03/1984 Lecture: Breathing Exercises for Roemheld Syndrome

Psychology Workshop of the „Task Force of Clinical Psychologists in Health Resorts, Section Clinical Psychology BDP [German Association of Psychologists]" and of the „Psychologist Task Force Autogenic Training and Progressive Relaxation" Bad Wildungen, Germany

Roemheld syndrome or the Roemheld symptom complex is also known as the gastro-cardial symptom complex. The name already indicates what it pertains to: a comprehensive, functional description of gastrointestinal and cardiac conditions.

Pschyrembel Clinical Dictionary defines it briefly:

> "Displacement of the heart toward the upper right side as a consequence of an elevated diaphragm (most commonly on the left side) due to bloating of stomach and/or intestines" ... Symptoms: Cardiac problems, extrasystoles, stomach pains, nausea and even stenocardiac attacks".

In my experience, the general term "cardiac problems" can be further divided into:

Tachycardia, bradycardia, stabbing and other chest pain, in extreme cases to perceived symptoms of a heart attack with fear of dying.

If we just contemplate the perceived cardiac symptoms, we find the following: Extrasystoles, tachycardia, bradycardia, angina pectoris, stabbing and other chest pains, all of which are symptoms which, once actual heart disease has been ruled out, are considered "functional cardiac problems", or, rather than functional, they are often characterized as "nervous", “psychosomatic", "psychovegetative", etc.

So we are looking here, at ONE model of functional cardia problems.

How common is RS?

I accidently stumbled upon this description of RS in 1978 and have kept a focus on it ever since. As I did not personally undertake any exact studies on how common this syndrome is, here is just my own, subjective impression: to a greater or lesser extent, Roemheld syndrome (RS) was involved in more than 90% of the patients who came to me for an individual psychological consultation, and had cardiac problems. Many of these patients did not come to me **because** of cardiac problems, but because of gastrointestinal problems. Many of them had not even listed their cardiac problems, because they had learned that those would not be taken seriously. In discussions with colleagues and physicians of the University Clinic in Bonn, who are members of the procedural task force which I am also part of, I came away with the impression that of the patients at that hospital who have functional cardiac problems, at least 50%, if not considerably more have an RS.

It is - and I am totally convinced of that - much more common than previously assumed.

I would like to further elaborate on this model, among other reasons, in order to explain, why and how specialized breathing exercises work.

The model has three distinct features:

1. an overfilled/bloated stomach or intestine,
2. an elevated diaphragm,
3. pressure on and/or displacement of the heart.

A functional analysis of these three distinct features raises at least the following questions:

1. What is overfilling of the stomach?

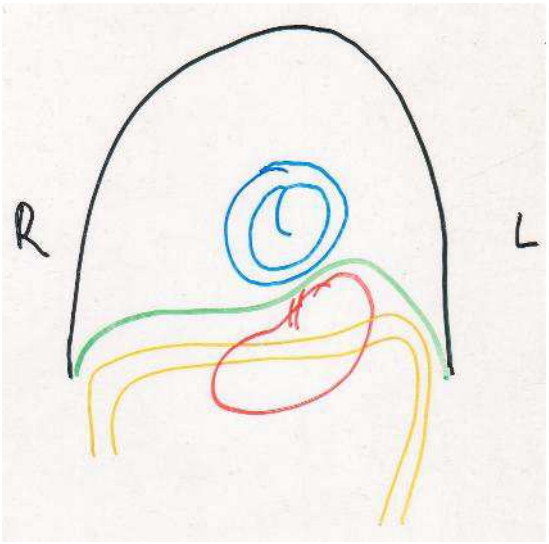
2. How can the diaphragm, which is a muscle, become permanently elevated? What went wrong here?

Feature 3 is simply the result of feature 1 and 2: If pressure is exerted on the heart, no matter how, or from which direction, it will react in some way: with pain, stabbing or other, extrasystoles, tachycardia, bradycardia, a feeling of tightness or other.

Re 1: 1. So what is the stomach overfilled with?
With food, in case of over eating, or - much more commonly - with air, air that is swallowed while eating. For many, this may bring aerophagia to mind, which is partially correct, but not the sole cause. This goes beyond aerophagia, because anyone can fill their stomachs with too much air if he or she breathes without sufficiently involving the diaphragm.

