

La sédentarité au travail : un risque professionnel à part entière

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Yolande Esquirol, Jean Ferrières
CHU Toulouse, UMR Inserm 1027

Key points

- Sedentary behavior kills
- We have sedentary behavior at work

**Sedentary behavior is an
occupational risk**

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- We have sedentary behavior at work

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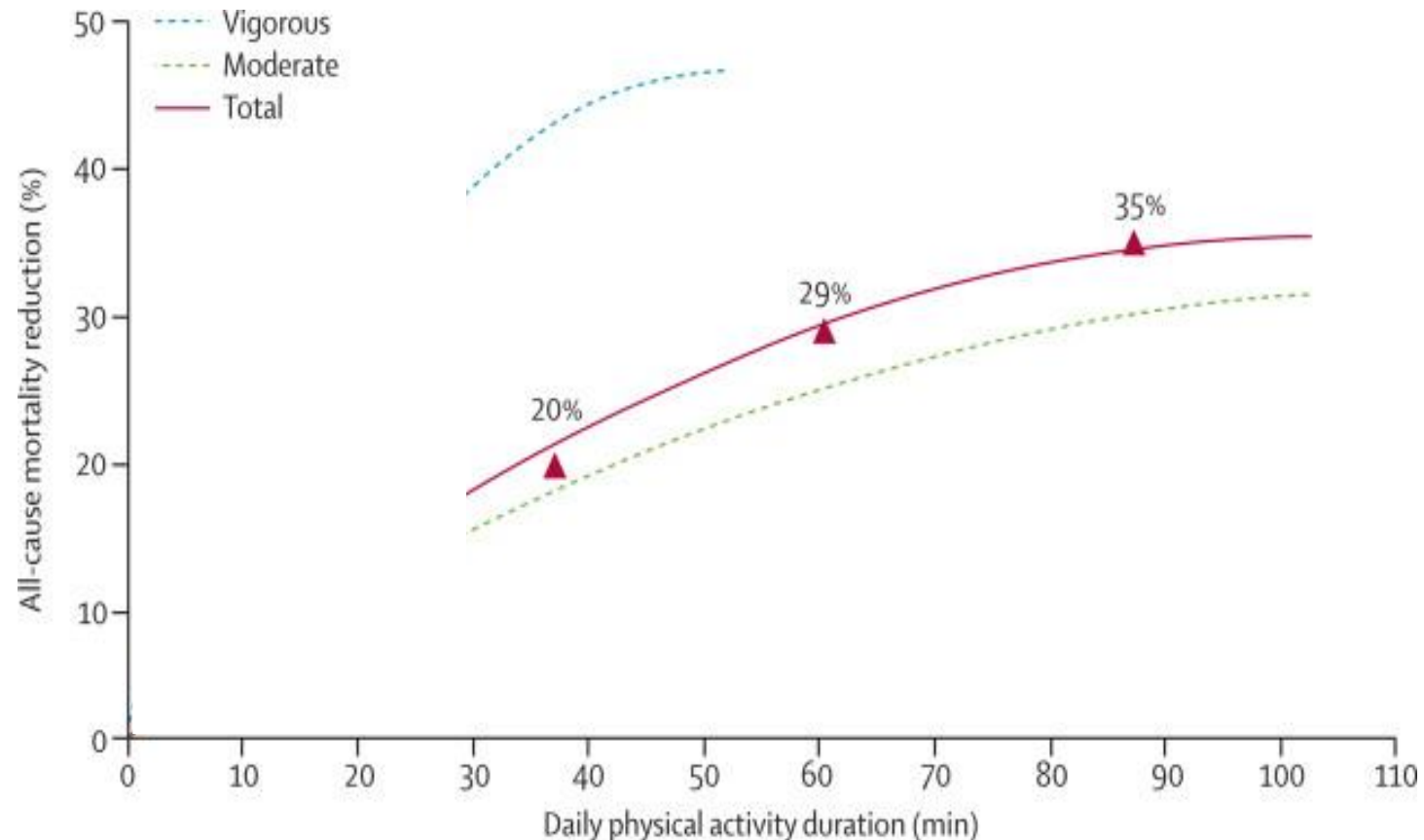
Background

- Physical activity
- Sedentary behavior

Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study

Chi Pang Wen*, Jackson Pui Man Wai*, Min Kuang Tsai, Yi Chen Yang, Ting Yuan David Cheng, Meng-Chih Lee, Hui Ting Chan, Chwen Keng Tsao, Shan Pou Tsai, Xifeng Wu

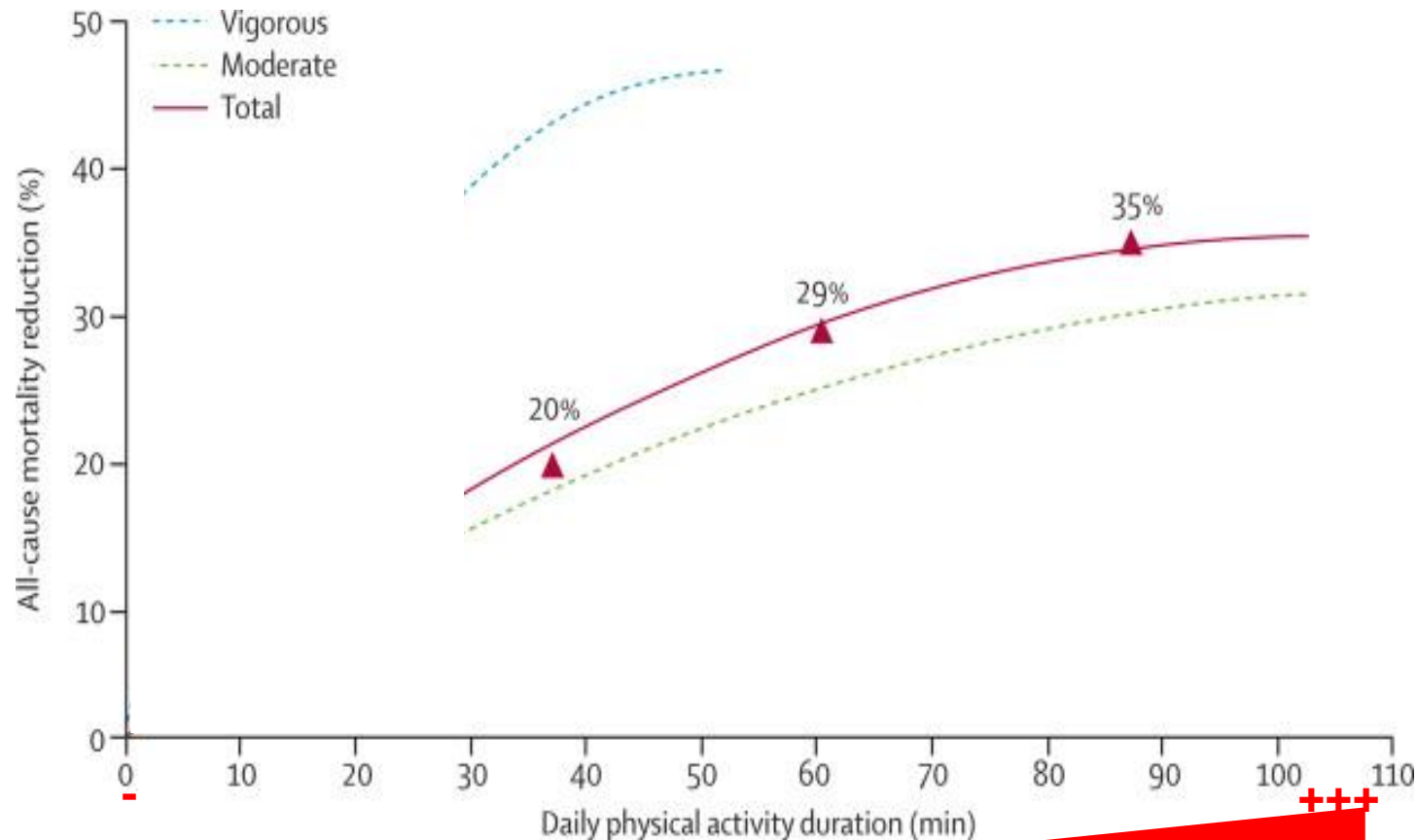
Lancet 2011; 378: 1244-53



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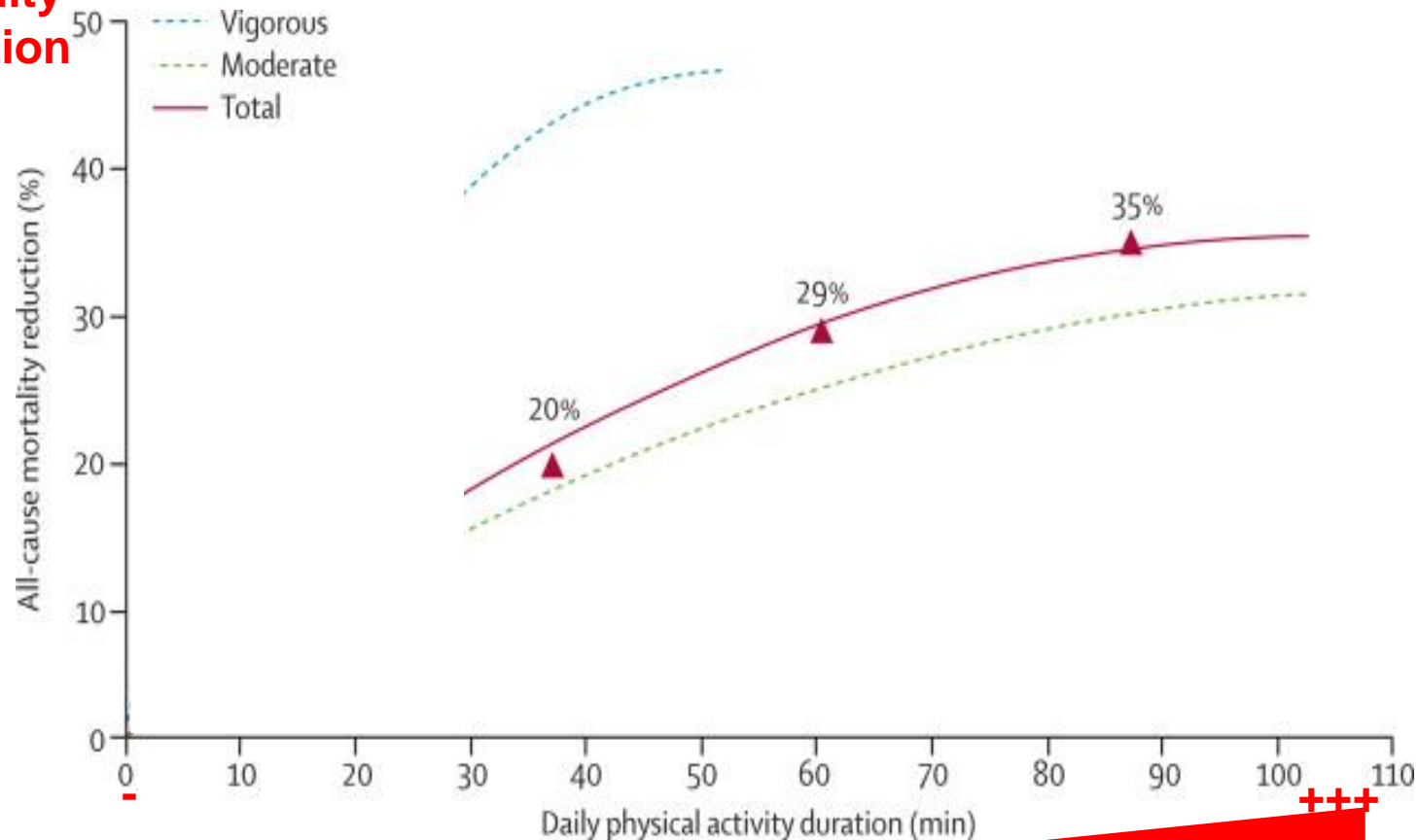
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**Mortality
reduction**



