



Exercise: every minute counts

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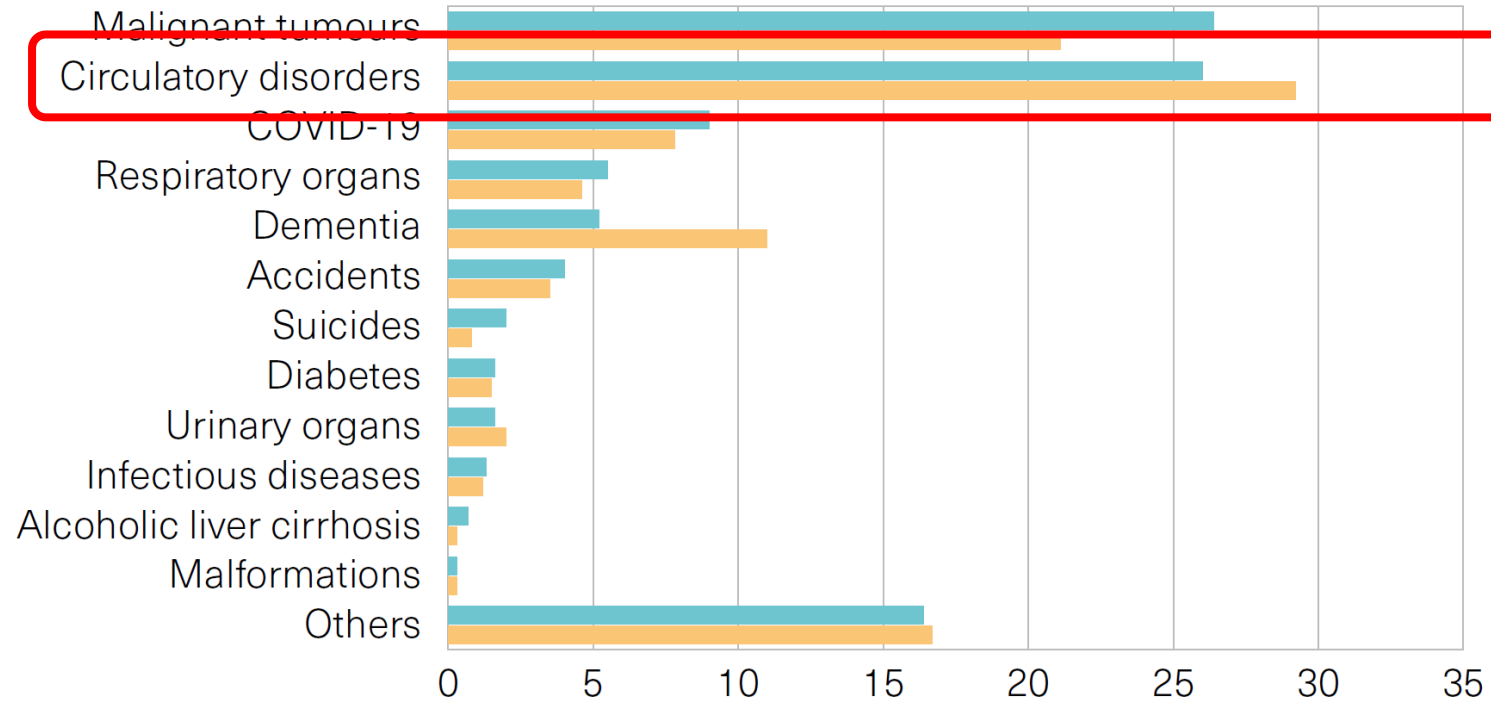
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Cardiovascular diseases remain the leading cause of mortality



Most common causes of death by gender

Deaths 2021: 71'192



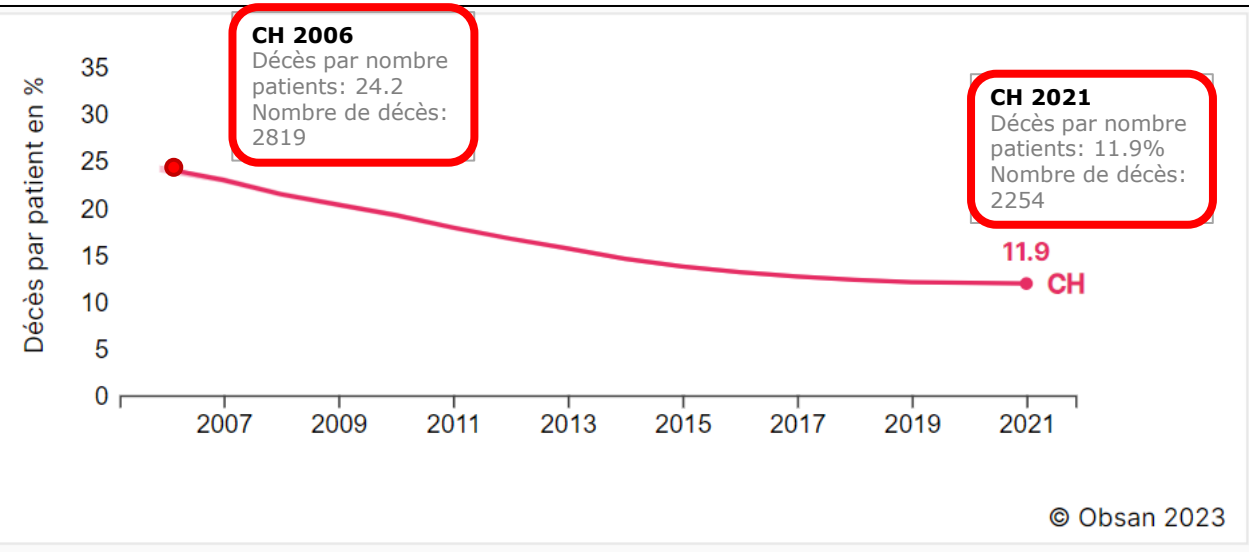
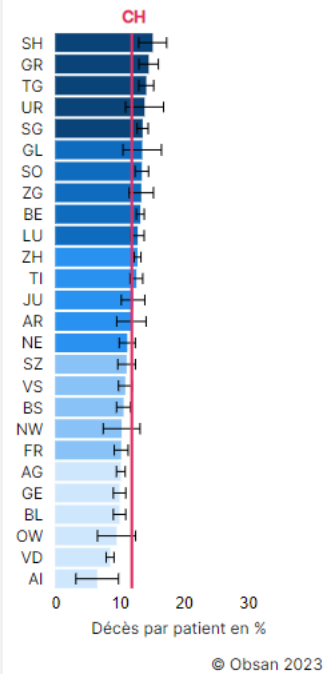
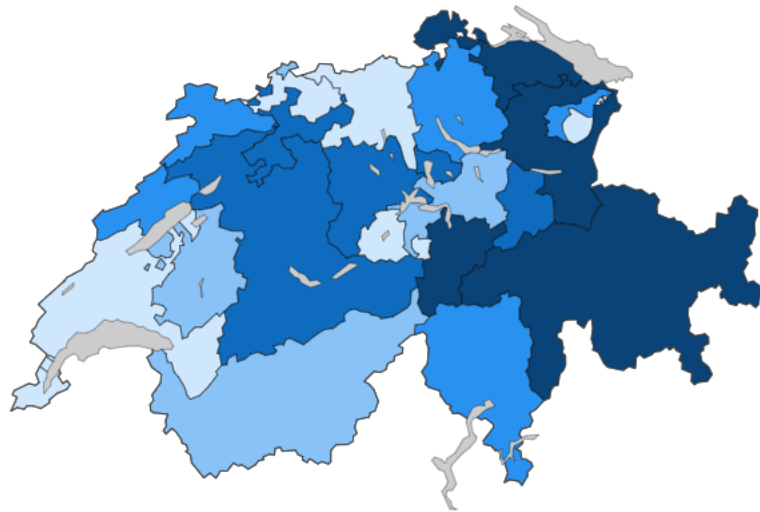
Men Women

Federal Statistical Office (2023), Cause of Death Statistics.