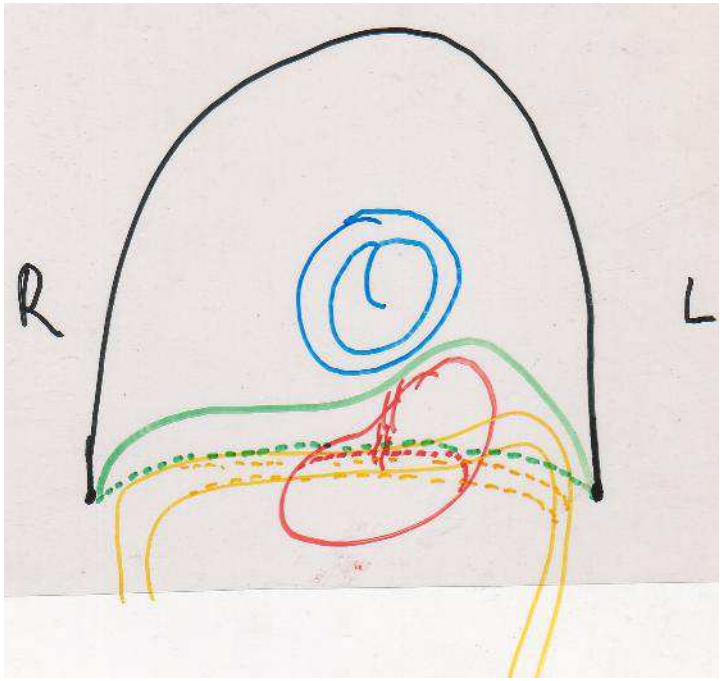
Re 2: This is the answer to question 2. I'm referring to the term "Elevated diaphragm", which - if not outright incorrect - is at least misleading: an elevated diaphragm is elevated **and does not move**: This person does not use diaphragmatic breathing, using instead the auxiliary muscles: - Expansion and raising of the chest. So maybe "elevated diaphragm with restricted motion" would be a more precise term than that to call it simply "elevated diaphragm". It is then easy for an overfilled stomach to push such a passive, untrained, elevated diaphragm upward toward the heart.

Here is a somewhat simplified image:



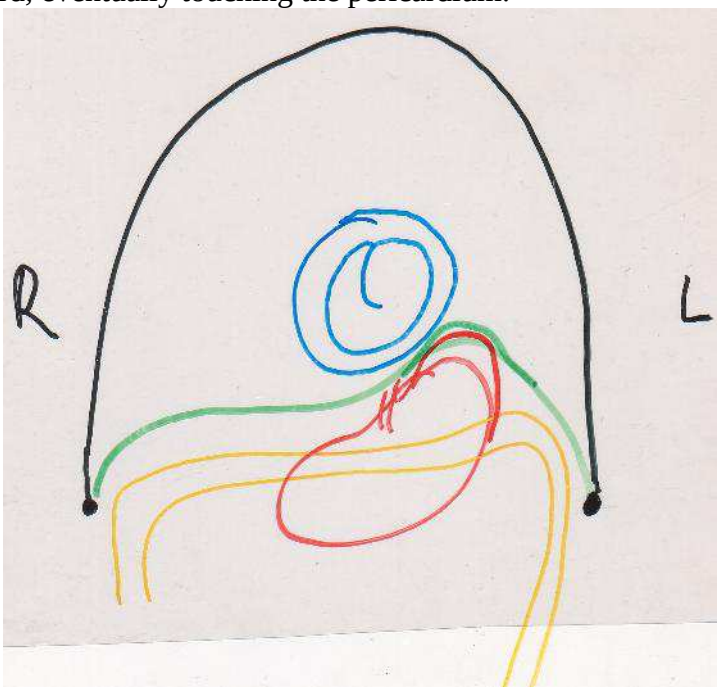
This is a frontal view cross-section of a human: Chest cavity black, diaphragm green, stomach red, pericardium and heart blue, large intestine yellow.

