

# Health surveillance in the construction sector

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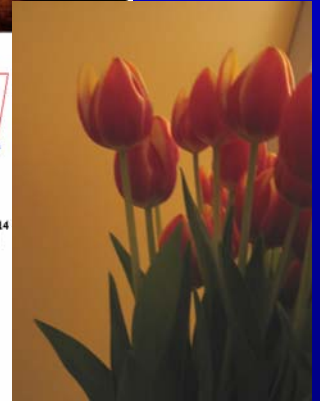
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Coronel Institute of Occupational Health, Academic Medical  
Center, Amsterdam, The Netherlands

Arbouw, Health & Safety Institute in the Construction Industry,  
Amsterdam, The Netherlands



# Amsterdam...



# Coronel Institute of Occupational Health

- Department of the Academic Medical Center (AMC)
- Named after Samuel Coronel (Sr) (1827-1892):
  - one of the first to relate living conditions on health
- Coronel Institute:
  - Largest university-based center on occupational health in the Netherlands ( $\pm$  80 colleagues)
  - Netherlands Center for Occupational Diseases
  - Research Center for Insurance Medicine
  - Out-patient Clinic People and Work
  - Topics: RSI, low back, hearing problems at work, mental complaints/disorders, OPS, work-related dermal disorders, EBM
  - Chronic diseases and work (RA, depression, DM, cancer, CVD)
  - Work ability and recovery (high-demand jobs and aging)



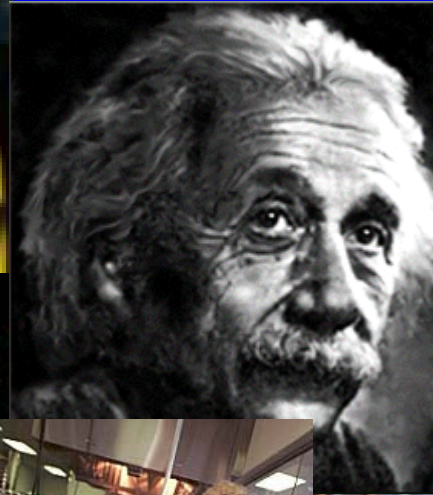
# Arbouw

- Knowledge & Service institute for Dutch industry sector
- Working circumstances ↑ & disability for work ↓
- Board of employers & employee organisations
- Collectively financed
- Organisation:
  - Research & Development
  - Contract with Occupational Health & Safety services
  - Facilitative towards sector, e.g. instruments



# Aging....a problem??

Most workers will probably NOT perceive work ability problems when growing older AND working in non-extreme environments



