

Mardi 24 septembre 2019



La sédentarité au travail : un risque professionnel à part entière

Frédéric DUTHEIL

Santé Travail Environnement, CHU Clermont-Ferrand LaPSCo UMR CNRS 6024 « Stress physiologique et psychosocial »









Key points

- Sedentary behavior kills
- We have sedentary behavior at work

Sedentary behavior is an occupational risk

Key points

- Sedentary behavior kills
- · We have sedentary behavior at work

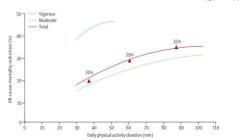
Sedentary behavior is an occupational risk

Background

- · Physical activity
- · Sedentary behavior

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

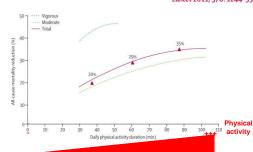
Thi Pang Went, Jackson Pui Man Wai^a, Min Kuang Tsai, Yi Chen Yang, Ting Yuan David Cheng, Meng-Chih Lee, Hui Ting Chan, Chwen Keng Tsao, Ihan Pou Tsai, Xifeng Wu Lancet 2011; 378: 1244–53



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

Shan Peu Tsal, Xifeng Wu

Lancet 2011; 378: 1244-53



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

Chi Pung Went*, Jackson Pul Mam Wai*, Min Kuang Tisal, Yi Chen Yung, Ting Yuan David Cheng, Meng-Chih Lac, Hui Ting Chan, Cheen Keng Tisal, Shan Peu Tisal, Xifeng Wu

Lancet 2011; 378: 1244–53

Mortality
reduction

Woodcraft

Total

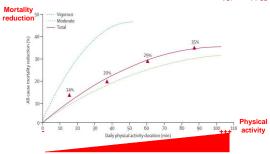
Physical
Daily physical activity duration (min)

Physical
activity

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

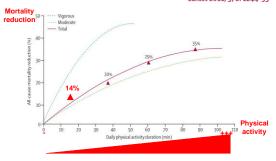
Chi Pang Went", Jackson Pui Man Wait", Min Kuang Tsai, Yi Chen Yang, Ting Yuan David Cheng, Meng-Chih Lee, Hui Ting Chan, Chwen Keng Tsao, Shan Peu Tsai, Xifeng Wu

Lancet 2011; 378: 1244–53



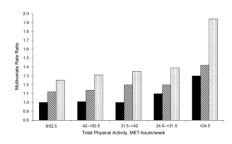
Minimum amount of physical activity for reduced mortality and extended life expectancy: a prospective cohort study

Chi Pang Wen", Jackson Pui Man Wai", Min Kuang Tsoi, Yi Chen Yang, Ting Yuan David Cheng, Meng-Chih Lee, Hui Ting Chan, Chwen Keng Tsoo, Shan Peu Tsoi, Xifeng Wu Lancet 2011; 378: 1244–53



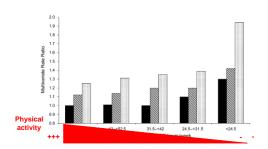
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



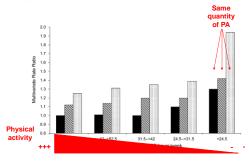
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



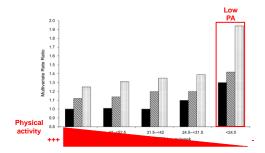
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbel Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



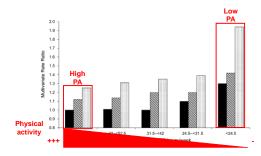
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



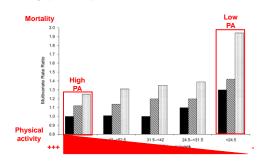
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



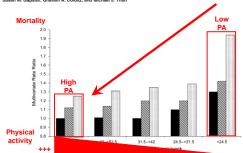
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



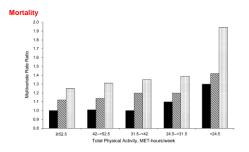
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun



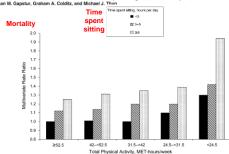
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel[®], Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun

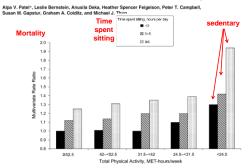


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun

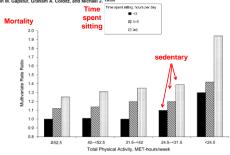


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of Am J Epidemiol 2010;172:419-429

