

A Comparative Study of Autogenic Training and Progressive Relaxation as Methods for Teaching Clients to Relax

Noboru Takaishi, M.D.

Two relaxation methods, Autogenic Training (AT) and Progressive Relaxation (PR), were evaluated and a comparison was made of their effectiveness in helping subjects to relax. One hundred and twenty psychiatric patients with a variety of anxiety-related disorders were randomly assigned to either AT or PR training programs, which were identical in terms of time, frequency of sessions, and trainer. After six weekly training sessions and practice at home, 50 AT and 43 PR subject, all of whom successfully completed the training, were evaluated by a self-report inventory, and by changes in arousal levels, i.e., EMG changes in the frontalis and forearm extensor muscles induced by practicing the technique during the seventh training session. Results indicated that AT was significantly superior to PR in terms of EMG decreases, as well as in the easiness of the relaxation method for patients with anxiety-related disorders. Possible reasons for these results were discussed. (*Sleep and Hypnosis* 2000;5:275-279)

Key words: comparative study, relaxation methods, autogenic training, progressive relaxation, changes in arousal levels, passive concentration, performance anxiety, variable of culture

INTRODUCTION

Autogenic Training (AT) is a therapeutic procedure developed by the Berlin nerve specialist J.H.Schultz (1) on the basis of experiences with hypnosis. It is actually a form of self-hypnosis which utilizes a series of imagery-based exercises to produce mental and physical relaxation. There are six components of the basic standard autogenic exercises. These steps involve the production of feelings of heaviness and warmth in the extremities, the regulation of cardiac and respiratory activity, and the production of abdominal warmth and cooling of the forehead. In addition, the autogenic formula includes a suggestion about mental calmness at each step of the exercise. Throughout the exercise, the client is encouraged to adopt an attitude of passive concentration, that is, to simply let the therapist's suggestions take hold without actively trying to make them occur.

Another form of relaxation exercise is Progressive

Relaxation (PR), developed by E. Jacobson (2) on the basis of his scientific study of rest, as a physiological method of quieting the nervous system, including the mind itself. The client is trained to relax the skeletal muscles by focusing on one muscle group at a time, and systematically tensing and relaxing these muscles while paying close attention to the difference between tension and relaxation.

Although both AT and PR are designed to reduce stress and anxiety, little research has been done to demonstrate the comparative value of each method in producing relaxation in clients. Many behavior therapies in English-speaking countries such as the United States use the method of PR to generate relaxation as the anti-anxiety response in the procedure of Systematic Desensitization (SD), according to Wolpe's (3) shortened method. At the same time, many other therapists have preferred to use AT Schultz (1), and in Japan the reason for this may be because AT had already been in vogue among Japanese psychotherapists before the introduction of SD and the behavior therapies. Except for the work by Kondas (4) in Czechoslovakia, there have been few reports of the use of AT with SD in countries other than Japan, e.g., Takaishi, (5). In Japan, therapists use both AT and PR, without any particular rationale for

Address reprint requests to: Noboru Takaishi, M.D.
1-2-2-200, Umeda, Kita-ku Osaka, 530-0001, Japan.
Tel +81-6-6346-0777 Fax +81-6-6346-0288
E-mail:takaishi@warp.or.jp

Accepted April 23, 2000

their preference. The purpose of the present study was to compare the potency and usefulness of AT and PR to train clients in relaxation, as a component of SD.

METHODS

Subjects and Training Procedure

The subjects were 120 patients at a psychiatric clinic, including 39 female subjects and 81 male subjects, with a mean age of 32.5 years. These patients, who were each given a diagnosis from DMS-IV (6) (see Table 1). Sixty subjects each were assigned randomly to an AT or a PR training program. In addition, there were two groups of control subjects, 29 diagnosed waiting-list patients and 19 normals, who had no prior training in relaxation.

As shown in Table 1, there were no substantial differences between the two experimental groups in terms of age or DSM-IV diagnosis. In addition, there were no major differences between the two groups in terms of medications used primarily minor tranquilisers.

In order to establish equivalence between the two groups in terms of personality characteristics, prior to the start of the training program all subjects were administered a battery of psychological tests, including: the Manifest Anxiety Scale (MAS) (7), Maudsley Personality Inventory (MPI) (8) and the Cornell Medical Index (CMI) (9). There were no significant differences between the two groups on any of these measures.

