



A NIOSH Center for Excellence to Promote a Healthier Workforce

Participatory Ergonomics as a Model for Integrated Programs to Prevent Musculoskeletal Disorders [to Promote Employee Health]: Evolution of a Program

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Some fundamental definitions:

 What is health promotion?

 What is ergonomics?

 What is a participatory process?

 What is integration?



What is Health Promotion?

Fostering positive decision-making about health

- ⚙️ Traditional focus on the individual's behavior
 - Stop smoking, healthier diet, cope with stress
- ⚙️ “Social health promotion” - activities at the community or societal level [WHO]
 - Environmental conditions that foster healthy behaviors
 - Positive human relations at work that foster decision-making and self-efficacy



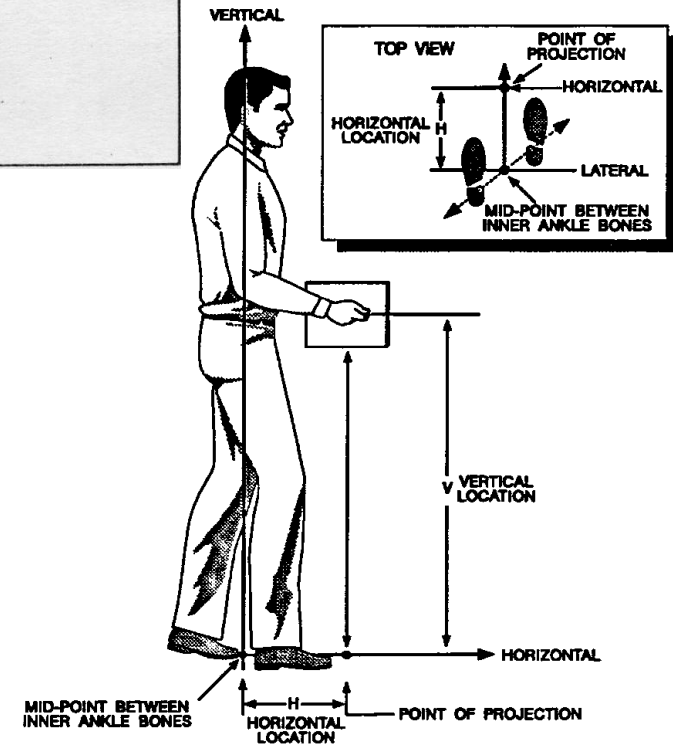
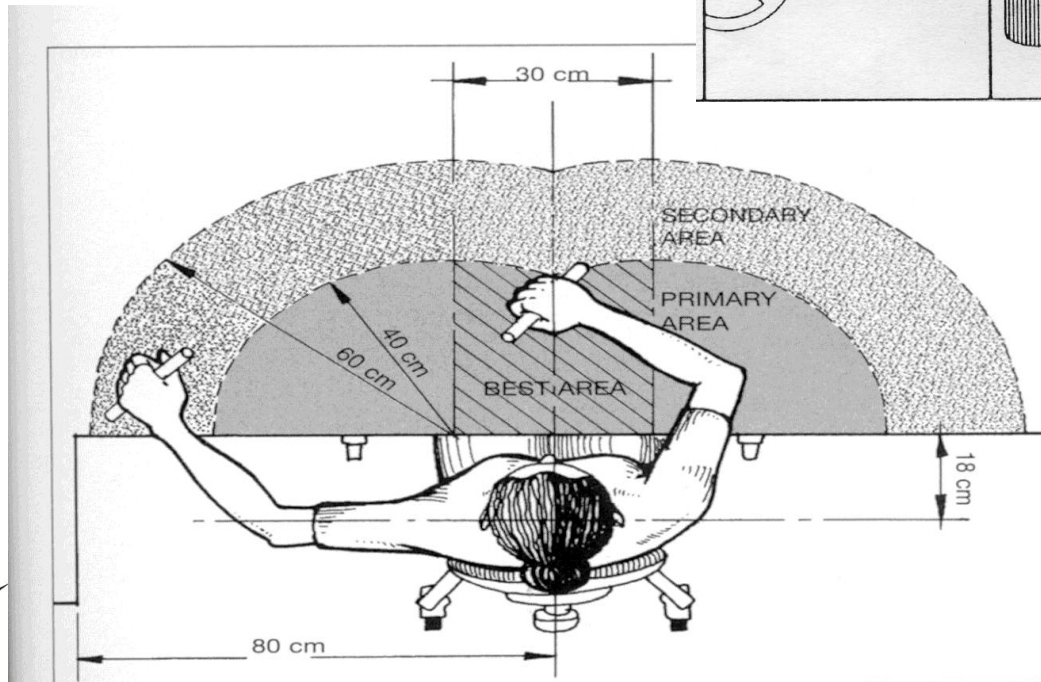
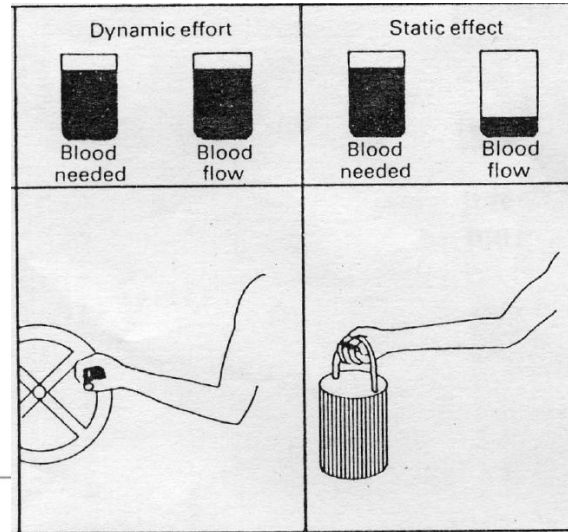
**Framing HP in terms of healthy
decision-making implies that a
program's *process* is as important as
*its content.***



Ergonomics (1)

Job-level physical attributes (exposure) ...

and ...



