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Original scientific paper

Yoga and Progressive Relaxation for Anxiety and Tension Reduction

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Abstract: *In this paper we research whether relaxation techniques and yoga exercises appear to improve psychological wellbeing and health. The study investigates the effectiveness of yoga and Jacobson progressive relaxation in relation to tension, energy and anxiety. The healthy students-participants (n=154) were recruited from post-graduated courses provided by the University School of Physical Education. General well-being and stress related symptoms were assessed in a pre-relaxation session. Than they were randomly assigned to one of the following groups: (1) postural relaxation yoga, (2) progressive relaxation, (3) control group. 'Tension' and 'energy' level were measured using Subjective Tension Scale (STS) and Energy Level Scale (ELS). Anxiety was measure by Spielberger's State Trait Anxiety Inventory (STAI). Final results show that the two experimental groups had a lower level of tension and anxiety than the control group. Results show that postural relaxation yoga group is more effective than Jacobson progressive relaxation, the energy level has increased mostly in yoga group. Yoga kind of relaxation seems to be more effective in reducing of anxiety than two other techniques, significantly different ($p < 0.05$). Yoga can be used as an instrument of psychological well being. Yoga relaxation appears to be associated the most with improvements from before intervention in psychological well-being including increased optimistic energy and reduction of tension and anxiety.*

Key words: *yoga, progressive relaxation, tension, energy, anxiety, wellbeing*

Introduction

In the West, the precursors of relaxation technique worked in psychosomatic medicine or in the specialties like integrative psychology. They were able to see the relationship between the scientific and spiritual mindsets, denying that the two were in contradiction. Therapists in the holistic paradigm are looking to the healing process from a broad perspective of the multiple determinants of disease and suffering of the patient. The use of relaxation techniques at the level of somatic or psychosomatic is connected primarily with the knowledge of the mechanisms of stress. The scientific attempt to verify the relaxation in the West took place over 80 years ago when *Johannes Heinrich Schultz*, a German psychiatrist and neurologist adapted some Far Eastern relaxation techniques of Western man. Schultz benefited from the Indian yogis of experiments and on the other the theory of Freud and O. Vogt 's[1]. At the end of the 60's there were many propositions of new relaxation techniques developed in the West. One of them was the original system of exercises focusing relaxation-modeled on the Indian yoga developed by

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[1] Freud's influence affected the levels of awareness and Vogt'a as an expert on psychosomatic medicine and the problems of "mind-body" (mind-body problems), referred to the hypnotic state and welfare (well-being).

Polish scientists, *Wieslaw Romanowski* and *Tadeusz Pasek* (1973). An important question for relaxation therapy in the coming decades will be a question of improving the quality of life not only in illness but also in health. This question should be focused on two groups of very practical purpose of a better knowledge of the effects of relaxation techniques. The first group of scientific problems is the problem of selection of the proper techniques of how the average person will be able to choose a specific therapy, technique or method suited to her health problems, physical abilities or personality traits. Second group of problems will attempt to answer questions on the issues of the effectiveness of techniques concerns techniques psychosomatic diseases that manifest many ailments of a functional nature and somatic, but the reasons relate to the mind of a particular emotion.

Yoga relaxation exercises

Relaxation is a process which final phase is to obtain a state of relaxation. As the process it is a specific activity, which is characterized by two features. The first is the introspection meaning focusing the activity "to each other," while the second is mindfulness, which is to remain within "what is" in a given place and at any given time. The yoga of India provides the earliest, comprehensive account of relaxation and its broader connection to mind-body states. The inspiration of many contemporary techniques is found here. Yoga emphasizes that peace of mind comprises many factors, and as such it specifies different practices depending on one's objectives. These techniques may be directed to various parts of the human body, or they may involve the breath, energies, emotions, or the mind in general. Their benefits may be physical, or spiritual. Yoga is a set of practical methods based on the experience of individual practitioners. Its simplicity and lack of dogma has enabled it to persist and thrive. It has adapted itself to different cultures and avoided the trap of religious particularism. In practice, yoga relies on a specific, step-by-step approach. It can provide insight into the tensions, inner conflicts, and thought processes that impinge on everyday consciousness. Relaxation exercises appears to be an effective, noninvasive technique for general improving feelings of well-being. According to *Bhogle* and *Prakash* (1995) positive well-being (PWB) consists of twelve factors: self-esteem, positive affect, life satisfaction, personal control, tension etc. *Herbert Benson* (1975), introduced the term the 'Relaxation Response' in the early 1970s to describe a state of the body that is the opposite of the stress response. He proposed different relaxation techniques include body postures and exercises, diaphragmatic breathing massage, concentration, meditation, music relaxation, mental imagery or biofeedback. Studies using relaxation to improve well-being in different types of group patients as well as healthy people show positive results (*Schell* 1994; *Horton*, 1983). Increased levels of calm than control, with a resultant improvement in psychological well-being, has been demonstrated. Many studies show the positive influence of the relaxation techniques on people in anxiety and stress reducing (*Norton* et al. 1985; *Borkovec* et al. 1987; *Kulmatycki, Supinski*, 2006; *Kulmatycki, Burzynski,* 2007). Studies in humans suggest that some specific relaxation exercises may moderately reduce anxiety, tension or phobias (*Bruner*, 1978; *Benson*, 1978, 1984).

