

# Occupational stress management programmes: a practical overview of published effect studies

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There are many occupational stress management programmes available which are designed to prevent and cure the negative aspects of job-stress. The focus of the programmes can be directed towards the individual worker, the working group, the organization of the work or the organization as a whole. Moreover, programmes show a considerable variation with respect to the type of interventions they promote and their underlying assumptions, as well as their duration and costs. In this paper, effect studies of occupational stress programmes published between 1987 and 1994 are reviewed. The aim is to give a practical overview of the variety in occupational stress programmes, their scope, applicability and the evidence of their effectiveness. The paper updates the review by DeFrank and Cooper published in 1989.

*Key words.* Effectiveness; evaluation, occupational stress, stress management programmes.

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## INTRODUCTION

Occupational stress is a major problem in western societies. Its relationship with various diseases is becoming increasingly obvious,<sup>1–3</sup> but probably more apparent are the vast socio-economic consequences manifested in absenteeism, labour turnover, loss of productivity and disability pension costs.<sup>4–6</sup> In the UK the Health and Safety Executive<sup>7</sup> has estimated that half of the absenteeism which occurs is due to work-stress; in the Netherlands the percentage of workers who received a disability pension because of stress-related disorders (ICD-9, 309, adjustment disorder) increased between 1981–94 from 21% to 30% and the number who returned to work in the diagnosis group is lower than in any other group.<sup>4</sup>

The first extensive review of the literature on occupational stress management programmes was conducted by Newman and Beehr,<sup>8</sup> and published in 1979. Although personal and organizational strategies have been incorporated, they conclude that most of the strategies reviewed were based on professional opinions, and that very few strategies have been evalu-

ated directly with any scientific rigour. This implies that 'practitioners have little more than their common sense and visceral instincts to rely on when they attempt to develop badly needed preventive and curative stress management interventions'. DeFrank and Cooper<sup>9</sup> launched a review on the same subject in 1989, covering the literature up to 1987. They conclude that in comparison with the findings of Newman and Beehr,<sup>8</sup> substantial progress has been made. Stress management programme evaluation has become more systematic and rigorous. The present review is an update of the review of DeFrank and Cooper,<sup>9</sup> effect studies of occupational stress management programmes published from 1987–94 are identified, summarized and evaluated with respect to their effectiveness and application. The paper intends to offer a practical overview of the evaluated programmes and to assess the state of affairs with respect to evaluation research in the field of occupational stress management programmes.

## MATERIALS AND METHODS

### Inclusion of studies

Computer-based searches were consecutively conducted in three CD-ROM data-bases that include the relevant

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scientific research: PsycLIT (psychological), SOPADO (sociological) and Medline (medical). To identify those studies published between 1987 and 1994 which evaluate the effectiveness of occupational stress management programmes, the following key words were used: occupational (or job- or work-) stress in combination with intervention (programme, program, therapy or management). A considerable overlap between the three CD-ROM data-bases appears; after the searches in PsycLIT and SOPADO, the Medline search did not produce any additional studies. In the first run, 342 abstracts were identified and screened. When it became obvious from the abstract that the effectiveness of a stress management programme was evaluated, attempts were made to obtain the original article. Only 37 of the 342 abstracts refer to some kind of evaluation research, which indicates the relative scarcity of evaluation studies on this subject, compared with purely descriptive or theoretical studies. Eventually, only two articles<sup>10,11</sup> could not be obtained through the library services. After screening the articles collected, only 24 studies were ultimately included in the review. Seven studies<sup>12-18</sup> were left out of the review because the evaluation was purely anecdotal, *i.e.*, the training was only rated as effective on the basis of comments from the participants. Two studies were excluded because they focused on specific sources of stress (merger or acquisition<sup>19,20</sup>), and two other studies<sup>21,22</sup> were excluded because the intervention was directed towards workers who had been given a psychiatric diagnosis of 'major depression'.

### Classification of occupational stress management programmes

Stress management programmes vary widely with

respect to objectives, type of intervention, structure and target group. In occupational stress management programmes this variation is even greater because not only employees, as individual or as a group, but also the organization itself could be subjected to intervention programmes. In the literature, several categories are applied to classify occupational stress management programmes. Matteson<sup>23</sup> draws a distinction between preventive and curative strategies. Murphy<sup>24</sup> emphasizes three levels of intervention: primary (stressor reduction), secondary (stress management) and tertiary (Employee Assistance Programs). Newman and Beehr<sup>8</sup> use a classification of 12 categories based on the different types of adaptive responses or participants (person, organization, outsider), the primary target (person, organization) and the nature of response (preventive, curative). A more simple classification is given by DeFrank and Cooper<sup>9</sup> who distinguish interventions as well as outcomes (targets) of stress management programmes on three levels: individual, individual-organization interface, and organization. The DeFrank and Cooper<sup>9</sup> classification is used in this paper to subsume the reviewed studies as represented in Scheme I.