Ergonomics (2)

- ❁ “Fitting the job to the person” includes macro- or system-level issues that define the job and/or impact the worker
- ❁ Ergonomists design to support human capabilities and limitations
 - to fix a problem, e.g., a human-machine system with too many “accidents”
 - or to increase system efficiency, e.g., improve the usability of a software system

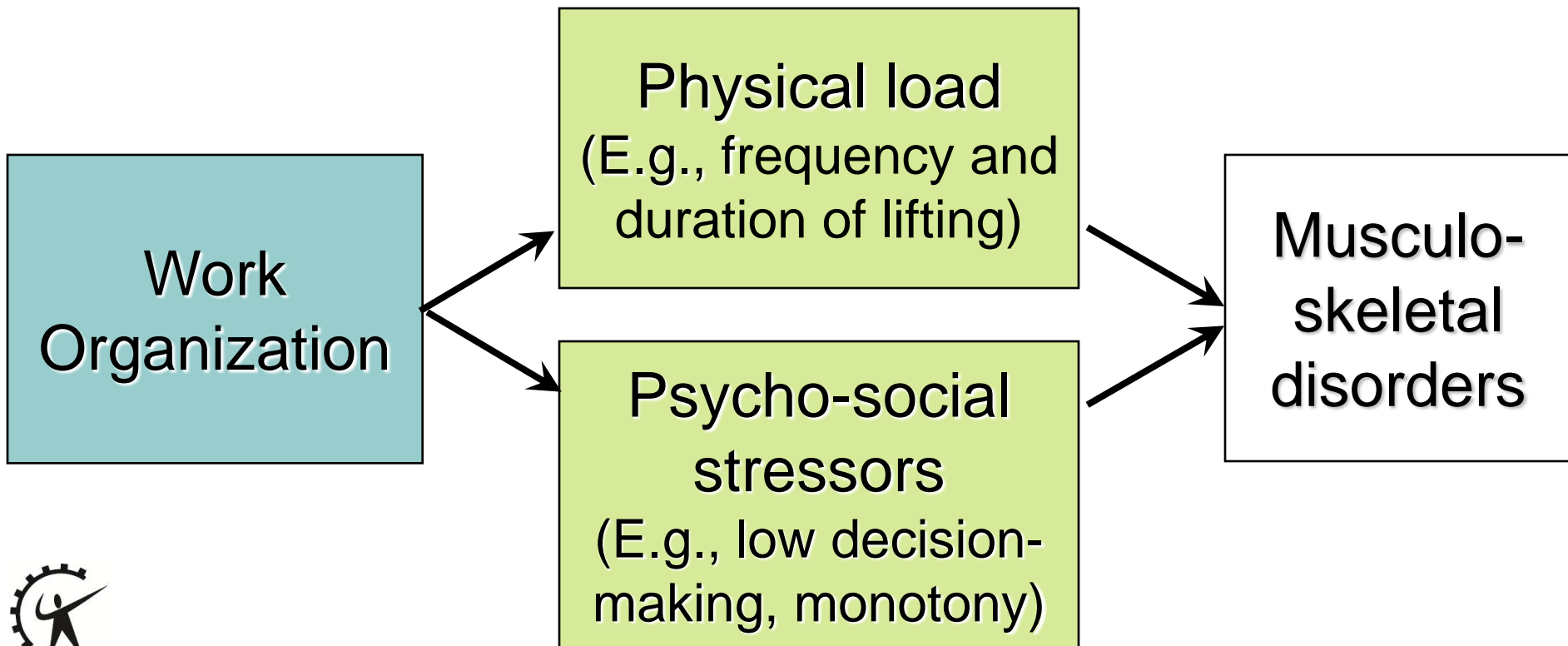


“Psychosocial” Stressors at Work

- ⚙️ Low decision latitude
 - Low skill utilization, monotonous work
- ⚙️ High job demands
 - Rapid work pace
 - Time pressure
 - Few rest break opportunities
- ⚙️ Low social support from coworkers and/or supervisor
 - Don't help to get the job done
 - Poor quality of supervision
- ⚙️ Low rewards, relative to the effort required (perceived fairness)



