

The risk of pain and disorders in neck, shoulders, arms and hands when performing repetitive work

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Topics

- Pain and disorders in neck, shoulder, arm, hand
- Causative factors
- Where do we see the problem?
- The hairdresser – specific ergonomic exposures?
- What to do

Disorders

- Chronic neck pain



- Shoulder tendinitis



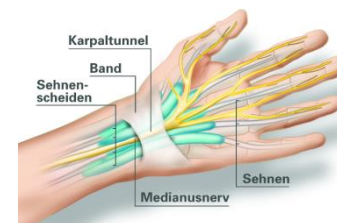
- Tennis- and golf elbow



- Tendinitis of the hand



- Carpal tunnel syndrome



Causative factors

- Repetitive movements
- Forceful use
- Awkward position
- Raised arms
- Combinations



Job tasks with the arms lifted

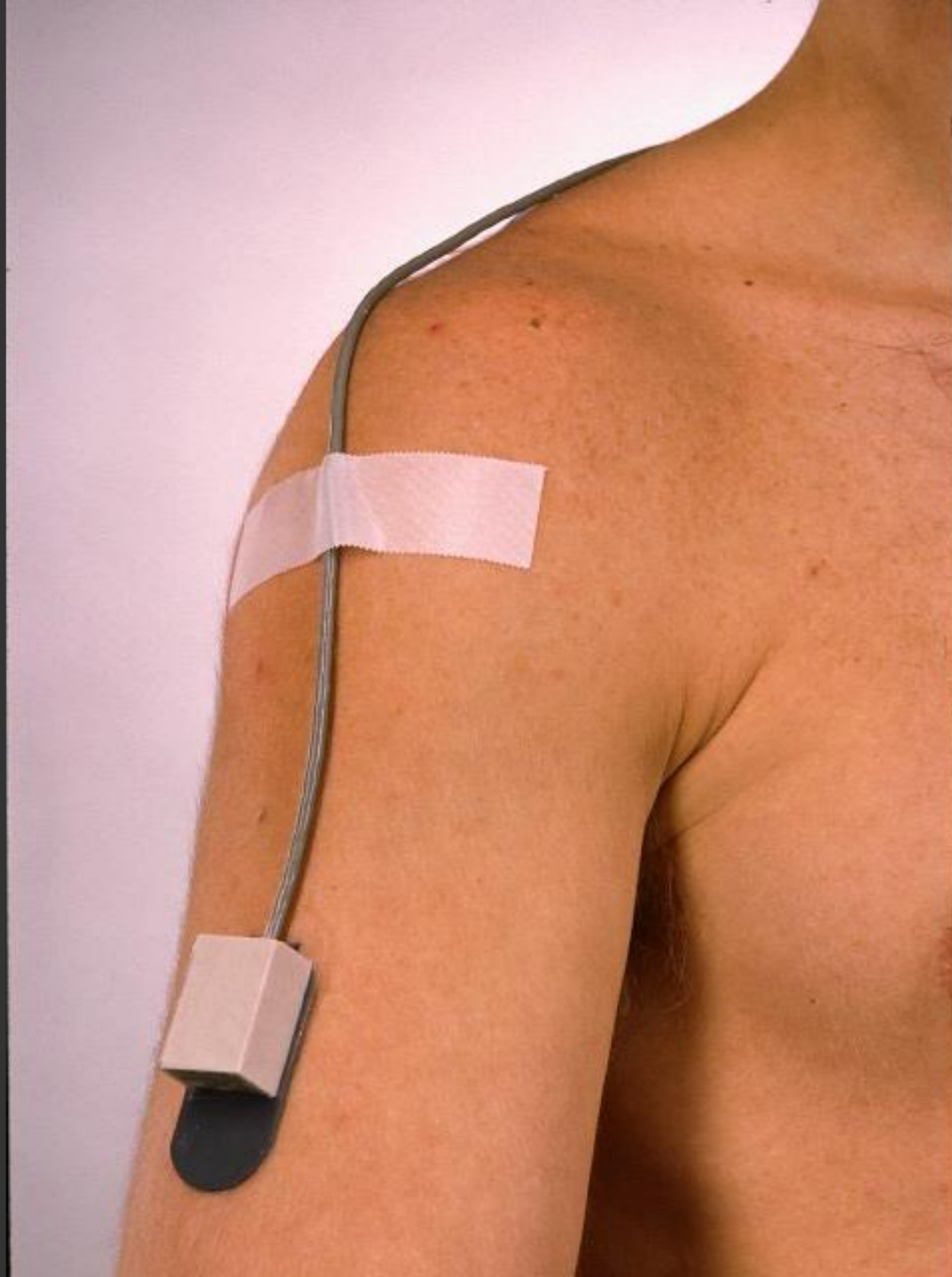


Major challenges

- Independent objective exposure measurements
- Valid independent case-definitions
- Exposure-response relationships
- Threshold limits







Neck and shoulder pain



- Moderate evidence
 - Combination of repetitive work in shoulder and flexion of the neck
- Limited evidence
 - Static load
 - Forceful work

Reviews: Palmer KT, Smedley J. 2007. Work relatedness of chronic neck pain with physical findings—a systematic review. *Scand J Work Environ Health* 33:165-191

Cote P, van d, V, Cassidy JD, Carroll LJ, Hogg-Johnson S, Holm LW, et al. 2008. The burden and determinants of neck pain in workers: results of the Bone and Joint Decade 2000-2010 Task Force on Neck Pain and its associated disorders. *Spine* 33:S60-S74

Shoulder tendinitis

Good evidence

Working with arms lifted

Forceful and repetitive movements

Limited evidence

Repetitive movements



Review: van Rijn RM, Huisstede BM, Koes BW, Burdorf A. 2010. Associations between work-related factors and specific disorders of the shoulder--a systematic review of the literature. Scand J Work Environ Health 36: 189-201.

