MSB, hvad er det?
Forebyggelse og rehabilitering

Professor Ole Steen Mortensen

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Plan for undervisningen

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- **Præsentation**
- **Arbejdsmedicin**
- **Muskelskelet besvær**
- **Psykosociale faktorer**
- **Fysisk aktivitet og arbejde**
- **Konklusion**

Arbejdsmedicin per definition

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”Læger uddannet inden for specialet "arbejdsmedicin" har som arbejdsfelt samspillet mellem faktorer i arbejdsmiljøet og det ydre miljø på den ene side og sundhed og sygdom hos enkeltpersoner og grupper af personer på den anden. Faget omfatter både en klinisk og en samfundsmedicinsk del.

Arbejdsmedicineren foretager udredning og diagnosticering af sygdom, vurderer om sygdommene har sammenhæng med arbejdsmiljøforhold, **iværksætter mulige forebyggende foranstaltninger og medvirker til en afklaring af patientens fremtidige muligheder for at klare sig på arbejdsmarkedet”.**

WWW.DASAMNET.DK

Hvad er muskel-skeletbesvær?

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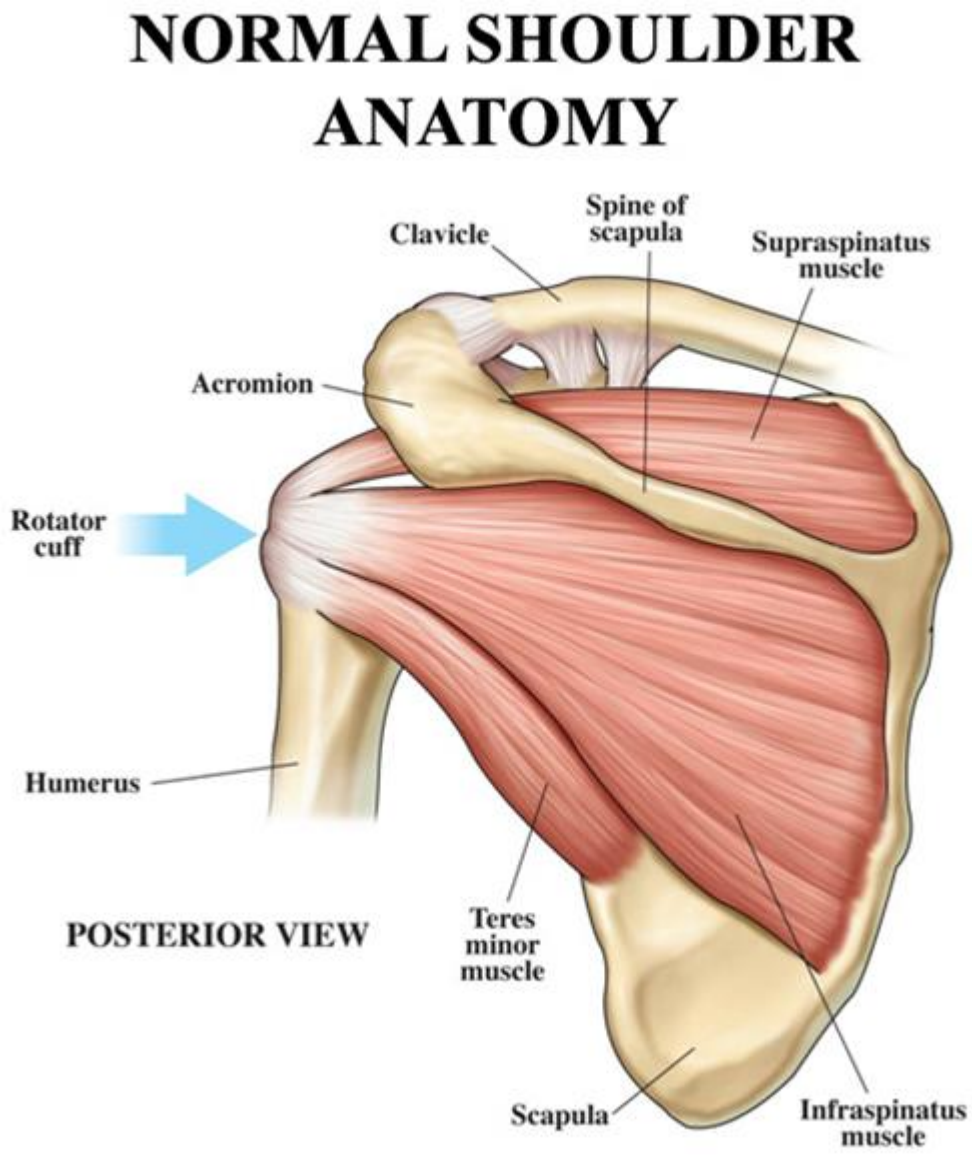
- **Dækker over mange forskellige sygdomme og tilstande.**
- **Hyppigst er der tale om symptomkomplekser, der ikke kan objektiviseres. (Smerter, ondt i ……)**
- **Der kan også være tale om meget veldefinerede diagnoser som slidgigt og leddegigt.**
- **Forebyggelse og behandling vanskeliggøres af manglende objektive fund.**

Skulderbelastninger

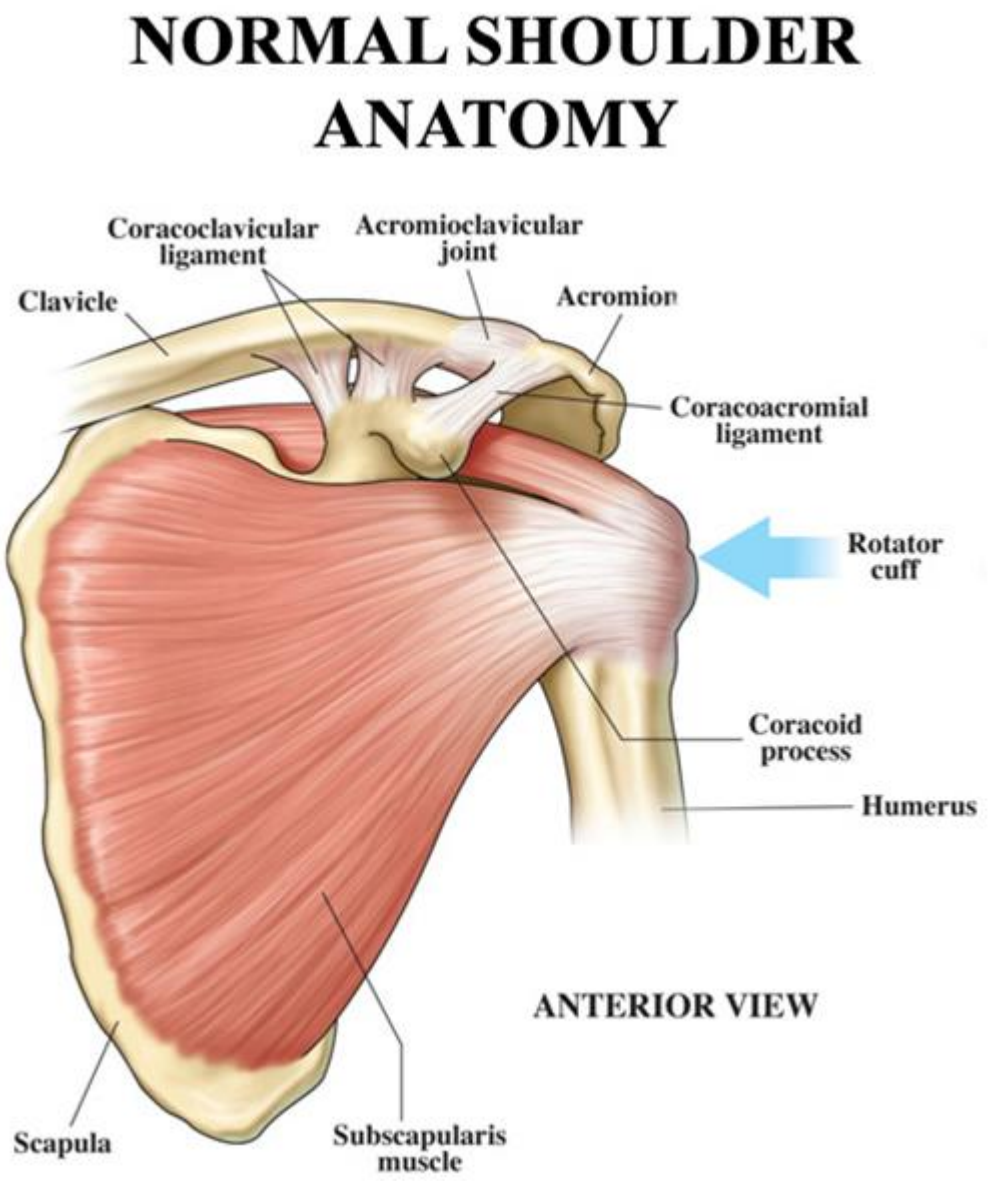
Især i håndværksfag
Malere
Struktører
Tømrere

