

Creating and Maintaining Well Being: The Relaxation Response at Work

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Submitted by Cecilia Bennysson Nord to the University of Skövde as a dissertation towards the degree of Master of Science by examination and dissertation in the School of Humanities and Informatics. The work was supervised by Monica Bergman.

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I hereby certify that all material in this dissertation which is not my own work has been identified and that no work is included for which a degree has already been conferred on me.

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Abstract

Numerous studies have presented physical and psychological benefits of meditation. Many of these are due to the so called Relaxation Response. In our study, we compared a concentrative meditation practice and a relaxation practice to investigate potential differences in the elicitation of the Relaxation Response. The study was performed during 12 weeks on 15 subjects employed by the Police Authority. We measured the subjective well-being, according to the Positive and Negative Affect Schedule (PANAS), and by reading blood pressures. The descriptive analysis of the results, supports that the Relaxation Response is elicited by meditation and, although weaker, by physical relaxation. An elicited Relaxation Response is, however, maintained by relaxation. We also looked at the possibilities of introducing these practices in the work environment. There are several issues to deal with if the methods are to be applied in the work environment, mainly creating the time and place for the employees.

Key Words: Affective style, Blood pressure, Meditation, Relaxation, Relaxation Response, Stress, Well-being, Work environment.

Table of Contents

1. Introduction.....	1
2. Well-Being: Measuring the Subjective Experience	3
3. Mental vs. Physical Relaxation	5
3.1. Meditation: Relaxing the Mind.....	5
3.2. Relaxation: Relaxing the Body	6
4. The Relaxation Response	8
4.1. Physiological Effects of the Relaxation Response	9
4.2. Psychological Effects of the Relaxation Response.....	13
5. Materials and Methods	14
5.1. General Procedure	14
5.2. Participants	14
5.3. Blood Pressure.....	15
5.4. PANAS.....	15
5.5. Meditation	15
5.6. Relaxation.....	16
5.7. Weekly Reports	16
6. Results.....	17
6.1. Practice Occasions.....	17
6.2. PANAS.....	18
6.3. Blood Pressure.....	19
7. Discussion	20
7.1. Blood Pressure.....	20
7.2. PANAS.....	20
7.3. Practice Occasions.....	22
7.4. The Relaxation Response	22
7.5. Practicing Outside of Work	23
7.6. Applying Meditation or Relaxation to the Work Environment	24
7.7. Limitations.....	25
8. Conclusion	26

Acknowledgements

References

Appendices

*Create all the happiness you are able to create:
Remove all the misery you are able to remove.*
- Jeremy Bentham

1. Introduction

Numerous studies have been published on the scientific findings relating to the benefits of meditation. In one of these studies it is concluded that mindfulness meditation produces alterations in brain function as well as immune function (Davidson et al., 2003). Another study supports that the affective style, which may be improved by meditation, is strongly associated with the immune function (Rosenkranz et al., 2003). A recent study shows that the natural age-related degeneration of cortex is slowed by extensive meditation practice (Lazar et al., 2005). On the subject of well-being, the neural correlates of well-being has been explained and shown with comparisons between self-reports and EEG measurements. These findings show higher left than right prefrontal activity, as an indication of experiencing well-being (Urry et al., 2004). In this work, the focus is on meditation research, specifically on studies that have linked meditation with improved physical health and increased mental well-being. Different kinds of well-being and meditative practices will be described and somewhat defined according to our purposes. Previous research within different fields of physiology and psychology regarding the effects of meditation will be briefly presented.

By doing meditative practices it seems possible to create and maintain a general well-being and influence e.g. blood pressure in a positive direction (Benson, 2000). This is investigated in this study by trying two different methods; concentrative meditation and muscular relaxation in parallel. Several studies have been performed on the effects of meditation. None of these studies have made any comparisons between a meditative practice and a muscular relaxation practice to see if these are compatible regarding these effects, or if either of them is superior to the other.

A study on 15 employees of the Police Authority was performed during twelve (12) weeks in the work environment. The subjects were randomly separated into two groups: one group did concentrative meditation during six (6) weeks and then physical relaxation during the following six (6) weeks, the other group did the practices in the opposite order. The aim was to investigate a general improvement of subjective well-being and also to look at the possibilities of infiltrating practises of this kind in a stressful work environment. The subjective well-being, according to the Positive And Negative Affect Schedule (PANAS), and blood pressure were measured in order to compare the effects of the two methods and

examine if either of them was superior to the other. Only descriptive statistics of the results will be presented.

This kind of experiment has not been done in the work environment. Part of the aim of our study was to examine whether this was possible or not, and to see if the subjects were as affected by the methods as they seem to be in a laboratory environment. Some questions regarding the importance of introducing the time and place for employees to retreat in the work environment will be treated in the Discussion.

2. Well-Being: Measuring the Subjective Experience

In Collins National Dictionary, well-being is described as “welfare”, which in turn is explained as “well-doing or well-being; prosperity” (Foreman, 1965). Urry et al. (2004) have classified two different kinds of well-being: eudaimonic and hedonic, in other words this means psychological well-being (PWB) and subjective well-being (SWB). The PWB is explained as the level of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance, to which the respondent approves. SWB is defined as the evaluation of the respondent’s own affective and cognitive status. SWB embraces four separate components; life satisfaction, satisfaction with important domains (e.g. work), frequent pleasant emotions, and infrequent unpleasant emotions. While PWB may or may not be part of feeling good; SWB entails positive affect as a defining component of well-being (Urry et al., 2004). Self-reported measures of happiness and self-satisfaction are, however, highly correlated with refined measures of several aspects of the PWB (Layard, 2005). In this study, well-being will be referred to in accordance with Urry et al.’s (2004) definition of SWB, i.e. the feeling of enjoying life and having a desire to maintain this feeling. PWB cannot be reliably measured by self-reports, but SWB can (Urry et al., 2004).

In research on well-being, self-report measures are mainly used to make inference about differences among individuals (Davidson, 2004). In 1988, Watson, Clark, and Tellegen developed the Positive And Negative Affect Schedule (PANAS), a test consisting of one 10-item scale for positive affect and one 10-item scale for negative affect. The subjects rate to which degree a series of positive and negative traits, or mood descriptors, illustrates their personalities. The PANAS offers reliable, valid, and independent measures of the positive and the negative affects, and it is easily administered (Watson & Clark, 1994). Studies support that people are well aware of how they feel (Layard, 2005), hence, self-report scales seems to capture this very well and are to be considered as reliable.

The opposite of well-being is anxiety disorders. Continuous negative emotions affect how the endocrine and immune systems run; hence, cumulated negative emotions are very harmful (Damasio, 2003). In other words, one may say that seeking to feel good is a survival mechanism for the human species; it would not have survived if it had not searched for feeling good and avoided feeling bad (Damasio, 2003; Layard, 2005). When people run into stressful situations, their bodies release hormones, which increase heart and breathing rates, blood pressure, metabolic rate, and blood flow to the muscles (Benson, 2000). These

responses are known as the “fight-or-flight”-response. When it was discovered, we received an understanding of how evolution had geared the human physiology with survival instincts (Benson, 2000). At every moment we are, mostly unconsciously, evaluating the situation we are in. The elements that we like attract us and the ones that we dislike repel us; a behaviour known as “approach”-oriented or “withdrawal”-oriented (Davidson, 2004; Layard, 2005).

The body is also equipped with the “Relaxation Response”; a physiologic state of tranquillity, which can be evoked by training (Benson, 2000). If the Relaxation Response is elicited on a regular basis, it can compensate for the damage caused by the fight-or-flight-response, i.e. recurring nervous reactions pulsing through our bodies (Benson, 2000). After exposure to negative events, Davidson (2004) has argued that the capacity for quick recovery may define an important ingredient of resilience. Davidson (2004) has defined resilience as the maintenance of high levels of positive affect and well-being in the face of significantly hard times. It does not mean that the resilient individuals never experience negative affect; it means that the negative affect does not persist for them. The capacity to regulate negative emotion is a key component of affective style, especially to decrease the duration of negative affect once it is experienced (Davidson, 2004).

All of us have different personalities that, to a certain extent, are described by our disposition and emotional reactivity (Rosenkranz et al., 2003). The expression “affective style” describes the variations in emotional tendencies, i. e. how emotions help to make decisions, influence learning and memory, and provide for action when motivated by the environment (Davidson, Jackson, & Kalin, 2000; Davidson, 2004). One of the most salient features of emotion is the extreme heterogeneity in individual responses when provoked by the same emotional challenges (Davidson et al., 2000; Davidson, 2004). Recently, research has started to break down the components of affective style by guidance from the neural systems that instantiate emotion and emotion regulation (Davidson, 2004). Within its frames are the efficiency of the processes required to regulate emotions, as well as the magnitude and duration of emotions (Rosenkranz et al., 2003). Entailed in the concept are a broad array of processes that, singly as well as in combination, adjust the individual response to emotional challenges, dispositional mood, and affect-related cognitive processes (Davidson, 2004).

