Contents

Contact Information:

Head Office:
POWERbreathe International Ltd
Northfield Road, Southam,
Warwickshire CV47 0FG,
England, UK

Telephone: +44 (0) 1926 816100
www.powerbreathe.com

Distribution:

UK and Ireland:
HaB International Ltd.
Northfield Road, Southam,
Warwickshire CV47 0FG,
England, UK

Telephone: +44 (0) 1926 816100
www.habdirect.co.uk

EC REP HaB GmbH,
Porschestr. 4,
D-21423 Winsen an der Luhe,
Deutschland.

POWERbreathe International Ltd. (UK REP)
Northfield Road,
Southam,
Warwickshire, CV47 0FG
England, UK

Tel: +44 (0)1926 816100
Email: enquiries@powerbreathe.com
powerbreathe.com

For other territories please visit: www.powerbreathe.com

Introduction

POWERbreathe will make your breathing muscles stronger, reducing breathlessness during exercise or activity.

POWERbreathe uses a technique known as resistance training. This strengthens the breathing muscles by making them work harder, in much the same way as you might use weights to increase the strength of your arm muscles.

When training with your POWERbreathe Medic device, you will notice that you have to work harder to breathe in. This is the effect of resistance training acting on the muscles used to inhale – primarily the diaphragm and rib cage muscles. When breathing out, there is no resistance and you can breathe out normally, allowing the chest and breathing muscles to relax, naturally pushing the air from your lungs.

Used properly, you should begin to enjoy the benefits of using your POWERbreathe Medic device in just a few weeks.

To make sure you get the most from your POWERbreathe Medic device, please read this instruction booklet carefully, visit powerbreathe.com and take time to get used to your POWERbreathe Respiratory Muscle Training.

To Activate Your Warranty
Please ensure that you register your
POWERbreathe Medic by visiting www.powerbreathe.com
Thank You.

Design Council Award Winner

Class 1 Medical Device
Developed, designed and manufactured with pride in the United Kingdom

Precautions

POWERbreathe - Respiratory muscle training (RMT) / Inspiratory muscle training (IMT) is drug free; suitable for almost anyone and should cause no harmful side effects when used properly. If you have any doubts about the POWERbreathe Medic device's suitability or you have a medical condition, please consult your doctor.

Please read the following - Precautions and CONTRAINDICATIONS information, to ensure that you use the POWERbreathe Medic device safely and appropriately:

PRECAUTIONS:

- Do not make changes to any prescribed medication or prescribed treatment programme without consulting your doctor.
- To prevent the potential transmission of infections, we recommend that you do not share your Medic device with other users, including family members.
- This product is not intended to diagnose, treat, cure or prevent any disease.
- POWERbreathe Medic is designed for exercising your inspiratory muscles only. No other use is intended or implied.
- Anyone who is under the age of 16 should only use POWERbreathe RMT / IMT with supervision from an adult. The Medic device contains small parts and is not suitable for children under 7 years.
- Whilst training with the Medic device you should feel resistance when inhaling but it should not be painful. If you should feel pain whilst using the Medic device, stop immediately and consult your doctor.
- Some users may experience slight ear discomfort when training with the Medic device, especially if they are recovering from a cold. This is caused by inadequate equalisation of pressure between the mouth and ears. If symptoms persist, please consult your doctor.
- If you are suffering from a cold, sinusitis or respiratory tract infection, we advise that you do not use your Medic device until symptoms have disappeared. If in doubt, consult your doctor.

Additionally, the following conditions have been highlighted to require guidance from your medical professional, before use of the Medic device:

- A history of spontaneous pneumothorax (a collapsed lung that was not due to traumatic injury e.g. broken rib), as it may lead to a recurrence of the condition. Following a traumatic pneumothorax and/or broken rib, the Medic device should not be used prior to full recovery.
- Pulmonary hypertension
- Large bullae on chest x-ray
- Marked osteoporosis with history of rib fractures
- Desaturation during or following IMT (<94%)
- If you have undergone recent abdominal surgery or have an abdominal hernia

CONTRAINDICATIONS: Respiratory muscle training (RMT) / Inspiratory muscle training (IMT), such as training with POWERbreathe Medic, is not recommended for patients with certain conditions including the following:

- POWERbreathe Medic is not suitable for asthma patients who have low symptom perception and suffer from frequent, severe exacerbations or with an abnormally low perception of dyspnoea.
- Do not use the Medic device if you are suffering from a ruptured eardrum or any other condition of the ear

Precautions

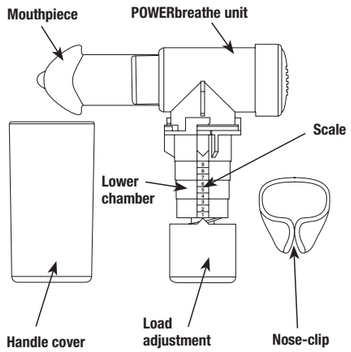
- POWERbreathe Medic is not suitable for patients with marked elevated left ventricular end-diastolic volume and pressure
- POWERbreathe Medic is not suitable for patients with worsening heart failure signs and symptoms after RMT / IMT
- Do not use the POWERbreathe Medic if you have suffered from or are likely to suffer from Costochondritis

Please remember: If in doubt, consult your specialist respiratory health doctor.

POWERbreathe RMT/IMT is clinically proven to improve symptoms, exercise tolerance and quality of life in major debilitating conditions such as COPD, Asthma and Heart Failure. If you or your doctor, would like more information on the clinical effectiveness of POWERbreathe devices, please visit our website (www.powerbreathe.com). If you have any more questions about POWERbreathe, please contact the POWERbreathe distributor in your country.

Product description

Contents:



User manual

Disclaimer

POWERbreathe devices are not toys. This product is designed to be used for breathing exercise only. Any other use is not recommended.

Always seek the advice of your doctor or other health provider with any questions you may have regarding a medical condition. This product is not intended to diagnose, cure or prevent any disease. Individual results may vary. No claims are made or implied in the use or results by the use of the equipment herein.

Please note that we are unable to answer any enquiries requesting medical advice. Such enquiries should be addressed to an appropriate, qualified health practitioner.

Always read the user manual before use. The material in this manual is for information purposes only.

POWERbreathe devices contain small parts and are not suitable for children under 7 years.

Note: This product is sealed to maintain hygiene and cannot be returned if the seal is broken.

POWERbreathe International Ltd makes no representations or warranties with respect to this manual or with respect to the products described herein. POWERbreathe International Ltd shall not be liable for any damages, direct, indirect or incidental, consequential or special, arising out of or related to the misuse or deviations from the intended use of this material or the products described herein.

POWERbreathe is a patented and design copyright protected product. All rights reserved. Specifications may change without notice due to manufacturer's continuous programme of development.

The POWERbreathe logo type is a registered trademark of POWERbreathe Holdings Ltd.

All POWERbreathe product names are trademarks or registered trademarks of POWERbreathe Holdings Ltd.

All details are correct at time of going to press.

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Warranty

Limited 2 year Manufacturer's Warranty

This warranty gives the purchaser specific legal rights. The purchaser may also have other statutory rights. POWERbreathe International Ltd hereby warrants to the original purchaser whose name shall be duly registered with it that the product sold by it is free from defects in the material and workmanship. 2 years (24 months) is from date of purchase.

The obligations of POWERbreathe International Ltd under this warranty are limited to the repair and replacement of such part or parts of the unit as shall be found upon inspection to be defective in material or workmanship. Misuse, abuse or accident, negligence of the precautions, improper maintenance or commercial use, cracked or broken cases is not covered under this warranty. During the Two year warranty period, the product will be either repaired or replaced
(at our option without charge). Warranty does not cover damage or consequential damage caused by service not authorised by POWERbreathe International Ltd.

The warranties contained herein are expressly in lieu of any other warranties including implied warranty of merchantability and/or fit for purpose.

Care and maintenance

Precautions
POWERbreathe products are designed to be as robust and durable as possible. With a little care, your Medic device should last many years. Please read the following precautions to ensure that your Medic device remains in top condition:

- Do not over-tighten the load adjuster knob: the maximum load is when the arrow on the adjuster covers the number 9 on the scale.
- Do not over-loosen the adjuster knob: when loosening the adjuster, try not to go lower than load 1 (described earlier) as this will unscrew the adjuster from the threaded section. If this happens, simply screw the adjuster back onto the threaded section, ensuring that the spring is in the correct position.
- Do not remove the end cap. This may allow the one-way flap valve to come loose.
- Please store your Medic device in the pouch provided or a suitable clean container. Always make sure that your Medic device is dry before storage.

