Sitting, Physical Activity and Cardiovascular Disease Risk: Opposite Sides of the Same Coin?

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OVERVIEW

- Definition & Epidemiology of Sedentary Behavior
- Sedentary Behavior & Health Outcomes
- Prospective Associations between Sedentary Behavior & Mortality
- Is Sedentary Behavior Independent of Physical Activity?
Physical Activity, Fitness and Mortality

DEFINITION OF SEDENTARY BEHAVIOR

“Any waking behavior characterized by an energy expenditure ≤ 1.5 METs while in a sitting or reclining posture.”

EPIDEMIOLOGY OF SEDENTARY BEHAVIOR

Sitting in US Adults, NHANES 2009-10

Harrington et al, J Sci Med Sport 2014
Sedentary Behavior and All-Cause Mortality

Almost All of the Time

N = 17,013 Canadian Men and Women,

½ of the Time

Follow-up Years Cumulative Survival (%)

MSSE

Almost None of the Time

80

All-Cause Mortality

¾ of the Time

Sedentary Behavior and Daily Sitting

P<0.0001 P<0.0001 NS P<0.0001

N = 17,013 Canadian Men and Women,

Daily Sitting

Canada Fitness Survey 12-year Mortality Follow-up, 1981-1993

Is Sedentary Behavior Independent of Physical Activity?

Different strategies have been used by the prospective mortality studies:

**Controlling for Physical Activity**
- Inoue et al. 2008
- Katzmarzyk et al. 2009
- Patel et al. 2010
- Dunstan et al. 2010
- Wijndaele et al. 2011
- Stamatakis et al. 2011
- van der Ploeg et al. 2012
- Matthews et al. 2012
- Brown et al. 2013
- Leon-Munoz et al. 2013

**Stratification by Physical Activity Level**
- Katzmarzyk et al. 2009
- Patel et al. 2010
- Wijndaele et al. 2011
- Stamatakis et al. 2011
- van der Ploeg et al. 2012
- Matthews et al. 2012
- Brown et al. 2013
- Leon-Munoz et al. 2013

**SEDENTARY BEHAVIOR, PHYSICAL ACTIVITY & MORTALITY**

N = 17,813 Canadian Men and Women,
Canada Fitness Survey 13 year Mortality Follow-up, 1981-1993
Katzmarzyk et al. Medicine 2003

“Inactive” defined as ≥ 7.5 MET-hr/week

**SUMMARY**

- Sedentary behavior is ubiquitous in modern society.
- Sedentary behavior is related to obesity, metabolic risk factors, and mortality from all causes and CVD.
- The degree to which sedentary behavior is independent of physical activity per se requires more research.

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**THANK YOU!**