Well-being can be measured in standard scientific ways and is no longer to be seen as only a subjective statement without content (Layard, 2005). If a person claims to be happy or expresses any other feeling, it is, hence, possible to check and see how closely this subjective feeling corresponds to the activity in different parts of the brain.

3. Mental vs. Physical Relaxation

In order to compare the effects of meditation and physical relaxation, a description and an explanation of the two methods, and what effects to expect from them, will be presented in the next two sections. I will present an overview of different meditation techniques and then characterize muscular relaxation.

3.1. Meditation: Relaxing the Mind

There are as many definitions of meditation as there are writers and practitioners in the field. A wide definition of meditation is that it is a ritualistic procedure intended to train and heighten the mental awareness and inner peace by means of maintained voluntary shifts in attention. The goals of meditating may be of a general as well as of a long-term nature, and it aims to foster mental, physical, and spiritual benefits. Meditation is a self-help technique that can be practiced in connection to religious traditions; it actually developed and has been practiced most broadly in adherence to religious traditions. These days, it is also practiced secularly, without connection to any religion or philosophy, worldwide by e.g. athletes, nurses, and students seeking improved health and well-being, increased concentration and creativity, heightened performances, and as a tool to cope with everyday stress. (Farthing, 1992; Shapiro & Walsh, 2003; Woodham & Peters, 1997)

There are several meditation techniques and they all allow people to perceive themselves and the surrounding world in a different way. This is done by shifting the attention away from the routines and focusing on other perceptions and thoughts than the everyday admits (Farthing, 1992). Two main types of techniques have been distinguished; the concentrative meditation and the mindfulness, or “opening up”, meditation, which differ in how attention is deployed (Goleman, 1978; Ornstein, 1977). In concentrative meditation, the attention is restricted to a single object, image, word, or phrase (Ornstein, 1977; Rubin, 1999). In mindfulness meditation, the meditator attends everything in a fresh, non-habitual way, without attachment or aversion to the thoughts, feelings, sensations, etc. experienced during the practice (Farthing, 1992; Rubin, 1999).

Meditation, concentrative as well as mindfulness, should be practiced for ten to twenty minutes, on a regular schedule, once or twice daily (Benson, 2000). While meditating, it is possible to stop thinking for several seconds at a time and still be attentive to external stimuli (Benson, 2000; Farthing 1992). In concentrative meditation you are supposed to focus on one

stimulus; in mindfulness meditation you are supposed to focus on every sound, smell, taste, sensation, etc. that you experience (Farthing, 1992). It is impossible to concentrate perfectly throughout ten to twenty minutes, but concentration improves with practice (Benson, 2000; Farthing 1992). Intrusive thoughts are brief failures of concentration on the focus of attention (Farthing, 1992).

An instant effect of meditation is the pause of inner speech, the ongoing commentary on experience, memory, and personal concerns in which we engage when our attention is not fully concentrated (Farthing, 1992). This is part of what Benson (2000) has named “the Relaxation Response”, which may be elicited in a variety of ways. However, two components are required to elicit the Relaxation Response; first, a mental tool e.g. a word, a phrase, or a prayer repeated in silence or aloud, or a fixed gaze at an object, and second, a passive attitude i.e. the ability to put aside distracting thoughts and returning to one’s focus of attention (Benson, 2000). Eliciting the Relaxation Response on a regular basis can prevent the damage that repeated nervous reactions incur while pounding through our bodies (Benson, 2000). Hence, the benefits from meditation are more likely to enhance with the amount of practicing it (Smith,1987; Lutz, Greichar, Rawlings, Ricard, & Davidson, 2004). There are many different ways to practice meditation in everyday life, e.g. while exercising, walking, working in the garden, sitting in the office, or doing the dishes (Benson, 2000).

3.2. Relaxation: Relaxing the Body

Very little literature is to be found on the effects of pure muscular relaxation. Often authors are referring to “relaxation techniques”, but, just as often, these techniques are not specified. For example, the US National Cancer Comprehensive Network has included acupuncture, hypnosis, and relaxation techniques in their guidelines on managing pain related to cancer (Vickers, 2000). Meditation is most certainly one relaxation technique, but here muscular relaxation will be referred to as relaxation and mental relaxation will be referred to as meditation. In order to improve well-being, relaxation classes are offered by some practices and are often aimed at patients with mild symptoms of anxiety, depression, or chronic physical pain (Vickers, 2000). In the U.K., massage is offered in most hospitals in order to reduce anxiety and sleep related problems (Vickers, 2000). Progressive muscle relaxation is included among secular practices that elicit the Relaxation Response (Montague, 1996).

We considered that muscular relaxation throughout the body might lead to mental relaxation as well. And, since the Relaxation Response is a bodily capacity in direct

opposition of the stress response (Benson, 2000; Golin & Stocker, 1995), we were interested in seeing if the Relaxation Response was elicited by muscular relaxation in similar ways as predicted with the meditation practice.

4. The Relaxation Response

In the mid 1970's, cardiologist Herbert Benson noticed that clear physiological changes arose from meditation alone, e.g. decreased heart rate, blood pressure, metabolic rate, and breathing rate, and labelled this phenomenon "the Relaxation Response" (Benson, 2000). In the following sections, I will describe what the Relaxation Response is and how it affects the physiology and the psychology of human beings.

The Relaxation Response is the exact opposite of the fight-or-flight response, but they are both assumed to be built into the human system (Benson, 2000). The fight-or-flight, or stress, response can be instantly triggered by a loud noise or an unexpected perception. Producing the Relaxation Response requires a little more effort (Benson, 2000; Golin & Stocker, 1995; Montague, 1996). The Relaxation Response stands for measurable, predictable, and reproducible physiological changes that arise when people occupy themselves with repetitive and focused thinking while ignoring intrusive thoughts (Benson, 2000). In many different cultures and religions around the world, the Relaxation Response is elicited on a daily basis by repetition of words, sounds, or prayers for at least 20 minutes (Benson, 2000; Montague, 1996). It can also be elicited by secular techniques, e.g. running, progressive muscle relaxation, and listening to music (Benson, 2000; Montague, 1996).

It is an established fact that regular elicitation of the Relaxation Response does lower the blood pressure (Benson, 2000). Numerous studies have shown that stress contributes to e.g. increased blood pressure, suppressed immune system, and muscle ache, migraine, chronic pain, and anxiety (Benson, 2000; Snyderman, 2000). Self-care based on the elicitation of the Relaxation Response can effectively treat all disorders caused by stress or mind-body interactions, it can help 75% of insomnia cases, and also alleviate several symptoms of cancer and AIDS (Benson, 2000; Montague, 1996).

It takes about a month to train the elicitation of the Relaxation Response. In this time, the body becomes less responsive to the stress hormone noradrenaline. Since it takes more of this hormone to increase the heart rate and blood pressure, one can say that the Relaxation Response works as a natural tranquilizer, which builds immunity to the fight-or-flight response. (Benson, 2000; Golin & Stocker, 1995)

Benson (2000) emphasizes that believing in the beneficial effects of the Relaxation Response certainly contributes to an enhanced effect. He admits to this being a placebo-effect, or what he calls "Remembered Wellness", an innate capacity for the human to heal. The union

of Remembered Wellness and the benefits of the Relaxation Response have been labelled the “Faith Factor” by Benson (2000). It is underlined that no scientific experiments have been done on humans that were not depending on the placebo-effect (Benson, 2000).

4.1. Physiological Effects of the Relaxation Response

Until recently, it was fairly shallow to discuss issues concerning well-being as anything but subjective experiences, but now we do have the tools to measure such phenomena in a real and objective way (Layard, 2005). The record of beneficial effects of meditation and the elicitation of the Relaxation Response includes: treating hypertension, headaches, anxiety, stress, and stress related illnesses; increasing alertness and the ability to control attention; improving sleep; controlling drug and alcohol abuse; enhancement of self-understanding, self-acceptance, and inner independence; and positive mood changes (Benson, 2000; Farthing, 1992). We will now look a little closer at some of these and yet other benefits. First, we will look at the established physiological benefits of meditation that have been found, and then we will move forward to the psychological benefits.