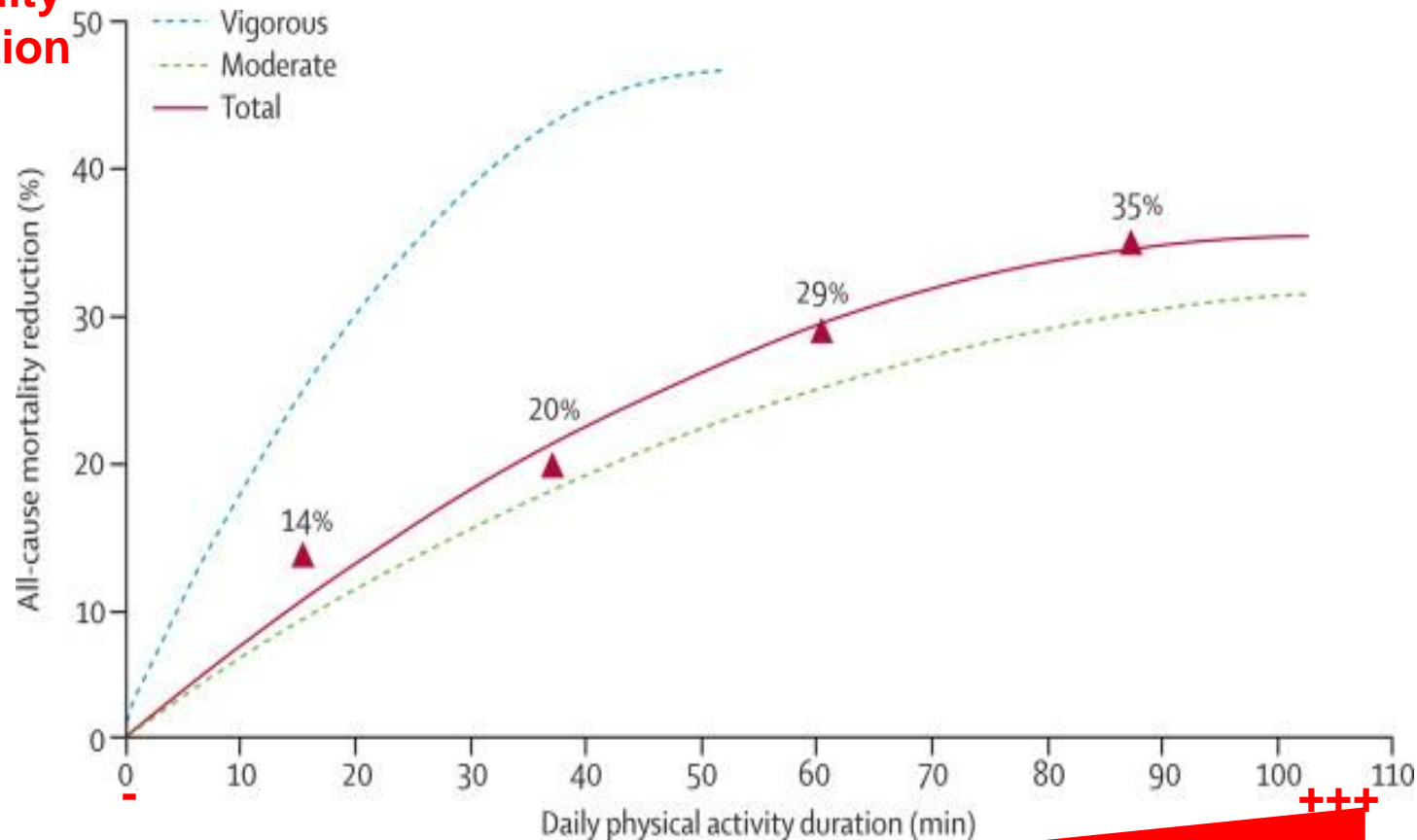
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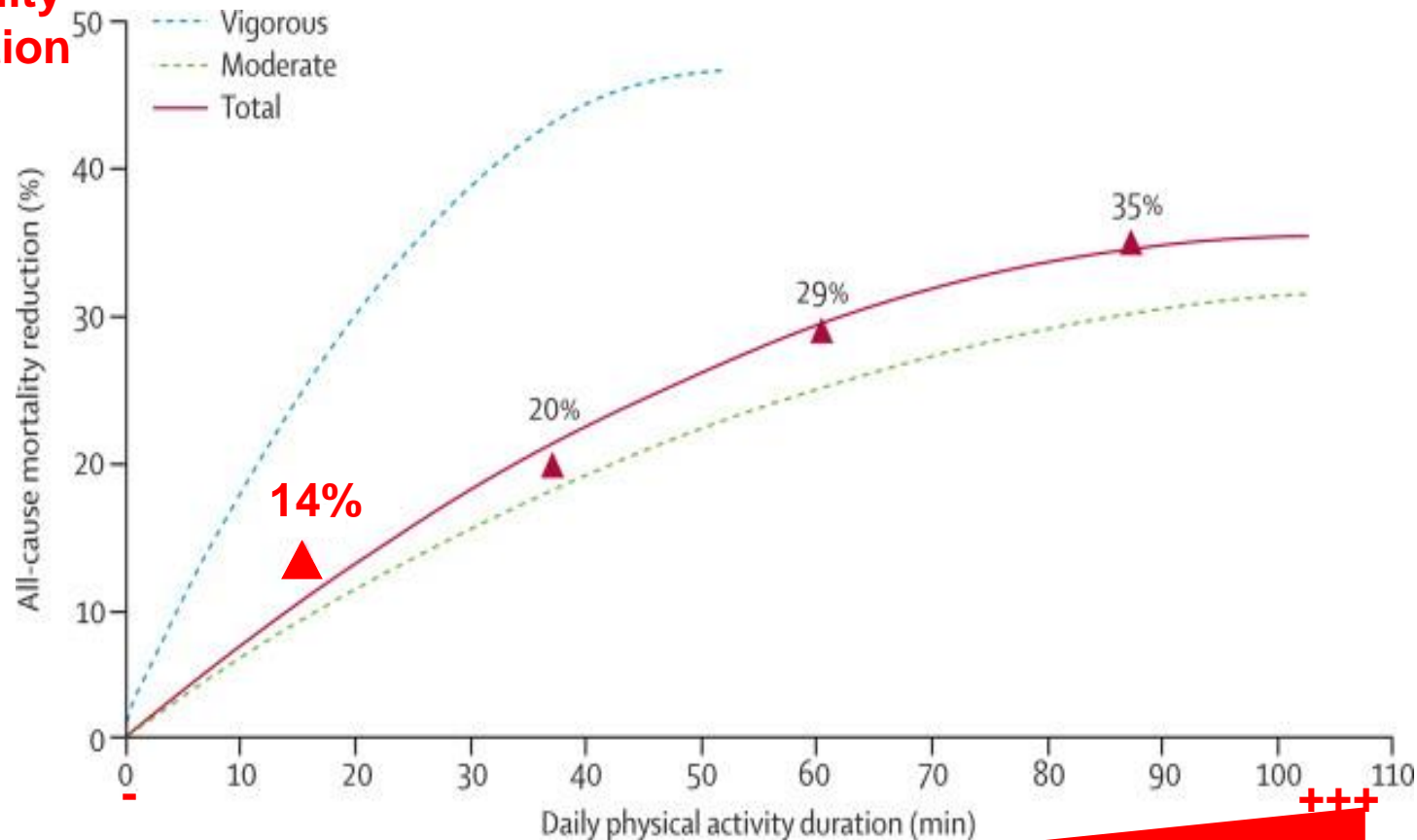
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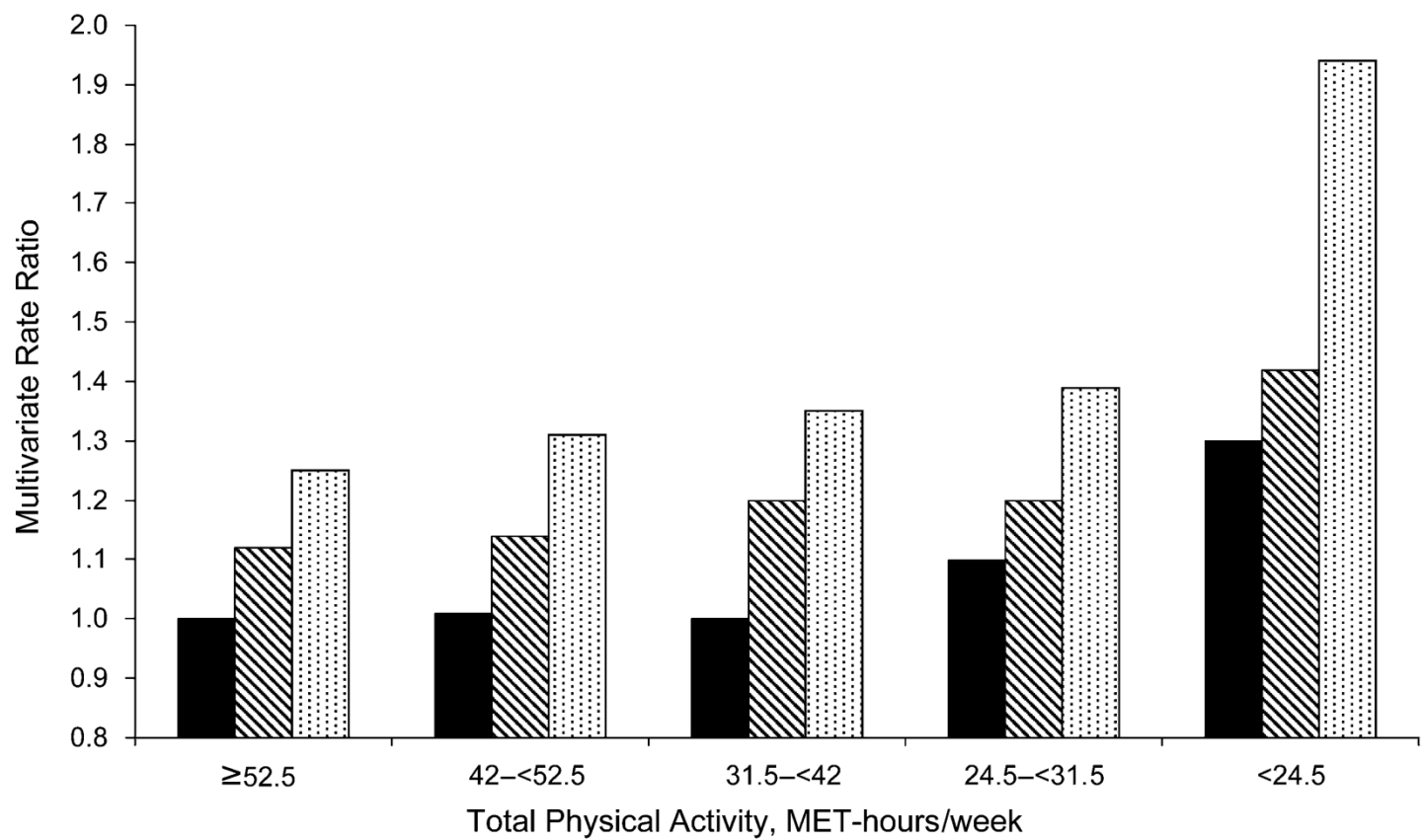


**Physical
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Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults

Am J Epidemiol 2010;172:419–429

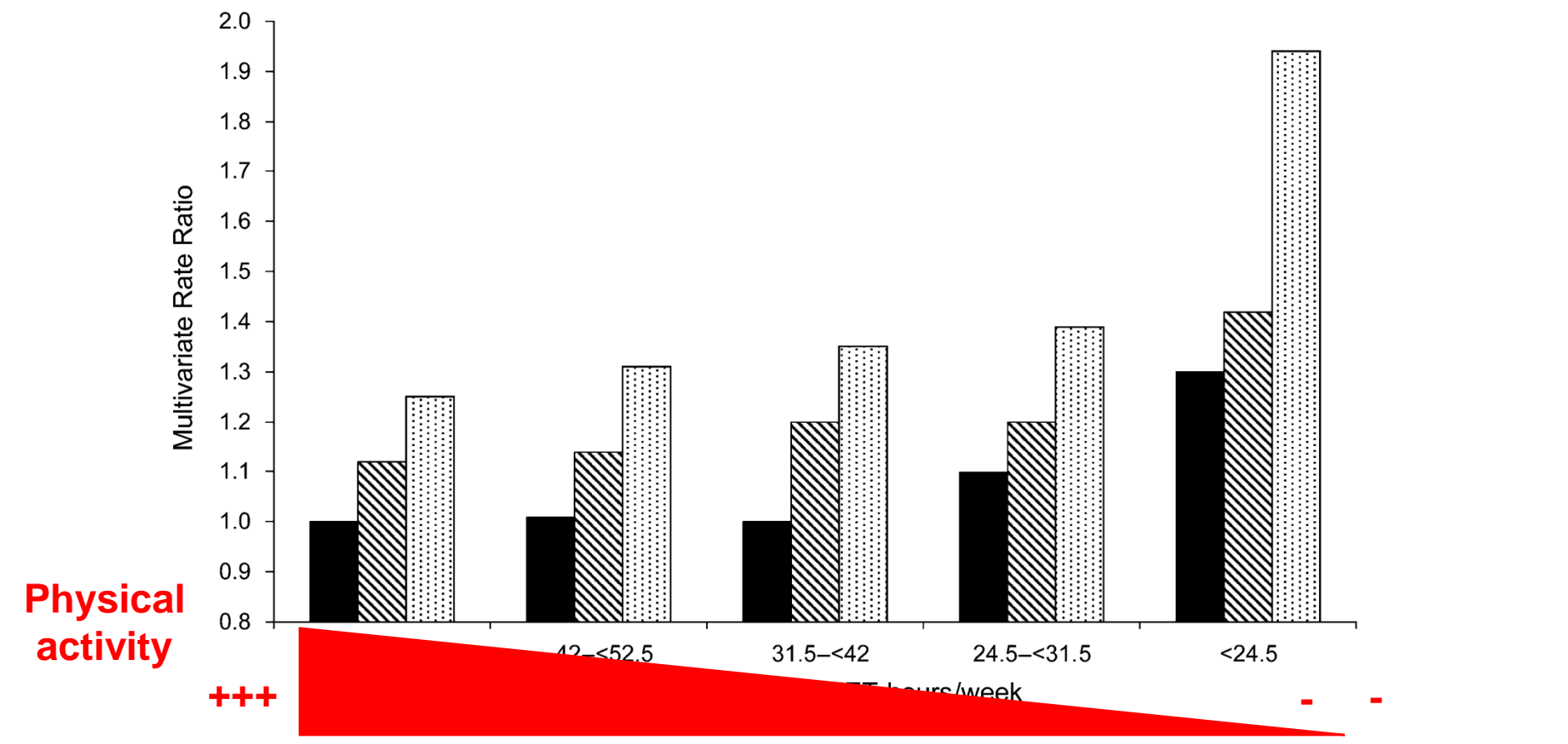
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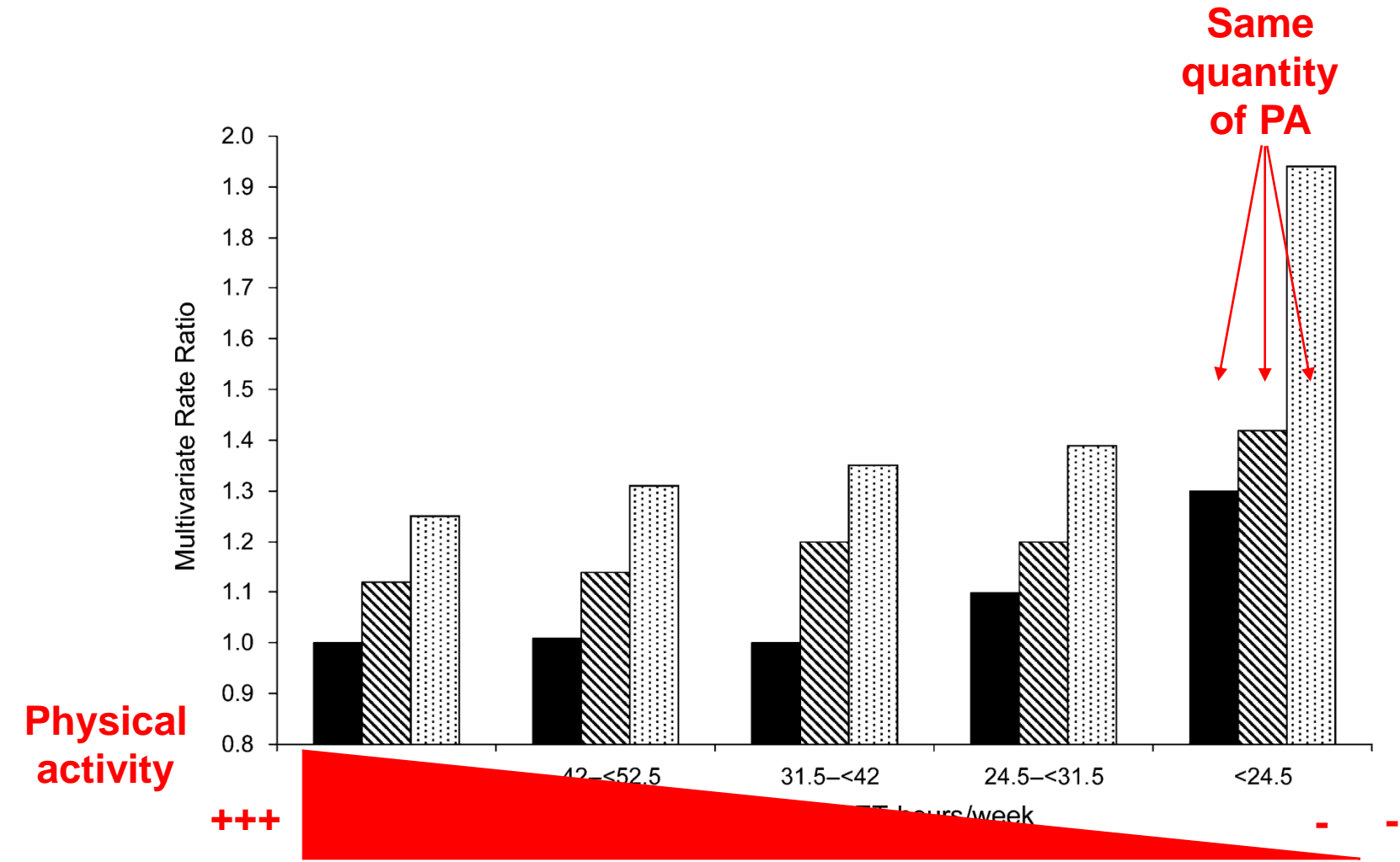
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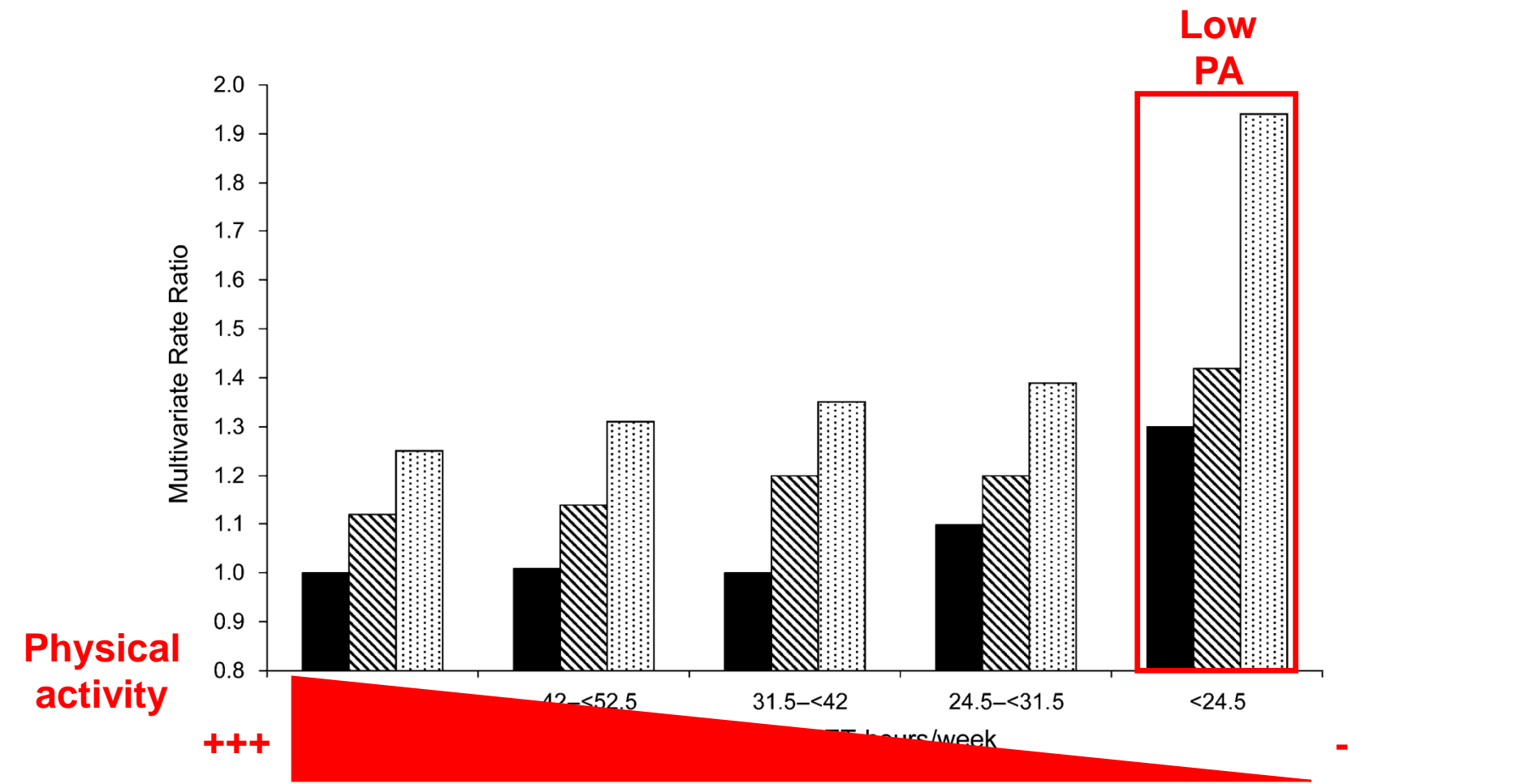
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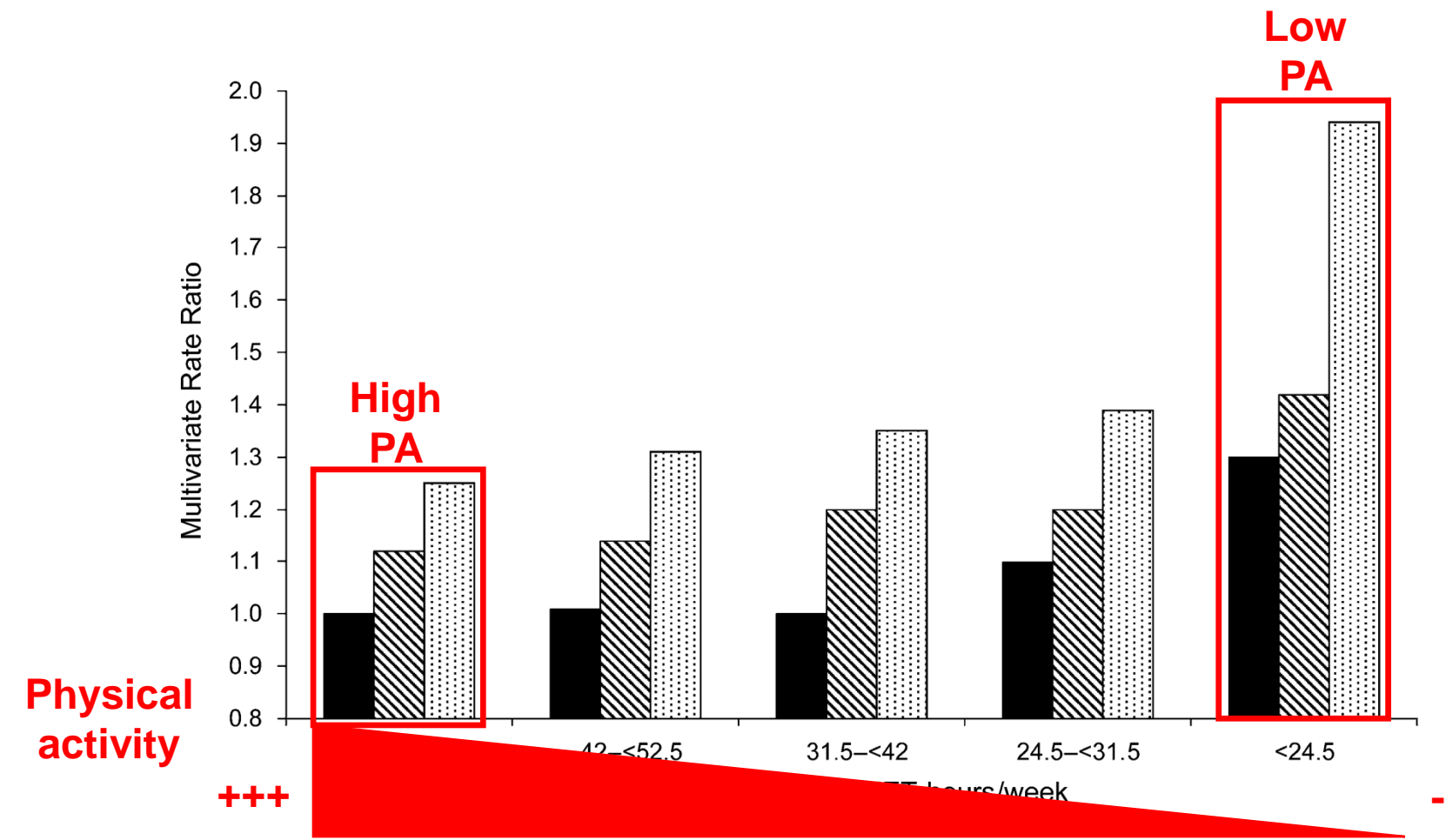
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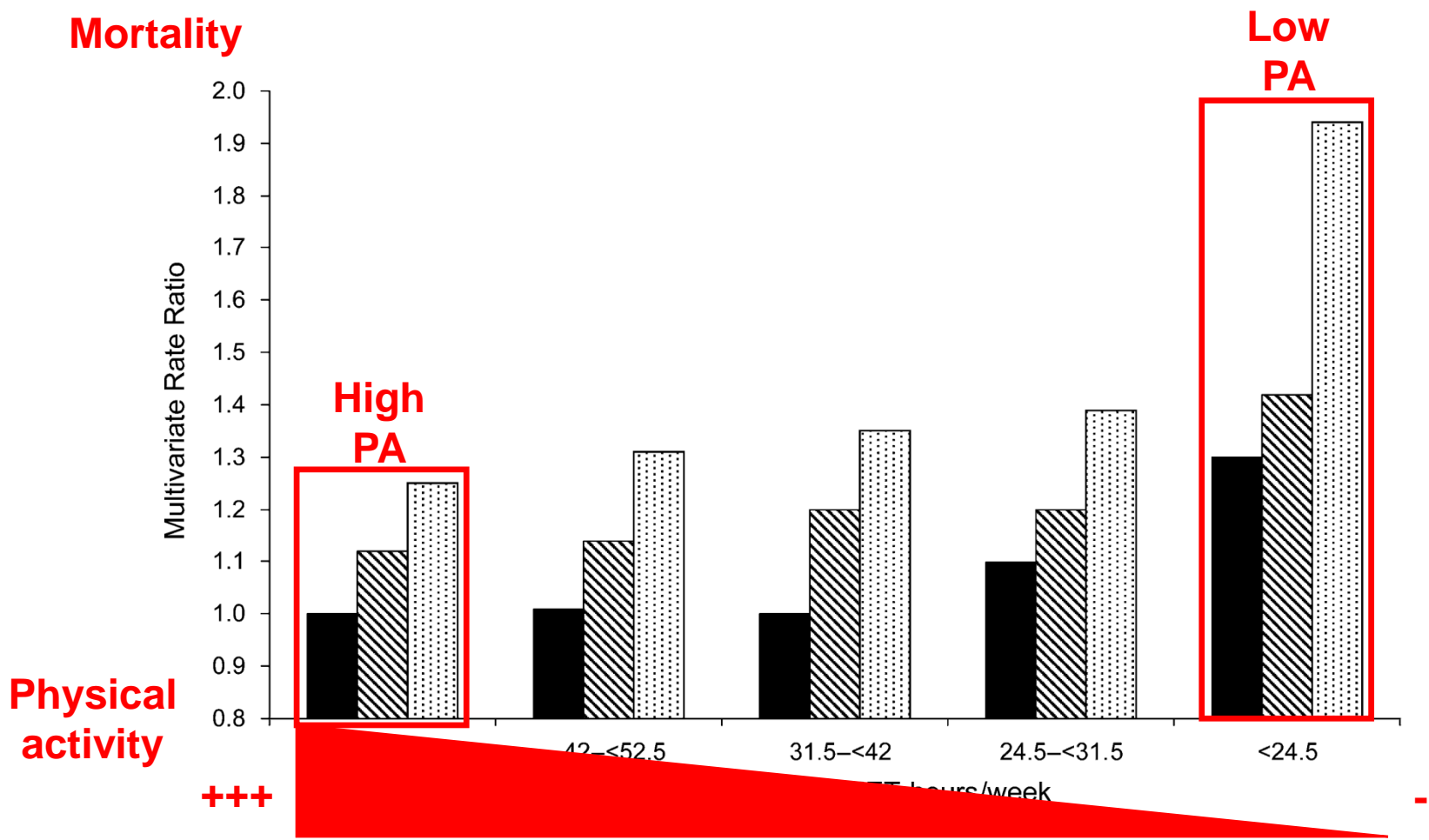
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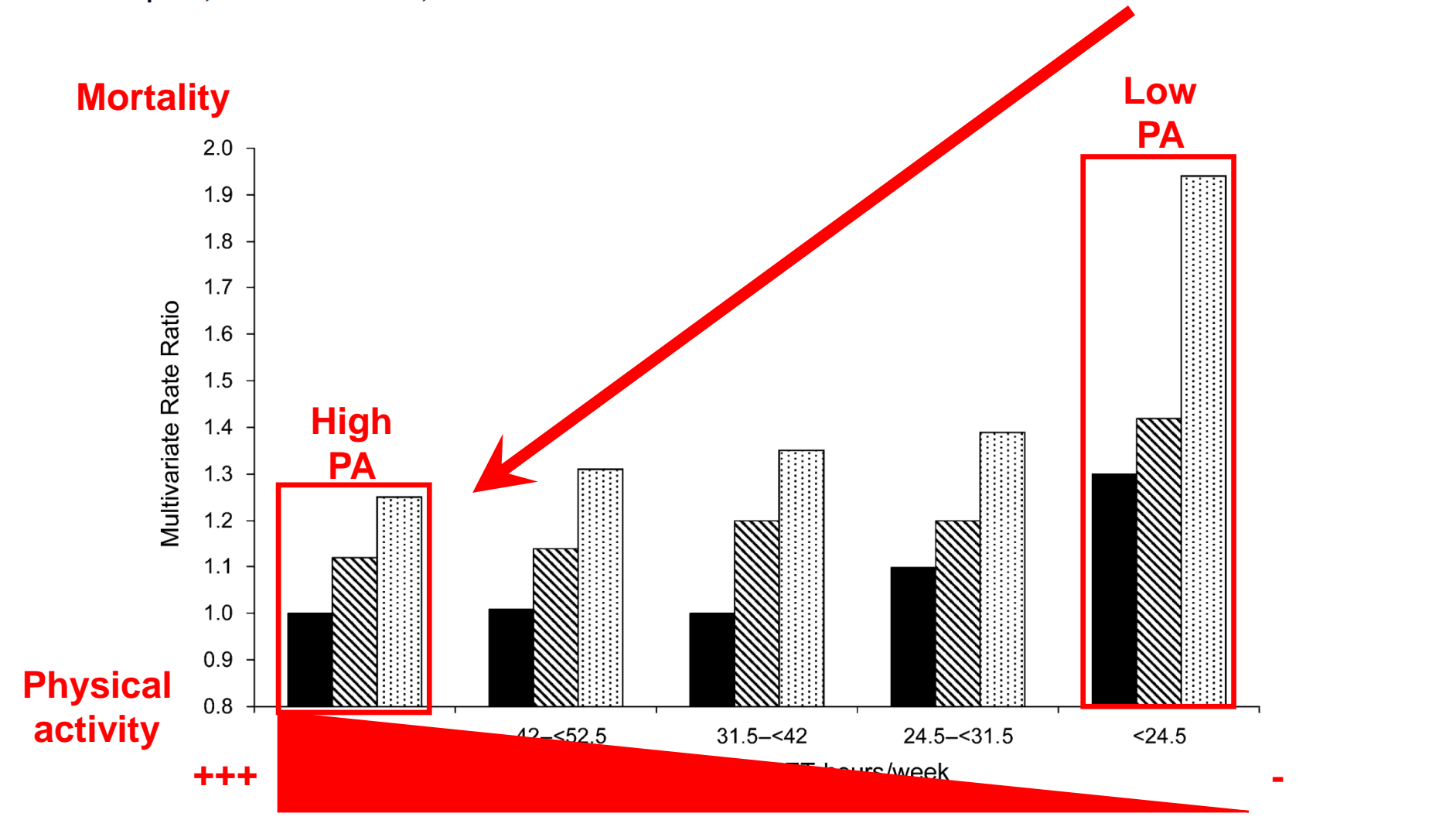
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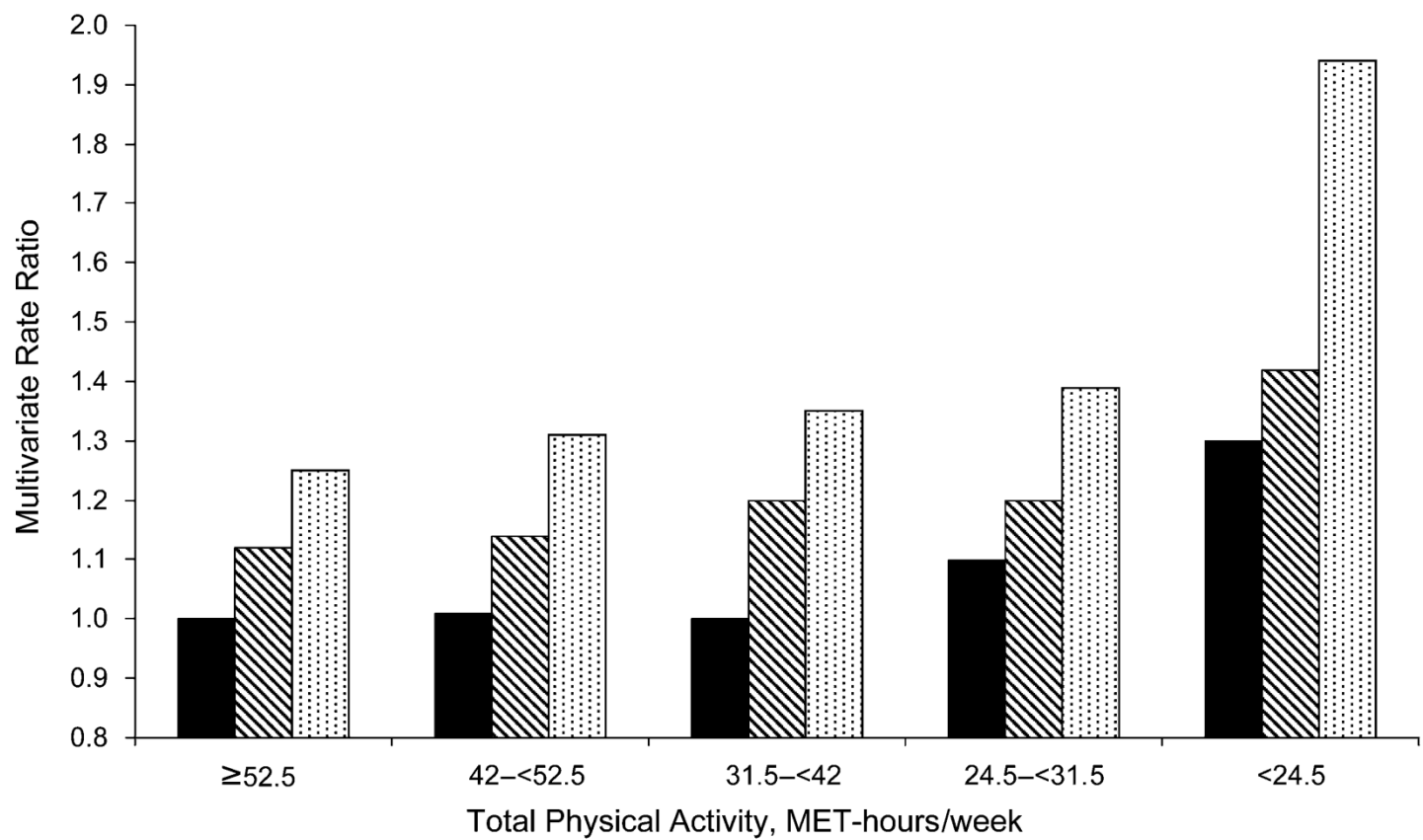


