Reprint from
T. Kikuch · H. Sakuma · I. Saito · K. Tsuboi (Eds.)

Biobehavioral Self-Regulation

Eastern and Western Perspectives

Springer

Breath Relaxation—Stress Management in East and West

Jan van Dixhoorn

Summary: *Breathing plays a dual role in self-regulation. It is a source of feedback to the conscious subject on the state of the organism (indicator role) and it offers a small but important possibility to influence the mind and body (regulator role). Since actively regulating the breath may disturb its indicator role, a passive attentional state is important, in which the subject allows body and mind to harmonize with spontaneous breathing. On the basis of experience with eastern and western methods, a method of breath relaxation for stress management has been developed and was tested within a cardiac rehabilitation porgram.*

Key words: *Respiration—Relaxation—Cardiac rehabilitation—Stress management*

Introduction

Breathing is a largely unconscious function of the organism. However, we have the option to breathe consciously and influence its habitual pattern. When we do that on a regular, systematic basis, it is called "breathing exercises", "breath control", and "breath regulation". Experience in daily life as well as scientific research suggest that we can influence the state of body and mind positively through conscious use of breathing. However, it may also result in confusion, disturbed respiration, overconsciousness or unpleasant repiratory sensations. For practical use of breath in self-regulation, we have to consider two major determinants: *body activity* and *attentional state*. In fact, most traditional breathing methods mainly give directions for attention and body movement, and allow respiration to respond to that. Only in modern times, it seems, are we trying to objectify breathing and improve dysfunctional breathing. The question is, how to combine the traditional perspective that integrates mind, body, and breath and the modern perspective on objective function, in such a way that it is really beneficial to the quality of our breathing and our function as a whole being.

Having practiced some traditional ways of self-regulation which include breath (*qigong*, yoga, zazen) as well as modern ones (voice training, breathing

Kennemer Hospital PO Box 1638, 2003 BR Haarlem, The Netherlands

therapy, relaxation, biofeedback), I would say that the degree to which the breathing pattern can be changed is relatively small. However, the results are best when the dependency of breathing on the state of body and mind is respected. I developed procedures for relaxation through "breathing awareness" in which this dependency is explicitly respected and I tested them in the context of a cardiac rehabilitation pogram [1]. It turned out that breath relaxation improved the physical, as well as psychological and social condition of myocardial infarction patients. After 2 years, patients experienced fewer cardiac events and were still breathing slower and fuller than patients who had followed exercise rehabilitation only [1,2].

Principles of Breathing Awareness

Basic Procedure: Alternating Attentional States

A passive attentional state is important, in which the subject is aware of respiration, but does not control it. One allows body and mind to harmonize with spontaneous breathing, and allows the body to breathe in its own way. This is alternated with active attention, in which the subject directs the body (Fig. 1).

Step 1

The subject is asked to find a comfortable position, in a quiet environment and to take some time to pay attention to the state of his body and mind. Not trying to relax, but noticing signs of tension in the body, the weight of the body and following the breathing movement, allowing the body to breathe by itself. Attention may be focused in particular on movement in the area of the lower abdomen, letting one hand lie there.