### Review: process and presentation

The studies included in the review are summarized by the authors of this paper independently on different aspects. The summaries are included in Scheme II in three columns. In the first column the *programmes* are characterized according to the aspects: type of programme, size of the target group, duration and number of the sessions and qualification of the trainer(s). The importance of an experienced trainer is illustrated by the findings of Butcher,<sup>25</sup> who evaluates two training

**Scheme 1.** Reviewed effect studies classified by level of intervention(s) and level of outcome measures (studies with more than one outcome level are printed in italic; studies with more than one intervention-level are printed bold)

Level of interventions	Level of outcome measures		
	<b>A. Individual</b> mood states ( <i>e.g.</i> , depression); psycho-somatic complaints; subjective experienced stress; physiological parameters; sleep disturbances; life-satisfaction	<b>B. Individual-organization Interface</b> job-stress-satisfaction; burn-out; performance; health-care utilization	<b>C. Organization</b> productivity; turn-over; absenteeism; health-insurance claim; recruitment
<b>A. Individual</b> (relaxation/meditation/ bio-feedback; cognitive coping strategies; Employee Assis- tance Programmes)	<i>25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 44, 45</i>	<i>25, 27, 29, 31, 33, 34, 37, 40, 41, 43, 45</i>	<i>33, 36, 43</i>
<b>B. Individual-organizational Interface</b> (relationships at work; person- environment fit; role issues; workers — participation and autonomy)	<b>45, 46</b>	<b>45</b>	
<b>C. Organization</b> (organizational structure; selection and placement; training; physical and environ- mental; job — (re)structuring; health concerns and resources)	<b>47, 48</b>	<b>48</b>	<b>47, 48</b>

groups and found better results when the trainer had more experience. Outcome measures which indicate the scope of the studies are included in the second column, *measurement characteristics*. Although this paper does not go deeply into matters of methodology, some crucial issues regarding the research design (control group, follow-up period, if any) are added in this column to indicate the persuasiveness of the study. *Outcomes* are summarized in the last column of scheme II.

In the results paragraph occupational stress management programmes are summarized per category of programmes more extensively. The evidence of the effectiveness of all reviewed studies is assessed on the basis of the quality of design and the limited scope indicated by the specific character of the target groups and the outcome parameters applied.

## RESULTS

The reviewed studies are classified in Scheme I according to the DeFrank and Cooper<sup>9</sup> classification of occupational stress management programmes. In the great majority of reported studies, interventions focus on the individual level. Interventions on this level vary considerably: from relaxation, meditation techniques, bio-feedback, cognitive coping strategies to individual counselling. Outcome measures on the individual level also show great variation well: physiological parameters (*e.g.*, blood pressure, muscle tension), psychometric scales of mood states, self-reported stress symptoms and satisfaction with life. On the individual-organizational interface level, interventions are directed towards a better person-environment-fit through strengthening social support or job-enrichment; outcome measures range from self-reported experiences (*e.g.*, job-stress, burnout) to health behaviour. Intervention on the organizational level are organizational development schemes and restructuring of jobs, while the outcome measures are productivity, absenteeism rates and health insurance claims. Scheme I shows that most studies with interventions on the individual level also have outcome measures on the individual-organizational interface level. Only two of the 24 studies reviewed evaluate an intervention on the individual-organizational interface level and two studies also concern interventions on the organizational level. However, compared with the 1987 review of DeFrank and Cooper,<sup>9</sup> this is a better score, because they did not trace any effect studies with interventions on these levels. Although there is general recognition that work and organizational problems are the major causes of occupational work-stress,<sup>49</sup> there is still a lack of research into interventions on this level. The low proportion of studies including interventions directed towards these causes does not necessarily give a correct representation of their actual occurrence; a methodologically sound evaluation on organizational level is usually much more difficult to implement.

## Occupational stress management programmes

*Individual level.* Although programmes apply different interventions, and many include more than one intervention (so called multi-model programmes<sup>25-31</sup>), their structures are comparable. Programmes usually commence with an educational phase, in which participants learn about the causes and consequences of occupational stress. Subsequently, a cognitive skill component is included, such as cognitive coping skills or time-management, which is intended to change the way in which people structure and organize their working situation. Finally, relaxation and/or meditation techniques are included, which target the physical concomitants of stress, such as muscle tension or blood pressure. Despite the similarity in structure, immense differences appear with respect to group size (6-27 per group; average of 12), duration of the programme (4-24 hours) and the period of implementation (from half a day to 12 weeks). No reasons are given for these vast differences, but the information is relevant when considering the costs and time impact of the programmes on the regular work-flow.

*Relaxation/meditation.* Relaxation methods can be distinguished in two categories: those ones that are physiologically oriented, aiming at the achievement of deep muscle relaxation through contracting and relaxing major muscle groups and, on the other hand, the cognitive-oriented methods achieving relaxation through imagery and meditation. Relaxation techniques are often used as a complementary technique in multimodel programmes. Three of the studies included in the review evaluate this technique as a single intervention, and are good examples of alternative methods. Murphy<sup>43</sup> uses a muscle relaxation technique which is taught to the participants by means of cassette tapes which describe muscle tension and relaxation exercises. Toivanen<sup>36</sup> describes an easy relaxation exercise, which needs only to be practised for 15 minutes a day. The participants are taught: (1) deep diaphragm breathing with the full vital capacity to possibly also improve the normal breathing and to relax the muscle structures involved; (2) forced tension and relaxation of the abdominal muscles to relax them and to 'massage' the abdomen; (3) deep relaxation along with simple suggestions for relaxing, to achieve relaxation, also focusing the mind on gradually calming the breathing. Tsai<sup>37</sup> applies the cognitive method which includes three cognitive processes: focusing, passivity and receptivity. Focusing is the ability to identify, differentiate, maintain attention on and return attention to simple stimuli for an extended period of time. Passivity is the ability to stop unnecessary goal-directed and analytic activity. Receptivity is the ability to tolerate and accept experiences that may be uncertain, unfamiliar or paradoxical. In the progress of relaxation, focusing, passivity, and receptivity is incorporated into the cognitive process, and the outcome of such relaxation is a calm mind and a relaxed

