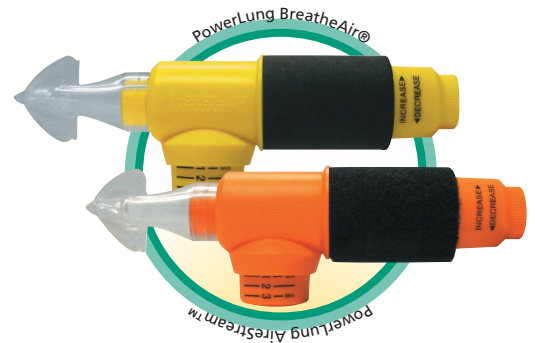


Introduction To PowerLung for Healthcare Professionals

This document is intended to provide the health professional with information on PowerLung products and how they are designed to help the user. It is not intended to be a comprehensive discussion or recommendation of the product as it relates to or has been used with any medical conditions. This document will provide a high level discussion of how PowerLung products differ from incentive medical devices available.

PowerLung is a hand-held machine specifically designed to strengthen the muscles used in breathing and train them to work more effectively and efficiently. PowerLung does not use any drugs or medications. PowerLung employs the proven concepts of progressive resistance training in conjunction with specialized breathing patterns for training. There is a PowerLung model with a range of resistance to meet the goals of any user.



- Performance athletes to improve their performance and technique
- Recreational athletes interested in staying fit to improve their ability to play with greater strength for longer periods
- Individuals interested in staying fit and improving their ability to exercise with greater strength for longer periods
- For individuals who desire to improve breathing for a higher quality of life or their ability to exercise or perform day-to-day activities
- Musicians who desire better ability to maintain support for their sound and to increase the ability of the breathing muscles to remain flexible for long playing periods
- For those in public safety or military professions whose jobs require them to operate under conditions of deprived or extremely labored breathing
- Independent studies have shown PowerLung can train the muscles used in breathing for strength, power, and endurance.



In short, PowerLung can be used by and provide training benefit to anyone who breathes. Many healthcare professionals implement it as a part of a treatment program for conditions including, but not limited to, asthma, emphysema, COPD, sleep apnea, post bilateral lung transplant edema and preparation for removal of ventilators for SCI patients.

PowerLung has been available since 1999 and is marketed directly to the health and fitness, music, professional, and athletic markets as a muscle strengthening and breathing training machine. Since its introduction, PowerLung has been appraised and recommended by many physicians and health practitioners. Even though PowerLung is not a medical device and was not designed to measure, diagnose, treat, or cure any disease or condition.

While we often think of strenuous exercise, as merely for the fit, it is the goal of most medical practitioners to assure their patients or clients are able to live their life to the fullest. Many respiratory studies use very fit and athletic individuals and demanding sports to show the effects of exercise on the human respiratory system. Most people are intellectually aware that fit individuals are used as a bellwether. However, as we review these reports, it is sometimes easy to forget that the same effects exist for other individuals.

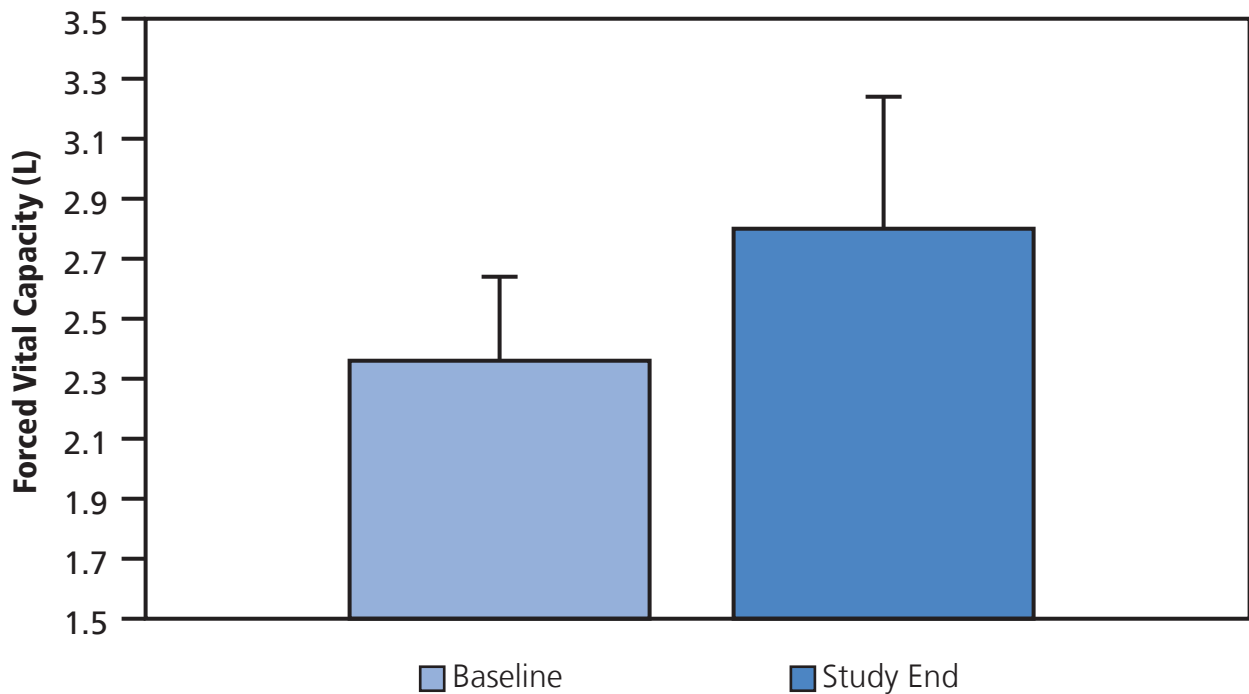
For example, in one PowerLung study, the athletes were tested at 85% submax. Wow, that is a high level of exercise! Well, yes. Consider, however, how quickly that 85% level is reached by someone who is not in "good" physical condition, who is trying to regain strength after a disease or surgery or in some instances to prepare for surgery.