The Nervous System. The autonomic nervous system (ANS) is, among many other things, responsible for the body’s fight-or-flight-response. Organs and muscles are regulated by the ANS, and functions like heartbeat, sweating, and digestion, are also included. The ANS consists of the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS). The SNS produces the fight-or-flight-response in order to help the body to mobilize for action when under pressure. This shows as e.g. increased heart and breathing rates. The responses of the PNS are opposite of the ones of the SNS; it produces what may be called the “rest-and-digest”-response. This shows as e.g. decreased heart and breathing rates. There is still much to learn regarding the effects of meditation regarding the ANS, but one way it may work is by reducing the SNS activity and increasing the PNS activity. These changes might be fundamental for many of the beneficial effects of meditation. (Eckert, Randall, & Augustine, 1988; NCCAM, 2006)

Blood Pressure. Numerous studies have been published regarding different relaxation techniques, e.g. transcendental meditation, yoga, and progressive muscular relaxation, as therapies for high blood pressure (Pérez-Stable, 1987). Most of these studies have shown a statistically significant, although small, reduction in systolic as well as diastolic blood

pressure (Pérez-Stable, 1987). The range of reduction has been 2-10 mmHg; if not just transient effects have been concluded (Pérez-Stable, 1987). When the diastolic blood pressure stays in the range of 90-94 mmHg non-drug therapies are often introduced in the initial treatment (Pérez-Stable, 1987). The idea that mental states influence blood pressure is part of the medical thinking of today (Roush, 1997).

Aches and Pains. As long as the aches or pains are stress-related, Benson (2000) and his team have found that eliciting the Relaxation Response on a daily basis relieves or even eliminates any ache or pain. They have systematically identified e.g. backaches, muscle pains, headaches, postoperative pains and concluded that these ailments are completely treatable with meditation and similar self-help techniques.

Stress. There is growing evidence that meditation is effective alone and as a complement to conventional medicine in relieving stress. Inhaling is connected to a reduced thoracic pressure (Eckert et al., 1988). Benson's term "the Relaxation Response" describes physiological changes as decrease in stress hormones, e.g. cortisol, and decrease in heart rate, observed during meditation (Roush, 1997). It is posited that the blood pressure is lowered by affecting the nervous system leading to these lowered levels of stress hormones, relaxation of the muscles in the blood vessels, and lowering the heart rate (NCCAM, 2006). In the U. S., relaxation therapies are taught in 60% of the medical schools and are offered by most hospitals (Roush, 1997).

Alertness and Sleep. Eliciting the Relaxation Response is not the same as sleeping and it is not evoked by sleeping more (Benson, 2000). Insomnia and other sleeping disorders are successfully treated by eliciting the Relaxation Response and people claim to sleep better during the night and feel more alert during the day (Benson, 2000).

Alcohol and Drugs. As well as reducing stress and tensions and helping to manage high blood pressure, a variety of meditation techniques have also shown to be a promising clinical intervention in decreasing addictive behaviours (Shapiro, 1981). Benson (2000) has performed an extensive study on meditators. The results showed that the use of drugs, liquor, and cigarettes, decreased immensely, trading the highs and lows of external stimuli for the profound feelings of meditation.

Immune system. Happy people tend to have been shown to have a stronger immune systems and lower levels of stress-hormones such as cortisol (Layard, 2005; Rosenkranz et al., 2003). A study was performed, by Rosenkranz et al. (2003), on the correlation between affective style and immune system. They found that individuals with more left hemisphere activity, i.e. more positive affective style, had a stronger immune system than those with a more negative affective style, who had a weaker immune system (Rosenkranz et al., 2003). In another study, it was concluded that an eight-week programme of mindfulness meditation changes the immune function in a positive way (Davidson et al., 2003). The results of both of the above studies were based on significant increases in antibody titers to influenza vaccine.

Brain electrophysiology. Electroencephalography (EEG) responses in experienced meditators were measured before, during, and after both concentrative and mindfulness meditation (see e.g. Anand, Chhina, & Singh, 1961; Bagchi & Wenger, 1957; Shapiro, 1981). The results show an increase of alpha waves, an increase of the alpha amplitudes, decreased alpha frequency, and occasional theta waves, during meditation compared to baseline measurements (Anand, Chhina, & Singh, 1961; Bagchi & Wenger, 1957; Shapiro, 1981). One study was performed by Lutz et al. (2004) on Buddhist practitioners with 15-40 years of daily practice of mindfulness meditation. They found that subjects with longer meditation experience showed more high-amplitude gamma-activity than subjects with shorter meditation experience. Hence, it has been concluded that regular meditation practice produce persistent changes in mental states and resting EEG pattern, i.e. that lasts beyond the period of active practice (Lazar et al., 2005).

EEG alpha waves *per se* have no known benefit, although, they are associated with the Relaxation Response (Benson, 1975). Also, EEG is a crude measurement of brain activity, and therefore not a sufficient tool when researching altered states of consciousness (Farthing, 1992). Hence, we must rely on introspective reports in such research (Farthing, 1992). Davidson has e.g. measured the EEG and related these to the feeling reported by the subjects (Layard, 2005). Reported positive feelings related to more activity in the left frontal regions of the brain, and reported negative feelings related to more activity in the right frontal regions of the brain.

Hemispheric asymmetry and brain plasticity. Mood and brain activity are directly connected. Research accomplished by scientists at the Laboratory for Affective Neuroscience at the University of Wisconsin at Madison shows that the parts of the brain that are associated

with positive emotions are activated by practicing meditation (Layard, 2005). People, whose left hemisphere is more active than the right, reported more positive feelings and memories. People, whose right hemisphere is the most active, reported more negative feelings and memories. The work of Davidson (2004) focuses on the contributions of the right and left hemispheres to affective style, and the brain circuitry responsible for different aspects of affective processing has been identified. Activation asymmetries in anterior scalp regions are related to dispositional affective style, and this disposition may be positively affected by meditative practices (Davidson et al., 2003; Davidson, 2004). In subjects with more dispositional positive affect, and during certain forms of positive emotion, activation in several left hemisphere anterior regions is observed (Davidson et al., 2003). Higher levels of dispositional negative affect and increased reactivity to acute negative challenges follow from high levels of right-hemisphere prefrontal activation at baseline (Rosenkranz et al., 2003). Accordingly, individuals with high and stable levels of left frontal activation report greater dispositional positive affect (Urry et al., 2004), e.g. people who are happy when at rest experience the greatest gain in happiness when exposed to pleasant film clips (Layard, 2005). When exposed to malicious film clips, they experience the least increase in uneasiness (Layard, 2005).

Lazar et al. (2005) present the first structural data of experience-dependent cortical plasticity related to practicing meditation. As we age the cortex becomes thinner because the white matter normally degenerates (Lazar et al., 2005; Reed, 2006). This kind of degeneration leads to less efficient working neurons and, hence, affects the activity of the brain (Lazar et al., 2005; Reed, 2006). The functions of the prefrontal cortex, mainly decision making, attention and memory, are thus decreased by age (Lazar et al., 2005; Reed, 2006). According to this study on 20 experienced meditators, regular practice of mindfulness meditation helps to prevent the pace of cortical degeneration (Lazar et al., 2005). The findings show that the between-group differences of the prefrontal cortex were that it was as thick and as active in older meditators as in younger non-meditators (Lazar et al., 2005). These results imply that meditation has an impact on the age-related prefrontal cortical thinning (Lazar et al., 2005; Reed, 2006).

4.2. Psychological Effects of the Relaxation Response

Physiological effects influence the psychology, just as psychological effects influence the physiology; the performance effectiveness of an individual is modulated by the compatibility of the bodily and the cognitive states (Barsalou, Niedenthal, Barbey, & Ruppert, 2003).

Layard (2005) calls the systematic experimentation on affect “positive psychology”, i.e. a forward-looking substitute for backward-looking psychoanalysis, which prevailed before the cognitive sciences. All of the meditative techniques offer a means by which we all can increase our enjoyment of life (Layard, 2005).

In our study, the subjects were instructed to sit in an upright position while doing the meditation practice. Studies have shown that the affective states of a person are influenced by particular postures, e.g. subjects experienced more pride if they had been upright while receiving task feedback than if they had been slumped (Barsalou et al., 2003).

Self-understanding. The meditation effects, such as decreased anxiety and increased PWB or self-actualization, are supported by several studies. Most people who are meditating regularly report, and are motivated by, the trait effects, i.e. the long-term effects that go beyond the actual practice. Established trait effects are e.g. reduced stress reactions and improved intellectual abilities. (Farthing, 1992)

Mood changes. Several studies have presented results showing that meditation does improve the affective style by increasing the blood flow of the left hemisphere (see e.g. Davidson et al., 2003). Meditation has e.g. been taught to prison inmates and has successfully suppressed violent behaviour and endorsed peaceful minds, i.e. increased the SWB (Hays, 2001).