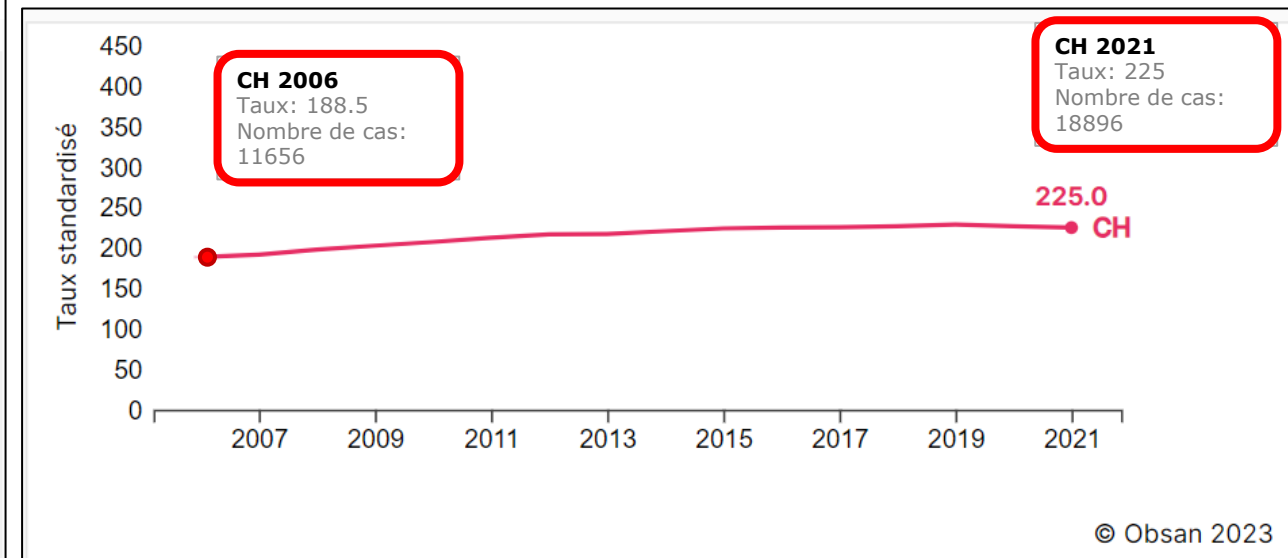
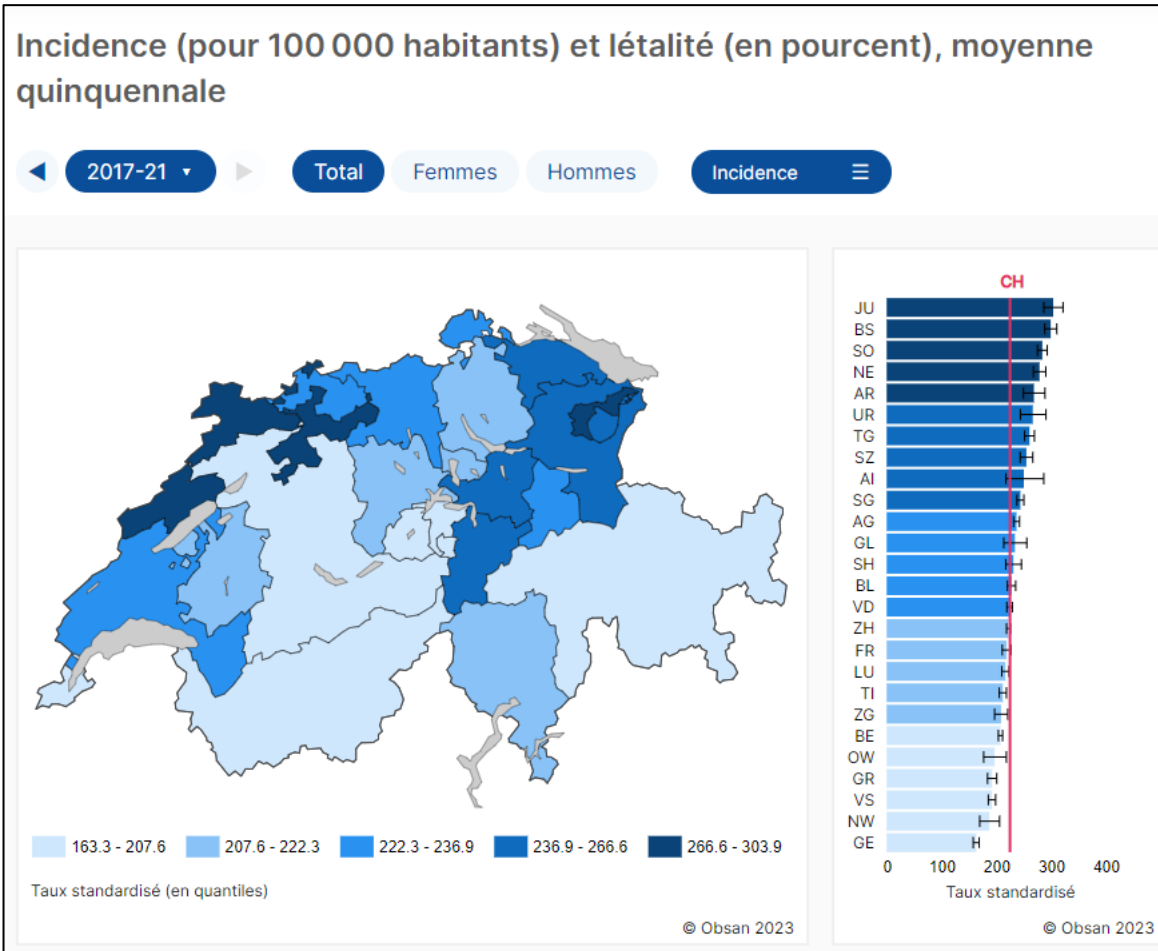
1/4 died from a heart attack 15 years ago, 1/8 today

Incidence (pour 100 000 habitants) et létalité (en pourcent), moyenne quinquennale