SAMT
Slagteriarbejdere

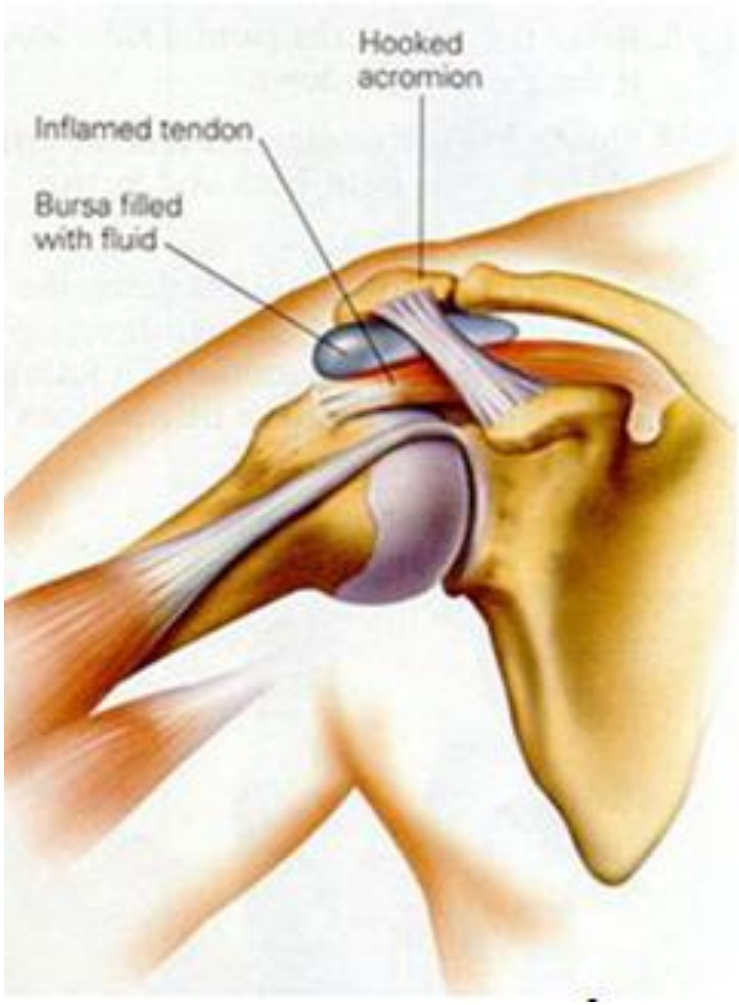
Skulderens anatomi



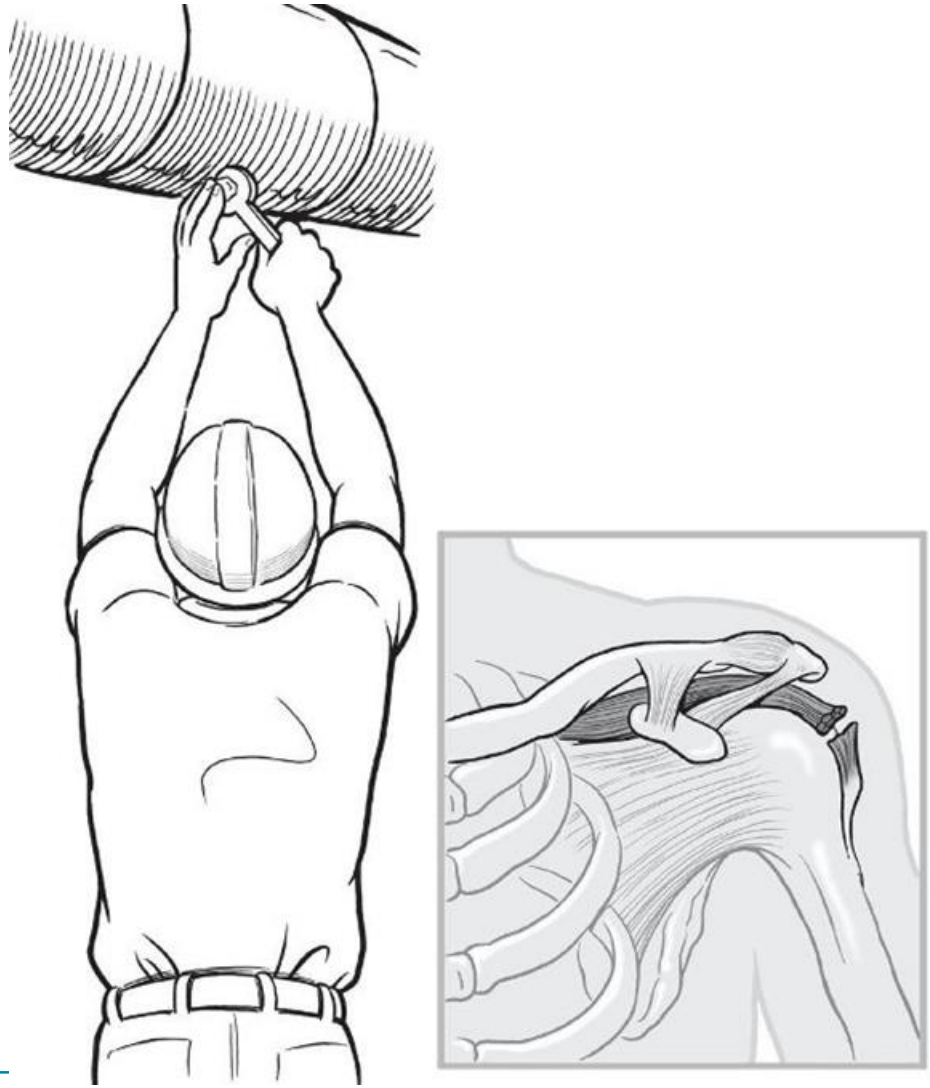
Skulderens anatomi 2



Rotator cuff læsion



Rotator cuff læsion 2



Arbejdets betydning

Table 3. Risk of surgery for subacromial impingement syndrome in relation to specific occupational biomechanical exposures and shoulder load. Results of Cox regression analyses including one exposure variable at a time and stratified by original study. [95% CI=95% confidence interval; HR_{adj}=adjusted hazard ratio]

Exposure	Cases	Person-years at risk	HR_{crude} [a]	HR_{adj} [b]	95% CI
Forceful work (force-score)					
<1.5 points	136	111 554	1	1	..
≥1.5–<2.5 points	282	113 441	1.52	1.52	1.11–2.07
≥2.5 points	139	55 131	2.22	1.74	1.16–2.64
Arm elevation >90°					
0 hours/day	274	154 856	1	1	..
>0–<1 hour/day	127	64 689	1.60	1.53	1.14–2.05
≥1 hour/day	156	60 581	1.98	1.61	1.06–2.45
Repetitive work					
Moderately repetitive work <2 hours/day	353	193 648	1	1	..
Moderately repetitive work ≥2–<4 hours/day	35	16 119	1.20	1.20	0.78–1.83
Moderately repetitive work ≥4 hours/day	75	33 382	1.41	1.34	0.88–2.05
Highly repetitive work	94	36 976	1.87	1.76	1.05–2.96
Shoulder load					
Low	115	100 792	1	1	..
Medium	236	96 682	1.63	1.64	1.19–2.26
High	206	82 651	2.18	1.96	1.33–2.89

[a] Adjusted for age, which was used as the underlying time variable. Number of observations: 37 402.

[b] Adjusted for job demands, job control, social support at work, sex, smoking status, body mass index, and age, which was used as the underlying time variable. Number of observations: 29 962.

Forekomst af muskel- og skeletbesvær, de seneste 14 dage

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- 58% har haft muskel- og skeletbesvær.
- 23% har haft meget generende muskel- og skeletbesvær.
- 13 % har taget receptpligtig medicin som følge af muskel- og skeletbesvær
- 12% har taget håndkøbsmedicin som følge af muskel- og skeletbesvær
- 8% har kontaktet egen læge som følge af muskel- og skeletbesvær
- <1% har været hospitalsindlagt som følge af muskel- og skeletbesvær

SIF: Folkesundhedsrapporten 2007

Omkostninger

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- **Det skønnes af omkring 35% af det langvarige sygefravær skyldes muskel-skeletsygdomme.**
- **Reduktion af sygefraværet som følge af muskel-skeletsygdomme har været prioriteret i Beskæftigelses ministeriets sygefraværsplan, hvor man ønskede at reducere fraværet med 10%**
- **SIF har beregnet at alene udgifterne i forbindelse med lænderygsmerter udgør 23,4 mia. kr!!!**

Fysisk belastning på arbejdet – opdelt i sektorer (%)

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"Hvordan vil du beskrive din fysiske aktivitet i din hovedbeskæftigelse?"