This is what it should be: Everybody constantly swallows some air, together with the saliva and while eating and drinking, some more, some less. After a while, the air collects in the upper part of the stomach, next to the esophageal sphincter. During diaphragmatic breathing, everything that is located below the diaphragm is pressed downward and partially deformed:

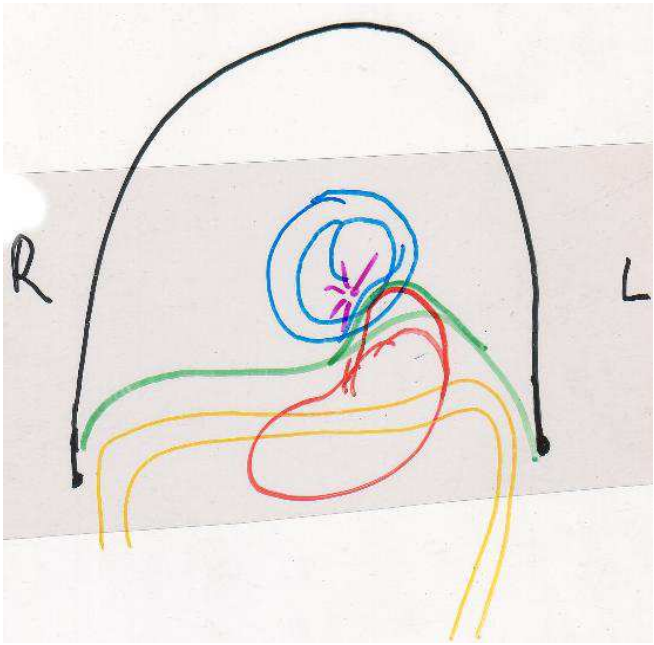


The fundus [upper part of the stomach], for instance, is pushed downward, whereby any small and even the tiniest air bubbles get pushed out of the stomach. In most cases, we don't become aware of this, because this normal-minimal act of expelling air is too minor to be called burping.

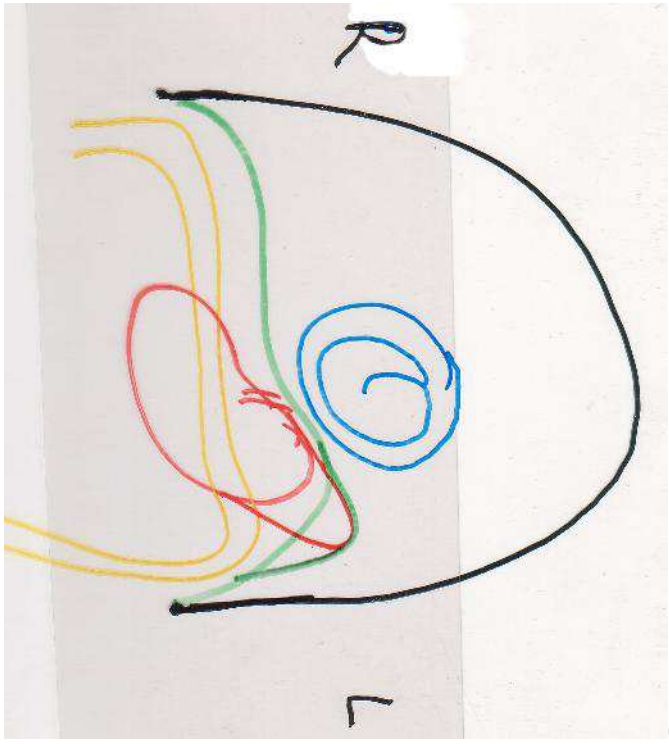
If somebody does not breathe diaphragmatically, or uses the diaphragm insufficiently, these tiny air particles are not pushed out, but rather begin to accumulate, and since this happens above the esophageal sphincter, the stomach slowly begins to bulge upward. Since the diaphragm is inactive, it too is pushed upward, eventually touching the pericardium.



More air accumulates, the diaphragm is pressed higher and higher, it pushes against the pericardium which already tends to cause heart issues.
If this continues, massive heart problems may ensue.



Generally, a measure that provides rapid, short-term relief is to turn on one's left side.



(below)

This relieves pressure on the heart, and the symptoms stop suddenly. As soon as the person rises, the problems begin again.

