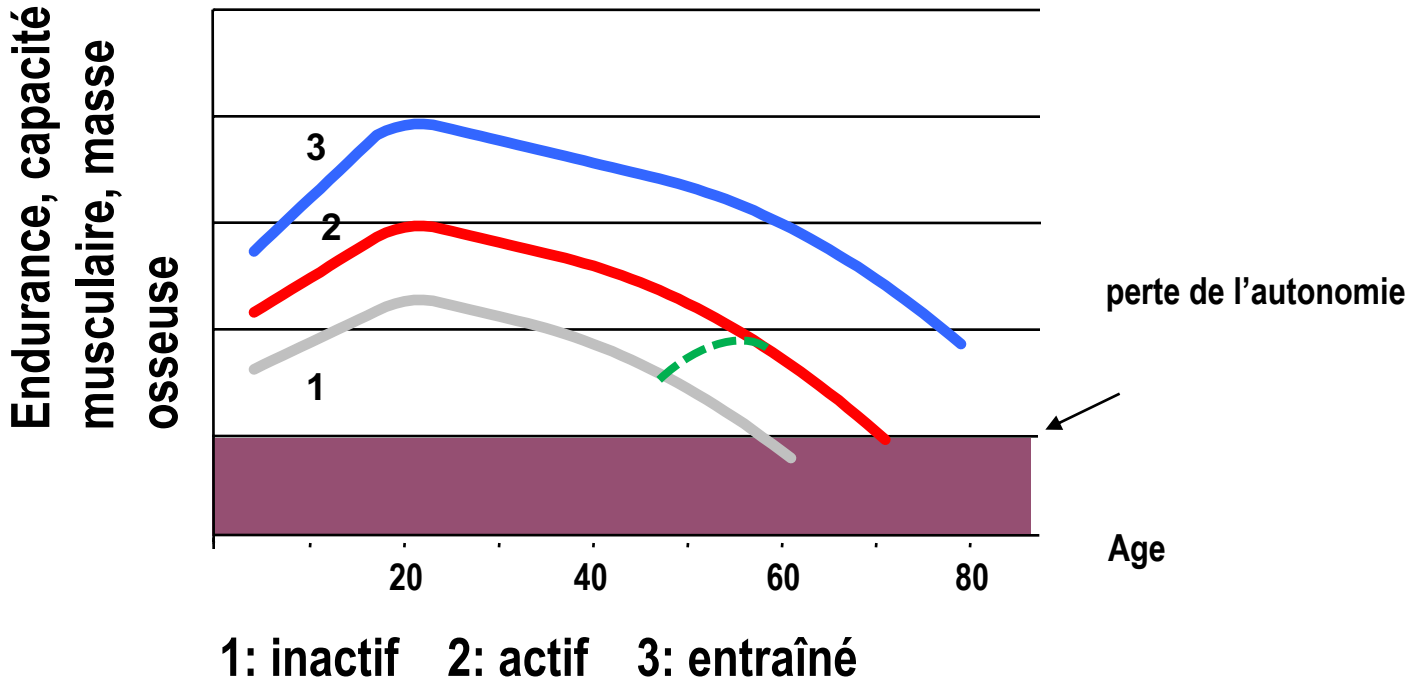
# *"L'activité physique et la personne âgée"*

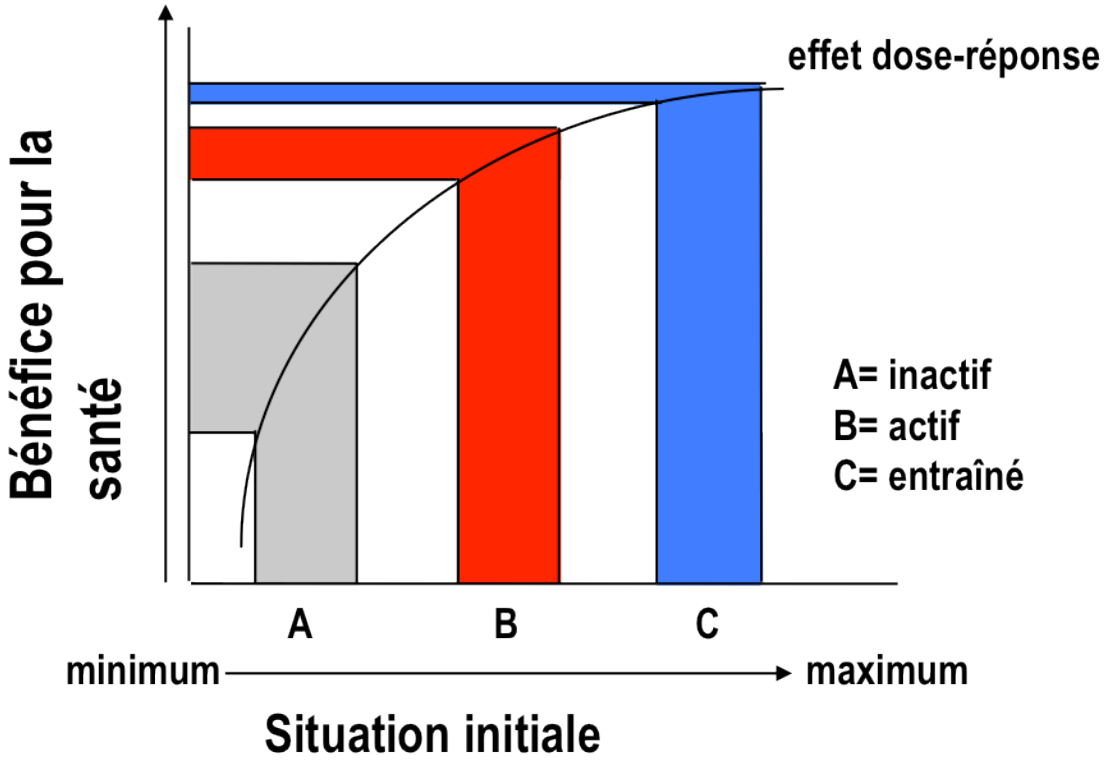
Bengt Kayser

# Activité physique et autonomie




Hepa Suisse, BFSPO

# Dose-réponse




Hepa Suisse, BFSPO

# Un paradox du sport

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

# Cardiovascular Events during World Cup Soccer

Ute Wilbert-Lampen, M.D., David Leistner, M.D., Sonja Greven, M.S., Tilmann Pohl, M.D., Sebastian Sper, Christoph Völker, Denise Güthlin, Andrea Plasse, Andreas Knez, M.D., Helmut Küchenhoff, Ph.D., and Gerhard Steinbeck, M.D.

## ABSTRACT

### BACKGROUND

The Fédération Internationale de Football Association (FIFA) World Cup, held in Germany from June 9 to July 9, 2006, provided an opportunity to examine the relation between emotional stress and the incidence of cardiovascular events.

### METHODS

Cardiovascular events occurring in patients in the greater Munich area were prospectively assessed by emergency physicians during the World Cup. We compared those events with events that occurred during the control period: May 1 to June 8 and July 10 to July 31, 2006, and May 1 to July 31 in 2003 and 2005.

### RESULTS

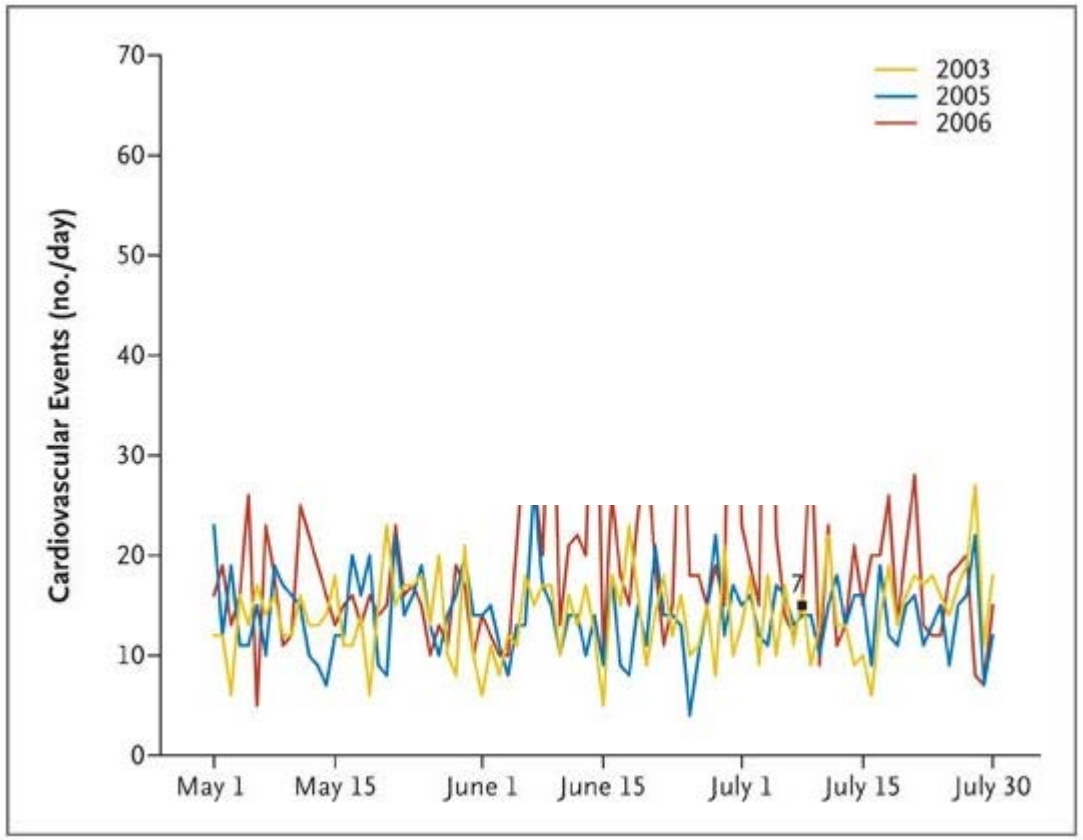
Acute cardiovascular events were assessed in 4279 patients. On days of matches involving the German team, the incidence of cardiac emergencies was 2.66 times that during the control period (95% confidence interval [CI], 2.33 to 3.04; P<0.001);

From Medizinische Klinik und Poliklinik I, Campus Grosshadern (U.W.-L., D.L., T.P., S.S., C.V., A.P., A.K., G.S.), and Statistisches Beratungslabor, Institut für Statistik (S.G., D.G., H.K.), Ludwig-Maximilians-Universität, Munich, Germany. Address reprint requests to Dr. Wilbert-Lampen at Med. Klinik und Poliklinik I, Campus Grosshadern, Marchioninistr. 15, D-81377 Munich, Germany, or at ute.wilbert-lampen@med.uni-muenchen.de.

Drs. Wilbert-Lampen and Leistner contributed equally to this article.

N Engl J Med 2008;358:475-83.