2017-21 Total Femmes Hommes Létalité

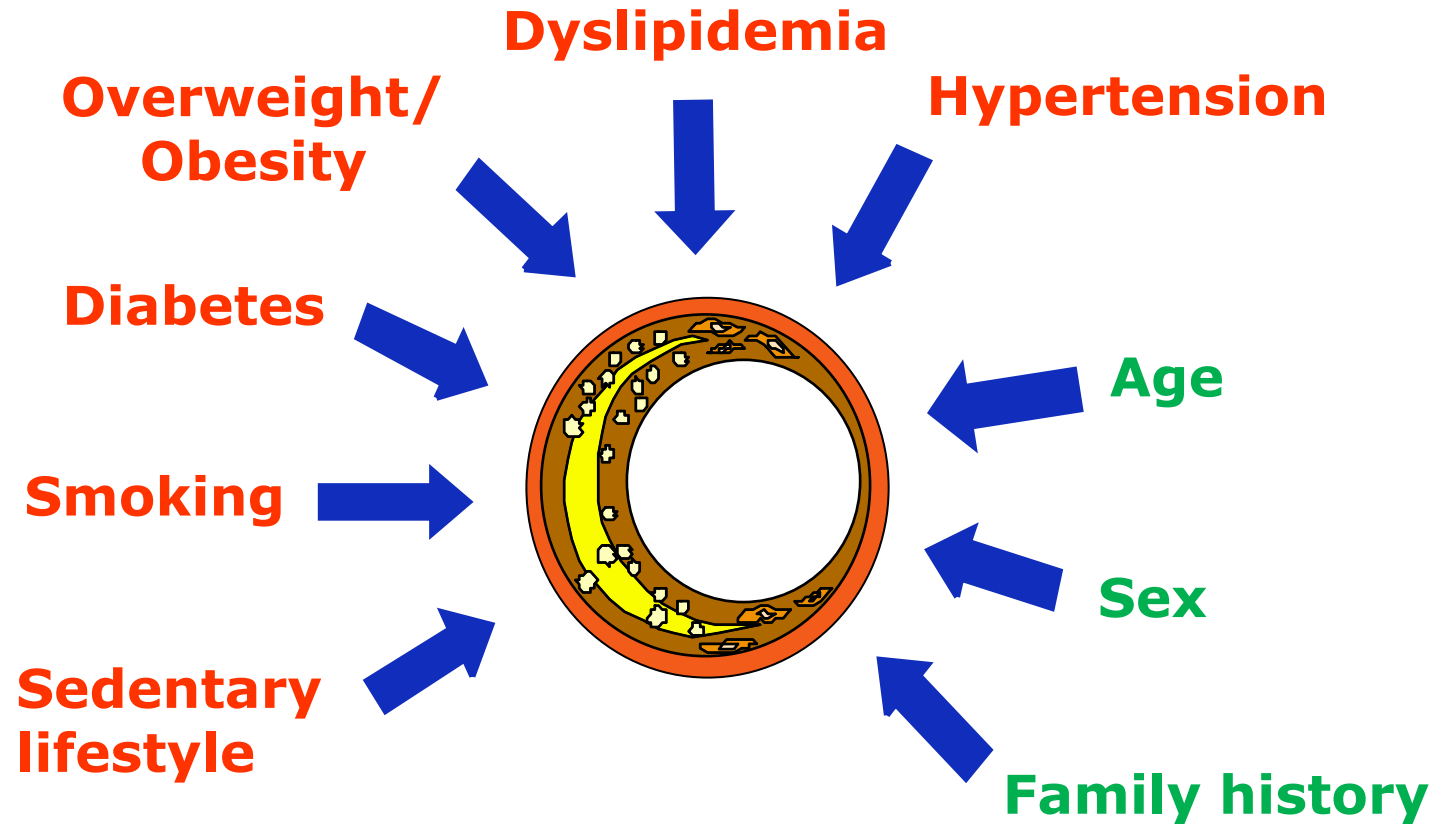


But, there were 19'000 heart attacks in 2021 (12'000 in 2006)



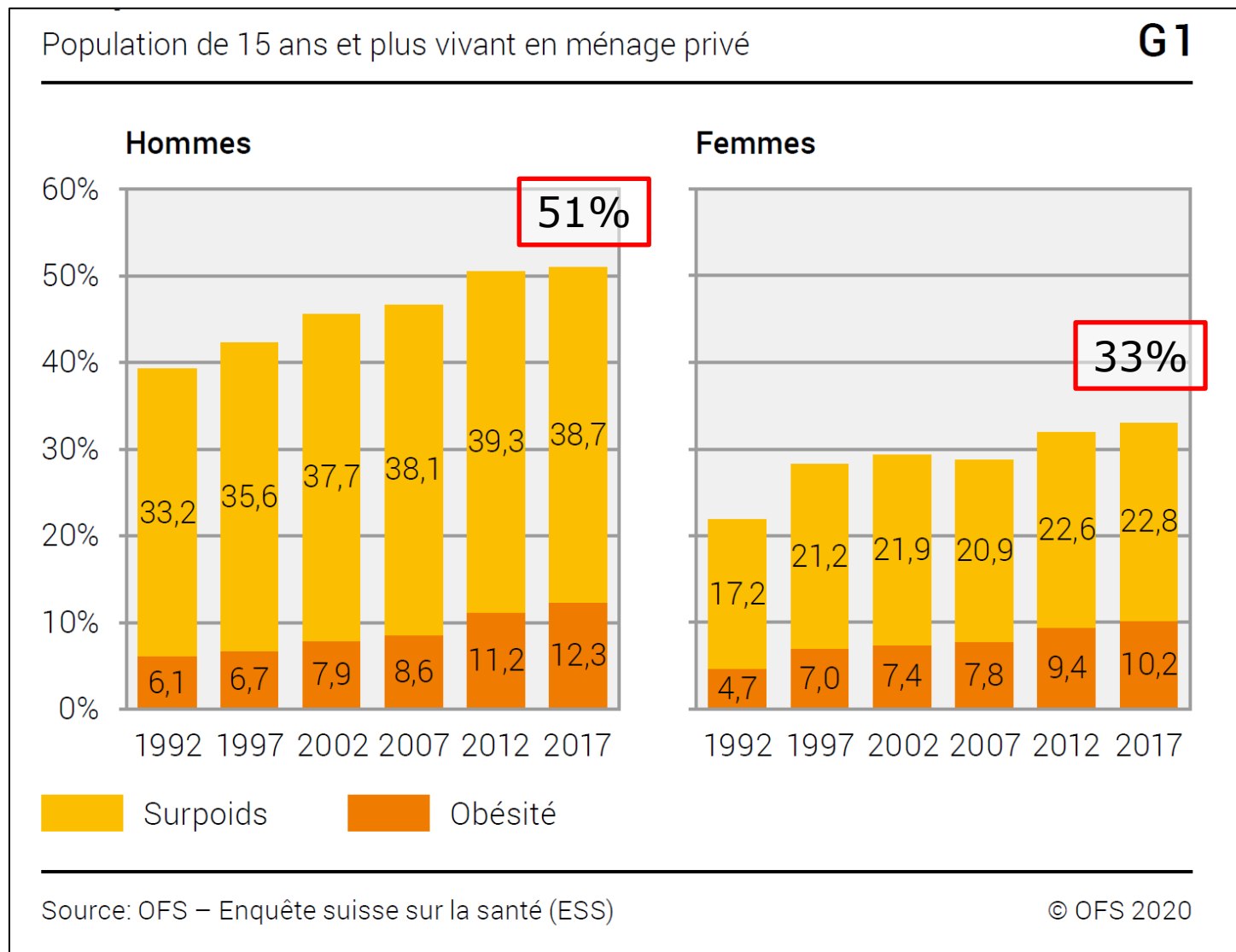
Cardiovascular risk factors are well known for 50 years