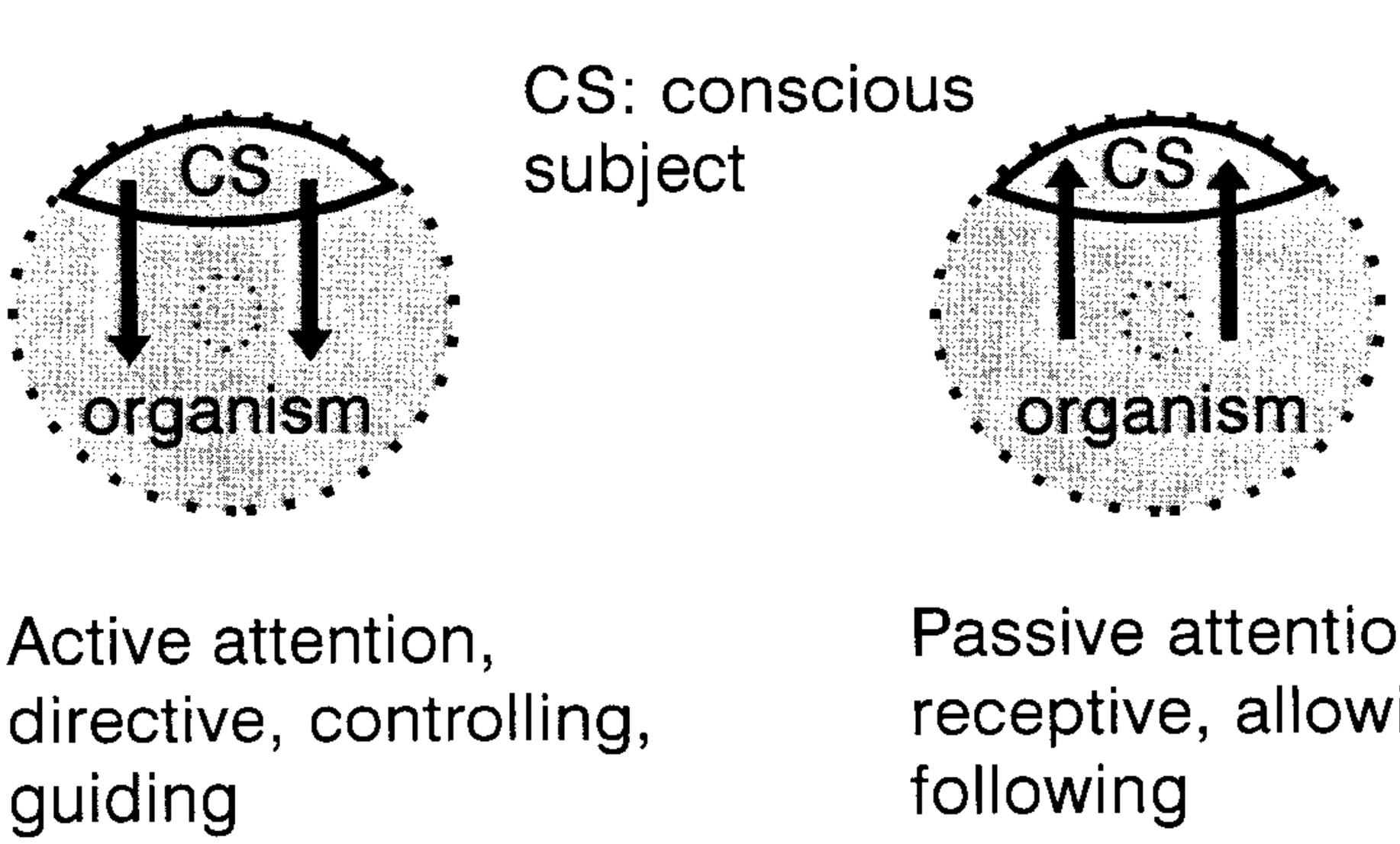

Fig. 1. Basic procedure: alternating passive and active attentional states

Reducing Residual Tension

A pleasant and concrete sensory experience and a significant reduction in respiratory effort is more likely when one practices under favorable circumstances. Therefore, it is advised to practice when one is already quiet. This will also help to deepen passive relaxation and the resting state [8].

People may apply what they learned as a self-help technique when they are in stressful situations or have complaints, and such use is often reported. However, residual tension that is, unnecessary respiratory effort even under resting conditions [9], should not be underestimated or neglected. The more residual tension when quiet, the more trouble can occur under distress. It is the basis for tension patterns under stress, but goes unnoticed because the subject is used to it. This residual tension becomes part of "feeling okay" and being one's "normal self". In other words, reducing residual tension means that the set-point for the internal reference by which the subject judges whether they are tense or relaxed, whether respiration is easy or requires effort, is shifted to a lower level. Such a shift results in increased awareness of one's habitual breathing patterns.

Differential Relaxation

Differential relaxation is an active form of relaxation and means that one does not use unnecessary muscle effort in order to perform a movement or activity [9,10]. Improving coordination and efficiency of respiratory movement is a form of active relaxation: It is at the same time a form of passive relaxation, since the movement occurs in a resting state and facilitates rest (relaxation response). The use of differential relaxation is further extended in coordinating breathing and body movements, and in consciously applying it to acts of daily life. As a result, the same performance needs less effort. In the cardiac patients, physical fitness after exercise training improved when breath relaxation was added [11].

Differential relaxation is achieved by coupling and uncoupling body and respiratory movements. For instance, turning the head tends to hinder spontaneous respiration, but when it is done with continued quiet breathing, both respiration and body movement become freer. Also, a particular posture can be held, like sitting forward or backward. When breathing adapts to it, unnecessary effort in the position decreases simultaneously. Coupling body and respiratory movements is helpful for pacing respiration as well as for mobilizing body parts that should be involved in respiration. For example, in the supine position, flexing the feet helps exhalation by flattening the abdomen and lumbar spine. Exorotating the legs helps to tilt the pelvis and to increase lumbar curving so that the abdomen relaxes and expands more with inhalation.