An important ingredient regarding mood changes is the wishes and desires of the practitioners (Farthing, 1992). Even though practicing meditation seems to be clearly associated with mood changes and increased SWB as well as PWB, it may be inaccurate to conclude that meditation techniques “produce” these changes (Holmes, Solomon, Cappel, & Greenberg, 1983). As implied by some studies (see e.g. Holmes et al., 1983), the rest-relaxation aspects of meditation lead to the reduced arousal during meditation, not the particular meditation practice, e.g. concentrative meditation, *per se*.

5. Materials and Methods

5.1. General Procedure

The total period of time of the experiment was twelve (12) weeks. During the first six (6) weeks Group A performed the Meditation practice and Group B performed the Relaxation practice. During the remaining six (6) weeks the Groups switched methods, so Group A performed the Relaxation practice and Group B performed the Meditation practice. Before the experiment began, all of the participants attended an introduction meeting, at which they were given a verbal presentation and written instructions (Appendices A & B) in individual enclosed envelopes. In the introduction meeting, the participants were told that two methods were to be tested and that they both were equally important. They were also told that they would be separated into two groups and that they would change practices after six (6) weeks. At a second meeting, with each of the groups, the practices were explained in more detail and performed together. After six (6) weeks, i.e. as the groups changed practices, the new practice was explained in more detail, at meetings with each of the groups, and performed together. All of the subjects gave their Informed Consents (Appendix C). The author met with the groups every second week throughout the time of the study.

5.2. Participants

All of the participants were asked to participate by the supervisor of personnel at the Police Authority of Östergötland. The participation was completely voluntary and the subjects were not paid or in other ways reciprocated. We were given a list of twenty (20) names and randomly separated the subjects into two groups; Group A and Group B. Since five (5) subjects left the study during the first 4 weeks, they were excluded from the study altogether. The study was hence performed with Group A, which contained eight (8) individuals (all women, mean age: 49, range: 35-59, SD: 10.2 years), and Group B, which contained seven (7) individuals (all women, mean age: 42, range: 25-57, SD: 11.3 years).

None of the subjects of this study had any experience of daily meditation; one woman had tried meditation as treatment for neck pain, but had given up after a few sessions. Neither of the subjects had any experience of regular relaxation, and definitely none in the work environment.

5.3. Blood Pressure

The blood pressures of the subjects were read at three different times; first, right before the experiment started; second, after six (6) weeks, when the subjects changed methods from meditation to relaxation or vice versa; and third, after twelve (12) weeks, right after the experiment was finished. A trained and experienced nurse read the blood pressures. The readings were done at the same time of day (11.00-12.00 AM), and at the same location each time.

5.4. PANAS

The Positive And Negative Affect Schedule (PANAS) consists of one 10-item scale for positive affects and one 10-item scale for negative affects. The subjects rate the extent to which a series of positive and negative traits are descriptive of their personalities (Watson & Clark, 1994). All of the 15 individuals answered the PANAS (Appendix D) initially, after six (6) weeks, and after twelve (12) weeks. We used a Swedish version and were granted permission to translate (Appendix E) the English version (Appendix F) and use the PANAS by the American Psychological Association (APA) (Appendix G). Each marking on the PANAS was counted as 1 point.

5.5. Meditation

Concentrative meditation was chosen as it was considered to be the easiest and fastest technique to teach and learn. The participants were instructed to perform the meditation practice for fifteen (15) minutes every day they were on duty. They were all on duty Monday through Friday during regular office hours. Initially, the participants were asked to find their own mantra word. The word should be as neutral as possible and absolutely not be the name of a person, and it should be the same throughout the duration of the experiment. The instructions were to sit comfortably in a quiet environment, where they were able to relax, and to repeat their word for the entire time period of fifteen (15) minutes. We emphasized that other thoughts would interrupt and then, when they did, to just pick up the mantra word again and continue. They were informed that it may take ten (10) minutes to get into the meditation in the beginning but that it usually gets easier and faster after a while. It was underlined that they could not ruin the study by having other thoughts and that they should quit the exercise after fifteen minutes, no matter what had happened during the practice.

5.6. Relaxation

The participants were instructed to perform the relaxation practice for fifteen (15) minutes every day they were on duty. They were all on duty Monday through Friday during regular office hours. The instructions were to sit comfortably, or lay down, in a quiet environment where they were able to relax. We suggested telling oneself to think or say out loud “I feel my feet being relaxed and warm”, “I feel the warmth travelling up my legs making them relaxed”, and so forth up along the entire body (focusing on knees, hips, stomach, chest, hands, arms, shoulders) until they reached the neck. The instructions included focusing on warmth, but otherwise to let the thoughts come and go without holding on to any of them, like planning grocery shopping or other chores or problems. It was underlined that they could not ruin the study by thinking “wrongful” thoughts and that they should quit the exercise after fifteen (15) minutes, no matter what had happened during the practice.

5.7. Weekly Reports

All of the participants filled in a Weekly Report (Appendix H) for each of the weeks of the experiment. The form included the seven days of the week and the subjects checked each day they had done the exercise. Beside each day there was a slot to fill in at what time of that day the exercise had been performed. There was plenty of room (half a page) on the form to write down odd experiences, interruptions of any kind, etc. and the subjects were encouraged to write as much as possible. Two reports were submitted at each of the meetings that occurred every second week.

6. Results

In the following, the descriptive analysis of the results is presented.

6.1. Practice Occasions

Both of the groups had their peaks of practicing during week three (3) and four (4) (see Table 1). During these weeks, nearly twice as many had, started to do the practices during the weekends (see Table 1).

The lowest amount of practice occasions, for both of the groups, occurred during the last two weeks, i.e. week eleven (11) and twelve (12) (see Table 1). During these weeks, Group B did almost all of their practicing outside of the workplace (see Table 1)

For both groups, week one (1) and two (2) had the highest ratio for practicing at work. For Group A, week five (5) and six (6) had the highest ratio for practicing outside of work, i.e. in the evenings and at the weekends (see Table 1). For Group B, week eleven (11) and twelve (12) had the highest ratio for practicing outside of work (see Table 1).

The total amount of practicing, for both of the groups, degenerated successively after week four (4), and especially after week six (6), i.e. after the groups switched methods (see Table 1).

One subject of Group A had an accident during week 5 and one subject of Group B was on vacation during week 6, so neither of them did the practice at all during one week out of the two-week-period. During week 11, one subject of Group A, and (3) subjects of Group B were attending an educational program and had not done the practice at all.

Table 1; Overview of the practice occasions

	Group A	Group A	Group A	Group B	Group B	Group B
	Mean	Total	Out of work	Mean	Total	Out of work
Week 1 & 2	5.1	81	27	2.2	31	9
Week 3 & 4	5.5	88	43	3.5	49	20
Week 5 & 6	5.3	84	51	3.2	45	20
Week 7 & 8	4.6	73	33	3.1	43	13
Week 9 & 10	3.9	63	32	2.0	28	12
Week 11 & 12	2.9	46	16	1.4	20	18

Group A mainly did their practices, i.e. the meditation as well as the relaxation at noon and at 10 AM, according to the Weekly Reports. Group B mainly did the relaxation practice at 2 PM and the meditation practice at 12.30 PM, according to the Weekly Reports. The

subjects who did the practice at the weekends were the ones who did the practice every day of the week, with the exception of one subject in Group B who only did it in the weekends.

For all of the comments in the Weekly Reports, see Appendix I.

6.2. PANAS

The subjects filled in the PANAS at three occasions; first, at the introduction meeting, i.e. before having received any information about the study; second after six (6) weeks, i.e. before switching methods; and, third, after twelve (12) weeks, i.e. when the study ended, the subjects filled in a PANAS. The mean scores and the ranges for both groups at the three occasions are presented in Table 2.

Table 2; Overview of the PANAS results (points)

	Group A	Group A	Group B	Group B
	Mean	Range	Mean	Range
First PANAS, Positive Score	3.3	20-43	3.2	25-43
First PANAS, Negative Score	1.1	10-14	1.1	10-13
Second PANAS, Positive Score	3.6	20-50	3.4	28-40
Second PANAS, Negative Score	1.1	10-14	1.1	10-15
Third PANAS, Positive Score	3.5	18-46	3.2	26-40
Third PANAS, Negative Score	1.2	10-13	1.2	10-17

Some affective words of the PANAS changed more in scores than others, some words were more affected by the meditation practice, and yet others by the relaxation practice. In Table 3 the words that changed the most or in other ways protruded are listed. The first six (6) words are positive and the bottom three (3) words are negative.