So far, the scenario presented has been limited to the "air in the stomach"; the scenario of an "overfilled intestine" or "overfilled stomach due to overeating" is much less common, in my experience. I will therefore talk a little more about the scenario of "too much air in the stomach".

Briefly, a few more aspects of the diagnostics:

1. The crucial difference lies in how the patient breathes: predominantly into the abdomen, using the diaphragm, or predominantly into the thorax. If somebody sits

in front of me and breathes in such a way that the chest visibly expands toward me, or worse, breathes like that while lying down during the relaxation training, for instance, the diaphragm is rather inactive during breathing.

2. Question: "Are you able to burp and **DO YOU BURP**? Most people with RS don't.
3. Commonly, but not always, people with RS have digestive problems, more likely leaning toward constipation.
4. Another important question: "How do they respond when problems occur?" Many turn to the left side, some discovered by accident that their problems disappear suddenly after a good burp; not too rarely, patients even report explosive burps!

So much for this model of heart problems that are not or not exclusively caused by underlying actual heart issues.

There are several therapeutic consequences. The one with the best long-term chance of success obviously follows from the model:

"Relearning to breathe diaphragmatically".

This goal can be divided into two sub-objectives:

a) Lowering the frequency of attacks through reacquisition of automatic, continuous diaphragmatic breathing,
and
b) The learning of strategies for dealing with an acute attack.

It seems crucial to me to point to another issue which may, unfortunately, in this as well as other situations - easily cause failures:

Most people **are able** to breathe diaphragmatically very quickly upon prompting, or with a little exercise, so they are able to, **but they don't do it**! And by doing it I mean: automatically, without thinking about it breathing diaphragmatically practically all the time.

A brief remark on the cognitive aspects of the training:

After recording the history of the problems as they occurred in the individual patient – and it is important to ask about specific aspects and not to wait until they raise them on their own - I repeatedly explained the model to the patient as it pertains to him or her. Once the patients understood it, can apply it to themselves, which means that they now have a plausible explanation for problems that were previously inexplicable to them, about 80% react with relief. The other 20% react angrily, often very angrily: "What, that's how simple it is? Why didn't someone tell me this 10 years ago? Etc. etc.: They are bitter about their long career as patients. With some of these patients I succeeded in working through this during further conversations, **if** they were ready for further conversation. A small number of them then simply stay away. I'm assuming that those patients were by then so invested in their disease that they were ultimately not interested in getting rid of their problems.

With all others, I then move on to breathing exercises.

The Breathing Exercises

These breathing exercises are based on experiences I gained from:
- Observation of myself and many other people over time (not in the systematic way)
- Systematic measurements on colleagues during breathing, which I conducted, based on those observations.

I was trying to find out:
How can diaphragmatic breathing be distinguished from non-diaphragmatic breathing by externally visible and measurable variables?

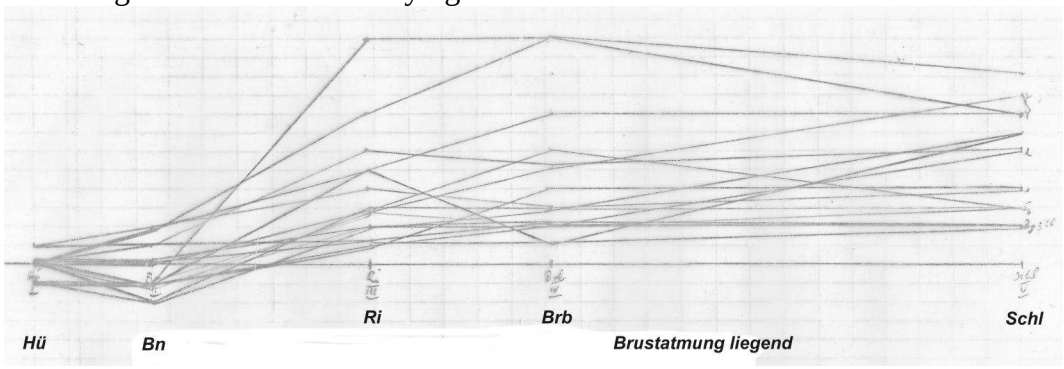
The examination carried out to answer this question was designed as follows:

> In 5 different locations on the bodies of 15 people, I measured the difference in circumference after inhalation vs. after exhalation, under 4 different conditions:
>
> Each one standing up and lying down, once with the instructions to breathe into the chest, and once into the abdomen.
>
> From top to bottom, these were the 5 measuring points:

clavicle,	Schl
sternum,	Brb (breast bone)
lowest rib,	Ri
bellybutton	Bn
iliac crest	Hü (hip)

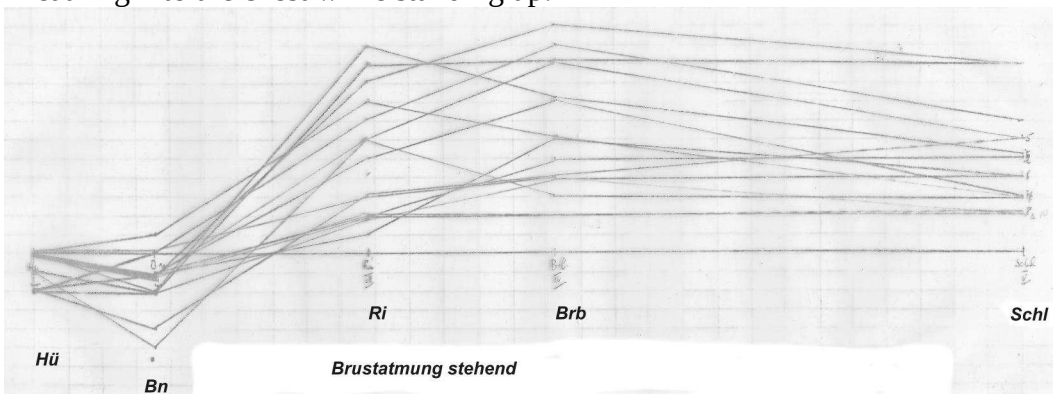
On the next pages I will show you 4 diagrams created based on the results, to give you a general impression of what happens with the breathing under the different conditions.

Breathing into the chest while lying down:



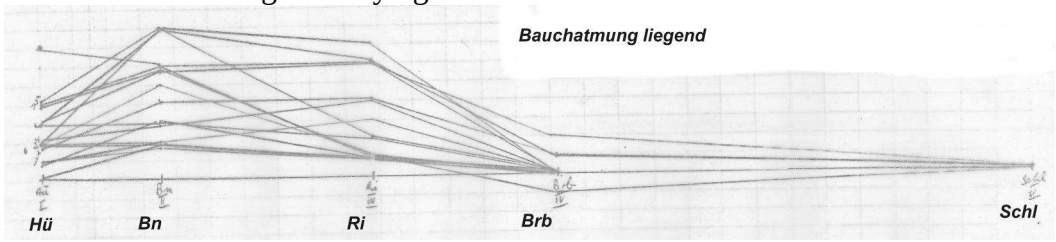
iliac crest bellybutton lowest rib sternum clavicle

Breathing into the chest while standing up:



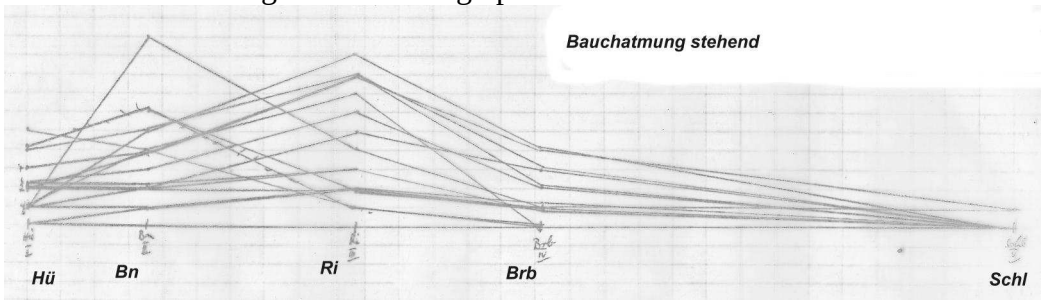
iliac crest bellybutton lowest rib sternum clavicle

