11. Whole Body Breathing – (eerste omschrijving, 1989)

Jan van Dixhoorn

This is an historical text, in which the concept of the whole body involvement of breathing is presented for the first time to a scientific audience. It is a paper presented at the Ninth Annual Conference of Respiratory Psychophysiology, London, December 1989. The same year the concept of the spinal connection to breathing movement was developed and presented in a subsequent workshop.

Concept

There is more to respiration than ventilation. At least two other aspects need to be considered: the interdependence of respiratory movement and body movement; the reciprocal relation of efficient breathing and body awareness. It is my contention that the quality of respiratory movement is intermediate to the metabolic (physiological) and psychic determinants of respiration.

The mechanics of respiratory motion not only serve to bring air in and out of the lungs, but should be considered as being involved in the overall functioning of the body. (That is, the musculoskeletal apparatus for ventilation is equally involved in other functions.) For instance, respiratory motion is necessary for voice production; the ribs and diaphragm are involved in posture, weight-lifting and locomotion. Conversely, the musculoskeletal state and motor function of the whole body influences respiration. For instance, a greater freedom of the spine to flex, to extend and to rotate, facilitates the work of breathing. The pattern of respiration with a slightly flexed head and pelvis differs from respiratory movement in a more extended posture. The freedom to move the arms and legs independently of respiration, which implies that locomotion does not disturb breathing, enhances the ease of respiration.

Respiration is a rhythmic motion of expansion and contraction of the entire body. This continuous rhythm affects its internal state. There is an alteration of pressure in the body because of exhalation and inhalation. These pressure changes can be felt and are one modality of the sensory awareness of breathing. Respiration is a pumping movement. This central pump influences digestion and blood circulation. The quality of its rhythm is a major criterion for proper breathing: regular, smooth, distributed evenly over the trunk, unhurried transitions between in- and exhalation. Conversely, organic problems, not only deriving from the lungs, are shown in the quality of the respiratory movement.

In addition, the respiratory rhythm modulates the state of the autonomic nervous system. Inhalation stimulates ergotropic tuning, whereas exhalation is more closely associated with trophotropic (parasympathetic) tonus. Increased arousal is usually coupled with inhalation, for instance when one starts an activity, tenses a muscle group, gets up from a chair. However, this coupling can reverse when the activity has been repeated until it has become easy and relaxed. This shows the connection between respiration and "active relaxation" (or relaxed activity, or differential relaxation).

It is well known that respiration is connected to psychic events and state. Attention, orientation, emotions and mood are reflected in breathing behavior. It is not so well realized that kinesthetic awareness is also a psychic function which is directly related to respiration. Since movement is a sensorimotor process, afferent kinesthetic feedback is essential for coordinated movement. Improved coordination turns out to improve respiration as well. In other words, new, or difficult movements usually are accompanied by disrupted breathing, whereas mastery of a movement is shown in its easy coordination and in smoothness of breathing. Repetitive peripheral movements tend to entrain respiration in rhythm and quality, e.g. turning the head, moving the legs, pressing the fingers. Thus, increased sensory feedback, from any place in the body, stimulates respiration. Modulating this feedback is one of the best ways to indirectly influence respiratory pattern. Conversely, respiration is an effective means toward increasing body awareness. For instance, the instruction: "breath through your hands" is helpful in learning to warm the hands voluntarily.

More interestingly, imagination and self-perception turn out to have a direct bearing on respiration as such. Imagining movements can be used to guide and modify respiratory pattern. For instance, inhaling while thinking of flexing the feet or endorotating the arms differs markedly from inhaling while mentally extending the feet or exorotating the arms. Thus, "mental directions" and body image govern respiratory patterns and conversely, when a change in respiration is coupled to a change in body image, the result is more stable. For instance, being aware of the width of the lower back and of the horizontal extension of the lower ribs improves the costo-abdominal coordination of inhaling and exhaling. Also, it provides a sense of "support" and "safety". Conversely, being unaware of this region or feeling "thin", "tight" or "threatened" in the back hinders free respiratory movement. Thus, the concept and perception of oneself in the environment

determines breathing. Therefore respiration has expressive value in that respect. "A friend is a person in who's company one can breathe freely".
Utilizing movement brings the "whole body" into the perspective of breathing. Also, it makes body awareness accessible to change and more of an active process than of a stable trait. Thus, one comes close to the psychological aspect of the self-concept. Relaxed breathing is connected to the sense of "freedom", "space", "ease" in the body and in one's self. To work with movement, imagination, awareness and breathing makes the applied psychophysiology of respiration fascinating.

