

# Work And Health – Impact of work on Productivity

Peter L. Schnall, MD, MPH

Week # 7      Hour # 2

University of California, Los Angeles  
Center for Social Epidemiology

May 15<sup>th</sup> 2007

# LECTURE GOAL:

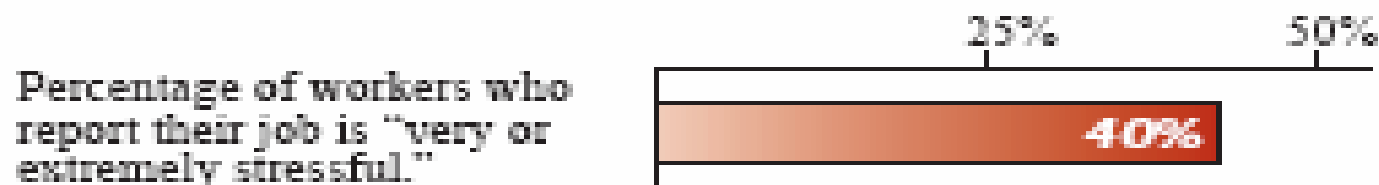
1. To examine the hypothesis that **work stressors are causal factors (e.g., job strain)** that negatively affect **PRODUCTIVITY,\* i.e., outcome variables**;
2. We will look at the relationship between work stressors, employee “stress responses” (intermediary variables such as anxiety and burnout) and productivity (outcome variables);
3. Examine the impact on employers; i.e., attitudes and responses to the injured or ill employee with sickness absenteeism re: returning to work with or without job accommodations.

# NIOSH report on Stress at Work

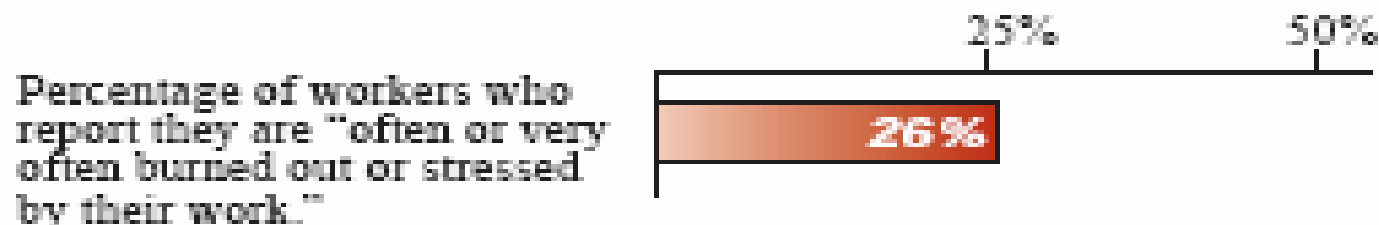
- 40% of workers reported their job was very or extremely stressful;
- 25% view their jobs as the number one stressor in their lives;
- Three fourths of employees believe that workers have more on-the-job stress than a generation ago;
- 29% of workers felt quite a bit or extremely stressed at work;
- 26 percent of workers said they were "often or very often burned out or stressed by their work";
- Job stress is more strongly associated with health complaints than financial or family problems.

## What Workers Say About Stress on the Job

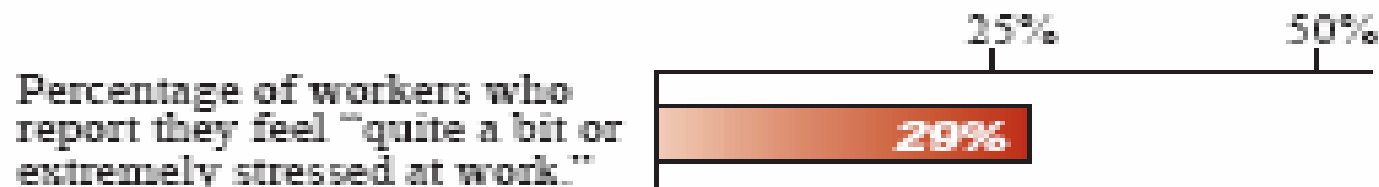
### Survey by Northwestern National Life



### Survey by the Families and Work Institute



### Survey by Yale University



# **The 2000 annual "Attitudes In The American Workplace VI"**

## **Gallup Poll** sponsored by the Marlin Company found that:

- **80% of workers feel stress on the job;**
- **Nearly 1/2 say they need help in learning how to manage stress;**
- **42% say their coworkers need such help;**
- **14% of respondents felt like striking a coworker in the past year, but didn't;**
- **25% have felt like screaming or shouting because of job stress;**
- **10% are concerned about an individual at work they fear could become violent;**
- **9% are aware of an assault or violent act in their workplace; and**
- **18% had experienced some sort of threat or verbal intimidation in the past year.**

# Productivity

**Productivity is the amount of output created (in terms of goods produced or services rendered) per unit input used. For instance, labor productivity is typically measured as output per worker or output per labor-hour.**

**We can examine “productivity” as its impact on the business economy (e.g., costs of workers’ compensation health insurance premiums and workers’ health care costs).**

# Measures of Productivity

Work stressors are associated with decreased employee productivity outcomes:

- Increased presenteeism, absenteeism, tardiness, and intentions by workers to quit their job.
- Decreased worker productivity outcomes negatively affect employee-management relations
- Decreased worker productivity threatens the economic soundness of a business organization.
- The costs of workers' compensation for work-related disease may provide an incentive to reduce workplace exposures to psychosocial stressors

\*Productivity: An outcome variable; the rate at which goods or services are produced; especially output per unit of labor.

# **Costs of WORKPLACE INJURIES AND DISABILITY**

- **Employee health and productivity losses as a result of work-related injury are estimated to be US dollars 1.2 trillion annually to US companies.**
- **In 2003 this was approximately 14.3% of the gross domestic product. Workers' compensation, medical care, and short and long-term disability are a part of these costs.**
- **Controlling or eliminating these costs is a problem for US employers.**
- **Work. 2003;21(3):211-20.**

For the individual worker, we hypothesize that:

**Work Stressors (e.g. Job Strain) → Health Problems**

- 1. Psychological**
- 2. Physical Injuries**
- 3. Medical Illnesses**

**Which in turn impact on productivity**

# Psychological Health Problems (outcomes)

1. SELF REPORTED DISTRESS
2. ANXIETY
3. BURNOUT
4. DEPRESSION
5. FATIGUE
6. CHRONIC PAIN

# Anxiety

- **An anxiety state consists of unpleasant feelings of tension, apprehension, nervousness, and worry, and activation of the autonomic nervous system.**
- **The physiological manifestations of anxiety generally include increased blood pressure; rapid heart rate (palpitations or tachycardia); sweating; dryness of mouth; nausea; vertigo; irregularities in breathing; muscle tension; and muscular-skeletal disturbances such as restlessness, tremors, and feelings of weakness (Spielberger and Rickman, 1990).**