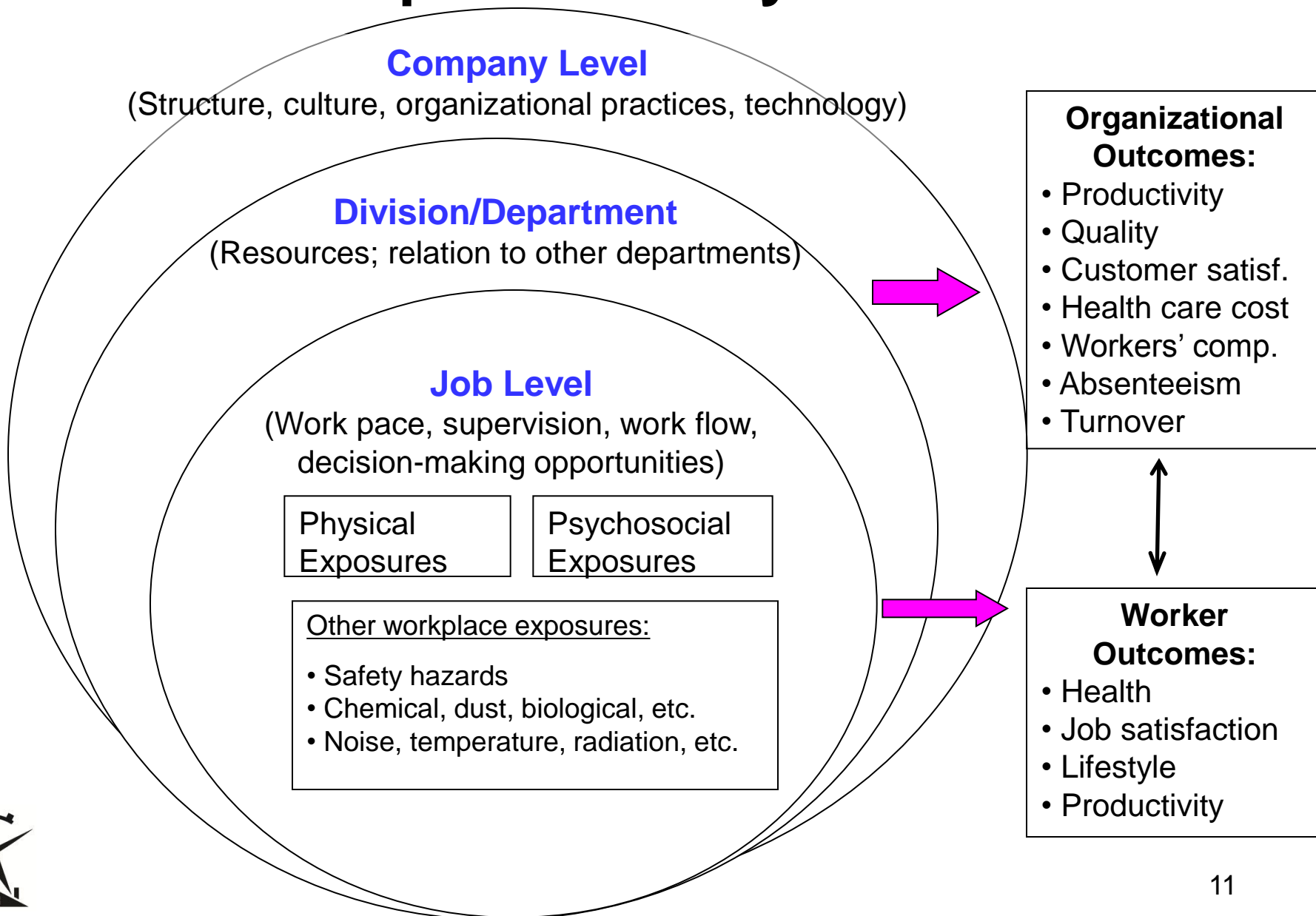
Work organization determines both physical and psychosocial features of work





Can we attribute MSD risk to “psychosocial” vs “physical” strain?



The Workplace as a System



Ergonomics (3)

-  'Macroergonomics' = harmonization (vertical interactions among the levels):
 - Job physical factors, information processing, psychosocial factors
 - Work organization (division of labor among jobs and workers, & between people and machines)
 - Organizational structure, policies, climate and culture
-  Evaluate and optimize user acceptability of technical solutions within the larger context

