

## Guidelines for STMedical<sup>®</sup> therapy - first steps



At rest a human's respiratory rate is approximately 20,000 breaths per day. The respiratory muscles are the only essential skeletal muscles and work day and night. During strenuous activity however, these muscles can become fatigued. Various illnesses can exacerbate this fatigue and have a detrimental effect on quality of life. Strengthening the respiratory muscles is a method of counteracting this. Conventional endurance training is not sufficiently effective for training the respiratory muscles. However using STMedical<sup>®</sup> allows the respiratory muscles to be selectively trained, therefore minimising the effects of illness-related complaints of the respiratory system.

There are three different types of **respiratory movement**: Respiratory movements of the abdomen, the chest and the neck/throat/shoulder area.

**Respiratory movements of the abdomen** are controlled primarily by the diaphragm. The diaphragm is the body's major respiratory muscle and upon inhalation it contracts and pulls down inside the abdomen. This causes the abdomen to expand, allowing a large volume of air to be inhaled.

During inhalation the work of the diaphragm is supported by other muscles that raise the ribs and cause the chest to expand. This is known as **respiratory movement of chest**.

**Respiratory movements of the neck/throat/shoulder area** represent an alternative breathing mechanism and should be avoided. Such breathing movements occur when the actual respiratory muscles are overstrained and exhausted. When the shoulder and neck muscles are called upon to assist with breathing the neck area can become overstressed, causing muscle cramps there. This alternative breathing mechanism is one of the primary causes of neck problems.

The **optimum respiratory technique** comprises a combination of abdominal and chest respiratory movements. The optimum breath is initiated by the diaphragm and shortly thereafter the chest muscles come into play as well. This allows the maximum expansion and therefore ventilation of the lungs. Using STMedical<sup>®</sup> causes the breathing pattern to be exactly the same – it forces breathing. The diaphragm is the focus here and is correspondingly trained. The neck/throat/shoulder area remains loose and relaxed.



Training of the respiratory muscles is impeded or relieved depending upon the **posture** adopted. Breathing is easier in a sitting position as a result of the reduced tension in the body. In addition, breathing can be further relieved by resting on the elbows.



Breathing resistance is increased when standing as a result of the tensed postural musculature of the upper body. Resistance can be reduced by leaning against a wall using the shoulders for support, thereby relieving breathing.

## First steps with the STMedical<sup>®</sup>

- Familiarise yourself with the device (assembly, operating principle)
- Understand feedback from the device

Objective: To adopt a good breathing technique  
Frequency: 3-4 therapy sessions per week

Initial recommendation:

Session	Duration	Respiratory rate
1	5 x 1 minute	20
2	3 x 2 minutes	20
3	2 x 3 minutes	22
4	2 x 4 minutes	22

Initially you should always concentrate on the respiratory rate. Once you have mastered this you can then focus on depth of respiration.

Where possible try to vary your posture during the therapy sessions. Lean on your elbows, stand up, walk around – in this way you will be taking direct account of the different stresses caused by the changing postures.

All recommendations given here are provided as guidelines only. The results of therapy will progress on a very individual basis, depending upon the clinical symptoms. If these guidelines prove to be too undemanding for the patient, the duration and respiratory rate should be increased sooner. If the patient is unable to achieve these guideline figures, he should commence with shorter intervals or a lower respiratory rate. However, the recommendations given by the therapist or doctor shall apply first and foremost.

## Increasing therapy intensity

- Consolidate the breathing technique
- Increase the duration of therapy while maintaining the same level of stress

Objective: Create the basis for solid respiratory muscle endurance  
Frequency: 3-5 therapy sessions per week

Try to distribute your therapy sessions evenly throughout the week. For example, alternate 2 days of therapy with 1 day of rest.

Before each therapy session a **warm-up** is carried out:

Duration	Respiratory rate	Note
2 minutes	20 - 22	Focus on optimum breathing technique

The warm-up optimally prepares the respiratory system for the coming stress.

Recommendations for intensifying training:

Session	Duration	Respiratory rate
5 - 10	8 - 12 minutes	22 - 28
11 - 15	10 - 15 minutes	24 - 30

If the display permanently shows a full bar, you should use a larger bag. You will find more detailed guidelines for controlling the therapy intensity in the supplementary sheet *STMedical<sup>®</sup> - modifying the therapy intensity*.