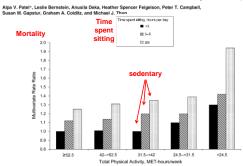


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of Am J Epidemiol 2010;172:419-429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thur

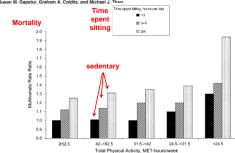


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of Am J Epidemiol 2010;172:419-429

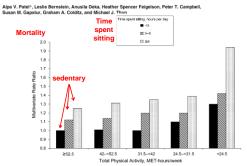


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of Am J Epidemiol 2010;172:419-429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun

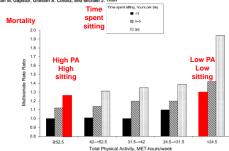


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of **US Adults** Am J Epidemiol 2010;172:419-429



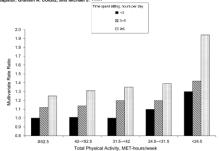
Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of **US Adults** Am J Epidemiol 2010;172:419-429

Alpa V. Patel*, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell, Susan M. Gapstur, Graham A. Colditz, and Michael J. Thun

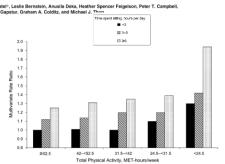


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of US Adults Am J Epidemiol 2010;172:419–429

Alpa V. Patelo, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell,

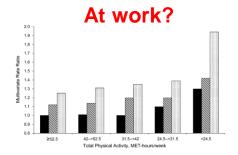


Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of Am J Epidemiol 2010;172:419–429



Leisure Time Spent Sitting in Relation to Total Mortality in a Prospective Cohort of Am J Epidemiol 2010;172:419-429

Alpa V. Patel^o, Leslie Bernstein, Anusila Deka, Heather Spencer Feigelson, Peter T. Campbell,



Observational studies At work?

- Physical activity
- · Sedentary behavior

Observational studies At work?

- Physical activity
- Sedentary behavior

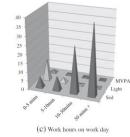
Epidemiology

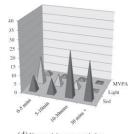
RESEARCH ARTICLE

Open Access

The contribution of office work to sedentary behaviour associated risk

Sharon Parry[†] and Leon Straker^{*†}

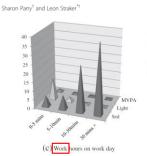


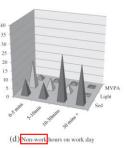


RESEARCH ARTICLE

Open Access

The contribution of office work to sedentary behaviour associated risk



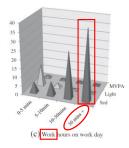


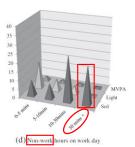
RESEARCH ARTICLE

Open Access

The contribution of office work to sedentary behaviour associated risk



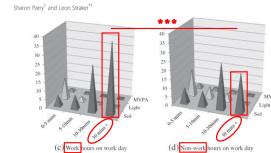




RESEARCH ARTICLE

Open Access

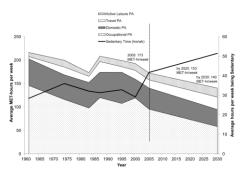
The contribution of office work to sedentary behaviour associated risk



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

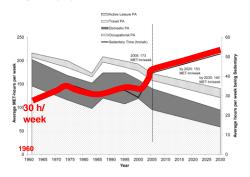
Obes Rev. 2012

Shu Wen Ng and Barry Popkin



Time Use and Physical Activity: A Shift Away from Movement across the Globe Obes Rev. 2012

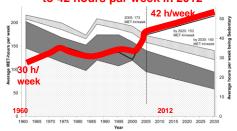
Shu Wen Ng and Barry Popkin



Time Use and Physical Activity: A Shift Away from Movement across the Globe Obes Rev. 2012

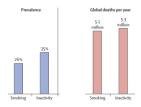
Shu Wen Ng and Barry Popkin

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



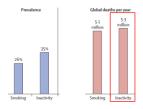


Chi Pang Wen, Xifeng Wu



THE LANCET

Chi Pang Wen, Xifeng Wu



Observational studies At work?

- · Physical activity
- · Sedentary behavior

Observational studies At work?