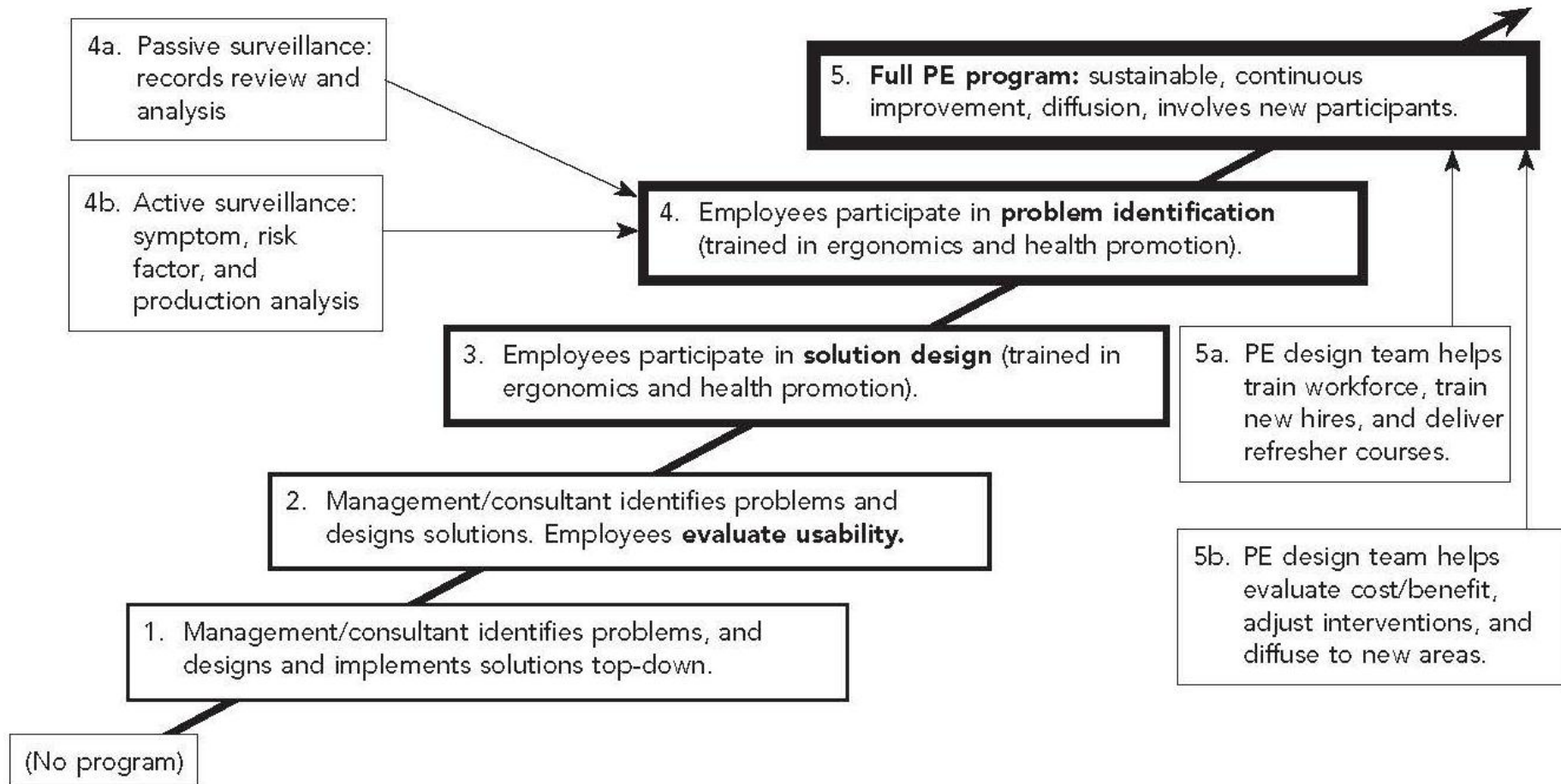


An effective ergonomics program addresses workplace organization as well as physical risk factors

- ☞ Increase employee autonomy and decision-making (“job control,” health self-efficacy)
- ☞ Encourage participation and creativity in problem-solving
- ☞ Structure healthier schedules
- ☞ Enhance interpersonal relationships at work
- ☞ Promote consistent and constructive feedback, fair recognition, and rewards for good work



Levels of participation



PE = participatory ergonomics

PExHP = use of participatory ergonomics to engage workers in participatory workplace health protection and health promotion efforts

[Henning et al., *Public Health Reports*, 2009]

Participatory decision-making: To identify a high-priority health/safety concern

(There are many ways to go about this)

1. Use existing data as a guide or starting point

- a) Employee health/work environment survey, focus group, HRA, OSHA logs, WC claim reports, etc.
- b) Team brainstorming exercise to generate a list of health/safety concerns.

2. Prioritize issues/concerns on the basis of:

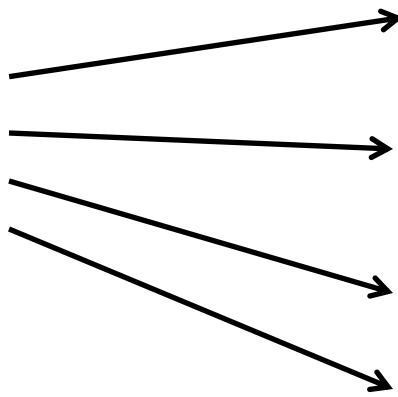
- Group voting procedure
- “Quick wins” during program start-up
- Likelihood of management support

(and other organization-specific factors)