However, most research try to described and recognize those 'specific effects', but it is not clear which 'specific relaxation approaches' or which part of relaxation are the most effective. The general aim of the study is to compare the effectiveness of relaxation exercises related to classical postural yoga and progressive relaxation of Jacobson. The first aim of the study was to investigate whether a controlled method of relaxation classical techniques are effective in relieving anxiety and psychosomatic tension and raising general life energy. In addition, the study was designed to clarify the correlation between tension, energy and anxiety in all groups.

Research group

One hundred fifty four healthy adults volunteered to participate in this study. The students were recruited from post-graduated courses (health promotion and relaxation techniques) provided by the University School of Physical Education (years 2004/2005). The participants (n=154) were randomly distributed among the three groups (yoga, relaxation and control group). Three participant was dropped out before the second last session. All analyses were computed using data from 151 participants (n=53 for the yoga g., n=49 for the relaxation g. and n=49 for the control g.). Majority, 137 were women and only 14 men. The participants were told that they would be taking a part of research project investigating relaxation techniques. The groups were labeled to prevent for a selection bias, so yoga group was labeled as 'relaxation exercises', progressive relaxation as 'relaxation imagery' and control group as 'relaxation with music'. They were informed about the research duration, according to course timetable. Characteristic of the sample divided in three groups are given in Table 1.

Table 1. Characteristics of the sample

	Groups			
	Total	Yoga g.	Relax g.	Control g.
Number of participants (1 session)	154	55	50	49
Number of participants (6 session)	151	53	49	49
Women	137	47	44	46
Men	14	6	5	3
Mean age in years	34,4	33,4	34,2	32,8

General well-being and stress related symptoms were assessed in a pre-relaxation session. Students-participants were assigned to one of the three groups with the restriction that each group comprised the same number of participants. There was no significant difference between groups in either cognitive status or average tension, anxiety or 'life energy' level. In the next phase students took part in six individual sessions. Every session was about 60 minutes run in exercise hall in University of Physical Education in Wroclaw. We did not give any instructions concerning home exercises. Tension, anxiety and energy were assessed two times, a first time - at the beginning of the trainings and a second time just after the last 6 session. 'Tension' and 'energy' level were measured using simple scales where students marked the points. Tension were assessed on a Subjective Tension Scale (STS) ranging from 0 (no tension at all) to 10 (a lot of tension) and 'energy' was measured by Energy Level Scale (ELS) ranging also from 0 (no energy at all) to 10 (full of energy). Anxiety was measure by Spielberger's State Trait Anxiety Inventory (STAI). Students-participants were treated by experimenters alternatively for four sessions, then by experimenters and CD relaxation of unknown lecturers for two sessions. This procedure was selected for methodological reason to minimize systematic biasing effects from the experimenter.

Relaxation sessions procedures

The procedure of the two experimental groups is based on classical yoga technique (Satyananda 1984) and Jacobson's progressive relaxation (Jacobson 1938). The instructors advised to focus on process, not on purpose. It was suggested that participants should be open to "what appears at the moment.". Each session lasted about 60 minutes

1. Postural relaxation yoga procedures (exercises group)

Training programme in this group helps students to control activity according to four types of classical yoga practices: asanas (yoga postures; padadirasana, pawanmuktasana, bhujangasana, shalabhasana, paschimottasana, matsyendraasana, tadasana, vrkasana, vajrasana, and pranayama (breathing exercises; nadisodhan pranayama) – 40 min., and pratyahara (yogic relaxation; tratak, yoga nidra) 20 min. Students of this group in order to achieve the final stage of relaxation had to be aware of the following points:
The most important and the longest part of this group was postural yoga relaxation finalizing with back lying position with the eyes closed. After yoga relaxation session the experimenter asked students to open their eyes.