- · Physical activity
- · Sedentary behavior

Health outcomes

The Journal of Nutrition, Health & Aging©
Volume 18, Number 3, 2014
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. MENOTTI, P.E. PUDDU, M. LANTI', G. MAIANI', G. CATASTA', A. ALBERTI FIDANZA'

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

The Journal of Nutrition, Health & Aging® Volume 18, Number 3, 2014
LIFESTYLE HABITS ANI 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

The Journal of Nutrition, Health & Aging© Volume 18, Number 3, 2014

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. MAIANI², G. CATASTA³, A. ALBERTI FIDANZA⁴

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

The Journal of Nutrition, Health & Aging® Volume 18, Number 3, 2014

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. MAIANI², G. CATASTA³, A. ALBERTI FIDANZA⁴

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

End po	int 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
	Diet Score 2	0.99	0.81 1.21

The Journal of Nutrition, Health & Aging©

Volume 18, Number 3, 2014 LIFESTYLE HABITS ANI 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 activit at work and eating habits were determined

End po	int Variable	ble Follow-up 20 y	
		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
	Diet Score 2	0.99	0.81 1.21

OPEN @ ACCESS Freely available online

PLOS ONE

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population Cohorts

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 0.03-0.85) and cancer [HR=0.60, 95% CI 0.43-0.85) mortality, compared to sitting occupations. There were no associations in men.

WOMEN

	All-cause Mortality		
Cases/total n	Model 3 [†] HR (95% CI)		
116/2090	1		
149/3124	0.68 (0.52-0.89)		
	0.005 (0.017)‡		
Cancer mortality			
77/2090			
83/3124	0.60 (0.43-0.85)		
	0.004 (0.014)‡		
	116/2090 149/3124 Cancer mortality 77/2090		

PLOS ONE

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population Cohorts

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]=0.08, 95% CI 0.32-0.89] and cancer [HR=0.00, 95% CI 0.43-0.85] mortality, compared to sitting occupations. There were no associations in men.

	All-cause Mortality	y		
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 p [‡]		0.005 (0.017)‡		
	Cancer mortality			
Sitting	77/2090			
Standing/walking about	83/3124	0.60 (0.43-0.85)		
Trend p		0.004 (0.014)‡		

PLOS ONE

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population Cohorts 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.

	All-cause Mortality		
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 p [‡]		0.005 (0.017)‡	
	Cancer mortality		
Sitting	77/2090		
Standing/walking about	83/3124	0.60 (0.43-0.85)	
Trend p		0.004 (0.014)‡	

OPEN @ ACCESS Freely available online

PLOS ONE

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population Cohorts

September 2013 | Volume 8 | Issue 9 | e73753

Results: In total there were 754 all-cause deaths. In women, a standingly walking occupation was associated with lower risk of all-cause (fully adjusted hazard ratio (HR] = 0.68, 55% 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.

	All-cause Mortality	
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 p [‡]		0.005 (0.017)‡
	Cancer mortality	
Sitting	77/2090	
Standing/walking about	83/3124	0.60 (0.43-0.85)
Trend p		0.004 (0.014)‡

OPEN @ ACCESS Freely available online

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population

Cohorts

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]=068, 95% Cl 0.32-0.89) and cancer (HR=0.60, 95% Cl 0.43-0.85) mortality, compared to Sitting occupations. There were no associations in men.

WOMEN		
	All-cause Mortality	>
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 p [‡]		0.005 (0.017)‡
	Cancer mortality	
Sitting	77/2090	
Standing/walking about	83/3124	0.60 (0.43-0.85)
Trend p		0.004 (0.014)‡

OPEN @ ACCESS Freely available online

PLOS ONE

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population

Cohorts
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] =0.66, 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 All-cause Mortality Predominant activity at work Cases/total n Model 3[†] HR (95% CI) Sitting 116/2090 Standing/walking about 149/3124 0.68 (0.52-0.89) Trend p‡ 0.005 (0.017)‡ Cancer mo Sitting 0.60 (0.43-0.85) Standing/walking about 83/3124 0.004 (0.014)‡ Trend p

Are Sitting Occupations Associated with Increased All-Cause, Cancer, and Cardiovascular Disease Mortality Risk? A Pooled Analysis of Seven British Population

Cohorts

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

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 0.52-0.889 and cancer [HR]=0.60, 95% CI 0.43-0.85) mortality, compared to Stifting occupations. There were no associations in men.

	All-cause Mortality	
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 p‡		0.005 (0.017)‡
	Cancer mortality	
Sitting	77/2090	
Standing/walking about	83/3124	0.60 (0.43-0.85)
Trend p		0.004 (0.014)‡

Observational studies At work?