Modifiable

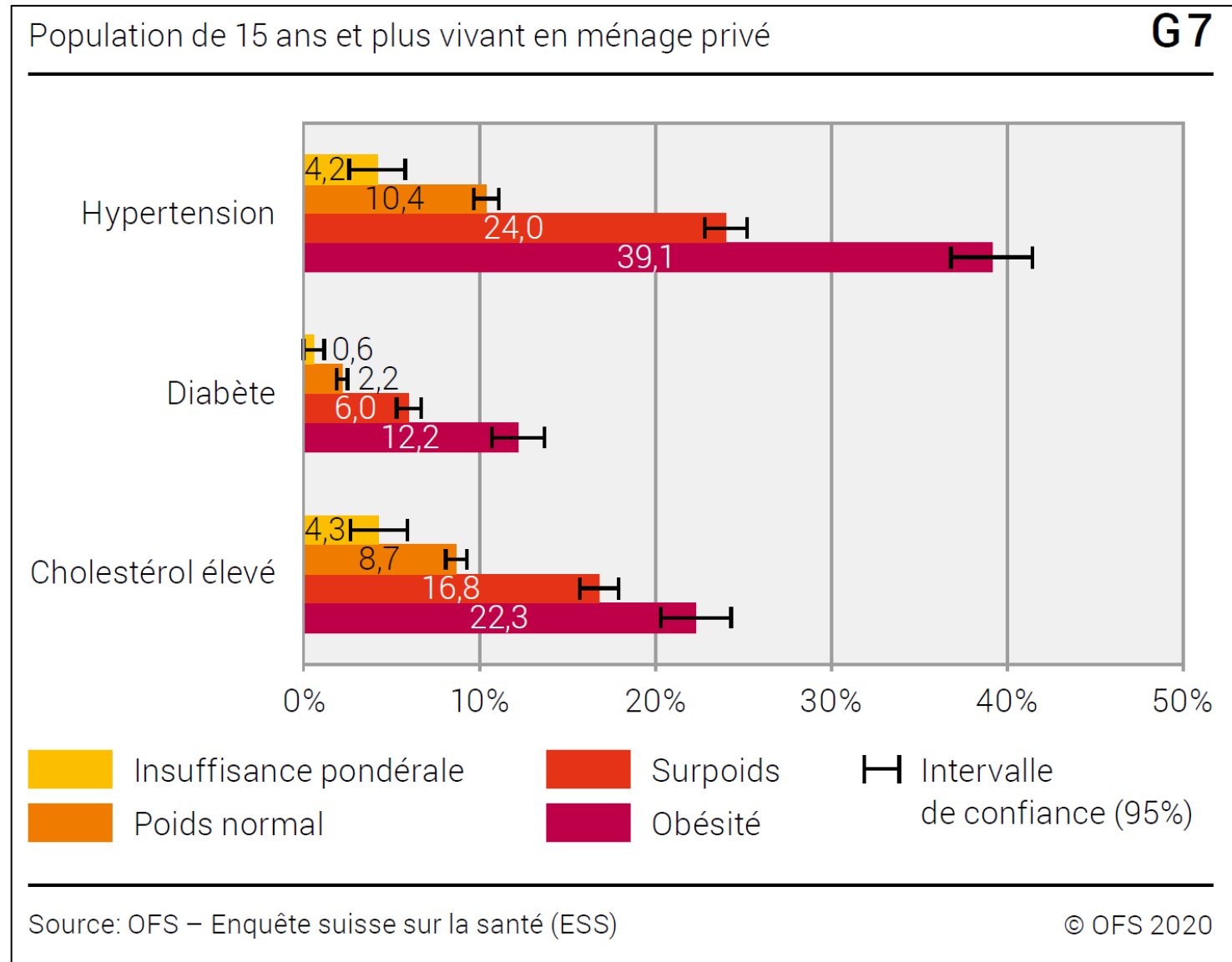


Non-modifiable

Overweight and obesity have increased significantly



As BMI increases, so do the risks of hypertension, diabetes, and high cholesterol

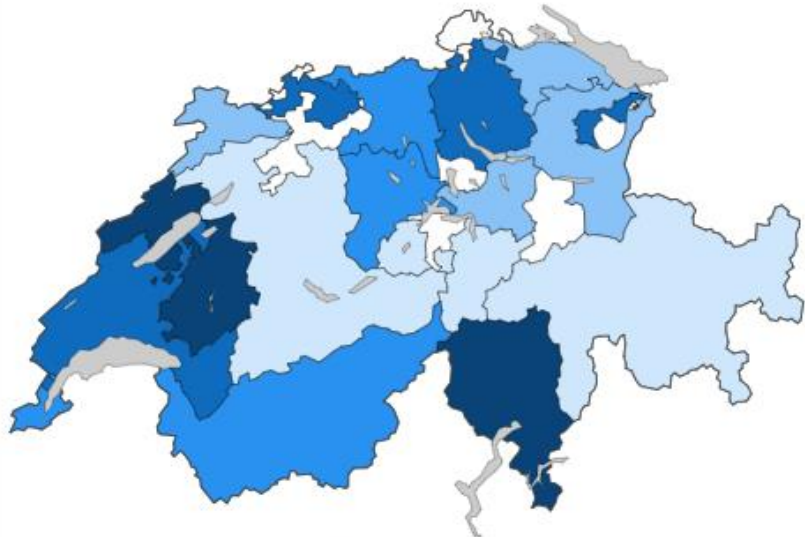


and smoking rates remain desperately stable...

Prévalence de la consommation de tabac

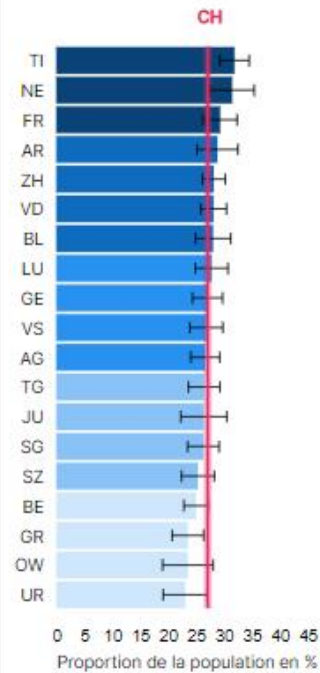
Proportion de la population vivant en ménage privé en %

◀ 2017 ▶ Total Femmes Hommes

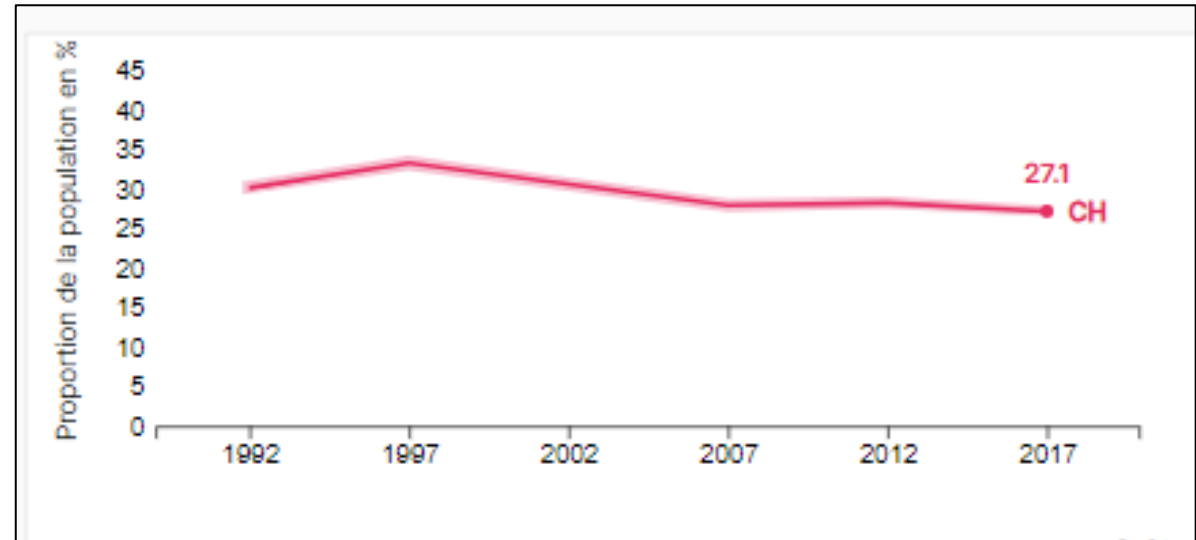


Proportion de la population en % (en quantiles)

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Physical activity has an impact on all cardiovascular risk factors