Tennis- and golf elbow

- Limited evidence
 - Forceful work
 - Forceful and repetitive work



Reviews: van Rijn RM, Huisstede BM, Koes BW, Burdorf A. 2009a. Associations between work-related factors and specific disorders at the elbow: a systematic literature review. *Rheumatology (Oxford)* 48: 528-536.

Shiri R, Viikari-Juntura E. 2011. Lateral and medial epicondylitis: role of occupational factors. *Best Pract Res Clin Rheumatol* 25: 43-57.

Hand tendinitis



- Limited evidence
 - Force in combination with repetitive movements

Palmer KT, Harris EC, Coggon D. 2007. Compensating occupationally related tenosynovitis and epicondylitis: a literature review. *Occup Med (Lond)* 57: 67-74.

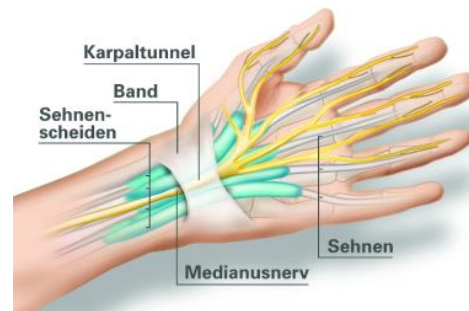
CARPAL TUNNEL SYNDROME

Good evidence

Repetitive and forceful movements
Hand-arm vibration

Moderate evidence

Postures
Repetition



Reviews

van Rijn et al. Associations between work-related factors and the carpal tunnel syndrome—a systematic review. *Scand J Work Environ Health* 2009;35(1):19-36

Barcenilla et al. Carpal tunnel syndrome and its relationship to occupation: a meta-analysis. *Rheumatology* 2012;51:250-261

What do we know about hairdressers?

- Hands and arms lifted (shoulder)
- Rapid repetitive movements (hand, shoulder, neck)
- Neck bended
- Not forceful
- Often busy, few pauses




Ergonomic measurements

- 31 jobs
- Whole day measurements
- 10 persons each job
- Repetition
- Position

Hand repetition – measurements


Wrist velocity

Low repetition




Office worker
Bank assistant
Forklift operator
Truck driver
Dental hygienist
Plumber
Smith
Wood processing
Childcare worker
Nurse's aid

Medium repetition



Carpenter
Gardener
Cardboard worker
Electronical worker
Scaffolder
Car mechanic
Construction worker
Bricklayer
Garbage collector
House painter

High repetition



Farmer (handling pigs)
Insulation worker
Storage worker
Hairdresser
Postal worker
Kitchen assistant
Fishindustry worker
Cleaner
Laundry worker
Slaughterhouse worker

Hand position - measurements

Neutral

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- Forklift operator
- Bank assistant
- Fish industry worker
- Office worker
- Construction worker
- Truck driver
- Wood processing
- Smith
- Cardboard worker
- Car mechanic

Partly out of neutral

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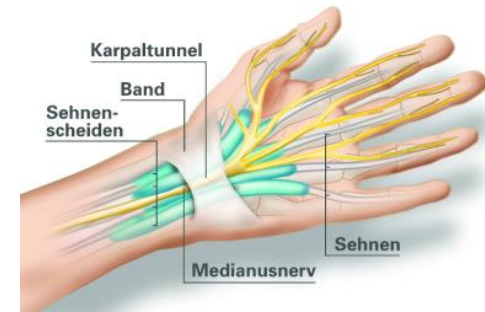
- Bricklayer
- Garbage collector
- Storage worker
- Slaughterhouse worker
- Plumber
- Gardener
- Laundry worker
- House painter
- Electronical worker
- Scaffolder

Often out of neutral

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- Dental hygienist
- Cardboard worker
- Farmer
- Insulation worker
- Cleaner
- Nurse's aid
- Postal worker
- Hairdresser**





Repetition and carpal tunnel syndrome

- The risk of CTS is more than doubled in the highest exposed group compared to the lowest exposed
- 31 jobs
- 971,000 persons
- 11,000 CTS cases (from Danish hospital registers)

Furthermore we know...

The Danish Hairdresser Study 2009

5324 hairdressers (1985-2007)

2321 left the trade

8 years in the trade on average

42 % because of musculoskeletal pain

Lysdahl SH, Sosted H, Andersen KE et al. Hand eczema in hairdressers: a Danish register-based study of the prevalence of hand eczema and its career consequences. *Contact Dermatitis* 2011;65:151-8

What are the recommendations – based on knowledge?

- Reduce work with hands and arms lifted
- Increase variation in tasks
- Respect pauses
- Have proper equipment (chairs, scissors etc.)