	Mest stillesiddende arbejde, som ikke kræver fysisk anstrengelse	Mest stående eller gående arbejde, som ellers ikke kræver fysisk anstrengelse	Stående eller gående arbejde med en del løfte- eller bærearbejde	Tungt eller hurtigt arbejde, som er fysisk anstrengende
1. Off. Admin	79	14	6	1
2**. Undervisning**	38	52	9	2
3. Socialområdet: **Ældre**	12	18	63	8
4. Socialområdet: **Børne- Ungdom**	16	33	49	2
5. Socialområdet: **Voksen-sektor**	27	31	33	9
6. **Sundhedssekt.**	34	31	33	2
Rengøring	1	23	57	19
Transport	81	7	9	2
Affald	35	38	26	3
Forsvar	53	6	3	7
Gennemsnit alle	**36**	**29**	**31**	**4**

Udbredelse – smerter nakken og ryggen

Oversigt alle sektorer

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SPM: Har du indenfor de sidste 4 uger haft ondt i nakken/ryggen?

Procentdelen af de adspurgte i sektoren som svarer "ja"

	Nakken	Ryggen
Off. administration	59	53
Undervisning	56	52
Ældreområdet	**63**	**66**
Børne- og ungdom	52	58
Voksensektor	57	59
Sundhedssektoren	**61**	56
Rengøring	**63**	**64**
Transportarbejde	42	**61**
Affald	59	59
Gennemsnit alle	***57***	***57***

Udbredelse – konsekvens af smerter

Oversigt alle sektorer

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SPM: Var smerten slem nok til at begrænse dine normale aktiviteter?

Udregnet som procentdelen af de adspurgte i sektoren som svarer "ja"

	Nakkesmerter	Rygsmerter
Off. administration	10	10
Undervisning	9	14
Ældreområdet	**13**	**20**
Børne- og ungdom	11	16
Voksensektor	11	17
Sundhedssektoren	11	10
Rengøring	**20**	**24**
Transportarbejde	*2*	12
Affald	**19**	**25**
Gennemsnit alle	***10***	***14***

Sygefravær og sygenærvær, selvrapporteret (ASUSI)

Sygefravær:

Hvor mange gange har du sygemeldt dig de sidste 12 måneder?

[ingen, 1 gang, 2-3 gange, 4-5 gange, 6-10 gange, >10 gange]

Sygenærvær:

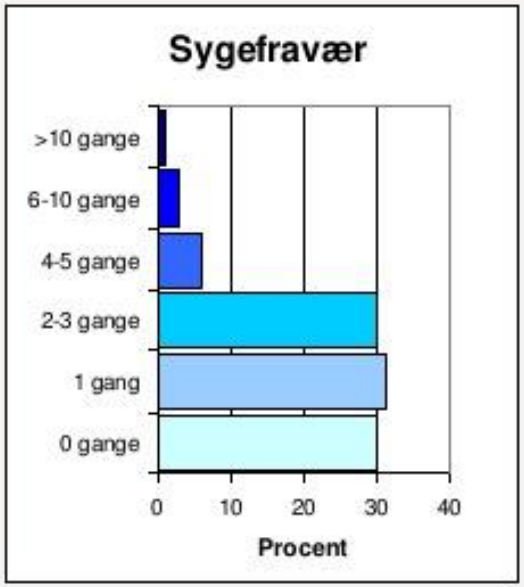
Hvor mange gange inden for de sidste 12 måneder er du gået på arbejde, selvom du med rimelighed kunne have meldt dig syg?

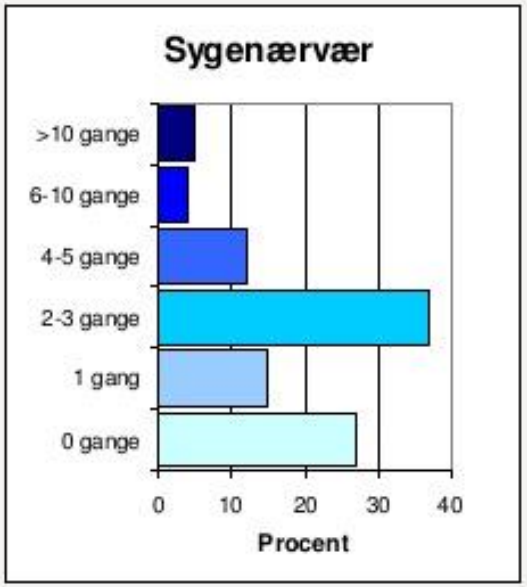
[ingen, 1 gang, 2-3 gange, 4-5 gange, 6-10 gange, >10 gange]

ASUSI

Sygefravær og sygenærvær

Antal gange med sygefravær og sygenærvær de sidste 12 mdr.





Er primær forebyggelse mulig?

- **Et stort europæisk arbejde, hvor litteraturen vedrørende muligheder for at forebygge lænderygsygdom er gennemgået konkluderer følgende:**
- **"Det er ikke muligt at primær forebygge forekomsten af lænderygsygdom, hvorfor indsatsen bør rette sig imod forebyggelse af konsekvenserne af allerede opstået sygdom" (Backpain Europe 2006).**

Ergonomiske interventioner

- **T.Lund viser at ergonomiske indsatser er effektive virkemidler, når der skal sikres en hurtig tilbagevenden til arbejdet. (Lund et al 2007)**
- **Deltagerstyret ergonomi indsats synes effektiv ved tilbagevenden til arbejdet. (Loisel et al 2004)**
- **Arbejdsplads modifikation og tværfaglig indsats kan sikre hurtig tilbagevenden til arbejde efter sygefravær (France et al 2006)**

Hvidbog om sammenhæng mellem arbejde og objektiviserbar MSB

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- **Meget beskedne sammenhænge**
- **Knæartrose ved langvarig hug- og knæsiddende arbejde**
- **Hofteartrose hos landmænd**
- **Diskusprolaps og lænderygartrose ved løft af ikke faste byrder**
- **Diskusprolaps og lænderygartrose ved meget tungt løftearbejde**
- **Ikke muligt at fastsætte**

Fysisk nedslidning!!!!!

- **Findes kun på dansk**
- **Opfundet på RUC i 70'erne**
- **Politisk ævl**
- **Kan ikke objektiviseres**

Original article

Scand J Work Environ Health. 2013;39(6):599–608. doi:10.5271/sjweh.3368

Does a history of physical exposures at work affect hand-grip strength in midlife? A retrospective cohort study in Denmark

by Anne Møller MD,[1, 2, 3] Susanne Reventlow DMSc,[3] Åse Marie Hansen PhD,[2, 4] Lars L Andersen PhD,[2] Volkert Siersma PhD,[3] Rikke Lund PhD, [4, 5] Kirsten Avlund DMSc, [4, 5, 6] Johan Hviid Andersen PhD,[7] Ole Steen Mortensen PhD [1, 2]

Møller A, Reventlow S, Hansen ÅM, Andersen LL, Siersma V, Lund R, Avlund K, Andersen JH, Mortensen OS. Does a history of physical exposures at work affect hand-grip strength in midlife? A retrospective cohort study in Denmark. *Scand J Work Environ Health* . 2013;39(6):599–608. doi:10.5271/sjweh.3368

Objective The aim of this cohort study was to examine associations between physical exposures throughout working life and hand-grip strength (HGS) in midlife.

Methods The Copenhagen Aging and Midlife Biobank (CAMB) provided data about employment and HGS for 3843 Danes. Individual job histories, including duration of employment in specific jobs, were assigned exposures from a job exposure matrix. Exposures were standardized to ton-years (lifting 1000 kg each day in one year), stand-years (standing/walking for six hours each day in one year) and kneel-years (kneeling for one hour each day in one year). The effects of exposure-years on HGS were analyzed as linear effects and cubic splines in multivariate regression models, adjusted for potential confounders.

Results Mean age was 59 years among both genders and HGS was 49.19 kg [standard deviation (SD) 8.42] and 30.61 kg (SD 5.49) among men and women, respectively. Among men, exposure to kneel-years was associated with higher HGS [>0.030 kg (P=0.007) per exposure-year]. Ton- and stand-years were not associated with HGS among either men or women in linear analyses. In spline regression analyses, associations between ton- and stand-years and HGS were non-linear and primarily positive among men. Among women, the associations were non-linear and, according to ton-years, primarily negatively associated with HGS but statistically insignificant.

Conclusion A history of physical exposures at work explained only a minor part of the variation in HGS, though exposure to kneeling throughout working life was associated with a slightly higher HGS among men. Exposure to lifting and standing/walking was not associated with HGS.