## Exercises for consolidating the breathing technique

**Conscious abdominal breathing:** Brace your hands on your sides, just beneath your ribcage. Without using STMedical<sup>®</sup> breathe so that your hands are pushed away to the outside as far as possible (this can be done while standing or sitting). Ensure that your shoulders remain relaxed. You can simplify this exercise by leaning on a wall and using the shoulders for support, thereby relieving breathing. Now repeat this breathing technique using STMedical<sup>®</sup>.



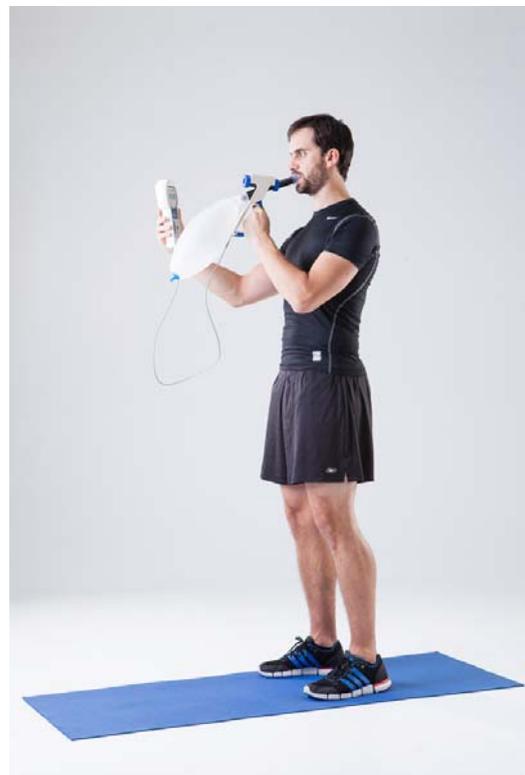
**Conscious chest breathing:** Wrap a rubber band (e.g. a Theraband) around your chest and hold both ends tightly together at the middle of your sternum with one hand. Hold STMedical<sup>®</sup> in your other hand. Now try to breathe so that your chest expands as far as possible in all directions and the rubber band becomes as taut as possible. Ensure that your shoulders remain relaxed.



Now combine these two respiratory movements together to achieve the *optimum breathing technique*. The optimum breath is initiated by the diaphragm and shortly thereafter the chest muscles come into play as well.



Inhalation



Exhalation

## Improving and maintaining performance

- Therapy-specific stresses
- Vary intensity and posture

Objective: Improve the performance of the respiratory system  
 Frequency: 3-5 therapy sessions per week

Before each therapy session a **warm-up** is carried out:

Duration	Respiratory rate	Note
2 minutes	20 - 22	Focus on optimum breathing technique

The warm-up optimally prepares the respiratory system for the coming stress.

In order to set a target for therapy, the sessions must be completed at a certain intensity. The respiratory muscles must become tired. So that further advances can be made it is also necessary for the intensity of therapy to be continuously modified as performance increases.

You will find more detailed guidelines for controlling the therapy intensity in the supplementary sheet  
*STMedical<sup>®</sup> - modifying the therapy intensity.*

## Therapy variations

Therapy sessions with STMedical<sup>®</sup> can be structured in a wide variety of ways.

There are basically two forms of training – basic training and high frequency training.

Basic training – which builds a good basic endurance – is carried out using somewhat larger bags and correspondingly lower respiratory rates.

High frequency training – which simulates short bursts of strenuous exercise such as running to catch the bus – is carried out at higher respiratory rates and a correspondingly smaller bag.

When training alternates between high and low intensities it is known as interval training. This simulates the stresses encountered when climbing stairs for instance.

*For example: 2 min at a respiratory rate of 18 followed by 2 min at a respiratory rate of 26. Repeat this sequence three times.*

Further exercises – which offer different variations – have been especially developed for use with STMedical<sup>®</sup>. These exercises are not only useful for training the respiratory muscles; they are good for improving general fitness and coordination as well. Thanks to this range of variations, training remains interesting and therefore maintains the patient's motivation to continue using STMedical<sup>®</sup>.

You can obtain STMedical<sup>®</sup> exercises directly from idiag AG.