

# Relaxation Techniques for Stress Management

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Relaxation techniques encompass a wide variety of Stress Management methods for slowing down the body and stilling the mind. Meditation, progressive muscle relaxation (PMR), breathing exercises, and guided imagery are relaxation techniques used frequently in clinical settings to help patients regulate their reactions to stress and achieve overall well-being.



## Historical Background

At the beginning of the last century, Dr. Walter B. Cannon of Harvard Medical School in America used a series of experiments on cats to identify the "fight or flight response" (Sultanoff and Zalaquett 2000). Cannon's classic experiments established that catecholamines increase heart rate, blood pressure, and respiratory rate. The same reactions can be elicited through electrical stimulation of areas within the hypothalamus in animals; likewise, the opposite reaction of hypo-arousal can be elicited through stimulation of other regions of the hypothalamus.

Later, in the 1950s, meditative practices of yogis and Zen masters were found to produce the opposite of the fight or flight reaction in humans (deLeon 1999). Around the same time, a Canadian researcher named Hans Selye began to define the connection between stress and ill health; Selye described "good stress" or eustress as distinct from a destructive type of stress that contributes to imbalance and illness. Good stress is defined as the ability to respond to the challenges of life in a way that promotes stimulation and encourages personal growth. Stress Management tools can facilitate this reaction. Examples of destructive, unhealthy reactions to stress are feeling overwhelmed or anxious. Repeated exposure to such feelings may contribute to chronic disease (Sultanoff and Zalaquett 2000).

Lending further support and credibility to relaxation techniques, Dr. Herbert Benson, a Harvard physician, researched the physiologic effects of transcendental meditation (TM) in the early 1970s. He coined the term "relaxation response" to refer to the stress-reducing effects of meditation, which we now know can be elicited through a variety of relaxation practices including meditation. Benson thought that four principles were necessary to elicit the relaxation response:

- 1) minimal distractions in a quiet environment.
- 2) a mental device or process, such as a mantra in TM, focus on the breath, or mental imagery.
- 3) a passive attitude that involves keeping the mind as quiet as possible.
- 4) a comfortable posture or position.

In the mid-1980s, another well-known physician, Dr. Dean Ornish, incorporated an extensive relaxation program including meditation, yoga, and breathing exercises into a comprehensive lifestyle program for patients with heart disease. Data published from a five-year trial revealed reductions in total and LDL cholesterol, decreased anginal symptoms, and regression of coronary artery disease, thus giving further

credence to the health benefits of stress reduction. Since the Ornish program included regular aerobic exercise, a low-fat vegetarian diet, and group support in addition to the relaxation techniques, it is difficult to determine which component is most important in establishing the health benefits mentioned. However, compliance with stress reduction practices seemed to correlate with the positive results seen in the study.

Many of the relaxation practices mentioned here (which are now entering the medical mainstream through pain management, stress reduction, and general wellness programs) are rooted in ancient religious practices including Christian and Jewish mysticism, Buddhism, and Islamic customs (deLeon 1999). Another expert in the field of relaxation, Jon Kabat-Zinn, uses mindfulness meditation for research protocols and clinical application. Mindfulness meditation stems from the Buddhist practice of moment-to-moment awareness of thoughts and sensations, even when one is not actually meditating. One learns how to apply this way of living or being in the world through a regular practice of meditation (Kabat-Zinn 1990). It is as if the techniques of awareness and mindful attention learned during a meditation session expand out to encompass all aspects of daily life.



### **Scientific Principles**

Relaxation techniques are thought to promote three main changes for the person incorporating these practices into a daily routine:

- 1) refocusing of attention, which may involve reframing thoughts.
- 2) increased body awareness.
- 3) reintegration of the body and mind through practices such as conscious breathing and meditation.

These three principles are interconnected. Refocusing of attention in an acute setting may mean noticing bodily reactions to tension and directing one's breath to those tense areas.