# Patterning of Psychological Attributes and Distress by quadrants of Karasek's job strain model

*Psychological Job Demands*

**Low**

**High**

**High**  
*Job  
Decision  
Latitude*

**Low**

Lowest  
Trait Anxiety,  
Job Dissat  
Highest LOC

**Low Strain**

Highest  
Type A Behavior  
Job Involvement  
+ Attributional  
Style

**Active**

+ Trait Anxiety  
Highest Ext. LOC  
Lowest Type A

**Passive**

+ Job dissatisfaction

**High Strain**

# More Evidence for Work stressor related Anxiety <sup>(1)</sup>

1 D'Souza RM, Strazdins L, Lim LL, Broom DH, Rodgers B.

J Epidemiol Community Health. 2003 Nov;57(11):849-54. **Work and health in a contemporary society: demands, control, and insecurity.** National Centre for Epidemiology and Population Health, Australian National University, Canberra, Australia. [rennie.dsouza@anu.edu.au](mailto:rennie.dsouza@anu.edu.au)

- **OBJECTIVE:** To examine independent associations of job strain (high demands and low control) and job insecurity with mental and physical health outcomes.
- **MAIN OUTCOME MEASURES:** Depression, anxiety, physical, and self rated health (SRH)

## Evidence for anxiety (2)

**D'Souza RM, Strazdins L, Lim LL, Broom DH, Rodgers B.**

- **RESULTS:** Adverse job conditions were relatively prevalent as 23% of the sample reported high job strain, while 7.3% and 23% reported high and moderate job insecurity respectively.
- Associations between job conditions and health persisted after adjustment for gender, education, marital status, employment status, major life events, and negative affectivity (personality).
- When adjusted for job strain, high job insecurity was independently associated with a greater than threefold increase in odds for poor SRH, depression and anxiety (OR (95% confidence intervals) poor SRH: 3.72 (1.97 to 7.04) depression: 3.49 (1.90 to 6.41), anxiety: 3.29 (1.71 to 6.33)), and a twofold increase for physical health 2.19 (1.21 to 3.95).

## Evidence for Anxiety <sup>(3)</sup>

D'Souza RM, Strazdins L, Lim LL, Broom DH, Rodgers B.

- High job strain showed significant independent associations with depression: 2.54 (1.34 to 4.75) and anxiety: 3.15 (1.48 to 6.70).
- **AUTHORS CONCLUSION:**
  - In this relatively privileged socioeconomic group, insecure employment and high job strain showed independent, consistent, and strong associations with physical and mental health.
  - These adverse job conditions are on the increase, particularly insecure employment, and the influence of these two work conditions are an important focus for future public health research and their prevalence and impact should be examined in other occupations.

# Effect of occupational stress on mental health

Yu SF, Zhang R, Ma LQ, Gu GZ, Yang Y, Li KR.

Henan Institute of Occupational Medicine, Zhengzhou 450052, China.

Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi. 2003 Feb;21(1):16-9.  
[Article in Chinese]

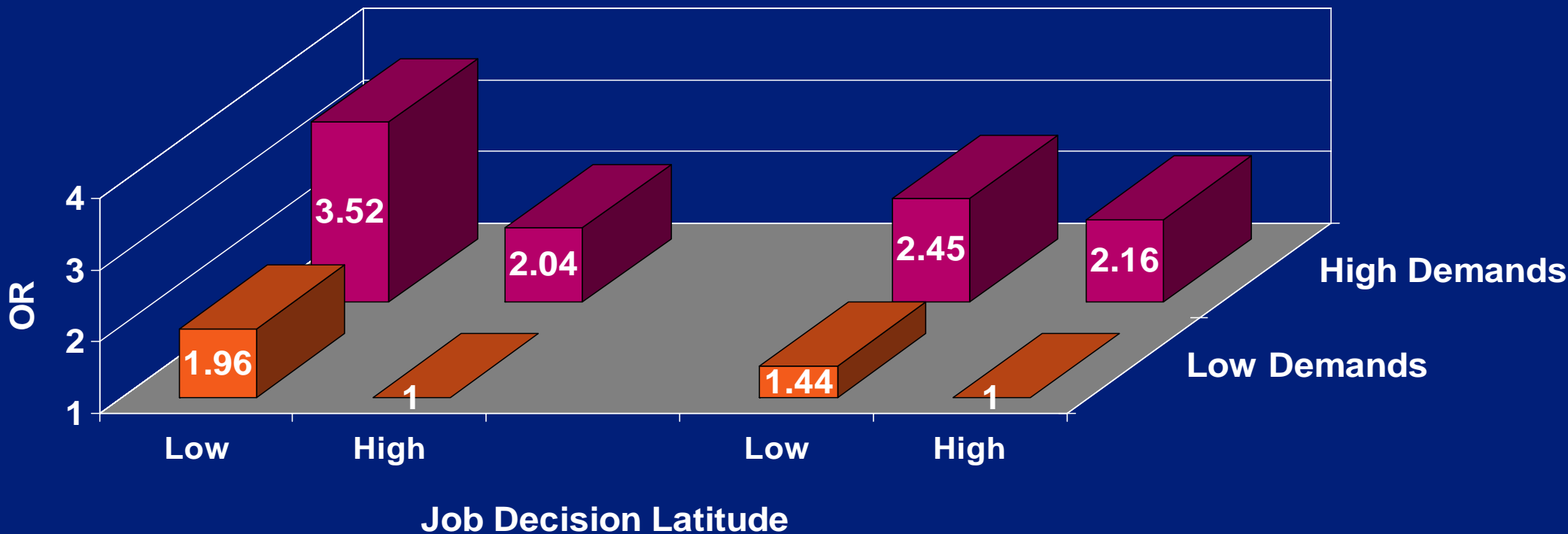
- **OBJECTIVE:** To study the effect of job psychological demands and job control on mental health and their interaction.
- **CONCLUSION:** Job time demands and job decision latitude have direct and interactive effects on psychosomatic health, the more time demands, the more psychological strains, the effect of job time demands is greater than that of job decision latitude.

# Burnout :How defined (Maslach)

The MBI (**Maslach Burnout Inventory**) surveys address three general scales:

- **Emotional exhaustion** measures feelings of being emotionally overextended and exhausted by one's work
- **Depersonalization** measures an unfeeling and impersonal response toward recipients of one's service, care treatment, or instruction
- **Personal accomplishment** measures feelings of competence and successful achievement in one's work

# High psychological distress (top 20% of PSI) among 2,889 Quebec white-collar workers, 1992-93



**Crude Association**

**Adjusted for Age, Gender, Employment Status, Occupation, Social Support, Cynicism, Hostility, Domestic Load, Past Year Stressful Life Events**

