Module Four: Physical Activity and Exercise

Welcome

Welcome to Module Four of Lung Foundation Australia's C.O.P.E program.

C.O.P.E. stands for **COPD. Online. Patient. Education.**

This module is designed to teach you that physical exercise, pulmonary rehabilitation and a healthy diet are very important for those with COPD. These factors can help you to lead a normal life as they will assist you in managing your COPD symptoms.

Please move through this module at your own pace by clicking through the 'Prev' and 'Next' buttons, located in the navigation bar.

Learning objectives

A combination of regular exercise, pulmonary rehabilitation programs, and a balanced diet will help you to remain healthy and in control of your COPD.

Upon completion of this module, you should understand:

- How exercise and physical activity can help you;
- The purpose of pulmonary rehabilitation and how these programs can help you to manage your COPD;
- How Lungs in Action can help you to maintain your exercise program;
- Examples of strength training;
- Examples of stretching;
- The precautions to be aware of when exercising;
- Your other options for staying active;
- How to keep track of your progress;
- Why healthy eating is important for those with COPD;
- What foods to eat to create a healthy and balanced diet;
- The best foods to eat if you are underweight;
- The best foods to eat if you are overweight; and
- How to manage your swallowing problems.

Definitions

Sedentary behaviour

This involves long periods of sitting or lying down throughout the day. It is important to try to break from sedentary periods regularly every 30 minutes by standing and/or walking around if you are able.

Physical activity

This is movement as part of your activities of daily living. It could include doing the washing, gardening, house-cleaning, grocery shopping, walking from the car to the shops etc.

Exercise

Physical activity done with the purpose of improving health. It includes fitness activities.

Training

A structured program involving one or more of the following: Aerobic activity such as walking, cycling, rowing and strengthening activities or weight training using resistance such as resistance bands, weights or dumbbells. Stretching and balance exercises are recommended, especially for older Australians. It involves specific goal setting with a set prescription of exercise and is timed.

Pulmonary rehabilitation

A 6-8 week program consisting of supervised, structured and individualised exercise, education and behaviour change strategies. It is often run within a hospital or a community health centre setting or your home and is conducted under the supervision of appropriately trained health professionals.

Maintenance exercise

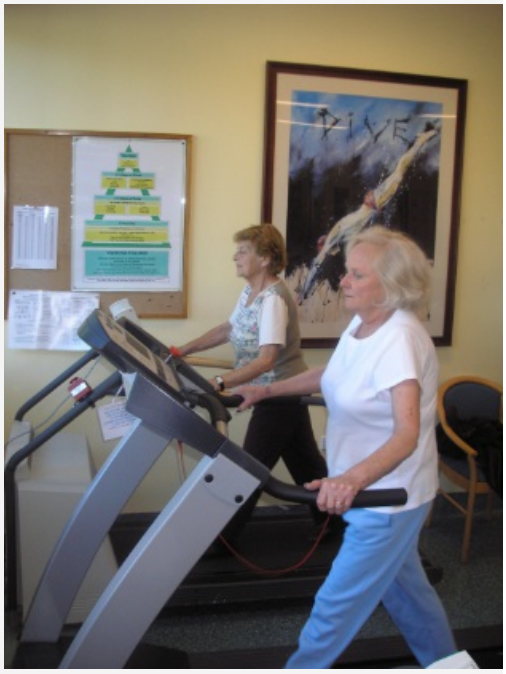
This is the ongoing structured weekly exercise program that follows on from pulmonary rehabilitation. It typically provides a supervised environment for people with chronic lung disease to continue their exercise program and to maintain the benefits that they've achieved during pulmonary rehabilitation.

Fitness

This is a general term that can have different meanings depending on the environment it is used in. Usually it provides an indication of your physical exercise capacity e.g. how far you can walk within a certain time without getting too breathless. It can also be used to indicate other physical parameters such as muscle capacity, composition and strength.

How can exercise and physical activity benefit you?

People with chronic lung conditions are often less physically active, and can have reduced fitness and muscle strength. By exercising regularly, you can maintain or even improve your fitness and muscle strength which will allow you to participate in your activities of daily living.



Undertaking regular exercise, such as walking or cycling for more than a total of two and a half to five hours of moderate intensity physical activity per week, can improve your health. As a result, you will feel better, keep well and are more likely to stay out of hospital.

Exercise will help to:

- Make your heart stronger and healthier.
- Improve your arm, body and leg muscle strength.
- Improve your breathing / make you less breathless.
- Reduce your breathlessness during daily activities.
- Stay out of hospital.
- Clear sputum from your lungs.
- Increase the number of activities that you are able to do each day or each week.
- Improve your balance and reduce your risk of falls.
- Improve your mood and make you feel more in control.
- Maintain / improve your independence.
- Assist your weight control and maintain muscle mass.
- Improve and maintain your bone density.

Following a diagnosis of COPD, speak with your GP about referral to a pulmonary rehabilitation program. Pulmonary rehabilitation has many benefits and helps restore your health to the highest possible level so that you can improve your quality of life and stay well for longer.

What is pulmonary rehabilitation?

Pulmonary rehabilitation is a program that usually consists of 6-8 weeks of individually prescribed, supervised exercise sessions plus education with strategies to promote health enhancing behaviours. These exercise and education sessions are based on the best evidence and designed especially for people with chronic lung conditions to help better manage symptoms.