Cleaning
Your Medic device will be exposed to saliva during use and we recommend that you clean it frequently to keep it in good working order.

A few times a week, soak your Medic device in warm water for about ten minutes and then wipe it with a soft cloth under warm, running water, paying particular attention to the mouthpiece. Shake off excess water and leave on a clean towel to dry.

Once a week perform the same procedure but soak your Medic device in a mild cleansing or approved cleansing solution instead of water. The cleansing solution used must be intended for use on equipment that comes into contact with the mouth, such as that used for babies' bottles. POWERbreathe cleansing tablets are available from retailers nationwide or visit: **www.powerbreathe.com** for further details.

To keep your Medic device in top condition, after cleansing hold it upside down under a running tap so that water can run through the device. Shake off excess water and leave on a clean towel to dry.

Technical specifications

Part	Material
Mouthpiece	**PVC**, not made with natural rubber latex or phthalates.
Flap valve	**Silicone rubber**
O-ring	**Nitrile rubber**
Spring	**Stainless steel**
Tensioner	**Reinforced nylon 66**
Handle cover, Main body, Lower chamber, End cap, Load adjuster and Nose-clip	**Polypropylene**

Load Selection Range

Model	Load (cmH_2O)									
	Load 1	Load 2	Load 3	Load 4	Load 5	Load 6	Load 7	Load 8	Load 9
Medic	10	20	30	40	50	60	70	80	90

Precise load settings may vary due to: (1) the analogue nature of the calibrated spring tensioner and the precision with which the load is selected; (2) a small effect of inspiratory flow rate upon spring compression such that high inspiratory flow rates lead to greater spring compression, and a small increase in load (Caine & McConnell, 2000). This effect is common to all spring loaded devices, and its size is magnified by increasing spring range (it is larger in a spring with a maximum range of 90cmH2O compared with one with half this range), it is also greater at lower absolute load settings (Caine & McConnell, 2000).

Caine MP & McConnell AK. (2000). Development and evaluation of a pressure threshold inspiratory muscle trainer for use in the context of sports performance. *Journal of Sports Engineering* 3, 149-159.

POWER breathe® Medic

makes breathing easier℠

Inspiratory

User Manual

UK CA CE

DESIGNED AND MANUFACTURED IN THE UK

www.powerbreathe.com

Getting used to your POWERbreathe

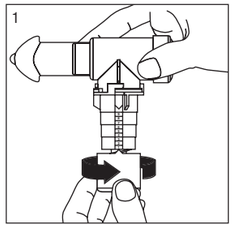

Diagram 1: Adjusting the POWERbreathe Medic
Remove the POWERbreathe unit, handle cover and nose-clip from the packaging. Holding the POWERbreathe unit upright, practice adjusting the training load: rotate the load adjustment knob clockwise to increase the training load; rotate the load adjustment knob anticlockwise to reduce the training load. Notice that a numbered scale is visible on the side of the Medic device, giving you guidance when selecting a training load.

Note: do not over tighten the adjustment knob beyond load 9 as this may cause damage to the mechanism.

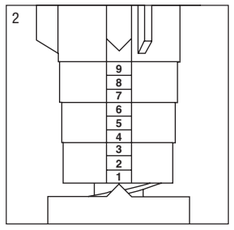

Diagram 2: Load 1
Now set the Medic device to load 1.
At this load, the tip of the arrow on the load adjustment knob should be aligned with the lower edge of the scale, as shown in the diagram.

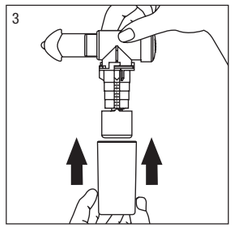

Diagram 3: Replacing the handle cover
Push the handle cover onto the Medic device, covering the scale and load adjustment knob.

Note: always ensure the handle cover is in position before breathing through the Medic device, as this allows the mechanism to function correctly.

Getting used to your POWERbreathe

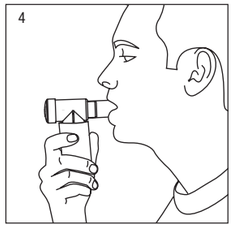

Diagram 4: Placing the Medic device in your mouth
Make sure you are sitting or standing upright and feel relaxed. Holding the Medic device by the handle cover, place the mouthpiece in your mouth so that your lips cover the outer shield to make a seal.

