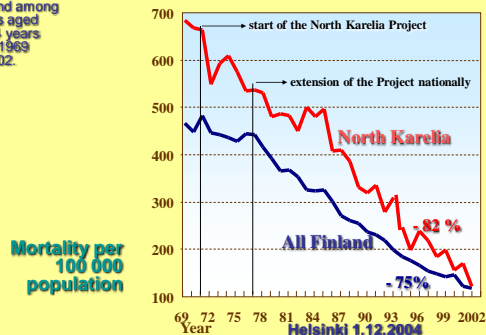


## Role of Occupational Health Services in Prevention of Work-related Cardiovascular Disorders

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Jorma Rantanen, University of Jyväskylä

### Age-adjusted mortality rates of coronary heart disease in North Karelia (Puska 2010)

and the whole of Finland among males aged 35-64 years from 1969 to 2002.



## The goals of occupational health services

- To prevent: All the conditions and factors in work, work environment, and work organization, which may be hazardous to health
- To promote:
  - healthy and safe work environment
  - well-functioning work community
  - the prevention of work-related illnesses
  - the maintenance and promotion of the employees' ability to work (OHS Act 2001, Finland)
- Rehabilitation and RTW
- Optional: curative services

## Tasks of Occupational Health Services in view of CVDs

- Recognition of employees with risk of CVD
  - Medical treatment/guidance to treatment and rehabilitation
  - Sick leave, part time sick leave, support in return to work
- Recognition of work-related risks – recommendations to diminish them
  - chemical and physical exposure
  - work time: shift work, long working hours/weeks
  - psycho-social exposure
  - stress factors related to insecurity of the employment, threat of unemployment
- Life style
- Intervention program at the work place
  - collaboration with primary health care
  - BOHS – combines both

## Proportion of mortality related to occupational factors in Finland

(Nurminen and Karjalainen SJWEH 2001;27:161-23)

### Work attributable fraction

- **Ischemic heart disease:** 9% for women, 19% for men
- **Stroke:** 8% for women, 12% for men
- Fatalities in traffic accidents ~391/yr and 38% reduction 1999-2010 !
- WRD fatalities 1800/yr (6-fold)

## Work stress and Cardiovascular diseases

Meta-analysis by Kivimäki et al. 2006, Scand J Work Environ Health: 83 000 employees, 14 studies

Exposure	RR, OR	Adjusted (age, sex etc.)
High work load	1,4	1,2
Imbalance between inputs to work and rewards	1,6	1,6
Injustice/unfairness in the organization	1,6	1,5
(Väänänen et al. 2008) Low predictability at work (clarity of goals, foreseeing problems, work awareness etc.)		Hazard ratio, HR 1.24 among workers aged 45-54 years

### Working hours and shift work

(Härmä 2006)

Working times	Risks
> 11 h/d	3-fold risk to cardiac infarction 4-fold risk for diabetes mellitus 2
> 60 h/week	3,7-fold risk for pension because of health reason
Night shifts in work	1,6-fold risk for coronary disease 1,5-fold risk for breast cancer

Shift work (2- or 3-shift) associated with higher carotid intima media thickness and 2.2 fold odds for carotid plaque in **young men** 24-39 years of age  
- Acceleration of **arteriosclerotic process**  
(Puttonen et al., Atherosclerosis. 2009 Aug;205(2):608-13)

### Psychosocial agents

- Justice at work diminished CVD deaths 45% (Kivimäki ym., Psychosom Res, 06;61:271-4) and mortality 35% (Kivimäki ym., Arch Intern Med; 165:2245-51)
- Burnout increases CVD in men (OR 1,35); musculoskeletal diseases in women (OR 1,22) (Honkonen ym. Psychosom Res 2006;61:59-66)

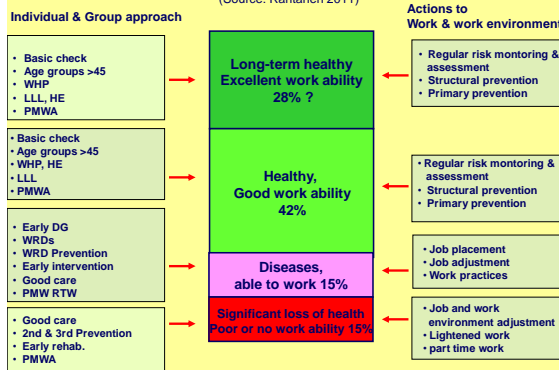
### Disappearance of health promotion need during a

3-year follow-up (Talvi A. et al (1999) Occup med (49)93-101)

	Group A (%)	Group B (%)
<b>Physical activity</b>	24	18
Musculoskeletal symptoms	55	56
<b>Dietary habits</b>	44	40
<b>Obesity</b>	14	9
Smoking	20	24
Serum lipids	12	14
Blood pressure	31	34
Quality of sleep	24	33
Mental well-being	50	54

### Actions of occupational health services for Work Ability, PMWA

(Source: Rantanen 2011)