Practical uses of the "breath connection"
The very interconnectedness of respiration with physical and mental functions is confusing and makes us wish to limit ourselves and focus on a particular area, preferably where processes can be measured and studied quantitatively. However, such a limitation is a reduction of reality and we do well to realize this. I propose to show that the "breath connection" can be of eminently practical use.
To summarize the three aspects mentioned: 1) respiration obviously has to do with ventilation. 2) It is also part of motor activity in general, and thus relates to efficient movement and relaxed behavioral patterns. 3) It is closely associated with body awareness and body concept, and thus with attention, imagination and self-concept.

1) Diagnostic. Respiratory disorders can be expected to consist of more than just disordered ventilation. They are part of a more general sensorimotor pattern. Once the clinician is alerted to this fact, peculiarities of patient behavior will be more easily noticed. These are sometimes mentioned in clinical descriptions, for instance the frequent sighing or the rapid speaking rate of patients with hyperventilation syndrome. When studied systematically, the patients overall behaviour may provide diagnostic "circumstantial evidence", help to elucidate etiology and most importantly, give the subject a framework for understanding his trouble and coping with it.

2) Dyspnoe. The most common respiratory complaint is dyspnoe. Dyspnoe is a negative awareness of breathing: one becomes aware of one's breathing because it is hindered. It is laborious, effortful: one feels constricted, limited, anxious. Making use of the many connections of respiration can improve flexibility in the respiratory apparatus and offers new options for moving, thinking and feeling. This leads to positive awareness of space and of ease in breathing. The person becomes more resourceful, acquires a sense of "quality" in breathing, and may learn to enjoy "Rolls Royce" breathing, in stead of only doing battle with his symptoms.

3) Concept of breathing. "Whole body breathing" is a useful concept to cut through fixed ideas about "proper breathing", about right and wrong ways of breathing. The whole trunk actually is involved in respiratory movement. Keeping this in mind may increase mental freedom for both patient and therapist in dealing with respiratory complaints and when "performing" breathing exercises. For instance, the ribs are circular and move both in the front (chest) and in the side (armpit) and back (under shoulder blades). The head and extremities are involved as well. The expression of the face, the tension in jaw and tongue, the position of hands and feet determine the ease or restriction of respiration. Movement in the extremities, as well as imagined movements, strongly influence respiratory movement. Awareness of the whole body is an essential condition for efficient breathing. Perception of whole body breathing in turn depends upon one's self-concept. If one cannot conceive of breathing in the pelvic ring or sacrum, it will be hard to allow the experience. Conversely, in order to utilize and integrate such experience, you will have to change your idea of breathing movement. Another example: if you consciously contract and then relax expiratory muscles, for instance the lower abdomen, inhalation will follow naturally and easily. It will be difficult to accept this experience and to relax expiratory activity fully, when you are hooked to the idea that inhalation has to be effortful. This very idea prepares the body for excessive inhalatory force, thus evoking counter-activity of their antagonists. In that case, effortless inhalation is not experienced, even though one may suggest it to oneself. Therefore, conceptual or cognitive change is inherent to breathing therapy.
It is equally important to follow the structure of the body. When the skeletal structure of the body is aligned well, the pattern of efficient breathing can be elicited and discerned clearly. The therapist should be aware to what extent particular directions and experiences of breathing are really possible. It is crucial to distinguish true perception and self-suggestion. Following the body's structure provides safety in two respects. It provides cognitive safety, since the structure determines the mechanical possibilities of motion. For most people, particularly professionals, the idea of whole body breathing seems farfetched or even ludicrous, until they actually see and realize the mechanical connections. Obviously, the structure is not the only connecting link, but it is verifiable and seems the safest to start with. Emphasis on the skeleton, the bony core of ourselves which supports us against gravity, also induces emotional safety. The sense of inner support, from the feet and heels, through the spine to the skull,

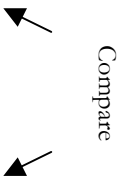
allows muscular and emotional relaxation, invokes awareness of the whole body and thus whole body breathing.

