

## Focus on IFA's work

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# Musculo-skeletal strain and stress in a joiner's workshop

## Problem

Diseases of the muscular and skeletal system are commonly the cause of health-related absence from work in wood-working businesses. These diseases can be caused by overloading and improper lifting and carrying at the workplace, which are in turn caused by lifting and carrying loads or even by maintaining an extreme body posture.

## Activities

The strains from the awkward body postures and improper load handling in typical tasks were ascertained in a joiner's workshop in cooperation with the then Institution for statutory accident insurance and prevention in the woodworking industry.

The IFA measuring system CUELA (a computer-supported system for recording and analysing musculo-skeletal strain and stress over the long term) was used to record postures and determine load weights.

The simultaneous video recording made it possible to establish a relationship between the measurements and the specific tasks. To get a characteristic picture of the tasks and the resulting bodily strains and stresses, three workers from different parts of the joiner's workshop were studied. Thus, the working postures at typical wood-working machines were recorded in the machine room; the surface treatment and furniture assembly movements were recorded in the bench room; and the



Work with a circular saw; measurement with the CUELA system

delivery tasks of loading and unloading and final assembly were recorded on the customer's premises.

The measurements of the external strains on the workers were evaluated using the ergonomic OWAS method. The result is a frequency distribution of working postures and handled weights related to the working time. These lead both

individually and in combination with one another to an evaluation of the tasks by arranging them in different risk classes.

### **Results and Application**

The obtained measurements permit a qualitative and quantitative comparison of the analysed working tasks. It was thus found that excessive strain is the result of working heights that are too low or machinery that is otherwise difficult to access in the machine room. Yet no elevated levels of strain were found for the large majority of machine workplaces and for the work in the bench room.

The strain and stress is higher in transport and final assembly on the customer's premises. Targeted prevention measures can be devised together with joineries based on the findings of this risk assessment.

### **Area of Application**

The woodworking industry.

### **Additional Information**

- Kremers, F.; Schulze, J.: Was passiert beim Heben, Tragen und Beugen? Computer-gestütztes System misst Belastungen von Skelett und Muskeln. Mitteilungsblatt der Holz-Berufsgenossenschaft – Holz-Info 103 (2001) S. 18-20

### **Expert Assistance**

IFA, Division 4: Ergonomics – Physical environmental factors

German Social Accident Insurance Institution for the woodworking and the metalworking industry, Munich

### **Literature Requests**

IFA, Central Division