



## **Letters to the Editor**

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Scand J Work Environ Health [2001;27\(1\):82-83](#)

doi:10.5271/sjweh.591

### **Study on postural stress and shoulder disorders**

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Refers to the following text of the Journal: [2000;26\(4\):0](#)

**Key terms:** [automobile assembly work](#); [biomechanics](#); [ergonomics](#); [job analysis method](#); [letter to the editor](#); [MSD](#); [musculoskeletal disorder](#); [postural stress](#); [posture](#); [repetitive work](#); [shoulder disorder](#); [shoulder tendonitis](#); [video recording](#)

This article in PubMed: [www.ncbi.nlm.nih.gov/pubmed/11266152](http://www.ncbi.nlm.nih.gov/pubmed/11266152)

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## Study on postural stress and shoulder disorders

Laura Punnett and her co-workers recently published a study (1) on shoulder disorders and postural stress and concluded that severe shoulder flexion or abduction is predictive of chronic or recurrent shoulder disorders. We have some concerns about issues pertaining to the study design.

Shoulder postures of auto assembly workers with and without shoulder pain were compared according to specified criteria. Among the cases, shoulder postures were observed in the job task held at the time of the onset of shoulder pain, while for the referents the currently held job was selected for postural analysis. If the onset (or aggravation) of shoulder pain is insidious or not well defined, workers may be likely to link the onset with the most strenuous job tasks. Thus exposure among the cases would have been rated too high. On the other hand, of the 259 potential referents more than 50% were excluded because of complaints of musculoskeletal pain in one or more regions. This exclusion may have resulted in an underestimation of exposure in the study population if workers with musculoskeletal disorders — whatever the causes — experienced pain in more strenuous work. Thus the combined effect of the differential exposure misclassification for the cases and referents would have produced risk estimates biased towards values that were too high.

Moreover, since pain during abduction or flexion in the shoulder in a clinical examination was taken as a sign

of shoulder disorder, it is perhaps not surprising that the authors found a relation between shoulder disorder and job tasks involving elevation of the arms. It may be important to distinguish between the main causes of disorders from factors which provoke symptoms once the disorder has developed — at least if the objective of the study is to detect causes of shoulder disorders. The Punnett et al study seems not to disentangle primary causal factors from factors that provoke symptoms. If epidemiologic musculoskeletal research at large is considered, it seems a major challenge to develop and apply objective markers of disorders and diseases. In so far as the outcome is based on pain reporting — whether reported in a questionnaire or at a clinical examination — it is probably not possible to separate etiologic and prognostic factors among currently employed workers.

### References

1. Punnett L, Fine LJ, Keyserling WM, Herrin GD, Chaffin DB. Shoulder disorders and postural stress in automobile assembly work. *Scand J Work Environ Health* 2000;26(4):283-91.

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Scand J Work Environ Health 2001;27(1):82—83

## Authors' reply

We thank Drs Bonde & Kolstad for their thoughtful reading of our study. The questions that they raise are of interest to investigators of episodic events with sometimes poorly delineated onset. In our study of shoulder musculoskeletal disorders, in a unionized workplace, a few workers (but probably not all) who developed pain and functional limitation were able to obtain transfers to less physically stressful jobs. Thus to link a case to the current job at the time of interview would have

risked underestimation of the etiologically relevant exposures. However, it is also true that reliance on a subject's recall to identify the job at onset risks overestimation if "onset" is interpreted by the worker to mean "onset of such severe pain that I could no longer tolerate it" rather than "when I first felt any shoulder discomfort". We did not have access to data regarding how much job mobility had actually been exercised in relation to musculoskeletal symptoms, and therefore we