# Sport et santé …




1,
2,
3,
4,
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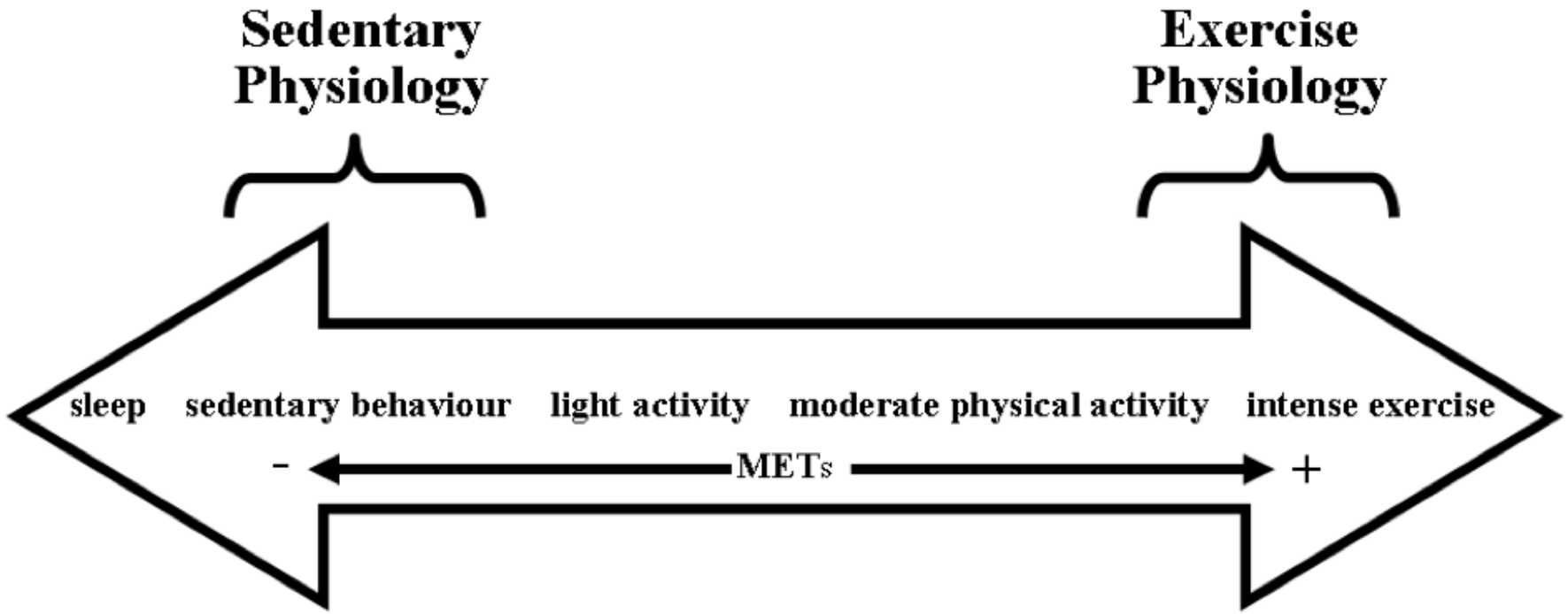
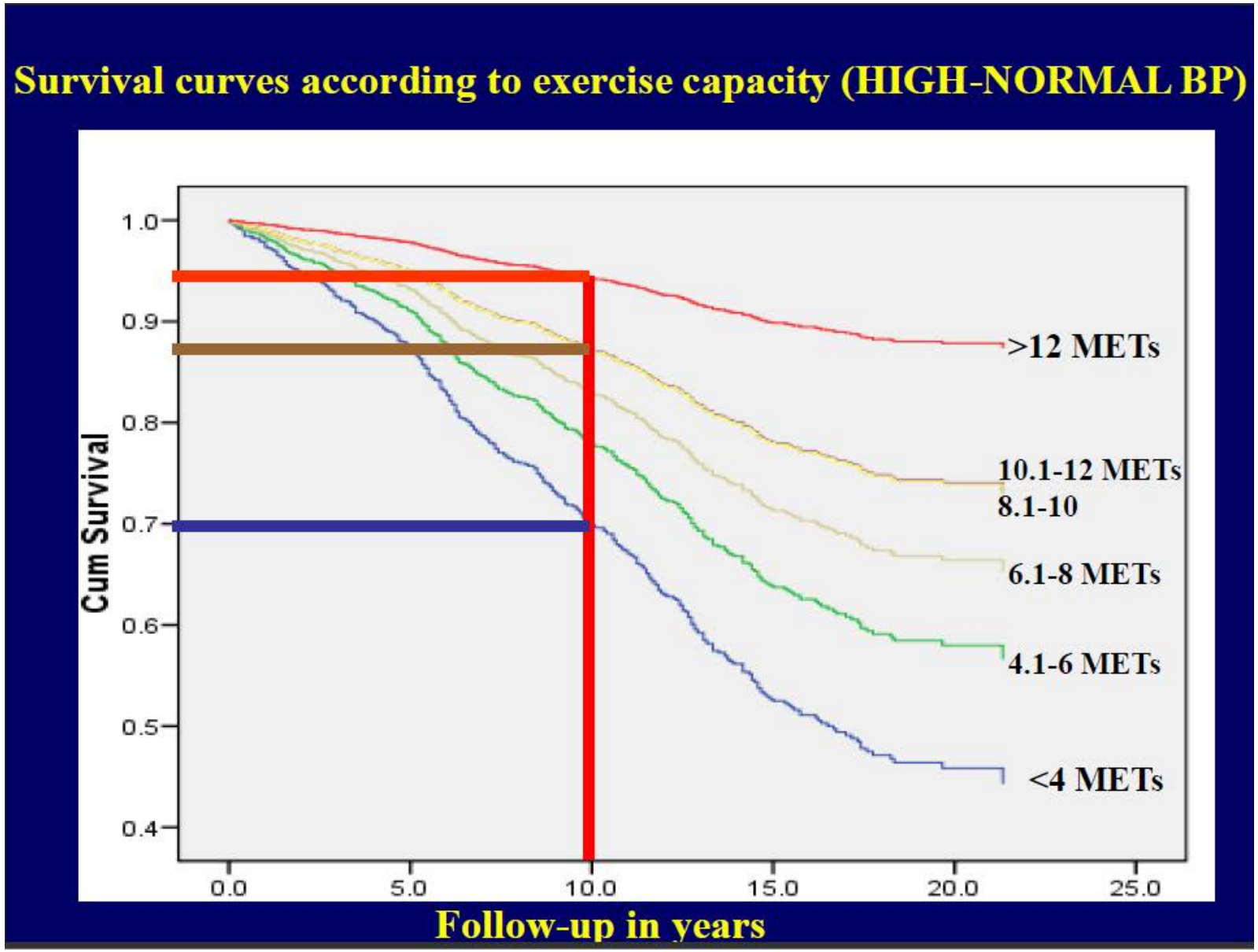
Wilbert-Lampen et al, NEJM, 2008

Sport

Activité physique

Exercice


Sedentary Physiology
Exercise Physiology
sleep
sedentary behaviour
light activity
moderate physical activity
intense exercise
-
METs
+




Kokkinos et al. 2009


TDK
Bolt
SEIKO
NEW WR
SEIKO
9.58

OPEN ACCESS Freely available online

PLoS one

# The Citius End: World Records Progression Announces the Completion of a Brief Ultra-Physiological Quest

**Geoffroy Berthelot[1], Valérie Thibault[1], Muriel Tafflet[1,2], Sylvie Escolano[1,2], Nour El Helou[1], Xavier Jouven[2,3], Olivier Hermine[3,4], Jean-François Toussaint[1,3,5]***

**1** Institute for Biomedical Research and Sports Epidemiology (IRMES), Paris, France, **2** INSERM, IFR69, U780, Villejuif, France, **3** Université Paris-Descartes, Paris, France, **4** Centre National de la Recherche Scientifique (CNRS) UMR 8147, Hôpital Necker, Paris, France, **5** Centre d'Investigation en Médecine du Sport (CIMS), Hôtel-Dieu, Assistance Publique-Hôpitaux de Paris (AP-HP), Paris, France

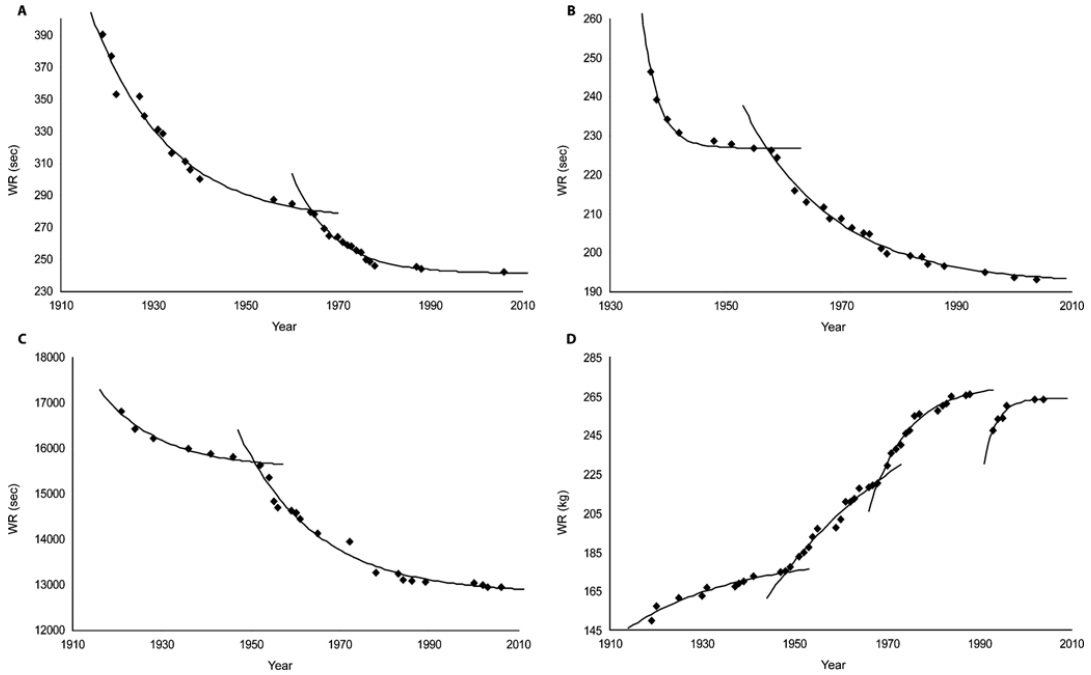



**Figure 1. Model fitting on 4 events.** A. Women 400 m freestyle (swimming) with biexponential decaying curve, adjusted $r_i^2 = 0.976$ and $r_{ii}^2 = 0.966$; B. Men 4×100 m freestyle relay (swimming), $r_i^2 = 0.985$, $r_{ii}^2 = 0.988$; C. Men 50 km walk (track), $r_i^2 = 0.972$, $r_{ii}^2 = 0.977$; D. Clean & Jerk Super Heavyweight (weight lifting), $r_i^2 = 0.939$, $r_{ii}^2 = 0.937$, $r_{iii}^2 = 0.975$ and $r_{iv}^2 = 0.946$. Weight categories were altered in 1948, 1968 and 1992 and control reinforced in 1988–1992 in weight lifting.
doi:10.1371/journal.pone.0001552.g001

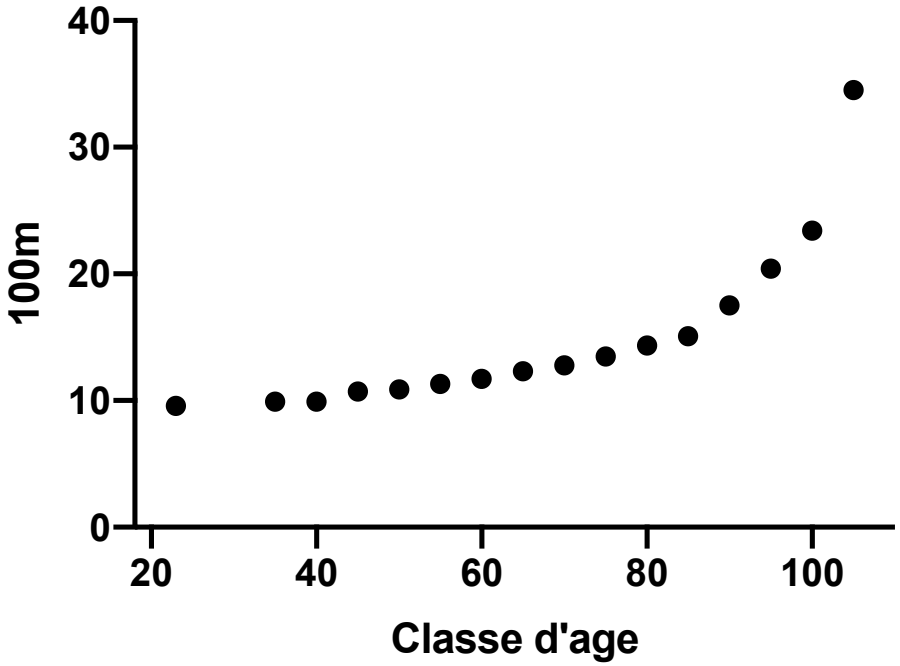
Quelle est la compétition internationale réunissant le plus grand nombre de compétiteurs?