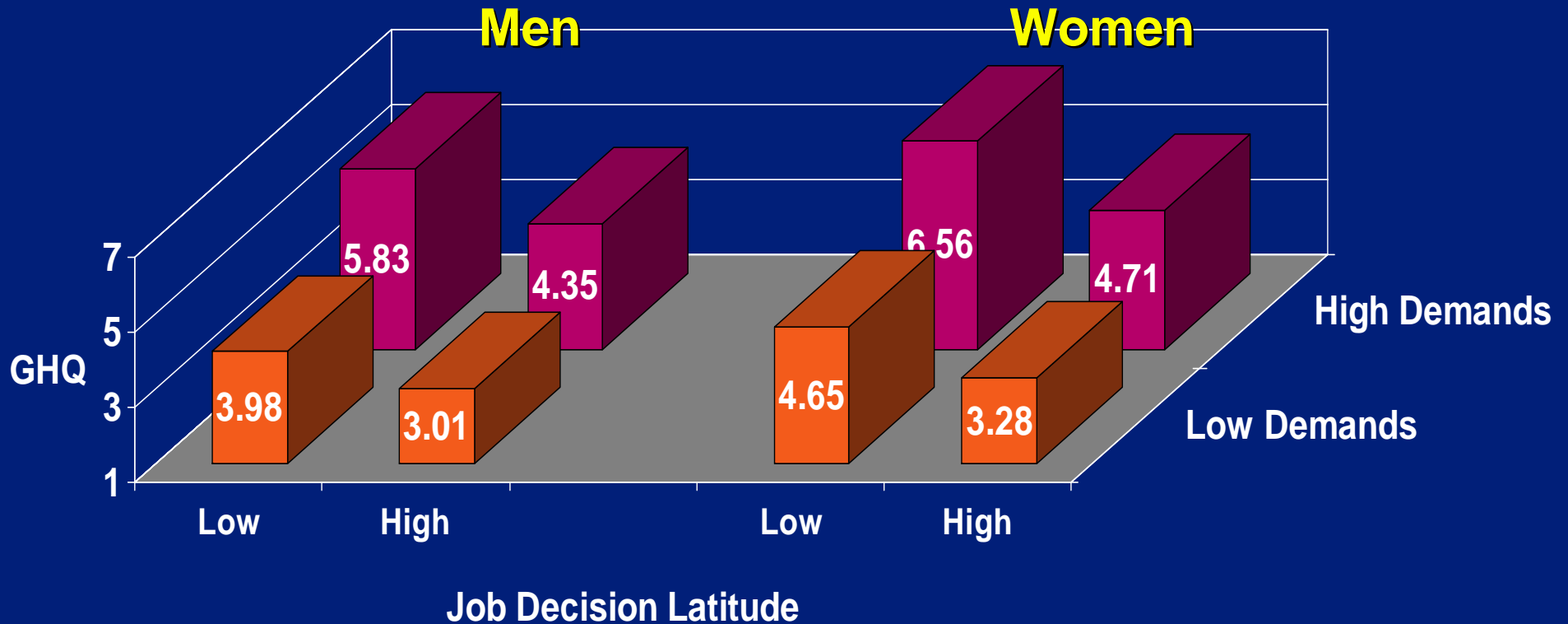
# 1999 review article: Van Der Doef & Maes

| • <u>Outcome</u>                         | <u>JDC Model</u> |               | <u>JDCS Model</u> |               | Total N of<br><u>Buffer</u> Studies |
|--|------------------|---------------|-------------------|---------------|-------------------------------------|
|  | <u>Strain</u>    | <u>Buffer</u> | <u>Strain</u>     | <u>Buffer</u> |                                     |
| • Psych well-being                       | 28/41            | 15/31         | 9/19              | 2/5           | 43                                  |
| • Job satisfaction                       | 18/30            | 10/23         | 8/14              | 2/6           | 31                                  |
| • Job “burnout”                          | 3/4              | 0/4           | 1/1               | 0/2           | 4                                   |
| • Job-related<br>Psych well-being        | 7/8              | 1/2           | 1/2               | 1/1           | 8                                   |
| • (ratio of supportive to total studies) |                  |               |                   |               |                                     |

Van Der Doef, M., & Maes, S. (1999). The job demand-control(-support) model and psychological well-being: a review of 20 years of empirical research. Work & Stress, 13(2), 87-114.

# [Whitehall Study]

Psychiatric disorder (30-item GHQ) among 10,314 British civil servants  
(Adjusted for age and employment grade)



Again, we see similar associations as in the Quebec sample – higher levels of symptoms for workers with high demands & low latitude.

# Evidence linking Work Stressors to Depression

- See article by Ahola et al.

# Depression Costs

- **The United States loses between \$30 billion and \$44 billion in direct medical, mortality, and productivity costs each year as a result of depression(2–4).**
- **Moreover, studies show that depression is related to work impairment (5), disability and lost work days (6–9), and reduced productivity on the job (10).**
  - Elinson, etal – Depression and the Ability to Work in

# Depression

- How measured?
- Numerous measures for depression exist including the Beck Depression Inventory (BDI), the Hamilton Depression Rating Scale (HAM-D), the Profile of Mood States (POMS) etc. , and simple ratings of depression made by an interviewer (Booth-Kewley and Friedman, 1987).

# Depression: Current treatment outcomes<sup>1</sup>

- Up to 70% of depressed patients respond ( $\geq 50\%$  decrease in HAM-D score) to treatment but fail to achieve remission from their emotional and physical symptoms<sup>1\*</sup>

## References:

1. O'Reardon JR, et al. *Psychiatr Ann.* 1998;28:633-640.

# Fatigue

- A recent study from China found that job time demands and decision latitude had interaction effects on physical complaints ( $R(2) = 0.24$ ), state-anxiety ( $R(2) = 0.26$ ), and daytime fatigue ( $R(2) = 0.28$ ) ( $P < 0.05$ ).

Zhonghua Lao Dong Wei Sheng Zhi Ye Bing Za Zhi. Effect of occupational stress on mental health 2003 Feb;21(1):16-9.

# Long work hours and Disability Retirement:

- Working 60+ hrs/wk → 2.75x greater risk of disability retirement among Finnish men, 1984-93

For the individual worker, we hypothesize that:

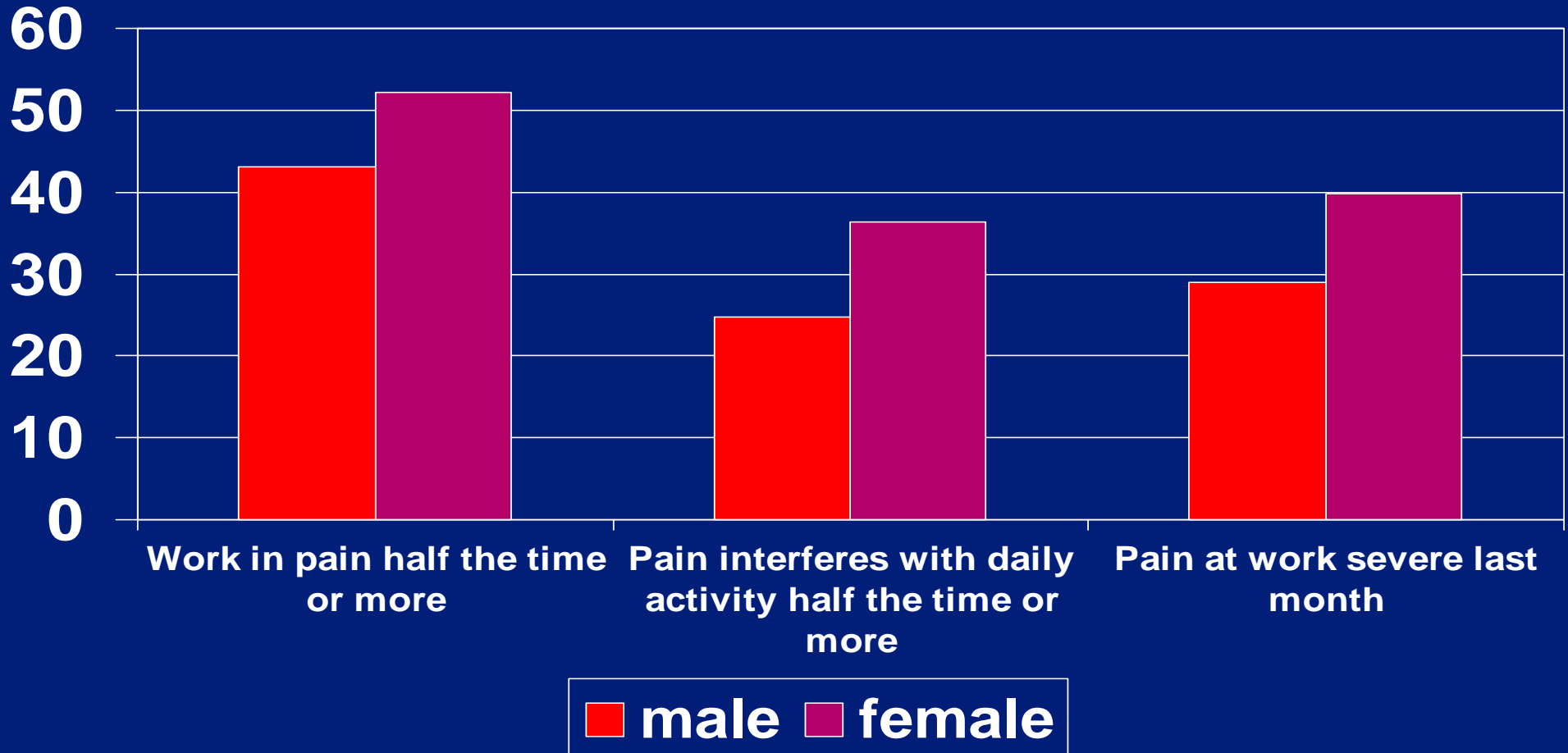
**Work Stressors (e.g. Job Strain → Health Problems including physical injuries and medical conditions**

- 1. Psychological Health Problems**
- 2. Physical Injuries**
- 3. Medical Illnesses**

# Physical Injuries

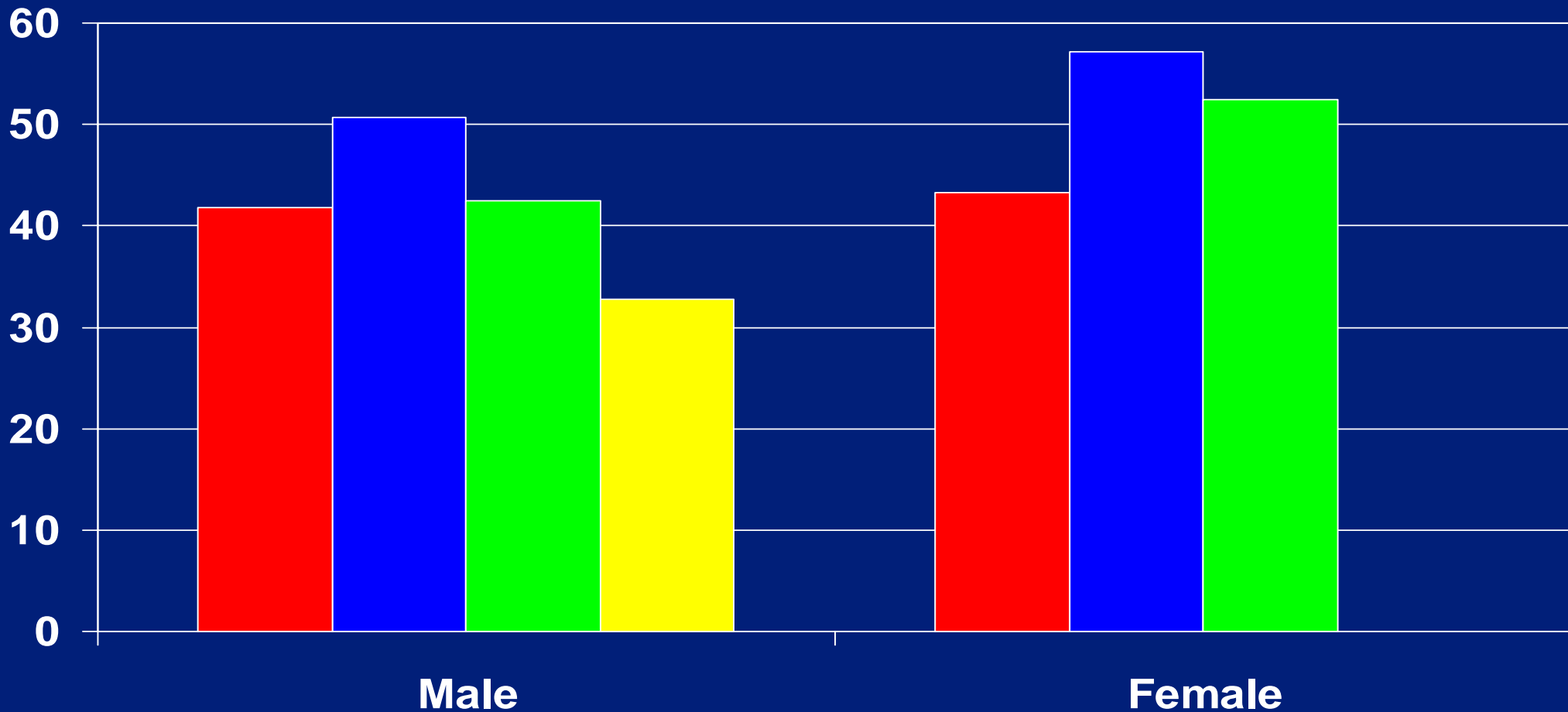
- **Neck and Back injuries**
- **WRMSD's**
- **Joint pain**

# Pain profile by sex (%)



# CAW STUDY 2003

## Work in pain half the time or more by sex and age (%)



■ <35 ■ 35-44 ■ 45-54 ■ 55-64

(n: male=818, female=191)

# Psychosocial Factors and Neck and Back Pain

- The main result of this study was that both physical work load and psychosocial factors were simultaneously and independently associated with back or neck pain <sup>\*</sup>.
- Psychosocial factors associated with back or neck pain included extended uninterrupted driving periods, frequency of job problems, high psychosocial demands, high job dissatisfaction, and low supervisory support.