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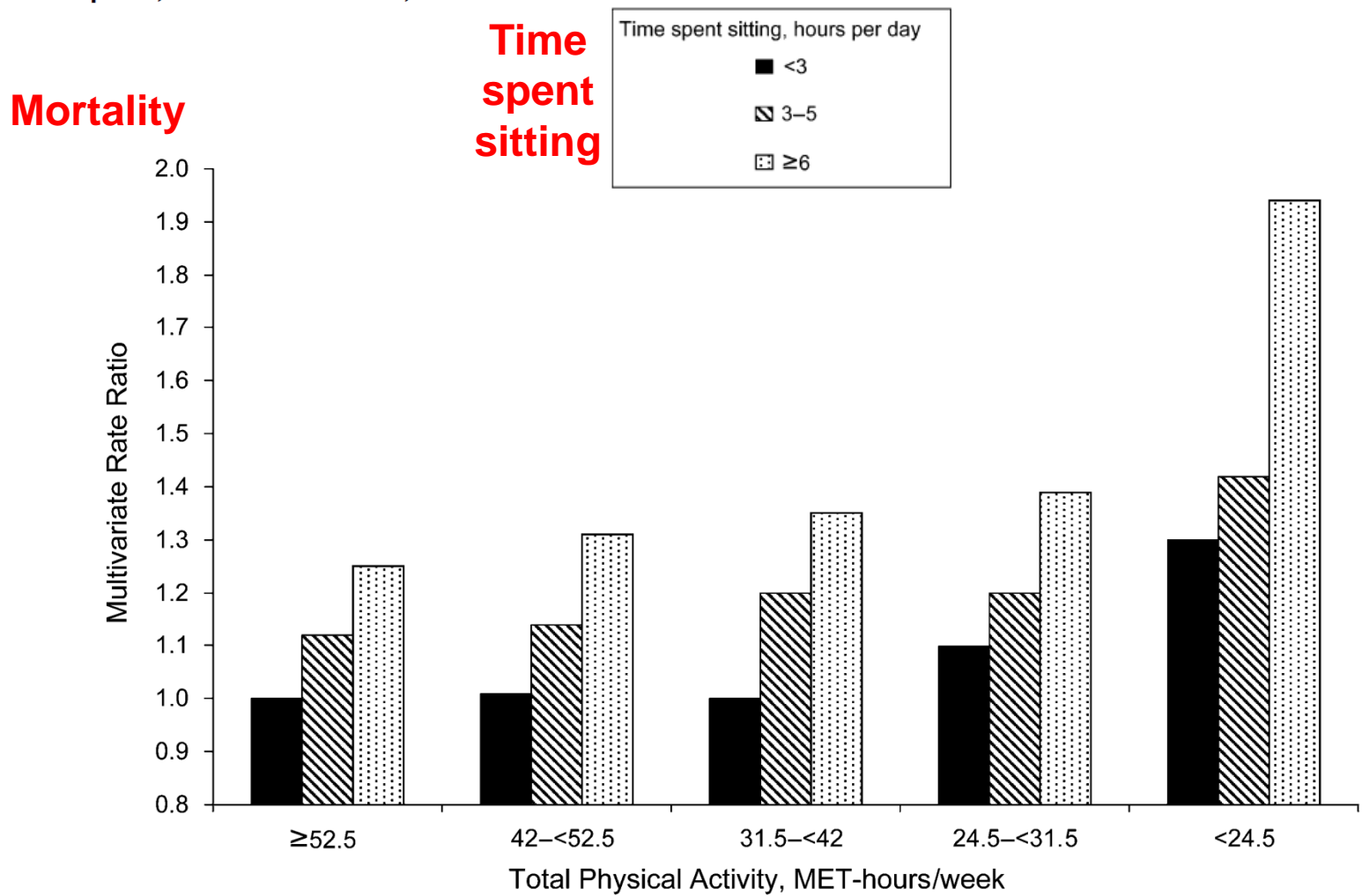
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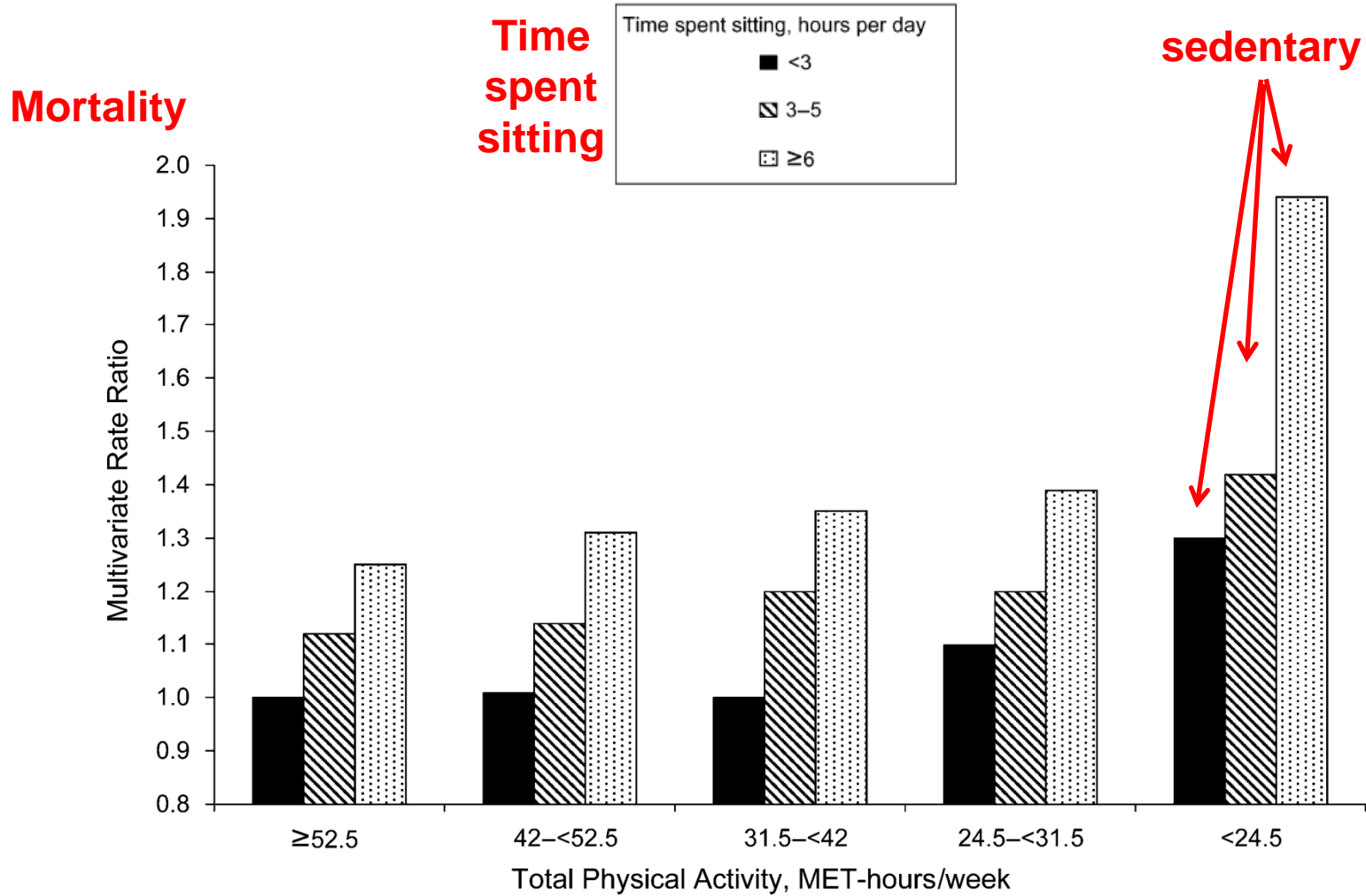
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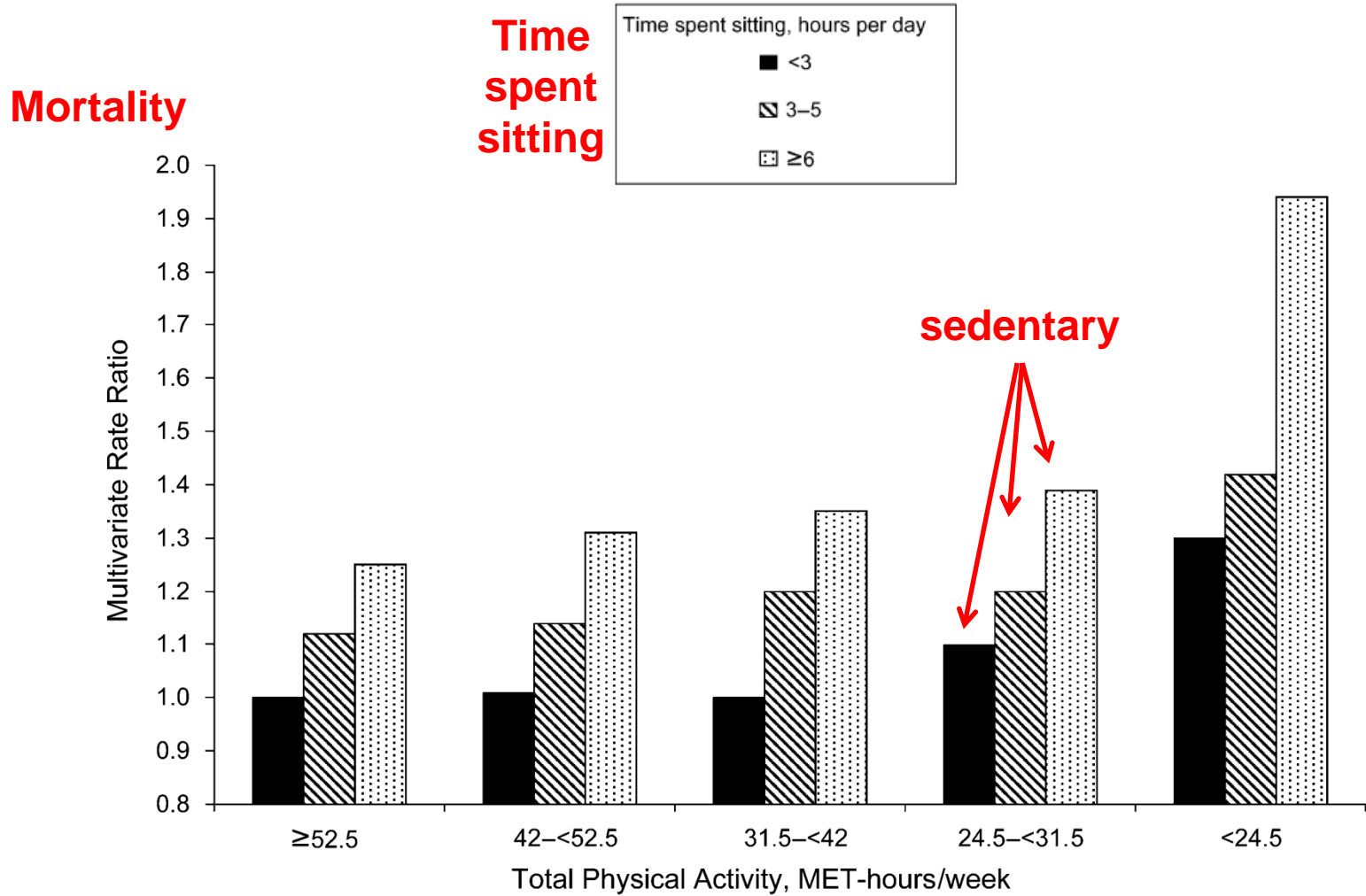
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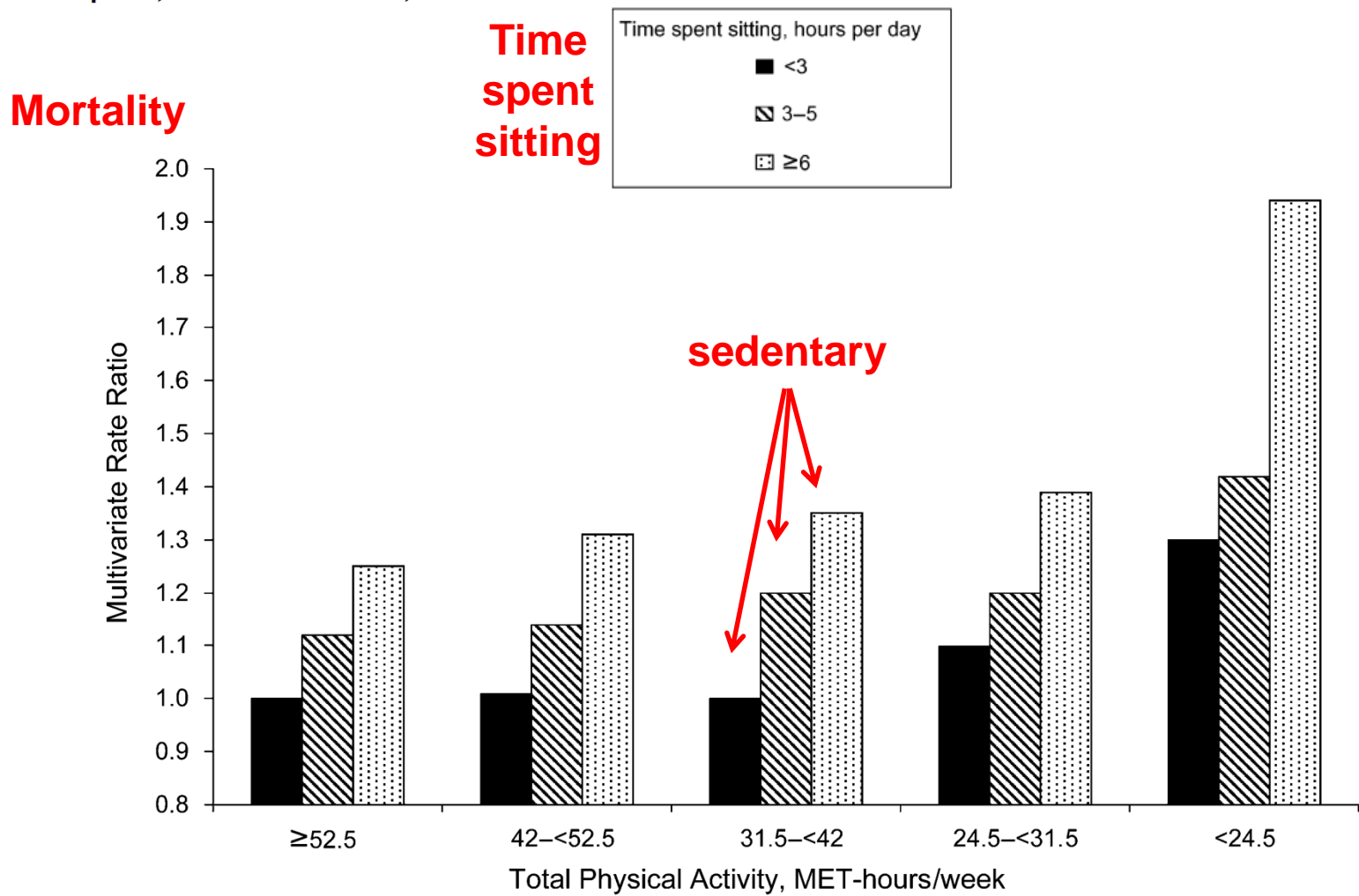
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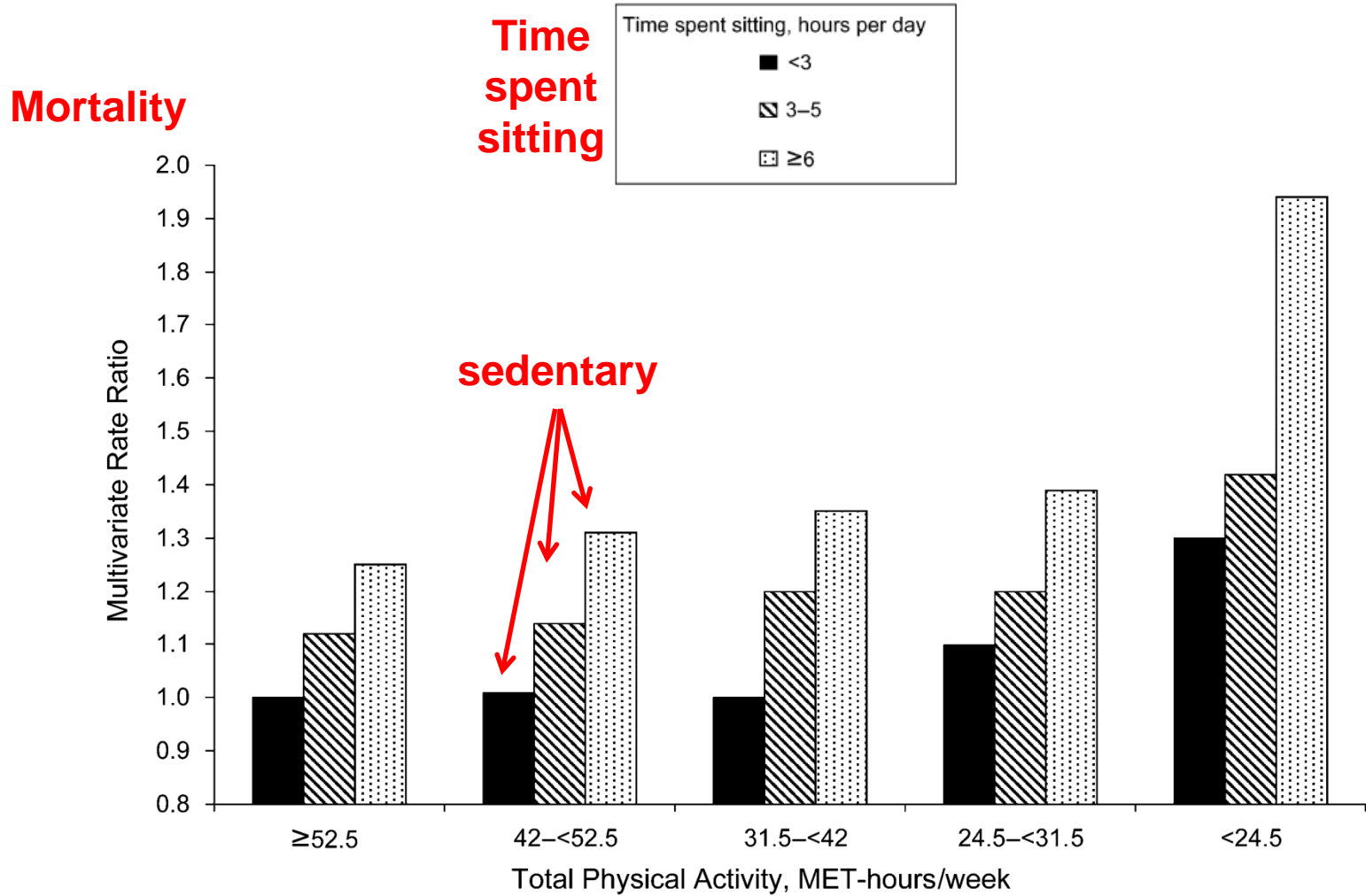
