterol

insulin

triacylglycerol

HDL-triglyceride

high density lipoprotein

high density lipoprotein cholesterol

triacylglycerol

actimetry

adult

aged

alcohol consumption

Article

blood pressure measurement

body mass

cardiometabolic risk

cross-sectional study

female

homeostasis model assessment of insulin resistance

human

insulin resistance

linear regression analysis

male

mean arterial pressure

medical assessment

moderate to vigorous physical activity

physical activity

sedentary lifestyle

smoking

Spaniard

very elderly

waist circumference

blood pressure

Cardiovascular Diseases

exercise

metabolic syndrome X

middle aged

physiology

risk factor

Spain

young adult

Adult

Aged

Aged, 80 and over

Blood Pressure

Cardiovascular Diseases

Cholesterol, HDL

Cross-Sectional Studies

Exercise

Female

Humans

Insulin Resistance

Lipoproteins, HDL

Male

Metabolic Syndrome X

Middle Aged

Risk Factors

Sedentary Lifestyle

Spain

Triglycerides

Waist Circumference

Young Adult