

POWERbreathe FAQ

1. How often do I need to use POWERbreathe?	3
2. Do I have to train twice a day forever more?.....	3
3. If I stop training will I lose the benefits?	3
4. Is training with POWERbreathe painful?	3
5. Can I still use POWERbreathe if I have a cold?	3
6. Can children use POWERbreathe?	3
7. Is POWERbreathe dishwasher and microwave safe?	3
8. What sterilising/cleansing solution should I use?	3
9. There is no resistance when I breathe in through my POWERbreathe Classic, even though the adjustment gauge and resistance is turned up. Why is this?	4
10. If most of the work of breathing is done by the inspiratory muscles, is there any point in training the expiratory muscles?.....	5
11. I've heard that expiratory muscle training works as well as inspiratory muscle training; is that true? ...	5
12. I've heard that if you do combined expiratory training and inspiratory training you get twice the effect. Is this true?	5
13. Does adding expiratory training improve the benefits of inspiratory training?	5
14. I've heard that expiratory training doesn't work, why is this?.....	5
15. Does inhale/exhale training work?.....	5
16. In the graphical results display on the K3, why does the graph only show 36 results when the session number shows higher than 36?.....	6
17. There seems to be no resistance for the first two breaths!.....	6
18. The POWERbreathe K Series is not working when I reach breath 5 the valve fails to OPEN!	6
19. During a training session after 5 breaths or more I cannot open the valve/The valve fails to OPEN after a few breaths/ the valve closes on me in the middle of a breath.....	6
20. Keep getting clean valve message?	7
21. In Auto training mode what does the levels settings mean?	7
22. During a training session the POWERbreathe breath-counter skips/jumps a breath!	7
23. During a training/test session the POWERbreathe fails to count down the breaths.....	8
24. The POWERbreathe device is not charging!.....	8
25. Predicted MIP rating is based on?	8
26. What is S-index and how is it calculated?	8
27. What is T-Index and how is it calculated?	8
28. How is Power Calculated?	9
29. My test score for S-Index is always larger then my training load score why? / What is Test Mode	9
30. Can the device be sterilized for hospital use.....	9
31. Can I download my results saved on Breathe-Link software to my POWERbreathe K Series device? ...	11
32. I suffer from COPD and asthma is a POWERbreathe device suitable.....	11
33. Can I download my results saved on my POWERbreathe K Series device on to the computer?	11
34. I cannot change the load for the first two breaths in all training modes / the first two breaths always have a load of 3cmH2O?	11
35. During an Auto and Manual training session I cannot adjust the training loads for the first 5 breaths with the load adjuster.	11
36. When I increment and decrement the training load the POWERbreathe Device seems to lock up.....	11
37. I sometimes get weird spikes on my graphs?.....	11
38. For the K5 Pro screen during a breath pressure load seems to drop off rapidly mid breath?	12
39. The POWERbreathe K Series device fails to operate when plugged into the PC?	12
40. When I start up the Breathe-Link Software the software seems to crash/unable to perform any tasks?	12

41. When I start up the Breathe-Link Software the software I get an invalid device connected even though I have connected the POWERbreathe K Series device? 12

42. The POWERbreathe unit load result is a different measurement compared to the Breathe-link software pressure result..... 13

43. The values produced on the POWERbreathe K Series device and Breathe-Link IMT suite do not correlate. 13

44. Custom routine performed on the POWERbreathe unit only; what will the load session show on the results screen..... 13

45. Is the Breathe-Link compatible with MAC computers?..... 13

46. The graphics seem to be slow and unresponsive?..... 13

47. The POWERbreathe K Series seems to loss connection with Breathe-Link application when inactive for sometime?..... 13

48. I have K5 Breathe-Link version 1.0 and wish to install the latest software will my data be lost? And How do I retain my data. 14

49. How many user profiles can I store on the Breathe-Link K4 and K5 software? 14

50. Neck strain when using POWERbreathe: 15

51. Minimum age..... 15

52. Mouthpiece material..... 15



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ABOUT POWERBREATHE

1. How often do I need to use POWERbreathe?

To be effective you must complete the tried and tested POWERbreathe training regimen of 30 breaths twice per day. If you are using POWERbreathe Medic, please follow the directions prescribed by your consultant.