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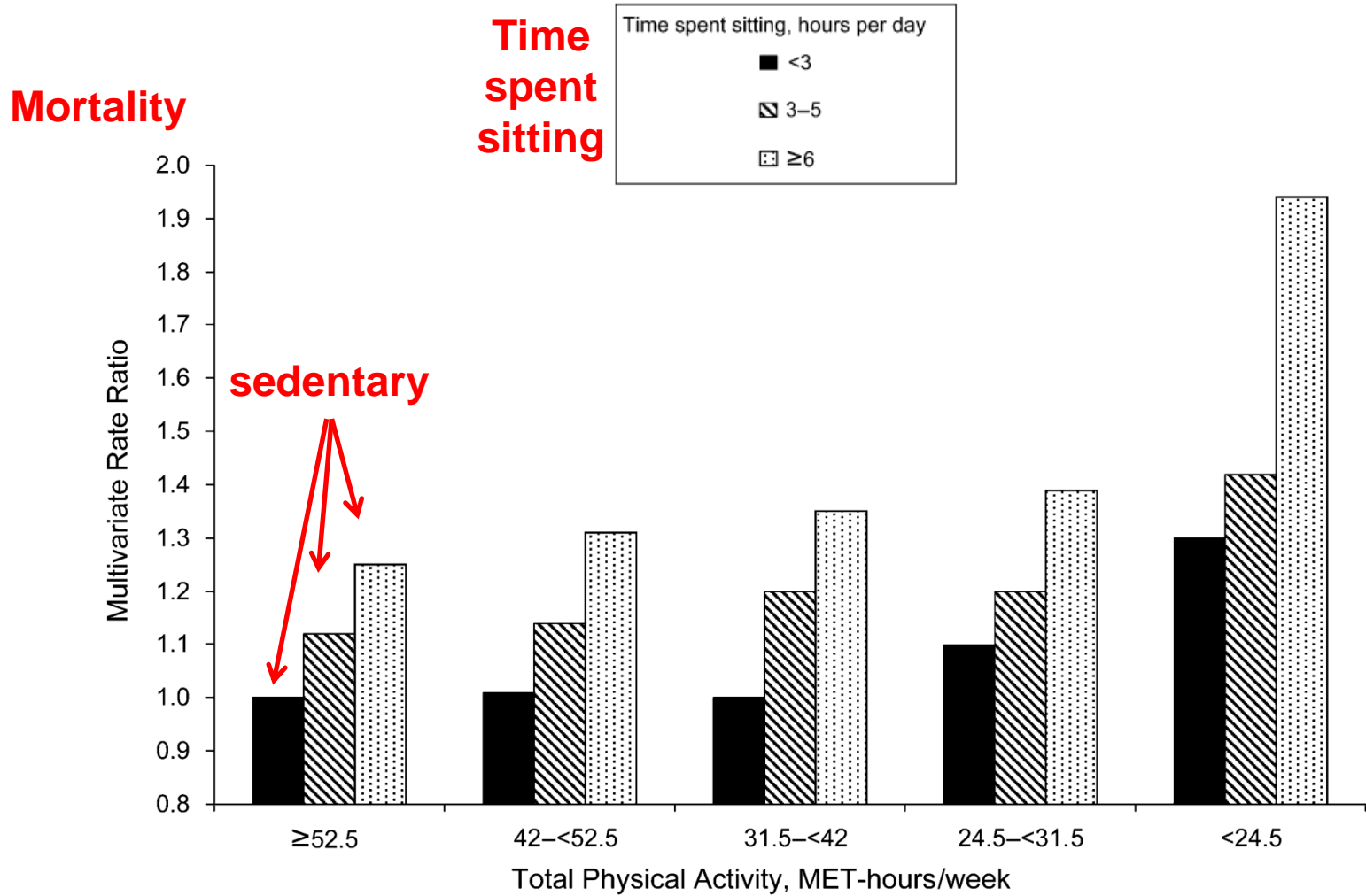
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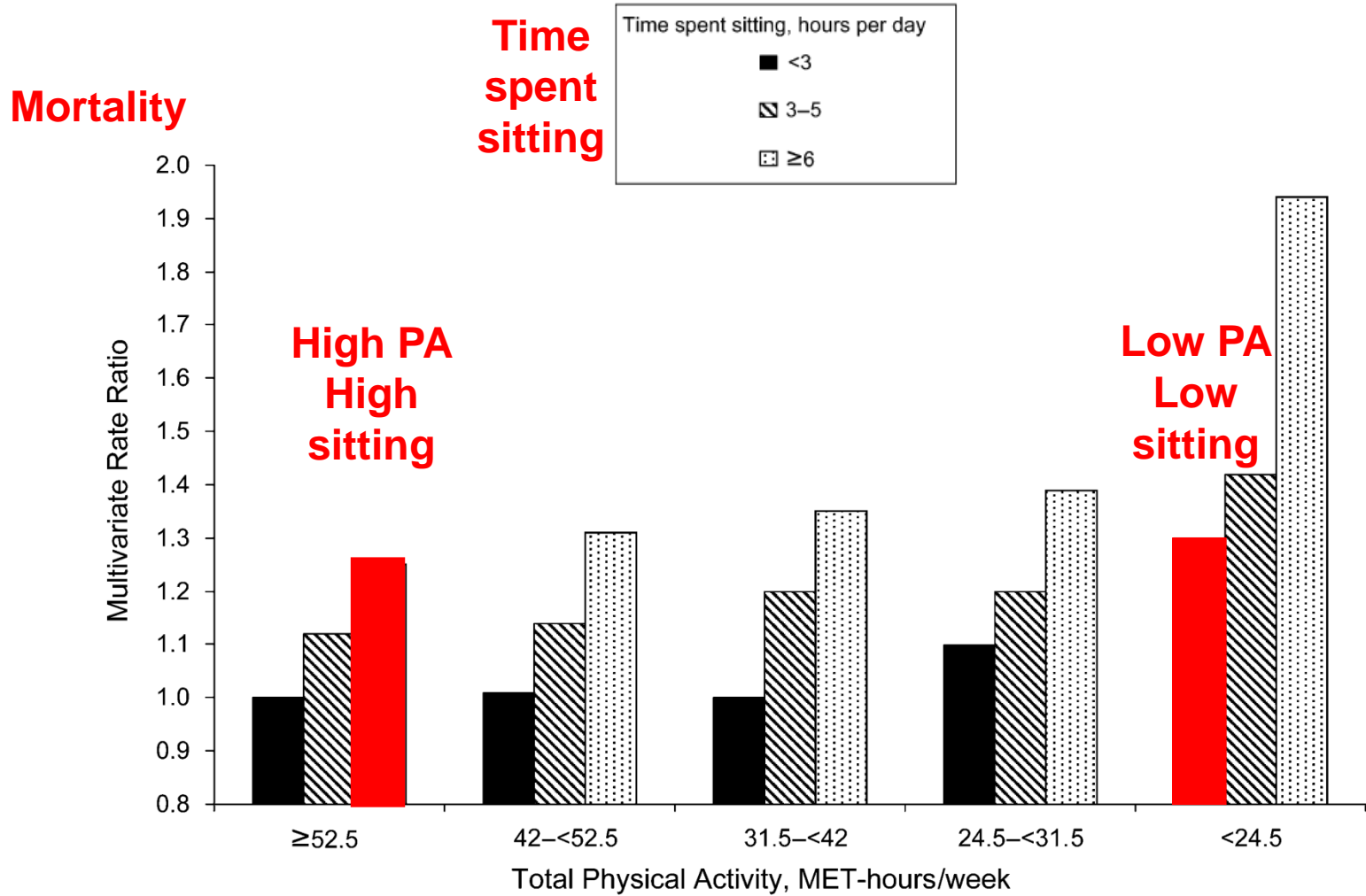
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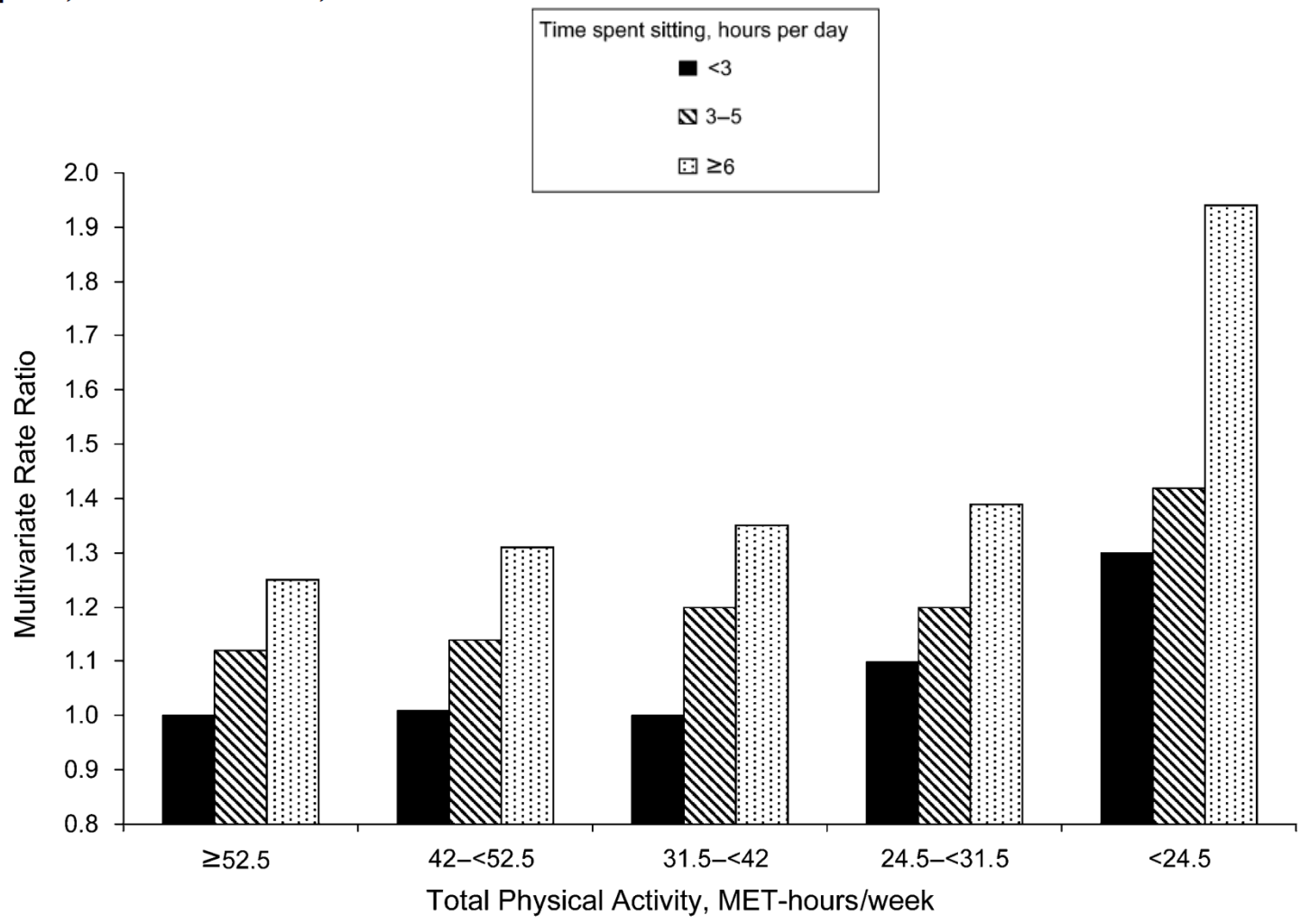
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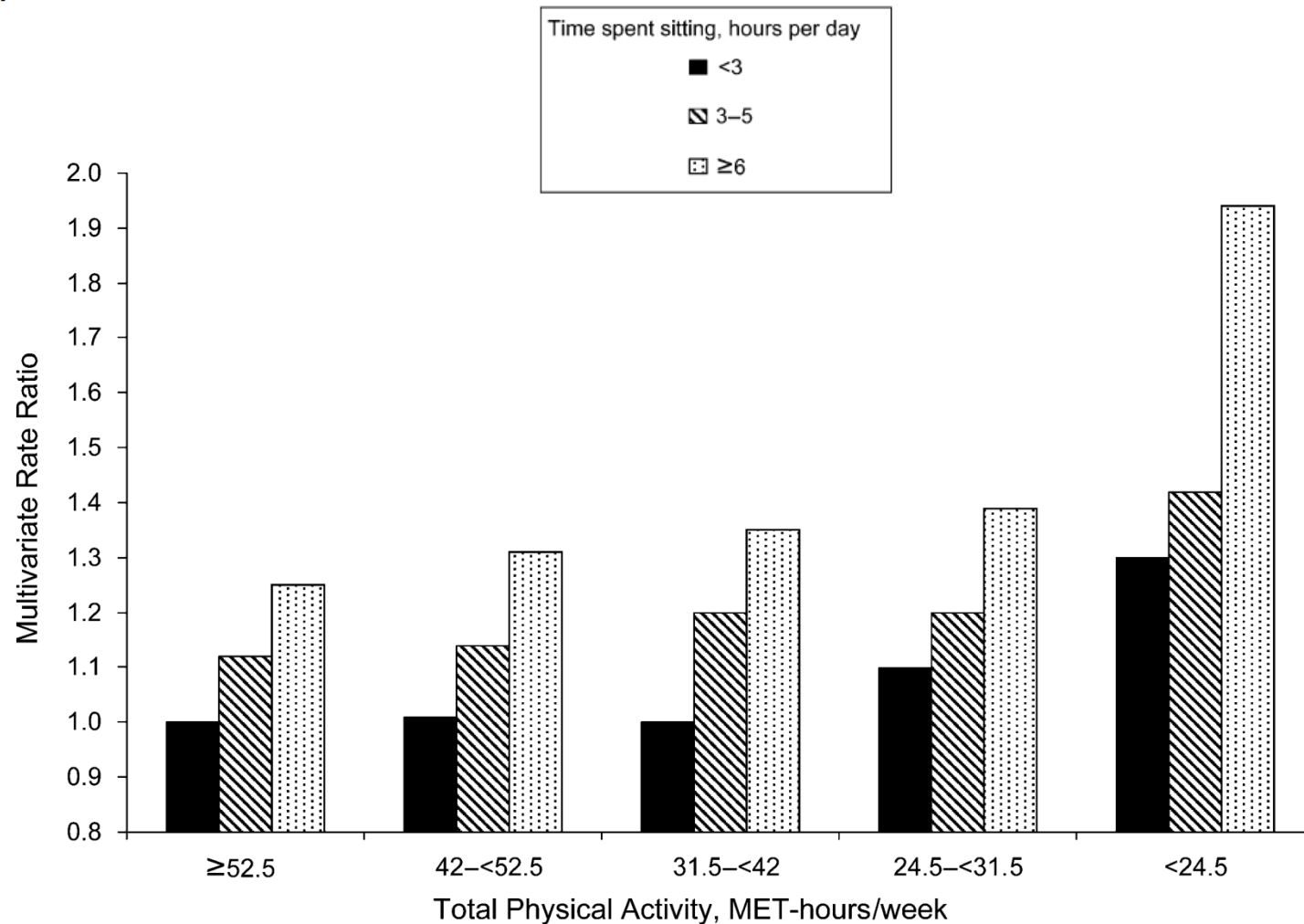
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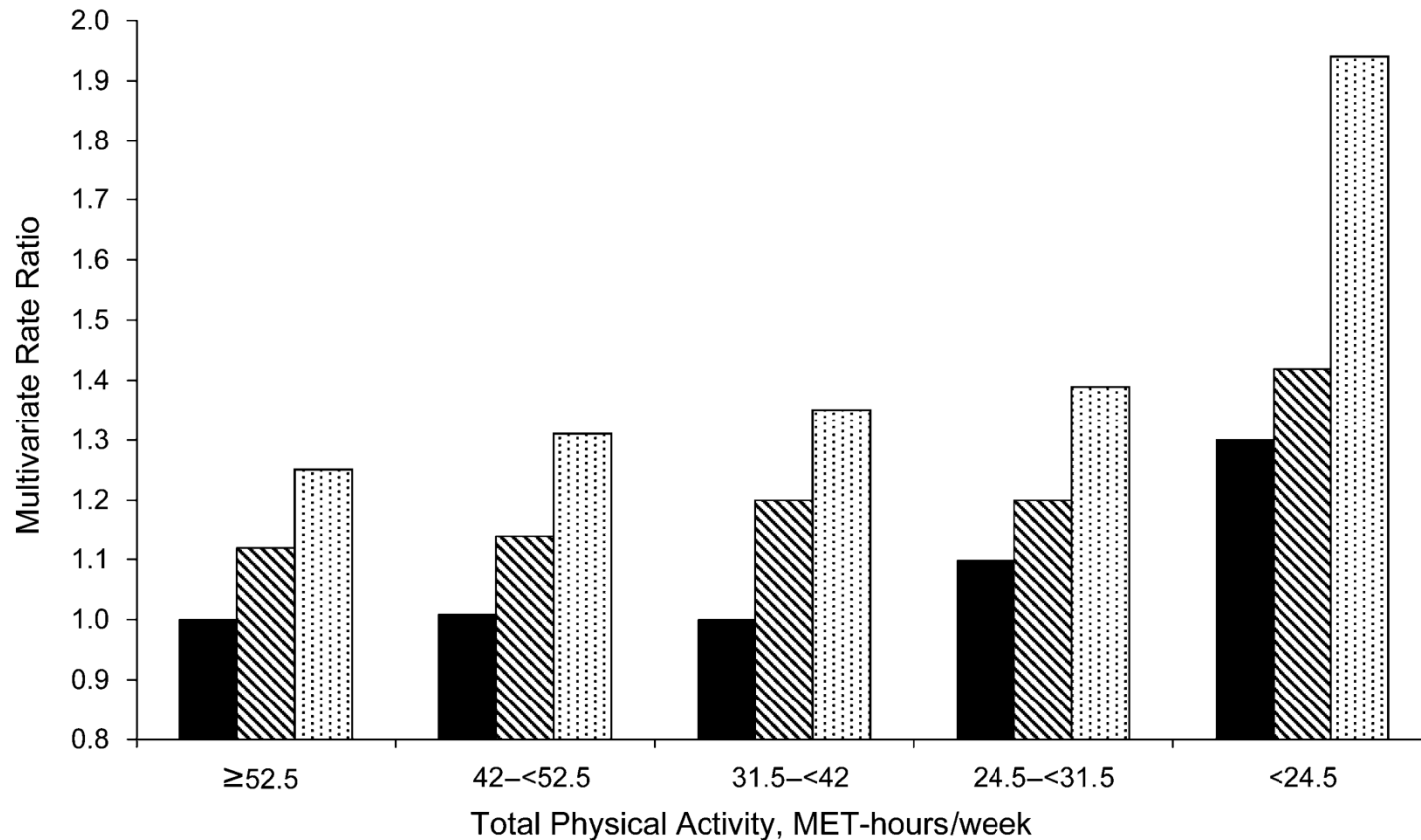


