Relaxation: Effectiveness Studies

ANXIETY
Relaxation techniques are highly efficient and produce long-term benefits in the treatment of clinical anxiety (Borkovec & Sides, 1979; Bernstein & Borkovec, 1973; Clum, Clum, & Surls, 1993; Rasid, & Parish, 1998).

Panic Disorder
Several studies report the elimination of panic attacks via cognitive or breathing techniques in at least 80-90% of their clients (Barlow, 1988; Beck, 1988; Clark, 1986; Clark, Salkovskis, & Chalkley, 1985). A recent study investigated the efficacy of applied relaxation and cognitive behavior therapy for treating panic disorder. Thirty-eight outpatients with no or mild avoidance were assessed. Both treatments yielded significant improvements that were maintained or furthered at follow-up. Sixty-five percent of those who received AR were panic-free after treatment, and 82% were panic-free at follow-up, and 74% of those who received CBT were panic-free after treatment, and 82% were panic-free after follow-up. These treatments made lasting changes in generalized anxiety and depression, which has shown that AR and CBT are effective treatments for panic disorder without avoidance (Oest & Westling, 1995).

Generalized Anxiety Symptoms
Different multi-component (cognitive, relaxation, and exposure techniques) treatments for the treatment of generalized anxiety have shown significant improvements of anxiety (Borkovec & Costello, 1993). Deffenbacher and Suinn (1987) recommend teaching relaxation as a self-control procedure as part of these treatments. Expressive Relaxation Training has proven to be quite effective in the treatment of anxiety. This method was used to treat male and female psychiatric outpatients with general anxiety disorders. Ratings of anxiety, depression, avoidance behavior, social impairment disability, and quality of interpersonal relationships were markedly improved at ERT termination (Andreoli, Casolari, & Rigatelli, 1995).

Test Anxiety
Relaxation seems to be effective in the treatment of test anxiety and significantly better than no-treatment controls. However, cognitive methods seem to be more effective than relaxation (Lehrer & Woolfolk, 1993).

Social Phobia
Relaxation appears to be effective in the treatment of social phobias. Treatment comparisons showed that either exposure, relaxation, or CT are effective in the treatment of social phobias (Heimberg, 1989).

Anger, Hostility and Aggressive Behavior
Relaxation techniques, such as PMR, meditation, and AT seem to be equally effective as CT in reducing symptoms of hostility (Deffenbacher, McNamara, Stark, & Sabadell,
1990). However, the combination of CT and relaxation therapies are particularly effective in treating excessive anger in children and adults (Kendall & Braswell, 1986; Meichenbaum & Novaco, 1985; Novaco, 1975). A combination of cognitive-relaxation compared with relaxation coping skills was measured to show which proved more useful in treating general anger. It was shown that some measures slightly favored the cognitive-relaxation method. The two methods also showed reductions in clinically meaningful general anger and maintenance of anger and anxiety after a one year follow-up period at a somewhat equivalent rate (Deffenbacher & Stark, 1992).

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**Headaches**

Relaxation techniques are useful in treating adults (Primavera & Kaiser, 1992) and children’s (Mehta, 1992; Sartory, Mueller, Metsch, & Pothmann, 1998) headaches. Relaxation or biofeedback training helps between 40% and 80% of tension headache sufferers (Blanchard, Ahles, & Shaw, 1979). Greater improvements are reported at follow-up than immediately after treatment. Autonomically focused techniques (e.g., TBFK, AT) are used for migraine headaches (Lisspers & Ost, 1990). Somatic techniques (e.g., PMR) are used for the treatment of migraine headache (Blanchard, Appelbaum, Radnitz, Morrill, Kirsch, Hillhouse, Evans, Guarnieri, Attanasio, Andrasik, Jaccard, & Dentineer, 1990). CT appears to be a particularly potent method for treating tension headaches (Murphy, Lehrer, & Jurish, 1990). A combination of CT and relaxation therapy has been shown to be more effective than relaxation alone (Tobin, Holroyd, Baker, Reynolds, & Holm, 1988). No systematic differences have been found between CT and relaxation for migraine headache (Sorbi, Tellegen, & du Long, 1989). Use of PMR and restricted environmental stimulation therapy showed a significant decrease in headache reports (Wallbaum, Rzewnicki, Steele, & Suedfeld, 1991). The active treatment group improved significantly more than the control group, as well as showed continuing improvement during follow-up periods, while the control group had deteriorated by 34% since the end of the treatment.