Benefits of a (facilitated) participatory workplace process

Employee empowerment



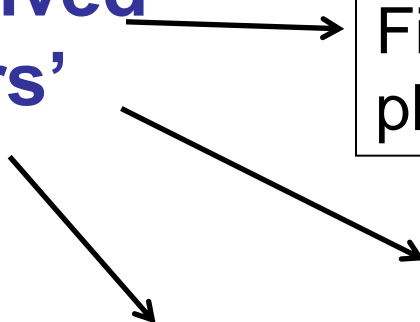
Increased decision latitude

Increased confidence to change unhealthy conditions

Increased program sustainability

Increased social support

Insights derived from workers' perspective



Find (other) root causes of physical & psychosocial stressors

Find (other) root causes of unhealthy behaviors

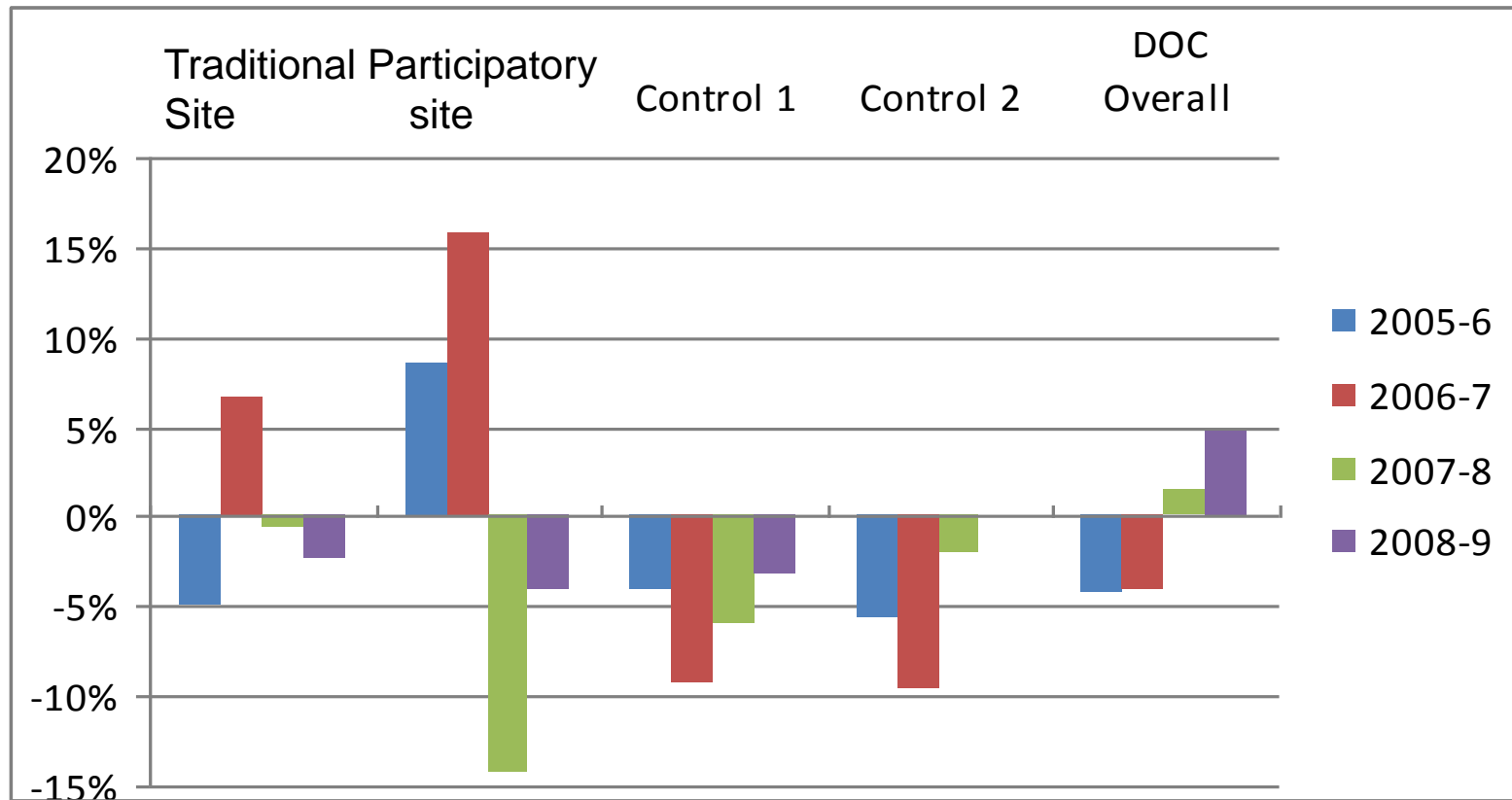
Reflect own experiences, needs and language of the intended program participants



