Personal Activity Intelligence (PAI) for promotion of physical activity and prevention of CVD

Conflict of interest: **None**

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Declaration of Interest

- I have nothing to declare

Background

THE LANCET

The pandemic of physical inactivity: global action for public health

*Harold W Kohl 3rd, Cora Lynn Craig, Estelle Victoria Lambert, Shigeru Inoue, Jasem Ramadan Alkandari, Grit Leetongin, Sonja Kahlmeier, for the Lancet Physical Activity Series Working Group**

Physical Inactivity is a Pandemic
> 5 million deaths related to inactivity
$117 billion in US
€80 billion in European economy

Scientific point of departure

Most goals such as minutes or steps says nothing about the body's response to activity

Goals such as '10,000 steps' or '30-minutes of activity per day' tend to be vague and misleading, as they do not reflect the body's response is to each activity.

What do I have to do in terms of physical activity to stay healthy for longer?

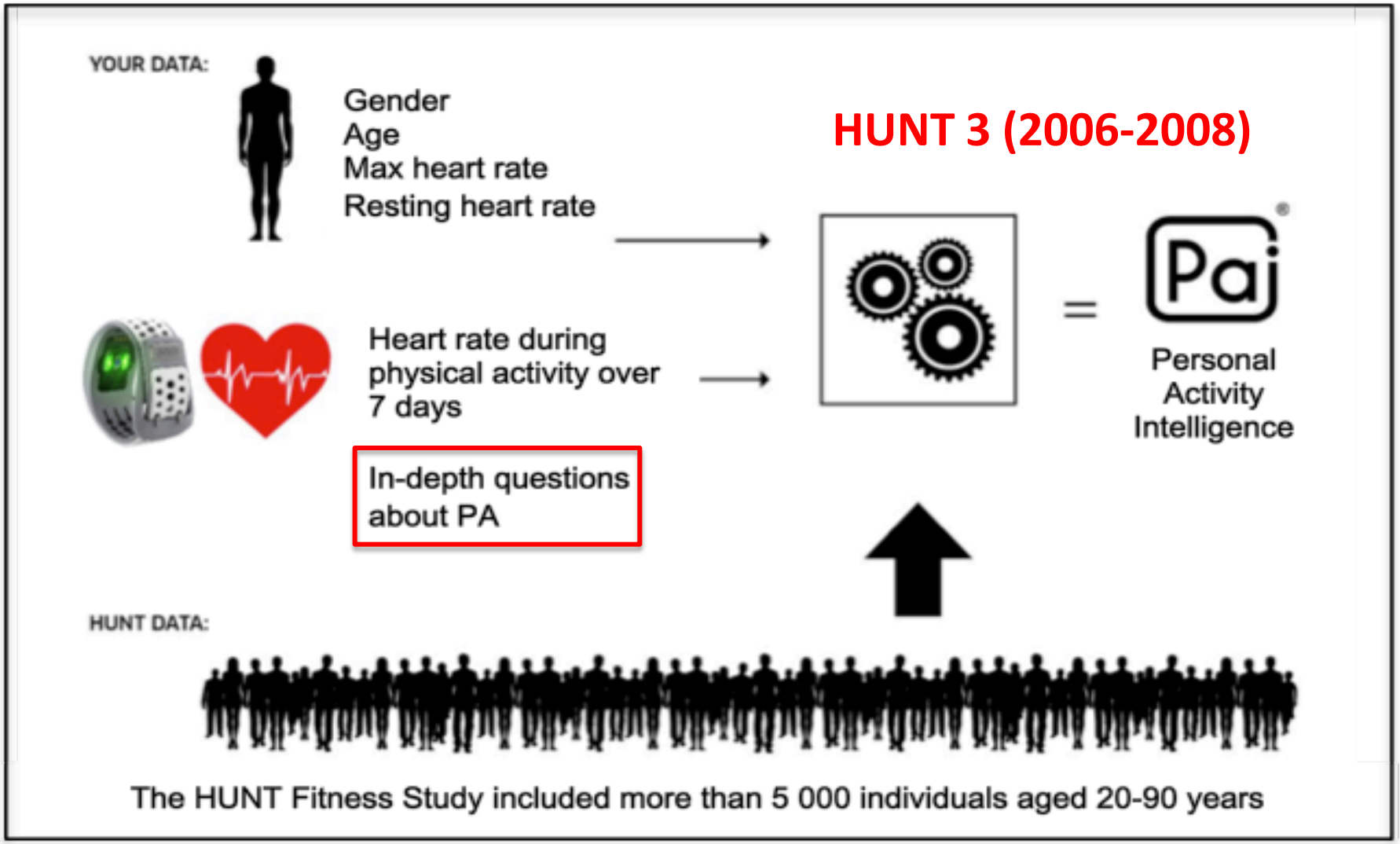
There is a lack of a simple formula for understanding exactly how much activity or exercise is necessary and what intensity level is needed to achieve a healthier and longer life.

Heart rate reflects the body's response to any type of physical activity!

Unlike all other physical activity metrics heart rate reflect the body's response to physical activity regardless of the type of activity performed

Scientific question

Can we make a meaningful heart rate metric for PA-tracking that could translate into lower risk of CVD mortality ?



The PAI level (scale from 0-100) were strongly correlated with health status

Low PAI (<50 weekly) was associated with high levels of cardiovascular risk factors (high blood pressure, high blood glucose, high cholesterol, obesity etc.)