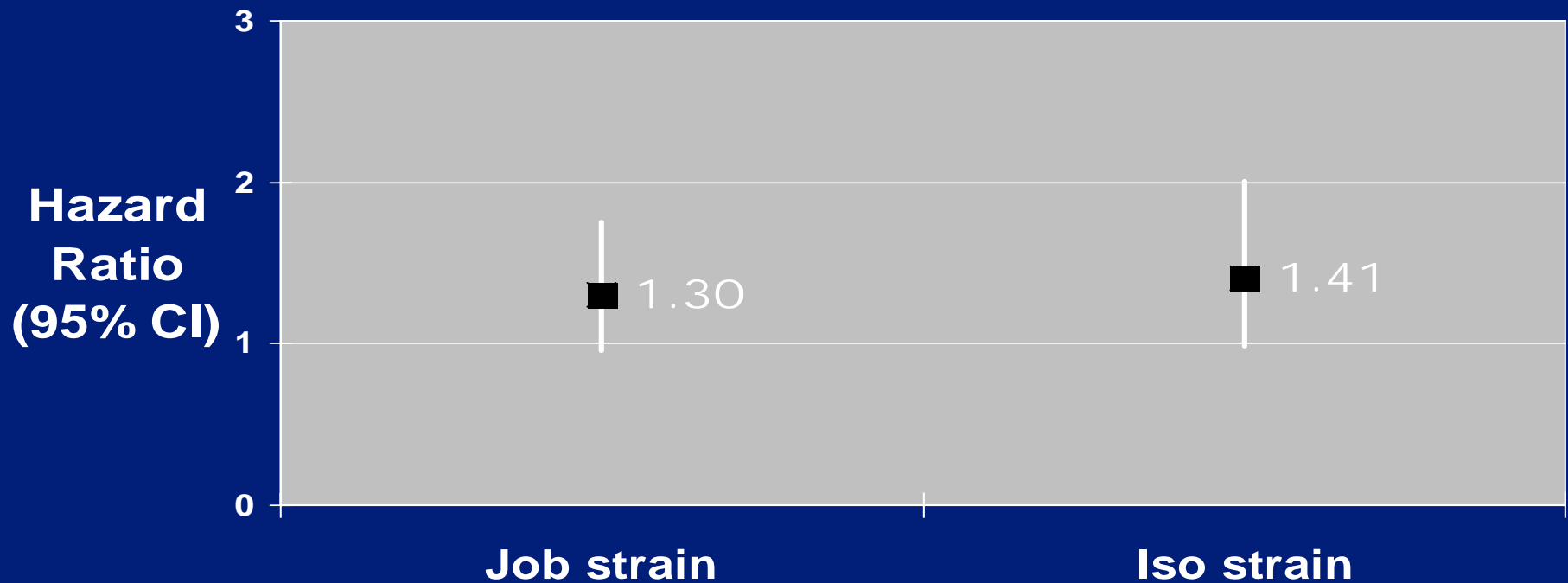
\* Krause N; Ragland DR; Greiner BA; Syme SL; Fisher JM. Psychosocial job factors associated with back and neck pain in public transit operators. Scand J Work Environ Health 1997 Jun;23(3):179-86.

# San Francisco Bus Drivers Cohort Study II (1993-2000)

- baseline exam & survey 1993-95, n=1503 (82% participation rate)  
7.5-year prospective follow-up
- Outcome: Incidence of first compensated spinal injury.  
Medical diagnosis and severity assessed by workers' compensation medical bill review files (ICD-9 codes)
- Control for confounding: age, sex, height, weight, pain at baseline, objective physical job demands:
  - driving years
  - weekly driving hours,
  - vehicle type (diesel bus, trolley bus, light rail, cable)
- Psychosocial risk factors: Job strain (high demands-low control); Iso strain (+ low social support) based on tertiles of exposure

# 7.5-Year Incidence of First Low Back Injury

San Francisco Bus Driver Study, 1993-2000, n=1221

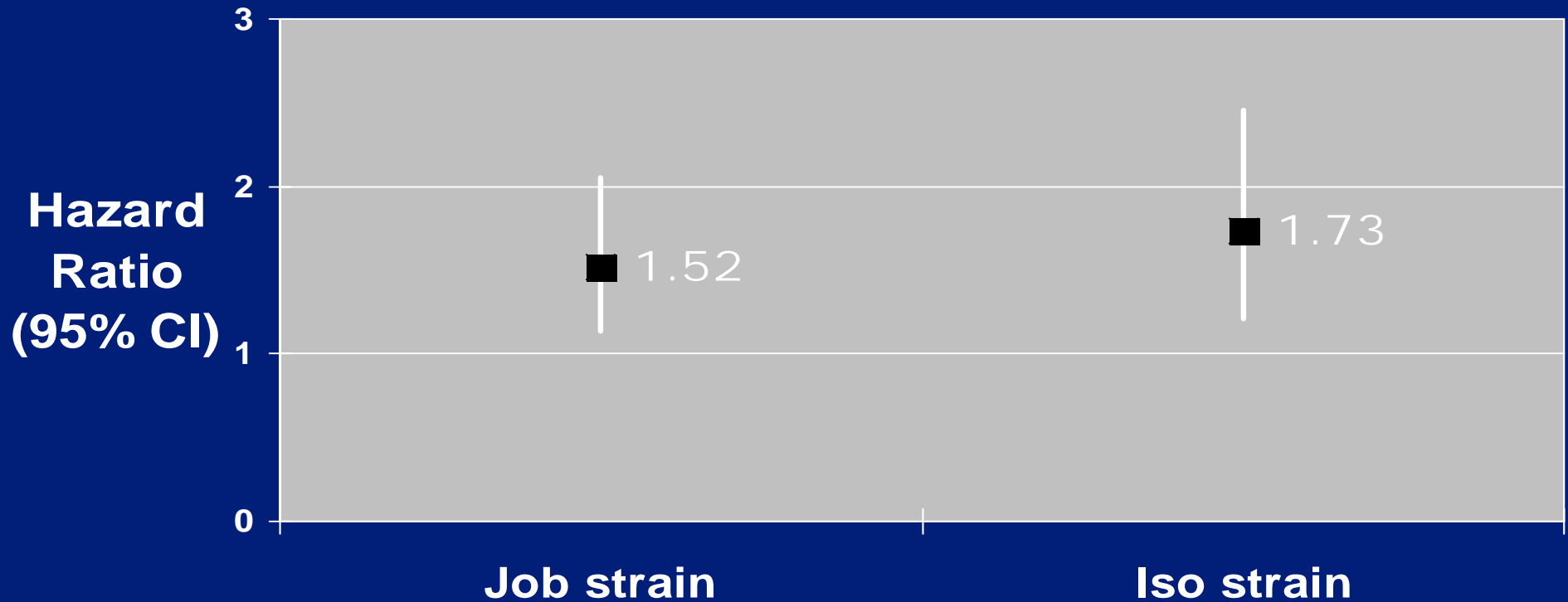


Hazard Ratios adjusted for demographic, anthropometric, physical job factors, and pain at baseline

Rugulies R, Krause N. Job strain, iso-strain, and the incidence of low back and neck injuries. A 7.5-year prospective study of San Francisco transit operators. *Social Science and Medicine* 2005;61:27-39.