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**Insomnia**

PMR is an effective treatment for idiopathic insomnia (objective insomnia, Borkovec, 1979). Knapp, Downs, and Alperson (1976) suggests that the majority of the relaxation training significantly reduces the latency to sleep onset and the number of awakenings. There is some evidence that PMR also improves pseudoinsomnia (self-reported insomnia) (Greeff & Conradie, 1998). Because cognitive rather than physiological arousal is critical to the cause and/or maintenance of insomnia, several researchers recommend a combination of CT and PMR methods (Lacks, 1987). A recent study has also found that self-administered treatment of progressive relaxation training is highly effective in treating insomnia. After a one year follow-up period, patients had learned to relax to an average of 83%, and also learned to achieve a state of calmness which improved their overall sleeping patterns by 86% (Gustafson, 1992).
Substance Abuse
Between 10-40% of alcoholics suffer panic-related anxiety disorder, and 10-20% of anxiety disorder clients abuse alcohol or other drugs (Cox, Norton, Swinson, & Endler, 1990). Relaxation and self-management techniques significantly reduce anxiety and tension in alcoholics (Parker & Gilbert, 1978; Parker, Gilbert, & Thoreson, 1978). Relaxation seems to be highly recommended for anxious alcoholics (Kushner, Sher, & Beitman, 1990) who drink to avoid experiencing stress or in response to stress. Relaxation training effects could substitute for alcohol effects.

Smoking
Recent studies have found that the use of relaxation imagery in smoking cessation programs to be effective. The study targeted smokers aged 18-60, and showed quit rates to be 69%, and abstinence rates of 55%. These findings suggest that relaxation imagery can be a useful tool to deter smoking (Wynd, 1992).

Relaxation Therapies with Children
Children are as good or better able than adults to learn relaxation techniques (Zaichkowsky & Zaichkowsky, 1984; Hiebert, Kirby, & Jaknovorian, 1989). Most of the studies show that relaxation can be beneficial in treating anxiety-related academic difficulties and pain (Heitkemper, Layne, Sullivan, & David, 1993). Relaxation therapy can also be a positive addition to improving psychosomatic disorders (Richter, 1984), and hyperactive children's impulsivity, disruptive behavior, academic performance, and self-concept (Omizo & Williams, 1982).

Hypertension and Heart Disease
Relaxation training is more effective in controlling mild essential hypertension than no-treatment, delayed-treatment, and control procedures (Agras, Southam, & Taylor, 1983). This training alone, however, is not as effective as antihypertensive medications in reducing blood pressure (Jacob, Shapiro, Reeves, Johnson, McDonald, & Coburn, 1986). Some studies of relaxation therapy for hypertension have reported highly significant effects for relaxation therapies (Jacob, Chesney, Williams, Ding, & Shapiro, 1991). In 1988, the joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure recommended that relaxation be used for treatment of mild hypertension, and as an adjunct to medication for treatment of more severe hypertension. There is evidence that stress management techniques can decrease the doses of anti-hypertensive medications needed (Glasgow, Engel, & D'Lugoff, 1989). Where blood pressure is significantly elevated, however, it should not be considered safe to maintain hypertensive patients on relaxation treatment alone. Relaxation-based interventions also have a prophylactic effect.
against heart disease (Dath, Mishra, Kumaraiah, & Yavagal, 1997, Patel, Marmot, & Terry, 1981; van-Dixhoorn, 1998). A combination of thermal biofeedback and PMR training administered to those suffering from essential hypertension has produced satisfactory results. A significant decline in systolic and diastolic blood pressure was observed in the treatment group, as opposed to an increase in both for the control group. (Hahn, Ro, Song, & Kim, 1993).