Table 3; Overview of the scores of the PANAS (points)

	Group A	Group A	Group A	Group B	Group B	Group B
	PANAS 1	PANAS 2	PANAS 3	PANAS 1	PANAS 2	PANAS 3
Interested	33	32	32	27	27	25
Excited	13	26	19	13	17	16
Strong	24	30	29	21	26	26
Proud	19	28	28	21	22	24
Alert	28	28	30	21	24	22
Active	27	29	28	23	26	23
Irritable	11	12	13	11	12	13
Upset	9	9	9	7	8	10
Guilty	9	9	9	9	8	11

6.3. Blood Pressure

The blood pressures of the subjects of both groups were read at three occasions during the study; first, before the groups started to do their practices; second, after six (6) weeks, i.e. before they switched methods; and, third, after twelve (12) weeks, i.e. when the study ended. None of the subjects had the same individual blood pressure in all of the three readings. The mean readings and the ranges for both groups at the three occasions are presented in Table 4.

Table 4; Overview of the blood pressure readings (mmHg)

	Group A	Group A	Group B	Group B
	Mean	Range	Mean	Range
First Reading	123.8/80.6	115/65-140/85	124.3/83.6	95/70-135/105
Second Reading	123.8/80.6	110/65-115/85	118.6/84.3	90/70-140/90
Third Reading	124.4/74.4	110/65-160/90	126.4/79.3	120/70-140/90

In the second reading, one (1) subject of Group A had an increased systolic blood pressure (+5 mmHg) and one (1) had an increased diastolic blood pressure (+5 mmHg), all of the rest had a decreased blood pressure; systolic range: -5 to -20 mmHg; diastolic range: -5 to -15 mmHg. The individual differences in blood pressure, between the first and the second readings, were bigger in Group B than they were in Group A. One subject had an increased diastolic blood pressure (+15 mmHg), all of the rest had a decreased blood pressure; systolic range: -10 to -35 mmHg; diastolic range: -10 to -20 mmHg.

In the third reading, four (4) subjects of Group A had an increased systolic blood pressure (range: 5-20 mmHg) and three (3) had an increased diastolic blood pressure (range: 5-15 mmHg), compared with the first reading. All of the rest had a decreased blood pressure; systolic range: -5 to -15 mmHg; diastolic range: -10 to -20 mmHg. Two (2) of the subjects of Group A had an increased systolic as well as diastolic blood pressure. One of the subjects was pregnant in the third trimester and the other was advised to see a doctor.

In the third reading, four (4) subjects of Group B had an increased systolic blood pressure (range: 5-25 mmHg) and one subject had an increased (+5 mmHg) diastolic blood pressure, compared with the first reading. All of the rest had a decreased blood pressure; systolic range: -10 to -20 mmHg; diastolic range: -5 to -20 mmHg.

7. Discussion

In our study, we introduced a daily practice of physical relaxation and of mental relaxation respectively to two groups in a stressful work-environment. The effects of the two methods, i.e. muscular relaxation and concentrative meditation, were then measured and compared. The effects measured were the blood pressure and the subjective well-being (SWB) according to PANAS. Since only one of the subjects had tried practicing meditation earlier, the results of this study are not likely to depend on prior experience.

7.1. Blood Pressure

Since the subjects were randomly separated into two groups, it is not surprising that the average blood pressures/group were balanced at the start. As the diastolic blood pressure is the one mentioned in discussions regarding stress management, we had hoped to see a decrease of the diastolic blood pressure to balance in between 75 mmHg and 80 mmHg. After the twelve (12) weeks of the study, the mean diastolic blood pressure of Group A was 74.4 mmHg and had decreased with 6.2 mmHg. The mean diastolic blood pressure of Group B was 79.3 mmHg and had decreased with 4.3 mmHg by the end of the study. According to Benson (2000), the Relaxation Response is activated after 3-4 weeks of meditation; consequently, there is a decrease of the blood pressure. After twelve (12) weeks this was indicated in our study. The decrease was slightly bigger for Group A than for Group B, even though the mean diastolic blood pressure of Group B was higher to begin with. The very small difference is most probably due to individual differences, but may be due to the fact that Group B did their practicing a lot less and, hence, did not receive a bigger effect of the Relaxation Response. We had no particular ideas concerning the systolic blood pressure.

7.2. PANAS

It was not unexpected that the ratings/group of the PANAS were balanced at the start, since the subjects were randomly separated into two groups. Although, it is noteworthy that the negative words initially received an average as low as 1.1 (1.0 is the lowest score possible) for both groups, considering the very stressful work environment. The low average of negative scorings may be explained by the mean age of the subjects (45.7 years), since previous studies have shown that positive affect scores are in general alike for students and adults, but negative affect scores are usually slightly lower for adults (Watson & Clark, 1994). Mature people tend

to experience more sustained positive emotions than younger people and their negative emotions subsides more rapidly (Flora, 2005). In the PANAS, we asked for the state of mind right now to avoid the problem of inaccurate memories of feelings in the past.

“Irritable” was the negative word that received the highest score throughout the study, and it also increased for Group B. We believe that this is an affect strongly connected to external events. Considering the nature of the work the subjects of this study have, the high scoring of “Irritable” may be explained in terms of working with criminals or people affected by crime. This could not possibly be changed by meditation or relaxation, as is the case with some of the other affective words that are closer connected to the self. The slight decrease in scoring of “Distressed” and “Nervous” after the meditation practice was not kept through the relaxation practice for Group A, but the increase in the last test was extremely small. Five (5) words, all negative, kept the same scores throughout all of the three tests: “Upset”, “Guilty”, “Hostile”, “Jittery”, and “Afraid”. Besides “Guilty” they all held the lowest score possible to begin with and were not possible to improve.

“Excited”, “Strong”, and “Alert” received the biggest changes after the meditation practice of Group A and after the relaxation practice of Group B, i.e. after six (6) weeks. “Excited” received the lowest score among the positive words throughout the study, but was also the word that received the biggest changes from test to test. As with “Irritable”, this is an affect that also may be considered to be connected to external events, although joyous. It may be suggested that it is a quite intense and instantaneous affect, and perhaps the subjects had simply had a fun conversation before they filled in the second test. Also, as “Irritable” scored high it seems reasonable that “Excited” scored low, considering they are somewhat opposite affects. After twelve (12) weeks, the scores for “Strong” had been maintained for both of the groups, and “Proud” had been added to the positive affective words with the biggest increase for both of the groups. These results may be considered as trait effects, they show that the general SWB has been improved, and they are most probably in line with improved PWB and self-actualization due to meditation and muscular relaxation. These affects, i.e. strong and proud, are also to be considered as strongly connected to the self. The only positive affective word that received fewer points in both the second and the third test, compared with the first test and only for Group A, was “Inspired”. An established trait effect is e.g. improved intellectual abilities (Farthing, 1992), so finding that “Inspired” received a much lower score after twelve (12) weeks of meditation and relaxation was somewhat surprising. This may be because the tests were filled in at the work place, which probably does not trigger inspiration the most.

7.3. Practice Occasions

Scoring high on the positive scale has been related to approach-related behaviour (Urry et al., 2004). The positive scores were not abnormally high, but the negative scores were surprisingly low. This fact in connection with the subjects being used to following orders within the Police Authorities, may explain the eager approach to the study. Throughout the first six (6) weeks Group A, which practiced the meditation exercise at the time, did the exercise more than requested, i.e. during the work-week. According to the Weekly Reports it was much harder for Group B, which practiced the relaxation exercise at the time, to do the exercise at work because of distractions in the environment. It is also obvious from the amount of occasions of practice that this group did not find the opportunity to do the practice as easily at work as the meditators did. One explanation to why the subjects of Group B performed the practice much less than Group A may be that it is extremely hard to physically relax in an upright position. Some, but certainly not all, of the subjects had access to a relaxation room in which there was a bed. During week 3 and 4 several of the subjects of Group B surrendered to doing the relaxation practice as soon as they got home (“as close to work hours as possible”).

As the groups switched practices, i.e. after week 6, it is obvious from the amount of occasions of doing the practice that Group A also found it harder to do the relaxation than the meditation at work. We figure that the reason to why Group A still did it a lot more than Group B ever did, is that they had gotten used to sitting upright while doing the meditation and, hence, had an easier time to relax in a seated position. Generally, Group B never got into a good routine of doing the practice from the start and they did not catch up with Group A until in the very end. The main reason is probably the hardship in performing the relaxation practice. It must be noted, though, that some individuals of Group B actually did the practice 6 days/week throughout the study.