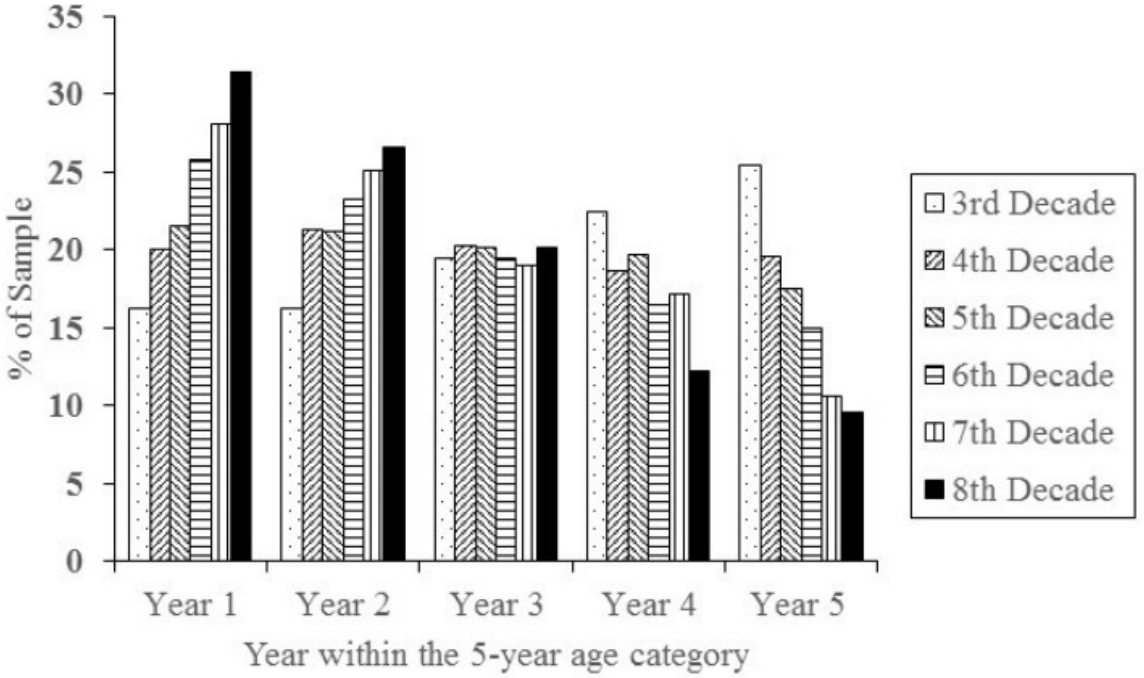
# World Masters Games

From April 21st to 30th, 2017, Auckland hosted the 9th edition of the World Masters Games, a multisport masters competition open to all countries around the world and accessible at all levels of performance.

Over 10 days of competition, 28'000 participants from 100 countries competed in 28 sports. The games were supported by devoted 3500 volunteers.

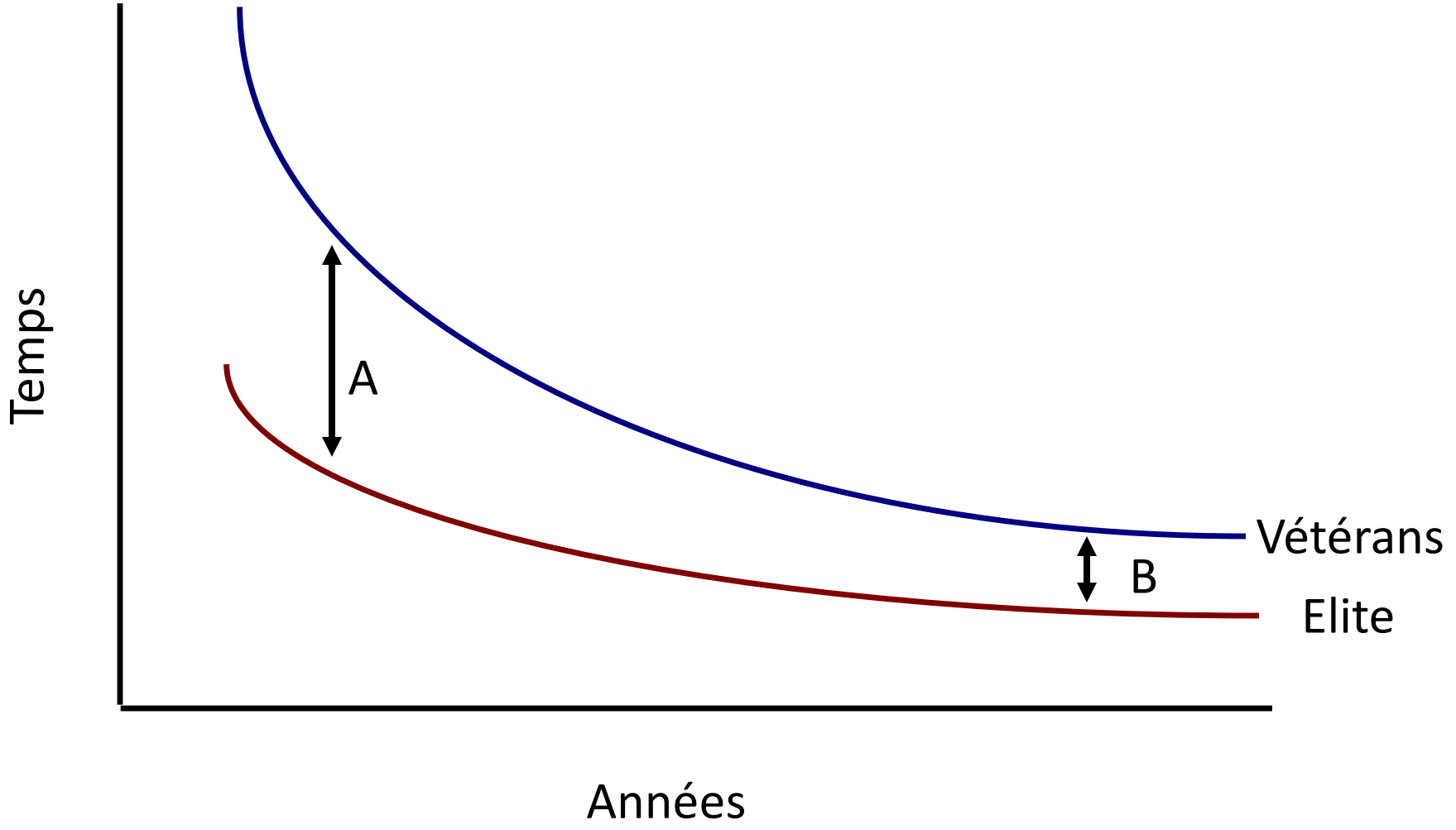
# Masters




Medic et al. 2018

# Progression records
## élite vs. vétérans



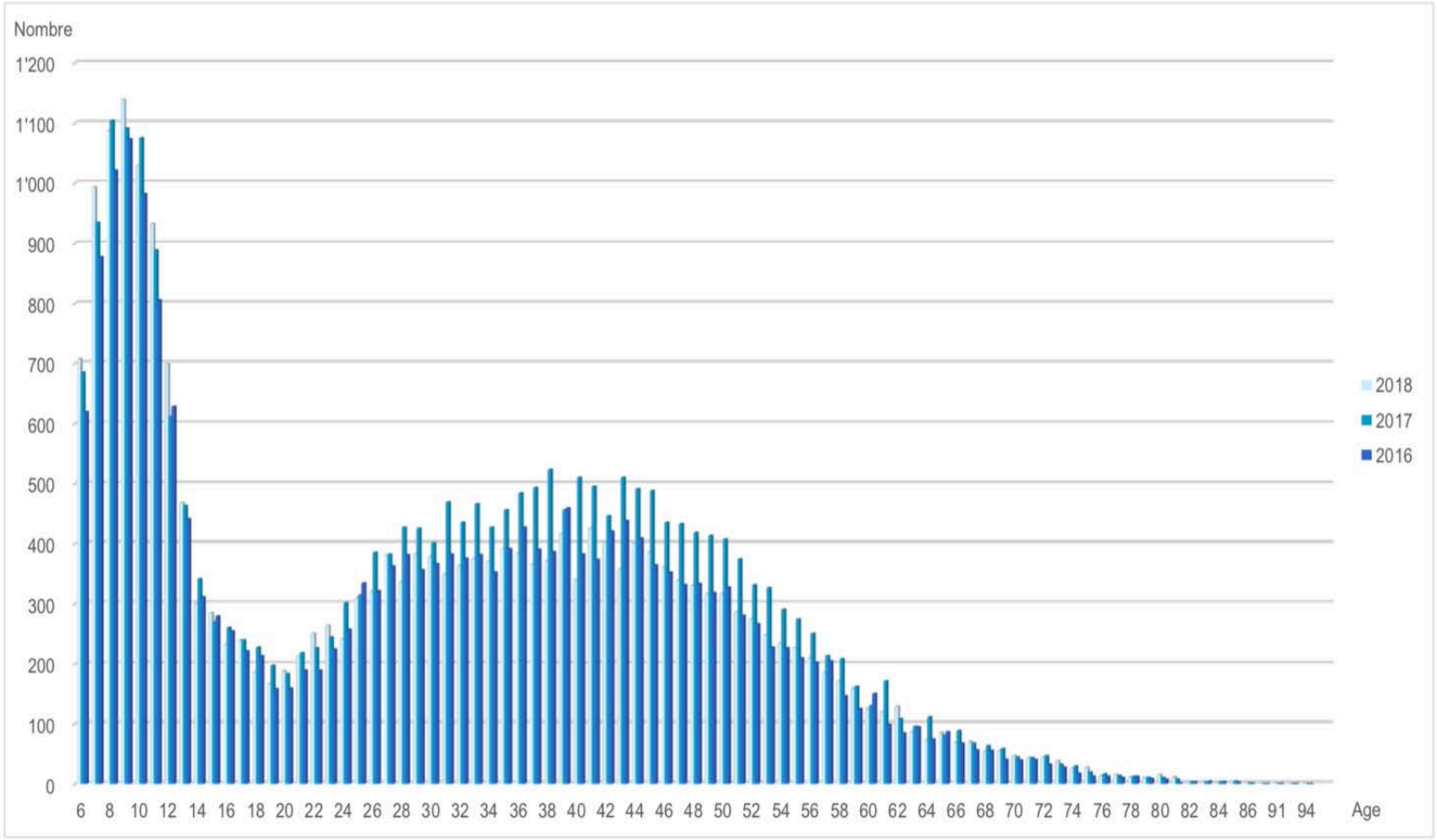

UBS
KIPLAGAT
SAUCONY
1110
7585
2202
11933
12495
5257
5054
8928

# 46’000 participants!

Course de l'Escalade

41e COURSE DE L'ESCALADE 2018

Nombre d'inscriptions par âge (Hommes)