4) Instruction. When giving instruction for breathing exercises it is useful to distinguish the three aspects.
A) Air passage (ventilation) is used with the instruction to breathe in or out. Awareness of the air flow may help develop (inaudible) nose-breathing, free the upper airways, induce relaxation of the face and sometimes lead to an awareness of the inner chest (openness of bronchi). Audible lip breathing is a feedback on the actual breathing pattern, for instance gasp like inhalation, or too extended exhalation. This way of making breathing audible also helps to harmonize respiratory movement. The rhythm becomes more smooth, unhurried, evenly distributed. The technique is very effective for home practice, as soon as the patient experienced and understood the procedure clearly (see 5). The therapist should guide this, verbally and manually, using the many breath connections. When the harmonizing technique of audible lip breathing poses particular difficulties, these may indicate a fixed respiratory pattern. In other words, when breathing is not particularly disordered, the technique quickly becomes beneficial. Audible exhalation through pursed lips helps to keep the airways open (emphysema), audible inhalation through the lips stimulates inspiratory muscle activity (the cheapest incentive instrument for inspiration!).
B) Awareness of respiratory movements in the body should at first be disconnected from conscious inhaling and exhaling, in order to avoid strain and too much voluntary effort of control. "The body expands and contracts" and you simply notice that; your body is active and you are passive. Attention is on location, direction and rhythm of movement, in order to form clear mental pictures of these movements. We prefer to start directing attention to unexpected places in the body and avoiding the upper chest. That is, not focusing on areas of accumulated negative awareness, but choose seemingly unrelated areas where positive awareness is possible. The organism itself will integrate the new experience into a more efficient pattern, and this reduces excess tension in the stress area.
C) When awareness is extended to the periphery (which may also be used as a starting point), connecting in- and exhalation to specific movements is even more related to mental images. "Inhale towards the feet", means that the air moves into the chest, the trunk expands, and one concentrates on the feet, thus guiding costo-abdominal coordination and at the same time helping to relax the pelvic floor muscles. "Exhale while pulling up your feet (mentally or actually)" serves the same purpose, simultaneously facilitating exhalation through flattening of the abdomen and chest bone (when in a supine position).

5) Breathing exercise. The psychophysiological nature of respiration is often forgotten when breathing exercises are performed. The purpose of breathing exercise is not to exercise breathing: not to fill the lungs more, nor to slow down respiration rate, nor to rely more on diaphragmatic activity. Respiration is both an indicator of tension and a regulator of tension. Using it as a regulator to modify arousal is helpful. However, a "trained" respiration may lose its feedback value to indicate one's physical and mental state. Therefore, the purpose of breathing exercises is to become aware of possible differences. One feels how the body is breathing, then one applies a particular technique, and again one feels how the body is breathing. The actual exercise is: to compare the state before and after applying a technique. Thus, in stead of sticking to a fixed idea of breathing "slowly", "abdominally", you compare: is respiration quicker or slower, is the movement smaller or larger, is the rhythm more or less regular. This comparison can be extended to more psychological aspects: does it feel more pleasant or more unpleasant, is it usual or more unusual in your opinion. Furthermore, is there a change in yourself: how do you feel inside your skin, how is your mood, are you more or less able to keep your attention in the here and now?

Procedure to induce awareness of breathing

Sense and relax body
Notice respiration movement
(rate, depth, location, ease, regularity)
Make are passage audible 5-10 times
(lip breathing)
Notice respiration movement
(rate, depth, location, ease, regularity)
Sense and relax body
Repeat two times



6) Self-regulation. Comparing the state before and after a verbal or manual technique actively involves the subject. This is important because the personal experience of the individual determines whether home practice can be fruitful. Also, an open comparison offers alternative options in a neutral fashion and avoids a preferential direction: is respiration quicker or slower? The purpose is to accurately perceive and accept one's condition and to refrain from judgment. When respiration has become quicker, maybe you were breathing too slow for your emotional or metabolic condition to begin with, or you practiced a technique with too much effort. An open comparison invites introspection. Obviously, there will be large individual

variations in quality, detail and level of self-report. An open comparison enables the therapist to match the individual's experience, and this will often change and develop in the course of breathing therapy.