Over time, as relaxation practices become routine, one's thinking may be reframed toward a healthier perspective with increased awareness of bodily sensations. Reintegration of the body and mind involves quieting the mind by focusing on the breath or on a mantra (a specific word, phrase, or sound used as a healing incantation, central to many meditative practices). Over time, this practice is thought to allow an individual to develop a higher level of alertness and consciousness about both oneself and life in general (Sultanoff and Zalaquett 2000).

Relaxation techniques work by eliciting the relaxation response as described in the Historical Background section above. The relaxation response is characterised by decreased heart rate, respiratory rate, oxygen consumption, and muscle tension, as well as increased alpha wave brain activity. Relaxation practices seem to produce these changes to a greater extent and more efficiently than sleep. For example, reports from Dr. Benson's work show that oxygen (O<sub>2</sub>) consumption diminishes by 8% during restful sleep over the course of four to five hours, while the relaxation response results in a 10 to 17% reduction of O<sub>2</sub> consumption in a matter of minutes (deLeon 1999).

In one small, controlled clinical trial involving Transcendental Meditation (TM) specifically, adults who had been practicing TM for a mean period of 22.4 years experienced significant reduction in Total Peripheral Resistance (TPR) and Systolic Blood Pressure (SBP) during a twenty minute Transcendental Meditation session, compared to the non-practicing control group who rested with eyes closed for that same period of

time (Barnes et al. 1999).

Another small study showed diminished lipid peroxide levels in elderly subjects who had been practicing Transcendental Meditation for 16.5 years on average, compared to a non-practicing control group. Lower lipid peroxide levels could, in theory, result in reduced oxidative damage (see section on Additional Clinical Outcomes below). There were some potentially confounding variables in the latter study, however, suggesting that more research is necessary to establish whether TM is in fact responsible for the reduced lipid peroxide levels observed.



### **Clinical Evaluation & Applications**

For general stress reduction and well-being, individuals can learn relaxation techniques through a variety of methods, including videotapes, audiotapes, books, distance learning courses and community classes. However, it is best for patients with specific medical or psychological issues to visit a healthcare professional or Relaxation Therapy specialist to determine the most appropriate relaxation method and to reduce potential negative side effects, such as relaxation-induced anxiety (see section on Risks, Side Effects, Adverse Events below).

Many relaxation practitioners are also clinical psychologists, psychotherapists or social workers who tend to be very effective in teaching these techniques and counselling patients appropriately. Other medical professionals, including general primary care physicians and psychiatrists, may also apply these techniques in their practices. Techniques are usually taught to patients on a one-on-one basis but may also be taught in a group setting. Experts suggest that the techniques be taught in a setting that is conducive to relaxation, including a quiet room with natural light, soothing background music, and the presence of plants, soft colours, and pleasant art work. Some people even go as far as to suggest that the process of selecting an appropriate practitioner should take into account whether he or she practices the relaxation techniques in his or her own life (Sultanoff and Zalaquett 2000).

Some experts feel that relaxation techniques are applicable to many psychiatric disorders and almost all common complaints encountered in a typical primary care medical setting. The following are some interesting examples supported by scientific literature.

A recent controlled clinical trial compared infertile women receiving either group support or cognitive-behavioural therapy together with relaxation training, with a control group receiving only usual care for infertility. The relaxation training included meditation, progressive relaxation, guided imagery, and yoga. The three-arm trial found that women receiving either group support or cognitive-behavioural therapy in conjunction with relaxation training were more likely to become pregnant than the control group during a one-year follow-up (Domar et al. 2000). Although the confounding of multiple variables makes it difficult to determine which specific technique was most effective for the desired outcome of pregnancy, the study at least suggests that relaxation may be a useful adjunct for the treatment of infertility.