7.4. The Relaxation Response

The Relaxation Response is usually activated after about a month of regular practice of meditation (Benson, 2000). This was confirmed verbally during the second meeting with Group A as well as in their Weekly Reports of week 3 and 4. During these weeks the amount of occasions of practice during the weekends more than doubled for Group A (110%) and heavily increased (57%) for Group B. None of the subjects had commented on this on the Weekly Reports and none said anything at the meeting. Since the trend was much stronger for

Group A and their Relaxation Response seemed more activated, compared with Group B, we figure that a need to be continuous in order to feel good is also evoked. It is noteworthy that the subjects of Group A, both verbally and in the Weekly Reports, complained about not having been able to find the time to practice, but reported only a slight decrease in the amount of occasions of practice. It seems obvious that not doing it as much as they had gotten used to clearly affected them and apparently there was a wish to do it more. An explanation to the feeling of not having the time to practice may be the higher workload because the schools were out for the winter holiday.

According to the comments in the Weekly Reports, the Relaxation Response seemed to be delayed for Group B and did not seem to become activated until during week 5 and even more so during week 6. Benson (2000) claims that a mental tool and a passive attitude is required to elicit the Relaxation Response, so it may be due to an actual difference between the mental and the muscular relaxation. Or, it may be due to the fact that Group B practiced at a lot fewer occasions than Group A. In an earlier study by Holmes et al. (1983), on 10 highly trained meditators and 10 untrained subjects, it was suggested that it is the rest-relaxation characteristics of meditation that cause the decreased arousal during meditation. Hence, it was concluded, decreased arousal is not dependent on the meditation itself (Holmes et al., 1983). In another study Shapiro (1981) concluded that meditation is equally efficient as any other self-regulation approach, e.g. hypnosis and progressive relaxation. Our study supports these conclusions. It seems like the Relaxation Response is somewhat delayed when practicing muscular relaxation, in comparison with concentrative meditation practice. But, if the circumstances were different, i.e. the relaxation practice had been easier to perform in the workplace; we assume that the effects would have been similar from meditation as well as from relaxation.

7.5. Practicing Outside of Work

A more organized way of doing the exercises may also be part of the explanation regarding the weekend practicing. During week 3 of the study, subjects from both of the groups had started to get together in the same room to do the practices at the same time. No literature has been found on doing meditation together or in solitude, but getting together probably made it more legitimate to actually relax, physically as well as mentally, since it removed the subjects from their work. This habit seems to have made it easier to bring the practicing home over the weekends, since the ones who did the practice at the weekends were mainly those who did it

daily at work. Not all of the subjects had the opportunity to participate in the gatherings at work, but many expressed a wish for it, not to the least to make sure the exercise “got done”. They all agreed that setting a time for the practice was a high necessity, or else there was a risk of putting it aside until the day was over and it had been forgotten altogether. Our suggestion for future studies is to set a time for practice, which is also suggested for the workplaces that may adopt this method for handling health issues or stress management.

As the groups started to get together, the occasions of practicing were more assembled. It is interesting to note the time they chose to gather; 2 PM. There are findings supporting that between 2 and 4 PM along with the period between 9 and 11 AM are the time slots of the day when people possess the lowest degree of happiness, aside from 8 AM that is the absolute low of the entire day, i.e. between 8 AM and 10 PM (Layard, 2005). Besides the organized practicing, i.e. all the subjects’ practicing occasions taken together, both of the low periods prevail over other time periods of the day. The exception is practicing around noon, which holds a top degree of happiness (Layard, 2005); our guess is that it has a practical explanation as that is the time for the lunch break.

7.6. Applying Meditation or Relaxation to the Work Environment

Meditation may not be superior regarding elicitation or maintenance of the Relaxation Response, in comparison with physical relaxation. It seems, however, to be much easier to apply in a work environment. Easier in the sense that it is easier to do it sitting in a regular chair and easier because it helps ignoring external distractions, e.g. people walking and talking outside the door. Two (2) subjects of Group A also experimented with doing it on trains and buses, with successful results. Hence, it seems like meditation allows for more creativity regarding doing it when there is an opportunity in the everyday life.

The, by far, most common comments have been regarding finding the time to do the practices. These comments are often in junction with comments regarding not working at work, e.g. comments like “stealing time”. If an employer is to introduce meditation or relaxation at work, he or she must be very clear in expressing the good of this, not only for the individual but for the company, in order to erase feelings of guilt. Such an employer must also provide a place to be, unless the employees have their own rooms, and set a time when this practice should be done.

7.7. Limitations

One limitation of this study is that only women participated and they were fairly few. We do not know whether any men were asked at all or whether they said no to participate when asked. Although, men and women worldwide are, in general, equally happy (Layard, 2005), so the results of the PANAS are probably not affected by there being no men participating.

Our study would undoubtedly have been well served by EEG measurements, blood draws, MRI scans, or similar objective measurements besides blood pressure readings to support the results. Unfortunately this was not possible, which is a limitation of the study. Also, no statistical analyses have been done on the results.

The study was performed in Sweden and started in the beginning of January, which is a very dark and drowsy time of the year. The study ended in the beginning of April, when the spring was on the way and the disposition of people is generally lighter. The weather conditions may have affected the results of the study in some way.

Group A may have brought the meditation along into the relaxation practice, since they did the meditation first and the relaxation last. That would presumably make the relaxation practice more of a mental relaxation for Group A than for Group B. For Group B, the relaxation practice was probably more purely physical, as it was intended to be, than it was for Group A. Also, some of the subjects did the practice at home, at the weekends and sometimes in the weekdays as well. Some did the practices together at the workplace. It is impossible to say whether these facts have affected the results in any way.

Each individual have her own unique personal character, including expectations, beliefs, cognitive traits, and attitudes (Davidson, Goleman, & Schwartz, 1976), which of course colours the results of the PANAS. Also, the subjects filled in the PANAS at several occasions and may have figured out how it works, i.e. demand characteristics.

8. Conclusion

Only descriptive statistics of the results are presented. No analyses of the statistical significance of the observed differences have been done. However, the differences, although small, are in the expected direction. The results of the study suggest that concentrative meditation as well as muscular relaxation activates the Relaxation Response, provided that the practice is done almost daily. It remains unclear whether the differences were statistically significant (i.e. bigger and more systematic than could be expected by chance alone). Both of the methods lead to a balanced blood pressure (around 120/80) and an increased general subjective well-being, at least regarding the self-image. The main difference between the methods seems to be that the Relaxation Response is elicited faster by the meditation practice than by the relaxation practice. However, after it had been evoked it appears to be maintained by the relaxation practice as well as by the meditation practice. In order to confirm these results, further studies with more subjects and a longer duration, are needed, as is statistical analysis of the results.

Despite the fact that fifteen (15) minutes are not a long period of time, it seems extremely hard to get the time to perform the practices at work, i.e. the employees consider it as stealing time from the employer and dismissing the engagements of work. In many cases, there are no possibilities to retreat and no quiet space that allows for an effective meditation/relaxation. This lies on the employer to provide in order to take advantage of all the benefits presented in this and many other studies.

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Appendices

- A. Written instructions, Meditation
- B. Written instructions, Relaxation
- C. Informed Consent
- D. PANAS, Swedish version
- E. APA approval to translate PANAS
- F. PANAS, English version
- G. APA approval to use PANAS
- H. Weekly Report
- I. Comments in the Weekly Reports

Meditation – Instruktion

Det första du ska göra är att välja ett ord med neutral laddning t.ex. mojäng, sol, pillerull – undvik absolut personnamn. Du ska använda samma ord under alla sex veckorna, så notera det nedan så att du inte glömmer bort det. Ingen kommer att fråga efter vilket ord du valt, det är helt och hållet ditt eget meditationsord.

Mitt ord: _____

Övningen ska utföras under 15 minuter. Ställ en äggklocka, mobiltimer e.d. så att du slipper hålla ett öga på klockan. Sitt bekvämt och repetera ditt ord konstant i din egen takt under samtliga 15 minuter. Andra tankar kommer att komma, men försök att hålla fast vid ditt ord och gå tillbaka till det. Inledningsvis kan det ta uppemot 10 minuter att komma in i repeterandet. Tro inte att du förstör studien eller dina egna resultat om andra tankar dyker upp för det gör du inte! Med tiden kommer det att gå lättare och lättare. Sluta efter 15 minuter oavsett hur det har gått. Notera på Veckorapporten om du känt dig störd eller att det inte fungerat. Försök att sitta enskilt i en så tyst och lugn miljö som möjligt. Repetitionen kan du göra tyst eller uttalat.

Du uppmanas att utföra övningen dagligen under sexveckorsperioden och helst under arbetstid de dagar du är i tjänst. Skriv in tidpunkterna på Veckorapporten som därefter överlämnas till Cecilia. Vi kommer att träffas varannan vecka för att göra övningen tillsammans, behandla eventuella frågor, lämna in Veckorapporterna o.d. Glöm ej att notera din kod på Veckorapporten.