I now use more than 100 different procedures or exercises, each taking 15 to 45 min. They can be matched to the individual to find the way that gives most clear sensory experiences, relaxation, and effortless breathing. There is no standard sequence of exercises.

Passive Attention

Generally speaking, when the body relaxes, it is geared less for effort and work (ergotropic state) and shifts to a state for rest and recovery (trophotropic state). Respiration becomes slower and post-exhalation pauses tend to lengthen. The mental condition shifts as well: one becomes drowsy, thoughts go slower and are less focused. Striving and goal-directed intent, as well as vigilance and alertness to the environment, decrease. This mental state helps to relax the body further, to have more sensory impressions, and to allow spontaneous breathing [12]. However, one may also fall asleep.

For breathing awareness one needs clarity of mind, to be attentive and yet passive. One allows information to come in, one is receptive and perceptive, particularly to sensory impressions, without judging or controlling breathing. This "passive attention" is difficult for beginners or when one has discomfort, is stressed, or tired. Yet, it is the fertile soil, upon which self-regulation techniques flourish and give benefit, because it facilitates the self-regulation of the whole organism.

One can be passively attentive while being physically active, which means that one mentally follows the process of one's movements, rather than focusing on the performance. This is a crucial difference between active relaxation as in the Feldenkrais method [10], and exercise training. One is present in one's act, there is presence of mind, or, as is said in qigong: mind, body and breath are coordinated.

Self-Regulation

Conscious breathing may foster self-control on several levels. First, it provides a technique and a focus of attention to deepen relaxation when one is quiet, as well as to handle stress in moments of discomfort. It functions as a self-help technique that enhances the sense of self-control.

Also, applying the procedures on many occasions makes one more aware of suitable and less favorable moments in one's life and of factors that influence the resulting experience. Thus, one learns to better recognize and handle stress factors in daily life, to find moments for relaxation and to recover more fully from stress. These are important issues for stress management.

Next, one becomes less afraid of unpleasant respiratory sensation (dyspnea, shortness of breath, chest discomfort) and can deal with them better. There is less reason for panic and undue anxiety. This is very important for patients with heart or lung problems, or with anxiety disorder and hyperventilation syndrome, as well as for those who are close to them (partner or parent). It is probably one reason why significantly fewer cardiac patients needed heart surgery in the years after relaxation therapy [13].

Self-regulation also means becoming more familiar with the connection between body processes and mood, feelings, and thoughts. One allows more "inner feedback". Thus, one gets to know oneself better, is more in touch with one's emotional responses and accepts them. It means that body, mind and

breath become more integrated and that one's general attitude becomes more gentle.

Furthermore, one may realize that the organism as a whole is self-regulatory. This self-regulation includes the conscious self, although its center lies outside consciousness. Only when one feels safe and strong enough is one able to accept that in reality there is very little conscious control, and to trust the self of the whole organism. It implies an essential shift towards a more respectful attitude to the body. This is important for teachers and therapists in order to strenghten their stability, to be a role model, and to feel safe with unpleasant responses in patients.

Discussion

According to Umezawa, using breath is by far the most common strategy to counteract daily stress in Japan [14]. In the relaxation therapy for cardiac patients, I included muscle relaxation, posture, imagery, biofeedback, and breathing. The most frequently retained and used strategy was again regulating breathing. Usually people regulate breathing actively: breathing slower, deeper, or more abdominally. They do that for a short time, but after feeling a bit better and sensing some self-control, most people forget about breathing. This is just as well. They apply it as the first level of self-regulation, as a simple tool for self-help.

A great advantage of breath control in general is that it can be used in many postures, in active daily life, as well as for inducing relaxation and passive rest. It can last just a few respiration cycles or a much longer time. Another characteristic is that breathing mediates between conscious and unconscious processes. It is the body's best biofeedback tool to the conscious subject. Using this tool effectively implies a deeper level of self-regulation where the subject is "listening to the body".

To have full benefit of breathing, it is important to learn both active and passive methods: controlling and listening. This is expressed in the basic procedure for breathing awareness as alternate passive and active attentional states. Furthermore, a number of general principles of psychophysical self-regulation have been formulated that are common to many methods.