In conversations with these professionals, we are advised they may recommend or prescribe it for the following reasons:

- The availability of different models with different ranges of resistance provides the healthcare professional the opportunity to select the device best suited to the patient's current ability.
- Inhale and exhale are independently adjustable so they can work with the patient/or client to utilize one machine more effectively.
- The psychological benefit of the product being marketed for health and improvement makes patient compliance higher.
- It aids in the physical and psychological preparation necessary to help an individual transfer from ventilator assisted breathing to normal breathing.
- It is a non-invasive, drug-free alternative for some individuals who are non-compliant with other therapies. (e.g. C-pap)
- It can be used as an assist in delivery of medications administered through inhalers because its use before inhaler use can improve the patient's ability to benefit from the inhaler.

Respiratory resistance training in creases ventilatory capacity in the elderly.

Nathan Trueblood, et al., Earlham College

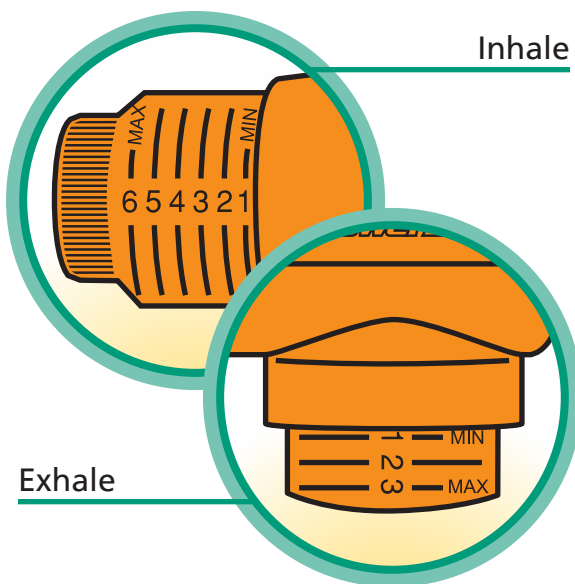
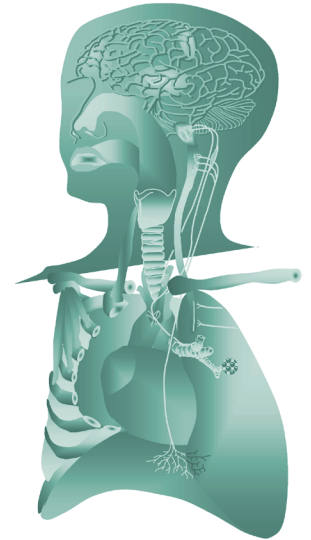


Forced Vital Capacity increased with RRT in 12 of 15 participants (~13% increase vs baseline, P=0.054).

PowerLung uses a unique approach to training the breathing muscles.

It trains the respiratory muscles using the same proven techniques as those used to strength train the skeletal muscles – progressive threshold resistance. The goal of this type of training is to implement training specific to a group of muscles in order to improve the muscles’ ability to meet the demands placed upon it with less stress and effort. This type of training also helps the muscles maintain flexibility for longer periods of activity. PowerLung is designed to provide a more natural approach to training breathing by training the full cycle of continuous breathing – inhale and exhale.