- · Physical activity
- · Sedentary behavior

Health outcomes

Observational studies At work?

- · Physical activity
- · Sedentary behavior

Health outcomes

Interventional studies At work?

- · Physical activity
- · Sedentary behavior

Health outcomes

Interventional studies At work?

- · Physical activity
- · Sedentary behavior

Health outcomes

Interventional studies ≈ Leisure

- · Physical activity
- · Sedentary behavior

Health outcomes

Interventional studies ≈ Leisure

Physical activitySedentary behavior

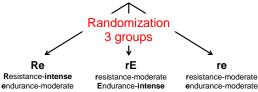
Health outcomes



International Journal of Cardiology Different modalities of exercise to reduce visceral fat mass and cardiovascular risk in metabolic syndrome: the RESOLVE* randomized trial

Frédéric Dutheil *Ab.G.G.e.*, Gérard Lac *, Bruno Lesourd *A.f. Robert Chapier *, Guillaume Walther *, Agnès Vinet *, Vincent Sapin *h. Julien Verney *, Lemlih Ouchchane ¹, Martine Duclos ^{c.d}, Philippe Obert *A.F. Daniel Courteix *A.F.

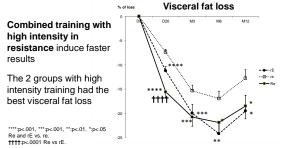
 MetS individuals randomized in 3 groups of combined PA (endurance + résistance) with differents intensities:





International Journal of Cardiology Different modalities of exercise to reduce visceral fat mass and cardiovascular risk in metabolic syndrome: the RESOLVE* randomized trial

Frédéric Duthell ^{a,b,c,d,c,g} Gérard Lac ^a, Bruno Lesourd ^{a,f}, Robert Chapier ^a, Guillaume Walther ^g, Agnès Vinct ^g, Vincent Sapin ^h, Julien Verney ^a, Lemlih Ouchchane ^l, Martine Duclos ^{c,d}, Philippe Obert ^{a,g}, Daniel Courteix ^{a,b}



Interventional studies ≈ Leisure

Physical activitySedentary behavior

Health outcomes

Interventional studies

Only on sedentary behaviors?

Physical activitySedentary behavior

Health outcomes

Interventional studies Laboratory

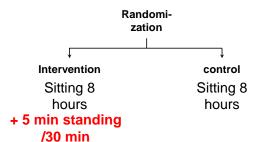
Only on sedentary behaviors?

Physical activitySedentary behavior

Health outcomes

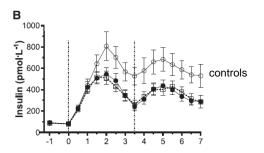
Benefits for Type 2 Diabetes of Interrupting Prolonged Sitting With Brief Bouts of Light Walking or Simple Resistance Activities 

Benefits for Type 2 Diabetes of Interrupting Prolonged Sitting With Brief Bouts of Light Walking or Simple Resistance Activities Amerikan
Diabetes Care.
2016
Paddy C. Dempsey, ^{1,2} Robyn N. Larsen.
Parneet Sethi, ¹ Julian W. Sares.
Nova E. Straznicky, ¹ Neole D. Cohen, ¹
Ester Ceim, ^{1,3,4} Govin W. Lambert, ^{1,2}
Neville Owen, ² Bromyn A. Kingwell, ¹
and David W. Durstann^{1,5,5}



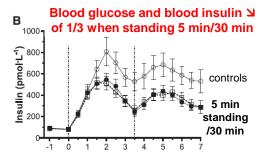
Benefits for Type 2 Diabetes of Interrupting Prolonged Sitting With Brief Bouts of Light Walking or Simple Resistance Activities American
Diabetes Care,
Association. Diabetes Care,
2016
Packly C. Dempsey, ^{1,2} Robyn N. Lorsen,
Parmeet Sethi, ¹ Julian W. Sacre, ¹
Nora E. Stranicky, ¹ Neele D. Cohen,
Ester Ceini, ^{1,3,4} Gontw. U. Lombert, ²
Neville Owen, ² Bronwyn A. Kingwell, ¹
and David W. Dunstrak,

One D



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





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
- · Sedentary behavior

Health outcomes

Interventional studies **At work?**

Only on sedentary behaviors?

