Epidemiological research on the relationship between work-related factors and low back disorders has a long tradition in Finland. Circumstances to conduct epidemiological studies in Finland are in many respects favorable: We have good register data available, the population is comparatively stable and homogenous and has a positive attitude towards participating in health surveys. In addition, we usually have easy access to work sites and our data protection and confidentiality regulations are fair.

Epidemiological studies on work-related back disorders have been directed to disc degeneration of the lumbar spine utilizing magnetic resonance imaging (MRI) and also to the occurrence of low back pain using prospective study designs.

**Disc Degeneration**

**Finnish Twin Study**

Professor Videman from the University of Jyväskylä, together with his international team, has conducted a series of studies on risk factors of lumbar disc degeneration in identical twins. The subjects in the study on the role of commonly suspected risk factors and "twinship" [1] were selected from the Finnish Twin Cohort which contains virtually all sex-matched twin pairs born before 1958 and alive in 1975, including 2050 male identical twins. The study subjects comprised 115 identical twin pairs, aged 35–69 years (mean 49.4 years) discordant for at least one of the following factors: occupational materials handling, sedentary work, exercise participation, vehicular vibration, and cigarette smoking. Disc degeneration was assessed by MRI using signal intensity, disc height, and bulging as the signs of degeneration. A summary score was used as the measure of disc degeneration. Lifetime exposure to suspected risk factors was assessed with a structured interview.

In univariate analyses heavier occupational loading in terms of materials handling, lifting, bending, and twisting was associated with greater
disc degeneration, particularly in the upper part of the lumbar spine. Conversely, longer times sitting at work were associated with less degeneration. Statistically significant associations were not found between disc degeneration and hours of occupational driving or heavy loading before the age of 20 years. In multivariate analyses, the effect of familial aggregation, reflecting genetic and shared early environmental influences, outweighed the effect of environmental loading. The former explained 75% of the variability in disc generation score in the upper and nearly 50% in the lower lumbar region. Physical loading explained 7% of the variation in the upper and 2% in the lower lumbar region. Particularly in the lower region much of the variation remained unexplained (Fig. 1).

The results of this study emphasize the importance of genetic and familial factors, but also show an effect of occupational load on disc degeneration. An interesting question that remains unanswered is a possible interaction between the effects of genetically determined susceptibility and external physical load on the development of lumbar disc degeneration.

**Lumbar Disc Degeneration Among Men in Dynamic Physical Work, Machine Driving, and Sedentary Work**

The effect of occupational load on lumbar disc degeneration is being studied at the Finnish Institute of Occupational Health by a research group lead by Professor Riihimäki. In 1991 (cross-sectional study) 164 men aged 40–45 years participated in the study in which MRI of the lumbar spine