Treatment of acute and chronic pain is a common application of relaxation techniques which is supported by clinical evidence. One study of patients undergoing colorectal surgery demonstrated that those who listened to guided imagery tapes progressively reported less subjective pain, and required fewer opioid analgesics (such as morphine or codeine) following surgery, than controls who did not hear the tapes. In another study of patients with chronic pain, those who participated in a behavioural programme using

relaxation techniques reduced their visits to a doctor or other healthcare professional by 36% during the one-year follow-up (deLeon 1999). Follow-up of patients under the care of Kabat-Zinn and colleagues at the Stress Reduction Clinic at the University of Massachusetts Memorial Medical Centre in Worcester, Massachusetts USA, showed reduced symptoms of pain, better coping skills, and continued long-term practice of meditation in patients with chronic pain (Kabat-Zinn et al. 1987).

In addition, Jon Kabat-Zinn and colleagues demonstrated, in a relatively small study, that participants with generalised anxiety and panic disorders did better clinically if they participated in mindfulness meditation training and practice than those who did not (Kabat-Zinn et al. 1992).

Other clinical trials suggest that relaxation techniques also decrease symptoms associated with premenstrual syndrome (PMS), diminish pain perception and enhance coping skills in migraine sufferers, and improve function, decrease utilisation of medical services, and increase the rate of return to work in patients with chronic pain (deLeon 1999).

Research also suggests that relaxation techniques may help relieve chronic tension headaches (Annequin et al. 2000); reduce the pain intensity, number of tender points, and emotional distress caused by Fibromyalgia (Leventhal 1999), and improve sleep quality and decrease wakefulness in those with chronic insomnia (Morin et al. 1999). Another intriguing potential clinical application of mindfulness meditation is psoriasis. In a single-blinded, randomised, controlled clinical trial of 37 subjects, half of the participants underwent ultraviolet phototherapy (UVB) or photo-chemotherapy (PUVA) for psoriasis with a mindfulness meditation audiotape playing in the background, while the other half underwent these treatments without the tapes. Inspection by physicians who were blinded to whether the patients had listened to the tapes, found significant improvement in the psoriatic lesions of those who had listened to the meditation tapes during treatment compared to the controls (Kabat-Zinn et al. 1998). Those who practice relaxation techniques regularly also tend to report greater self-esteem and self-confidence (Sultanoff and Zalaquett 2000).

Relaxation techniques are also thought to be useful adjuncts in the treatment of adjustment disorder, addictions, irritable bowel syndrome, gastritis, peptic ulcer disease, inflammatory bowel disease, arrhythmias, asthma, diabetes, and social phobias, although these applications may not have been as extensively researched as the clinical applications discussed above. In children, relaxation techniques may be beneficial for those suffering from impulsivity due to hyperactivity and disruptive behaviour (Sultanoff and Zalaquett 2000).



### **Risks, Side Effects, Adverse Reactions & Contraindications**

Relaxation techniques are non-invasive and, therefore, tend to be considered very safe. Rarely, though, anxiety may be increased by the practice of relaxation techniques. This phenomenon, known as Relaxation Induced Anxiety (RIA), is characterised by heightened physiologic arousal and reactivity. Although equally rare, autogenic discharges may occur in some patients. Autogenic discharges are defined as sudden, unexpected emotional or physical experiences that may include pain, heart palpitations, muscle twitching, and crying spells. These side effects can elevate blood pressure and may be dangerous for those with hypertension (Sultanoff and Zalaquett 2000).

Caution should be exercised in the case of schizophrenia and other forms of active psychosis. Relaxation practices may be counterproductive with such patients and therefore should probably be avoided (Sultanoff and Zalaquett 2000).



### ***The Future of Relaxation Techniques***

The validity and efficacy of relaxation techniques are gaining greater acceptance. Some would like to see more focused research on the exact mechanism of action, such as the effects of neuro-endocrinology on blood pressure (Barnes et al. 1999). In addition, given the reduction of lipid peroxide levels seen in a study cited in the section on Mechanism of Action, relaxation practices may have the potential to decrease free radical-induced oxidative damage. Such an anti-oxidative effect might be of value for prevention and adjunctive treatment of conditions associated with aging, such as coronary artery disease (Schneider et al. 1998).



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