Furthermore, PowerLung forces an individual to breathe deeply from the diaphragm using all of the respiratory muscles. The user receives feedback to help assure the user knows when they are performing the training correctly. There is no benefit to training if the protocol is not well established or the user cannot tell if they are doing the training properly to obtain the benefits.



The Control Dials

PowerLung has implemented Control Dials for both inhale and exhale controls to provide the user with progress tracking and feedback that is non-technical, easy to use, and generally, results can be achieved with a time commitment of about four (4) minutes twice a day. This ease of use is enhanced by the fact that most users can feel a difference with a deeper breath after the first ten (10) breaths with PowerLung.

The ease of use and feedback features are designed into the product to encourage compliance with the recommended usage program. Compliance is also enhanced by the fact that PowerLung does not look like a medical product and is marketed as a fitness product so the patient feels they are taking positive steps toward improving their quality of life, not simply treating a medical condition. The positive nature and presentation of PowerLung encourages compliance at every step.

The Limitations of Other Devices

Contrast PowerLung with other devices currently available. Most other offerings utilize a technique known as “flow restriction”. These type of devices provide resistance by reducing and restricting the flow of air through a series of openings or by using “balls” in tubes with decreasing diameters or bores. This type of approach provides ONLY inhale OR exhale but no capability for both which is the normal breathing pattern.

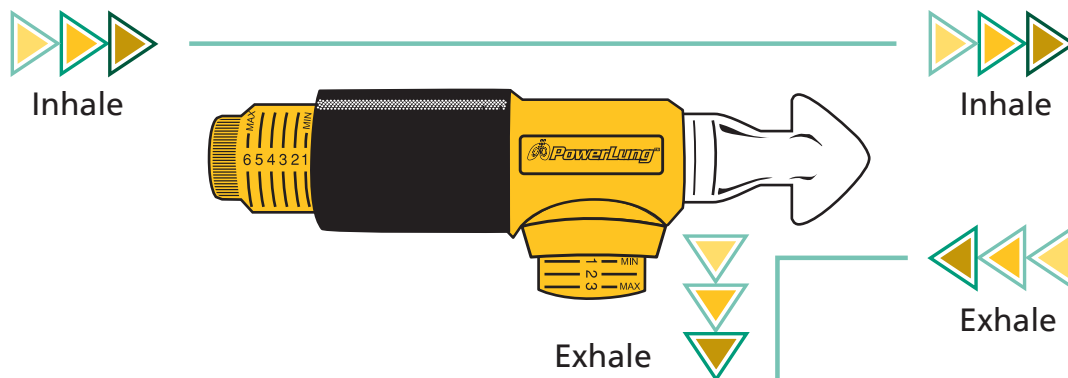
Generally speaking, while the user may attempt to breathe deeply using these devices the breathing tends to be more in the “chest” and tends to reinforce shallow or chest breathing. While simple, the same results can be accomplished by breathing through drinking straws. Once it becomes easy to breath through the straw to choose one that has a smaller diameter, or bore, and continue. This technique is only exercise and is shown in clinical studies to have limited ability to actually train muscles to be stronger because the user, simply by changing the breathing pattern, can breathe at so low a level that no training occurs.

Exhaling Is Just As Important As Inhaling

Other devices that use pressure threshold to provide resistance do so in one direction only – either inhale or exhale – but not concurrent inhale and exhale. PowerLung provides this resistance in both the inhale direction and the exhale direction. This is extremely important because it provides the health professional the ability to instruct the patient to use the device differently.

For example, as the patient begins using the product the patient is advised to set the inhale resistance at the lowest setting and work primarily with the exhale cycle. The patient is receiving the full, deep breathing training with the exhale cycle working against a challenging level of resistance and the inhale resistance is merely the effort of opening a valve at atmospheric pressure. As the patient progresses a simple adjustment of the inhale breathing effort index (BEI) adds a new component to the training program.

PowerLung Inhale and Exhale Demonstration



Gives A Better Quality Of Life

PowerLung is unique in what it offers healthcare professionals for dealing with various breathing conditions and symptoms by letting the respiratory muscles be recruited for deeper breathing. Whether through disease or muscle debilitation that impacts the ability to breathe deeply, PowerLung works specifically to strengthen respiratory muscles and encourages and allows the individual to participate to the best of their physical condition in even the mildest forms of exercise and quality of life activities.

PowerLung 
BETTER BREATHING

1918 Triway Ln
Houston, Texas 77043 USA
www.powerlung.com

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