# 7.5-Year Incidence of First Neck Injury

San Francisco Bus Driver Study, 1993-2000, n=1221



Hazard Ratios adjusted for demographic, anthropometric, physical job factors, and pain at baseline

Rugulies R, Krause N. Job strain, iso-strain, and the incidence of low back and neck injuries. A 7.5-year prospective study of San Francisco transit operators. *Social Science and Medicine* 2005;61:27-39.

# Neck and Back injuries

- Krause N, Ragland DR, Fisher JM, Syme SL. 1998. Psychosocial job factors, physical workload, and incidence of work-related spinal injuries: a 5-year prospective study of urban transit operators. *Spine* 23:2507-16.
- Krause N, Dasinger L, Neuhauser F. 1998. Modified work and return to work: a review of the literature. *Journal of Occupational Rehabilitation* 8(2):113-39.
- Krause N, Lynch JW, Kaplan GA, Cohen RD, Goldberg DE, Salonen JT. 1997. Predictors of disability retirement. *Scand J Work Environ Health* 23(6):403-13.

# Job Stressors And Upper Extremity Musculoskeletal Disorders

| Studies with:                                     | Null assoc |             | Positive assoc |             | Attributable fraction (%)* |
|---|------------|-------------|----------------|-------------|----------------------------|
|   | N          | Effect est. | N              | Effect est. |                            |
| High job demands                                  | 6          | 1.1-1.4     | 10             | 1.5-2.4     | 33-58                      |
| Low job control                                   | 10         | 1.1-1.7     | 6              | 1.6-2.8     | 37-64                      |
| (consistent for shoulder, not elbow, hand, wrist) |            |             |                |             |                            |
| Low social support                                | 7          | 1.2         | 7              | 1.4-2.1     | 28-52                      |
| Few rest break opportunities                      | 3          | 1.4-1.5     | 3              | 1.5-3.3     | 33-70                      |

\*Only some studies included in estimate

14 of 32 studies controlled for physical job demands (but did not assess interaction)  
MSDs common even in low exposed, thus high RR not expected; majority x-sectional

For the individual worker, we hypothesize that:

**Work Stressors (e.g. Job Strain → Health Problems including physical injuries and medical conditions**

- 1. Psychological Health Problems**
- 2. Physical Injuries**
- 3. Medical Illnesses**

# Medical Illnesses

- Hypertension
- CVD
- Stroke
- Poor Health
- Immune Suppression

# Nurses Health Study

- The negative affects of work are particularly acute for employees in high-strain jobs with little control over their workdays.
- A study of 21,000 nurses in high-demand, low-control jobs found that over a four-year period their health declined more than would be expected if they were smokers or led sedentary lives.
- After adjusting for age, body mass, smoking, exercise, chronic disease, education, isolation, marital status and virtually every other conceivable factor, the group still ranked considerably lower in physical functioning, vitality and mental health than did those in medium- and low-strain jobs.
- In other words, independent of what employees did individually, the organizational structure of their workplace affected their health.

# PRESENTEEISM

**“Absenteeism affects productivity; however, even when employees are physically present at their jobs, they may experience decreased productivity and below-normal work quality--- a concept known as decreased *presenteeism*.”**

- **Koopman et al., “Stanford Presenteeism Scale: Health Status and Employee Productivity” JOEM 2002; 44:14-20**

# PRESENTEEISM

- **“Presenteeism is the health-related productivity loss while at paid work. In the literature Presenteeism is often referred to as LPT or LWPT (lost (work) productive time)**
- **Presenteeism may include:**
  - **1) time not on task (e.g., in the workplace, but not working);**
  - **2) decreased quality of work (e.g., increased injury rates, product waste, product defects);**
  - **3) decreased quantity of work;**
  - **4) unsatisfactory employee interpersonal factors (e.g., personality disorders); and**
  - **5) unsatisfactory work culture.**
- **Loeppke et al, “Health-Related Workplace Productivity Measurement: General and Migraine-Specific Recommendation from the ACOEM Expert Panel,” JOEM 2003; 45(4): 349-359**

# PRESENTEEISM

- **“...However, absenteeism has generally been the only aspect of work impairment included...because absenteeism is more easily measured than other aspects of work performance. This neglect of other workplace costs of illness has led to an underestimation of the indirect costs of illness and to a skewing of focus away from conditions associated with low absenteeism but high rates of impairment while at work. The latter is referred to...as presenteeism...”**
- **Wang et al., “Chronic Medical Conditions and Work Performance in the Health and Work Performance Questionnaire Calibration Surveys,” JOEM 2003; 45: 1303-1311**

# Presenteeism - Findings

**Some data suggest that presenteeism is a larger productivity drain than either absenteeism or short-term disability. Further, presenteeism costs are compounded, some health experts say, because employees who work when ill generally cost more in the long run from increased health, mental health, and short-term disability utilization.**

# An alternative view

**The Worker perspective – often don't feel well and yet they come to work**

**1) have a commitment to the job including co-workers and company**

**2) can't afford to take sick days or go on disability**

**For example, the average Wal-Mart hourly pay is \$9.26  
(men make 6% more on average than women )**

**3) Afraid to lose job (job insecurity)**

**As a consequence, workers often work in pain or when ill.**

# Presenteeism - Costs

- A new study shows that productive time lost due to common pain conditions such as headaches, back pain, and arthritis costs U.S. employers more than \$61 billion dollars per year, and **most of that lost time is caused by impaired performance at work** rather than work absence.
- "Pain is common and treatable condition that results in a significant but largely invisible cost to employers," says researcher Walter Stewart, PhD, MPH, director of the Center for Health Research and Rural Advocacy at Geisinger Health System in Danville, Penn.
- Stewart, Walter *The Journal of the American Medical Association*, Nov. 12, 2003

# Sickness Absence - Definition

- Short term – episodes of 4-21 days
- Long term – episodes > 21 days

# Sickness Absence – Study by Vahtera and colleagues

- **STUDY OBJECTIVE:** To investigate the impact of changes in psychosocial work environment on subsequent sickness absence
  
- **Effect of change in the psychosocial work environment on sickness absence: a seven year follow up of initially healthy employees.**  
Vahtera J, et al. J. Epidemiol Community Health. 2000 Jul;54(7):484-93.

# Sickness Absence – Vahtera et al

**MAIN RESULTS:** After adjustment for the pre-recession levels, the changes in the job characteristics of the workers during the recession predicted their subsequent sick leaves.