**Scheme II.** Summaries of reviewed effect studies on occupational stress management programmes

<i>Study</i> <i>First author</i> <i>target group</i> <i>intervention level</i>	<i>Programmes</i> <i>Type of programme/group-size/</i> <i>duration and time-frame/</i> <i>qualification of trainer</i>	<i>Measurement</i> <i>outcome measures/control</i> <i>group/follow-up period</i>	<i>Outcomes</i>
Butcher: 1988 <sup>25</sup> . Community health workers . Individual	Multimodal training/First training group of 27, second training group of 13 persons/3 hour sessions per week for 3 weeks/No trainer qualification mentioned	Perceived knowledge and abilities; Actual knowledge/No control group/Follow-up 4 months	Post-test scores significant changes on measurements, only for second training group changes maintained at follow-up. This is explained by the experience from the therapist with the first training group.
Norvell: 1987 <sup>26</sup> . Respiratory therapists . Individual	Multimodal training/Group size six persons/1 hour session per week for 8 weeks/Master's level psychologists	Burnout; Physical symptoms; Hassels and Uplifts Scale/Waiting list control group/No follow-up period	Support that a variety of stress management techniques can be effective in enhancing emotional functioning. However, only two out of 11 scales are significant.
Bertoch: 1989 <sup>27</sup> . Teachers . Individual	Multimodal training/Group size 15 persons/2 hour sessions per week for 12 weeks/Clinical psychologist	Stress levels; Clinical rating scale/Waiting list control group/No follow-up	Substantial decrease in stress levels after the treatment compared to control group. More focused treatment on individual needs is recommended.
Johansson: 1991 <sup>28</sup> . Nurses . Individual	Multimodal training/Group size max. nine persons/2 x 50 minutes per week for 3 weeks/No trainer qualification mentioned	Anxiety; Depression/Minimal treatment control group/No follow-up	Significant lower anxiety and depression scores for the treatment group compared to control group.
McCue: 1991 <sup>29</sup> . Medical Residents . Individual	Multimodal training/Group size 13-16 persons/4 hours on one day/No trainer qualification mentioned	Burnout; Stress levels; Life expectancy survey/Control group/Follow-up 6 weeks	Training was received positively and can lead to significant short-term improvement in stress and burnout test scores.
Reynolds: 1993 <sup>30</sup> . Health service workers . Individual	Multimodal training/Group size nine persons/2 hour sessions per week for 6 weeks/Clinical psychologist	Evaluation; Session impact rating/No control group/No follow-up	Time management and introductory sessions had few impacts on participants. Relaxation, relationships, cognitive strategies and dealing with emotions had a distinctive and predicted positive impact.
Schaufeli: 1994 <sup>31</sup> . Community nurses . Individual	Multimodal training/Group size not mentioned/3 day workshop No trainer qualification mentioned	Somatic complaints; Psychological strain; Burnout; Job performance; Reactivity/No control group/ Follow-up 1 month	Treatment is effective in decreasing mental and physical symptoms, but not job performance. Moderating role of reactivity. Low reactive nurses, who are already rather resistant to stress benefit most from the workshop.
Barkham: 1990 <sup>32</sup> . White collar workers . Individual	Psychotherapy/Individual/2 sessions + 1 after 3 months/ Clinical psychologists	Depression; Symptom checklist/Normative control data/ Follow-up 6 months	At follow-up 53-75%, depending on the scale that is used, of the clients have improved to normal functioning.
Cooper: 1990 <sup>33</sup> . Post-office employees . Individual	Psychotherapy/Individual/Average of three sessions/Clinical psychologists	Anxiety; Depression; Somatic anxiety; Self-esteem; Job satisfaction; Organizational commitment, Sickness absence days/Normative control data/ Follow-up 6 months	Significant decline in sickness absence, anxiety levels, somatic anxiety, depression and increase in self-esteem. No changes in job satisfaction or organizational commitment.
Keys: 1988 <sup>34</sup> . Staff working with mentally retarded . Individual	Stress Inoculation Training (SIT)/ Group size 12-16 persons/One day workshop/No trainer qualification mentioned	Anger Inventory; Emergency restraints rating/Attention control group/Follow-up $\pm$ 5 months	Decrease in scores on anger inventory, frequency of emergency restraints significantly reduced compared to the period prior to the training. For males a larger reduction in anger scores reported compared to females following the training.
Long: 1988 <sup>35</sup> . Teachers . Individual	Stress Inoculation Training (SIT)/ Group size 7-12 persons/1.5 hour per week for 8 weeks/Experienced group leaders	Anxiety; Teachers' stress; Coping; VO <sub>2</sub> max-cardiovascular fitness/Delayed treatment control group/Follow-up 8 weeks	SIT with exercise more effective in reducing anxiety and stress compared to minimal treatment, although both groups significantly decrease emotion focused and increase of preventive coping. SIT without exercise component had no significant effect on anxiety, stress or coping strategies. This is probably due to the time-frame and design of the experiment. Subgroup of high-anxious/low fitness benefit most.
Tolvanen: 1993 <sup>36</sup> . Hospital cleaners . Individual	Relaxation training/Group size not mentioned/3 x 15 minutes per week for 3 weeks/No trainer qualification mentioned	EMG levels; Diary; Absenteeism ratings; Depression/ Control group/Follow-up 6 months	Relaxation training effective in reducing neck-shoulder tension, but the decrease in absenteeism rates can not be attributed to the relaxation training because control group shows a comparable decrease, which is explained by the social support from the researcher.
Tsai: 1993 <sup>37</sup> . Nurses . Individual	Relaxation training/Group size 23 persons/2 x 90 minutes per week and follow-up session after 5 weeks/No trainer qualification mentioned	Work stress; General Health Questionnaire/Placebo control group/No follow-up	Significant difference between experimental and control group after 5 weeks. Duration of practice significant factor on self reported work-stress levels. Control group also shows decrease in reported levels, which is explained as reactivity and contamination effects.
Woods: 1987 <sup>38</sup> . White-collar workers . Individual	Rational Emotive Training (RET)/ Group size 8-14 persons/1.5 hour per week for 4 weeks/Experienced RET trainer	Physical symptoms; Anxiety; Depression; Irrational beliefs/ No control group/Follow-up 3-4 months	Three to four months after the training major changes on all outcome measures and these changes are related to changes in irrational beliefs.
Kushnir: 1993 <sup>39</sup> . Senior safety officers . Individual	Rational Emotive Training (RET)/ Group size 22 persons/4 hour sessions per week for 5 weeks/ Experienced RET trainer	Cognitive weariness; Somatic complaints; Assertiveness; Irrational Beliefs/Control group/Follow-up 18 months	After 18 months the improvements on the measurements still evident, but not in the same extent as short term effects. Booster session is advised. No follow-up data is available for control group.