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At work?



Observational studies

At work?

- Physical activity
- Sedentary behavior

Observational studies

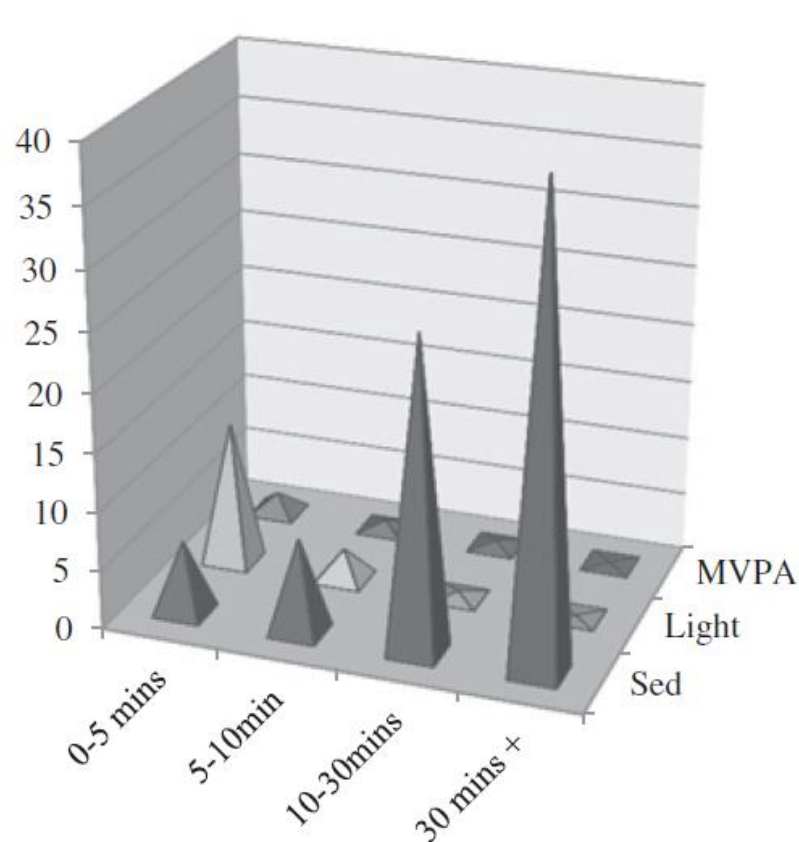
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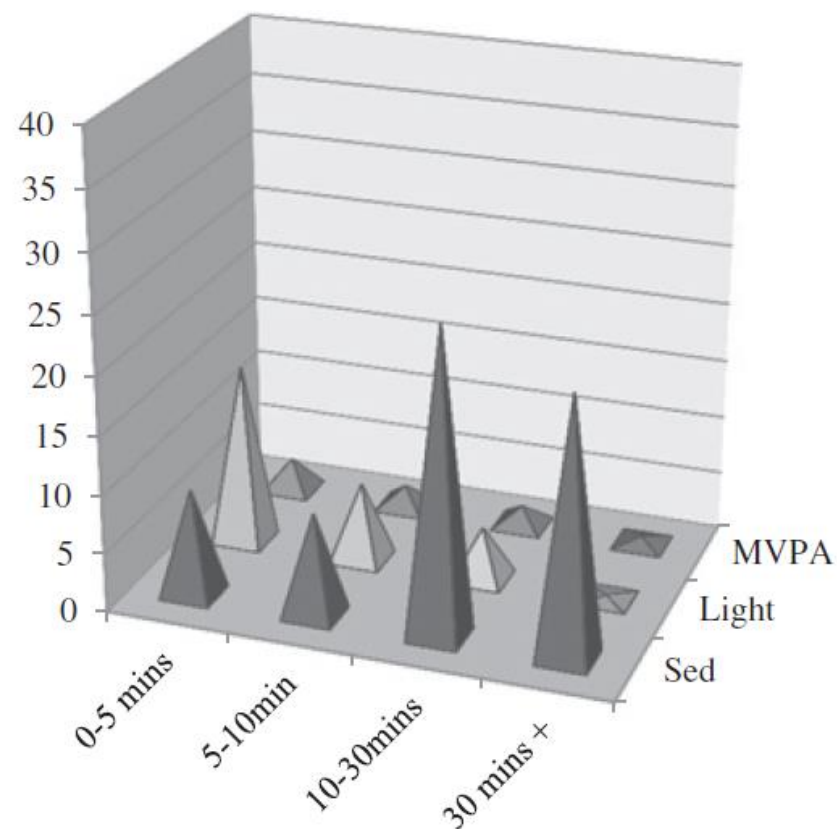
Epidemiology

The contribution of office work to sedentary behaviour associated risk

Sharon Parry[†] and Leon Straker^{*†}



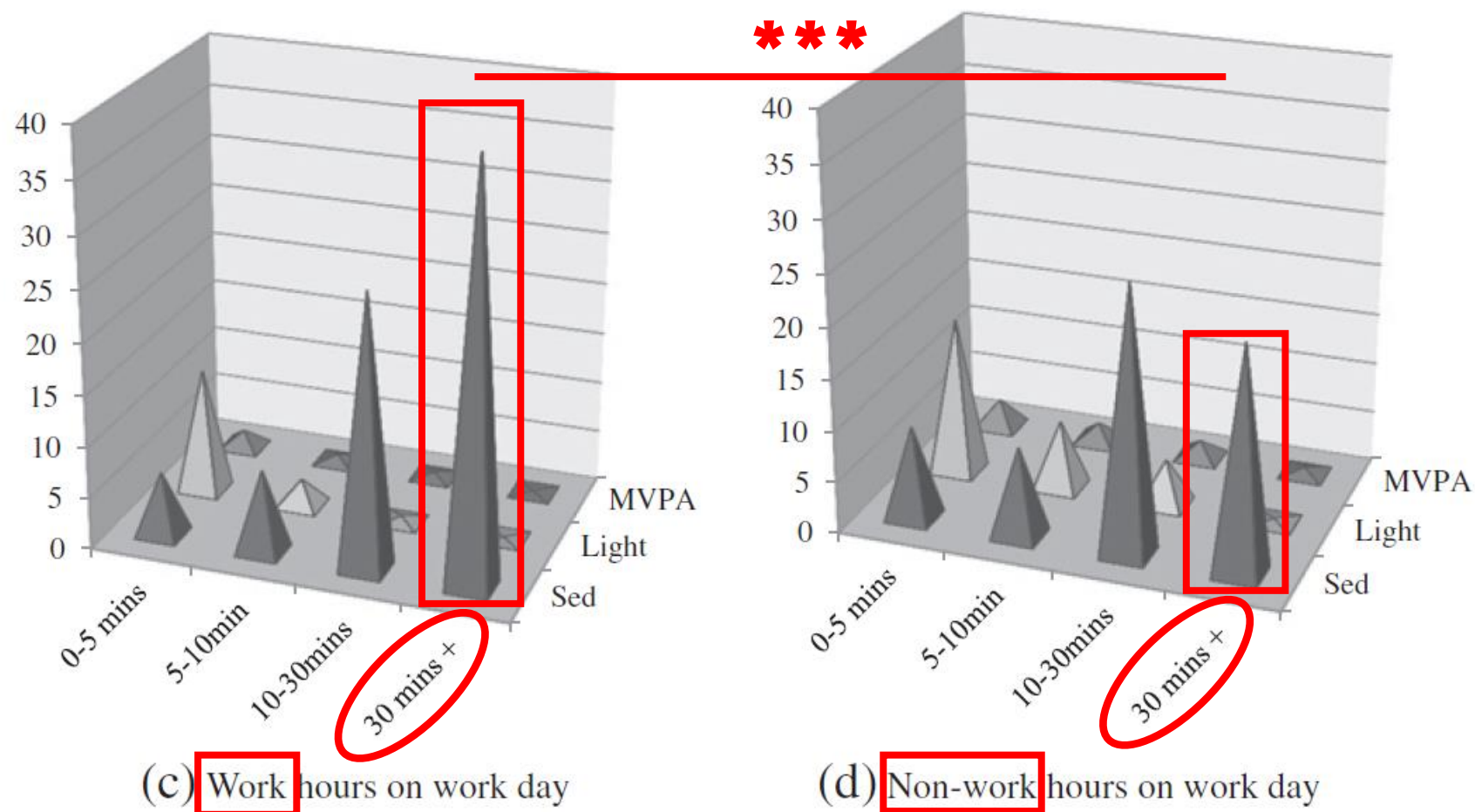
(c) Work hours on work day



(d) Non-work hours on work day

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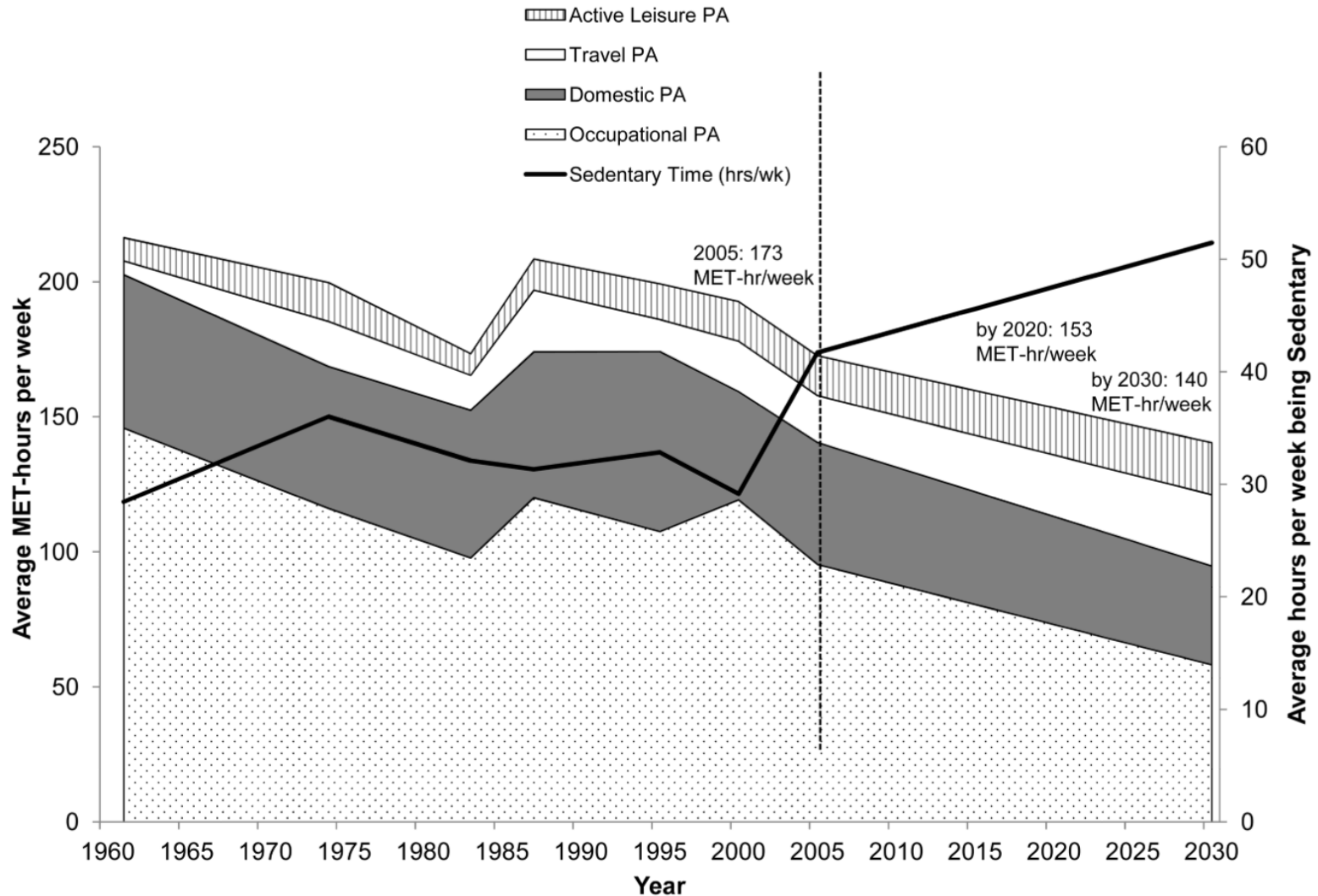
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Time Use and Physical Activity: A Shift Away from Movement across the Globe