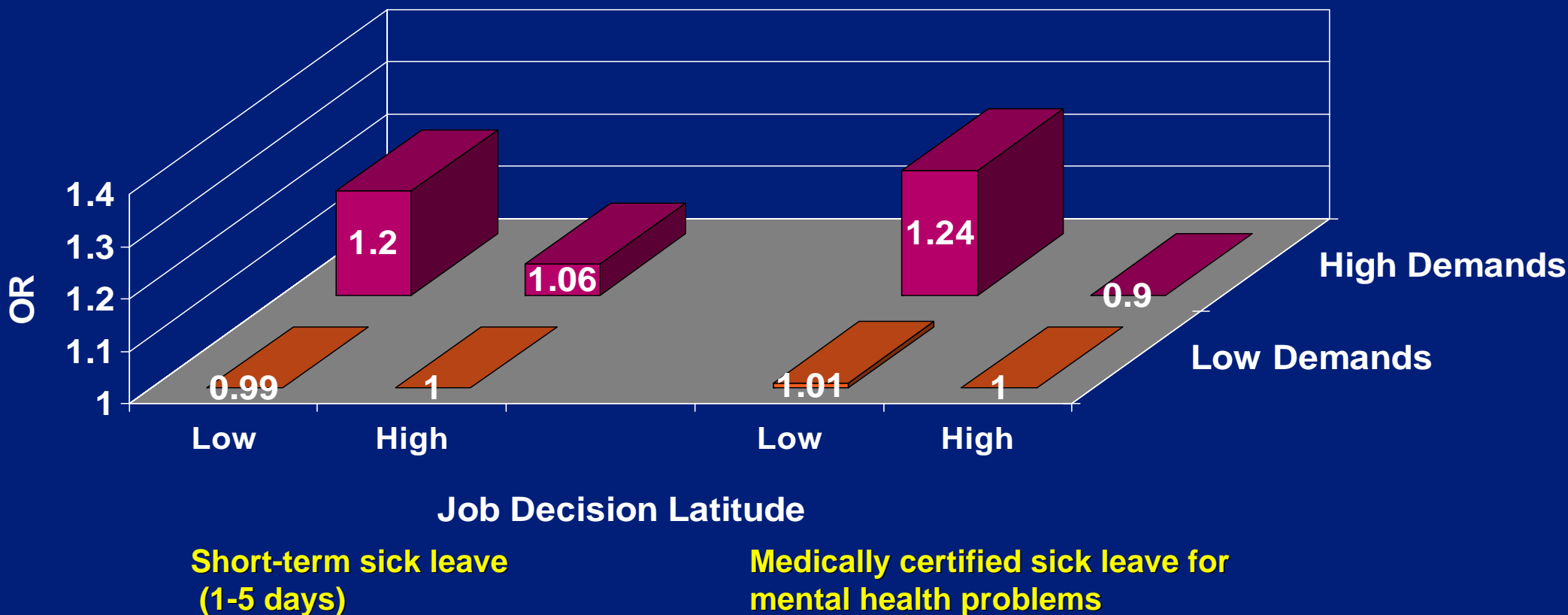
Lowered job control caused a 1.30 (95% CI = 1.19, 1.41) times higher risk of sick leave than an increase in job control. The corresponding figures in relation to decreased social support and increased job demands were 1.30 (95% CI = 1.20, 1.41) and 1.10 (95% CI = 1.03, 1.17), respectively.

In some cases there was an interaction with socioeconomic status, changes in the job characteristics being stronger predictors of sick leaves for employees with a high income than for the others.

# Vahtera et al. cont:

- The highest risks of sick leave (ranging from 1.40 to 1.90) were associated with combined effects related to poor levels of and negative changes in job control, job demands and social support.
- **CONCLUSION:** Negative changes in psychosocial work environment have adverse effects on the health of employees. Those working in an unfavorable psychosocial environment before changes are at greatest risk.

# Job Strain and Sickness Absence: 20 month follow-up among 1,793 Quebec nurses



Bourbonnais, R & Mondor, M AJIM 39:194-202 (2001)<sup>54</sup>

# The Impact of Psychosocial Factors On Workplace Productivity

A recent study by Andrea et al 2002 BMJ found that job characteristics such as lower levels of decision latitude and the presence on one long term disease were the strongest predictors for sickness absences exceeding one month duration.

# Absenteeism

## (unexcused missed days from work)

- Absenteeism is traditionally defined as a habitual pattern of absence from a duty or obligation.
- However, most workplaces classify any missed day from work which is unexcused as “absenteeism”

## **Correlates of employees' perceptions of a healthy work environment.**

Lowe GS, Schellenberg G, Shannon HS.

- **PURPOSE:** This study analyzed correlates of workers' perceptions of the extent to which their work environment is healthy and how these perceptions influence job satisfaction, employee commitment, workplace morale, absenteeism, and intent to quit.
- **MEASURES:** The dependent variable was the response to the item, "The work environment is healthy" (5-point strongly agree-strongly disagree Likert scale). Perceptions of a healthy work environment were related to job satisfaction, commitment, morale (measured on a 5-point scale), number of self-reported absenteeism days in the past 12 months, and whether or not the respondent had looked for a job with another employer in the past 12 months.

### 3. WORKPLACE ABSENTEEISM (2)

Am J Health Promot. 2003 Jul-Aug;17(6):390-9.

- **RESULTS:** The strongest correlate of a healthy work environment was a scale of good communication and social support (beta = .27). The next strongest was a job demands scale (beta = -.15.) Employees in self-rated healthier work environments had significantly ( $p < 0.01$ ) higher job satisfaction, commitment and morale, and lower absenteeism and intent to quit.
- **CONCLUSIONS:** The study supports a comprehensive model of workplace health that targets working conditions, work relationships, and workplace organization for health promotion interventions.

# Disability

- A disability is a condition or function judged to be significantly impaired relative to the usual standard of an individual or their group. The term is often used to refer to individual functioning, including physical impairment, sensory impairment, cognitive impairment, intellectual impairment or mental health issue.

# Predictors of disability retirement

- Disability retirement may increase as the work force ages, but there is little information on factors associated with retirement because of disability.
- First prospective population-based study of predictors of disability retirement including information on workplace, socioeconomic, behavioral, and health-related factors.

- **RESULTS: Various job characteristics predicted disability retirement.**
- **Heavy work, work in uncomfortable positions, long workhours, noise at work, physical job strain, musculoskeletal strain, repetitive or continuous muscle strain, mental job strain, and job dissatisfaction were all significantly associated with the incidence of disability retirement.**
- **The ability to communicate with fellow workers and social support from supervisors tended to reduce the risk of disability retirement.**

# Overtime and Disability Retirement:

- **Working 60+ hrs/wk →**
  - **2.75x greater risk of disability retirement among Finnish men, 1984-93**

# For the individual worker, we hypothesize that:

## Health Problems → Decreased Productivity

4. Increase in Disability Leaves of Absence
5. Increase in Job Turnover Rates
6. Increase in Workers' Comp Health Costs

## **Views of Laypersons on the Role Employers Play in Return to Work When Sick-Listed**

**Cecilia Nordqvist,<sup>1</sup> Christina Holmqvist,<sup>1</sup> and Kristina Alexanderson<sup>1,2</sup>**

*Journal of Occupational Rehabilitation, Vol. 13, No. 1, March 2003 (© 2003)*

---

*Sickness absenteeism is an increasing public health problem, but few studies have examined the views of laypersons regarding factors that promote return to work. The present investigation concerns the opinions of such individuals on the role employers play in this context. Data from five focus-group interviews of laypersons with experience of long-term sickness absence were subjected to grounded theory analysis. When asked about factors that hinder or promote return to work, the laypersons spontaneously emphasized the importance of the employer. Specifically, they stressed the need for a structured back-to-work program at each workplace, which should include contacting absent employees and informing fellow workers of possible changes in task assignments upon return of the absent person. Reported hindering factors included lack of such information, leading to envy and harassment. Respondents also asserted the importance of work supervisors in creating a positive emotional atmosphere.*

---

**KEY WORDS:** return to work; sick leave; lay perspective; employer; back pain; rehabilitation.

# The Demand-Control-Support model as a predictor of return to work

- The present study investigated work-related determinants of return to work.
- The strain hypothesis of the Demand-Control-Support model postulates a relation between job demands, job control and support at work on the one hand, and the etiology of health complaints on the other hand.