**A good example**  
***Cardinal Joseph Ratzinger gets***  
**promotion.....**

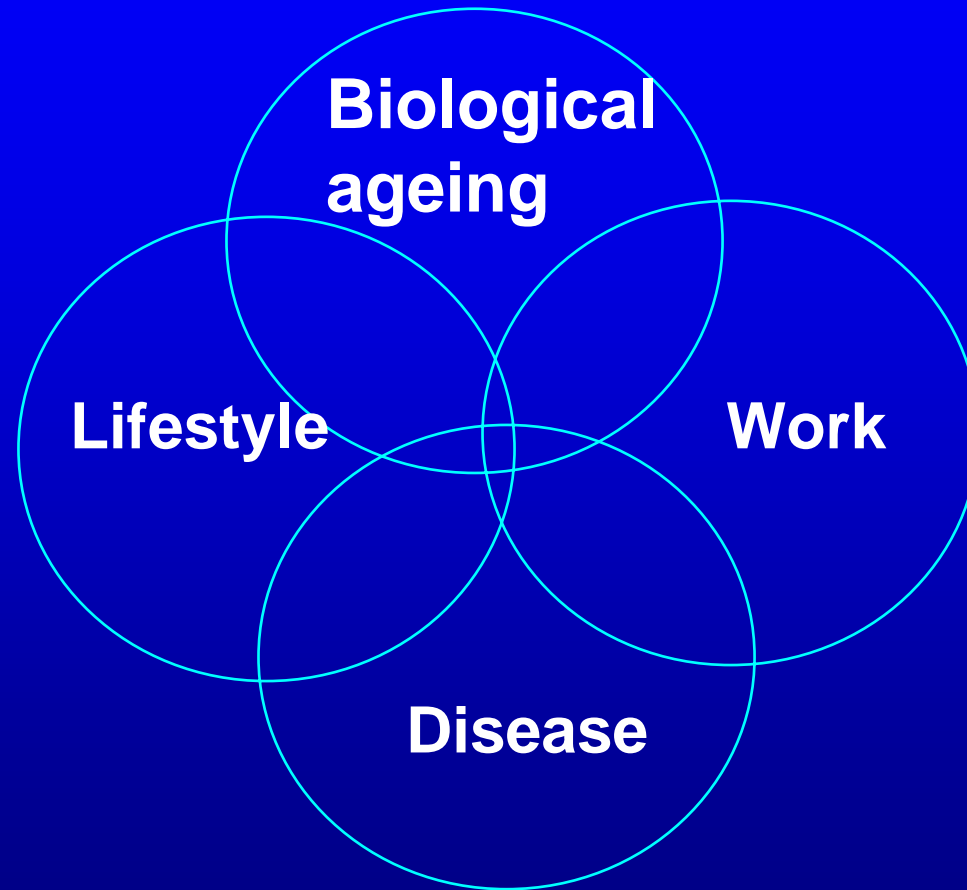
***Pope Benedictus XVI (80 years)***



# Ageing working population

- Number of 45-plus:
  - 1990 → 34%
  - 2000 → 39%
  - 2020 → 48%

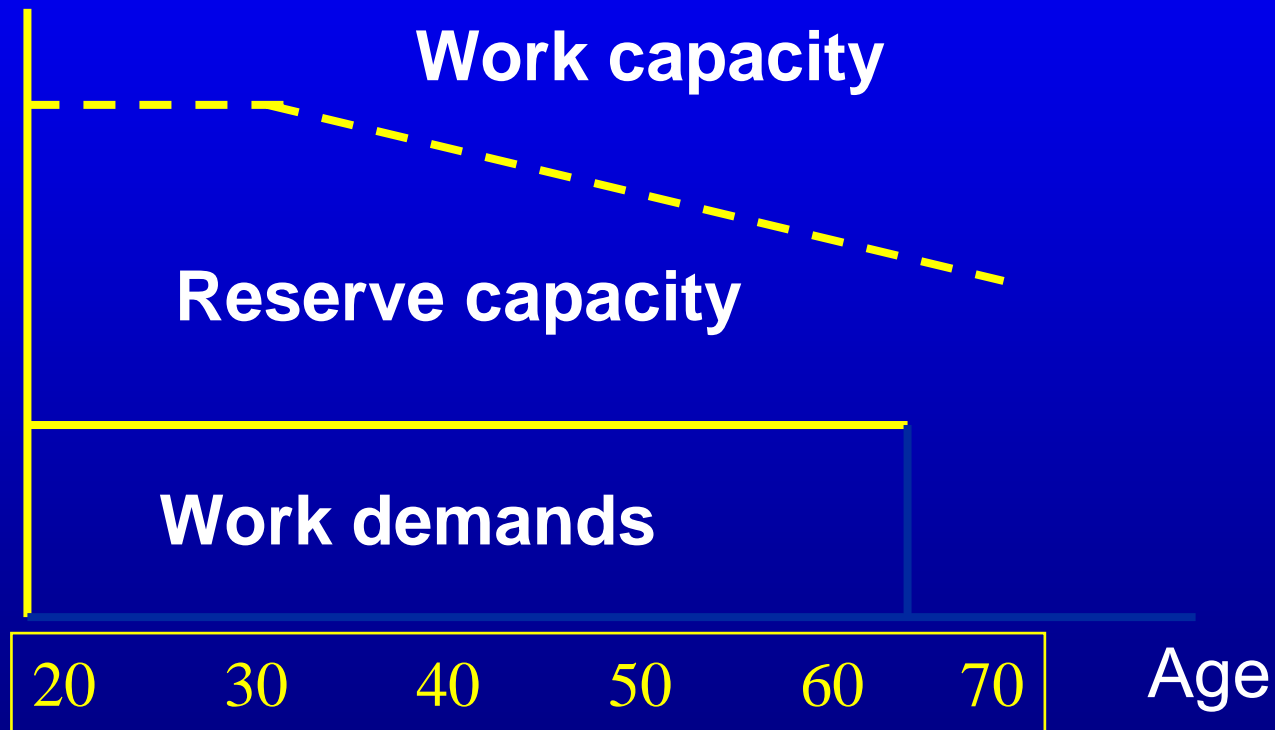
# ✓ *Ageing and work* (Ilmarinen 1992)



# Workers at risk for disability

- Ageing populations
- Longer active work period/ later retirement
- Cumulative exposure
- Working in high-demands jobs, like in the construction sector

# ✓ Work capacity and work demands



# WAI

- **Developed in Finland**
- **Applied in physical and mental jobs**
- **Decreases with age**
- **Lower in physical jobs (Ilmarinen 1995)**

# Development of decision model

- To identify workers at risk of long term disability
- To prevent long-term sickness absence and disability