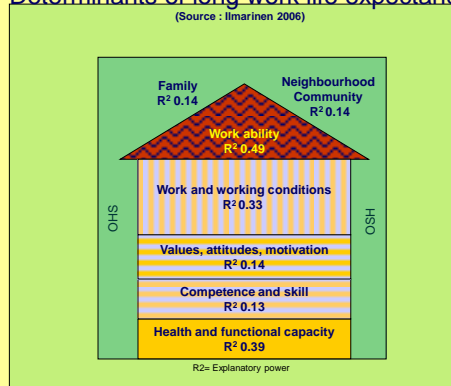


### Levels of WHP (MoSAH)

	Level 1: Healthy workers	Level 2: Threat of decreased work ability	Level 3: Workers with disability to work
<b>Target group</b>	All workers	Workers with symptoms, ill health	Workers with diseases, workers who come off bad
<b>Measures</b>	Prevention: - healthy working conditions - healthy life style - good work atmosphere - "decent work and work contracts"  <i>Primary prevention</i>	Finding out the reasons and influencing them: - exposure - life style - lacking rehabilitation etc. - insecurity of the work  <i>Secondary prevention</i>	- Treatment of the diseases and rehabilitation. - Improvements of the work environment. - Improvement of the work society, work contracts etc.  <i>Tertiary prevention</i>

### Determinants of long work life expectancy

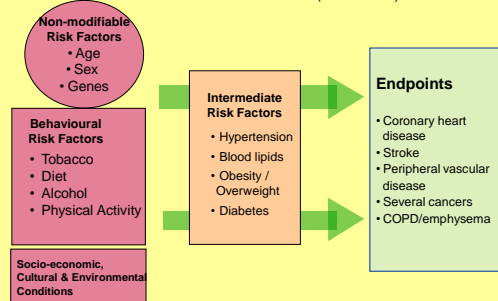
(Source : Ilmarinen 2006)



## The OHS Cycle



## CVD, Cancer and Chronic Respiratory Diseases Risk Factors (Puska 2010)



Helsinki 1.12.2004

## What to screen?

- Screening of conventional risk factors
- Conventional ECG & Ergometric screening
- Ultrasonic screening for carotid intima media thickness of men in shift work to prevent acceleration of atherosclerotic process? (V. s. Puttonen et al. work)
  - Screening not (yet?) recommended by U.S. Stroke Association
  - More feasible method for OHS: measurement of central artery stiffness, in screening use in Japan
- Young employees at risky jobs or employees with high risk?
  - The research institutes should develop feasible methods and programs for screening at OHS

## New types of motivation for life style?

- Health promotion is in competition of the time and interest with other information and entertainment
  - Behavioural theories
  - Collaboration with media?
- E.g. TV program "Life at stake" with internet risk calculator
  - Fashionable: Personal/ special group trainers in physical activities, healthy cooking courses etc.?
- We should OHS utilise consults/ advertising experts to make the health promotion campaigns "fancy"?
- For employers: cost-benefit estimations of the effects of downsizing, outsourcing and sacking?
- Return of the investments to healthy work place an to health promotion?

## Need for new tools at OHS

### Traditional prevention methods:

- For identification: criteria, scores
  - the traditional risk factors
  - screening tools for early recognition
- Methods for early interventions
  - Individual factors
  - Systems factors

### New approaches:

- Using new ICT tools for communication, monitoring and feedback
- Need for "organisational diagnosis" for CVD risk environments and consitions
- Using socialmedia and networking
- Effective use of TV and other mass media

## Challenges for Prevention of CVDs by the OHS

- Preventive means exist for control of chemical and physical exposure, work time, workplace psycho-social agents
  - OHS activities in collaboration with workplaces
- Lack of preventive means against work insecurity, downsizing, global economical crisis etc.
  - Governements: actions for more secure work contracts
  - ILO, EU principles for "decent work life"
  - WHO: ICD 11 work - Occupational diseases more visible?
  - Workers' and Employers' Associations?
- Benefits from prevention:
  - Decrease of occupational and non-occupational diseases, decreased costs, improved health and work ability
- Recognition of ODs and WRDs - kick-off for prevention!

## Occupational health as an investment

- In a Finnish enterprise (Lassila & Tikanoja) OH is developed and followed up as any other business activity
- Results: Sick leaves diminished, retiring age rose up to 62 years
- Regular meetings with the OHP and the management of the enterprise
- Participatory OHS as a goal
- **OHS needs skills** to communicate with the workplace counterparts

## Wider – national and global - approach needed

- OHS has no preventive means against work insecurity, downsizing, global economical crisis etc.
  - Governments: actions for more secure work contracts
  - ILO, EU principles for "decent work life"
  - WHO: ICD 11 work - Occupational diseases more visible?
  - Workers' and Employers' Associations?

## Hearts and minds at work in Europe

[www.enwhp.org](http://www.enwhp.org) or [workhealth@bkk-bv.de](mailto:workhealth@bkk-bv.de)

- From individual level intervention to (pan-) national action plans – Recommendations to policy makers:
  - to develop or influence policies and practices at an international, national, regional, local or company level
  - **workplaces are powerful settings for health promotion and prevention**
  - **workplace health interventions are available and effective**
  - workplace health issues apply to non-working life as well
  - **workplace health is an essential part of public health – BOHS**

[http://www.ttl.fi/NR/rdonlyres/3FEF6037-B2C0-4D59-B6B7-BE2869BF89C6/0/BOHS3Edition28Sept2007\\_3\\_.pdf](http://www.ttl.fi/NR/rdonlyres/3FEF6037-B2C0-4D59-B6B7-BE2869BF89C6/0/BOHS3Edition28Sept2007_3_.pdf)