For instance, reducing residual tension and unnecessary effort and eliciting sensory experiences are also principles of Progressive Relaxation and the Feldenkrais method. The specific nature of breath relaxation is to focus on the effort of respiratory movement itself. Respiration is influenced temporarily in order to reduce respiratory effort and improve coordination and is then left free to respond. Thus, by contrast to many other breathing methods, the depth, timing and even location of respiratory movement is left to the state of the organism. A positive consequence is that respiration becomes more *responsive to* changes in activity, mood or thought. Thus, it will be a more sensitive indicator to the conscious subject of one's condition. Greater respiratory

responsivity may also support one's activities, for instance, there may be better coordination when lifting a weight or climbing stairs, without having to think about it. We may say that repeating the same procedure helps to generalize differential relaxation.

The static yoga *asana* and *qigong* movements are a form of differential relaxation coupled with passive attention: They invite the body to continue breathing in whatever posture is taken and thus augment responsiveness and flexibility of respiration in daily life. For instance, when the body is fully flexed one should be able to breathe with the back and not try to elevate the chest or expand the abdomen too much.

Passive attention is required, implicitly or explicitly, in all western relaxation methods as well as in eastern methods. It is explicitly part of our approach to breathing. Passive attention, combined with the advice to practice when one is already quiet constitutes a certain "time out" for inner quiet and reflection. In addition to the relaxing and stress-reducing effect, it is also considered important to listen to one's inner voice. Awareness of the voice of the body may have consequences for one's attitude to life. Many subjects reported such changes, for instance, becoming more gentle, mild, respectful, more aware of difficulties, and more attentive to other people's moods and sensitivities. Thus, stress management from this perspective not only means being able to withstand stress better, but also to become more sensitive to stress and *not accept unnecessarily stressful conditions* for oneself or others.

Respect for subjective appreciation is explicitly demonstrated in our approach by not telling people what to feel, but accepting any experienced change. This encourages people to trust their own feelings and not only listen to what is expected or what is "normal". Trusting one's feeling is the very basis for accepting the reality of *Ki* (*Qi*), the energy field of the eastern methods. Thus, breath relaxation can be seen as a western way of *qigong*.

References

1. van Dixhoorn J, Duivenvoorden HJ (1989) Breathing awareness as a relaxation method in cardiac rehabilitation. In: McGuigan FJ, Sime WE, Wallace JM (eds) Stress and tension control 3. Plenum, New York, pp 19–36
2. van Dixhoorn J, Duivenvoorden HJ, Staal JA, Pool J, Verhage F (1987) Cardiac events after myocardial infarction: possible effect of relaxation therapy. Eur Heart J 8:1210–1214
3. Kapandji IA (1974) The physiology of the joints, III. Churchill Livingstone, London
4. Parow J (1972) Funktionelle atmungstherapie. Georg Thieme, Stuttgart
5. van Dixhoorn J (1989) Whole body breathing. Ninth annual conference of respiratory psychophysiology December 6–7, London
6. Umezawa A (1992) Effects of stress on postexpiration pause time and minute ventilation volume. In: Shirakura K, Saito I, Tsutsui S (eds) Current biofeedback research in Japan. Shinkoh Igaku Shuppan, Tokyo, pp 125–132

7. Ulrich B (1928) Die Sängeratmung, Dörffling & Franke Verlag
8. Benson H, Beary JF, Carol M (1974) The relaxation response. Psychiatry 37:37–45
9. Jacobson E (1972) The two methods of tension control and certain basic techniques in anxiety tension control. In: Stoyva J, Barber TX, DiCora LV, Kamiya J, Miller NE, Shapiro D (eds) Biofeedback and self-control. Aldine-Atherton, Chicago, pp 463–482
10. Feldenkrais M (1972) Awareness through movement. Harper and Row, New York
11. van Dixhoorn J, Duivenvoorden HJ, Staal HA, Pool J (1989) Physical training and relaxation therapy in cardiac rehabilitation assessed through a composite criterion for training outcome. Am Heart J 118-3; 545–552
12. Luthe W (1972) Autogenic therapy: excerpts on applications to cardiovascular disorders and hypercholesteremia. In: Stoyva J, Barber TX, DiCora LV, Kamiya J, Miller NE, Shapiro D (eds) Biofeedback and self-control, Aldine-Atherton, Chicago, pp 437–462
13. van Dixhoorn J (1992) Cardiac events after myocardial infarction: Four year follow-up of exercise training and relaxation therapy. Fifth world congress on cardiac rehabilitation, July 5–8, Bordeaux
14. Umezawa A (1993) Stress, relaxation and repiratory function. 3rd international congress on biobehavioral self-regulation and health, Tokyo, September 21–25