Efter denna del av studien, dvs. efter 6 veckor, kommer ditt blodtryck att mätas och du kommer att få fylla i ett PANAS-test igen.

Du ombedes att undvika samtal om övningarna med andra personer i studien då detta kan påverka resultaten. Har du minsta fråga beträffande studien eller känner att du behöver diskutera erfarenheter kring övningen är du alltid välkommen att kontakta Cecilia enligt nedan. Cecilia arbetar under sekretess.

Hem: 011-13 54 25 (det går bra att ringa 8-24)

Mobil: 0708-51 93 53

Mail: cino70@hotmail.com

Avslappning – Instruktion

Övningen ska utföras under 15 minuter. Ställ en äggklocka, mobiltimer e.d. så att du slipper hålla ett öga på klockan. Sitt eller ligg bekvämt och känn efter hur du slappnar av nerifrån och upp. Säg gärna till dig själv ”Jag känner hur mina tår och fötter slappnar av och blir varma” och sedan ”Jag känner hur värmen stiger upp mot knäna som också slappnar av” osv. upp till halsen/nacken. Du väljer själv vilka steg du vill hoppa mellan, men fötter, knän, höfter, mage, bröst, händer, armar, axlar är ett förslag. Försök tänka mycket kring värme. Låt tankarna komma och gå men försök att inte fokusera på problem eller saker du måste göra t.ex. skriva inköpslista. Tro inte att du förstör studien eller dina egna resultat genom att tänka ”fel” tankar för det gör du inte! Sluta efter 15 minuter oavsett hur det har gått. Notera på Veckorapporten om du känt dig störd eller att det inte fungerat. Försök att sitta enskilt i en så tyst och lugn miljö som möjligt. Repetitionen kan du göra tyst eller uttalat.

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Efter denna del av studien, dvs. efter 6 veckor, kommer ditt blodtryck att mätas och du kommer att få fylla i ett PANAS-test igen.

Du ombedes att undvika samtal om övningarna med andra personer i studien då detta kan påverka resultaten. Har du minsta fråga beträffande studien eller känner att du behöver diskutera erfarenheter kring övningen är du alltid välkommen att kontakta Cecilia enligt nedan. Cecilia arbetar under sekretess.

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Mobil: 0708-51 93 53

Mail: cino70@hotmail.com

Studie om Välbefinnande
Institutionen för Kommunikation och Information
Högskolan i Skövde

Informerat Samtycke (för personer över 18 år)

Syftet med denna studie om välbefinnandet har förklarats muntligt för mig. Skriftlig och personlig information har tilldelats mig i ett förslutet kuvert. Jag har också haft möjlighet att ställa frågor till forskaren och fått mina frågor besvarade.

Sekretess råder och kodning av samtliga data (blodtryck och PANAS-test) sker. Varje person som deltar i studien tilldelas en kod, t.ex. A101. Denna kod är personlig och endast personen själv samt den som är ansvarig för studien vet vilken person som hör ihop med vilken kod. Inga enskilda individer kommer att kunna identifieras i eventuella publikationer.

Deltagande är frivilligt och kan när som helst avbrytas utan förklaring. Jag lider inte av några mentala störningar som gör att jag inte är kapabel att ge mitt samtycke till deltagande i denna studie.

- Jag ger frivilligt mitt samtycke till att deltaga i denna studie.

- Jag tackar nej till att deltaga i denna studie.

Ort och Datum: _____

Forskningspersonens namnunderskrift: _____

Namnförtydligande: _____

Subjekt Nummer:
Datum:

APPENDIX D

PANAS

Positive And Negative Affect Scale

Gradera hur du känner dig just nu

- 1 - Inte alls**
- 2 - Lite**
- 3 - Måttligt**
- 4 - Ganska mycket**
- 5 - Extremt**

	1	2	3	4	5
Intresserad	<input type="checkbox"/>				
Orolig	<input type="checkbox"/>				
Uppspelt	<input type="checkbox"/>				
Upprörd	<input type="checkbox"/>				
Stark	<input type="checkbox"/>				
Skuldmedveten	<input type="checkbox"/>				
Skärrad	<input type="checkbox"/>				
Fientlig	<input type="checkbox"/>				
Entusiastisk	<input type="checkbox"/>				
Stolt	<input type="checkbox"/>				
Lättirriterad	<input type="checkbox"/>				
Alert	<input type="checkbox"/>				
Skamsen	<input type="checkbox"/>				
Inspirerad	<input type="checkbox"/>				
Nervös	<input type="checkbox"/>				
Bestämd	<input type="checkbox"/>				
Uppmärksam	<input type="checkbox"/>				
Skakis	<input type="checkbox"/>				
Aktiv	<input type="checkbox"/>				
Rädd	<input type="checkbox"/>				

Tack för hjälpen!

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January 23, 2006

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Date

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PANAS: *Positive and Negative Affect Scale*

The Positive and Negative Affect Scale is a series of questions that attempts to measure mood at any given moment in time. An example of a PANAS form is below.

PANAS (Endurance Rowing) 24 Hours					
Rower		When?		Time	
Rate how you feel right now					
	Not at all	A little	Moderately	Quite a bit	Extremely
Interested					
Distressed					
Excited					
Upset					
Strong					
Guilty					
Scared					
Hostile					
Enthusiastic					
Proud					
Irritable					
Alert					
Ashamed					
Inspired					
Nervous					
Determined					
Attentive					
Jittery					
Active					
Afraid					



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Raven A. Thomas

Applicant for the American Psychological Association

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February 24, 2006
Date

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Comments in the Weekly Reports

All comments were reported in Swedish and translated by the author.

Meditation – Group A:

Week 1:

“My thoughts flew astray!”

“My thoughts flew astray! (Almost forgot my task [my word]!)”

“My thoughts did not fly away so much, but I almost fell asleep!” A101

“Was disturbed by talk and steps in the hallway – did manage to quickly return to my word. Fell asleep?”

“Hard to wind down. A colleague opened the door after half the time. Did not work – but it still felt good after 15 minutes of just sitting still and relaxing the body, even though not mentally.”

“At home. Worked great! Focused.”

The thoughts flew about. The time felt long.” A103

“I think about other things but try to get back to my word. I repeat the word in the speed of a [imaginary] pendulum.” A104

“I felt dizzy for about 2 hours after the first practice, so I’ll do the practice at home in the future” A 105

“The word ‘disappeared in the brain’ – the brain felt empty! At first my legs felt very heavy, in the end they felt like feathers! NICE!”

“In the end I felt as if I was sinking – just like when you go very fast over a hill, a butterfly-feeling. The feeling of a falling blood pressure. My body felt slightly exhausted afterwards.” A106

“Thought about other things several times in the beginning. Hard to relax at work.” A107

“The first times I had a hard time concentrating, the thoughts often went to other places, among those things, to work.” A108

“Hard to hold the word.” A110

Week 2:

“My thoughts flew away a little less, but I almost fell asleep.”

“My thoughts flew away a little less, but I almost fell asleep.”

“My thoughts flew away a little less, but I almost fell asleep.”

“My thoughts flew away a little less, but I almost fell asleep.”

“My thoughts flew away a little less, but I almost fell asleep.”

“My thoughts flew away a little less, but I almost fell asleep.” A101

“Fell asleep...”

“Felt stressed out and the 15 minutes seemed loooooong – but physically pleasant afterwards.” A103

”I still think about other things but try to get back to my word. This week it has been a lot easier.” A104

“I had a hard time concentrating, my left hand turned very cold.”

“I felt very pleasant afterwards.” A106

“Still hard to find the time to meditate.”

A very distracting theme is the sounds that may be interpreted as if someone was on the way to my room in order to discuss something.” A107

“It is easier to relax, even though the thoughts still travel it is easier to return to the word. On the [second] Monday I did the practice at the train home, it worked beyond my expectations.” A108

Week 3:

“I generally feel much calmer. It is hard to think of the word the entire time.”

“Extremely nice relaxation. The thoughts don’t float around as much anymore.”

“I feel less stressed & calmer, but easily fall asleep when I do the practice.” A101

“Fell asleep, was deeply asleep when the timer rang after 15 minutes.” A103

“I think it gets better and better to focus on the word. The thoughts don’t fly about as much as before.” A104

“Laid on my bed and fell asleep.” A105

“It is definitely easier to “activate” the word.”