Key terms ergonomics; muscle strength; musculoskeletal aging; occupational; physical activity

Spine

SPINE Volume 36, Number 19, pp 1541–1546

CLINICAL CASE SERIES

Occupational and Other Predictors of Herniated Lumbar Disc Disease—A 33-Year Follow-up in The Copenhagen Male Study

Inge Gregersen Sørensen, MD, Peter Jacobsen, MD, Finn Gyntelberg, MD, DrMedSc, and Poul Suadicani, DDS, DrMedSc

Study Design. Cohort study.

Objective. To examine the association between self-reported physical workload and risk of herniated lumbar disc disease (HLDD) in a long-term follow-up of men without a history of back disorders at baseline.

Summary of Background Data. Heavy physical workload is considered a risk factor for HLDD, but the issue is not definitively settled.

Methods. The Copenhagen Male Study is a prospective cohort study established in 1970 to 1971. At baseline, 5245 men answered a questionnaire about history of back disease and physical workload. Psychosocial working conditions, lifestyle, social class, and measured height and weight were included as potential confounders. Information about hospitalization due to HLDD was obtained from the *National Hospital Register* covering the period from 1977 to 2003. Hazard ratios were calculated by Cox proportional hazard regression model.

Results. Among 3833 men without back disease history at baseline, the strongest predictor of hospitalization for HLDD was frequent strenuous physical activity at work; compared with unexposed, the hazard ratio with 95% confidence interval was 3.90 (1.82–8.38). Also, body height was a significant predictor, whereas body weight was only insignificantly associated with HLDD.

Conclusion. Among men without history of back disease reporting of frequent exposure to strenuous physical activity at work was a strong risk factor for later hospitalization due to HLDD.

Key words: herniated lumbar disc, occupational exposure, strenuous work, prospective cohort study. **Spine 2011;36:1541–1546**

Low back disorders are considered causally related to ergonomic loads, especially lifting, carrying, and posture in occupational settings.[1] However, the association is complex and a clear causal relationship between exposure and disease has not been established; the main problem being the nonspecific nature of back pain and the complex interaction of ergonomic, genetic, and psychosocial risk factors including the possibility that back disorders are more likely to be reported by individuals with physically demanding jobs—inverse causality.

Specific back diseases such as disc herniation have only been studied to a limited extent, although the issue of inverse causality is likely to be less problematic with a well-defined pathologic condition. Herniated lumbar disc disease (HLDD) has in a few prospective studies been associated with blue-collar work and other broad occupational categories characterized by lifting and other ergonomic strains to the back.[2,3] In a prospective study of transit vehicle operators, severe low back disorders, including but not specifying HLDD, were predicted by heavy physical labor including bending, pulling, and pushing, as well as duration of professional driving.[4] Specific ergonomic loads have also been associated with HLDD in case-control studies, which unfortunately have an inherent risk of recall bias of workload.[5–7] In contrast, magnetic resonance imaging studies have indicated that ergonomic loads may play only a minor role in lumbar disc degeneration.[8]

To our knowledge, no prospective studies of ergonomic exposures as risk factors for HLDD as specified disorder have been carried out. Using data from The Copenhagen Male Study established in 1970 to 1971, we tested in a long-term follow-up the hypothesis that self-reported heavy work load is a predictor of HLDD requiring hospitalization, taking into account other potential risk factors including leisure time physical activity, indicators of psychological stress, and anthropometrics.

MATERIALS AND METHODS

The Copenhagen Male Study was established in 1970 to 1971 as a prospective cohort study of physical fitness and cardiovascular disease in employees at 14 private and public companies in Copenhagen including railway, telephone, insurance, postal delivery, and fire brigade enterprises. All men aged 40 to 59 years were invited; 5249 men, 87% of potential participants,

From The Copenhagen Male Study, Epidemiological Research Unit, Clinic of Occupational and Environmental Medicine, Bispebjerg University Hospital, Copenhagen, Denmark.

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The manuscript submitted does not contain information about medical device(s)/drug(s).

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DOI: 10.1097/BRS.0b013e3181f9b8d4

Physical demands and resources

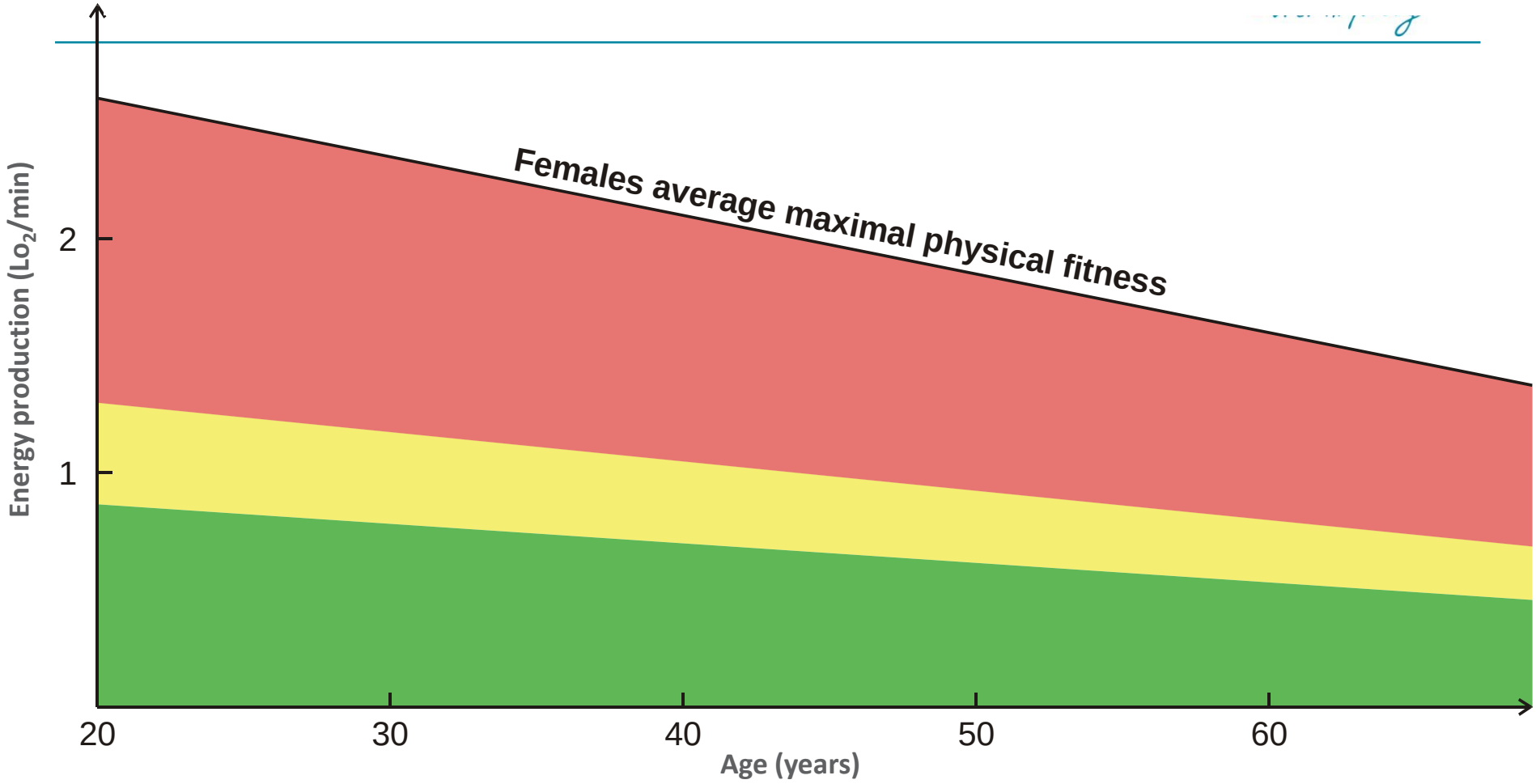
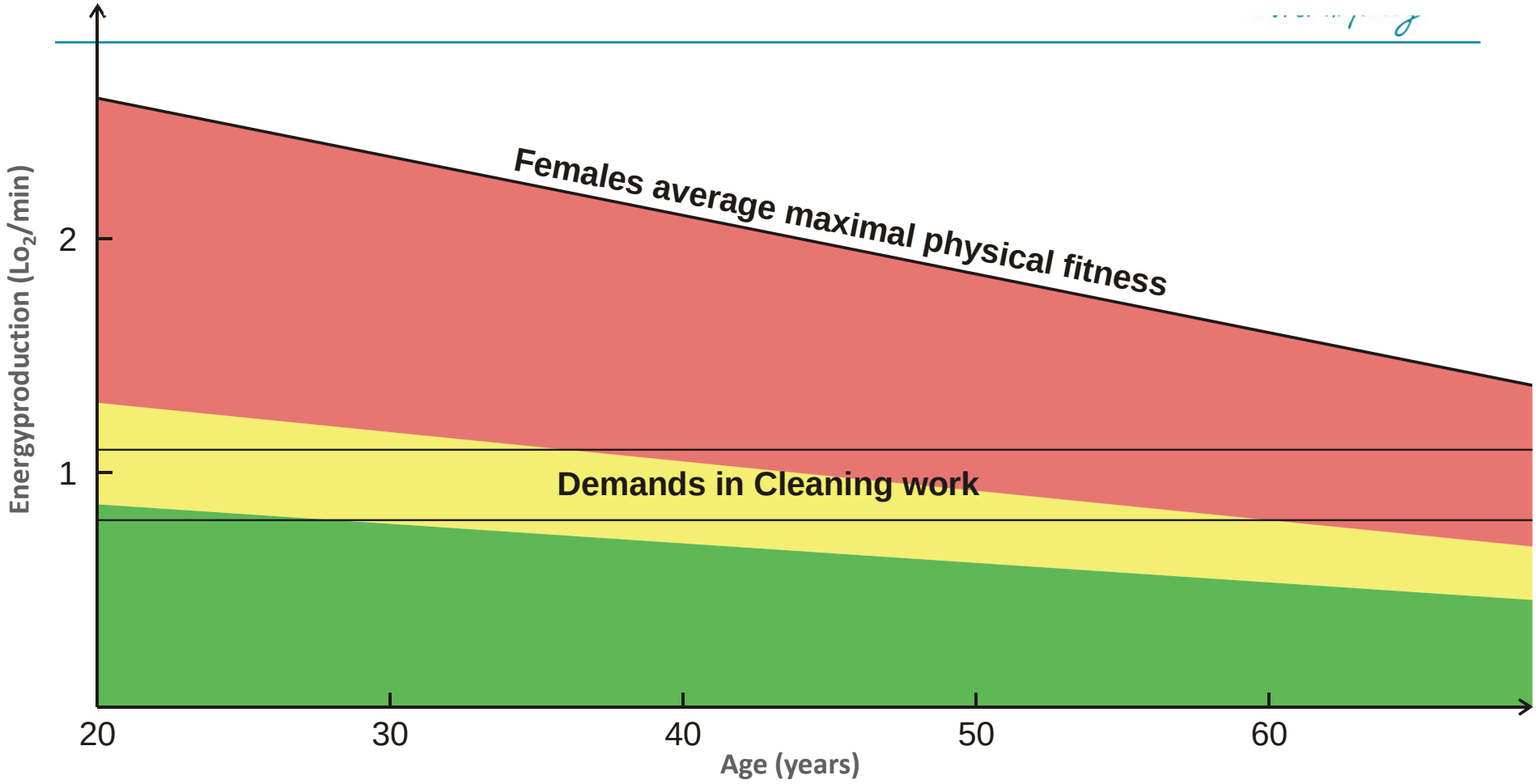