Raynaud's Disease
Self-control techniques such as PMR, AT, and TBFK are effective for treating Raynaud's disease (Pinkerton, Hughes, & Wenrich, 1982; Rose & Carlson, 1987; Surwit, 1982). TBFK seems to be the more effective technique, especially when cold stress is added to treatment (Freedman, Lynn, lanni, & Wenig, 1983).

Fibromyalgia
Relaxation techniques have been used to treat those suffering from fibromyalgia. Studies have compared the effectiveness of relaxation, exercise, and a combination of the two. It was found that all three treatment groups produced improvements in self-efficacy for physical function, which was best maintained by the combination group after a two year follow-up period (Buckelew, Conway, Parker, et al., 1998).

Menopausal Symptoms
Applied Relaxation was tested on individuals who suffered from postmenopausal hot flushes. The number of flushes was measured from one month before to six months after treatment was applied, and was found to reduce the frequency by an average of 73% (Wijma, Melin, Nedstrand, & Hammar, 1997).

Irritable Bowel Syndrome
Studies combining relaxation and CT have shown positive results in the treatment of irritable bowel syndrome (Neff & Blanchard, 1987; Blanchard & Schwarz, 1988). Progressive Muscle Relaxation administered to those suffering from Irritable Bowel Syndrome has been shown to significantly alleviate symptoms associated with the condition (Blanchard, Greene, Scharff, & Schwarz-McNorris, 1993). Fifty percent of the group was clinically improved by the end of the treatment, and results also indicate that relaxation training alone can be a useful treatment for Irritable Bowel Syndrome.
Asthma
Relaxation treatments have been shown to produce significant improvement in asthma (Vazquez & Buceta, 1993). Facial muscle EMG BFK appears to successful in decreasing parasympathetically mediated bronchoconstriction. (Kotses, Harver, Segreto, Glans, Creer, & Young, 1991). After reviewing the emotional precipitants of asthma, Kotses (1998) recommends the use of procedures that promote relaxation and reduce stress.

Diabetes
A recent study tested the hypotheses that persons with diabetes mellitus treated with twelve sessions of biofeedback-assisted relaxation would decrease blood glucose compared with untreated controls. Treatment consisted of EMH biofeedback, thermal biofeedback, relaxation therapy, and diabetes education. The results confirmed the stated hypotheses, as well as an earlier study, which concludes that biofeedback-assisted relaxation can be an adjunct to conventional therapy for insulin-dependent diabetes. (McGrady, Graham, & Bailey, 1996).

Cancer
Relaxation techniques have been used to treat side effects of cancer therapy. Relaxation training has been successful in decreasing the duration and severity of post treatment nausea (Morrow, 1986); and secondary insomnia (Cannici, Malcolm, & Peek, 1983). Recent studies have also shown relaxation to be effective in increasing immune effects during chemotherapy treatment for ovarian cancer. It is suggested that relaxation can positively affect immune parameters in cancer patients. (Lekander, Fuerst, Rostein, Hursti, & Fredrickson, 1997). Relaxation combined with imagery and cognitive-behavioral training have been used to reduce pain during cancer treatment with substantiated success. (Syrjala, Donaldson, Davis, & Kippes, 1995).

Dysmenorrhea
PMR, EMG BFK, TBFK, cognitive restructuring, time scheduling, and non-directive therapy has been shown to be effective in the treatment of dysmenorrhea (Balick, Elfrier, May, & Moore, 1982; Sigmon & Nelson, 1988).