Obes Rev. 2012

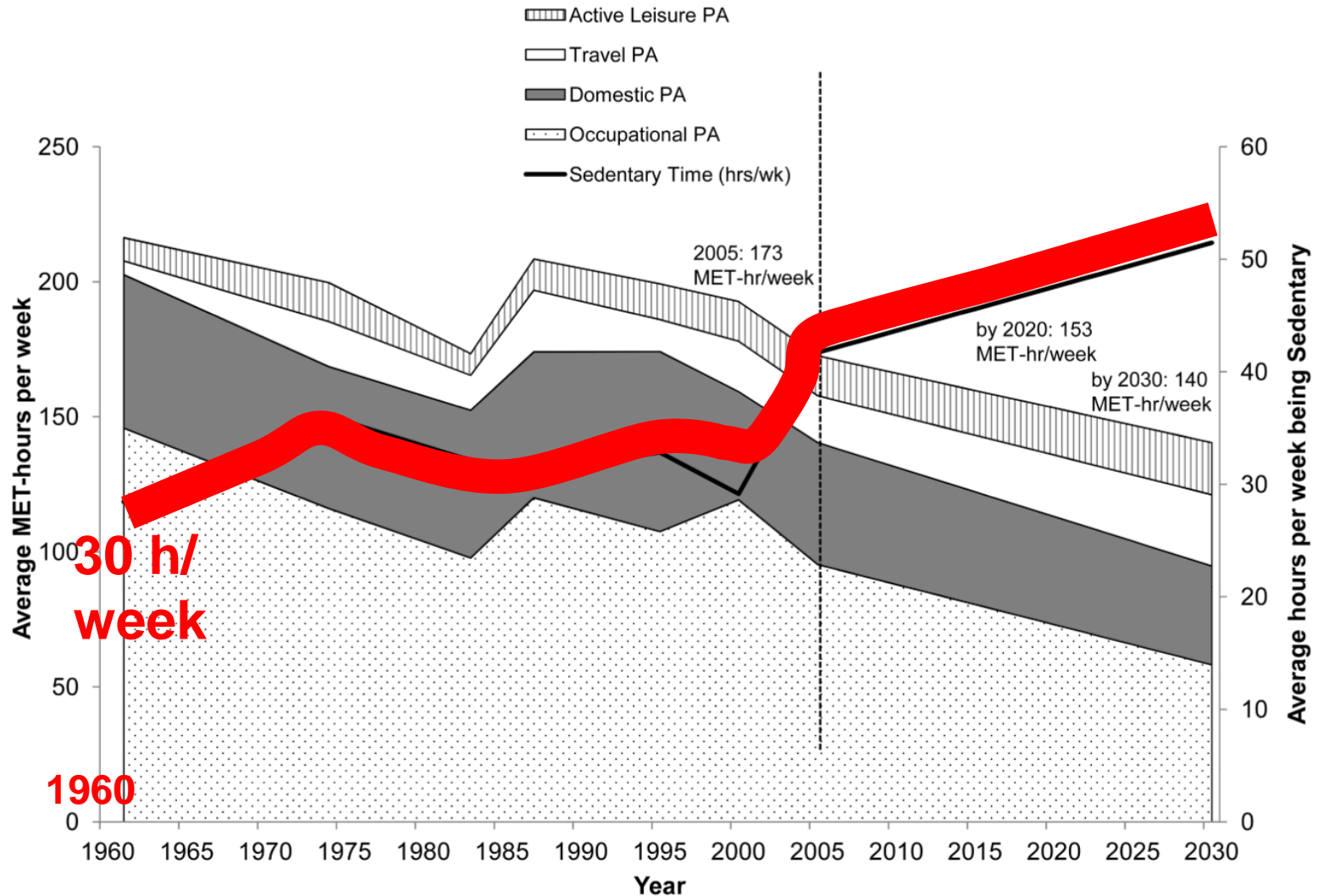
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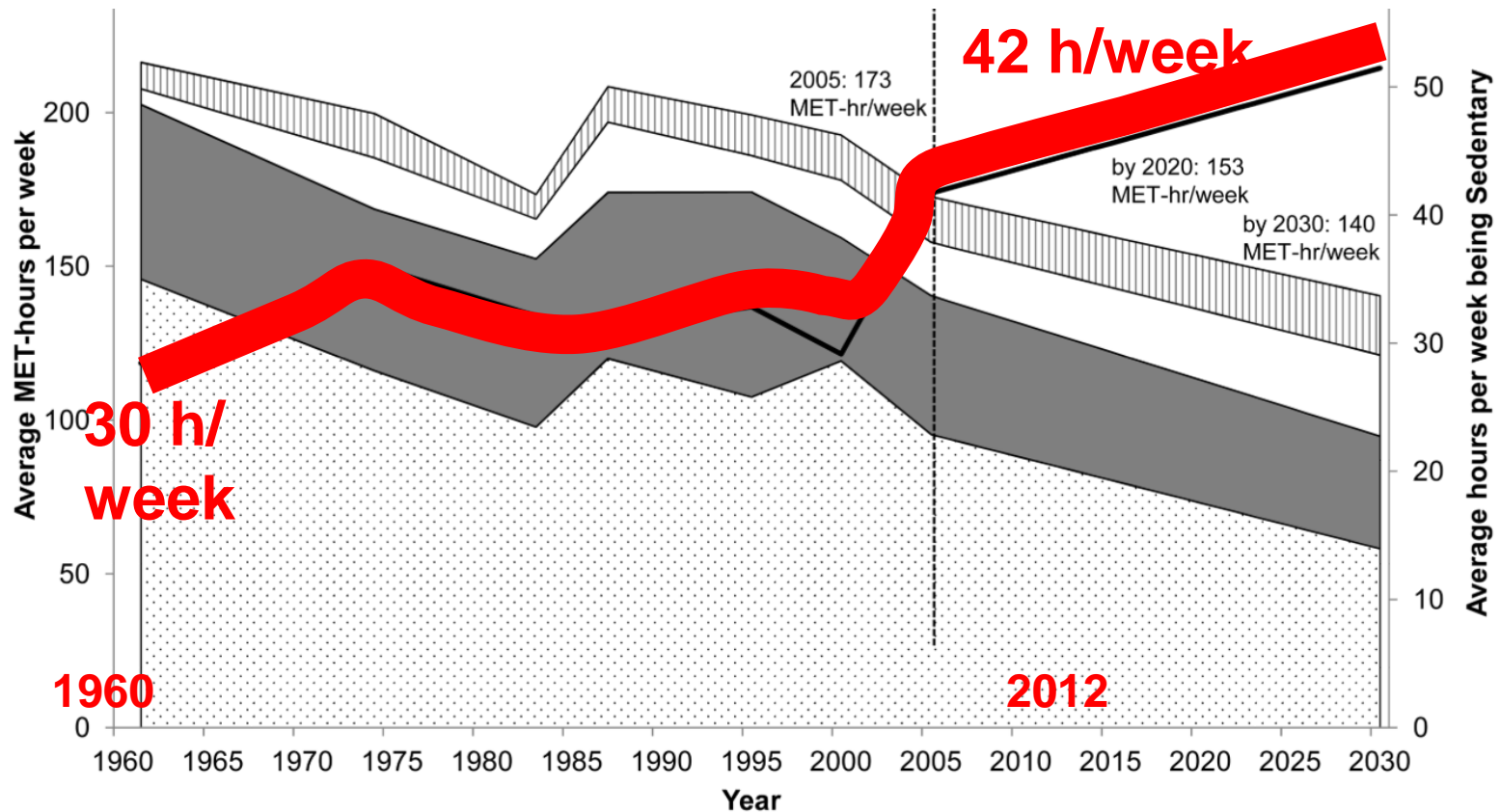


Time Use and Physical Activity: A Shift Away from Movement across the Globe

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Sedentary behaviors increased from 30 hours per week in 1960 to 42 hours per week in 2012



Observational studies

At work?

- Physical activity
- Sedentary behavior

Observational studies

At work?

- Physical activity
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Health
outcomes

**LIFESTYLE HABITS AND MORTALITY FROM ALL AND SPECIFIC CAUSES
OF DEATH: 40-YEAR FOLLOW-UP IN THE ITALIAN RURAL AREAS
OF THE SEVEN COUNTRIES STUDY**

A. MENOTTI¹, P.E. PUDDU², M. LANTI¹, G. MAIANI³, G. CATASTA³, A. ALBERTI FIDANZA⁴

smoking habits, physical activity at work and eating habits were determined

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End point Variable		Follow-up 20 years	
		HR	95% CI
ALL	Smoker	1.41	1.17 1.70
	Ex smoker	1.06	0.83 1.36
	Physically sedentary	1.91	1.57 2.32
	Physically moderate	1.21	1.02 1.45
	Diet Score 1	1.42	1.18 1.71
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September 2013 | Volume 8 | Issue 9 | e73753

Results: In total there were 754 all-cause deaths. In women, a standing/walking occupation was associated with lower risk of all-cause (fully adjusted hazard ratio [HR]=0.68, 95% CI 0.52–0.89) and cancer (HR=0.60, 95% CI 0.43–0.85) mortality, compared to sitting occupations. There were no associations in men.

WOMEN

<i>All-cause Mortality</i>		
Predominant activity at work	Cases/total n	Model 3 [†] HR (95% CI)
Sitting	116/2090	1
Standing/walking about	149/3124	0.68 (0.52–0.89)
Trend <i>p</i> [‡]		0.005 (0.017) [‡]
<i>Cancer mortality</i>		
Sitting	77/2090	
Standing/walking about	83/3124	0.60 (0.43–0.85)
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Health
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Health
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Interventional studies

At work?

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Health
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Health
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Interventional studies

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Health
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Interventional studies

Only on sedentary behaviors ?

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Health
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Interventional studies

Only on sedentary behaviors ?

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Health
outcomes

Benefits for Type 2 Diabetes of Interrupting Prolonged Sitting With Brief Bouts of Light Walking or Simple Resistance Activities

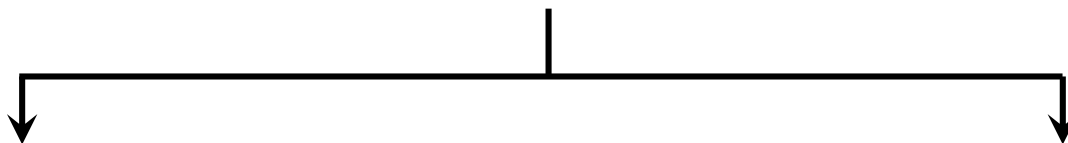
 American Diabetes Association. **Diabetes Care**
2016 Paddy C. Dempsey,^{1,2} Robyn N. Larsen,¹
Parneet Sethi,¹ Julian W. Sacre,¹
Nora E. Straznicky,¹ Neale D. Cohen,¹
Ester Cerin,^{1,3,4} Gavin W. Lambert,^{1,2}
Neville Owen,¹ Bronwyn A. Kingwell,¹
and David W. Dunstan^{1,3,5}



Benefits for Type 2 Diabetes of Interrupting Prolonged Sitting With Brief Bouts of Light Walking or Simple Resistance Activities

 American Diabetes Association. **Diabetes Care**
2016 Paddy C. Dempsey,^{1,2} Robyn N. Larsen,¹
Parneet Sethi,¹ Julian W. Sacre,¹
Nora E. Straznicky,¹ Neale D. Cohen,¹
Ester Cerin,^{1,3,4} Gavin W. Lambert,^{1,2}
Neville Owen,¹ Bronwyn A. Kingwell,¹
and David W. Dunstan^{1,3,5}

Randomi- zation



Intervention

Sitting 8
hours

**+ 5 min standing
/30 min**

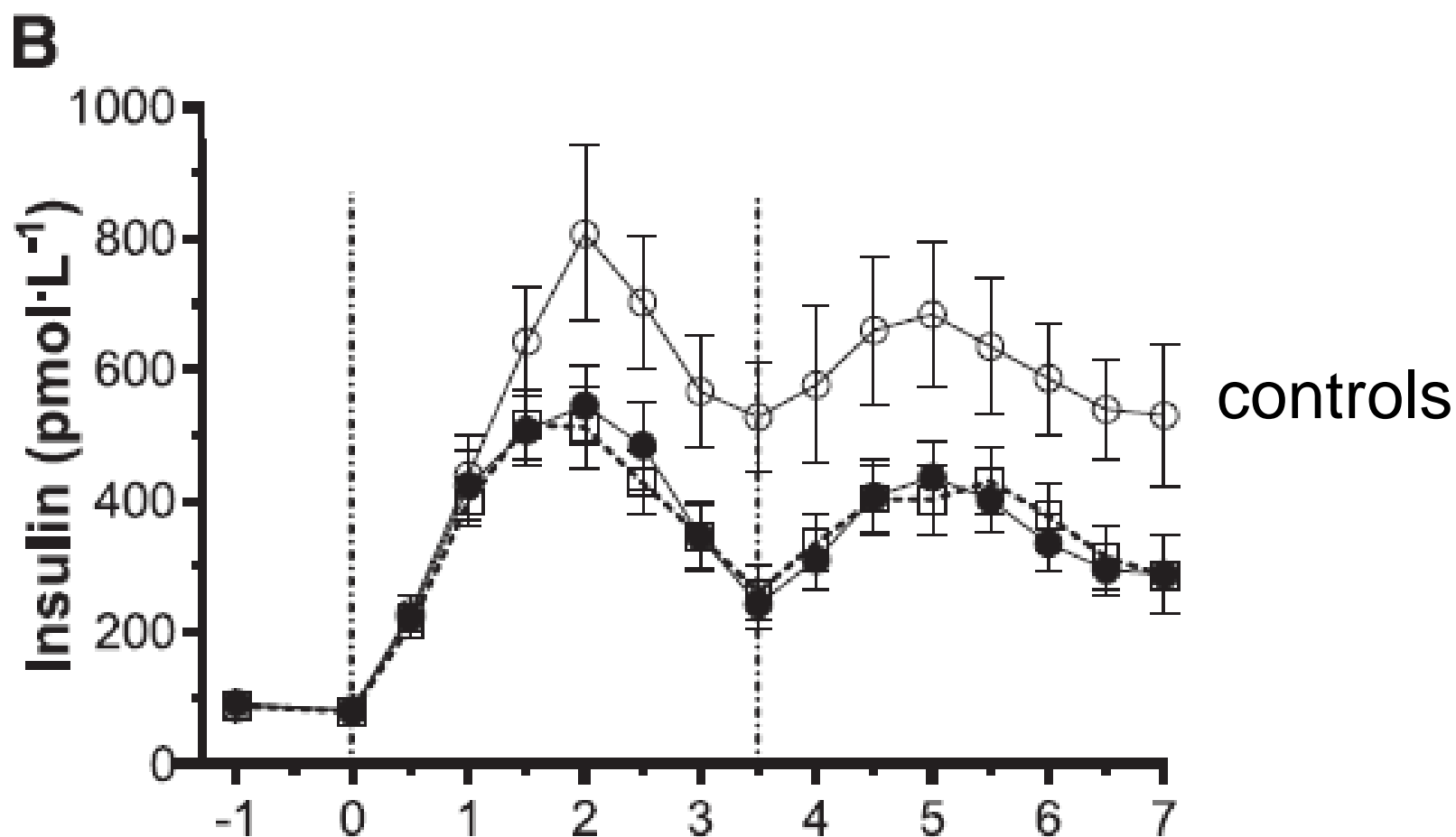
control

Sitting 8
hours


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 American Diabetes Association. **Diabetes Care**
2016