2. Do I have to train twice a day forever more?

No, after 4-6 weeks of regular training your breathing muscles will have improved substantially and you should feel less breathless. At this stage the recommended training regimen of 30 breaths twice a day can be undertaken every other day, to maintain your improved breathing. If you are using POWERbreathe Medic, please follow the advice provided by your consultant.

3. If I stop training will I lose the benefits?

The phrase 'use it or lose it' applies equally to your inspiratory muscles as it does to any other muscle. If you stop training, your muscles will become weaker again.

4. Is training with POWERbreathe painful?

No, it should not be painful. You should feel resistance to inhaling, but if you feel pain whilst using your POWERbreathe then you should stop and consult your doctor.

5. Can I still use POWERbreathe if I have a cold?

We advise you not to use your POWERbreathe if you are suffering from a cold, sinusitis or a respiratory tract infection until all symptoms have disappeared.

6. Can children use POWERbreathe?

POWERbreathe is not suitable for children under 3 years (due to small parts) and anyone under 16 should only use POWERbreathe under the supervision of an adult.

7. Is POWERbreathe dishwasher and microwave safe?

No, do not attempt to clean your POWERbreathe in any way other than instructed in your User Manual.

8. What sterilising/cleansing solution should I use?

POWERbreathe Cleansing (sterilising) tablets are recommended. You can also use a solution that is intended for use on equipment that comes into contact with the mouth, such as that used for babies' bottles. If in doubt, ask your pharmacist.

9. There is no resistance when I breathe in through my POWERbreathe Classic, even though the adjustment gauge and resistance is turned up. Why is this?

This could be because the sleeve that is placed over the adjustment gauge has moved or is not on straight. When undertaking your breaths, especially during a rigorous training session, the sleeve can occasionally move and push against the adjustment gauge, opening the valve. Resolve this by ensuring the sleeve is on straight. You could also try holding the POWERbreathe at the top to prevent the sleeve moving. During very intensive training you may want to remove the sleeve altogether and hold the top part of the device.

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ABOUT INSPIRATORY / EXPIRATORY MUSCLE TRAINING

- 10. If most of the work of breathing is done by the inspiratory muscles, is there any point in training the expiratory muscles?**

No. To date, no study has shown that expiratory muscle training improves performance in healthy young people.

- 11. I've heard that expiratory muscle training works as well as inspiratory muscle training; is that true?**

No. To date, no study has shown that expiratory muscle training improves performance in healthy young people.

- 12. I've heard that if you do combined expiratory training and inspiratory training you get twice the effect. Is this true?**

No, adding expiratory training actually impairs the improvements due to inspiratory training.

- 13. Does adding expiratory training improve the benefits of inspiratory training?**

No, because breathing against a load during exhalation makes it impossible to also work hard during inhalation, so your inspiratory muscles don't get trained as effectively.

- 14. I've heard that expiratory training doesn't work, why is this?**

Most likely because strengthening expiratory muscles doesn't reduce breathing effort, PLUS the expiratory muscles (your abs) are already quite well conditioned, so they probably don't elicit a metaboreflex that reduces limb blood flow.

- 15. Does inhale/exhale training work?**

Yes, but only the inspiratory part of the training is effective, so you might as well just do inspiratory training.

K-SERIES MODEL

16. In the graphical results display on the K3, why does the graph only show 36 results when the session number shows higher than 36?

The session number counts the total number of sessions you have completed (up to 999). However, the K-Series device can only store a maximum of your last 36 training session results - this is limited by the memory on the device and the display area on the screen.

17. There seems to be no resistance for the first two breaths!

For the first two breaths of the POWERbreathe K Series device are setup breaths so that the device can calculate correct parameters for your training. The setup breaths have a low load setting of 3cmH₂O and therefore you will find the first two breaths very easy to overcome. For breaths 3 and 4 a gradual load set to 50% and 75% of your maximum training load is introduced. Subsequent breaths are set at 100% of your maximum training load.