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https://doi.org/10.1080/02640414.2017.1340661

Routledge
Taylor & Francis Group



# Effects of increased participation on veteran running performance

Bernard Cerutti [a] and Bengt Kayser [a,b]

[a]Faculty of Medicine, University of Geneva, Geneva, Switzerland; [b]Institute of Sports Sciences, University of Lausanne, Lausanne, Switzerland

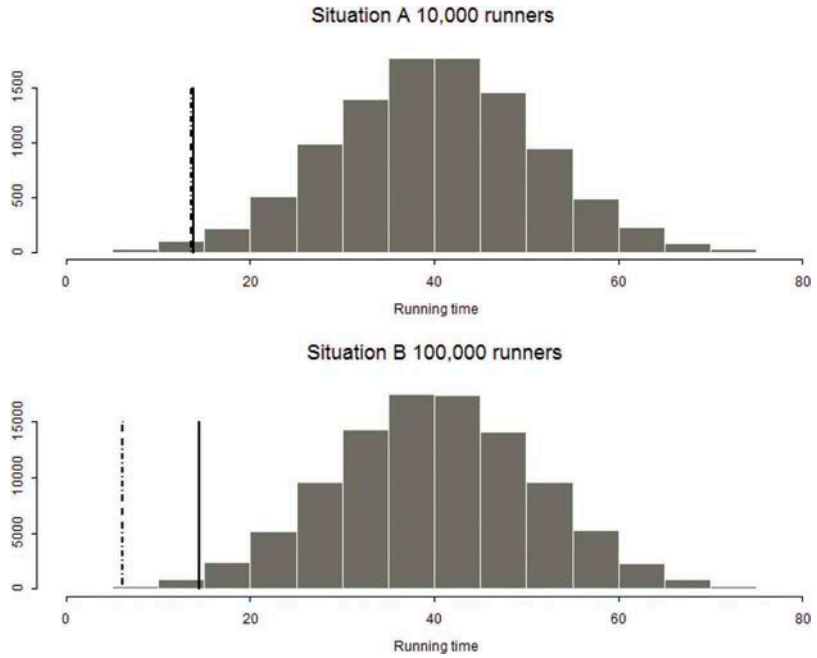



Figure 1. Example of the distribution of the running times of two identical races with a sample taken from exactly the same population of runners, assuming a normal distribution of the observations. The 1% percentile is represented with the continuous vertical line while the performance of the best 100$^{th}$ runner is represented with the dashed vertical line: taking the performances of the best n runners (with n fixed) induces a shift to the left if the number of runners increases.

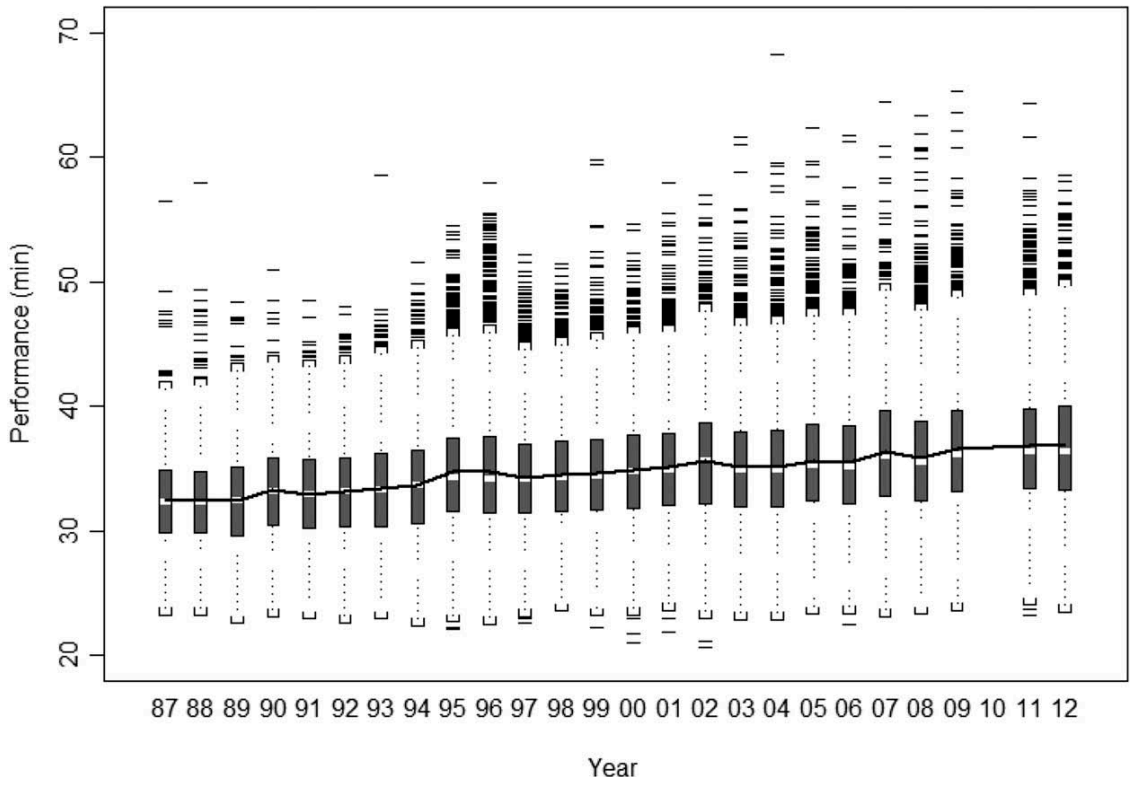



**Figure 2.** Boxplots of all running performances (n = 116,019 observations), irrespective of age-group, split by calendar year. The superimposed curve is a smooth spline fit, which roughly shows an increase of around 10 seconds by year, that is 4min15s over the 25 year interval.

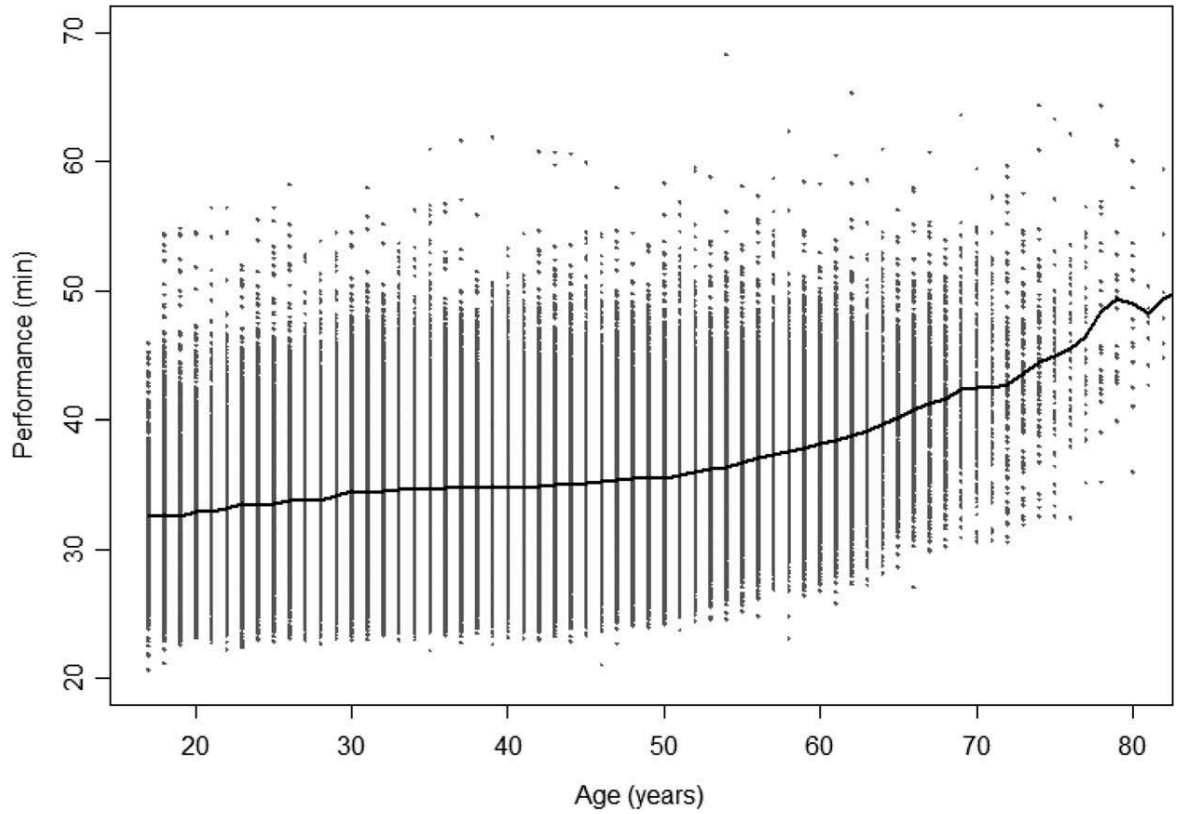



**Figure 3.** Performance as a function of age, irrespective of the year of the race. Peak performance is reached around the age of 20, followed by a slow near linear decrease till the age of 50, then a more substantial and rapid reduction. The fitting is less reliable over the age of 70 (fewer observations).

# Résultats

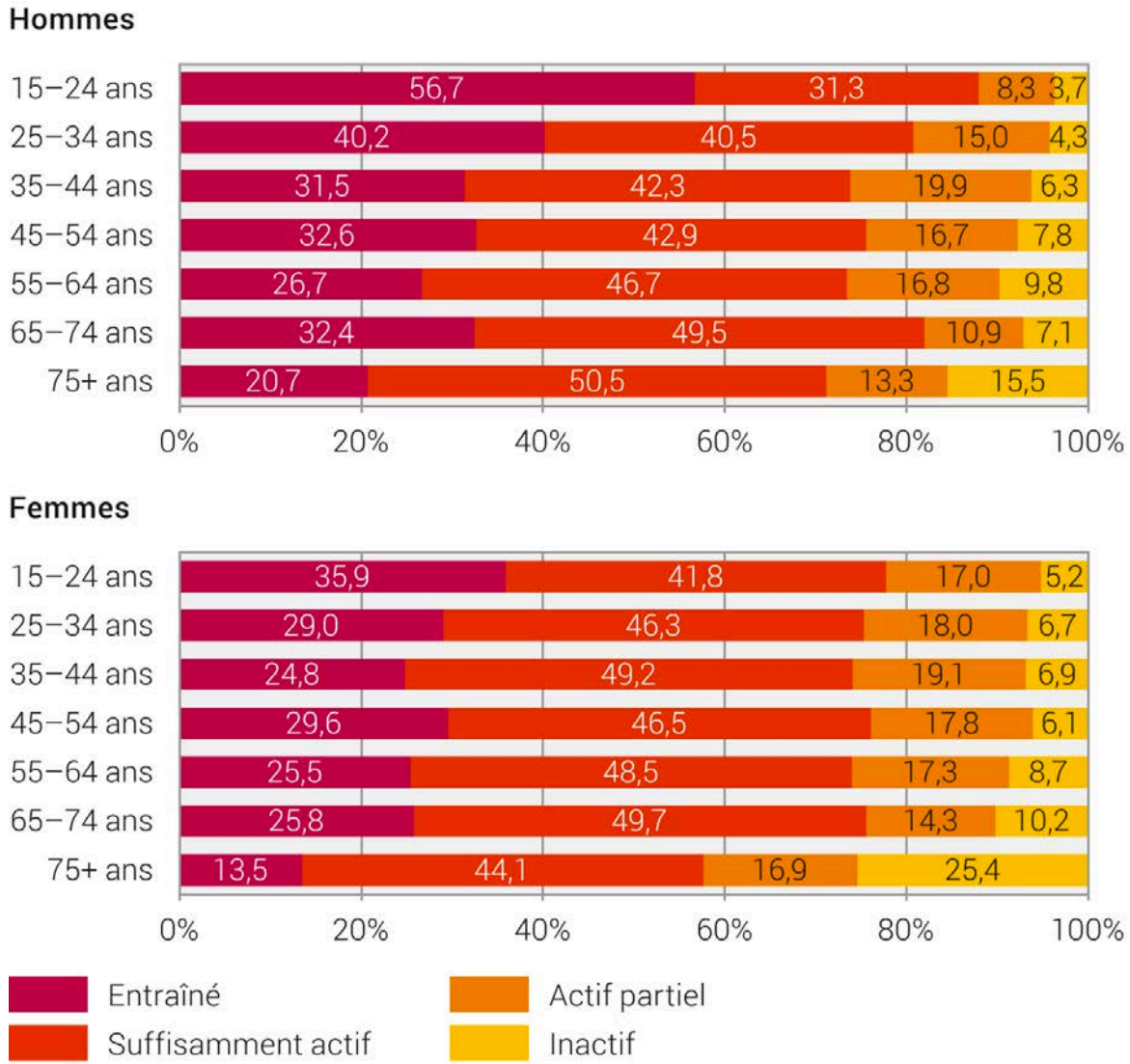
- Analyse des meilleurs 10, 20 et 50 montre une amélioration
- Analyse des meilleurs 1, 10 et 20 percentiles montre pas d'effet ou péjoration