Wolpe's shortened PR method (3) requires a training period of six weekly sessions. Similarly, the author's clinical experience has shown that six weekly training sessions for AT are sufficient for clients to become able to accomplish a reliable relaxation experience focusing on the heaviness and warmth of extremities component of the procedure. The goal of the study was to assess and compare the effectiveness of AT and PR in

generating relaxation in clients during the course of the seventh and final training session. Prior to this assessment session, subjects in both the PR and the AT groups were trained by the same trainer in six weekly individual sessions of 30 minutes, with daily relaxation practice at home with the use of an appropriate tape-recording from the trainer.

The AT procedure was rather similar to hypnotic trance induction, in that patients passively listened to suggestions concerning heaviness in the limbs in the first three sessions, and suggestions concerning warmth of extremities in the last three sessions. In the PR training, muscle relaxation of the whole body was conducted using Wolpe's shortened version.

By the end of the six weeks of training, there were 10 dropouts or failures i.e., subjects who claimed that the full training program had not helped them to relax more from the AT groups and 17 dropouts or failures from the PR group, a non-significant difference. Among the dropouts or failures, more were men, reflecting the greater proportion of men in the original subject group.

Assessment Instruments

Physiological and self-report measures were taken from subjects at only one time, during the seventh and final training session. At this time, each subject completed a self-assessment questionnaire, and EMG readings were taken as described below.

The self-assessment questionnaire (see Table 2) consisted of 23 items rated on a four-point rating scale (none, little, moderately, very much). These items concerned such subjective changes as: mental relaxation (five items), muscle relaxation (four items), warmth of extremities (two items), abdominal warmth (one item), concentration (two items), altered state of consciousness (three items), and ongoing subjective changes induced by repeated relaxation practice (six items).

Table 1. Subject characteristics

	Total		Dropout		Success	
	AT	PR	AT	PR	AT	PR
Number of patients	60	60	10	17	50	43
Mean age	31.5	33.6	31.5	32.6	31.5	34.0
Sex						
Female	19	20	0	6	19	14
Male	41	40	10	11	31	29
DSM-IV Diagnosis						
Phobic disorder	21	27	1	6	20	21
Generalized Anxiety	19	18	4	5	15	13
Dysthymic disorder	7	6	2	4	5	2
Undiff. somatoform disorder	3	1	0	0	3	1
Depersonalization disorder	2	0	1	0	1	0
Adjustment disorder	2	1	0	1	2	0
Psychological factors*	6	7	2	1	4	6

* Psychological factors affecting physical condition

Table 2. Self-Assessment Questionnaire

Items	
1.	Can you concentrate on the training
2.	Do you feel calm*
3.	Do you feel more tense
4.	Do you feel reduced anxiety*
5.	Do you feel an increase in anxiety
6.	Do your arms and legs feel relaxed
7.	Do your arms and legs feel tense
8.	Do your arms and legs feel heavy*
9.	Do your arms and legs feel light
10.	Do your arms and legs feel warm
11.	Do your arms and legs feel cold
12.	Does your abdomen feel warm
13.	Are you troubled with thoughts that intrude into the training instructions
14.	Are you bothered by any noise in the training environment
15.	Is your mind empty
16.	Do you feel that the time has passed quickly
17.	Do you feel in a very good mood
18.	Do you feel less anxiety or tension than before you began this training program*
19.	Do you have fewer symptoms than you did before you began this training program*
20.	Do you notice any positive changes in your life since you began this training program
21.	Do you feel you have gained something from this training program*
22.	Are you willing to continue this training
23.	Did you find this training difficult*

* Starred items were those for which AT was significantly superior to PR. All items were answered on a 4-point scale: none, little, moderately, very much.

As objective measures of muscle relaxation, EMG readings were taken on the frontalis muscle and the right forearm extensor muscle, using a digital integrator attached to an EMG biofeedback apparatus Autogenic 1500, which indicated EMG potentials averaged across intervals of one minute. The EMG was measured during the last three minutes of the five minute rest period before the relaxation procedure was begun, and again during the ten minutes of the relaxation procedure itself.