Modifiable

Dyslipidemia

Hypertension

**Overweight/
Obesity**

Diabetes

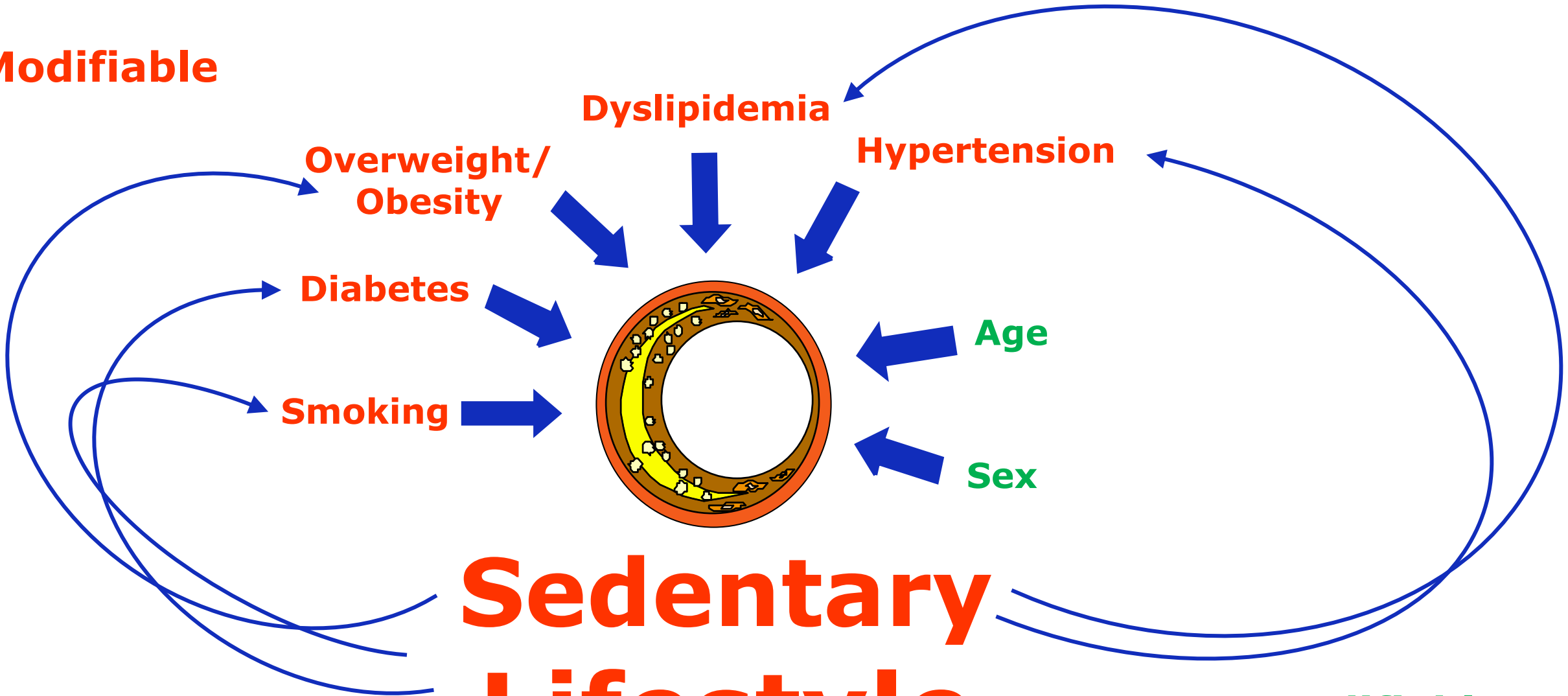
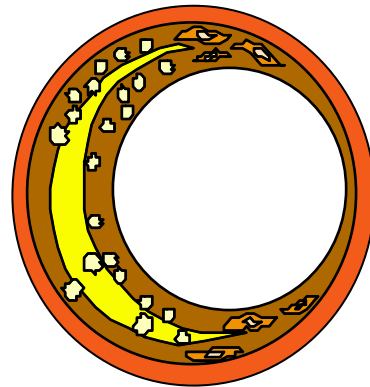
Smoking

Age

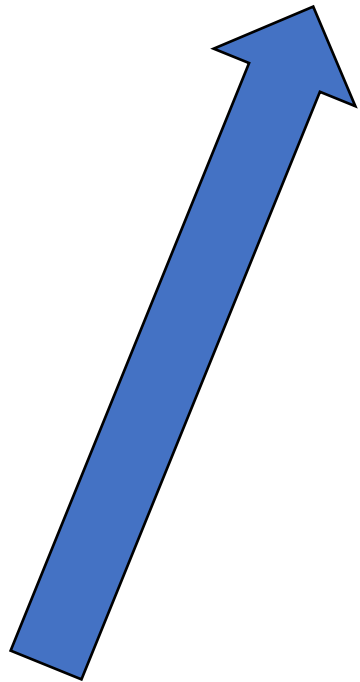
Sex

**Sedentary
Lifestyle**

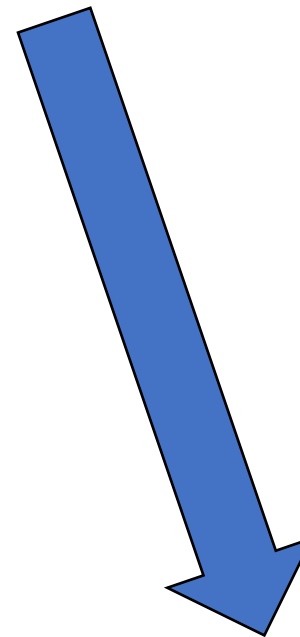
Non-modifiable



Scientifically proven benefits of regular physical activity



- **Life expectancy**
- Physical fitness
- Healthy weight
- Bone strength
- Mental well-being
- Sleep
- Quality of life
- Independence
- Intellectual abilities

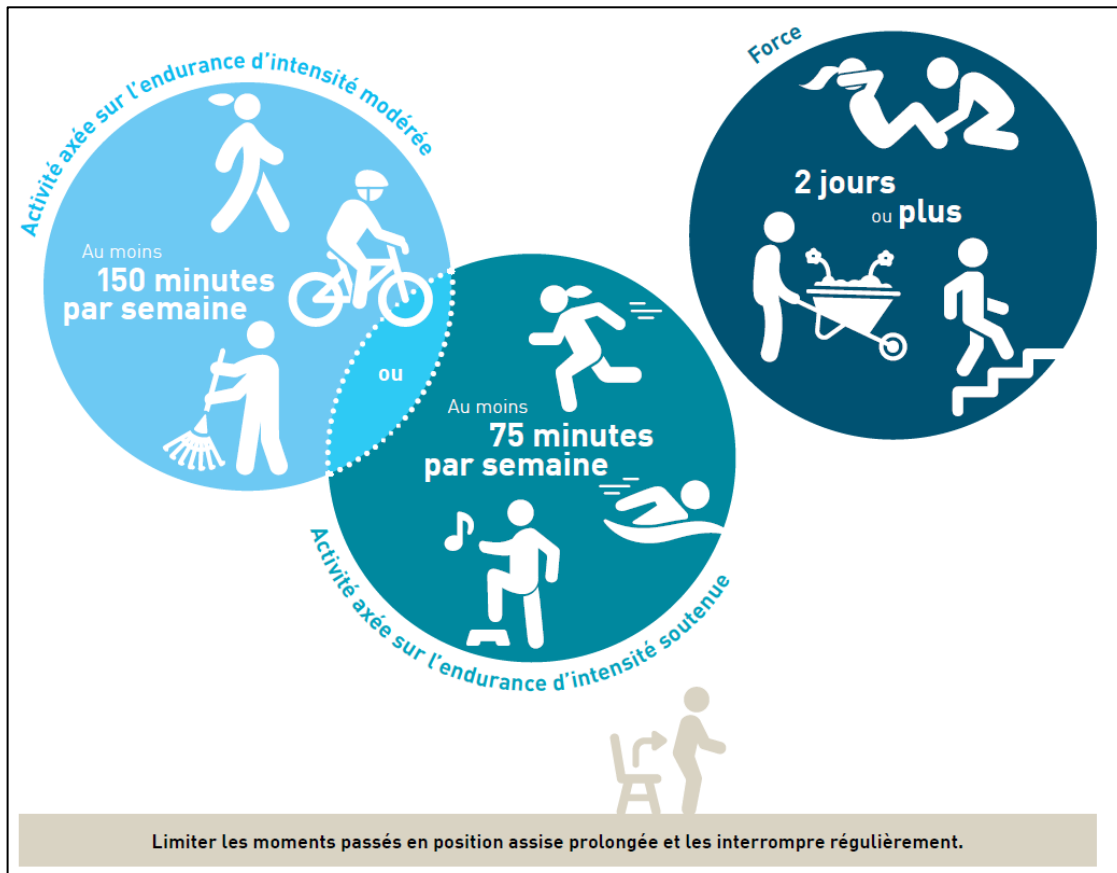


- **Cardiovascular diseases**
- **Stroke**
- Hypertension
- Type 2 Diabetes
- **Colon Cancer**
- **Breast Cancer**
- Depression
- Falls

