
PAMAP

Physical Activity Monitoring for Aging People

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TRIVISIO



*Clinic Functional
Rehabilitation
Foundation de Rotschild*



PAMAP: Physical Activity Monitoring for Aging People

- **Balanced physical activities are essential for “well-aging”**

Report on Physical Activity and Older Americans by US Department of Health and Human Services (HHS) - 2002

Established Benefit

- Lower overall mortality.
- Lower risk of coronary heart disease.
- Lower risk of colon cancer.
- Lower risk of diabetes.
- Lower risk of developing high blood pressure.
- Lower risk of obesity.
- Improved mood and relief of symptoms of depression.
- Improved quality of life and improved functioning.
- Improved function in persons with arthritis.
- Lower risk of falls and injury.

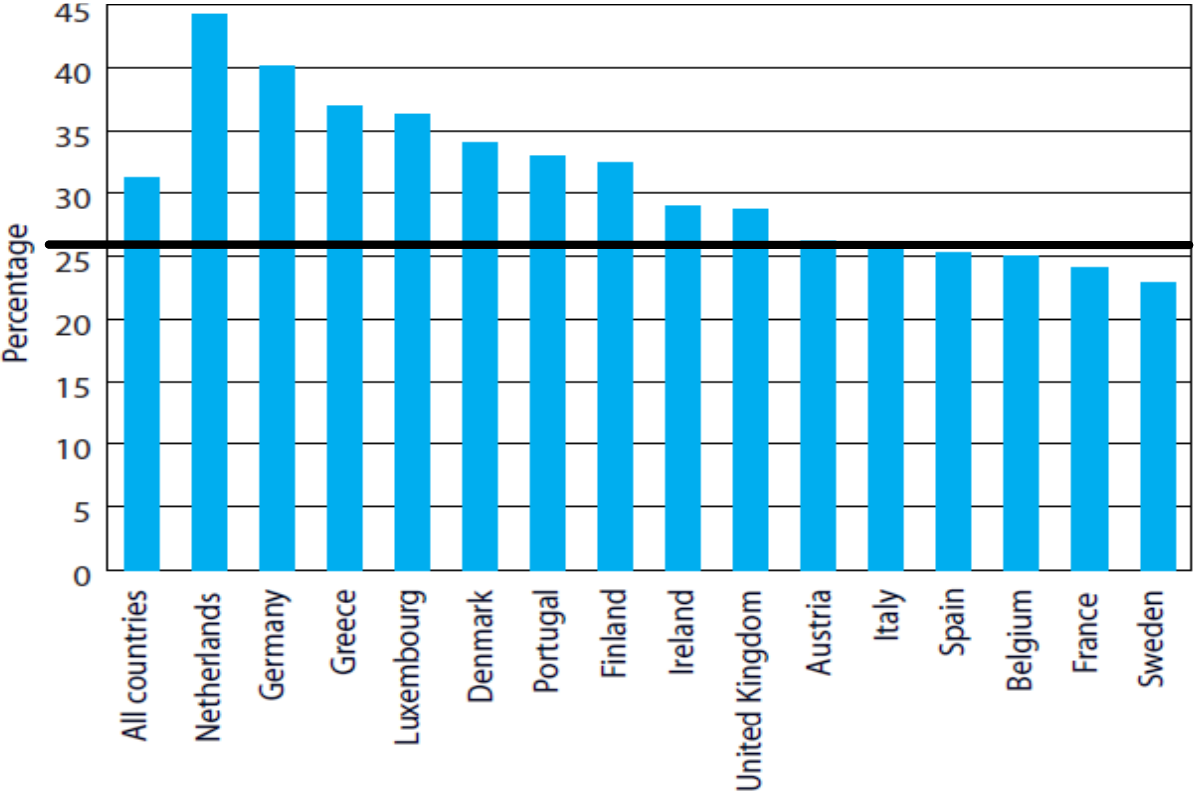
Supposed Benefit

- Lower risk of breast cancer.
- Prevention of bone loss and fracture after the menopause.
- Lower risk of developing depression.
- Improved quality of sleep.

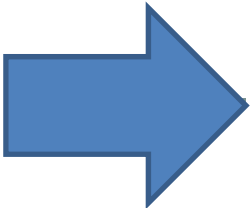


Physical Activity Statistics

Fig. 1. Proportion of adults (aged 15 years or over) in the EU classified as sufficiently active, 2002



Source: Sjöström et al. (8).