# The Demand-Control-Support model as a predictor of return to work -2

- Hypoth #1: The Strain Hypothesis:
  - The combination of high job demands, low control and low support predicts an adverse health state. [**High demands are hypothesized to obstruct return to work.**]
- Hypoth #2: The Learning Hypothesis:
  - The combination of high job demands, high control and high support predicts high work motivation and learning opportunities. [**High control and high support are hypothesized to have a positive effect on return to work.**]

# The Demand-Control-Support model as a predictor of return to work -3

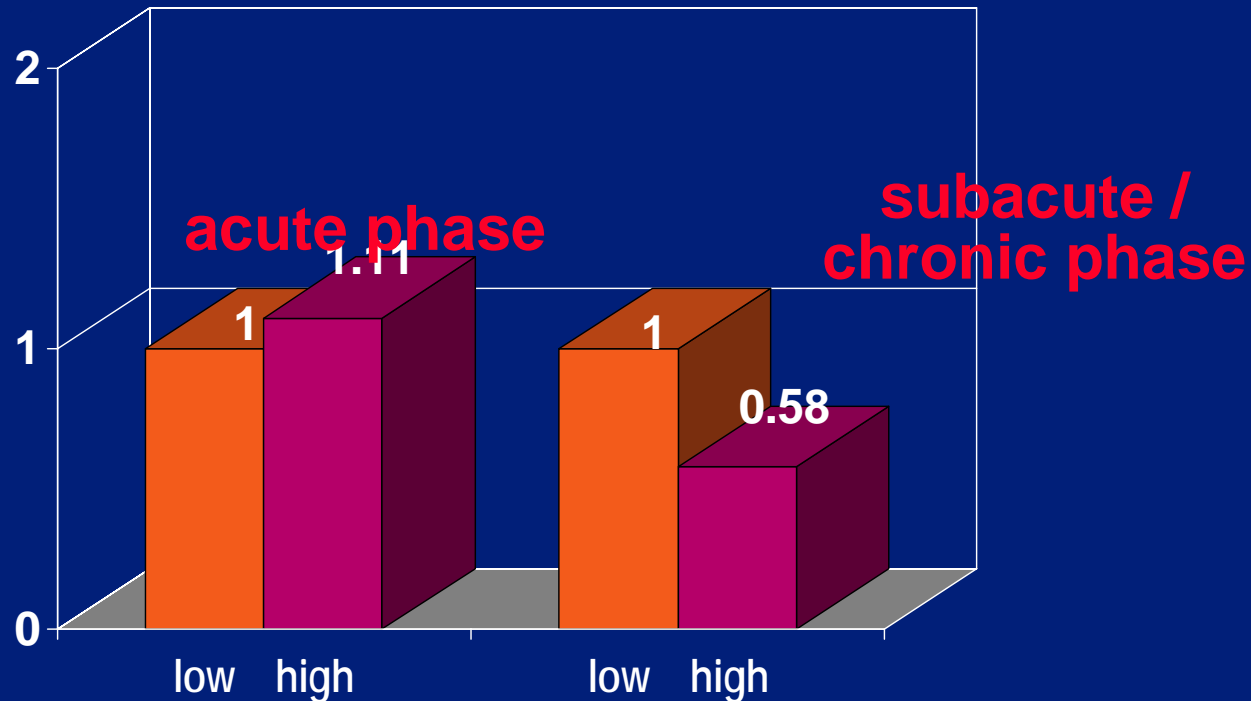
- This hypothesis was tested in a population of employees who were sick-listed for 6-8 weeks.
- Return to work (RTW) was determined 4 months after the onset of the sick leave.
- RTW is operationalized by the categories (i) not working; (ii) return to work with adjustments; and (iii) full return to work
  - Janssen N, van den Heuvel WP, Beurskens AJ, Nijhuis FJ, Schroer CA, van Eijk JT. *Int J Rehabil Res.* 2003 Mar;26(1):1-9.

# The Demand-Control-Support model as a predictor of return to work: Findings

- **High job demands** were the **least predictive** of full return to work.
- The likelihood of employees with high job demands returning to work with **adjustments** was higher than the likelihood of them not working.
- **Therefore, job demands might also work as a pressure to return to work**
- **High skill discretion in combination with high job demands** predicts working with adjustments in comparison with not working.
- **High supervisor support** was the **most predictive** of return to work without adjustments, and the least predictive of not working.

# Relative return-to-work (RTW) rates

3 year cohort (1994-1996) of 721 LBP California workers compensation claimants



## Job Strain

adjusted for age, sex, injury severity, previous injury, physical workload, social support at work, job seniority and employer size

Krause N, Dasinger LK, Deegan LJ, Rudolph L, Brand RJ. Psychosocial job factors and return-to-work after compensated low back injury: a disability phase-specific analysis. Am J Ind Med 2001;40(4):374-92.

# NIOSH DEFINITIONS

## ***What are the Causes of Job Stress?***

Nearly everyone agrees that job stress results from the interaction of the worker and the conditions of work. Views differ, however, on the importance of *worker characteristics* versus *working conditions* as the primary cause of job stress. These differing viewpoints are important because they suggest different ways to prevent stress at work.

According to one school of thought, differences in individual characteristics such as personality and coping style are most important in predicting whether certain job conditions will result in stress—in other words, what is stressful for one person may not be a problem for someone else. This viewpoint leads to prevention strategies that focus on workers and ways to help them cope with demanding job conditions.

Although the importance of individual differences cannot be ignored, scientific evidence suggests that certain working conditions are stressful to most people. The excessive workload demands and conflicting expectations described in David's and Theresa's stories are good examples. Such evidence argues for a greater emphasis on working conditions as the key source of job stress, and for job redesign as a primary prevention strategy.

1. **“STRESS”** refers to a **response** of the organism to various stimuli; i.e.,  
**A STRESS RESPONSE**

- *Different stimuli may produce **different responses** in different people.*
- *Stress responses may be **psychological** as well as **physiological**.*
- *Sometimes there can be a **physiological** response to a **stressor** **without** a concomitant **conscious** recognition of an **emotional** response.*
- *Many of the key demands on the individual are **invisible***

**A “STRESSOR” refers to a specific causal exposure that produces the “stress response.”**

- 1) **Physicochemical stressor** - external environment represented by "nature."
- 2) **Social stressor** - the "social environment;" e.g., **work stress, job stress** (specifically **job strain**)
- 3) **Biological stressor** - the internal environment.
- 4) **Mental stressor** - psychological condition such as pleasantness and unpleasantness.

# A model of job strain and health outcomes