18. The POWERbreathe K Series is not working when I reach breath 5 the valve fails to OPEN!

The POWERbreathe K Series device introduces a gradual increase of load for the first 5 breaths of the training session. Once you have reached breath 5 the load is set at its maximum target-training load, and therefore becomes more difficult to overcome. The valve will not activate until you have overcome the maximum training load set by the device. Consequently if the maximum training load set is too great for you to overcome it may seem that the device is not functioning correctly. We recommend: If you are operating in an automatic mode set the intensity level to a lower level. Alternatively change to manual mode and set the load manually starting with a low load and increase the load by 5 cmH₂O until you have a training load that you can complete a complete session (30 breaths) with some difficulty.

19. During a training session after 5 breaths or more I cannot open the valve/The valve fails to OPEN after a few breaths/ the valve closes on me in the middle of a breath

- *If the valve is not opening or seems to jam during a training session it is mostly likely that you are failing to overcome the training load. This could be because the training load set is too high or you are fatiguing during the training session. Reduce the load until you can perform 30 breaths.*
- *Make sure the valve is not sticky. If the valve is blocked then the valve may not open. See section 11 Care and Maintenance*
- *Ensure that the valve head is attached correctly to the POWERbreathe K Series unit. Failing to do this will mean that the gears will fail to mesh and therefore the valve may not open or close. See Figure 1*



Figure 1 Incorrect and Correct attachment of valve head

- Do not obstruct the airvent otherwise pressure values may be effected, resulting in the POWERbreathe unit to maintain a high load and therefore may seem that the device is being jammed.

20. Keep getting clean valve message?

Clean valve thoroughly with recommended sterilising tablets. Move the valve head back and forth (Open too Close) while rinsing under mid warm water until it moves freely without any major resistance. Wait until fully dried and move the valve head back and forth (Open too Close) ensuring that it moves freely before attaching to the POWERbreathe K Series device. For more detail please refer to POWERbreathe K Series manual section 11 Care and Maintenance

21. In Auto training mode what does the levels settings mean?

The POWERbreathe K Series unit will automatically estimate your training load at the beginning of every training session. Using this method, the device will adjust the training load every time you start a new session and as the strength of your inspiratory muscles increases. Automatic setup of this load takes place during the first two breaths of each training session. The intensity levels represent a percentage of your estimated load that you will be training at. The levels are:

	V. Light (Level 1)	Light (Level 2)	Moderate (Level 3)	Heavy (Level 4)	V. Heavy (Level 5)
Percentage of estimated Strength Index	40%	50%	60%	70%	80%

Table 1POWERbreathe Intensity Levels

22. During a training session the POWERbreathe breath-counter skips/jumps a breath!

Make sure the valve is not sticky. If the valve is blocked then you may see erroneous results. The skipping of breaths can also be a result of erratic breathing technique or evidence that you are struggling with the current settings causing erratic breathing. In some instances the POWERbreathe device will count short pauses of a breath as a valid breath. Inhale as quickly and as deeply as possible through the mouthpiece.

23. During a training/test session the POWERbreathe fails to count down the breaths

The POWERbreathe K Series device has a mechanism that ensures that only valid breaths are counted, if your volume is less than 0.5litres then device will not count this as a valid breath. This is to protect you and the device.

24. The POWERbreathe device is not charging!

In some instances when the POWERbreathe K Series device is left unused for a period of time the unit will not automatically go into charge mode. You should connect the charger to the USB and then briefly push the ON button and ensure that the red light comes on then leave to charge for the full 16 hours. If the red light flashes contact the distributor for further advice.

25. Predicted MIP rating is based on?

MIP prediction equations are from papers by Carpenter et al and Wilson et al. Data from Carpenter et al was selected as it used a large number of participants. Data from Wilson et al was used, as it was the only research with prediction equations for children.

The rating scale is based upon a normal distribution using standard deviation derived from the research data. The limits of each level are set at increments of 0.8 standard deviations such that the lowest rating (V.POOR) is below 2 standard deviations from the mean (5th percentile) and the highest rating (EXCELLENT) is above 2 standard deviation from the mean (95th percentile). This gives a range for each rating (POOR to V.GOOD) of (e.g. for Men) 22.48cmH₂O. This means that, at worst, an average man (MIP 106.1cmH₂O) would need to make a 21% improvement in their MIP to make the transition from one rating to the next.