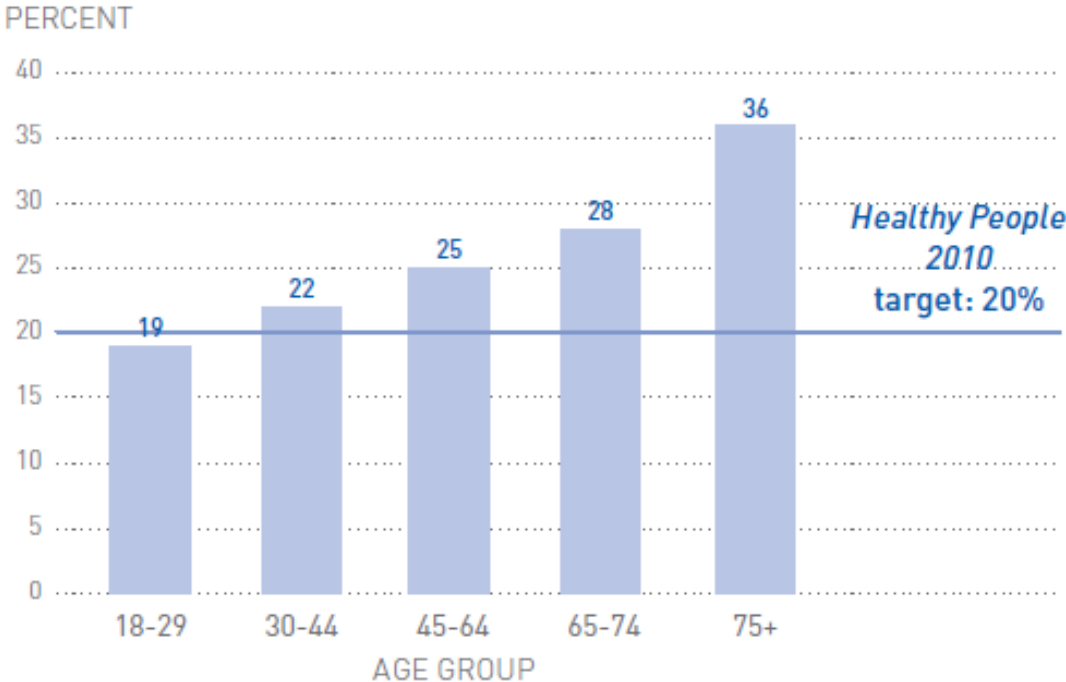


Estimated cost of physical inactivity about €150–300 per citizen per year (WHO Europe report 2006)

Physical Activity Statistics

Aging = Less Physical Activity

Prevalence of no leisure-time physical activity

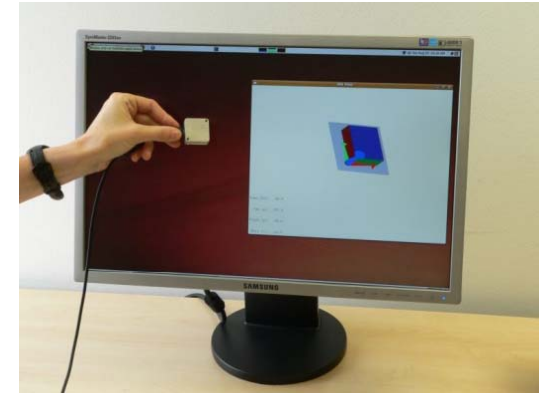


Report The State of Aging and Health in America 2007
Centers for Disease Control and Prevention - U.S. Department of Health and Human Services



PAMAP: Physical Activity Monitoring for Aging People

- The basic idea
 - On-body sensor network
MEMS: accelerometers, gyroscopes, ...
 - Bio-mechanical model of the body
 - Musculoskeletal motion analysis
 - To infer the muscle activity
- Then
 - To compare actual and targeted user's physical activity
 - To share information with friends, family or clinicians



PAMAP: System

At Home - TV Station

- *Musculoskeletal activity analysis*
- *Information sharing*
- *Tele-consultation*