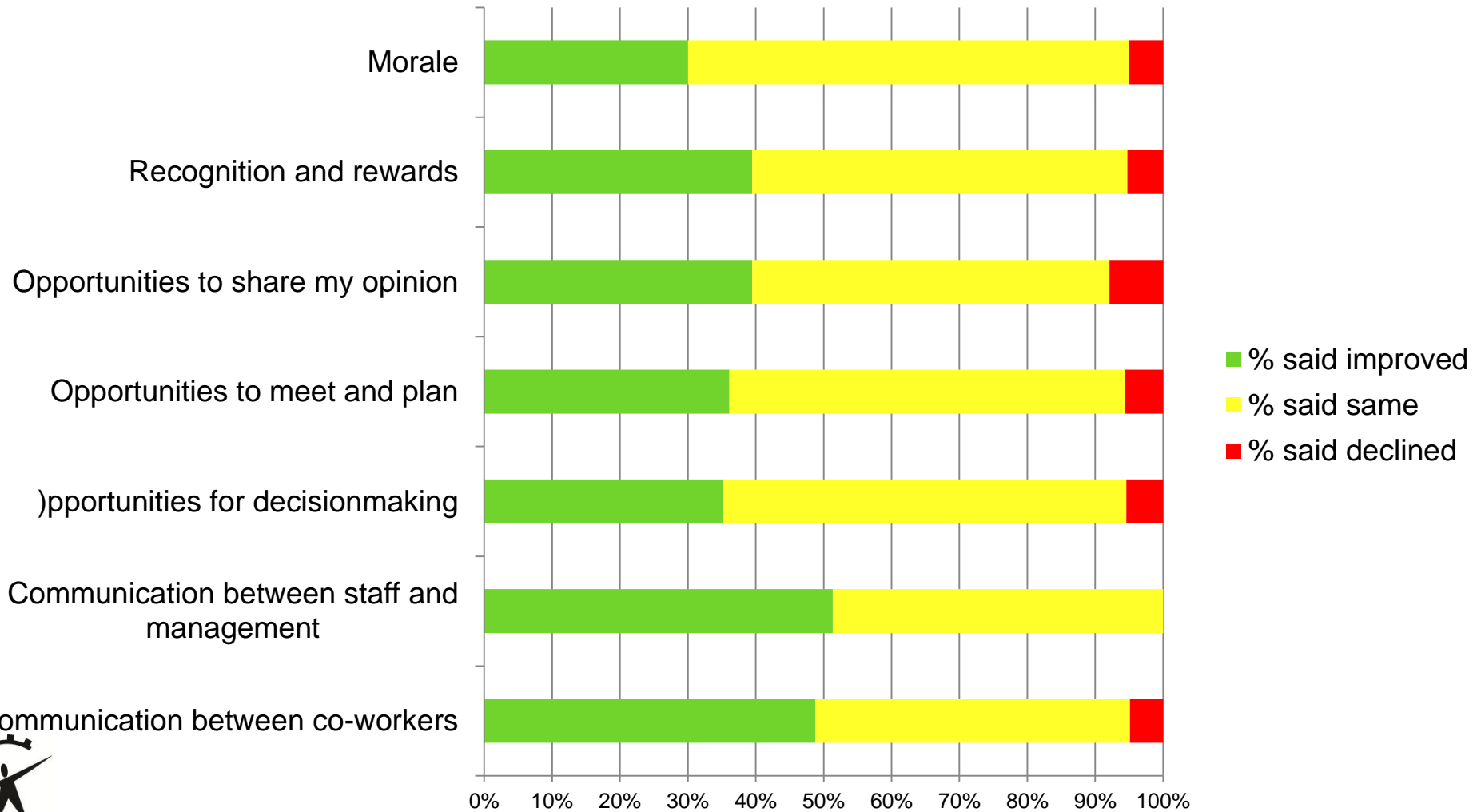
HITEC program effectiveness

*Weight loss (20 weeks): 4% in Participatory site,
vs 2% in Traditional site*

Annual Change in Sickness Absenteeism



Real estate maintenance workers: Perceived changes in company climate in the past year



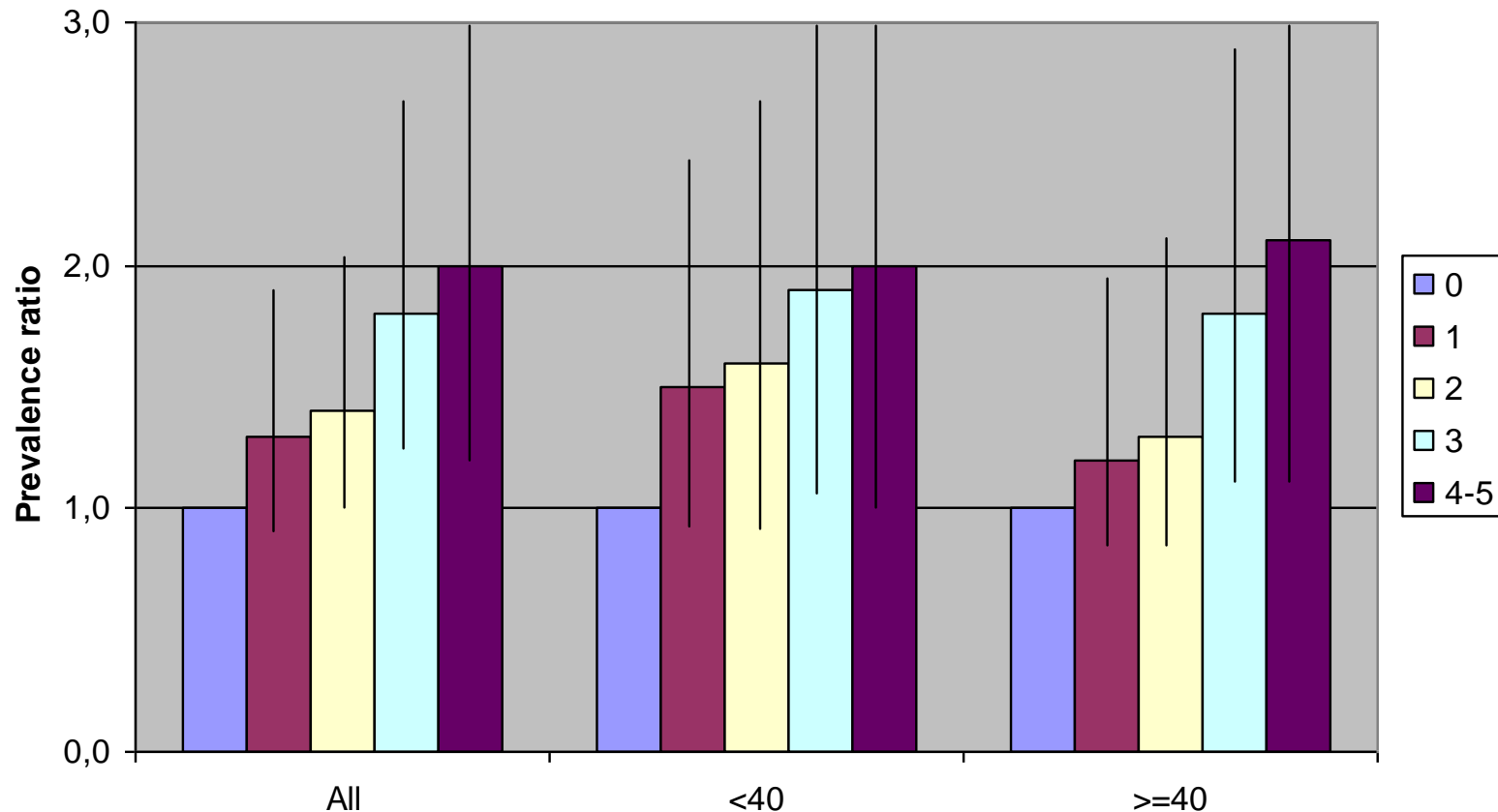
Why Integration?