Illustration from Karen Søgaard

Physical demands and resources



Karen Søgaard

High Intensity Physical Exercise and Pain in the Neck and Upper Limb among Slaughterhouse Workers: Cross-Sectional Study

Emil Sundstrup,[1,2] Markus D. Jakobsen,[1,2] Kenneth Jay,[1,2] Mikkel Brandt,[1] and Lars L. Andersen[1]

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[2] *Institute for Sports Science and Clinical Biomechanics, University of Southern Denmark, 5230 Odense, Denmark*

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Slaughterhouse work involves a high degree of repetitive and forceful upper limb movements and thus implies an elevated risk of work-related musculoskeletal disorders. High intensity strength training effectively rehabilitates musculoskeletal disorders among sedentary employees, but less is known about the effect among workers with repetitive and forceful work demands. Before performing randomized controlled trials it may be beneficial to assess the cross-sectional connection between exercise and musculoskeletal pain. We investigated the association between high intensity physical exercise and pain among 595 slaughterhouse workers in Denmark, Europe. Using logistic regression analyses, odds ratios for pain and work disability as a function of physical exercise, gender, age, BMI, smoking, and job position were estimated. The prevalence of pain in the neck, shoulder, elbow, and hand/wrist was 48%, 60%, 40%, and 52%, respectively. The odds for experiencing neck pain were significantly lower among slaughterhouse workers performing physical exercise (OR = 0.70, CI: 0.49–0.997), whereas the odds for pain in the shoulders, elbow, or hand/wrist were not associated with exercise. The present study can be used as general reference of pain in the neck and upper extremity among slaughterhouse workers. Future studies should investigate the effect of high intensity physical exercise on neck and upper limb pain in slaughterhouse workers.

Original article

Scand J Work Environ Health. 2014;40(3):244–251. doi:10.5271/sjweh.3419

Workplace strength training prevents deterioration of work ability among workers with chronic pain and work disability: a randomized controlled trial

by Emil Sundstrup, MSc,[1,2] Markus D Jakobsen, MSc,[1,2] Mikkel Brandt, MSc,[1] Kenneth Jay, MSc,[1,2] Roger Persson, PhD,[3] Per Aagaard, PhD,[2] Lars L Andersen, PhD [1]

Sundstrup E, Jakobsen MD, Brandt MB, Jay K, Persson R, Aagaard P, Andersen LL. Workplace strength training prevents deterioration of work ability among workers with chronic pain and work disability: a randomized controlled trial. *Scand J Work Environ Health.* 2014;40(3):244–251. doi:10.5271/sjweh.3419

Objective Imbalance between work demands and individual resources can lead to musculoskeletal disorders and reduced work ability. The aim of this study was to evaluate the effect of two contrasting interventions on work ability among slaughterhouse workers with chronic pain and work disability.

Methods Sixty-six slaughterhouse workers with upper-limb chronic pain and work disability were randomly allocated to 10 weeks of either strength training for the shoulder, arm, and hand muscles (3 times per week, 10 minutes per session) or ergonomic training (usual care control group) from September to December 2012. The outcome measure was the change from baseline to 10-week follow-up in the work ability index (WAI).

Results A priori hypothesis testing showed a group×time interaction for WAI ($P<0.05$). Compared with the ergonomic training group, WAI increased 2.3 [95% confidence interval (95% CI) 0.9–3.7] in the strength training group corresponding to a moderate effect size (Cohen's d 0.52). Within-group changes indicated that between-group differences were mainly caused by a reduction in WAI in the ergonomic group. Of the 7 items of WAI, item 2 (work ability in relation to the demands of the job) and item 7 (mental resources) increased following strength training compared with ergonomic training ($P<0.05$).

Conclusions Implementation of strength training at the workplace prevents deterioration of work ability among manual workers with chronic pain and disability exposed to forceful and repetitive job tasks. Thus, strength training performed at the workplace may in fact be regarded as a complex biopsychosocial intervention modality that reaches further than the specific physiological benefits of training per se.

Key terms biopsychosocial; carpal tunnel syndrome; elbow pain; ergonomic training; ergonomics; hand pain; lateral epicondylitis; musculoskeletal disorder; resistance training; shoulder pain; WAI; work ability index.

RESEARCH ARTICLE Open Access

Associations between biopsychosocial factors and chronic upper limb pain among slaughterhouse workers: cross sectional study

Emil Sundstrup[1,2*], Markus D. Jakobsen[1,2], Mikkel Brandt[1,3], Kenneth Jay[1,4], Per Aagaard[2] and Lars L. Andersen[1,3]

Abstract

Background: Knowledge of factors associated with chronic pain is necessary for preventive strategies. The present study investigates biopsychosocial differences, with specific focus on rate of force development (RFD) and work ability, between workers with and without chronic upper limb pain.

Methods: Eighty-two male slaughterhouse workers, 49 with chronic upper limb pain and 33 pain-free controls participated in the study. Maximal muscle strength, RFD, and muscle activity was determined from fast and forceful maximal voluntary contractions for the shoulder and hand. Participants filled out a questionnaire on work ability (work ability index), work disability (Work module of DASH questionnaire), fear avoidance, and self-rated health. Additionally, pressure pain threshold (PPT) was measured in muscles of the arm, shoulder and lower leg.

Results: Muscle strength and RFD (determined within time intervals of 30, 50, 100, and 200 ms relative to onset of contraction) was 28 % and 58–78 % lower, respectively, in workers with chronic pain compared with pain-free controls, and paralleled by reduced muscle activity (all $p < 0.001$). Workers with chronic pain had lower PPT of the arm, shoulder and lower leg ($p < 0.01$), and reported impaired work ability index score and general health along with higher work disability and fear avoidance compared with controls (all $p < 0.0001$). No differences were observed between the groups in regard to age, BMI, physical activity level, job position and duration of slaughterhouse work (all $p > 0.4$).