Abdominal breathing while lying down:



iliac crest bellybutton lowest rib sternum clavicle

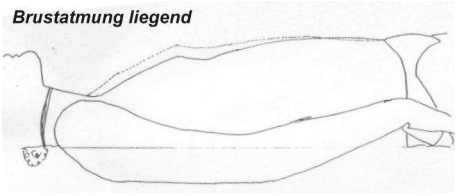
Abdominal breathing while standing up:



iliac crest bellybutton lowest rib sternum clavicle

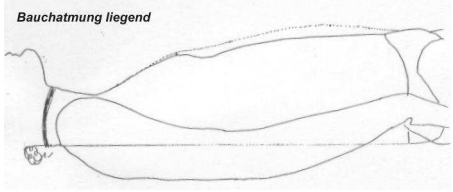
I took each subject, photographed them from the side under the 4 conditions, each time after complete inhalation and exhalation, and then superimposed those photographs.

Breathing into the chest while lying down:



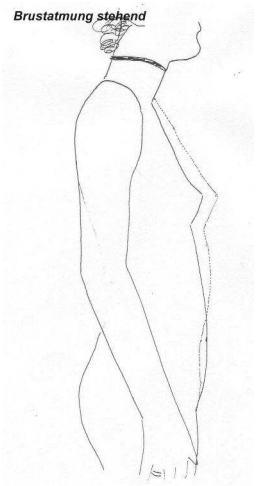
This subject was untrained, meaning that she had not yet taken part in my breathing exercises. The camera (OM 2) was positioned on a tripod next to her, at a right angle. I asked her, first to inhale only into her chest, to hold her breath, I took a photo, prompted her to exhale fully, to re-inhale into her abdomen, hold her breath, and took the second photograph.

Abdominal breathing while lying down:



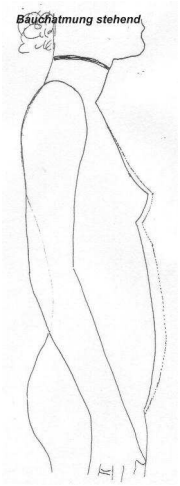
This sequence was repeated several times with each of the subjects. After developing the negatives I superimposed the image pairs, then outlined the contours.

Breathing into the chest while standing up



During "Breathing into the chest standing up" one can beautifully observe the "paradoxical breathing", in which during inhalation, the belly recedes slightly, compared to the relaxed exhalation position. In all of the patients I observed, it appeared to me that the paradoxical breathing is not a conscious, intentional, and active retraction of the abdomen, but rather that it is a reaction to the pressure changes in the thoracic/abdominal cavities.

Abdominal breathing while standing up:

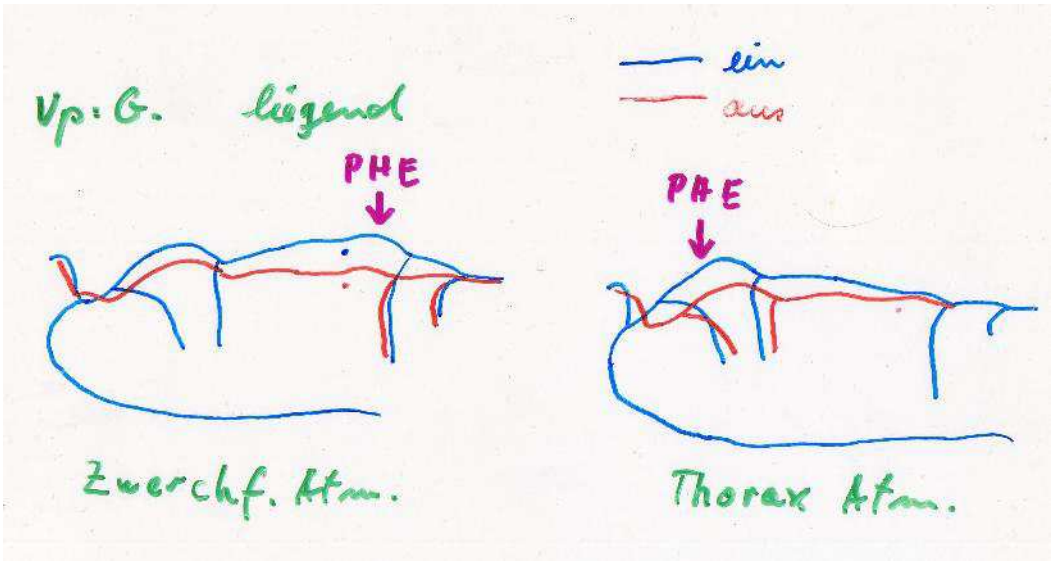


Here one can see beautifully how low, that means how deep into the abdomen the breathing can reach.