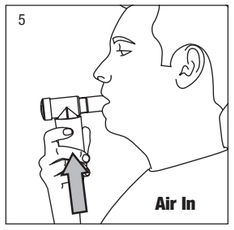

Diagram 5: Inhaling through the Medic device
Breathe out as far you can then take a fast, forceful breath in through the mouth. Take in as much air as you can, as quickly as you can, straightening your back and expanding your chest.

Diagram 6: Exhaling through the Medic device
Now breathe out slowly and passively through your mouth until your lungs are empty, letting the muscles in your chest and shoulders relax. Pause until you feel the urge to breathe again. Repeat this exercise until you feel confident about breathing through the Medic device.
Note: do not pant – if you start to feel light-headed, slow down and pause at the end of your breath out.

Using the nose-clip
Now put the nose-clip on so that it pushes your nostrils together. Continue to practice taking a forceful breath in then breathing out slowly and fully.

Note: the nose-clip will help you to breathe through your mouth rather than your nose. However, it is not essential and some people find it more comfortable to train without the nose-clip.

Training with POWERbreathe

Guidance for patients
Please follow the instructions below unless instructed to do otherwise by your doctor. Before commencing the exercises, please ensure that you have read the precautions section on page 4-5 of this manual.

Finding your correct training load:

The recommended POWERbreathe training routine is 30 breaths twice a day.* In order to get the most from the training, these exercises should be completed at a load that is as hard as possible, without causing discomfort.

For the first day of training, set your Medic device to load 1 (**see Diagram 1 - "Getting used to POWERbreathe"**). Some individuals may find the exercises very challenging at this load. If you find you are unable to complete 30 breaths at this load, take a short rest then start again until you have accumulated a total of 30 breaths.

If you found it difficult to complete 30 breaths at load 1, continue to train at this load twice a day for the first week.

If you found you could easily complete 30 breaths at load 1, the next day you should set your Medic device to load 2. Complete the exercises again. By this method, continue to increase the training load by 1 setting each day, until you are only just able to complete 30 breaths of training. Once you have reached this point, continue to train at this load twice a day for one week.

After one week of training with the Medic device at the same load, increase the training load by half a turn. Continue to train at this load for a further week. From this point onwards you should aim to increase the load by half a turn each week.

Table 1 (Page 10) is an example of a typical training diary record for a patient starting to use the Medic device. **Table 2** is blank, and is provided so that you may keep a record of your training progress.

** The 30 breath twice daily training regimen is a high intensity training regimen that has been found to be very effective in people who train to improve their general fitness (Romer & McConnell, 2003). Though more intense, this regimen has the great advantage of being much shorter than the more traditional "Low intensity training" regimens that have been used in clinical studies. Recent evidence suggests that the benefits of low and high intensity training are similar (Gosselink et al, 2010), so we recommend the regimen that is least time consuming. However, if you are experiencing difficulties with the high intensity training, please refer to the section on "Low intensity training" on the following page.*

Training with POWERbreathe

Achieving good training technique:

When you inhale through your Medic device, you should breathe in as deeply and as quickly as possible. When you exhale, breathe out slowly and gently until your lungs are completely empty. Try to squeeze out as much air as possible towards the end of the breath to ensure your lungs are completely empty. Pause until you feel the urge to breathe again before inhaling again (Approx 3-4 secs).

You will notice that it becomes harder to completely fill your lungs as you continue to breathe during a training session. This is because your breathing muscles are becoming tired. If you can no longer take a satisfying breath, take a short break before continuing your training. If you find you are unable to complete a breath early in your training session, the training load may be set too high. In this case, simply decrease the training load by half a turn, then continue your training session. **Note:** Training should feel challenging. At the end of the 30 breaths training, you should aim to feel as if you cannot continue further.

If you feel out of breath, light-headed or you need to cough, take a short break. As soon as you have recovered, continue the training session until you have completed a total of 30 breaths. If you miss a training session, simply complete the session as soon as possible. If you miss it by more than 12 hours, ignore the missed session and carry on with your next training session as normal.