Conclusions: Chronic upper limb pain was paralleled by reduced neuromuscular function of the shoulder and hand along with impaired work ability, work disability and general health. Future studies on chronic pain management at the workplace should carefully consider the biopsychosocial nature of pain when designing and implementing preventive strategies.

Keywords: Rapid force capacity, RFD, PPT, Shoulder pain, Arm pain, Hand pain, Presenteeism, WAI

Nakke

J Occup Rehabil (2011) 21:520–525
DOI 10.1007/s10926-011-9294-4

Workstyle Risk Factors for Work Related Musculoskeletal Symptoms Among Computer Professionals in India

Deepak Sharan · Prakriti Parijat · Ajeesh Padinjattethil Sasidharan · Rameshkumar Ranganathan · Mathankumar Mohandoss · Jeena Jose

Published online: 17 February 2011

Abstract *Introduction* Work-related musculoskeletal disorders are common in computer professionals. Workstyle may be one of the risk factors in the development of musculoskeletal discomfort. The objective of this retrospective study was to examine the prevalence of adverse workstyle in computer professionals from India and to evaluate if workstyle factors were predictors of pain and loss of productivity. *Methods* Office workers from various information technology (IT) companies in India responded to the short-form workstyle questionnaire and pain questionnaire. Correlation analyses were conducted to examine the associations between different variables followed by a multivariate logistic regression to understand the unique predictors of pain and loss of productivity. *Results* 4,500 participants responded to the workstyle and pain questionnaire. 22% of participants were reported to have a high risk of an adverse workstyle. 63% of participants reported pain symptoms. Social reactivity, lack of breaks, and deadlines/pressure subscales of workstyle questionnaire were significantly correlated with pain and loss of productivity. Regression analyses revealed that workstyle factors and duration of computer use per day were significant predictors of pain. *Conclusion* Workstyle seems to be a mediating factor for musculoskeletal pain, discomfort, and loss of productivity. Based on the study findings, it is recommended that intervention efforts directed towards prevention of musculoskeletal disorders should focus on psychosocial work factors such adverse workstyle in addition to biomechanical risk factors.

P. Parijat (✉) · A. P. Sasidharan
Academics Division, RECOUP Neuromusculoskeletal

- **Psykosociale arbejdsfaktorer findes at være en medierende faktor for smerter, utilpashed og produktionstab.**

- **Det anbefales at interventioner, der retter sig mod muskel-skelet gener ikke kun inddrager biomekaniske risiko faktorer man ligeledes inddrager psykosociale risikofaktorer**

Mere nakke

International Journal of
Environmental Research and Public Health

MDPI

Article

The Consequence of Combined Pain and Stress on Work Ability in Female Laboratory Technicians: A Cross-Sectional Study

Kenneth Jay [1,2,*], Maria Kristine Friborg [2], Gisela Sjøgaard [1], Markus Due Jakobsen [2], Emil Sundstrup [2], Mikkel Brandt [2,3] and Lars Louis Andersen [2,3]

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- **Her undersøges betydningen af kombineret stress og smerter.**

- **Man finder at såvel stress som smerter nedsætter arbejdsevnen.**

- **Der er ikke interaktion, hvorfor forfatterne konkluderer at stress og smerter er uafhængigt associeret med lav arbejdsevne.**

Nakke

Am J Ind Med. 2016 May 17. doi: 10.1002/ajim.22602. [Epub ahead of print]

Workplace psychosocial and organizational factors for neck pain in workers in the United States.

Yang H[1], Hitchcock E[2], Haldeman S[3,4], Swanson N[2], Lu ML[2], Choi B[1], Nakata A[5], Baker D[1].

Author information

Abstract

BACKGROUND: Neck pain is a prevalent musculoskeletal condition among workers in the United States. This study explores a set of workplace psychosocial and organization-related factors for neck pain.

METHODS: Data used for this study come from the 2010 National Health Interview Survey which provides a representative sample of the US population. To account for the complex sampling design, the Taylor linearized variance estimation method was used. Logistic regression models were constructed to measure the associations.

RESULTS: This study demonstrated significant associations between neck pain and a set of workplace risk factors, including work-family imbalance, exposure to a hostile work environment and job insecurity, non-standard work arrangements, multiple jobs, and long work hours.

CONCLUSION: Workers with neck pain may benefit from intervention programs that address issues related to these workplace risk factors. Future studies exploring both psychosocial risk factors and physical risk factors with a longitudinal design will be important. Am. J. Ind. Med. © 2016 Wiley Periodicals, Inc.

- **Der findes signifikante associationer mellem en række psykosociale faktorer og nakke smerter.**
- **Arbejde-familie balancen**
- **Job usikkerhed**
- **Lange arbejdsuger**
- **Det anbefales at der gennemføres forløbsstudier med inddragelse af såvel fysiske som psykosociale faktorer**

RESEARCH ARTICLE Open Access

Musculoskeletal pain and effort-reward imbalance- a systematic review

Peter Koch[1*], Anja Schablon[1], Ute Latza[2] and Albert Nienhaus[1,3]

Abstract

Background: Musculoskeletal pain may be triggered by physical strains and psychosocial risk factors. The effort-reward imbalance model (ERI model) is a stress model which measures psychosocial factors in the working world. The question is whether workers with an effort-reward imbalance report musculoskeletal pain more frequently than those with no effort-reward imbalance. A systematic review using a best evidence synthesis approach was conducted to answer this question.

Methods: A literature search was conducted for the period from 1996 to 2012, using three databases (Pubmed, Embase and PsycINFO). The research criteria related to psychosocial, work-related stress as per the ERI model and to musculoskeletal pain. A quality score was developed using various quality criteria to assess the standard of the studies. The level of evidence was graded as in (Am J Ind Med 39:180–193, 2001).

Results: After applying the inclusion criteria, a total of 19 studies were included in the review: 15 cross-sectional studies, three prospective studies and one case–control study. 74% of all studies exhibited good methodological quality, 53% collected data using the original ERI questionnaire, and in 42% of the studies, there was adequate control for physical working conditions. Furthermore, different cut-off points were used to classify exposed and non-exposed individuals. On the basis of 13 studies with a positive, statistically significant association, a moderate level of evidence was inferred for the association between *effort-reward imbalance* and musculoskeletal pain. The evidence for a role of *over-commitment* and for *its interaction with effort-reward imbalance* was rated as inconclusive - on the basis of eight and five studies, respectively.

Conclusions: On the basis of the available evidence, no reliable conclusion may be drawn about any association between the psychosocial factors ascertained using the ERI model and musculoskeletal pain. Before a reliable statement can be made on the association between ERI and musculoskeletal pain, additional longitudinal studies must be performed - with a standardised method for recording and classifying exposure, as well as control of physical confounders. Appropriate preventive measures can then be specified.

Keywords: Effort-reward imbalance, Musculoskeletal pain, Psychosocial work stress, Review

Ikke sikker sammenhæng

- **Man konkluderer, at der ikke kan drages sikre konklusioner om psykosocialt arbejdsmiljø og muskelskelet smerter.**

- **Man anbefaler, at der gennemføres flere forløbsstudier med en bedre registrering af psykosociale eksponeringer og kontrol for fysiske risikofaktorer**

BMJ Open

Influence of work-related psychosocial factors on the prevalence of chronic pain and quality of life in patients with chronic pain

Keiko Yamada,[1] Ko Matsudaira,[2,3] Hironori Imano,[1] Akihiko Kitamura,[1] Hiroyasu Iso[1]

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ABSTRACT

Objectives: Working is a common cause of chronic pain for workers. However, most of them need to continue working despite the pain in order to make a living unless they get a sick leave or retirement. We hypothesised that the therapeutic effect of vocational rehabilitation may depend on psychosocial factors related to the workplace. To test this hypothesis, we examined the association of work-related psychosocial factors with the prevalence of chronic pain or health-related quality of life (HRQoL) among workers with chronic pain.

Methods: We examined 1764 workers aged 20–59 years in the pain-associated cross-sectional epidemiological survey in Japan. The outcomes were (1) chronic pain prevalence among all workers and (2) low Euro QoL (EQ-5D <0.76; mean value of the current study) prevalence among workers with chronic pain according to the degree of workplace social support and job satisfaction. Workplace social support and job satisfaction were measured using the Brief Job Stress Questionnaire.