Continued

Scheme II. *Continued.*

<b>Study</b> First author . target group . intervention level	<b>Programmes</b> Type of programme/group-size/ duration and time-frame/ qualification of trainer	<b>Measurement</b> outcome measures/control group/follow-up period	<b>Outcomes</b>
Hyman: 1993 <sup>40</sup> . Staff in long-term care facility . Individual	Experiential group training/Group size not mentioned/3 hour sessions for 3 weeks/No trainer qualification mentioned	Burnout; Work atmosphere rating; Benefit workshop rating/No control group/No follow-up	Statistical improvement for the scales personal accomplishment and emotional exhaustion. Also rating work atmosphere improved. Retrospective pretest design is used.
Sallis: 1987 <sup>41</sup> . Hi-tech personnel . Individual	Three different training programmes: relaxation training group, multimodal training, education—support group; Group size 11–16 persons/1 hour per week for 8 weeks/No trainer qualification mentioned	Blood pressure; Anxiety; Depression; Hostility; Job satisfaction/Education—support group is minimal treatment control group/Follow-up 3 months	Significant reduction in anxiety, depression and hostility, maintained at follow-up measurement. No improvement on job satisfaction, work stress and blood pressure. No evidence that one group was more effective than the other, even education— support group shows comparable changes.
Bruning: 1987 <sup>42</sup> . Hospital equipment personnel . Individual	Three different training programmes: management skills, meditation, exercise; after 13 weeks groups receive a combination of the programmes/8–10 hour training in first week, which is repeated after 13 weeks / Group size 15–16 persons/One of the researchers	Pulse rates; Blood pressure; Galvanic skin response/Control group only during first training week/No follow-up period	All three training programs resulted in significant reductions in pulse rate and systolic blood pressure compared to control group, none of the programs was more effective.
Murphy: 1988 <sup>43</sup> . Highway maintenance workers . Individual	Two different training programmes: biofeedback, muscle relaxation; group size 2–4 persons/ 1 hour daily for two weeks/ Cassette tapes	Absenteeism; Performance ratings; Equipment accidents; Work injuries/Control group/ Follow-up 1.5 year	There is limited support found for relaxation training on absenteeism one year after the treatment, not on the other measures. Six months later this effect also diminished.
Jenkins: 1990 <sup>44</sup> . Teachers . Individual	Two different training programmes: individualized training method — step by step development of an individualized plan and a global training approach — focus on general knowledge; group size not mentioned/3 hour sessions for 2 weeks/No trainer qualification mentioned	Survey about the workshop/ No control group/ Follow-up 3 weeks	Teachers who received the individual training did significantly increase the time they spend on managing stress, and used a greater diversity of methods to handle stress compared to the global training approach. Both training methods had the same content.
Cecil: 1990 <sup>45</sup> . Teachers . Individual—organizational	Two different training programmes: stress inoculation training (SIT) and co-workers support group; group size not mentioned/1.5 hour per week for 6 weeks/No trainer qualification mentioned	Personal and organizational stress levels; Coping skills; Teacher anxiety observations/ No control group/ Follow-up 1 month	SIT was effective in reducing self reported stress, while the co-worker support group was not. Neither treatment successful in changing motoric manifestations of anxiety in the classroom.
Grossman: 1993 <sup>46</sup> . Hospital staff . Individual—organizational	Support groups/Group size 8–15 persons/1.5 hour per week for 10– 15 weeks/Social workers, psychiatric nurses or psychologists	Evaluation report/No control group/No follow-up period	Appear to be effective in alleviating stress. A problem is the high drop-out rates (people who need it most).
Jones: 1988 <sup>47</sup> . Hospital staff . Organizational	Organization-wide stress management program/All members of the organization/Total duration one year/No trainer qualification mentioned	Medical malpractice claims/ Matched control group/ Follow-up $\pm$ 1 year	Hospitals that implemented an organization-wide stress management program had significantly fewer claims compared with a matched sample of hospitals
Golembiewski: 1987 <sup>48</sup> . Management team . Organizational	Organizational Development/All members of the organization/ Total duration 13 months/No trainer qualification mentioned	Burnout; Job involvement; Work environment; Turnover rates/ No control group/No follow-up	Level of burnout diminished and remained reduced for at least four months, decreased somewhat in the following nine more months. Improvement in group properties and turnover rates persisted.