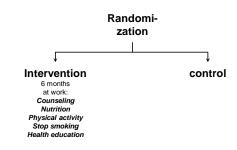
Physical activity
Sedentary behavior

Health outcomes

The American Journal of Cardiology 2009

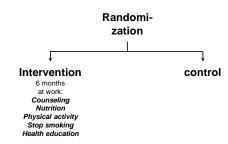
Impact of Worksite Wellness Intervention on Cardiac Risk Factors and One-Year Health Care Costs

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





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



intervention (n = 185)	s in active p	articipants afte	r worksite	health
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

The American Journal of Cardiology 2009 Impact of Worksite Wellness Intervention on Cardiac Risk Factors and One-Year Health Care Costs

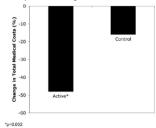
Change in health parame intervention (n = 185) ters in active participants after worksite health Variable Baseline After Change p Value Intervention 2.5 ± 3.6 0.0001 0.0002 Anxiety (U) Depression (U) Well-being Somatization (U) 0.0001 1.9 ± 2.8 128 ± 14 0.09 ± 0.08 28.3 24.4 Hostility (U)
Quality of life (U)
CAGE (U) 0.0001 Body mass index (kg/m²) Body composition Fat (%)
Smoker (%)
Sedentary (%)
Total cholesterol (mg/dl)
HDL cholesterol (mg/dl)
TC/HDL (U) 24.4 15% 72% 184 53 17% -3% 13% -14% 0.0001 CV Risk: Systolic blood pressur 124 122 0.08 Systolic blood pressure (mm Hg) Diastolic blood pressure (mm Hg) Health habits (U) Total health risk score (U) Blood lipids 81 0.01 **Blood pressure** 5.4 ± 4.0

The American Journal of Cardiology 2009

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

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

One-year change in total medical cost



Salud Pública Mex 2012, 54:20-27

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. (**). Dazina Dosamantes-Carrasco, MSc. (**) Carole Siani, D. Sc. (**) Yvonne N. Flores, D. Sc. (**) Armando Arredondo, D. Sc. (**) Irma Lumbreras-Delgado, MSc. (**) Victor M. Granados-Garca, MSc. (**) Edgar Denova-Guiderez, MSc. (**) **
Edgar Denova-G

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.

Salud Pública Mex 2012, 54:20-27

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

Pablo Méndez-Hernández, D. Sc. (^{13,13}) Darina Dosamantes-Carrasco, MSc. (^{1,16} Carole Siani, D. Sc. (¹¹) Yvonne N Flores, D. Sc. (^{16,15}) Armando Arredondo, D. Sc. (¹⁰) Ima Lumbreras-Delgado, MSc. (¹⁰) Vor M Granados-Garcia, MSc. (¹⁰) Edgir Denova-Guiderz, MSc. (¹⁰) Sci. (¹⁰) Garcia Garcia (¹⁰) Sci. (¹⁰) Sci.

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.

Salud Pública Mex 2012, 54:20-27

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

Pablo Mendez-Hernández, D.S.c.^(1,2,1) Darina Dosamantes-Carrasco, MSc.^(1,4) Carole Siani, D.S.c.^(1,4) Yvonne N.Flores, D.S.c.^(4,5) Armando Arredondo, D.S.c.⁽⁶⁾ Irma Lumbrers-Delgado, MSc.⁽⁶⁾ Victor M Granados-Garcia, MSc.⁽⁷⁾ Edgar Denova-Guiderer, MSc.⁽⁶⁾ Kasia Gallegos-Carrillo, MSc.⁽⁶⁾ Jorge Salmerfon, D.S.c.⁽⁶⁾

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.

Salud Pública Mex 2012, 54:20-27

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

Pablo Méndez-Hernández, D. Sc. (**). Darina Dosamantes-Carrasco, MSc. (**) Carole Siani, D. Sc. (**) Yvonne N. Flores, D. Sc. (**) Sc. (**) Sc. (**) Victor M. Granados-García, MSc. (**) Sc. (**) Victor M. Granados-García, MSc. (**) Edgar Denova-Guierez, MSc. (**) Sc. (**) Glasson (**) Sc. (

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.

Interventional studies At work?

- · Physical activity
- · Sedentary behavior

Health outcomes

Interventional studies At work?