Medical Supervision

- *Remote data access*
- *Tele-consultation*



INTERNET

Mobile Platform

- *Data recording*
- *Local information processing*
- *Monitoring*

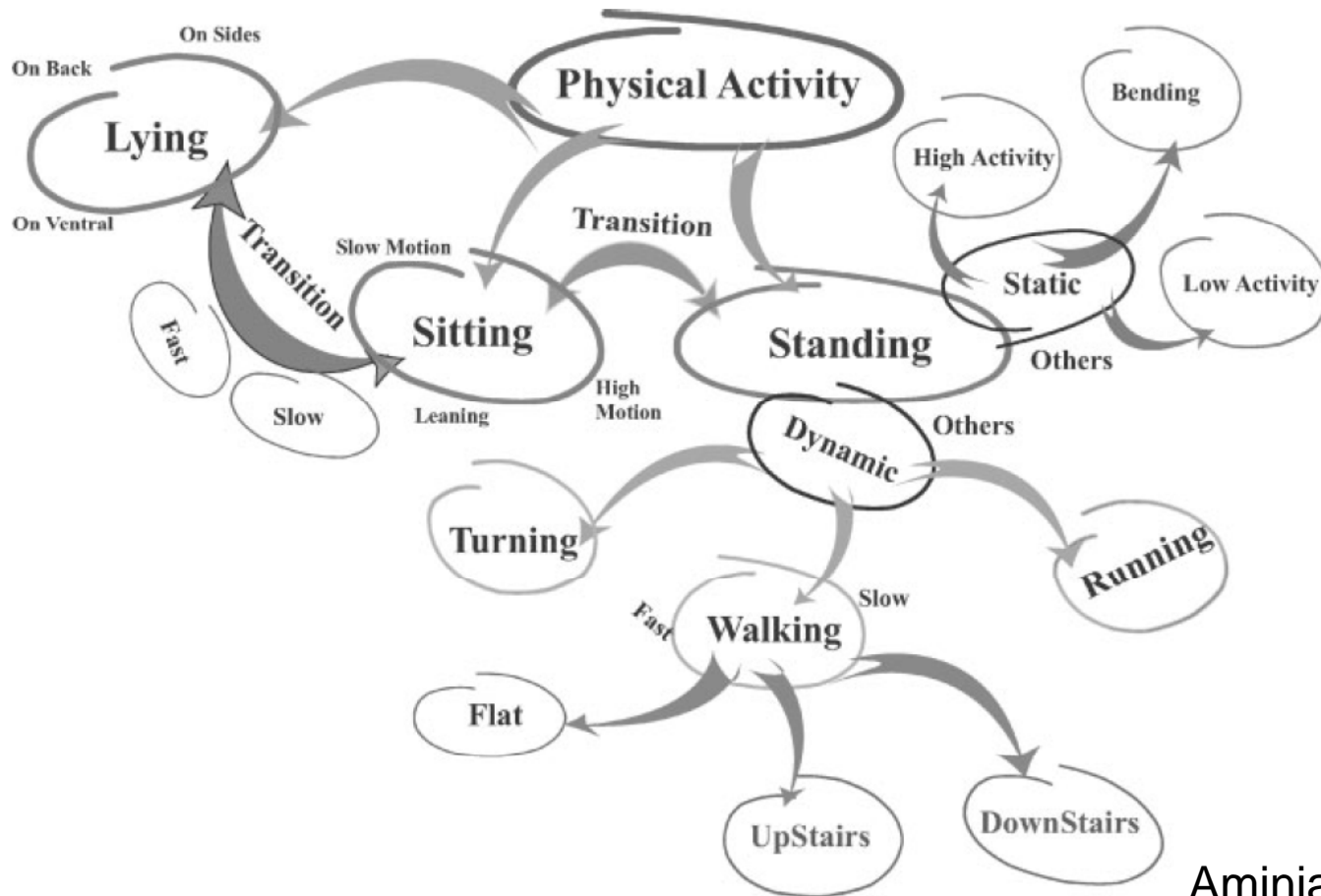


Information sharing – Social communication

- *Video conferencing*
- *Information sharing*



Challenges: Diversity of physical activities



Aminian 2004



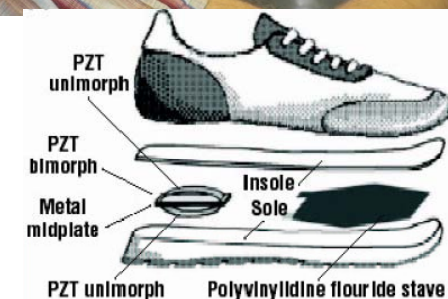
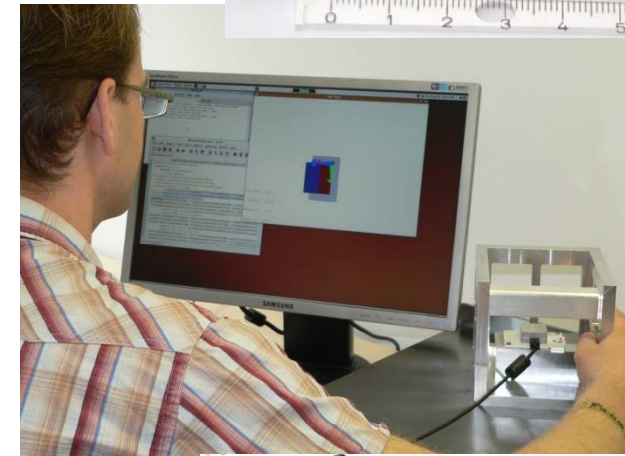
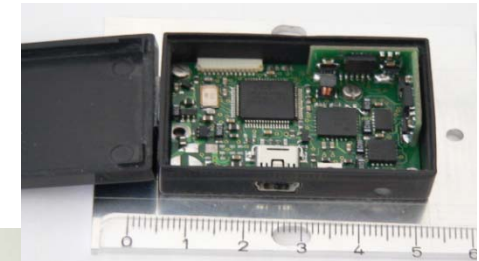
Challenges: Usability and Acceptance



- Record and feed back system
 - User interface
 - Clinical staff interface
-

Challenges: technical development

- First sensors are available
- Early Demonstrator
 - Global activity through a single sensor in the shoe
 - Simple bio-mechanical model of the leg
 - First (simple) tests in January 2010





Thank you!

More under:

www.pamap.org

and

<http://av.dfki.de>