Conclusion

→ Effet d'augmentation de la participation dans les classes d'âge avancées

# Activité physique selon l'âge, en 2017

Population de 15 ans et plus vivant en ménage privé




Source: OFS – Enquête suisse sur la santé (ESS)

# Longévité

- 2010: 524 millions > 65 ans
- 2050?

→ 1.5 milliards …

(OMS, 2011)

# Vieillissement réussie (‘Successful ageing’)

- Longévité? (Suzuki, Willcox, & Willcox, 2004)
- Qualité de la vie? (Li et al., 2014)
- Satisfaction avec la vie? (Havighurst, 1961)
- Bien être? (Strawbridge, Wallhagen, & Cohen, 2002)

- > 80 définitions …. (Cosco, Prina, Perales, Stephan, & Brayne, 2014a)

Conditions:

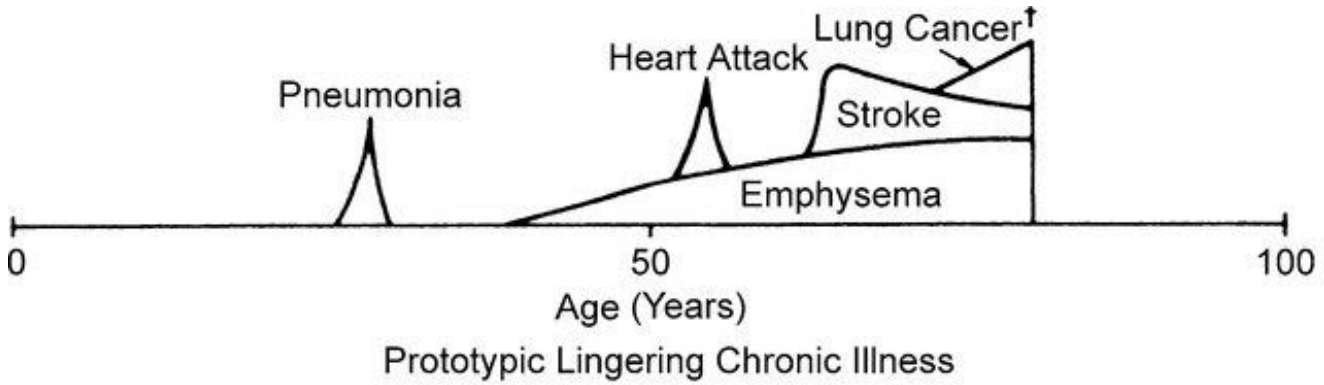
- Biomédicales - éviter la maladie et le handicap, bonne fonction cognitive et physique, avoir une vie engagée
- Psychosociales – dynamique laissant de la place à la maladie et perte de fonction grâce des mécanismes psychologiques et/ou sociales compensatoires

# Vieillissement réussie

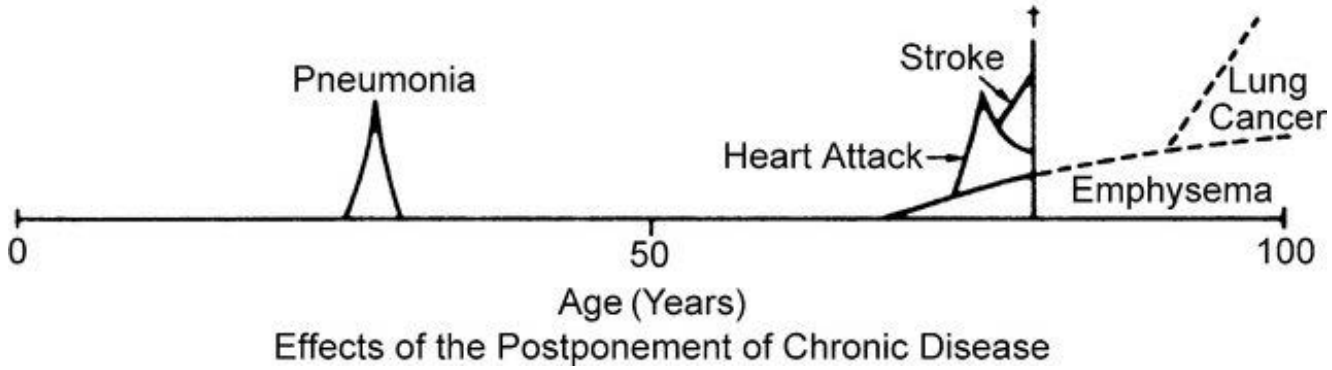
- Quelle fraction du ‘déclin’ avec l'âge est fonction de la diminution de l’activité physique au quotidien?

- Est-ce que les ‘masters’ sont des exemples de vieillissement réussies?

# Compression de la morbidité




Prototypic Lingering Chronic Illness




Effects of the Postponement of Chronic Disease

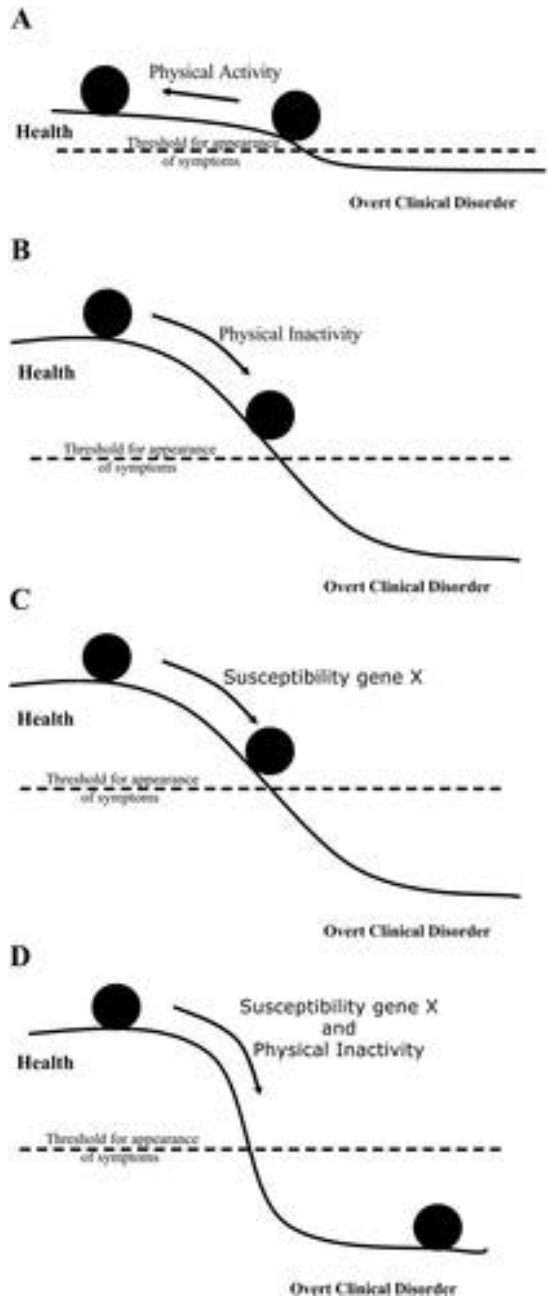
# Magic bullet?