Strengths and limitations of this study

- Our study included a large population and used the specialised questionnaire for pain medicine.
- This is the first study to investigate the association between work-related psychosocial factors and health-related quality of life of patients with chronic pain.
- Our questionnaire included only three psychosocial factors: social support from supervisors, support from co-workers and job satisfaction.
- Patients with severe chronic pain who took sick leave or had retired because of pain were not included in our study.

health problem.[1] Although most workers need to continue their work despite pain, in order to make a living, unless they get sick leave or retire, workers with chronic pain are

Psykosociale faktorer, smerter og livskvalitet

REGION SJÆLLAND
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- **Kroniske smerter var hyppigere blandt de ansatte, der havde lav jobtilfredshed.**
- **Ansatte med kroniske smerter og lav jobtilfredshed havde dårligere livskvalitet end ansatte med kroniske smerter og høj jobtilfredshed.**
- **Det samme fandtes blandt ansatte med lav social støtte fra ledere og kolleger**

Is musculoskeletal pain a consequence or a cause of occupational stress? A longitudinal study

M. Bonzini[1,2], **L. Bertu'**[1], **G. Veronesi**[1], **M. M. Ferrario**[1,2], **M. Conti**[2], **D. Coggon**[3], and **L. Bertu'**[4]

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[4]PhD in Epidemiology and Biostatistica, University Milano-Bicocca, Milan, Italy

Abstract

Objectives—Longitudinal studies have linked stress at work with a higher incidence of musculoskeletal pain. We aimed to explore the extent to which musculoskeletal pain is a cause as opposed to a consequence of perceived occupational stress.

Methods—As part of the international CUPID study, we collected information from 305 Italian nurses, at baseline and again after 12 months, about pain during the past month in the low back and neck/shoulder, and about effort-reward imbalance (ERI) (assessed by Siegrist's ERI questionnaire). Poisson regression was used to assess the RR of ERI >1 at follow-up according to report of pain and of ERI >1 at baseline.

Results—Among nurses with ERI ≤1at baseline, ERI >1 at follow-up was associated with baseline report of pain in the low back (RR=2.7, 95%CI1.4-5.0) and neck/shoulder (RR=2.6, 95%CI 1.3-5.1). However, there was no corresponding association with persistence of ERI in nurses who were already had ERI >1 at baseline. Associations of ERI at baseline with pain at follow-up were weak.

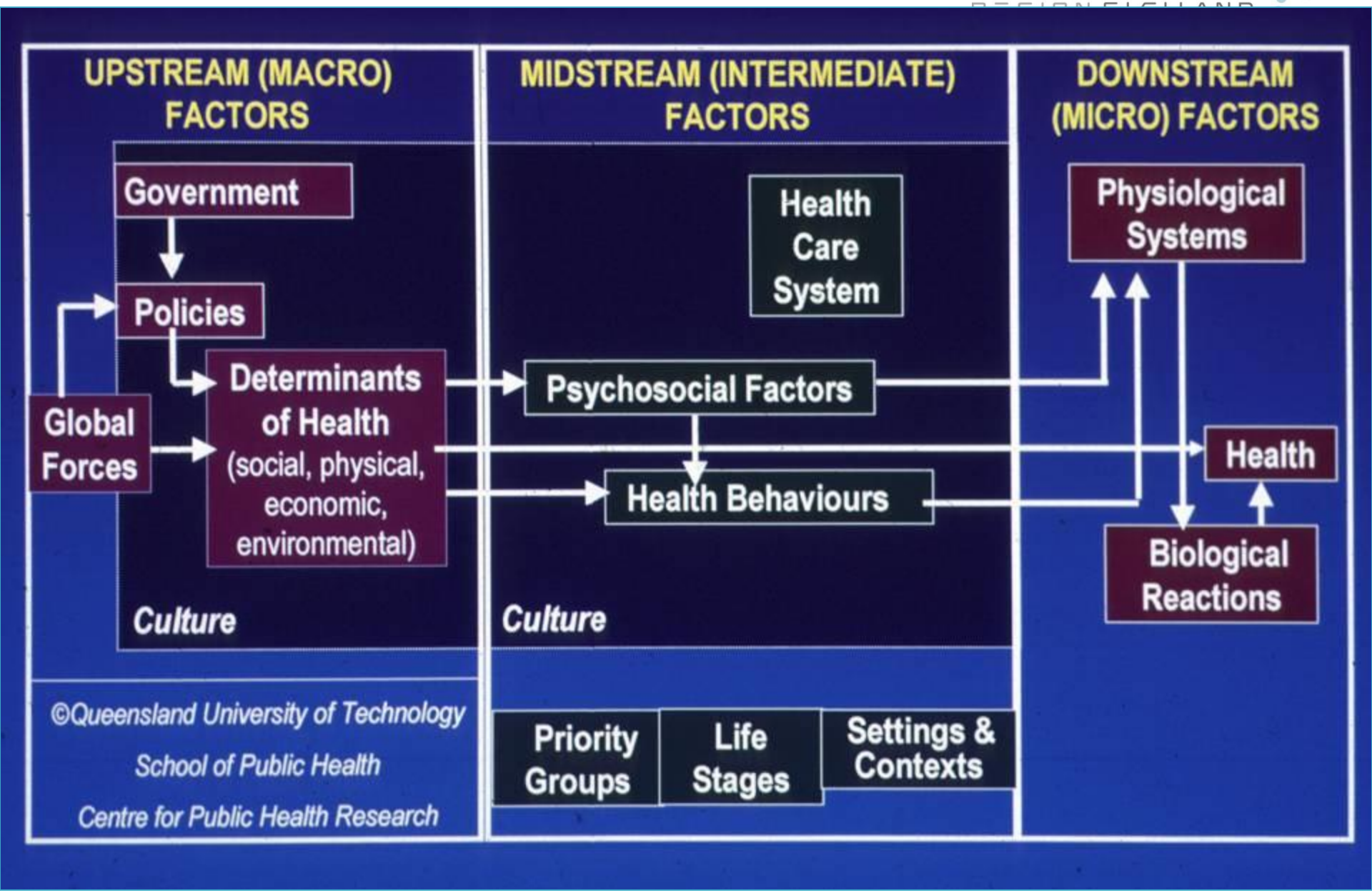
Conclusions—Our results suggest that the well documented association between job stress and musculoskeletal pain is not explained entirely by an effect of stress on reporting of pain. It appears also that workers who report musculoskeletal pain are more likely to develop subsequent perceptions of stress. This may be because pain renders people less tolerant of the psychological demands of work. Another possibility is that reports of pain and stress are both manifestations of a general tendency to be aware of and complain about symptoms and difficulties.

Smerter og stress

- **Dette studie er et forløbs studie.**
- **Der findes den forventede sammenhæng mellem stress og smerter.**
- **Graden af smerte er ikke udelukkende forklaret af tilstedeværelsen af stress.**
- **Ansatte med smerter har højere risiko for at udvikle stress**
- **Ansatte med smerter har en lavere tærskel for hvad de kan klare af psykosociale krav**

Rehabilitering

- **Hvad betyder disse resultater for rehabiliteringen af patienter med muskel-skelet smerter?**
- **Kan den anbefalede hurtige tilbagevenden til arbejdet som en del af den rehabiliterende proces påvirkes?**
- **Er det altid psykosociale forhold på arbejdet, der er afgørende?**