Reference:

1. M.A.Carpenter, S.Melvyn, R.G.Hutchinson, C.E.Davis, G.Heiss. Demographic and Anthropometric Correlates of Maximum Inspiratory Pressure
2. S.H.Wilson, R.H.T.Edwards, S.G.Spiro. Predicted Normal Values for Maximal Respiratory Pressures in Caucasian Adults and Children

26. What is S-index and how is it calculated?

Based on relationship between pressure and flow.

27. What is T-Index and how is it calculated?

T-Index is the amount of mechanical energy (or work) achieved during a session expressed as a percentage of the maximum potentially achievable work (i.e. the amount of work you could achieve if you were training at absolutely 100% effort). T-Index is not a measure that will necessarily get better as your inspiratory muscle improve but instead is an indicator that you are in the right training zone (i.e. a rating of medium to high).

The POWERbreathe K Series measures your inhaled volume and your peak inspiratory flow. It does this during the first two breaths of the session when there is no load. It uses the value of peak inspiratory flow to estimate your maximum inspiratory muscle strength (MIP) using the force-velocity relationship of the inspiratory muscles. It then uses MIP and inhaled volume to calculate maximum potentially achievable work using the length-tension relationship of the inspiratory muscles. As this value of 'maximum achievable work' is calculated using measured values it is effectively a value of your maximum potential performance for that day.

The POWERbreathe K Series then measures the actual work that you achieve during the remaining breaths of the training session (calculated using pressure, flow and time). T-Index is then calculated as $100 \times (\text{measured actual work}) / (\text{calculated maximum potential work})$. Using this method, T-Index gives you an indication of how much effort you put into training on that day.

28. How is Power Calculated?

Power = Velocity * Force in regards to POWERbreathe Velocity = Flow and Force = Load therefore Power = Flow * Load. The POWERbreathe calculates Power every 2ms and integrates this for the entire session, then averages this out to get an average Power value for the entire session.

29. My test score for S-Index is always larger then my training load score why? / What is Test Mode

In test mode it is used to assess the strength of your Inspiratory Muscle, this is similar idea to 1 Rep Maximum in strength training. In that for one breath we estimate the strength of your muscles. There is a very low load when performing this test and the user should find this very easy. Again the principle is the same as before, you are required to empty your lungs fully then breath in as hard, fast and deep as you can. Once complete the device will estimate your strength of the muscles (MIP). This value will tend to be larger then your training value as this represents the maximum strength, where as in training we account for a percentage of S-Index based on your level setting. The value you see in training is the training load that you are training at. Again in weight training you tend to train at about 50% to 80% of your 1 Rep Maximum.

30. Can the device be sterilized for hospital use

- We advise to use sterilised or alcohol wipes to wipe down the unit.
 - Make sure to get gaps and buttons
 - Wipe before and after each training or test session
 - Keep in a dry and cool clean environment
- Individual Valve Heads for each patient
 - Examine the condition of the valve head /mouthpiece if any secretions, dirt marks and if the cleaning process below fails to eradicate the marks discard and use new valve head
 - Rinse with water after each session
 - Twice every week soak in cleansing g tablets for 10 minutes then rinse thoroughly with water making sure to open and close the valve head. Dry with clean cloth and let dry in a cool clean environment
 - If patient has cold/virus then soak in cleansing tablets after healing.

These are general guidelines! If in doubt do not use! Depends on the situation

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K4 AND K5 WITH BREATHE-LINK

31. Can I download my results saved on Breathe-Link software to my POWERbreathe K Series device?

No.

32. I suffer from COPD and asthma is a POWERbreathe device suitable

Inspiratory muscle training has been most widely used in patients with COPD. The rationale is particularly strong in this patient group, as they have primary weakness of their inspiratory muscles.

33. Can I download my results saved on my POWERbreathe K Series device on to the computer?

No. Data can only be saved on to the computer when the POWERbreathe K Series device is connected to the computer and Breathe-Link application is running.

34. I cannot change the load for the first two breaths in all training modes / the first two breaths always have a load of 3cmH2O?

The first two breaths are setup breaths so that the device can calculate training parameters used to setup an ideal variable load training profile. The setup breaths will always be set at a very low load of 3cmH2O and is counted as a part of your overall training session.