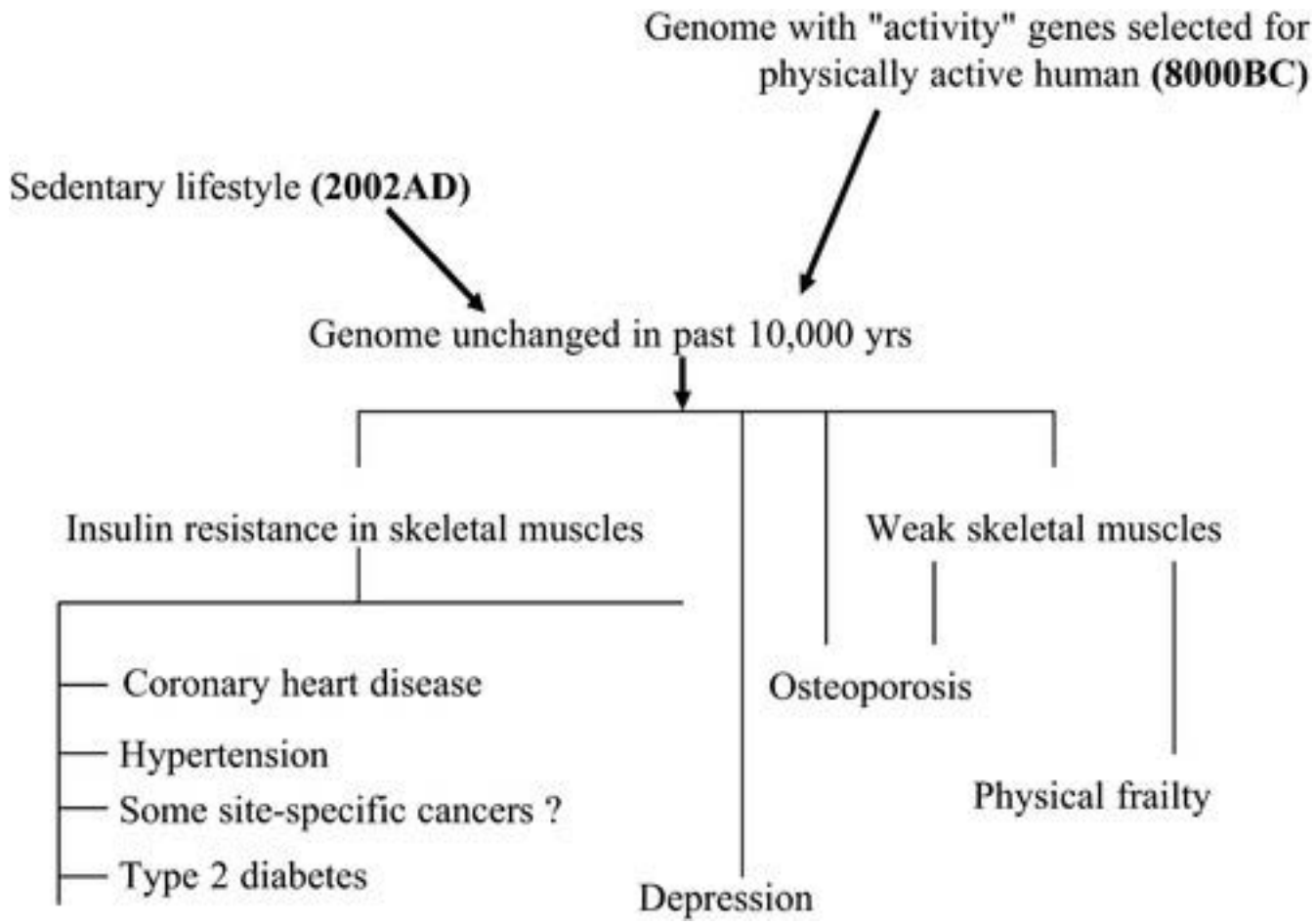
## *Sedentary Death Syndrome*

**Simon J. Lees[1] and Frank W. Booth[1,2]**

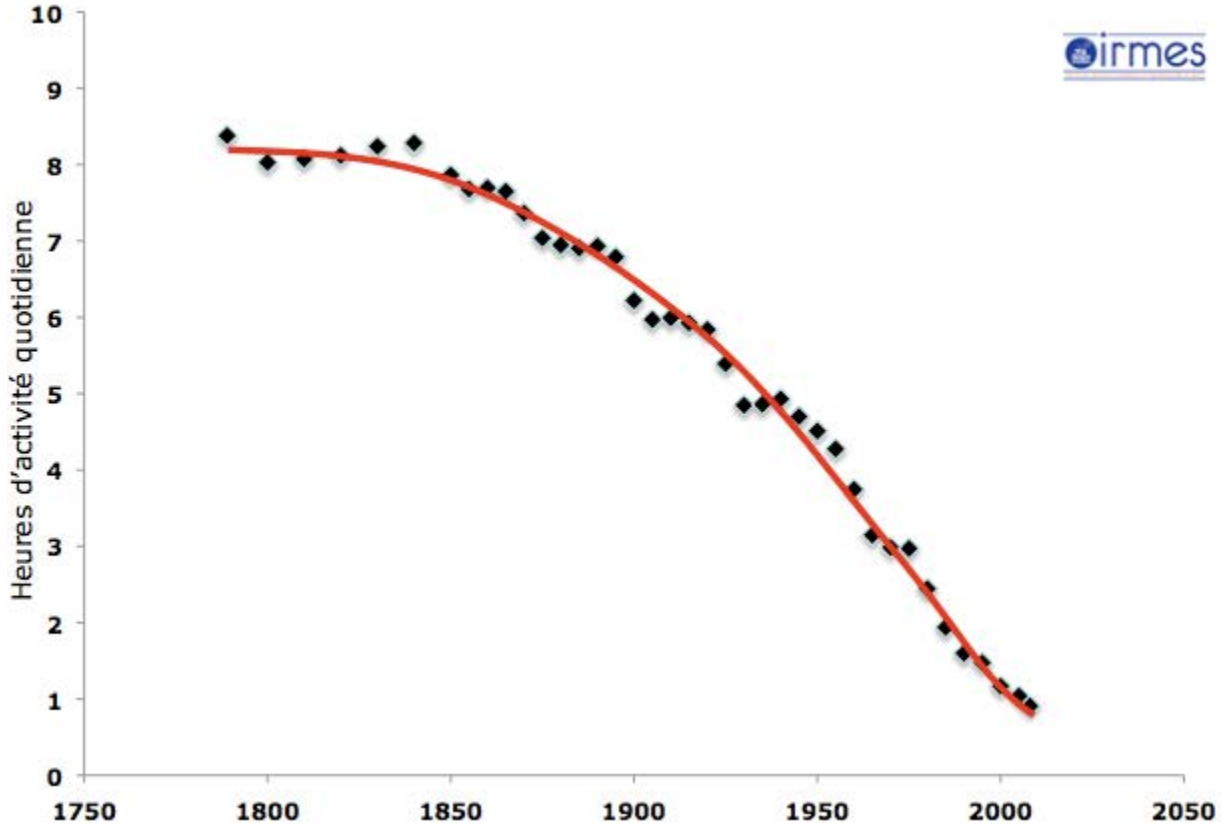
**Catalogue Data**
Lees, S.J.; and Booth, F.W. (2004). Sedentary death syndrome. **Can. J. Appl. Physiol.** 29(4): 447-460. 

***Key words:*** *physical inactivity, chronic diseases, diabetes, glucose*
***Mots-clés:*** *l'inactivité physique, maladies chroniques, le diabète, glucose*

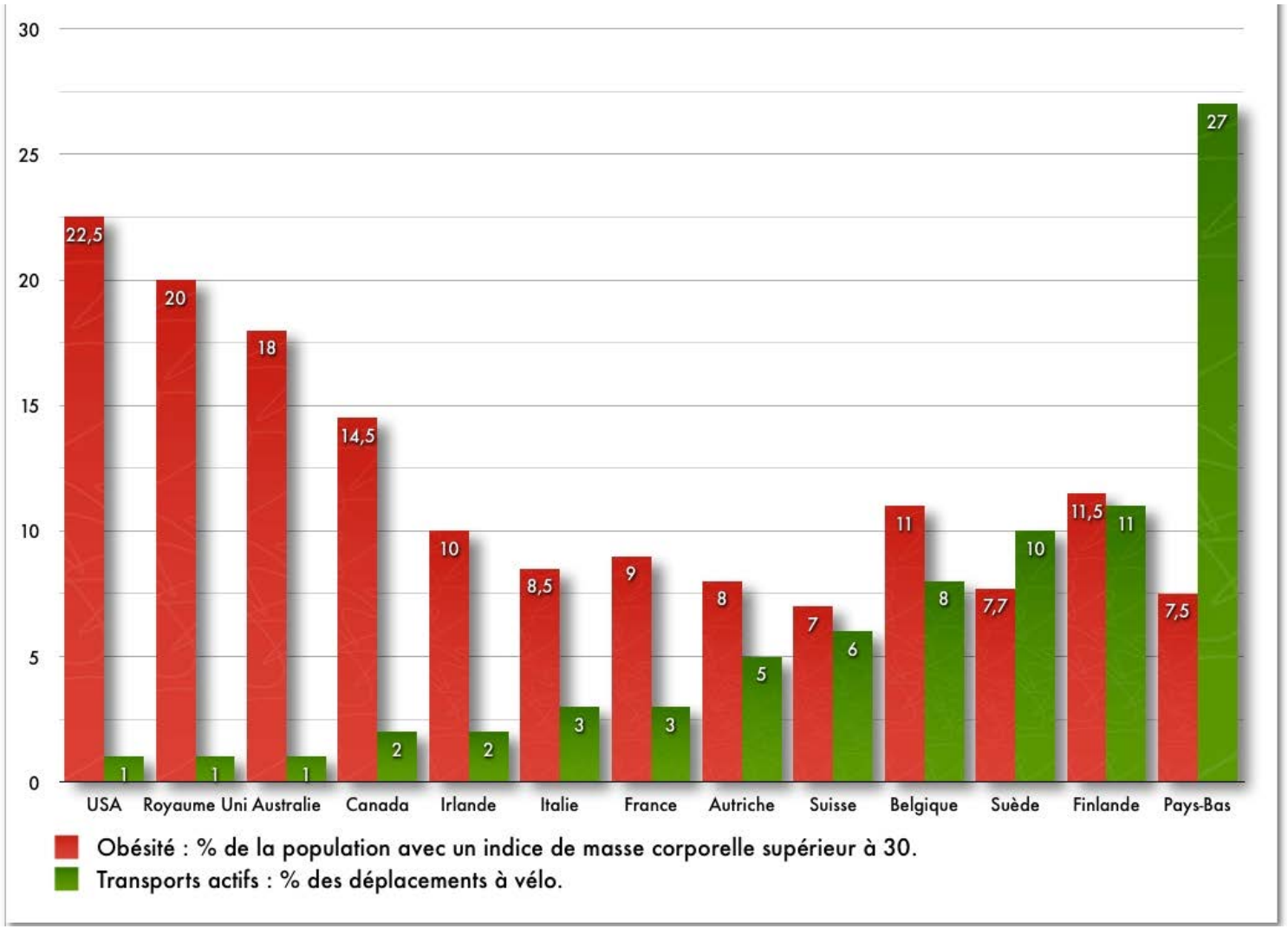

A
Physical Activity
Health
Threshold for appearance of symptoms
Overt Clinical Disorder
B
Physical Inactivity
Health
Threshold for appearance of symptoms
Overt Clinical Disorder
C
Susceptibility gene X
Health
Threshold for appearance of symptoms
Overt Clinical Disorder
D
Susceptibility gene X and Physical Inactivity
Health
Threshold for appearance of symptoms
Overt Clinical Disorder


Genome with "activity" genes selected for physically active human (8000BC)
Sedentary lifestyle (2002AD)
Genome unchanged in past 10,000 yrs
Insulin resistance in skeletal muscles
Weak skeletal muscles
Coronary heart disease
Hypertension
Some site-specific cancers ?
Type 2 diabetes
Depression
Osteoporosis
Physical frailty

# Diminution de l’activité physique




Toussaint, 2008. Plan National de prévention par l’Activité Physique ou Sportive http://velobuc.free.fr/download/RapPreventionActivite-2008.pdf




Saladin, 2008


Andersen, 2006

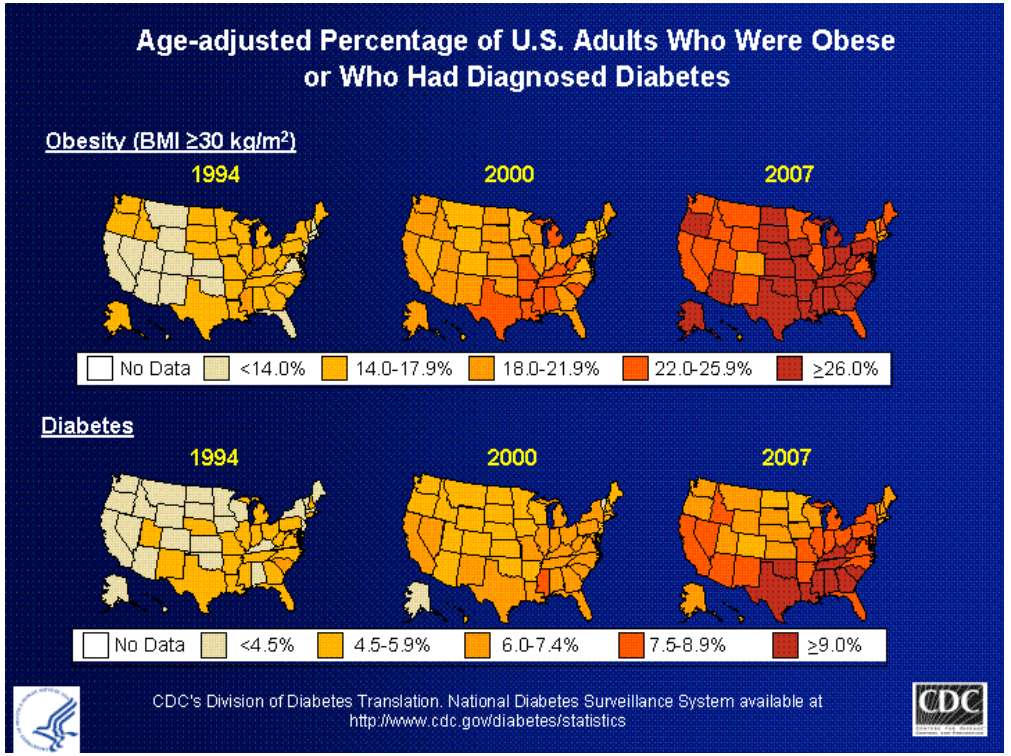

Dros
RESTAURANT & WINE CELLAR
CAPE TOWN
FISH MARKET
McDonald's
SUBWAY
SUBS & SALADS
Sloops

Postulat 1

L’adulte semble génétiquement prédisposé pour une certaine ‘paresse’ ...