I realized that for each subject and each condition, there was one "point of highest elevation" or "point of greatest increase in conference". I am calling it "**PHE**" Depending on the conditions, on average, the PHE is located as follows:

Breathing into the chest - lying down:	between sternum and clavicle,
Breathing into the chest - standing up:	between sternum, and lowest rib
Abdominal breathing - lying down:	at/below the bellybutton
Abdominal breathing - standing up:	at the lower rib.

Again, I would like to demonstrate this with one particular patient:



Abdominal/ diaphragmatic breathing *Chest breathing*

This diagram was produced in the manner described above: from the side, 2 photographs, after inhalation and after exhalation, then both superimposed, and the contours outlined. On the left side, you see here the shoulder and chin, in the middle the bellybutton, on the left the bra, and on the right the slip. The PHE, i.e. the "point of highest elevation" or "point of greatest increase in circumference", during abdominal or diaphragmatic breathing, is located about 3 fingers' width below the bellybutton, during chest or thoracic breathing about 2 fingers' width above the nipples. There was only minor variation in the PHE between the subjects.

Summary of the above:

1. **Too much air in the stomach causes uncomfortable cardiac sensations ranging anywhere from extrasystoles to a perceived heart attack (Roemheld syndrome);**
2. **Too much air in the stomach results only in the absence of diaphragmatic breathing;**
3. **Reintroduction of diaphragmatic breathing suppresses all Roemheld syndrome symptoms;**
4. **Breathing is an autonomically regulated behavior, which can, however, be intentionally influenced;**
   Diaphragmatic breathing can be observed from the outside: The abdomen is extended outward;
6. **Awareness of one's breathing is not a given.**

Based on the above, I developed a simple breath training:

I. A simple biofeedback setting creates awareness of the breathing and makes it possible to distinguish the modalities.

1. **The patient is lying down** – the PHE is more obvious while lying down than while standing up;
2. **The patient removes any clothing from the belly** – any kind of clothing (from jeans to girdles) impairs or prevents interoception [awareness by the patient] of the breathing;
3. I place one **hand on** the patient's **belly**, right below the bellybutton, then the patient places his/her dominant hand next to mine;
4. I place a small, colorful **object on** the patient's **chest**, right above the nipples (where it remains, even with female patients), for instance a small booklet like Cliff Notes;
5. I place a **mirror** above the patient in such a way that he/she can see his/her chest as well as his/her hand;
6. **I** look at his/her chest, sensing even the slightest diaphragmatic activity with my hand **giving continuous feedback** to the patient:

This establishes a double feedback setting: Through his/her own visual feedback and through my verbal feedback, the patient is able to slowly synchronize his/her interoception.

7. After a while I **instruct the patient to breathe solely diaphragmatically:**

This first training step requires patience and more patience! Usually, the goal is achieved suddenly.

II. Stabilizing the diaphragmatic breathing:

8. The biofeedback training is simplified for home training purposes:

   The object is replaced by the dominant hand, the mirror and my feedback are no longer there; this is practiced briefly in the office;

9. The patient is asked to carry out this training at least 5 times a day for at least 5 minutes each time;

10. After a positive checkup the training is further simplified: only the dominant hand on the belly, with clothes on, and expansion to different positions: while standing, sitting, walking and finally while running; this too, should be practiced daily, several times a day.

When solely diaphragmatic breathing is achieved unconsciously, in any situation, the breath training is complete. This serves to reach the 2 above-mentioned goals:

a) Reduction of the frequency of attacks and
b) The learning of strategies for dealing with an acute attack.