Back to the 80's

HUNT 1 (1984-86)

♂ 19,269

♀ 20,029

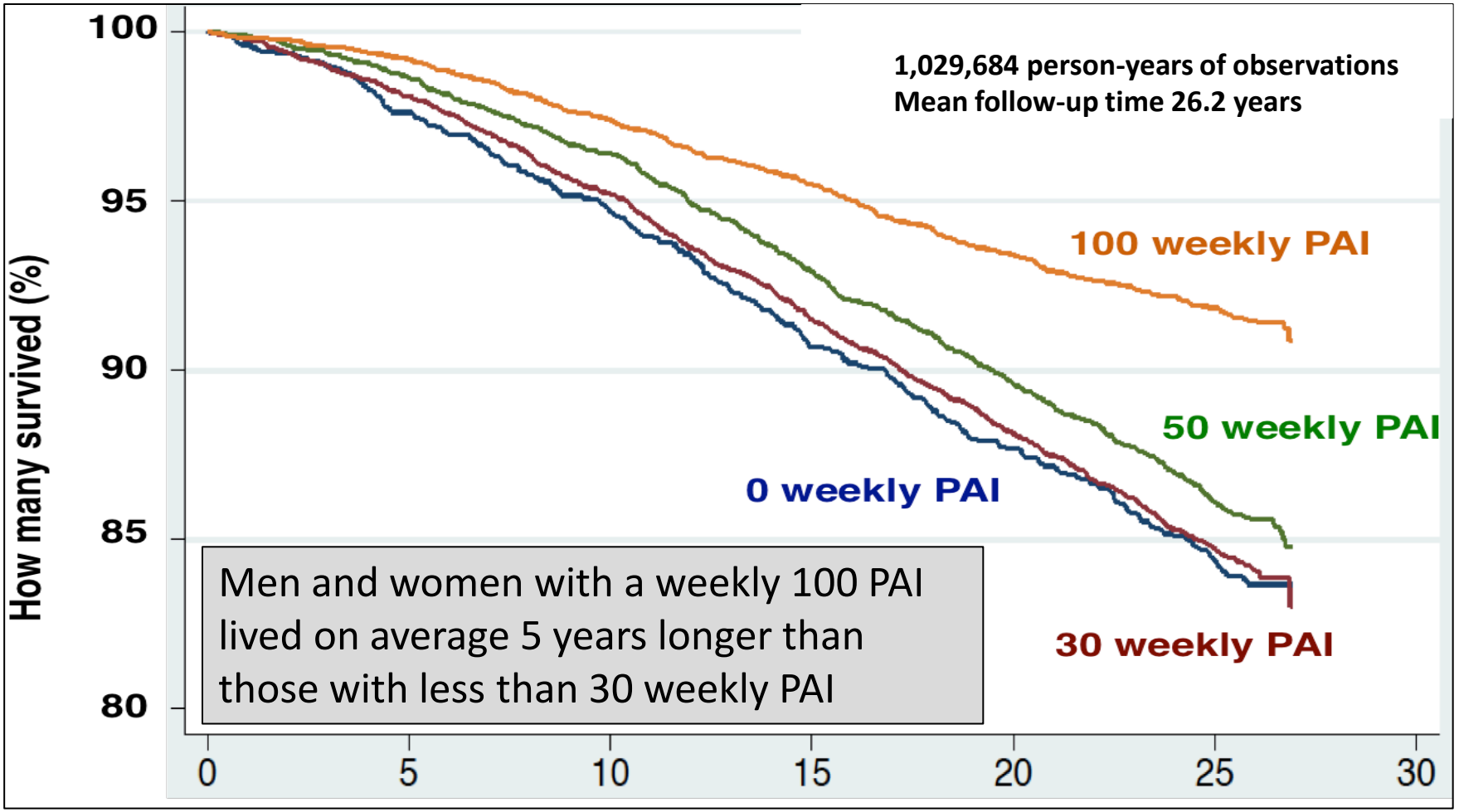
~26 years

1,029,684 person-years of observations

2012

10,062 deaths
3,857 CVD deaths

Identical questions about PA in HUNT1 and HUNT3 made it possible to calculate PAI data in about 40 000 individuals in the 80's and combined that with complete end-point registries.



Most effect of 100 weekly PAI in those starting at "young age". For instance individuals aged **55-60 years old and 100 weekly PAI lived on average 7 years longer** than those with less than 100 weekly PAI, whereas the corresponding number for **those above 70 years old were about 2 years increased lifespan.**

How to reach a 100 PAI?

100 PAI can be achieved at different intensities, frequencies and duration in various preferred activities over the course of 7 days, the higher the intensity, the shorter the time needed.

How hard is it to obtain 100 PAI?

The algorithm incorporates the fact that the major reduction in mortality occurred between the least active (<50 PAI) and the next-least active people (51-99 PAI), and it is easier to earn the first 50 vs. the next 50 PAIs.

More beneficial to obtain more than 100 PAI?

In terms of risk, no further reductions in CVD or all-cause mortality were observed for scores progressively higher than 100 PAI. More beneficial for weight loss etc. but not studied in detail yet.

Different from today's advice for PA?

Participants who did not obtain ≥100 PAI had increased risk of dying regardless of meeting the physical activity recommendations from leading health authorities.

Moderated Poster # 80115, Monday at 15:35

MIO SLICE

ALL-DAY HEART RATE + ACTIVITY TRACKER

THE FIRST WEARABLE TO FEATURE PAI

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