UPSTREAM (MACRO) FACTORS
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Government
Policies
Global Forces
Determinants of Health (social, physical, economic, environmental)
Culture
Health Care System
Psychosocial Factors
Health Behaviours
Culture
Physiological Systems
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Biological Reactions
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Priority Groups
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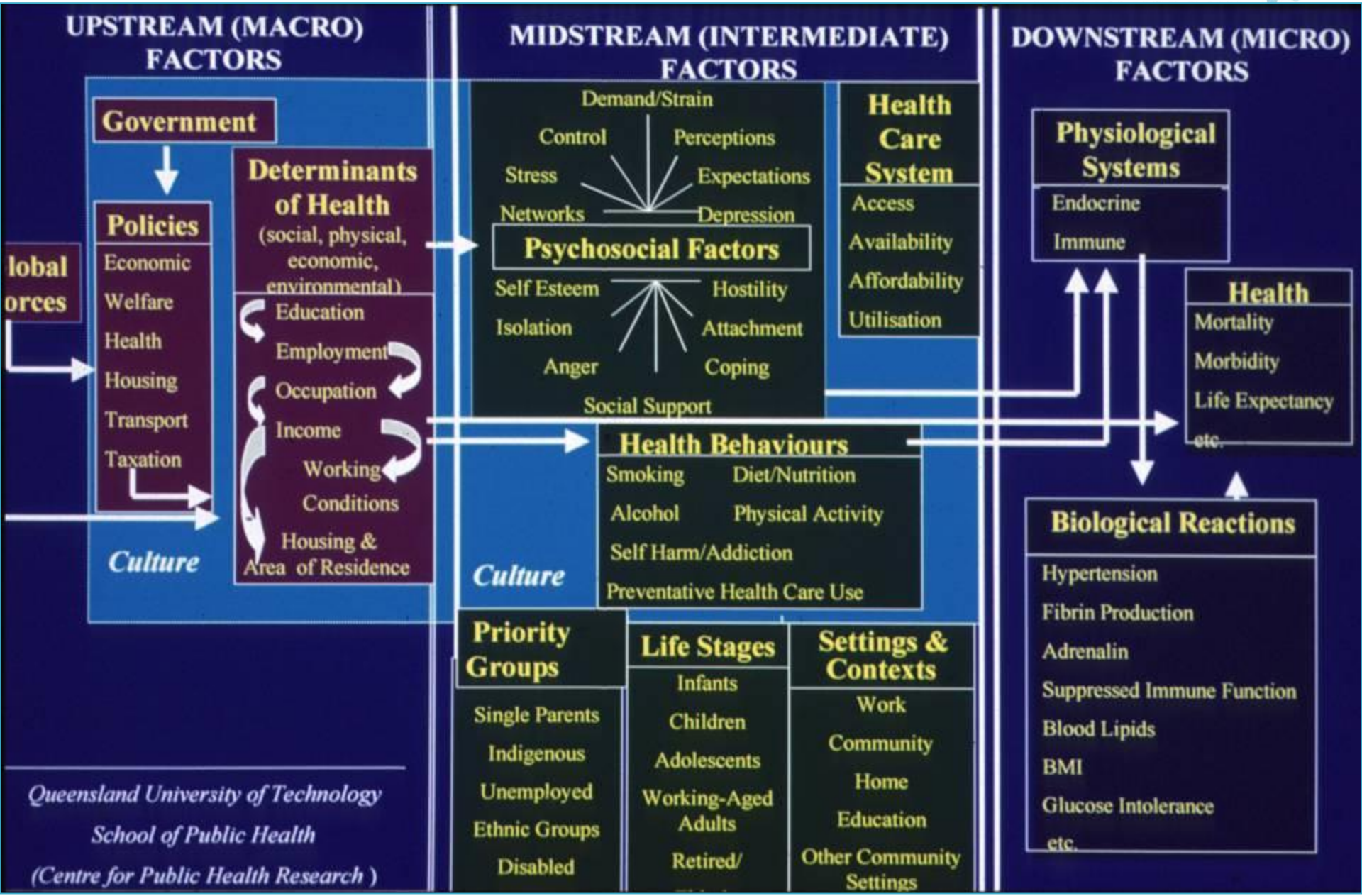
Settings & Contexts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Transport
Taxation
Culture
Determinants of Health
(social, physical, economic, environmental)
Education
Employment
Occupation
Income
Working Conditions
Housing & Area of Residence
Demand/Strain
Control
Perceptions
Stress
Expectations
Networks
Depression
Psychosocial Factors
Self Esteem
Hostility
Isolation
Attachment
Anger
Coping
Social Support
Health Care System
Access
Availability
Affordability
Utilisation
Culture
Health Behaviours
Smoking
Diet/Nutrition
Alcohol
Physical Activity
Self Harm/Addiction
Preventative Health Care Use
Priority Groups
Single Parents
Indigenous
Unemployed
Ethnic Groups
Disabled
Life Stages
Infants
Children
Adolescents
Working-Aged Adults
Retired/
Settings & Contexts
Work
Community
Home
Education
Other Community Settings
Physiological Systems
Endocrine
Immune
Health
Mortality
Morbidity
Life Expectancy
etc.
Biological Reactions
Hypertension
Fibrin Production
Adrenalin
Suppressed Immune Function
Blood Lipids
BMI
Glucose Intolerance
etc.
Queensland University of Technology
School of Public Health
(Centre for Public Health Research)

Konklusion

- **Der er betydelig sammenhæng mellem det psykosociale arbejdsmiljø og fysiske symptomer.**
- **Sammenhængen er ikke helt entydig. Psykosociale forhold kan forværre smerter. Smerter kan medføre øget stress.**
- **Arbejdspladsinterventioner over for muskel-skelet smerter bør rette sig imod såvel det fysiske som det psykosociale arbejdsmiljø.**
- **Når arbejdspladsen benyttes som arena for rehabilitering skal der være opmærksomhed på det psykosociale arbejdsmiljø**

Generelle anbefalinger

At der sikres arbejdspladser, hvor de ansatte oplever tilfredshed med arbejdspladsens indretning, snarere end specifikke ergonomiske indsatser.

At patienter med muskel- og skelet besvær holder sig fysisk i gang, og arbejdet i mange tilfælde kan anses som en del af behandlingen.

At arbejdspladsen tilpasses med henblik på at mennesker med muskel- og skelet besvær kan arbejde i størst muligt omfang, også selvom det ikke kan lade sig gøre med 100 % effektivitet.

Tungt arbejde

Ensidigt gentaget arbejde (EGA)

Int Arch Occup Environ Health. 2013 May;86(4):463-70. doi: 10.1007/s00420-012-0781-5. Epub 2012 May 15.

Risk for low back pain from different frequencies, load mass and trunk postures of lifting and carrying among female healthcare workers.

Holtermann A[1], Clausen T, Aust B, Mortensen OS, Andersen LL.

Author information

Abstract

PURPOSE: To investigate the risk of developing non-chronic and chronic low back pain (LBP) from frequency, load mass and trunk postures of occupational lifting and carrying among female healthcare workers.

METHODS: A total of 9,847 workers in eldercare answered a questionnaire about occupational lifting and carrying frequency (rarely, occasionally and frequently), load mass (low: 1-7 kg, moderate: 8-30 kg and heavy: >30 kg), trunk posture (upright or forward bent back), and days with LBP in 2005. The odds ratio (OR) for developing non-chronic (1-30 days the last 12 months) and chronic (>30 days the last 12 months) LBP reported in 2006 from these characteristics of occupational lifting and carrying was investigated with multi-adjusted logistic regressions among female healthcare workers without LBP in 2005 (n = 1,612).

RESULTS: Frequently lifting and carrying low load mass with forward bent back doubled the risk for developing chronic LBP (OR: 2.14; 95 % CI: 1.02-4.50). Occasionally and frequently lifting or carrying of any load mass with upright back did not increase the risk for chronic LBP. Lifting and carrying did not increase the risk for non-chronic LBP.

CONCLUSIONS: Preventive initiatives for LBP among healthcare workers ought to pay attention to frequent lifting and carrying of low load mass with forward bent back.

J Aging Health. 2014 Feb;26(1):88-105. doi: 10.1177/0898264313508188.

Social class differences in physical functions in middle-aged men and women.

Hansen ÅM[1], Andersen LL, Skotte J, Christensen U, Mortensen OS, Molbo D, Lund R, Nilsson CJ, Avlund K.

Author information

Abstract

OBJECTIVE: The objective of the present study is to analyze gender differences and social class gradients in physical functions; and to study whether the social class gradients in physical functions in midlife differed between men and women.

METHOD: This study used traditionally used physical performance tests and we added several tests of vigorous physical functioning (trunk muscle strength and power and sagittal flexibility). We measured reaction time, one-legged balance, sagittal flexibility, jump height, chair rise ability, trunk muscle- and handgrip strength in 5,412 participants aged 50 to 60 years (68.5% men).

RESULTS: We found gender differences and social class gradients for all physical performance tests. We did not find an interaction between social class and gender, indicating that the social gradient in physical functions did not differ between men and women.

DISCUSSION: Including measures of vigorous physical functioning may add to the existing knowledge on development of functional limitation and poorer functional health later in life.

KEYWORDS: SES; early aging; physical function; physical tests

Tungt arbejde

REGION SJÆLLAND
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– vi er til for dig

Øger risikoen for muskel-skeletbesvær.

I alle kropsregioner, men især i lænderyggen.

Er ofte kombineret med andre risikofaktorer som vrid, dårlige arbejdsstillinger, helkropsvibrationer og lav indflydelse.

Fysisk krævende jobs medfører

ikke højere fysisk kapacitet

end blandt arbejdstagerne med

stillesiddende jobs. Ophobning af andre (kardiovaskulære)

risikofaktorer!!

Restitution

- **Det er vigtigt med restitution**
- **Vekslende arbejdstempo kan være en fordel**
- **Egentlige pauser i løbet af dagen**

Positive faktorer i arbejdet

Generelt har forskere og fagpersoner indenfor arbejdsmiljøområdet i mange år fokuseret på at fjerne eller forebygge de faktorer i arbejdet, som kan have en negativ betydning for medarbejdernes helbred og trivsel. Det kan fx være ved at forebygge rolleuklarhed, jobusikkerhed og mobning.

Indenfor de seneste ti til femten år er forskerne også begyndt at tale om de forhold på arbejdspladsen, der øger vores glæde ved arbejdet - såkaldte positive faktorer. Det kan være alt det, der understøtter medarbejderens trivsel, læring og personlige udvikling.

Tak for opmærksomheden!!