body functioning. The relaxation technique included breathing exercise, imagery and meditation, with special emphasis on the underlying cognitive process of meditation proposed by Smith.<sup>50</sup> Another meditation—relaxation technique applied in a study<sup>42</sup> was developed by Carrington.<sup>51</sup> In this method the participants are instructed to sit quietly and meditate for 15 to 20 min once or twice a day. The participants begin each meditation session by calming and relaxing the body. Then they spend the remaining time working with a mantra (meditation sound), which has been chosen by the participant from a number of such sounds selected by Carrington.<sup>51</sup>

**Biofeedback.** Biofeedback was evaluated by Murphy<sup>43</sup> as a separate intervention technique, but is usually employed in combination with relaxation. When the relaxation exercises are practised, the participants receive immediate response (feedback) measurements from an electromyogram (EMG). Biofeedback is provided by a finger thermometer and a galvanic skin-resistance monitor, which the participants use to find out if they are successful in dilating peripheral blood vessels and decreasing sweat-gland activity. Another way of giving biofeedback is mentioned by Johansson<sup>28</sup> who, in connection with autogenic training uses select phrases (*e.g.*, 'the feeling of heaviness is growing across

my shoulders and arms; I am relaxing deeper and deeper') which should be repeated with intense concentration.

Methods which provide the participant of a stress management programme with an immediate response on the effect of the exercises are especially helpful in teaching them the most effective way of to achieve relaxation.

*Cognitive coping strategies.* Cognitive coping strategies are derived from psychotherapy, and are based on the concept that human behaviour and emotions can be influenced by a change in cognition. Two categories of cognitive coping strategies can be distinguished: the cognitive restructuring strategies, aiming at the reduction of stress, and the coping skill strategies directed towards the development of personal strategies aimed at improving skills and competencies to meet the demands of the job. The rational emotive therapy of Ellis<sup>31,38,39</sup> is an example of the cognitive restructuring strategy. The appraisal and reappraisal model of Beck<sup>33</sup> and the self-instruction therapy of Meichenbaum<sup>28</sup> are examples of the coping skill strategy.

Cognitive restructuring involves training in positive coping self-statements (e.g., 'One step at a time'; 'I can handle the situation') that encourage realistic assessment of situations, control over self-defeating thoughts, preparation to confront potential stressors, coping with fear and reinforcement of successful coping behaviour.

The stress inoculation training developed by Meichenbaum<sup>52</sup> is one of the most famous cognitive coping skill strategies. The programme focuses on such activities as goal-setting, time-management, communication skills, conflict resolution and problem articulation skills. For example, in Bruning's<sup>42</sup> study participants were instructed to explore both work and personal values and then to set themselves both strategic and tactical goals. They were taught to pinpoint goals, to seek the collaboration of fellow workers regarding these objectives and to identify road-blocks. Most of the studies use a method of education and discussion. In Bertoch's<sup>27</sup> study the participants discuss customary ways of coping with disappointment and explore less stressful alternatives. Another form of this method is used by Butcher,<sup>25</sup> who provides the participants of his study with 'stress scripts' in which cognitive, emotional and behavioural directions for constructive reactions to stress situations are explained.

An example of how problem articulation skills can be taught is given by Hyman<sup>40</sup> in an exercise in which each participant had to communicate the correct order of a series of items to a partner, while sitting back-to-back. In another exercise, an 'accident report' was read aloud and then transmitted verbally to a series of volunteers who had not heard or seen the written report.

*Employee Assistance Programmes (EAP).* The Employee Assistance Programmes (EAP) were applied in the

studies of both Cooper and Barkham.<sup>32,33</sup> Both studies involve different forms of psychotherapy given to highly stressed individuals. The intervention is, in contrast to the other studies, curative in nature. Barkham's<sup>32</sup> study can be considered an EAP which takes place outside the organization. All the participants of the study were referred to his psychological clinic because of work-related problems. He describes a brief therapeutic model comprising two weekly sessions of therapy, followed by a third session three months later. Two modes of therapy are presented within this model: a brief cognitive-behavioural package, called 'prescriptive therapy', and a brief relationship-oriented package, called 'exploratory therapy'. Cooper's study<sup>33</sup> is an example of an in-house EAP offered by the Occupational Health Services of British Mail. It was assumed that an in-house counselling service would have the benefit of a broad knowledge of the business and working methods, and would be more able to understand and help the employees. Another important aspect in the choice of an in-house service was the function of signalling to the management, when problems seemed to be organizational rather than individual. The counselling was based on Rogerian psychotherapy, and an average of three sessions proved to be enough to help the people who made use of the service because of work-related problems.

*Individual-organizational interface level.* On the individual/organizational level two studies<sup>45,46</sup> were identified which were directed towards strengthening social support. Both studies describe co-worker support groups which primarily aim to improve the individual-organization relationship (instead of changing individual characteristics). The groups are networks of people who occupy similar positions in an organization and consider themselves to have common needs and goals. These people meet to solve common problems, support each other and improve their skills. Despite the lack of evaluation data concerning this intervention, co-worker support groups have been described in numerous professional publications as an important entity in the prevention of occupational stress in employment settings.<sup>45</sup> The primary emphasis of the group meetings was to share problems, give reassurance and support, share successful coping strategies and to listen emphatically.