35. During an Auto and Manual training session I cannot adjust the training loads for the first 5 breaths with the load adjuster.

The first two breaths are setup breaths so that the device can calculate training parameters used to setup an ideal variable load training profile. The setup breaths will always be set at a very low load of 3cmH2O and count as a part of your overall training session. Breaths 3 and 4 are set at a gradual percentage of calculated training load, for consistency the device will not allow you to increase or decrease the load until after breath 5.

36. When I increment and decrement the training load the POWERbreathe Device seems to lock up.

In most cases you should not see a lock up of the POWERbreathe K Series device, however in some rare instances communications between the Breathe-Link software and POWERbreathe K Series may be corrupted by abuses behaviour of these buttons. Therefore when adjusting the training load using the up and down buttons you should increment and decrement the values slowly and in a positive fashion, a 1 second pause for each click of the adjustment buttons. POWERbreathe International Ltd views any behaviour beyond the one described above as unexpected abusive behaviour.

37. I sometimes get weird spikes on my graphs?

Make sure the valve is not sticky. If the valve is blocked then you may see erroneous results. The spikes can also be a result of erratic breathing technique or evidence that you are struggling with the current settings causing erratic breathing.

38. For the K5 Pro screen during a breath pressure load seems to drop off rapidly mid breath?

The POWERbreathe device will try to maintain a variable load for each breath, if you fail to overcome the load set during a course of a breath most likely due to fatigue of the respiratory muscles you will see a sudden drop of pressure plotted. In essence you have reached the point of failure, where the muscles have reached a point where it cannot overcome the load and fatigue has taken place. This is commonly seen at the end of a training session, if you see this behaviour early in the training session then it is a good indicator that the training load set is to high or you need to put more effort in each breath to maximise your volume.

39. The POWERbreathe K Series device fails to operate when plugged into the PC?

Make sure that the correct drivers have been installed. Uninstall and reinstall the Breathe-Link software making sure that you agree with the terms and conditions, and tick the agree box. Click OK when asked to install drivers. In some instance where the battery of the POWERbreathe K Series device is very low, the drivers fail to detect the POWERbreathe. In this instance connect the POWERbreathe K Series device as normal and briefly push the ON button of the POWERbreathe. The associated drivers will then be detected and normal connection procedures should be applied. Make sure the POWERbreathe K Series device is switched OFF before attempting to connect with the Breathe-Link Software.

Make sure no other device is connected to the PC that draws more then 500amps.

If the problem still persists contact supplier of the device.

40. When I start up the Breathe-Link Software the software seems to crash/unable to perform any tasks?

You can only access the features of the Breathe-Link software with a valid POWERbreathe K Series device is connected and synchronised with the software. Close the Breathe-Link software and connect a valid POWERbreathe K Series device, then start up Breathe-Link software. Make sure you have correctly installed the drivers.

Use the USB port you used when you first connected the POWERbreathe device to the Breathe-Link software. In some instances the USB driver for the Breathe-Link software only recognize the POWERbreathe device when connected to the same USB port when it was first installed.

41. When I start up the Breathe-Link Software the software I get an invalid device connected even though I have connected the POWERbreathe K Series device?

Make sure the software you have downloaded or been supplied with is correct for the model of POWERbreathe K Series that you have. POWERbreathe K Series versions are not interchangeable between Breathe-Link K4, K5 and KH2 units.

42. The POWERbreathe unit load result is a different measurement compared to the Breathe-link software pressure result.

The POWERbreathe unit load displayed corresponds to the highest training load achieved (highest weight lifted) during your breathing training session. The Breathe-Link pressure represents the average pressure 'average weight lifted' generated by the breathing muscles. Arguably this gives you a better indication of how the breathing muscles are performing against a variable load training session. A higher load result means that you are training your inspiratory muscles harder, leading to stronger muscles.

43. The values produced on the POWERbreathe K Series device and Breathe-Link IMT suite do not correlate.

Values from the POWERbreathe device and Breathe-Link software should not vary more than $\pm 10\% + 5$ cmH₂O. To consistently breath at the same rate and effort for each new session is impossible, consequently variations of results will be observed. Ideally if you are performing a test or training session with or without the Breathe-Link software you should try to perform them at the same time and same effort to get a accurate overview of your breathing muscle performance.