Similar EMG measurements were also taken on the two groups of control subjects, while subjects were instructed simply to rest with their eyes closed for 15 minutes.

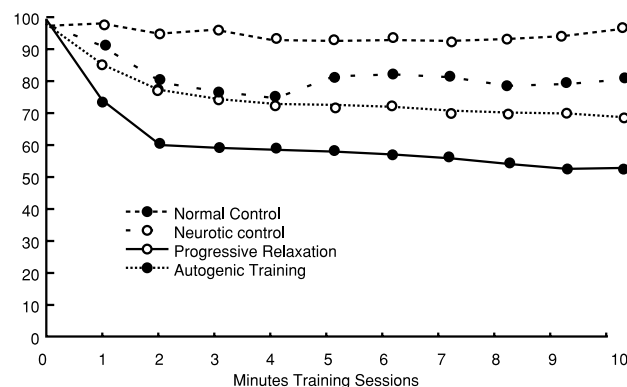
RESULTS

An analysis of variance on the self-assessment questionnaire results indicated a marked superiority of AT training compared to PR training on several items. AT was significantly superior to PR on the items concerning mental calmness $Z = -3.185$, $p < .01$, reduction of anxiety $Z = -2.015$, $p < .05$, heaviness of extremities $Z = -6.866$, $p < .01$, warmth of extremities $Z = -3.522$,

$p < .01$, reduction of anxiety as a result of repeated relaxation practice $Z = -3.011$, $p < .01$, symptom improvement $Z = -1.987$, $p < .05$, positive attitude towards the training $Z = -3.190$, $p < .01$, and easiness of the exercise $Z = -1.698$, $p < .01$. PR was not superior to AT on any items.

Concerning the EMG measurements on the frontalis and the right forearm extensor muscles, it was found in both groups that the values during relaxation practice tended to decrease compared to those taken during the pre-practice rest period, indicating that both methods were effective in decreasing muscle tension. A baseline measure was established, using the average EMG measure across the last three minutes of the five minute rest period there were no significant differences among the baselines of the two experimental and two control groups. Then the averaged reduction rates at each minute during the ten minutes of the relaxation practice were evaluated with reference to this baseline see Figure 1. A repeated measures analysis of variance was performed on the reduction rates of the two training and the two control groups. The AT group showed a significantly greater EMG reduction on the frontalis muscle than did the PR group $F = 2.30056$, $p < .05$, the normal control group $F = 2.17773$, $p < .05$, and the neurotic control group $F = 4.54807$, $p < .01$. The PR group was not significantly different to either control group.

Figure 1. EMG reduction rates on frontalis muscle

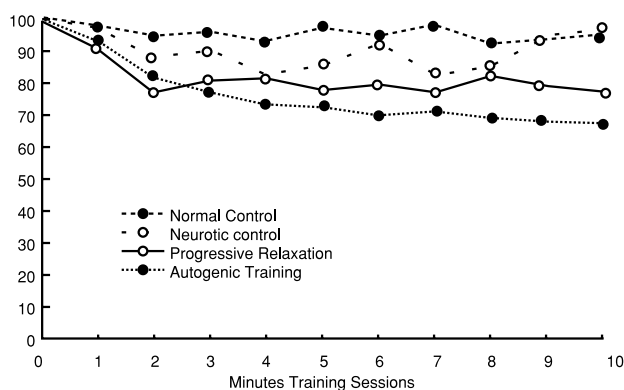


Average Baseline Value

Normal control	n=19	2.35 V
Neurotic control	n=29	2.34 V
Progressive Relaxation	n=43	2.45 V
Autogenic Training	n=50	2.41 V

AT was also significantly superior to PR in the EMG reduction on the right forearm extensor muscle $F = 2.09689$, $p < .05$. However neither AT nor PR was significantly different to either of the control groups on this measure.