7) Goal and limit of therapy. Changes in self-reports and in observed motor and respiratory style are very useful as indicators for the end or limit of treatment. Mastery of breathing technique implies clear perception of differences, in our view. One notices the effect of tension as well as of conscious relaxation and relaxed breathing. This in turn implies self-regulation and is the major goal of therapy. If mastery occurs without reduction of complaints, there is good reason that the complaints are not related to respiratory style (although there may be a delayed clinical effect). If mastery seems impossible, there is good reason to end therapy, even though complaints may not have changed. Not all persons are suitable to this approach. Thus, medical diagnosis is not a sufficient indication. Conversely, it should be added that breathing therapy is not only, nor even particularly useful in respiratory disorders.

8) Therapist style. Respiratory and behavioral style is contagious. A person who is in pain, in panic or dyspnoeic is broadcasting a lot of behavioral cues which may induce similar responses in his environment. This kind of "sympathy" is not very helpful and therapists or medical personnel can feel resistance to have contact with the patient. They may deal with this influence by ignoring it or by avoiding the patient. However, a more quiet respiratory style is also contagious. It is a challenge for the therapist to maintain contact with a patient and respond to his panic cues with opposite signs indicating one's personal breathing awareness, sense of safety and inner quiet, which are reflected in respiratory style as well. In this way, the patient may follow the therapist.

Breathing therapy

The above outlined approach has a wide range of applications: education, therapy, prevention, training (sports, music, performing arts). It can be integrated in many professional activities. As a therapeutic modality, breathing therapy can take many forms. An important distinction should be made however between the rather simple and most commonly used directives and a more integrative approach. There is a continuum in-between these two forms, of which the latter and more complex one seems far superior, but this is not necessarily true. Compare the relation between true psychotherapy and a personal talk. Simple techniques ("abdominal breathing", "deep breathing") have a strong disadvantage in that they teach a fixed way of breathing. The integration in the musculoskeletal, emotional and metabolic functions is then left out. The effect of instruction, even though positive to begin with, can become more negative, when the therapist or patient are stubborn. Usually, breathing instructions do some good and little harm, because clients tend to forget most of what they are taught, and stop practicing as soon as they feel a little better. This is quite sensible. The breathing technique served as a trigger to enter a positive cycle of increased self-confidence and reduced complaints. It may be best to leave therapy at that and not complicate matters. Breathing therapy offers more options to the therapist to reach a limited goal. The therapist may then present things simple, but for each individual in a different way. The purpose is to strengthen the balance of each individual's respiration. Thus, the "whole body approach" makes instruction more interesting to the therapist and enables him to reach a larger variety of clients. One is better equipped to cope with variations in personality and in respiratory style. Moreover, one can adapt the instructions to different purposes and different levels of functioning. For instance, in case of hyperventilation syndrome, reducing ventilation is not the only possible goal. Other possibilities include: teaching passive and active relaxation, increasing proprioceptive information and awareness, accessing emotions, improving posture or way of walking, reducing tightness in the stomach area, increasing mobility in the chest, increasing mental concentration, reducing speed (of talking, walking, thinking etc), building a positive experience of one's body and thus to stop labeling physical sensations as complaints or to stop catastrophizing. On the other hand, a relative disadvantage of breathing therapy is the very fact that one touches upon the personal qualities of the patient. The open invitation to report any experience, coupled to a technique which is able to induce basic physiological changes, may be too much. The patient may feel overwhelmed or lost, and may become more aware of tension, physical limitation and negative feelings than experience benefit, self-control and calmness. Therefore it is important to follow the patient's ability to change and that application of the learned techniques results in more positive than negative experiences. Breathing therapy may easily develop in a psychotherapeutic treatment, as well as in a full somatic treatment of all kinds of disorders, depending upon the context, the ability of the practitioner, the expectation of the patient, and their relationship. It seems important however, to be aware of the boundaries between a standard and fixed breathing technique, an individually simplified instruction, and a full treatment. In my view, only the latter two deserve the name of breathing therapy. Research studies which employ fixed and standard techniques therefore do not reflect the potential value of breathing as a therapeutic modality.