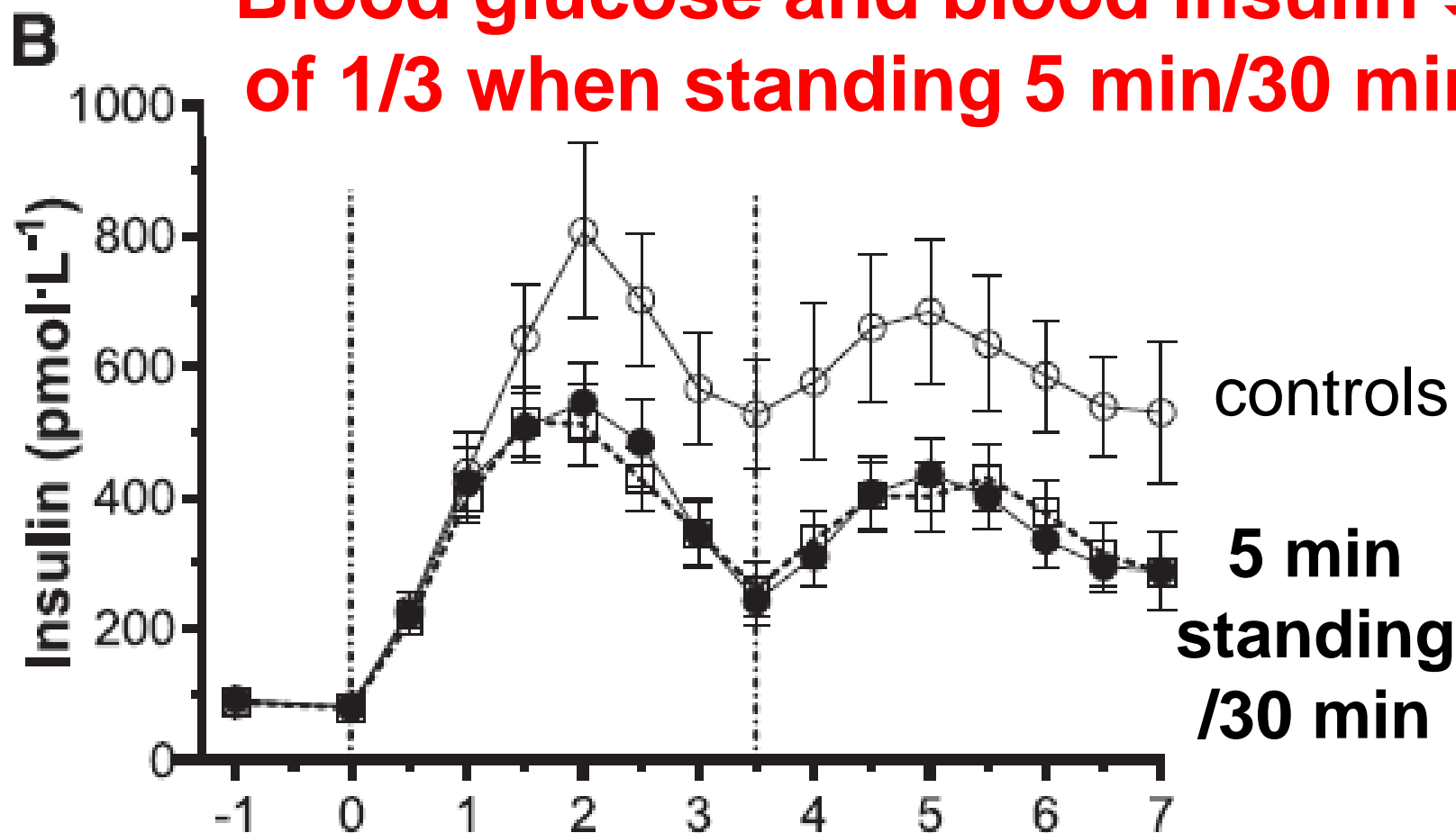
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Blood glucose and blood insulin \searrow of 1/3 when standing 5 min/30 min



Interventional studies

- Physical activity
- Sedentary behavior

Health
outcomes

Interventional studies

At work?

- Physical activity
- Sedentary behavior

Health
outcomes

Interventional studies

At work?

Only on sedentary behaviors ?

- Physical activity
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Health
outcomes

Interventional studies

At work?

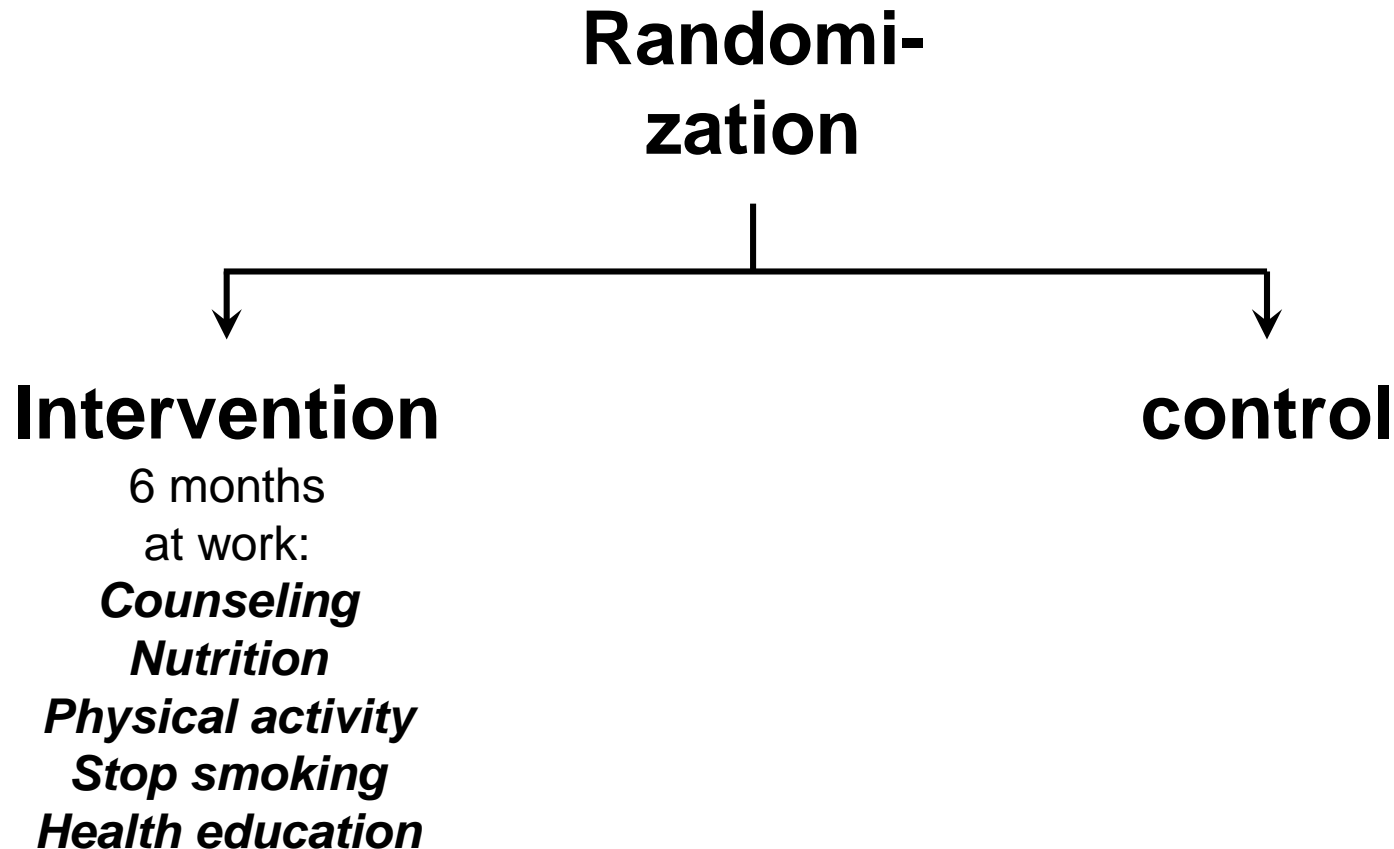
Only on sedentary behaviors ?

- Physical activity
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Health
outcomes

Impact of Worksite Wellness Intervention on Cardiac Risk Factors and One-Year Health Care Costs

Richard V. Milani, MD*, and Carl J. Lavie, MD



Impact of **Worksite Wellness Intervention** on Cardiac Risk Factors and One-Year Health Care Costs

Richard V. Milani, MD*, and Carl J. Lavie, MD

Randomi- zation



```
graph TD; A[Randomization] --> B[Intervention]; A --> C[control];
```

Intervention

6 months

at work:

Counseling

Nutrition

Physical activity

Stop smoking

Health education

control

Impact of Worksite Wellness Intervention on Cardiac Risk Factors and One-Year Health Care Costs

Change in health parameters in active participants after worksite health intervention (n = 185)

Variable	Baseline	After Intervention	Change	p Value
Anxiety (U)	3.7 ± 4.2	2.5 ± 3.6	−32%	0.0001
Depression (U)	2.4 ± 3.7	1.6 ± 3.1	−33%	0.0002
Somatization (U)	5.2 ± 4.1	3.5 ± 3.3	−33%	0.0001
Hostility (U)	3.6 ± 4.0	1.9 ± 2.8	−47%	0.0001
Quality of life (U)	117 ± 12	128 ± 14	10%	0.001
CAGE (U)	0.17 ± 1.1	0.09 ± 0.08	−47%	NS
Body mass index (kg/m ²)	28.5 ± 5.7	28.3	−1%	0.08
Fat (%)	26.7	24.4	−9%	0.001
Smoker (%)	17%	15%	−12%	NS
Sedentary (%)	79%	72%	−9%	0.14
Total cholesterol (mg/dl)	190	184	−3%	NS
HDL cholesterol (mg/dl)	47	53	13%	0.0001
TC/HDL (U)	4.2	3.6	−14%	0.0001
Systolic blood pressure (mm Hg)	124	122	−2%	0.08
Diastolic blood pressure (mm Hg)	81	79	−2%	0.01
Health habits (U)	2.0	0.8	−60%	0.0001
Total health risk score (U)	7.2 ± 5.1	5.4 ± 4.0	−25%	0.0001

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Well-being

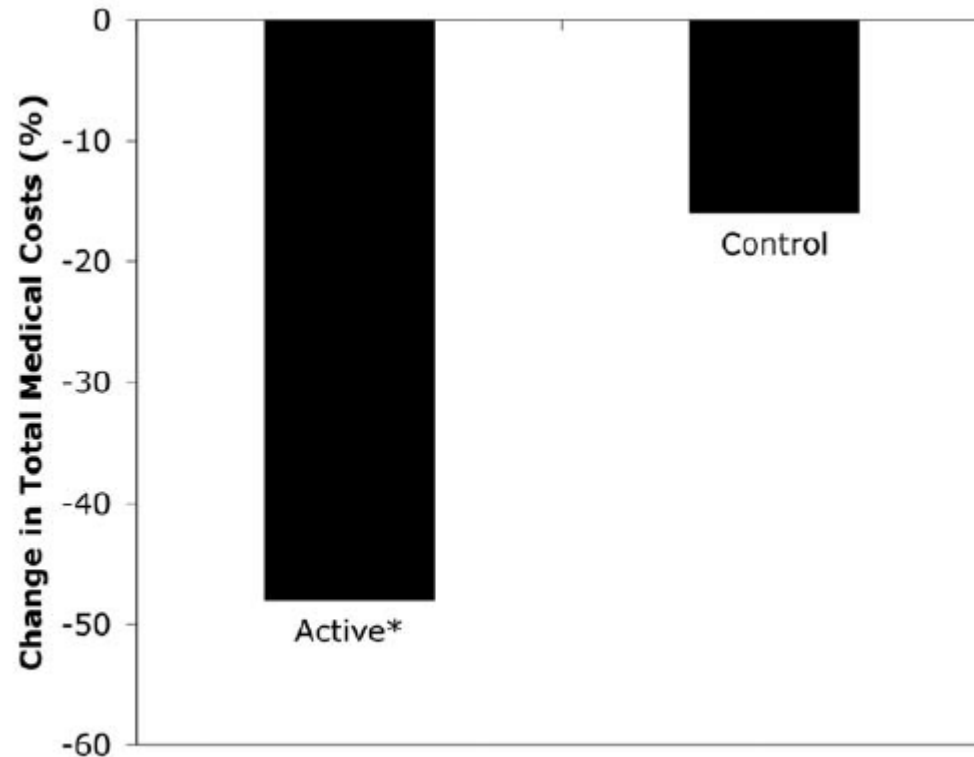
Body composition

CV Risk:
 - Blood lipids
 - Blood pressure

Impact of Worksite Wellness Intervention on Cardiac Risk Factors and One-Year Health Care Costs

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One-year change in total medical cost



*p=0.002

A workplace physical activity program at a public university in Mexico can reduce medical costs associated with type 2 diabetes and hypertension

Pablo Méndez-Hernández, D Sc,^(1,2,3) Darina Dosamantes-Carrasco, MSc,^(1,4) Carole Siani, D Sc,⁽¹⁾ Yvonne N Flores, D Sc,^(4,5)
Armando Arredondo, D Sc,⁽⁶⁾ Irma Lumbreras-Delgado, MSc,⁽²⁾ Víctor M Granados-García, MSc,⁽⁷⁾
Edgar Denova-Gutiérrez, MSc,^(4,8) Katia Gallegos-Carrillo, MSc,⁽⁴⁾ Jorge Salmerón, D Sc.^(4,9)

each dollar invested in a recreational PA program might translate into a healthcare cost reduction of 2.2 USD for type 2 diabetes, 2.1 USD for HBP and 5.3 USD for both.

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Interventional studies

At work?

- Physical activity
- Sedentary behavior

Health
outcomes

Interventional studies

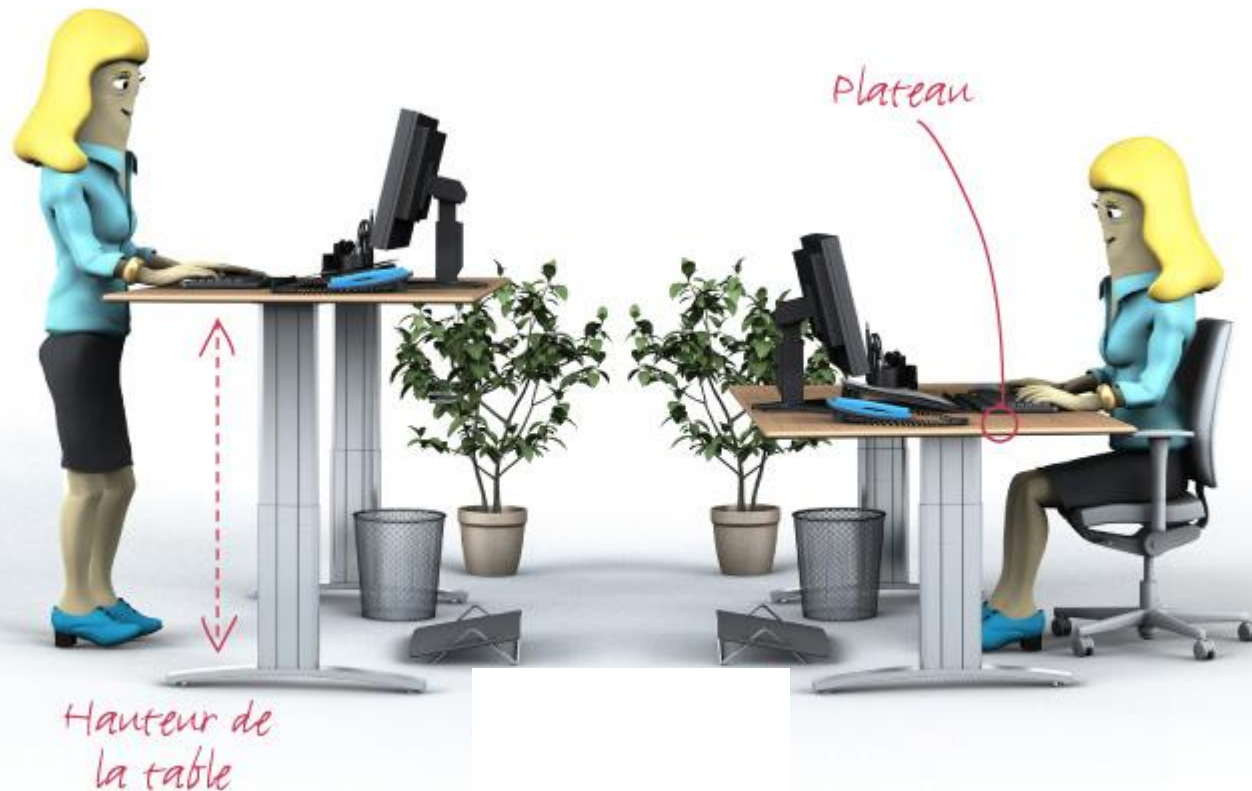
At work?

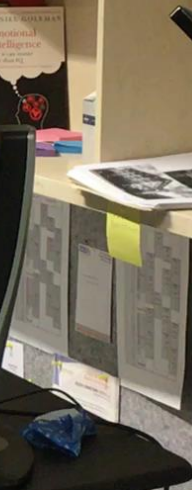
- Physical activity
- Sedentary behavior

Health
outcomes

the Stand Up Victoria cluster randomized trial

Dunstan DW, Wiesner G, Eakin EG, Neuhaus M, Owen N, LaMontagne AD, Moodie M, Winkler EA, Fjeldsoe BS, Lawler S, Healy GN.









Key points

- Sedentary behavior kills
- We have sedentary behavior at work

**Sedentary behavior is an
occupational risk**

Key points

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- We have sedentary behavior at work

**Sedentary behavior is an
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**Sedentary behavior is an
occupational risk**

A massive area for future research

La sédentarité au travail : un risque professionnel à part entière

Frédéric DUTHEIL

CHU Clermont-Ferrand
LaPSCo UMR CNRS 6024 Stress



Yolande ESQUIROL, Jean FERRIERES
CHU Toulouse, UMR Inserm 1027