2. Jacobson relaxation procedures (relaxation imagery)

In this group for first 25 minutes people were asked to do some simple slow stretching movement. Then they were asked to do passive exercises according to a standardized Jacobson's progressive relaxation technique. Relaxation involves flexing specific muscles, holding the tension and then relaxing. The technique involves progressing through muscle groups one at a time. They did specific motions with their eyes closed, they had to tense and relax their muscles one by one, starting from the feet - calves, thighs, hands, forearms, arms, shoulders, back, chest, neck, eyebrows, eyes – to the jaw and the face. Progressive relaxation may be practiced while lying down or sitting. This procedure lasted about 25 minutes. Then, they were asked to imagine some pleasant activity from the daily life (open air walks, games, bicycle riding, gardening, swimming, meditating, talking, eating etc.). This part lasted for about 10 minutes. After relaxation, the experimenter counted from l to 10, and asked participants to open their eyes and to come back to the present.

3. Control procedures *(*relaxation with music*)*

These participants did not receive any specific instructions. They came for listening of relaxation music. They had to find comfortable body position for 45 minutes and then was time of another 15 minutes to share the feelings.

Results

The present study investigated the efficacy of two relaxation techniques in reducing tension and anxiety and increasing level of energy. All data were computed using statistical software (Statistica 7.0). The analyses revealed that overall all the groups after six session training progressed. The relaxation effect measured by ‘tension’ x measurement time interaction was significant differ in all groups (Table 2). The results of the paired t-tests showed significant changes in tension reduction from S1 to S6. The highest reduction was in the yoga group, then in the relaxation group participants first session (S1) significantly differ from group after six session (S6) (4.62, and 3.23, $p<0.00$). Tension reduction in the control group was lower, but significantly differ (1.24, $p<0.01$).

Table 2. Change in tension intensity – main scores from the first session (S1) to the last session (S2) among three groups

	S1 M (SD)	S6 M (SD)	t-value	Significance (2-tailed)
Exercise r.	3.86 (1.16)	2.26 (1.30)	4.62	.00

Imagery r.	3.91 (1.20)	2.82 (1.09)	3.23	.00
Music r.	3.92 (1.56)	3.40 (1.01)	1.24	.01

The relaxation effect measured by positive energy measurement time interaction was significant differ only in two groups (Table 3). The energy increased in yoga group from 5.25 to 9.04 points (-7.42, $p<0.00$), and in the relaxation group, from 4.48 to 7.10 points (-5.49, $p<0.00$). In the control group energy raised from 5.12 to 5.82. The results of the paired t-tests showed no significant changes in tension reduction from S1 to S6.

Table 3. Change in energy effect – main scores from first class (S1) to the last class (S6) among three groups.

	S1 M (SD)	S6 M (SD)	t-value	Significance (2-tailed)
Exercise r.	5.25 (1.44)	9.04 (1.41)	-7.42	.00
Imagery r.	4.48 (1.12)	7.10 (1.14)	-5.49	.00
Music r.	5.12 (1.32)	5.82 (1.24)	-1.81	.08 *NS*

Yoga kind of relaxation seems to be more effective in reducing of anxiety than two other techniques (Table 4). The only this group progress significantly when compare S1 and S6.

Table 4. Change in anxiety level – main scores from first class (S1) to the last class (S6) among three groups

	S1 M (SD)	S6 M (SD)	t-value	Significance (2-tailed)
Exercise r.	5.25 (1.44)	9.04 (1.41)	-7.42	.00
Imagery r.	4.48 (1.12)	7.10 (1.14)	-5.49	.00
Music r.	5.12 (1.32)	5.82 (1.24)	-1.81	.08 *NS*

To explore further the impact of differences on each group, correlations between tension, energy and anxiety have been computed. The results of analyses for tension and anxiety are display in Table 5. The pattern of correlation suggests that probably there is not relationship. The same pattern of correlation was found for energy and anxiety (Table 6).