Figure 2. EMG reduction rates on right forearm extensor muscle



Average Baseline Value

Normal control	n=19	1.07 V
Neurotic control	n=29	1.38 V
Progressive Relaxation	n=43	1.34 V
Autogenic Training	n=50	1.54 V

There were no significant differences between the AT and PR groups, including dropouts, on any of the results of the psychological tests. However, in general the results showed an interesting trend in favor of AT. In both groups the dropouts and failures tended to be more anxious and neurotic than the successes according to the results of two of the three personality tests MAS and CMI. However, same tests indicated that the PR dropouts were more anxious than the AT dropouts although the difference was not significant, and similarly, the AT successes were more anxious and neurotic than the PR successes although non-significantly so. Furthermore, there were more dropouts in the PR group than the AT group, and the successful AT subjects rated the AT method more highly in terms of easiness, compared to the successful PR subjects. One way to interpret these trends is that the PR method was in some way more difficult or unpleasant for the more anxious and neurotic subjects, thereby perhaps making it less valuable as a therapeutic tool, while AT may be a more user-friendly method for such patients.

DISCUSSION

This study assessed and compared the effects of Autogenic Training and Progressive Relaxation in help-

ing clients, all of whom had already received six weekly training sessions and six weeks of practice at home, to relax during the course of the seventh and final 10-minute relaxation training session. In general, using both subjective and objective measures, it was demonstrated that AT was significantly superior to PR in terms of decreasing EMG arousal levels, clinical effects on symptoms, and easiness of the method to learn for patients with anxiety-related disorders.

In speculating on the reasons for the demonstrated superiority of AT over PR in this study, it can be noted that in AT, the focal points for lowering the arousal level are not confined to the muscular system, as in PR. Instead, they also involve suggestions about the subject's mental state, e.g., calmness, as well as suggestions involving the autonomic nervous system e.g., warmth of extremities. Thus, these systems may mutually reinforce the suggestions concerning the muscular system in order to enhance relaxation and the lowering of the arousal level. In PR, on the other hand, instructions are limited to the muscular system only.

Secondly, PR requires the subject to maintain a stance of active concentration, both in tensing and then relaxing specific muscle groups and then consciously attending to the difference between the two sensations. In contrast, AT requires that the subject merely relax and passively listen to suggestions, in a procedure that seems much more likely to engender the kind of passive concentration and letting go that is necessary for relaxation e.g., (10). It is interesting to note that the trainer in this study had been committed to the PR method and he had expected PR to prove the superior method until this study disclosed unexpected results. It is therefore possible to rule out any effects from experimenter bias in these results.

One can also speculate on the possible relationship between highly anxious subjects and their readiness to react with some kind of performance anxiety in the PR procedure. I am doing this right, as well as on their readiness dependently and passively to follow suggestions in the AT procedure. Another important variable may be that of culture: one might expect Japanese subjects to be naturally more passive, and perhaps to find it easier to take a passive stance, than would North American subjects. This, of course, is a matter for further research.

Whatever are the dynamics behind these results, it seems clear from this study that Autogenic Training deserves further investigation as the relaxation training method of choice with neurotic patients suffering from anxiety.

REFERENCES

1. Schultz JH. *Das Autogene Training*. Leipzig: George Thieme, 1932.
2. Jacobson E. *Progressive Relaxation*. Chicago: University of Chicago Press, 1938.

3. Wolpe J. *The Practice of Behavior Therapy*. New York: Pergamon Press, 1967.
4. Kondas O. Reduction of examination anxiety and stage fright by group desensitization. *Behavior Research and Therapy* 1967;5:275-281.
5. Takaishi N. *Jiritsu Kunrenho o mochiita Keitoteki datsukansaho Systematic desensitization by the use of autogenic training*. *Saiminkenkyu Japanese Journal of Hypnosis* 1968;2:24-28.
6. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorder, 4th Edition*. Washington, D.C.: American Psychiatric Association, 1994.
7. Taylor JA. Personality scale of manifest anxiety. *Journal of Abnormal & Social Psychology* 1953;48.
8. Eysenck JH. *Manual of the Maudsley Personality Inventory*, London, University Press 1959.
9. Brodman K, Erdman A Jr, Wolff HG. *Revised Cornell Medical Index Health Questionnaire Manual*. The New York Hospital and the Department of Medicine Neurology and Psychiatry, Cornell University Medical College, 1955.
10. Schultz JH, Luthe W. *Autogenic Methods*. In: Luthe W, ed. *Autogenic Therapy*. New York: Grune & Stratton, 1969.