Secret of my
longevity?
Whisky, cigars
and **NO SPORTS!**



Recommended minimal weekly durations of physical activity for adults



150 minutes of moderate-intensity exercise

or

75 minutes of vigorous exercise

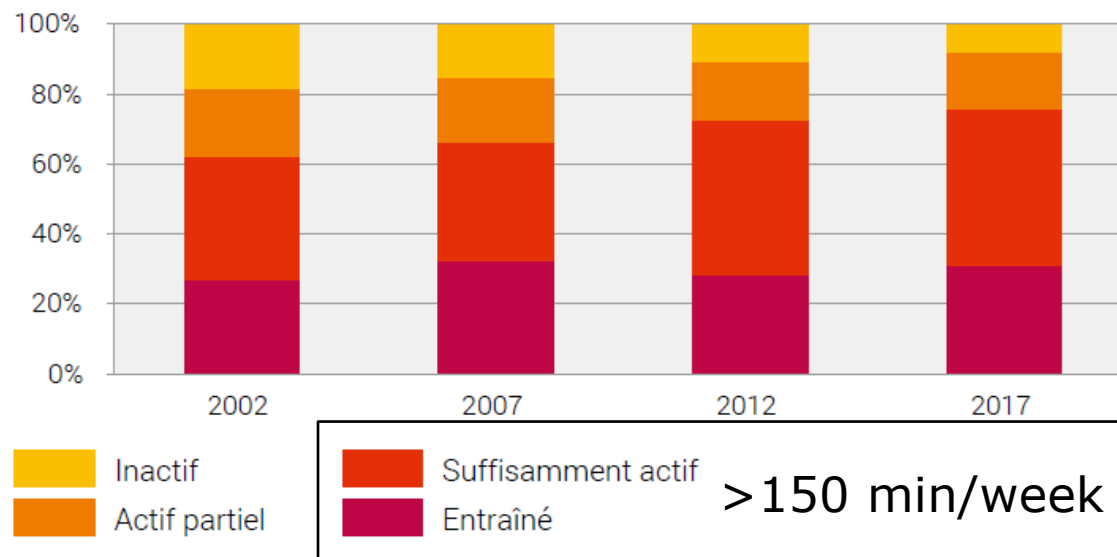
and

2 sessions of strength training

Activité physique

Population de 15 ans et plus vivant en ménage privé

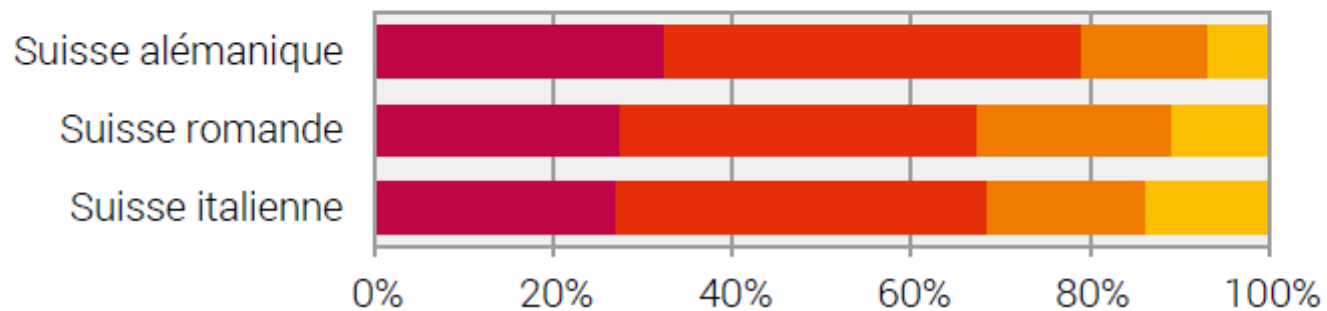
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Source: OFS – Enquête suisse sur la santé (ESS)

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Région linguistique





Article

<https://doi.org/10.1038/s41591-022-02100-x>

Association of wearable device-measured vigorous intermittent lifestyle physical activity with mortality

Received: 3 March 2022

Accepted: 21 October 2022

Published online: 8 December 2022

Check for updates

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Cecilie Thøgersen-Ntoumani³, Martin J. Gibala⁴, Aiden Doherty⁵ &
Mark Hamer ⁶

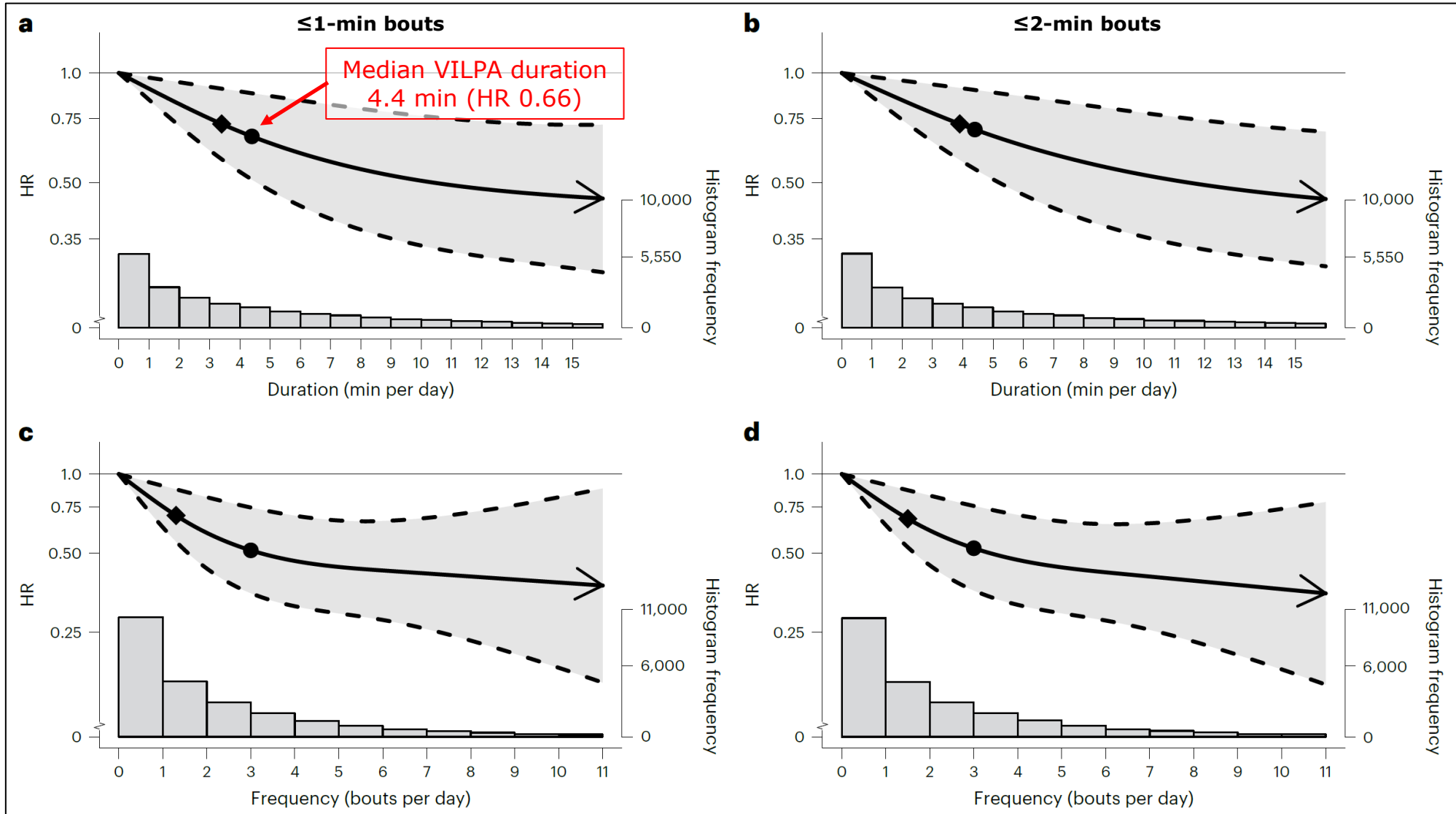
Wearable devices can capture unexplored movement patterns such as brief bursts of vigorous intermittent lifestyle physical activity (VILPA)

