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Effects of ergonomic and health training on work interest, work ability and health in elderly public urban transport drivers

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Abstract

Public urban transport drivers of the Munich Transportation Authority ($n = 122$) with an average age of 50 years participated in 20 health days with full paid worktime over one year. The training consisted of physical exercise, professional skills training and self-experience in groups. The evaluation instruments were the work ability index (WAI) developed by the Finnish Institute of Occupational Health and the effect typology (ET) developed by the Austrian Institute of Occupational Health Promotion (IBG-Österreich). No changes were found in the WAI score. The ET evaluated for 50% of the participants the optimal effect "evolution", i.e., psychobiological and noetic changes. A variance analysis of the WAI pre–post differences according to the effect classes of the ET showed significant differences, namely an increase in the WAI in the evolution group and a drop in the recovery group. The thoughts on early retirement decreased in the "evolution group". The improvement of work ability and interest in work is essential for keeping elderly workers at work. The "individual" health training in Munich led to a rise of the WAI and indicated that, owing to its elements, this programme had an impact on ergonomics and relations at workplace.

1. Introduction

Researchers at the Finnish Institute of Occupational Health (FIOH) defined an "ergonomic triangle" of levels of health-promoting interventions to achieve an age-related work environment and sustainable improvement of work ability and health (Ilmarinen and Tuomi, 1993).

These three interactive levels of intervention in the triangle are:

(a) human relations at the workplace (culture),
(b) work and work organisation,
(c) individual work capacity (physiological and psychological).

This triangle is the ergonomic essence for evaluating successful interventions by using the work ability index (WAI) in the Finnish "Respect for the Ageing" programme. The WAI is an evaluation questionnaire which assesses the individual's ability to cope with work demands and assigns work ability to classes ranging from good to poor. The index bears a high predictive potential for early retirement (Tuomi et al., 1994) and death.

In our evaluation research of occupational health promotion we have focussed on a second

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dimension which we consider important for keeping older workers healthy at work, namely interest in work. Staying in the work process must be founded on both work ability and interest in work. This hypothetical model is based upon a theory with a salutogenic paradigm: the "Existence Analysis" of Frankl (1987), an anthropological and psychotherapeutic method which is highly useful for "salutogenic" research in occupational health promotion and ergonomics.

The salutogenic paradigms are (Frankl, 1982):

(1) Meaning (interest and challenge)
(2) Noetic dynamic (find meaning, take over responsibility, make decisions ...).

Based upon Frankl's work, we have developed the evaluation instrument called "Effect Typology (ET)" (Karazman et al., 1994) of occupational health promotion. The ET evaluates the salutogenic dynamics of a person. It was developed while evaluating the health promotion programme of 400 drivers who were employed by the Munich Public Transportation Authority. In 1995 and 1996 we made a co-evaluation of the programme both, by means of the WAI and by the ET to further validate the ET and to investigate the processes of occupational health promotion in general.

1.1. The effects of occupational health promotion

The effects of occupational health promotion on health, well-being and workability (i.e. the quality of a health promotion programme) can be measured by evaluating the quality of its subjective effects on the workers and participants themselves. The subjective approach of the WAI has made it possible to examine working life, health promotion, and the influences on both. With our "Effect Typology" we have tried to define subjective effects of health promotion programmes on the basis of the bio–psycho–noetic model of human life of Frankl (1982), to measure the quality of occupational health promotion and to predict, whether its effects on somatic and psychic health are of short, medium, or long term (Karazman et al., 1994). These effects should be achieved by implementing specific elements in the programme like physical training, psychobiological training, stress management and social skills, and diet counselling. These elements are important for occupational functioning of transport drivers. Physical training was introduced to improve endurance and posture while psychological training was introduced and included general relaxation training, concentration training, visualisation, etc. to improve general relaxation. The stress management module and the social skill training should help the drivers in achieving new attitudes towards work-related stressors like responsibility for passengers, conflicts with passengers, lack of recognition, etc. Self-experience groups supported the social skill training. The diet counselling was used to address the specific demands of drivers working in shift work.

As described above, we used the WAI and the ET to measure the quality of the health promotion programme and its effects on workability, health and work interest. With the ET we first defined the following qualitative hierarchy of the health effects of an occupational health promotion programme: recovery, relaxation, and evolution (Table 1).

This typology is hierarchic, that is a "lower" health effect quality is automatically included in the next "higher" one, but no effect is inferior to the other because an optimal occupational health promotion strives to achieve all three effects (i.e., recovery, relaxation, and evolution). Moreover, involutional dynamics followed by a deterioration of health, work ability, and well-being or loss of interest in private and working life could be

Table 1
The structure of the "Effect Typology" of occupational health promotion

Effect quality	Regeneration of psychobiological resources	Development of psychobiological resources and skills	Induction of noetic dynamics
Recovery	✓		
Relaxation	✓	✓	
Evolution	✓	✓	✓