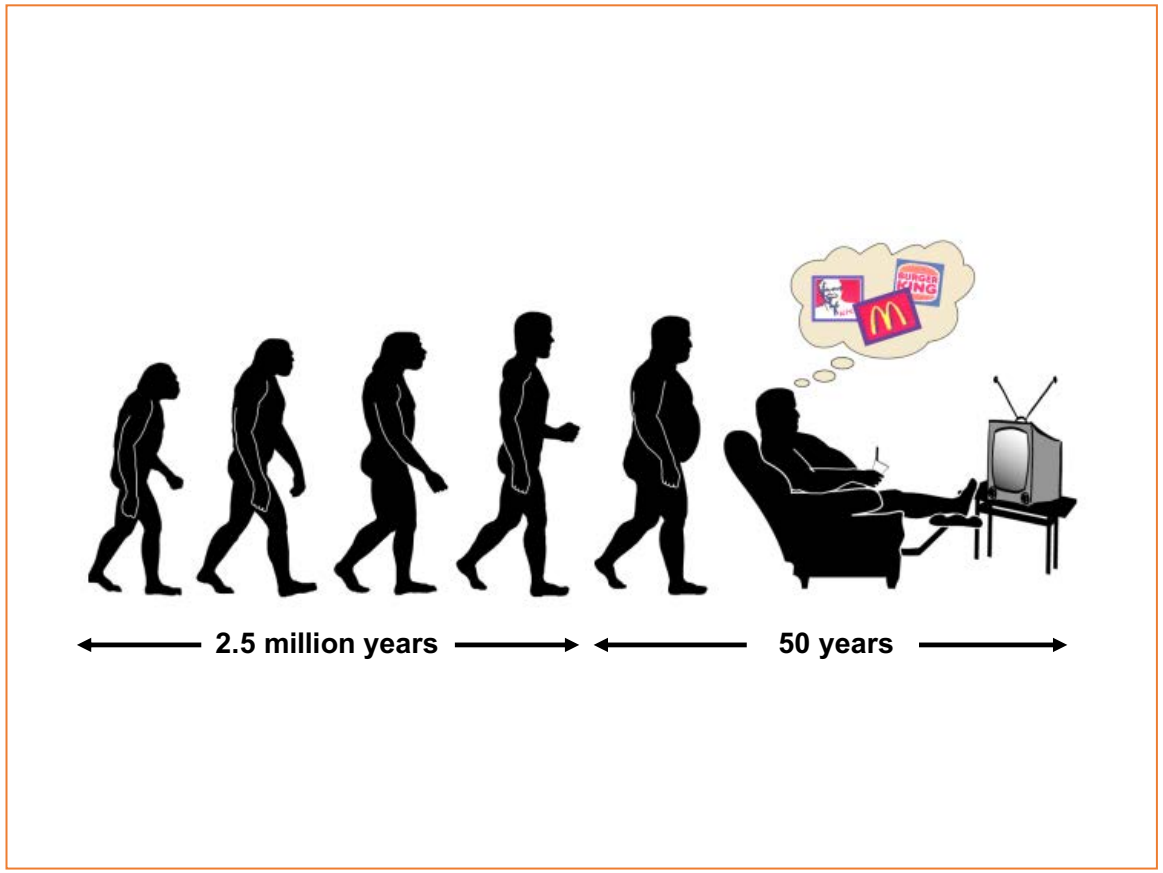
# Postulat 2

- Le génome humain est mal-adapté à un environnement qui reduit l'activité physique et promeut un exces d'apports énergétiques



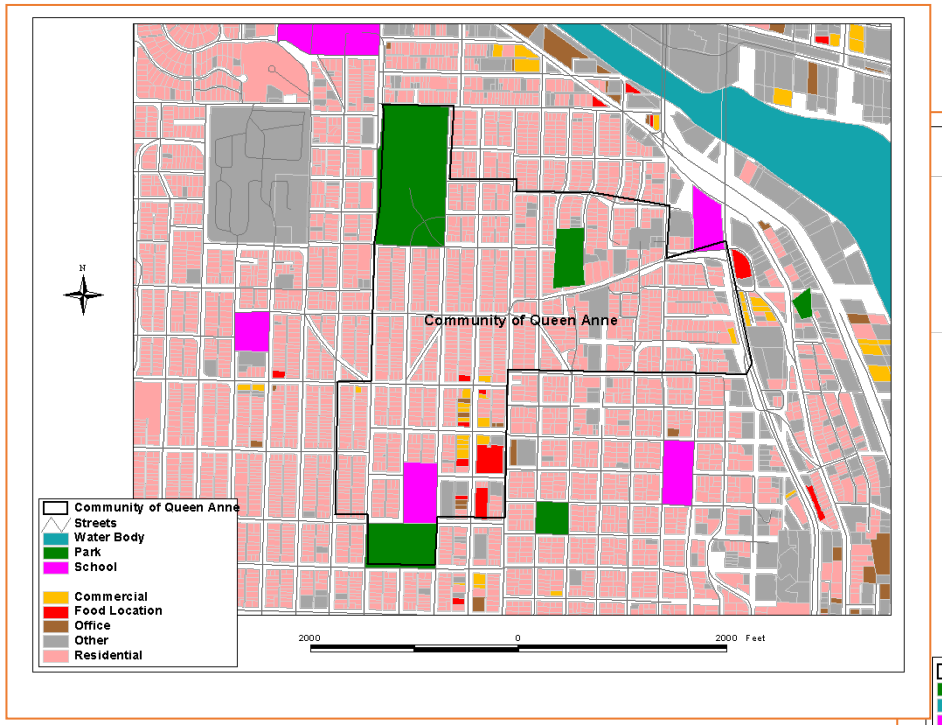
# Postulat 3

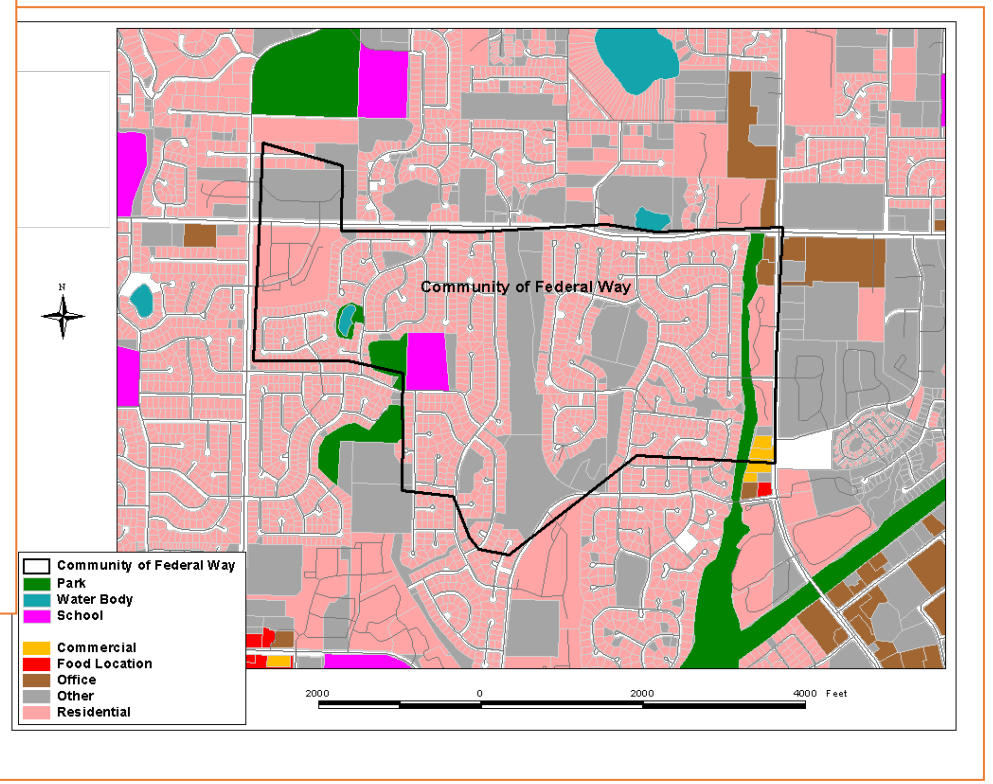
- L’environnement moderne est obésogène et ‘toxique’



# Postulat 4

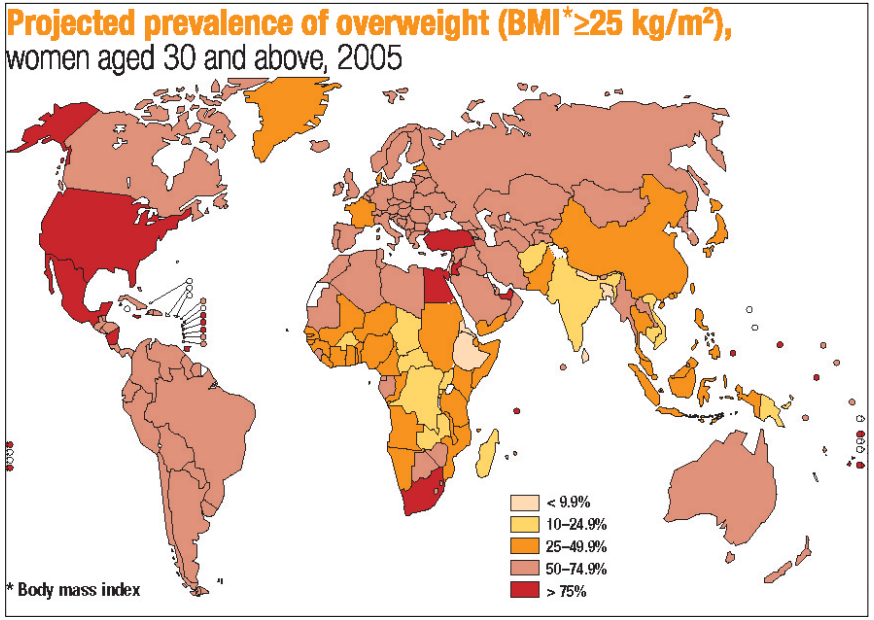
- L'environnement construit influence le niveau d'activité physique spontané