Genital Herpes
Applied relaxation given as a treatment for frequent occurrences of genital herpes outbreaks has been shown to produce reduction in outbreak frequency (Koehn,, Burnette, & Stark 1993).
HIV
Progressive muscle relaxation has shown to be quite effective in treating symptoms associated with HIV. Conditions such as anxiety, mood, self-esteem, and t-cell count were measured after a stress management program consisting of 20 bi-weekly sessions of progressive muscle relaxation was implemented. Analysis showed significant improvements on all measures, and suggests that using stress management to reduce arousal of the nervous system would be an appropriate component of treatment for HIV infection (Taylor 1995). Studies have also compared the effectiveness of guided imagery and PMR on HIV symptoms. Results have shown that imagery reduced depression and fatigue, while PMR increased CD4+T lymphocyte count and also reduced depression (Eller 1995).

Seizures
Progressive relaxation has been shown to be highly effective in the reduction of seizures (Whitman, Dell, Legion, & Eibhlynn, 1990). Frequency of seizures was monitored over an eight-week interval, and three subsequent follow-up periods after the therapy was implemented. During the third eight week follow-up interval, seizures were shown to reduce by over fifty percent.

Alzheimer’s Disease
Studies focusing on PMR for 34 patients with Alzheimer’s have successfully shown significant decreases in behavioral disturbances, as well as improved performances on measures of memory and verbal fluency, from baseline to two month follow-up testing (Suhr, Anderson, & Tranel, 1999).

Live versus Taped Training
Live and taped training techniques work equally well within training sessions (Stefanek & Hodes, 1986). However, only live relaxation training seems to provide clients with skills that enable them to lower their physiological arousal outside the training session (Lehrer, 1982; Lehrer & Woolfolk, 1984).
Problems Associated with Relaxation

For some clients, especially those suffering generalized anxiety, the level of tension increases instead of decreases when practicing relaxation, an experience they find unexpected and stressful (Borkovec & Grayson, 1980; Lazarus, 1965; Ley, 1988). Unpleasant side effects of relaxation may include dizziness, unpleasant sensations of warmth, fear of losing control, and panic attacks (Lazarus & Mayne, 1990; Ley, 1988). The following two adverse consequences of relaxation training have been documented:

Autogenic Discharges

Autogenic discharges (Schultz & Luthe, 1969) are emotional or physical experiences that can include pain, anxiety, palpitations, muscle twitches, and crying. These AT events, which are not necessarily counter-therapeutic, are sometimes experienced as unpleasant, leading the client to abandon treatment. They may also produce effects that are medically dangerous (e.g., increases in blood pressure among hypertensives). Therefore, clients must be carefully monitored to prevent any deleterious effect of autogenic training.

Relaxation-Induced Anxiety

Relaxation-induced anxiety (Heide & Borkovec, 1983, 1984) is the heightened physiological arousal and physiological reactivity that are experienced sometimes during meditation. This type of detrimental anxiety has been observed more frequently during meditation than during PMR. This suggests that meditation produces more negative side effects than PMR (Carrington, Collings, Benson, Robinson, Wood, Lehrer, Woolfolk, & Cole, 1980; Heide & Borkovec, 1983; Norton, Rhodes, Hauch, & Kaprowy, 1985).

Autogenic discharges and relaxation-induced anxiety occur more frequently with AT and in meditation than in PMR (Heide & Borkovec, 1983; Lehrer, Atthowe, & Weber; 1980). Fewer patients report sensations of transient anxiety during the practice of PMR suggesting that this technique is easier to tolerate. Because of its direct focus in lowering somatic tension, the anxiety reactions may be less common in PMR. Although some (e.g., Smith, 1988) suggest that the symptoms of relaxation-induced anxiety can be therapeutic if subjects can learn to relax through the experience, there is data showing that this type of experience predicts poor treatment prognosis (Borkovec, Mathews, Chambers, Ebrahimi, Lytle, & Nelson, 1987), and it may even contribute to high dropout rate in relaxation therapies. When clients experience AT or meditation-induced anxiety, clinicians should consider using PMR methods. PMR is an effective method to minimize physiological tension prior to meditating (Girdano, Everly, & Dusek, 1990).

Other Contraindications

Relaxation is not recommended for clients with certain types of respiratory or gastrointestinal disorders (Kinsman, Dirks, Jones, & Dahlem, 1980; Luthe & Schultz, 1969).
More Relaxation References