Scand J Work Environ Health, 2005

# How to protect the (work-related) health of (aging) workers in high-demand jobs?



# Dutch laws and professional OH guidelines

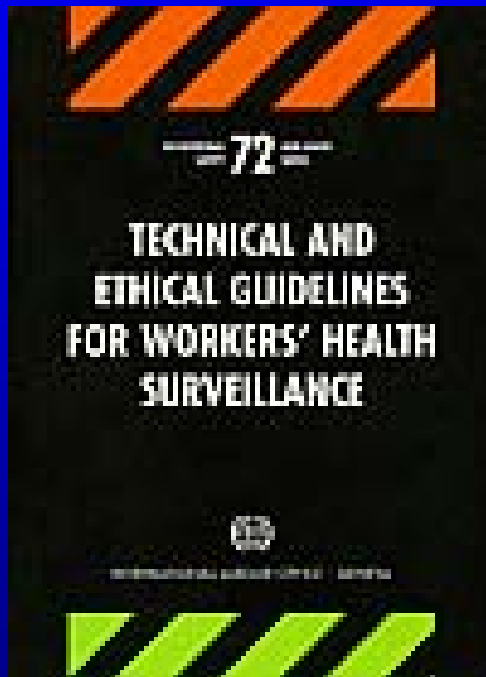


- Art.18 Dutch Safety and Health Act 2007  
“..the employer has to offer to the employee a periodical workers’ health surveillance aimed at the work-related risks that effects workers’ health in order to reduce or prevent health problems as much as possible.. “
- Preventive health policy



**Workers' Health Surveillance**

# ILO 1999 and The Global Occupational Health Network WHO



- glossary
  - occupational health
  - surveillance
  - occupational health surveillance (systems)
  - surveillance of the work environment
  - workers' health surveillance

# Fitness of the worker for a specific job or type of work

- What do we need?
  - assessment of relationship between work demands and abilities in order to advise on measures to overcome the problem. Measures: e.g. functional/vocational rehabilitation, work adaptation
  - only in terms of particular job or type of work
  - relationship of demands and abilities; both are subject to change

# Assessing work ability in high-demands jobs

1. Work-related health may decrease early (starting around 40 yrs)
2. Knowledge base is empty concerning workers aged > 55-60 yrs
3. To increase the predictive value with respect to work ability, a bad strategy has been shown to use (medical) tests that are too far away from how workers have to perform on a daily basis



# Following Dutch Laws and occup.med.guidelines....

**Are 'specific' job demands present? Is evidence present on health hazards?**



## **Specific job demands.....**

- cannot be eliminated by current state-of-the-art (ergonomic) measures.....
- may exceed exposure safety levels or average human capacities
- may increase the risk of work-related health problems



*WHS development starts with same specific job demands and health hazards..*

# When specific job demands are present....then:

- It is allowed to perform a pre-employment medical examination
- From the specific job demand, assess the specific physical or psychological capacities needed to perform this specific job demands
- Assess test possibilities for these specific capacities
- After start in the high-demands job, monitor the same capacities during their career on a regular basis

# Development of realistic p-e med exam and workers' health surveillance; fire fighters and ambulance workers (1)

- How were existing protocols and tests developed and with what aims? (almost no changes since late '60s; differences between employers)

What information is needed when we like to monitor job-specific work ability and screen for relevant work-related health complaints?

- What tasks/activities occur during work, for how long, with what frequency and/or intensity. >> through HTA
- How demanding is this workload on the individual level (normative)? >> through HTA
- What is already known on the national level and has been studied?
- What evidence is present on work demands, work load and health effects in these workers groups? >> systematic international review
- What do we know about the cumulative effect of exposure duration and aging? >> evidence intern. literature and NL data-analysis

# New PhD project

- Starting in 2008
- Aimed at developing and testing the feasibility and quality of a job-specific workers' health surveillance
- i.e. in two jobs: brick layers and works foremen

# New PhD project (2)

- 25,000 brick layers: physical demanding
  - High risk for MSDs, hearing loss, dermal disorders, accidents
- 12,000 foremen: mental/psychosocial demanding
  - 60% state the work to be psychological demanding
  - 70% works under high time pressure

# Works foreman

Average 170 task changes per day

Average 34 task interruptions per day

Task changes (TC)

$r = 0,48$ : between total TC and Adrenalin end workday till 20.00 hrs

$r = 0,44$ : between total TC and Cortisol end workday till 23.00 hrs

Task interruptions (TI)

