

Breath stacking and lung volume recruitment (LVR) bags

Information for patients

This leaflet answers common questions about breath stacking and lung volume recruitment bags. If you would like further information, or have any particular worries, please do not hesitate to ask your physiotherapist.

In all cases a physiotherapist will explain breath stacking and lung volume recruitment bags to you and answer any questions you may have.

In most cases it will be possible for a friend or relative to accompany you for all or part of the procedure. Please ask your physiotherapist.

What is breath stacking?

Breath stacking is a breathing exercise used to help you take a big breath in. It is useful when the breathing muscles are weak and taking a deep breath in is difficult. It can help to improve the strength of your cough and can help improve the quality of your voice.

What are lung volume recruitment bags?

Lung volume recruitment (LVR) bags are a piece of equipment which can help you to take a deep breath in. They are made up of a special flexible plastic bag, a one-way valve, a filter and either a mask, mouthpiece or tracheostomy connector. They look similar to the resuscitation bags that you may have seen.

What are the benefits of breath stacking?

- It may help you to clear phlegm from your chest and may help prevent chest infections.
- It helps to keep your rib cage and the breathing muscles flexible.

How are breath stacking and LVR bags used?

You will be advised by your physiotherapist about how to do breath stacking with or without the LVR bags.

You should do the breathing exercises at least twice a day. You may be advised or choose to do it more often. You may also be advised to do the breathing exercises more often when you are unwell with a chest infection.

Breath stacking

You should do this breathing exercise in an upright position.

The following steps are an example of how to do breath stacking, but your physiotherapist may make individual changes for you.

1. Breathe out fully
2. Take a full breath in
3. Try to hold your breath for 1-2 seconds, then try to take another breath on top of the previous one. Repeat this until you feel you have taken a full breath in. This may take between two and five repetitions
4. Try to hold your breath for 3-5 seconds then gently breathe out
5. Rest between each breath stacking for at least 30 seconds. You can repeat steps 1 to 4 up to five times in a row
6. If you feel you have any phlegm, try to cough instead of gently breathing out
7. You should stop and rest if you feel tired or lightheaded.

Individual changes:

Lung volume recruitment (LVR) bags

You should do this breathing exercise in an upright position.

The following steps are an example of how to use the lung volume recruitment bag, but your physiotherapist may make individual changes for you.

1. Breathe out fully
2. Place the mask over your nose and mouth (or the mouthpiece in your mouth using a nose clip if you prefer) and form a tight seal to minimise any air leak
3. Take a full breath in while gently squeezing the bag
 - a. You can do this between your knees (as demonstrated below)



b. You can do this using your hands (as demonstrated below)



c. You can do this like a bagpipe (as demonstrated below)



d. You can ask someone to help you (as demonstrated below)



4. Try to hold your breath for 1-2 seconds, then try to take another breath on top of the previous once again squeezing the bag. Repeat this until you have taken as deep a breath in as you can. This may take two to five repetitions
5. Once your lungs are full try to hold the breath for 3-5 seconds and then breathe out gently

6. Rest between each breath stacking for at least 30 seconds. You can repeat steps 1 to 5 up to five times in a row
7. If you feel you have any phlegm, try to cough instead of gently breathing out
8. You should stop and rest if you feel tired or lightheaded.

Individual changes:

What equipment will I be given?

The lung volume recruitment bag includes:

- a lung volume recruitment bag
- mouthpiece and nose clip
- full face mask
- filters



Maintenance and care for your LVR bag

Check the bag before each use to ensure there's no damage to the bag or any parts missing. If you are not sure about your bag or whether you have all the equipment do not use it and contact the sleep and ventilation team for a replacement.

The bag should be replaced if it is damaged or worn. It will last three months and should be replaced after that. It is your responsibility to contact the sleep and ventilation team to request a replacement.

It is important to take care of the mask or mouthpiece. You should wash the mask or mouthpiece after every use in warm soapy water and leave it to air dry. The mouthpiece or mask should be replaced if it looks worn or damaged.

The filters need to be changed if they look soiled or contain trapped moisture. The round filter attached to the bag should be changed monthly.

Replacement equipment including lung volume recruitment bags, masks, mouthpieces or filters can be requested from the sleep and ventilation team. Please contact us to arrange this. We can either post replacement equipment or you can collect it from the physiotherapy department. You should not attend the hospital without contacting the sleep and ventilation team first.

Risks and side effects

Please do not do the breathing exercises within one hour of having food or drink unless advised to do so by your physiotherapist.

If you use a feeding tube, you should stop the feed one hour before doing your breathing exercises.

You should not do the breathing exercises if you have any sudden or new chest pain or if you see any blood in your phlegm.

You should not use the lung volume recruitment bags if you have ever had a pneumothorax (collapsed lung).

Alternatives to breath stacking and lung volume recruitment bags

Your physiotherapist may be able to teach you breathing exercises, positions or cough techniques which may help to clear your phlegm.

There is also a machine called a cough assist which can be used to help people with a weak cough to clear phlegm. You will be advised if this is appropriate for you.

Do you have any further questions?

If you notice that your equipment is worn or damaged you may call us to let us know. We can then advise you on the best way forward. Our lines are open Monday to Friday, 9-5pm.

If you have an urgent problem, please contact:

- Stephanie Mansell, consultant respiratory physiotherapist:
020 7794 0500, bleep 1041
- Steve Cutts, highly specialist physiotherapist: 020 7794 0500, bleep 2352

If you have a non-urgent query or problem, please contact:

- Phone: 020 7794 0500 extension 38581 or direct dial: 020 7472 6623
Please leave a message on our answerphone and we will call you back as soon as possible
- Email: RF-TR.respiratoryphysioRFH@nhs.net

Other useful contacts

- Claudia Canova, motor neurone disease co-ordinator at the Royal Free London:
07773 583 391

External sources of information

You can find further information on the following websites:

- Motor Neurone Disease Association: www.mndassociation.org
- Muscular Dystrophy UK: www.musculardystrophyuk.org
- YouTube video: www.youtube.com/watch?v=3XPuSJ6gyw8

More information

For more information about the respiratory and therapy services at the Royal Free London, please visit our website:

- www.royalfree.nhs.uk/services/services-a-z/therapy-services
- www.royalfree.nhs.uk/services/services-a-z/respiratory-medicine

Your feedback

This leaflet was adapted with permission from the Aintree University Hospital NHS Foundation Trust. If you have any feedback on this leaflet or for references for it, please email: rf.communications@nhs.net

Alternative formats

This leaflet is also available in large print. If you need this leaflet in another format – for example Braille, a language other than English or audio – please speak to a member of staff.

© Royal Free London NHS Foundation Trust
Service: Therapy services and thoracic medicine
Version number: 1
Approval date: October 2019
Review date: October 2021
www.royalfree.nhs.uk