Maintaining your breathing:

After 4-6 weeks your breathing muscles should have improved substantially and you should feel less breathless during activity. At this stage you will not need to use your Medic device every day to maintain your improved breathing. Training with your Medic device just 3 times a week will be sufficient to continue to enjoy a better lifestyle.

"Low intensity training"– If you are experiencing difficulties with the training, you may wish to progress to a less intense, longer training regimen that has proven very effective for people who suffer from respiratory conditions. If so, you could consider trying the 15 minutes continuous breathing on a low setting (consult your medical practitioner if in doubt).

Training diary record

Table 1: Example training diary – in this example, load 5 was the maximum that could be sustained for 30 breaths during week 1 of training

Week 1	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning	1	30	2	30	3	30	4	30	5	30	5	30	5	30
Evening	1	30	2	30	3	30	4	30	5	30	5	30	5	30

Table 2: Record the training load on your Medic device and the number of breaths of your training sessions below -

Week 1	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning														
Evening														

Week 2	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning														
Evening														

Training diary record

Week 3	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning														
Evening														

Week 4	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning														
Evening														

Week 5	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning														
Evening														

Week 6	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration	Load	Duration
Morning														
Evening														

Guidance for healthcare professionals

Contraindications: Please read the precautions section on page 4-5 of this manual in order to assess a patient's suitability for inspiratory muscle training.

Patients should be instructed in the proper use of the POWERbreathe Medic before commencing training. Please familiarise yourself with the operation of the device prior to assisting a patient in its correct use referring to the sections on "Getting Used to POWERbreathe" and "Training with POWERbreathe - Guidance for Patients". Guidance on training with the Medic device is based upon that published in the European Respiratory Society's 'Breathe' journal (McConnell et al, Inspiratory muscle training in obstructive lung disease; how to implement and what to expect. September. vol 2(1), pp39-49, 2005). Visit our website to download the full article.

Note: Some patients may be unable or unwilling to use a mouthpiece. In this instance, the mouthpiece may be replaced with a facemask in order to provide a seal to the mouth.

Setting the training load:
Research indicates that inspiratory muscle training (IMT) loads must exceed 30% of the patient's maximal inspiratory muscle strength in order to be effective. There is also evidence that heavier loads yield greater improvements in inspiratory muscle strength.

If you have access to a means of measuring inspiratory muscle strength i.e the POWERbreathe KH2, you may set the initial training load to 30-40% of MIP using the conversion table on pg16. The training load should then be increased by half a turn each day for the next 7-10 days up to 60% of baseline MIP. The patient should train at this load for 1 week. Thereafter, the training load should be increased weekly to maintain the training load at approximately 60% of the patient's new inspiratory muscle strength.

Note: at 60% MIP training will be strenuous and it may take some time before the patient is able to complete 30 breaths without taking a break.

Guidance for healthcare professionals

Coaching good training technique:
The first few days are the most challenging for the patient who will require careful and sensitive coaching, including the allowance of short breaks. They should be encouraged to tolerate the breathless sensation induced by training, and to increase the training load progressively. Typically, increases in load of 5-10% per week can be achieved.

It is advisable to encourage patients to train across the full extent of their vital capacity in order to train the full range of motion of the inspiratory muscles. As the patient's inspiratory muscles fatigue, they may find it hard to achieve higher lung volumes towards the end of inspiration. At these higher lung volumes the inspiratory muscles are weakest and will be most prone to the effects of fatigue. Patients should be warned to expect this and should be discouraged from training beyond the point where they are able to achieve a 'satisfying breath'.

Patients should also be encouraged to inhale against the load as rapidly as possible in order to maximally recruit their inspiratory muscles. Patients should breathe with a combination of diaphragmatic and chest wall movement in order to utilise all of their inspiratory muscles during training. Patients may require breaks during a training session in order to cough, or because they feel too breathless.

It is important that the duration of these is minimised in order to maintain the training stimulus, but this too must be handled sensitively, and supported by an explanation of why it is important to minimise the duration of these enforced 'rest' periods.

Maintenance training:
After 4-6 weeks of training, the patient's inspiratory muscles should have improved substantially and they should feel less breathless during exercise. At this stage it is not necessary to train with the Medic device every day in order to maintain improved breathing. Training with the Medic device three times a week will be sufficient to maintain the training effects.