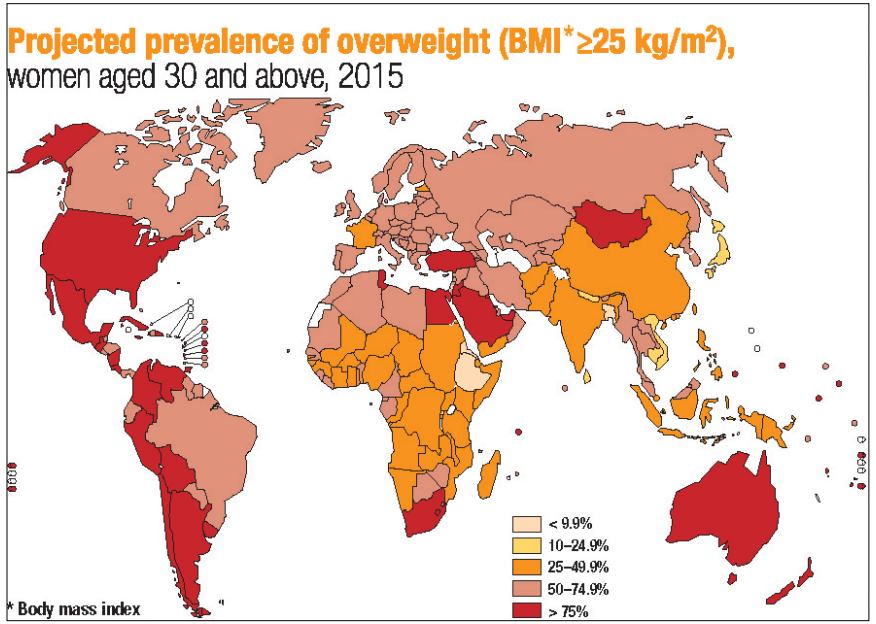


# Postulat 5

- La population mondiale ne bouge pas assez et mange trop



# Postulat 6

- Le coût associé à l'inactivité et une alimentation deséquilibrée devient insupportable

# Postulat 7

- Information et éducation ne suffiront pas

# Postulat 8

- Un comportement ‘sain’ doit être rendu plus simple
  - Escalators à coté des escaliers? Erreur de design!
  - *Primo loco* ascenseurs, *secundo loco* escaliers? Erreur de design!
  - Tout voiture? Erreur de design!

# Petits changements, grands effets

*Geneva Stair Study* (Meyer et al., 2010)

- De 5 à 20 étages / jour pendant 3 mois
- BMI, graisse, HDL-cholestérol, pourtour abdominale, pression diastolique, fitness aérobie ….

Wolters Kluwer Health | Lippincott Williams & Wilkins

EUROPEAN SOCIETY OF CARDIOLOGY®

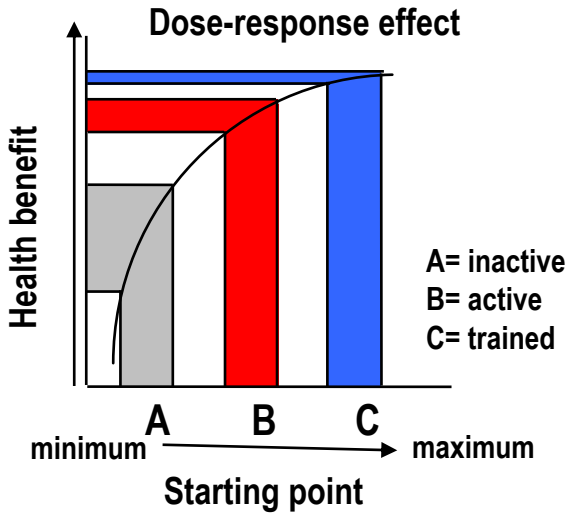
**Original Scientific Paper**

**Stairs instead of elevators at workplace: cardioprotective effects of a pragmatic intervention**

Philippe Meyer[a], Bengt Kayser[e], Michel P. Kossovsky[b], Philippe Sigaud[a], David Carballo[a], Pierre-F. Keller[a], Xavier Eric Martin[c], Nathalie Farpour-Lambert[c], Claude Pichard[d] and François Mach[a]

[a]Cardiology Service, [b]Department of Community Medicine, [c]Department of Pediatrics, [d]Nutrition Unit, University Hospital of Geneva and [e]Institute of Movement Sciences and Sports Medicine, University of Geneva, Geneva, Switzerland

**Received** 31 July 2009 **Accepted** 11 February 2010



# Le comportement d’activité physique du patient peut et doit être pris en compte

**PROMOTION DE L’ACTIVITÉ PHYSIQUE AU CABINET MÉDICAL**

MANUEL DE RÉFÉRENCE À L’INTENTION DES MÉDECINS

**PAPRICA**

PHYSICAL ACTIVITY PROMOTION IN PRIMARY CARE

Policlinique Médicale Universitaire, Lausanne
Office fédéral du sport, Macolin
Collège de Médecine de Premier Recours
Ligue vaudoise contre les maladies cardiovasculaires

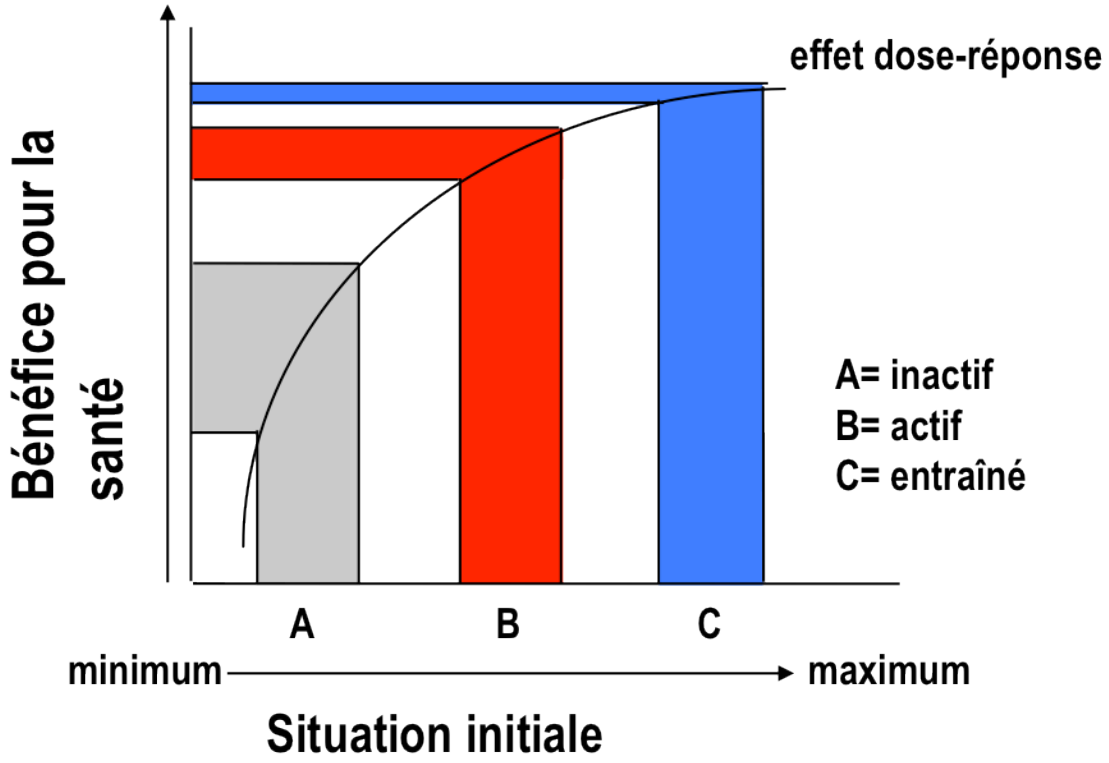
Policlinique Médicale Universitaire CH-Lausanne

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Office fédéral du sport OFSPO

KOLLEGIUM FÜR HAUSARZTMEDIZIN
COLLÈGE DE MÉDECINE DE PREMIER RECOURS
COLLEGIO DI MEDICINA DI BASE
COLLEGE OF PRIMARY CARE MEDICINE

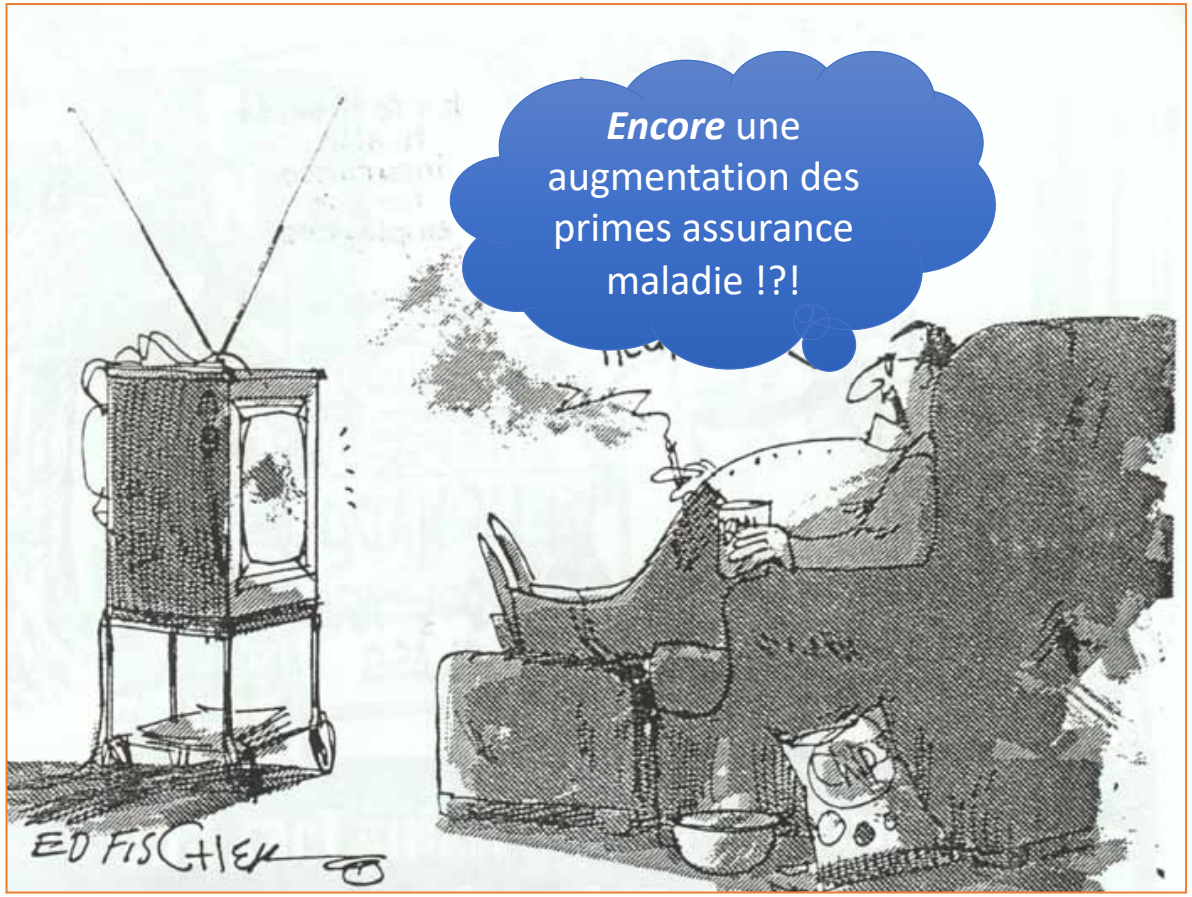
LVCV Ligue vaudoise contre les maladies cardiovasculaires

# Dose-réponse



# Comportement et maladie

- Besoin de changements ….



# Quelques pistes

- Promouvoir la mobilité active (marche, vélo)
- Promouvoir l’activité physique au quotidien comme besoin de base
- Réguler l’urbanisme et l’architecture avec des arguments de santé publique
- Intégrer dans les soins l’AP programmée comme moyen thérapeutique primaire et auxiliaire


https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/829884/3-physical-activity-for-adults-and-older-adults.pdf