

Mental Training for Pain Patients

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Abstract

Mental training was used as a treatment in connection with musculoskeletal states of pain in the back, neck, shoulder, lower part of the leg, with 111 patients at the orthopaedic clinic in Helsingborg, Sweden. The training was based on cognitive behaviour-therapeutic methods combined with stress management and auto-hypnosis. An evaluation was made by means of a visual analogue scale (VAS) on 10 variables and by measuring the sicklisting frequency (i.e. sick days that kept patients away from work). Comparisons were made with an age-matched control group from the regional social insurance office. A one year follow-up showed significant improvements on 7 variables and the sicklisting frequency was decreased by 27%.

The expert report of the National Swedish Board of Health and Welfare on treatment of chronic pain states that psychological and pedagogical methods with a cognitive and behaviour-therapeutic concentration in combination with activating physiotherapy/pharmacology are of great value and that the effects of these methods are well documented (SoS-rapport 1994:4). Östergren (1994) conducted a literary survey on stress management techniques applicable to pain behaviour therapy and concluded that methodological developments in this area have led to a successful stress management.

Systematic patient education programs have been developed and are very often referred to as mental training. The basic elements include muscular and psychological relaxation training, self-confidence training, goal pictures and creative problem solving techniques. At the orthopaedic clinic in Helsingborg, a mental training program

which followed these methods was introduced to patients with chronic pain under the guidance of a behaviourist, who is a qualified mental trainer.

Mental training is based on the fact that man is a thinking, acting creature able to develop. The training is meant to initiate a positive process of development, in which the strengthening of the self-confidence plays a very important part (Károlyy & Jensen, 1987). Bandura (1977) is using the term self-efficacy for the self-confidence strengthening insight that "you can do what you did not think you could before". By gradually developing physical or psychological abilities you give positive feedback and encourage further tries, resulting in the creation of a positive loop of feedback, and more personal control. Gentry & Owens (1986) emphasize the importance of a secure and pedagogical group setting

for this training, as well as the importance of raising the bar step by step.

Patients And Methods

At the orthopaedic clinic in Helsingborg, Sweden, pain patients were taught mental training techniques during the period 1991-1994 with financial support from the regional social insurance office. The course was taken by 111 patients (32 men and 79 women) with an average age of 45 years (from 19 to 68). Most of these patients were referred by the orthopaedic clinic and the regional social insurance office, and a small number came from various health centres. Forty-nine additional referred patients never started the course or attended only a few sessions and are therefore not included in this report.

The types of pain or pain localization experienced by these patients is presented in Table No.1.

The average time on the sicklist (absent from work) before the course was 21 months. Seventy patients (63%) were reported sick (and as a result were not working), 11 (10%) had sickness allowances, 8 (7%) had sickness pensions and the remaining 22 (20%) were working people and old-age pensioners. Almost everyone had tried other types of pain treatment like physiotherapy, analgesia, TNS, acupuncture, pain school or pain rehabilitation programs but they were unsuccessful in relieving their pain. This course which focused on mental training was a "last chance" for them. The course was conducted at the teaching division in the hospital of Helsingborg. The overall orientation focused on promoting a positive attitude and active life in spite of the pain. The leader of the course was a behaviourist educated in mental training.

The course content reflected Steinberg's (1987) pedagogical model and Uneståhl's

(1988) sport psychology model. A variety of educational approaches were used including videos, and a great number of neuropsychological exercises respecting the principle "what I do I understand". Table No. 2 presents the main content items experienced during the course.

The training content was based on Uneståhl's (1993) basic mental training program on audio cassettes (see table No.2). The patients were asked to train daily with these cassettes at home. The cassettes were combined with Uneståhl's books "Jo, du kan" (Yes, You can - 1993) and "Motivation - livets kärna" (Motivation - the essence of life - 1984).

Table No. 1

Types of pain reported by participants in mental training program

Type of Pain	Number of patients
Myofacial pain at varying origins	20
(ex. muscular rheumatism)	
Back pain	19
(ex. lumbar pain syndrome, dorsal insufficiency)	
Back and leg pain	11
(ex. sciatica, herniated discs, spinal stenosis)	
Neck and shoulder pain	12
(ex. overload damages, tendinitis, rhizopati)	
Posttraumatic pain	11
(ex. whiplash)	
Pain in the lower extremities	11
(ex. pelvis, hip, meniscus)	
Arm and hand pain	4
(ex. epicondylitis, carpal tunnel syndrome)	
Varia	15
(ex. stress related tension pain)	

Table No. 2**The principal elements of the course**

Element	Theme	Audio cassette practice
Basic course:		
1	Background and principles. Information on the training material.	Muscular relaxation training.
2	Stress and stress management.	Continued muscular relaxation training.
3	Right and left brain hemisphere. Creating a mental room in the mind.	Psychological relaxation.
4	Altered states of consciousness. Auto-hypnosis. Goals and subgoals.	Auto-suggestions in the mental room.
5	Self-image and self-confidence.	Self-confidence strengthening auto-suggestions.
6	Goal direction and goal pictures.	Continued self-confidence training.
7	Goal programming. A former course participant talks about	Goal picture programming. his/her own training and experiences.
Continuation course:		
8	The resources of the subconscious. The connection between body and mind.	Creating more to life.
9	Body language. Subpersonalities. The language of the dream.	Creating an "inner guide".
10	Creativity. Solution of problems.	Techniques for solution of problems.
2 months' pause. Home training only.		Creativity training. Humour and joy. Humour and creativity Brainstorming. Revival of previous successful states of consciousness. Pain training.
11	Humour and health.	
6 months' pause.		
12	Exchange of experiences. Survey of the course.	