Study design

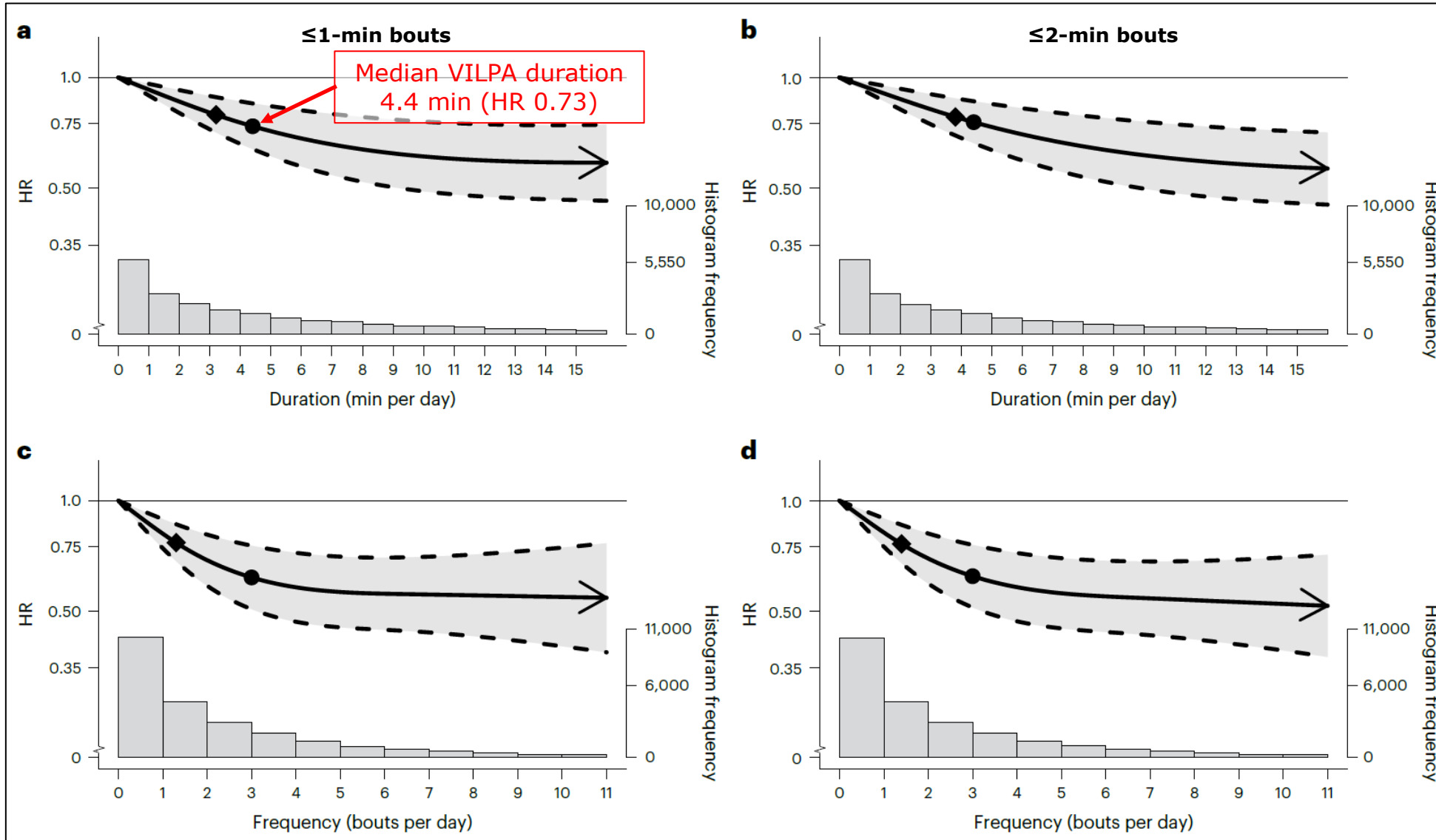


- **Aim:** to examine the association of vigorous intermittent lifestyle physical activity (VILPA) with outcomes
- **Study participants:** 25'241 nonexercisers selected from the UK Biobank
- **Assessment of PA:** all patients wore a wrist accelerometer during 7 days at baseline
- **Definition of VILPA:** daily-life activities of vigorous intensity assessed by the accelerometer in 10-second windows. Bouts lasting up to 1 min or to 2 min were considered in the analysis
- **Follow-up:** 6.9 years on average
- **Main outcomes:** All-cause, CVD and cancer mortality

Association of daily VILPA with CVD mortality



Association of daily VILPA with all-cause mortality



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

- **Participants** 77 healthy voluntary employees of the Geneva University Hospital with a sedentary lifestyle
- **Design** Pilot pre and post intervention study. Follow-up 3 months after the intervention
- **Setting** Geneva University Hospital (12 stories). From February to October 2007
- **Intervention** 12-week use of stairs instead of elevators at work. Promotional campaign of stair climbing

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Tiens,
les e

col



Geneva
Stair
Study



HUG
Hôpitaux Universitaires de Genève

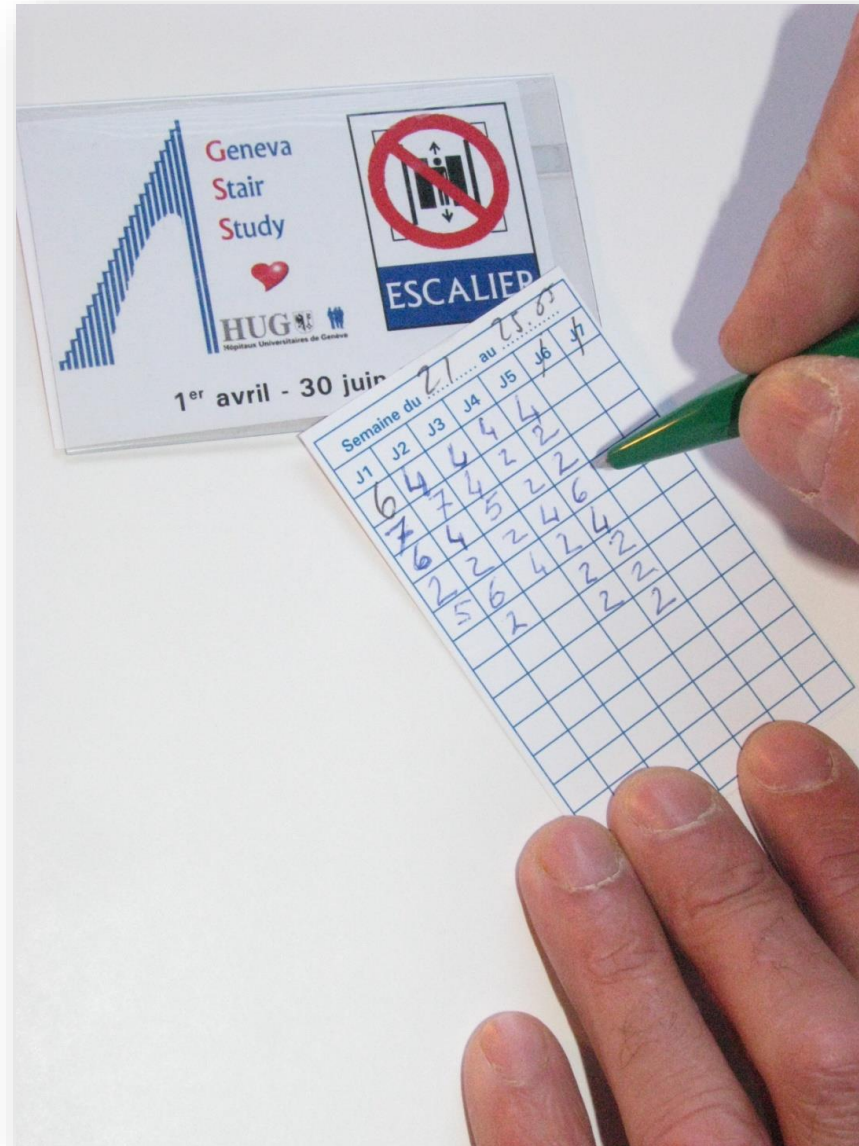


ESCALIER

1^{er} avril - 30 juin 2007

Outcome measures

- **Physical activity**
- **Fitness level**
- **Anthropometrics**
- **Body composition**
- **Blood pressure**
- **Blood samples**