- ⚙️ Traditional HP behavioral targets: Exercise, diet, smoking, obesity, etc.
- ⚙️ Risk factors for cardiovascular disease (as well as musculoskeletal disorders (MSDs), mental health problems, and other chronic diseases)
- ⚙️ These so-called “personal” or “lifestyle” risk factors **are also affected by psychosocial features of work, esp. decision latitude**



ProCare: Risk of physical inactivity, by number of occupational hazards* and age group

PR
and
95%
CI

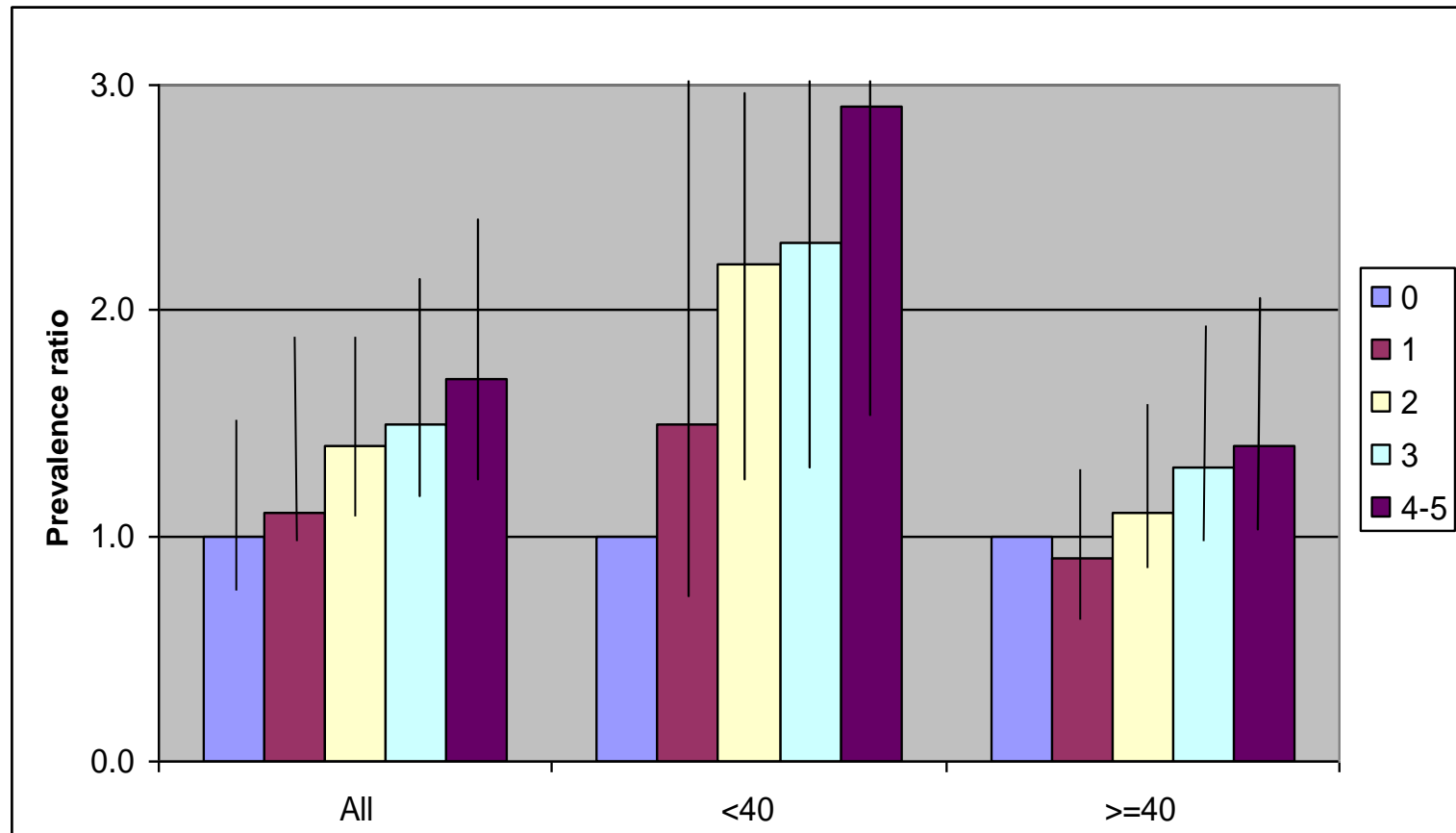


***Hazards:** low co-worker support, low decision latitude, night work, work-family imbalance, employer tolerates discrimination at workplace. All models adjusted for gender, education, region, & age (unless stratified).