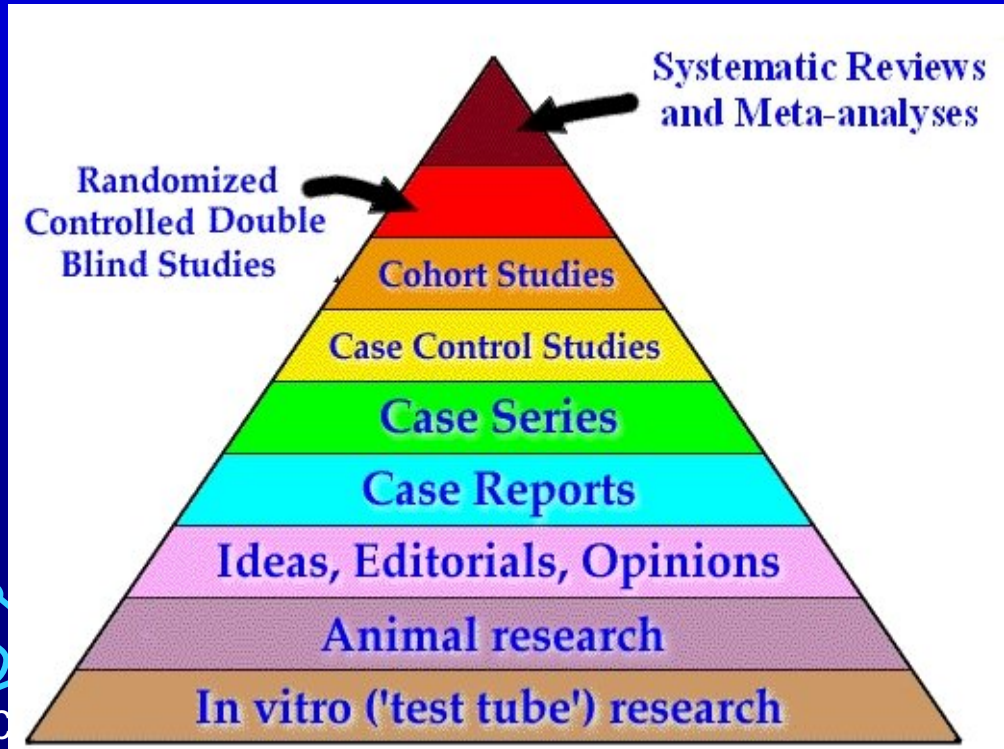
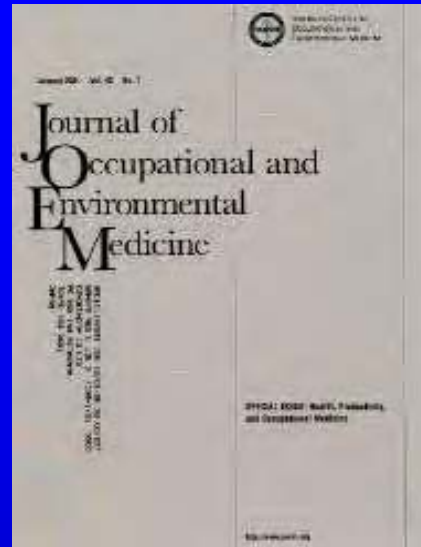
$r = 0,51$ : between specific TI and Cortisol from end workday till 23.00 hrs

# New PhD project (3)

- International literature search to describe the work-related occupational diseases in these two jobs
- Start cohort study on experienced workload and early health indicators
- Hierarchical task analysis
- Focus Groups with key persons
- Search for effective instruments and interventions
- Feasibility study by qualitative approach
- RCT stratified on occupational health service

# What works!?





# 6 ergonomic measures

carpenters



Mechanical transport

Lifting aids

bricklayers



Bricks on elevation

Mechanical transport

pavers



Mechanical paving

Mechanical kerbs placing

# Take home message

- Evidence-based job-specific periodical workers' health-surveillance needs to be developed
- Effectiveness of WHS program needs to be evaluated



# Exchange of knowledge (research)

- Increase of peered reviewed articles
- Special issues about construction ergonomics
  - Scandinavian Journal of Work, Environment & Health 2005
  - Applied Ergonomics 2005
  - American Journal of Industrial Medicine (in preparation)
- Scientific committees
  - IEA
  - ICOH
- International projects (e.g. Cochrane review safety interventions)

# Exchange of knowledge (research)

- Fifth IEA symposium in Beijing 2009
- Call for proposals for 5th international symposium Ergonomics in Building and Construction (by Van der Molen, Koningsveld & Schneider, TC)
- Aims:
  - Effectiveness of ergonomic measures
  - Implementation strategies for ergonomic measures
- Abstracts to [IEA2009.org](http://IEA2009.org)
- Looking for NEW CHAIR!!