In both studies there seemed to be one major problem: embedding in the organization. Groups of volunteers from various schools were evaluated, which made external interaction difficult.

*Organizational level.* Two studies were identified in which the stress prevention programme focused on the entire organization. The organization-wide programme described by Jones<sup>47</sup> started with an assessment of stress levels, and subsequently a five-step intervention was implemented. In the first step, the results from the survey were reported to senior management and suggestions were made for amending

organizational factors that may cause employee stress. Secondly, the managers of the departments in which the highest stress levels occurred, worked out a series of policy and procedural changes to reduce stress, with which they were able to obtain support from external consultants. These changes concerned inter-departmental communication, organization and personnel policies. During the third step, the senior management discussed the survey results with all employees in small conference sessions. In the fourth step all employees were shown a series of video-cassette training modules. They were designed to increase recognition and understanding of stress and to teach them how to improve their coping skills in dealing with both workplace and personal stress. Finally, a comprehensive employee assistance programme was set up to provide employees with help and counselling for work-related and personal problems.

The second study of Golembiewski<sup>48</sup> describes a high-stimulus organizational development (OD) programme aiming at the development of a socio-emotional infrastructure to generate and support changes in policies, procedures and structures. The programme aims to create an organizational culture and provisions to meet individual needs and eliminate the causes of stress. This approach involves the participation of all members of an organization in the diagnosis and solution of problems. To start with, all employees were asked to list the three things they considered best in their department and the three things they considered worst and urgently in need of change. The outcomes were discussed in a general meeting and reported to the Vice-President. Subsequently, groups of volunteers were formed to gather additional information and make recommendations for improvement. The objective was to formulate values and to create appropriate provisions and relationships for support in work and tasks. An example of a concrete outcome is the development of a career policy.

## EVIDENCE OF EFFECTIVENESS

Most of the studies summarized in Scheme II show some kind of effect, but no consistent overall picture emerges. Although all interventions are intended to prevent and combat stress, they produce differential effects. Some studies reported effects over one year and longer,<sup>39,43</sup> but most did not measure such long-term effects and in nine studies no follow-up period at all was included, which in itself is a serious methodological shortcoming.

Sometimes an intervention (co-worker support group) which brings about the intended effect in one group,<sup>46</sup> does not do so in another,<sup>45</sup> which indicates the important influence of confounding or modifying factors. The qualification of the trainer is mentioned as a crucial modifier in the study of Butcher,<sup>25</sup> and gender in the study of Keyes.<sup>34</sup> Control groups make controlling for these effects possible, but in 10 out of the 24 studies there are no control groups. Despite methodo-

logical shortcomings, the major problem in drawing conclusions about the most effective occupational stress management programmes is the fact that the reviewed studies are difficult to compare, due to their heterogeneity. They vary with respect to target group and target, as indicated by the outcome parameters.

*Target groups.* The method of recruitment determines, to a large extent, the type of workers who will participate and also their expectations with regard to the programme. Most participants in stress management programmes join on a voluntary basis, but in organization-oriented programmes it is often more difficult to abstain from participation. At the same time the effectiveness of an intervention can be dependent on the type of workers who participate. This is demonstrated in the study of Long,<sup>35</sup> in which it appears that high anxiety scores at inclusion in the programme result in greater effectiveness in the outcome parameters. It has been found that programmes in which participation is entirely voluntary, attract the so-called 'worried well' people who recognize the stressors in their work, but who are quite capable of coping with them. Schaufeli,<sup>31</sup> who conducted a workshop for community nurses, found that the average level of burnout was significantly lower among workshop participants than among a comparable group of community nurses. The researchers assumed a selection effect: the nurses who felt least burnt out decided to participate in the workshop, whereas for their colleagues, who were more burnt out, participation might have been too threatening. A final indication that voluntary participation does not attract the workers at risk comes from Sallis:<sup>41</sup> in his study the participants, employees of two 'high-tech' corporations, reported baseline values very similar to the means of the normative samples on all psychological variables (anxiety, depression and hostility).

Definition of the target group and the method of recruitment should be an important point of consideration. In research, the definition of the target group is the basis for generalization of the results, and is the most practical point of departure when designing a stress-management programme.

*Targets and interventions.* To assess the effectiveness of interventions directed towards stress prevention or alleviation, specification of the target is crucial. The relationship between the intervention and the target should be entirely clear when the programme is initiated, and should be proved when the programme has been implemented. Interventions on the individual level usually bring about the most convincing effect on the individual outcome parameters. Murphy's study, reporting a temporary effect of decreasing absenteeism among highway maintenance workers, is an exception. However, at the end of the paper he concludes: 'as a primary strategy to reduce employee stress at work, stress management has significant limitations, since no attempt is made to alter the sources of work-stress'; in other words: another type of intervention would

have been more effective in achieving this target. Interventions tailored to the needs and demands of individual problems have a greater effect on stress outcome measures than standard interventions.<sup>27</sup> The Golembiewski study, which focuses on the organizational level but also applies methods on the individual and organization–individual interface level, shows convincing effects on all three levels.

Targets can be defined as the intended outcomes as, for instance, indicated in Scheme I; they can refer to specific groups at risk because of their workload or age. Targets can also involve primary, secondary or tertiary prevention, which is discussed in the Materials and Methods section of this paper.