The course leader also put together 60 pages of training and discussion material for the participants in this course. The educational experience was divided into a basic course consisting of 7 sessions of two hours each and a continuation course consisting of 3 two hour sessions. Then there was a pause of two months followed by another two hour session and finally a follow-up session six months later.

A visual analogue scale (VAS) was used for patients to rate 10 variables: basic tension, physical capacity, stress threshold, power of concentration, self-confidence, creativity, anxiety tendency, state of mood pain in general and pain at its worst. The participants were verbally instructed on how to fill out the scale and completed it on three separate occasions: baseline, after 3 months and after 12 months. On the two follow-up occasions after baseline they were not allowed to see the ratings from their previous VAS-test.

Correctly used VAS-scales are considered to be reliable, valid and sensitive (Gift (1989). Wewers and Lowe (1991) emphasize the intra-subject character of the VAS-method and that scales shorter than 100 mm tend to give greater variances of incorrectness. For this study a 200 mm scale was used. Linton (1986) refers to reports stating that VAS is sensitive to changes and correlates well with verbal scales. His conclusion is that changes on the VAS-scale must exceed 10 mm in order to be clinically meaningful.

The VAS-measurement was supplemented with a comparison of the sicklisting frequency before the course and one year after completing the course.

Results

The total group pain patients undergoing mental training showed significant im-

provements on 7 variables, i.e. basic tension, stress threshold, power of concentration, self-confidence, anxiety tendency, state of mood and pain in general. See table No.3. This table shows that the greatest improvements were based on an enhanced stress threshold, a strengthened self-confidence, a higher level of mood and a decreased anxiety tendency.

It is interesting to note how the stress threshold during the follow-up after 12 months had increased by another 0.5% compared to the follow-up after 3 months. This is also the case with self-confidence, which increased from 9.5 to 11.0%, and the anxiety tendency, which decreased by another 7% from the 3 month follow-up to the 12 month follow-up. The experience of pain in general also decreased by 3.5% between the two follow-up measures and the power of concentration increased by another one per cent. The sicklisting frequency decreased by 27% within the group ($p<0.001$) and by 19% compared to a matched random sample, taken by the regional social insurance office ($p<0.01$).

Discussion

The effects of mental training on a cortical level are already known since auto-suggestions can create an increased concentration on positive goals. Increased self-confidence and a better self-image can result in decreased anxiety, stress and pain. Melzack (1965) and Wall's (1969) so called gate-theory created an increased understanding of the neurology of the pain and a theoretical grounding for acting on pain through hypnosis. The theory describes how the interaction between different types of nerves can effect the pain signal on its way to the brain. By this mechanism psychological factors can influence the experience of pain through distraction, placebo and hypnosis.

Table No. 3**Results**

Variable	mm*	Pre n**	Follow-up						P
			3 months			12 months			
			mm	%	n	mm	%	n	
Basic tension	131	102	113	-9,0	81	115	-8,0	90	<0.01
Physical capacity	78	101	91	+6,5	81	90	+6,0	90	NS
Stress threshold	83	100	104	+10,5	80	105	+11,0	89	<0.001
Power of concentration	95	102	108	+6,5	81	110	+7,5	90	<0.05
Self-confidence	105	102	124	+9,5	81	127	+11,0	89	<0.001
Creativity	109	98	114	+2,5	78	112	+1,5	86	NS
Anxiety tendency	104	100	95	-4,5	81	81	-11,5	90	<0.001
State of mood	93	99	123	+15,0	81	120	+13,5	88	<0.001
Pain in general	133	100	126	-3,5	80	120	-6,5	89	<0.05
Pain at its worst	165	99	155	-5,0	78	148	-8,5	87	NS

*Mean VAS Score on 200mm scale

**Number of Respondants

% Percent up or down.

The long-term goal must be that the results achieved by means mental training or behaviour medical methods become permanent - a new life style for life, as Lispers & Nygren (1992) express it. A regional association for mental training has been established in order to facilitate follow-up activity. Ten of the former pain patients from this study are now studying mental training on an academic level. Continued research and

development in this area may lead to mental training becoming just as natural as physical training.

The results of this study provide additional support for the capacity of mental training to positively influence factors that are essential for a high quality of life, including stress reduction, self-confidence, anxiety control and level of mood. Audio cassettes were

found to help simplify and reduce the cost of this type of intervention process. Finally, even though our results persisted when they were followed up one year later, the devel-

opment of methods for their continuance and stability must be regarded as the most important part of the development work.

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