· Physical activity

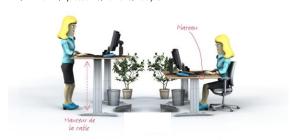
Sedentary behavior

Health outcomes

BMC Public Health.

the Stand Up Victoria cluster randomized trial

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



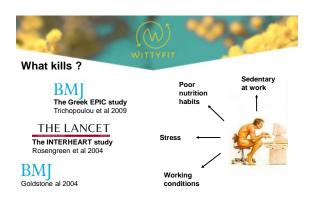


















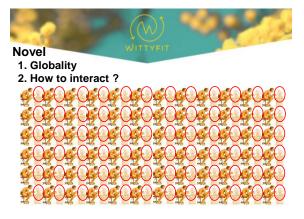






















- 1. Globality
- 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers





- 1. Globality
- 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine



- 1. Globality
- 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine
- 7. WittyFit... → behavior data



- 1. Globality 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine
- 7. WittyFit... → behavior data WittyFit Research → medical data



- 1. Globality
- 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine
- 7. WittyFit Research
- 8. Connected objects



8. Connected objects





8. Connected objects







8. Connected objects







8. Connected objects









8. Connected objects

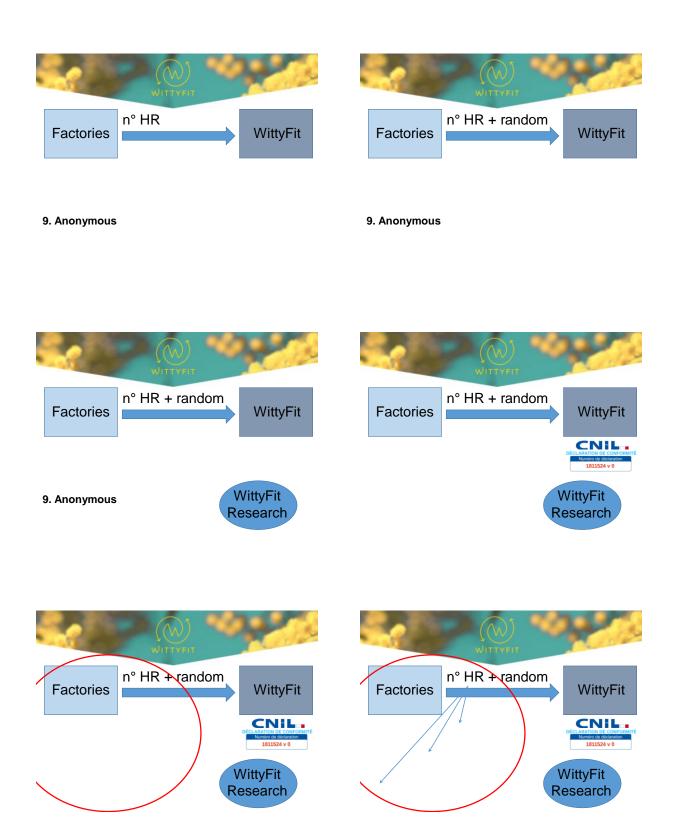


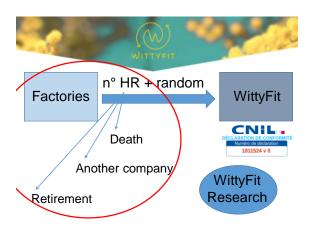


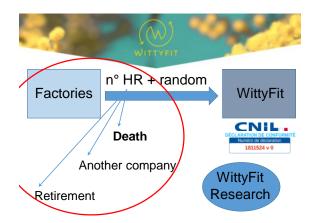




- 1. Globality
- 2. Digital world
- 3. Personalized feedback 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine
- 7. WittyFit Research
- 8. Connected objects
- 9. Anonymous











Death

The main outcome: **Death**



- 1. Globality
- 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine
- 7. WittyFit Research
- 8. Connected objects
- 9. Anonymous



- 1. Globality
- 2. Digital world
- 3. Personalized feedback
- 4. Up-to-date EBM
- 5. A feedback for managers
- 6. Collaboration with Occupational Medicine
- 7. WittyFit Research
- 8. Connected objects
- 9. Anonymous
- 10. A powerful epidemiological database

Key points

- Sedentary behavior kills
- We have sedentary behavior at work

Sedentary behavior is an occupational risk

Key points

- Sedentary behavior kills
- We have sedentary behavior at work

Sedentary behavior is an occupational risk

Key points

- Sedentary behavior kills
- · We have sedentary behavior at work

Sedentary behavior is an occupational risk

A massive area for future research



Mardi 24 septembre 2019



La sédentarité au travail : un risque professionnel à part entière

Frédéric DUTHEIL

Santé Travail Environnement, CHU Clermont-Ferrand LaPSCo UMR CNRS 6024 « Stress physiologique et psychosocial »