## CONCLUSIONS

In comparison with the review published in 1989 by DeFrank and Cooper,<sup>9</sup> the number of effect studies on occupational stress management programmes is increasing and studies including interventions on organizational level have also been identified. However, it is still impossible to determine which specific interventions or techniques are most effective and should be recommended. There is some evidence that organization-wide approaches show the best results on individual, individual–organizational interface and organizational parameters; these comprehensive programmes have a strong impact on the entire organization, and require the full support of the management. From a methodological perspective, however, it is not clear what exactly causes the effects: the commitment and willingness of management to invest in human resources, the quality of the single programme components, or simply the combination of all these factors. Knowledge about the effectiveness of single components of stress management programmes is important, not only for the accumulation of scientific knowledge on stress prevention and treatment, but also to assist smaller organizations which are not in a position to implement comprehensive programmes. The aim of future research should be to establish credibility as to what stress management programmes can or can not accomplish, and under which circumstances.

The lack of accumulation of empirical evidence on the effectiveness of interventions directed towards stress prevention, is not primarily caused by a shortage of studies, but by the considerable heterogeneity of studies, which makes it difficult to compare various empirical studies. There is an urgent need for better conceptualization and theoretical reflection on stress management programmes and the type of effects that could be expected under which conditions and for what length of time.

A priority for future research should be determination of the cost-effectiveness of interventions. Our review shows enormous differences in time duration (from 9 min per individual to 12 h) that are absolutely

not reflected in the effect parameters. The most expensive interventions (expressed in time per participant) even produce the lowest effects.

Practitioners are still left with a considerable amount of uncertainty with respect to the choice of good stress management programmes. Useful strategies for the implementation of stress management programmes have been published by Karasek<sup>49</sup> or Williams.<sup>53</sup> It is crucial to start by determining which workers are at risk and what constitutes risky working conditions; screenings instruments can be used, a stress audit can be organized, or absenteeism and turnover rates analyzed. The next step is the choice and implementation of an intervention. Cost-effectiveness analyses are important to ensure management support, but participation of the workers in the preparation phase is essential for the success of the programme.

## REFERENCES

1. Lehrer PM, Isenberg S, Hochron S. Asthma and emotion: A review. *J Asthma* 1993; 30: 5–21.
2. Siegrist J, Peter R, Junge A. low status control, high effort at work and ischemic heart disease: prospective evidence from blue-collar men. *Soc Sci Med* 1990; 31: 1127–1134.
3. Niaura R, Goldstein MG. Psychological factors affecting physical condition: Cardiovascular disease literature review: II. Coronary artery disease and sudden death and hypertension. *Psychosomatics* 1992; 33: 146–155.
4. Schoer CAP. *Verzuim wegens overspanning*. Academisch Proefschrift RU Limburg; Universitaire Pers Maastricht, 1993.
5. Fielding JE. Work Site Stress Management: National Survey Results. *J Occup Med* 1989; 31: 990–995.
6. Palmer S, Dryden W. Stress management: approaches and interventions. *Br J Guidance Counsel* 1994; 22: 5–11.
7. Cooper CL, Cartwright S. Stress-management interventions in the workplace: stress counselling and stress audits. *Br J Guidance Counsel* 1994; 22: 65–73.
8. Newman JE, Beehr TA. Personal and organizational strategies for handling job stress: a review of research and opinion. *Personnel Psychol* 1979; 32: 1–43.
9. DeFrank RS, Cooper CL. Worksite stress management interventions: Their effectiveness and conceptualisation. *J Managerial Psychol* 1987; 2: 4–10.
10. Hendrix WH, Steel RP, Leap T, Summers TP. Development of a stress-related Health promotion model: antecedents and organizational effectiveness outcomes. *J Soc Behav Personal* 1991; 6: 141–162.
11. Abrams H. Rational Emotive Behavioral therapy in the treatment of stress. *Br J Guidance Counsel* 1994; 22: 39–50.
12. Kearney D, Turner K. Peer support and stress management for headteachers. *Educational Psychology in Practice* 1987; April: 20–25.
13. Long BC, Flood KR. Coping with workstress: Psychological benefits of exercise. *Work Stress* 1993; 7: 109–119.
14. Evans GF, Harris P, McNeill AW, McKenzie RD. Montana State University: An Employee Wellness Program Financed by a Self-Insurance Group Health Plan. *Amer J Health Prom* 1989; 3: 25–33.
15. Israel BA, Schurman SJ, House JS. Action research on occupational stress: involving workers as researchers. *Int J Health Serv* 1989; 19: 135–155.
16. Orlans V. Stress and health in UK organizations: a trade union case study. *Work Stress* 1991; 5: 325–329.
17. Cwikel JG, Kacem L, Slonim-Nevo V. Stress management consultation to Israeli social workers during the Gulf war. *Health Soc Work* 1993; 18: 172–183.