“Earlier I came down “as a blood pressure fall” toward the end – now that occurs a lot earlier.” A 106

“Was interrupted once.” A108

Week 4:

“Try to think of the word but easily fall asleep. I feel relaxed and calm. I quicken up from the meditation and hence have problems falling asleep on my regular bedtime.” A101

“Hard to concentrate, then all of a sudden I loose “time & space”. A feeling of being newly awoken when the timer rang. I ponder on how it is “supposed” to feel. Are you supposed to “see” the word (letters or images) in front of you? Is it ok to fall asleep?”

“Quickly fell asleep! Hard to wake up after 15 minutes.”

“Thoughts buzzing. 15 minutes felt very long.”

“Initially hard to concentrate, worked after about 5 minutes. Nicely relaxed after 15 minutes, had lost time & space.” A103

“I generally feel more relaxed and not so stressed out.” A104

“It is starting to feel really good to relax for 15 minutes even though it is a little hard to think of the word the entire time. Of some strange reason I feel a lot more alert than I used to & often wake up before my alarm clock rings in the morning. Unfortunately I don’t want to do the practice at work since I get a little light-headed afterwards. It’s impossible for me to go from total relaxation to top speed as quickly as the work demands.” A105

“Experience that the 15 minutes pass a lot faster than in the beginning.”

“Fell asleep!” A 106

Week 5:

“Nice with the relaxation at work. Felt tired today!”

“Feel a cold coming. Fell asleep. My body feels tired.”

“Slumbered. Get refreshed from doing the exercise – no good to do it late in the day, it is a lot better to do it early in the day!”

“Feels better when I do the exercise a little earlier. I feel even more relaxed then.” A101

“I think it works really well now. Most often, I take my 15 minutes in the morning hours, because that works the best. If I don’t do it in the morning, it feels like something is missing.” A104

“At several occasions, my fingers have been “affected – sometimed warm and at other times they feel tickly (particularly ringht long finger!)!!!”

“Fell asleep at several occasions!” A 106

“Tuesday went very well. I could relax better.”

“Friday: even though I lost my word I was totally relaxed. Did take the word up again.”

“Saturday: I was interrupted after half the time. I did start over and it worked very well.” A108

Week 6:

“I feel a lot calmer and less stressed out since I started doing this practice.”A101

“Could not possibly find the time to do the practice at work.”

The best way for me to make it work, is to have a scheduled time during work hours to make sure it is done and to be more apt to focus.” A103

“It feels good!” A104

“It’s been hard to ‘find’ the time to meditate!” A106

“Wednesday: was on the train on my way home from Stockholm, there was a lot of distraction while I did the exercise. Tried for yet another 15 minutes and then it worked much better.” A108

Relaxation – Group B:

Week 1:

“A phone ringing in the middle of the practice interrupted, but otherwise everything else was ok.” B102

“Hard to perform the practice at work. Feel very distracted. High workload since I just came back from a week of sick-leave.” B104

“It was easy to relax even though I did not attend the instructions class.” B106

“At the occasions I did the practice at home [at the weekends], I managed to fall asleep!

Sometimes hard to wind down, 15 minutes can seem like a very long time (This applies at work only!)” B108

“My body gets warm, especially the face.” B109

“Heard people outside, was disturbed and felt chilly.”

“Very relaxing, transparent thoughts, was relaxed and felt harmony in body and soul. Used a little blanket around my feet and noticed a big difference from earlier (fell asleep).”

“Very relaxing, light slumber, feel a complete relaxation in my body and head.” B110

Week 2:

“This week it has worked a little better. It is easier to relax, I have gotten used to the sounds around the relaxation room e.g. quirks in the floor, doors being opened and closed etc.” B108

“A little harder to relax. Probably to many thoughts that interrupted. Towards the end it was easier. I did not slumber but felt relaxed.”

“Very hard to relax. Did not manage to lay the time out. Went up after about 13 minutes. However I tried to relax I couldn’t. I felt itchy, thoughts were flying about, and I “heard” a lot of things outside the room.” B110

Week 3:

“Hard to get the time to practice at work.” B104

“It is hard to find the time during workhours. Feels best once at home.” B107

Week 4:

“Still hard to get the time to practice at work.” B104

“It is easier to do the practice at home – hard to get the time at work. I have to practice on letting go of thoughts around work during practice – easily slip in on work-related thoughts.” B106

Week 5:

“It gets easier and easier to wind down. I usually ‘come back’ a few seconds before the alarm goes off (15-20 sec.).” B102

“Tuesday: I did the practice with the group & it went well.” B104

“Very relaxing. Fell asleep, but woke up 30 seconds before the time was up.” B110

Week 6:

“It feels good to leave [work]. Before I got tired after the relaxation, but now I feel quickened up.”

“It is easier to ‘turn off’ external distractions now that a few weeks have passed. Generally, I’m not as easily disturbed as I used to be.” B102

“Get a little dizzy.” B107

“During the weekend, I’ve done the exercise at home. It is so much easier to relax at home compared to at work.” B108

Meditation – Group B:

Week 1:

“A little hard to change from relaxation to meditation. My word doesn’t work; I have to find a new one.” B102

“Find it a little hard to keep my thoughts on ‘my word’, they seem to get stuck on other things.” B108

Week 2:

“It works better and better.”

“Sometimes I start rhyming on the word, sometimes I think it backwards.”

“Starting to get a hang of it.” B102

“Hard to hold on to the word. The thoughts like to fly about!” B104

“Easy to relax – wonderful feeling afterward.” B106

“This week it’s been a little easier to focus on my word.” B108

Week 3:

“I find it hard to meditate here at work.” B107

Week 4:

“The meditation is harder [than the relaxation]. It’s hard to hold on to the word.” B104

Week 5:

“Have not done the practice at all – was in Berlin with 100 teenagers and sure would have needed to meditate...” B102

“Had a stressful week. Many days went by without meditation.” B104

“It has been very hard for me to do the meditation during work hours. I don’t have a place to sit in peace and quiet. I try to do the practice at home instead.” B107

“No meditaion this week.” B109

Week 6:

“Was sick – no practice.” B104

“The best relaxation this week was in the sun at the porch of my summerhouse in the countryside during the weekend. A lot of sun – unbelievable.” B107

“No meditation this week.” B109

Relaxation – Group A:

Week 1:

“To relax feels better than to meditate – less of an ‘achievement’ and easier to relax. Start to relax very fast!” A103

“The first time I imagined sitting in the sun.” A106

Week 2:

“I do believe I felt more ‘harmonious’ from the meditation [than I do from the relaxation], but that might be imagined.” A101

“As soon as routines are changed or additional things occur, it is hard to remember to take your ‘quarter’, It feels like it’s a memory-thing more than a matter of prioritising ... Or it’s only bad planning, whatever the difference may be to prioritising...” A103

“Harder practice.” A 105

“I’ve measured the time between two bus stops, when the bus gets to the second one the driver says so on the speakers, and the time is 15-16 minutes!” A 106

Week 3:

“I feel much more relaxed since we started with these practices. I don’t feel as stressed out at all. It feels very good!” A101

“The fifteen minutes lasted for a long time... Managed to relax completely and start to wind up again before the time was up.”

“Alright, but hard to tell whether I fell asleep or not, was drowsy for the entire evening afterwards.”

“Generally it feels more efficient to do the relaxation during work hours; I feel warm, relaxed and focused afterward. When I do it at home I mostly feel drowsy, despite the mutual time limitation of fifteen minutes.” A103

“The differences between the different practices are (for me):

- No.1, ‘the word’: The brain felt a lot more alert!
- After sitting with No.1/the word for 15 minutes, it took about 30 minutes to get started again.
- No.2 – I find it to be an easier exercise to perform – I don’t feel as slow in the brain afterward – but, I’m not as alert now as when performing No.1.” A106

Week 4:

“This practice does not suit me. I don’t get more alert or de-stressed, only a little tired...” A105

Week 5:

“I haven’t done the practice because I was away on training.” A102

Week 6:

“Was on vacation.” A101

“I haven’t done the practice because I was away on training.” A102

“Some reflections:

The relaxation is a ‘lift’, when it gets done... A set routine/time is required in order not to feel like you’re stealing time, during which you could have been ‘productive’ or available instead – which goes at work as well as at home. The dilemma is that when life is as crazy/stressful as it gets, the relaxation would probably help the most...?? Or else the optimal occasion is not then - but before it gets that tangled and you still have the chance to ‘steal’ fifteen minutes for yourself...” A103

“Generally the meditation was experienced as positive, but the one I’ve come to like the best and found to be easier to practice, now by the end, is the relaxation. The body is relaxed and the thoughts sometimes travel. The meditation, with repeating of the word, was harder because it was experienced as a long time to repeat the same word. All of a sudden you were thinking of something else, and even though it was just a matter of returning to the word it was still harder.” A108