s, accelerometer

(6-minute step test)

waist circumference

analysis

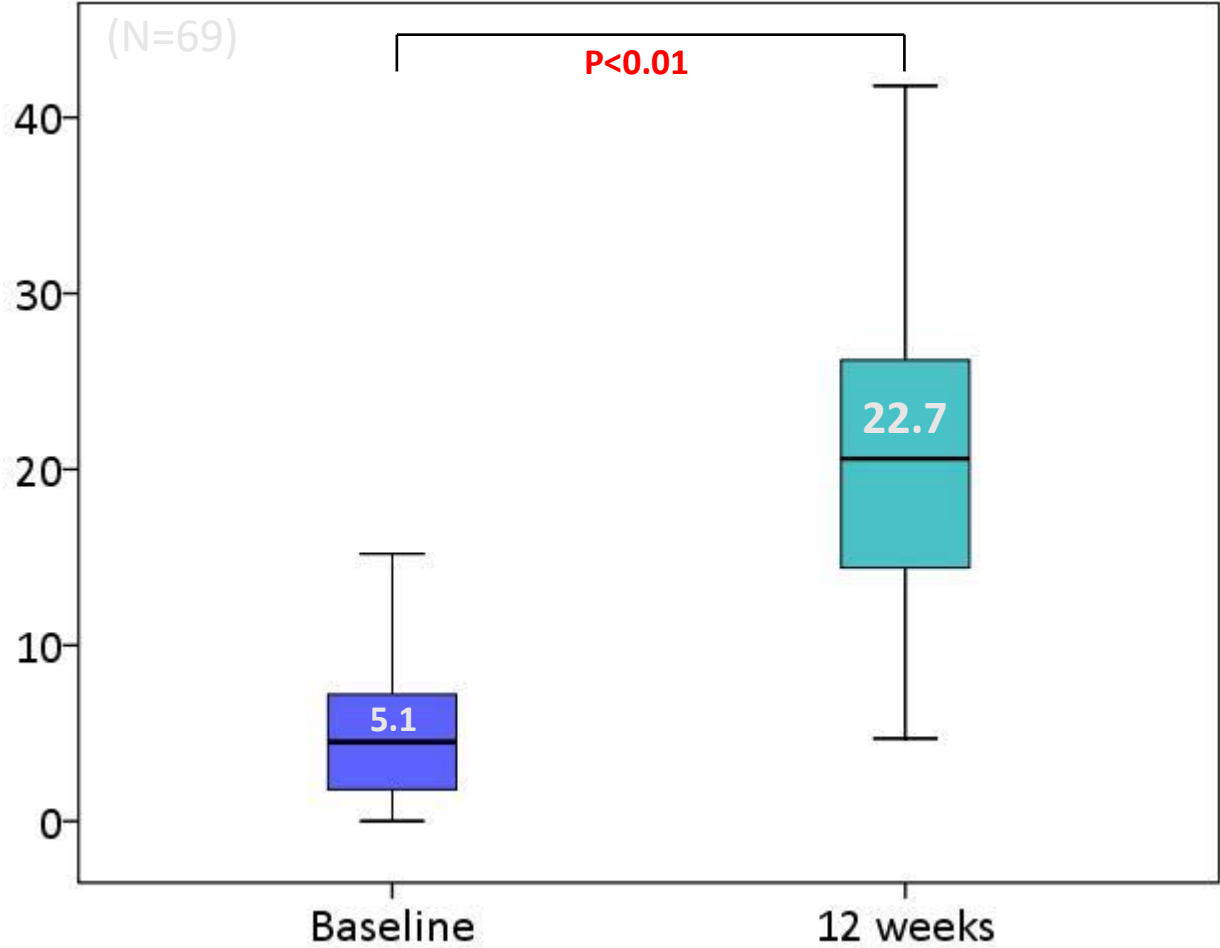
anometer

insulin, hsCRP

Baseline characteristics

(N = 77)	N (%) or mean (\pm SD)
Females	42 (55%)
Age (years)	42.8 (9.0)
Occupation	
Physician	20 (26%)
Nurse	25 (32%)
Technician	11 (14%)
Secretary/administrator	9 (12%)
Laboratory assistant	7 (9%)
Other	5 (6%)
Smoker	16 (21%)
Body mass index (kg/m²)	25.7 (4.4)
Waist circumference (cm)	88.1 (12.9)
Hypertension (\geq 140 and/or \geq 90 mmHg)	11 (14%)
Hypercholesterolemia (\geq 6.5 mmol/l)	10 (13%)
Impaired fasting glucose (\geq 6.1 mmol/l)	2 (3%)
VO₂max (ml/kg/min)	37.3 (7.4)

Ascended and descended 1-story staircase units (N/day)



Intervention effect on outcome variables at 12 weeks

(N=69)	Baseline	12 weeks	Mean absolute difference	Mean relative difference	P*
Ascended and descended one-story staircase units (N/day)	5.1	22.7	+17.5	+342%	<0.01
VO₂max (ml/kg/min)	37.3	40.5	+3.2	+8.7%	<0.01
VO₂max (l/min)	2.8	3.0	+0.2	+8.1%	<0.01
Accelerometer counts (N/min/day)	434.1	455.4	+21.3	+5%	0.14
Body weight (kg)	74.4	73.9	-0.6	-0.7%	0.02
Body mass index (kg/m ²)	25.6	25.4	-0.2	-0.7%	0.04
Waist circumference (cm)	87.9	86.4	-1.5	-1.8%	<0.01
Fat mass (kg)	20.3	19.9	-0.3	-1.7%	0.03
Fat free mass (kg)	54.1	53.9	-0.2	-0.4%	0.19
Systolic blood pressure (mmHg)	120.7	118.8	-1.9	-1.5%	0.07
Diastolic blood pressure (mmHg)	75.5	73.7	-1.8	-2.3%	0.03

Intervention effect on blood parameters at 12 weeks

(N=69)	Baseline	12 weeks	Mean absolute difference	Mean relative difference	P*
Total cholesterol (mmol/l)	5.44	5.33	-0.11	-2.0%	0.10
High density lipoprotein cholesterol (mmol/l)	1.45	1.48	+0.02	+1.6%	0.48
Low density lipoprotein cholesterol (mmol/l)	3.46	3.33	-0.13	-3.9%	0.03
Triglycerides (mmol/l)	1.17	1.16	-0.01	-0.6%	0.39
HOMA-IR index†	2.68	2.55	-0.13	-4.7%	0.52
High-sensitivity C-reactive protein (mg/l)	1.71	1.68	-0.04	-2.5%	0.68

Conclusion

- Encouraging **physical activity** is an effective way to **reduce cardiovascular risk factors and cardiovascular mortality**
- Recommendations include **150 minutes of moderate-intensity exercise or 75 minutes of vigorous exercise per week**, but recent data indicate that **even short bouts of vigorous exercise can be effective**
- Just **4.4 min of daily VILPA*** (**30 min per week**) lead to a **33% reduction of cardiovascular mortality**
- **Physical activity ≠ sport**
- **Every movement counts**

* **VILPA: vigorous intermittent lifestyle physical activity**



Thank you!

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