Table 5. Within-condition correlation between the tension and anxiety

	Exercise r.	Imagery r.	Music r.
Before 1 session	-0.45 (55) $p< 0.05$	0.35 (50) NS	-0.42 (49) NS
After 6 session	-0.24 (53) NS	0.36 (49) NS	-0.44 (49) NS

Table 6. Within-condition correlation between the energy and anxiety

	Exercise r.	Imagery r.	Music r.
Before 1 session	-0.48 (56) $p< 0.05$	-0.12 (50) NS	0.14 (49) NS
After 6 session	-0.08 (53) NS	-0.18 (49) NS	0.16 (49) NS

Discussion

Many studies indicate that anxiety or other psychological distress leads to increased tension of the sympathetic system. Regular use of relaxation techniques reduce stress response, and particularly reduce anxiety levels, allow for better coping with aggressive behavior and negative emotions. Participation in sessions of yoga as a relaxation of economically active people experiencing stress reactions has contributed to the decrease in a statistically significant overall level of aggression, selfagression and external aggression. Negative correlation was found between the state of relaxation and aggression (Kulmatycki 2004). The effectiveness of coping with stress and emotions is often the subject of the investigation undertaken on the occasion of the use of relaxation techniques (*Andreoli, Casolari, Rigatelli,* 1995; *Haaga, Davisom* et al, 1994; *Scheufele*, 2000). As a result of studies comparing the effectiveness of relaxation techniques to cope with negative emotions showed that the most effective is yoga nidra. The study was conducted in three groups, according to the relaxation of nidry yoga, relaxation meditation of Benson and passive relaxation, as the control group. Tests were subjected to 34 people aged 24-42 who participated in 12 sessions of relaxation (*Kulmatycki, Burzynski*, 2007). Similar results were obtained in studies using techniques of yoga postural relaxation, and the related reduction of tension and anxiety and lower depressive emotion as compared with the initial measurement (*Bhogal*, 1998; *Kulmatycki, Burzynski*, 2008; *Kulmatycki, Surynt, Torzyńska*, 2010). Reduction of anxiety has also been confirmed in studies with young people (n = 88) involved in progressive relaxation *training according to Jacobson. Significant improvement was indicated in mood (Kulmatycki, Supinski*, 2006) and significantly affect the subjective feelings of relaxation (*Kulmatycki*, 2004). There is no single relaxation technique effectively treats problems rooted in negative emotions including tension or anxiety. Instead, there are multiple, seemingly disparate relaxation exercises or practices. They are ranging from more traditional forms, like any kind of meditation, tai-chi or yoga, originating in the Far East, to more contemporary forms, like autogenic training, progressive muscle relaxation or biofeedback, developed in the West (*Bhushan*, 1994; *Bellarosa, Chen,* 1997). In the research of *Khasky* and *Smith* (1999), 114 subjects, divided into 4 groups were given tests, including the Smith Quick Stress Test (Somatic Stress, Negative Affect and Worry), and the Smith R-State Inventory (relaxation-related states Disengagement, Physical Relaxation, Mental Relaxation, Strength and Awareness, Joy, Love and Thankfulness and Prayerfulness). For all participants, Disengagement (feeling distant, far away, indifferent, freeing the mind from mental disturbances or steadying the mind) correlated positively with negative affect and physical relaxation. This suggests that disengagement in relaxation may not lead to relaxation-induced anxiety but may help one cope with such anxiety.
Authors are aware that there are some limitations of this study. We did not measured participants relaxation susceptibility and we did not evaluate the attitude or belief in the efficacy of the experimenters (psychologists or instructors). However, we believe that the way the students were instructed to conduct the sessions limits the bias. Another limitation is that we did not record whether participants between sessions spontaneously practice the particular technique at home. Future studies might manipulate some parts of exercises in both group of relaxation. It is also important to determine the impact of individual practice at home on subjective tension, energy and anxiety, used in trials with homework v.v no homework.

Conclusions

1. A yogic type of relaxation is effective technique of increasing positive energy and reducing tension and anxiety. Yoga can be safely used as an instrument of psychological well being. From the yogic perspective, well being is more than just psychological.

2. Participants from yoga relaxation have reported the increased energy released by relaxation. Some authors reported that spontaneous body movements, often described as 'without control' along with positive emotions and mood, are common during yoga sessions. Some participants described a remarkable build up of energy often for longer time, whole day or few days after session.

3. In yoga and progressive relaxation groups some role play physical part of trainings. Moreover, this kind of training, which is more physical passive (postural yoga), is not very demanding for differences, such as stretching or active progressive relaxation exercises (progressive relaxation). The researchers incongruence between effectiveness ratings and actual choices of interventions including relaxation, physical fitness or meditation.

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