44. Custom routine performed on the POWERbreathe unit only; what will the load session show on the results screen.

The POWERbreathe unit will only show the highest load set in the custom routine. It is advised to use the Breathe-Link software to get a more accurate view of pressure load. The values shown on the Breathe-Link software is the average pressure (average weight lifted) for the entire session. It is possible to analysis the data in greater detail in the Review Screen see Chapter 10 Data Review for more information.

45. Is the Breathe-Link compatible with MAC computers?

*No. It may be possible to download windows emulators for MAC that will allow you to run Breathe-Link or third party software such as wineHQ (<http://www.winehq.org>) or Boot Camp at <https://www.apple.com/support/bootcamp/> **Please Note:** POWERbreathe International does not guarantee the correct functioning of the software and should be understood that no testing has been performed using MAC computers and associated third party software.*

46. The graphics seem to be slow and unresponsive?

The Breathe-Link is a highly graphically intensive program. We advise you to stop any other application running in the background and ensure that your computer meets the recommended required specification.

47. The POWERbreathe K Series seems to loss connection with Breathe-Link application when inactive for sometime?

Depending upon your computer settings when your computer goes into standby mode the USB communication can also shut down; consequently both the Breathe-Link and POWERbreathe K Series device can be out of synch. To resynch either press the connect button on the Breathe-Link, or disconnect the POWERbreathe and reconnect.

48. I have K5 Breathe-Link version 1.0 and wish to install the latest software will my data be lost? And How do I retain my data.

Breathe-link Version 1.0 has no import/export feature, however it is possible to manually import your data see Breathe-Link Updates Reinstallation Best Practice Version 2.0.pdf available online.

49. How many user profiles can I store on the Breathe-Link K4 and K5 software?

Breathe-Link K4 a max of 10 user profiles and 1200 sessions per user can be stored

Breathe-Link K5 a max of 30 user profiles and 1200 sessions per user can be stored



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GENERAL

50. Neck strain when using POWERbreathe:

Neck problems are very rare when using POWERbreathe but have been known to occur when breathing against very heavy loads and in people with a history of neck injury e.g. whiplash. Our advice is as follows:

- *In order to warm-up before training with POWERbreathe, perform a warm-up session mode; alternatively perform 10 breaths set the load to 80% of you normal resistance (e.g. if you normally train at level 5, set the POWERbreathe to level 4). Perform a set of 30 breaths at this level prior to training at your normal intensity. This should help warm-up the muscles in the neck and chest*
- *Now perform your normal set of 30 breaths - try to breathe from the chest and diaphragm, keeping your neck as relaxed as possible. If you are still experiencing discomfort, reduce the load slightly - it is important to take controlled breath as well as pushing yourself. Remember that the same principles apply to POWERbreathe as with any other resistance training*
- *If you perform uncontrolled movements at high intensities then you may be increasing the risk of muscle strain. If the pain continues, we would advise that you consult your doctor or chiropractor as the problem is likely to be due a slight displacement of a vertebrae (of the kind experienced when one gets a 'crick' in the neck') rather than to a muscle strain.*

51. Minimum age

There are no safety reasons for preventing young children (above 3 years of age) from using POWERbreathe. However the following factors may affect their ability to use the device effectively:

- *They must be able to fit the mouthpiece in their mouth. The POWERbreathe Plus mouthpiece is smaller and therefore more suited to children*
- *They must be old enough to understand how to effectively perform the breathing exercises*
- *They must have the motivation themselves or the parental encouragement to ensure that they continue to perform the exercises*

52. Mouthpiece material

All the mouthpieces for the POWERbreathe units are BPA (Bisphenol-A) free. Please see detail below:

- *POWERbreathe K-Series mouthpiece: - Material Name: NonP650 (no Pthalate or Bisphenol-A plasticisers)*
- *POWERbreathe Classic/Plus mouthpiece: - Material Name: Colorite 6811G-015 (uses DOP plasticiser, no Bisphenol-A)*

Please note: Other parts of the POWERbreathe products that do contain Bisphenol-A are as follows (these parts are not in direct contact with the mouth):

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