ProCare: Risk of obesity, by number of occupational hazards* and age group

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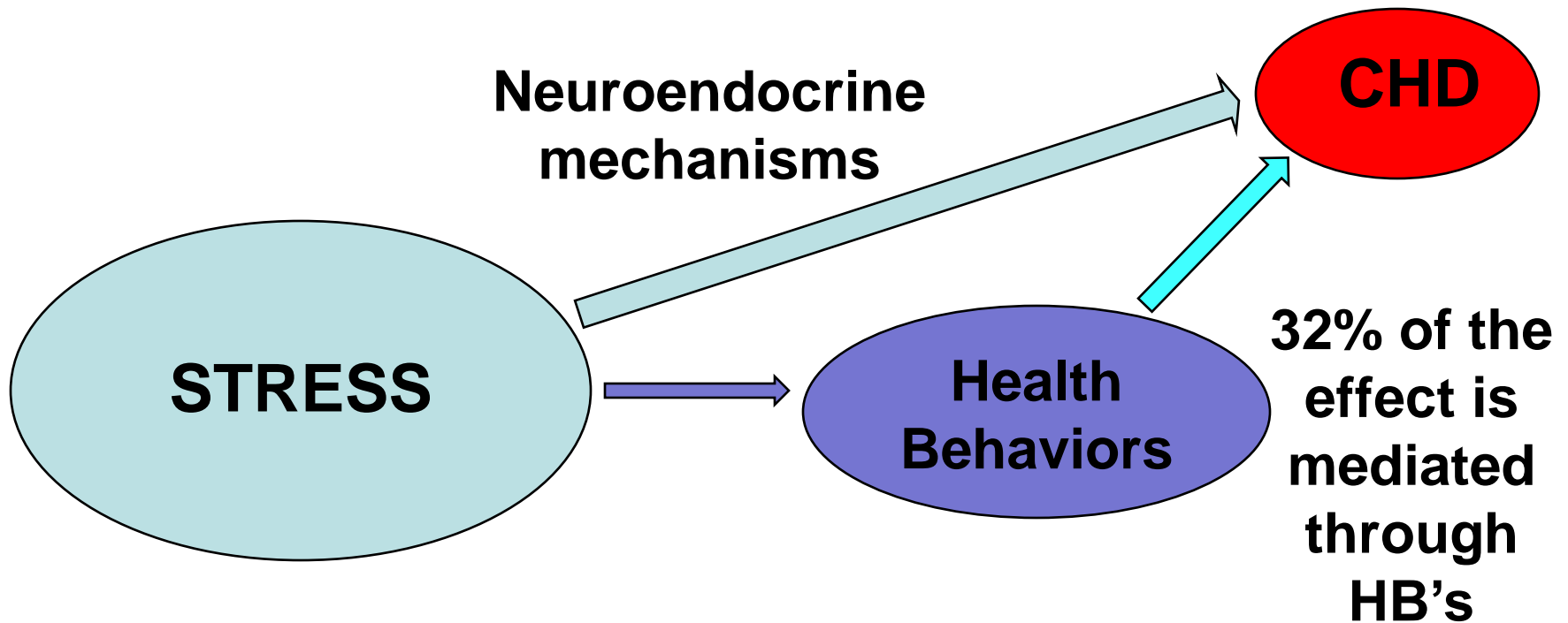


* **Hazards:** poor co-worker support, low decision latitude, night work, physical assault at work, lifting heavy loads.

All models adjusted for gender, education, region and age (unless stratified)






Job Strain, Health Behaviors, and CHD*



* [Chandola T, et al. *European Heart Journal*, 2008]



CPH-NEW's approach to integration addresses:

-  The (under-appreciated) importance of work organization & psychosocial strain for health behaviors
-  Attention to how a program is carried out, not only what health needs it addresses
-  Participatory ergonomics as a model for problem-solving



Implications for health disparities

- ❁ WHP programs often have uneven scope, with higher participation and effectiveness among higher-SES employees.
- ❁ Low-SES workers tend to have lower decision latitude, more physically strenuous jobs, and more exposure to safety and other workplace hazards.



Integrated OHS and HP Worksite Programs

- ❑ **Employee Involvement and Participation**
 - ❑ Greater buy-in from all levels
 - ❑ Better integration of programs with workplace culture, needs of employees in different subgroups
 - ❑ Avoid unforeseen obstacles
- ❑ **Sharing resources across departments and functions: cost-efficient, less duplication in program offering**
- ❑ **Common set of metrics can be used by all programs**
- ❑ **Reduced competition for senior management attention and scarce resources**
- ❑ **Health care costs decrease**
- ❑ **Reduces disability and sickness absence**
- ❑ **Improve productivity**
- ❑ **Affects employee recruitment/retention (employer of choice)?**





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