18. Heilbronn FS. The use of Hatha Yoga as a strategy for coping with stress in management development. *Manage Edu Dev* 1992; 23: 131-139.
19. Schweiger DM, DeNisi AS. Communication with employees following a merger: A longitudinal field experiment. *Acad Manage J* 1991; 34: 110-135.
20. Elliott TR, Maples S. Stress management training for employees experiencing corporate acquisition. *J Employ Counsel* 1991; 28: 107-114.
21. Shapiro DA, Barkham M, Hardy GE, Morrison LA. The second Sheffield Psychotherapy Project: Rational, design and preliminary outcome data. *Br J Med Psychol* 1990; 63: 97-108.
22. Firth-Cozens J, Hardy GE. Occupational stress, clinical treatment and changes in job perceptions. *J Occup Organiz Psychol* 1992; 65: 81-88.
23. Matteson MT, Ivancevich JM. Individual stress management interventions: Evaluation of techniques. *J Manag Psychol* 1987; 2: 24-30.
24. Murphy LR. Workplace interventions for stress reduction and prevention. In: Cooper CL, Payne R, eds. *Causes, coping and consequences of stress at work*. New York, NY (USA): John Wiley and Sons, 1988.
25. Butcher P, Davis H. A personal effectiveness and stress management course for community health workers: a pilot study. *Patient Edu Counsel* 1988; 12: 13-27.
26. Norvell N, Belles D, Brody S, Freund A. Worksite stress management for medical care personnel: results from a pilot program. *J Specialists Group Work* 1987; 118-126.
27. Bertoch MR, Nielsen EC, Curley JR, Borg WR. Reducing teacher stress. *J Exper Edu* 1989; 57: 117-128.
28. Johansson N. Effectiveness of a stress management program in reducing anxiety and depression in nursing students. *J Am Coll Health* 1991; 40: 125-129.
29. McCue JD, Sachs CL. A stress management workshop improves residents' coping skills. *Arch Intern Med* 1991; 151: 2273-2277.
30. Reynolds S, Taylor E, Shapiro DA. Session impact in stress management training. *J Occup Organiz Psychol* 1993; 66: 99-113.
31. Schaufeli WB. The evaluation of a burnout-workshop for community Nurses. *J Health Human Services Admin* 1995; 18: 11-31.
32. Barkham M, Shapiro DA. Brief psychotherapeutic interventions for job-related distress: a pilot study of Prescriptive and Exploratory therapy. *Counsel Psychol Quarterly* 1990; 3: 133-147.
33. Cooper CL, Sadri G, Allison T, Reynolds P. Stress counselling in the Post Office. *Counsel Psychol Quarterly* 1990; 3: 3-11.
34. Keyes JB, Dean SF. Stress inoculation training for direct contact staff working with mentally retarded persons. *Behav Res Treatment* 1988; 3: 315-323.
35. Long BC. Stress management for school personnel: stress-inoculation training and exercise. *Psychol Schools* 1988; 25: 314-324.
36. Toivanen H, Helin P, Hanninen O. Impact of regular relaxation training and psychosocial working factors on neck-shoulder tension and absenteeism in hospital cleaners. *Amer College Occup Environ Med* 1993; 35: 1123-1130.
37. Tsai S, Swanson-Crockett M. Effects of relaxation training, combining imagery, and meditation on the stress level of Chinese nurses working in modern hospitals in Taiwan. *Issues in Mental Health Nursing* 1993; 14: 51-66.
38. Woods PJ. Reduction in type A behavior, anxiety, anger, and physical illness as related to changes in irrational beliefs: results of a demonstration project in industry. *J Rational-Emotive Therapy* 1987; 5: 213-237.
39. Kushnir T, Malkinson R. A Rational-emotive group intervention for preventing and coping with stress among safety officers. *J Rational-Emotive and Cognitive-Behav Therapy* 1993; 11: 195-206.
40. Hyman RB. Evaluation of an intervention for staff in a long-term care facility using a retrospective pretest design. *Eval Health Prof* 1993; 16: 212-224.
41. Sallis JF, Trevorrow TR, Johnson CC, Hovell MF, Kaplan RM. Worksite stress management: a comparison of programs. *Psychol Health* 1987; 1: 237-255.
42. Bruning NS, Frew DR. Effects of exercise, relaxation, and management skills training on physiological stress indicators: a field experiment. *J Appl Psychol* 1987; 72: 515-521.
43. Murphy LR, Sorenson S. Employee behavior before and after stress management. *J Organiz Behav* 1988; 9: 173-182.
44. Jenkins S, Calhoun JF. Teacher stress: issues and intervention. *Psychol Schools* 1991; 28: 60-70.
45. Cecil MA, Forman SG. Effects of stress inoculation training and coworker support groups on teachers' stress. *J Soc Psychol* 1990; 28: 103-118.
46. Grossman AH, Silverstein C. Facilitating support groups for professionals working with people with AIDS. *Soc Work* 1993; 38: 144-151.
47. Jones JW, Barge BN, Steffy BD, Fay LM, Kunz LK, Wuebker LJ. Stress and medical malpractice: organizational risk assessment and intervention. *J Appl Psychol* 1988; 7: 727-735.
48. Golembiewski RT, Hilles R, Daly R. Some effects of multiple OD interventions on burnout and work site features. *J Appl Behav Science* 1987; 23: 295-313.
49. Karasek R. Stress prevention through work reorganization: A summary of 19 international case studies. In: *Conditions of Work Digest* 1992; 11: 23-42.
50. Smith JC. *Cognitive-behavioral Relaxation Training: A New System of Strategies for Treatment and Assessment*. New York, NY (USA): Springer, 1990.
51. Carrington P. *Freedom in Meditation*. New York, NY (USA): Anchor Press/Doubleday, 1978.
52. Meichenbaum D. *Cognitive Behavior Modification*. New York, NY (USA): Plenum, 1977.
53. Williams LJ, Cote JA, Buckley MR. Lack of method variance in self-reported affect and perceptions at work: reality or artifact? *J Appl Psychol* 1989; 74: 462-468.