Back pain

A Van Nieuwenhuyse et al. OEM (2006) Vol.63 p 45 – 52
The role of physical workload and pain related fear in the development of low back pain in young workers: evidence from the BelCoBack Study; results after one year of follow up

Ergonomic factors were found to be predictive of back pain, as was fear of pain. The results for pain of a type that could be related to injury were not presented. There were some doubts about the exposure variables, which were measured by self report.

The study population consisted of 716 young (<30 years old) healthcare or distribution workers (6 organisations) without self reported low back pain lasting seven or more consecutive days during the year before inclusion. All were permanent employees with prospects of more than 1 years employment in post.

At baseline employees were asked about (1) the duration of working in awkward postures, (2) the duration of exposure to whole body vibration, (3) the intensity and, where indicated, the frequency of manual materials handling such as lifting, carrying, pushing, or pulling of loads, (4) static work postures (that is, standing and sitting for long periods) and (5) ability to change posture regularly. Leisure activities included DIY and driving. Occupational stress was assessed by means of the Karasek Job Content Questionnaire, support, job insecurity, and job dissatisfaction. Smoking, BMI, and history of body pain were recorded as was pain related fear, catastrophising, negative affectivity and somatisation.

One year outcomes were assed by means of the following question:

> *"Have you had ache, pain or discomfort in the low back region irradiating to the legs or not, for seven or more consecutive days during the past twelve months?"*

61% of recruits were women 88% were in full time employment. Those who returned the second questionnaire were significantly more likely to have had back pain in the year before inception, were more likely to drive during leisure time, and were more likely to be recent employees.

After 1 year the incidence of long duration back pain had been 12.6%. [90 cases]. 585 people provided full information.

Independent Risk factors were:

- Working with the trunk in a bent or twisted position for more than 2 hours per day RR = 2.21 (95% CI = 1.20 – 4.07). 14 out 57 people so exposed, developed back pain.
- No ability to change posture regularly RR = 2.11 (95% CI = 1.26 – 3.54) 20 out of 73 people so exposed developed back pain.
- Back complaints in the year before inception RR = 1.7 (95% CI = 1.07 – 2.75). 48 out of 290 people with this history developed long term back pain.
- Pain-related fear RR = 1.81 (95% CI = 1.04 – 3.14) when fear was highest. 38 out of 190 people with (high) pain-related fear developed long term back pain.

Whole body vibration, manual materials handling, forceful movements, lifting and patient handling were not risk factors. Neither were standing or sitting for long periods. Neither were job strain, support, job insecurity or job dissatisfaction. Taking the population as a whole, the most likely causal factor was high pain-related fear [high pain-related fear affected 32% of the population the other risk factors affected only 5% each]. Comparison of univariate and multivariate risk estimates shows that very few of the fear of pain group of cases also had poor ergonomic factors to contend with. Similarly there was very little overlap of the bent for > 2 hours, fixed posture or previous complaints groups.

Comment
A 7 or more day episode of back pain or radiating pain is non-trivial. It is unlikely that people would mis remember it within a year. However, ache and discomfort are much more subjective and the reasons for noticing them may vary. There was no information on the composition of the positive-outcome group.

At first sight the analysis shows clear indications of risk from traditionally recognised ergonomic factors: bent posture, static posture and, with previous back pain. This is a very unusual result; most longitudinal studies find no evidence of the predictive power of ergonomic factors for back pain. Previous pain is an uncontroversial result; the only surprise is that it is not a stronger predictor.

On closer inspection the results are confusing, possibly because the first language of the authors is not English. How can there be little overlap between groups who work with bent / twisted postures for more

than 2 hours a day and people who observe that they work with relatively static postures? How can it be that previous pain did not get preferential reporting from those who have a dread of pain?

In conclusion, the apparent support for ergonomic risks should be treated with a little scepticism; a more convincing case would be made if the physical exposures had been independently observed. Pain and radiating pain should be analysed separately from ache and discomfort if any inferences about injury are to drawn.

Fear of pain was the most predictive factor, but doubts about the study design preclude elaboration on this point.