Pulmonary rehabilitation involves a team approach with the participants working closely with their doctors, respiratory nurses, physiotherapists and other allied health team members. However, in areas where hospital or community health centre-based, multi-disciplinary team, pulmonary rehabilitation programs aren't available, a smaller scale program can be constructed utilising a nurse, physiotherapist or exercise physiologist and this online education program.

How pulmonary rehabilitation can help you - the SALES pitch!

If you are undertaking this education together with a supervised exercise program, then you may not require the entire “sales pitch” about the benefits of pulmonary rehabilitation. BUT, because the benefits are so AMAZING, we think it’s worth hearing it all again!

In areas where pulmonary rehabilitation is provided through a hospital or state-run community health centre, it is usually FREE to attend. Other programs may charge a small amount or require private health cover to attend. Many programs are close to public transport or located within a venue that enables easy access.

Pulmonary rehabilitation provides an opportunity for you to meet other people who have lung conditions and who are experiencing similar symptoms and challenges. You will be able to share your experiences while hearing how others live with their lung condition. Some programs include a cup of tea after the class to facilitate social interaction.

Pulmonary rehabilitation works with you to teach you all the things that you need to know in order to be able to manage your symptoms as best as you can, so you function as well as you are able and stay well and out of hospital for longer.

Pulmonary rehabilitation

The supervised exercise sessions are typically performed twice a week and are tailored especially to your needs and abilities. You will learn how to coordinate your breathing with your movements to make tasks like hanging out the washing easier.

You will learn other important information to help you live better with your condition, such as important nutritional information, how to recognise early signs of a flare-up, the role your medicines play, and how to manage symptoms of anxiety or panic.

If you find tasks such as walking to the kitchen to make a cup of tea or showering difficult, you will find these tasks much easier after completing the program and may even be taking on other activities that you'd previously given up.

Anyone with a chronic lung condition who is experiencing symptoms can benefit from pulmonary rehabilitation. It is suitable for all stages of disease severity, even if you are on oxygen.

Pulmonary rehabilitation programs have been shown to help people breathe easier, improve their activity and quality of life and stay out of hospital. After completing pulmonary rehabilitation, many patients find they can resume activities that they had previously given up.

What does pulmonary rehabilitation involve?

A pulmonary rehabilitation program typically runs for at least six weeks with two to three sessions per week. Each session will usually involve a group education session (for example, lectures, demonstrations or discussions), and followed by supervised exercise.

You may also be given a home exercise program to do on some of the days that you do not attend the rehabilitation program. The pulmonary rehabilitation program will teach you exercises that you should continue to do after the program finishes so that you can maintain the benefits.

At the start of the pulmonary rehabilitation program, your medical history will be documented and your baseline measures taken, such as oxygen levels, blood pressure, weight, a spirometry breathing test and questionnaires to assess your quality of life. Once a baseline has been determined, a specially tailored program of exercise can be designed for you which will also take into consideration any other conditions you may have (e.g. arthritis). At the completion of the 6 to 8 weeks you will be reassessed to measure the improvements.

The structured exercise sessions in pulmonary rehabilitation programs involve exercises using both your arms and your legs and will help you to be more active and improve your fitness. Exercise will include components of aerobic, strength, stretching and balance. These will be explained in further detail later in this module.

Pulmonary rehabilitation education sessions

The structured education sessions in pulmonary rehabilitation programs can cover many topics and will be dependent upon the availability of health professionals who are conducting the program. Topics can include:

- Information about your lungs and your lung condition and how to keep your lungs clearer.
- Understanding how your medicines work.
- How to breathe and how to coordinate your breathing and movements so that you can do more. You'll be shown how to pace yourself; be shown physical aids that can help you with tasks that you find difficult; and tips on how to make things like drying yourself off after a shower easier.
- How to identify worsening symptoms and when it's time to call your health care professional so you can reduce your chances of spending time in hospital.
- Managing stress, anxiety and depression.
- Important nutritional information.
- Understanding what support services are available to you in the community.

For those who are unable to attend a pulmonary rehabilitation program, you won't miss out because ALL this important information is contained within this online education program.

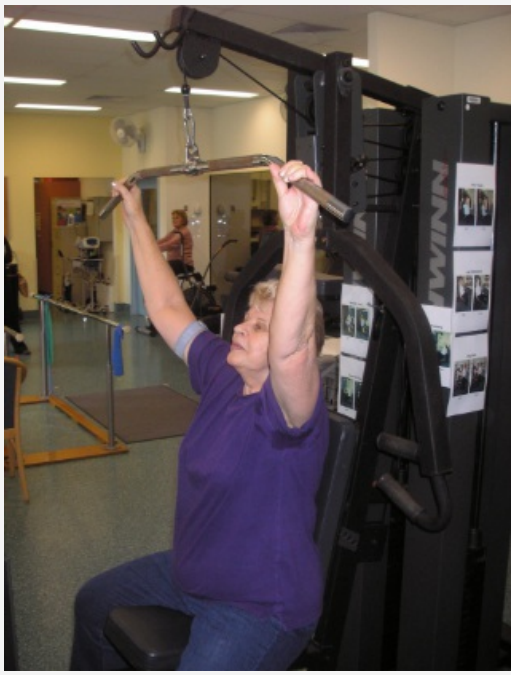
How to enrol in a pulmonary rehabilitation program

The criteria to enrol in a pulmonary rehabilitation program will vary among centres. Some pulmonary rehabilitation programs will require a specialist or doctor's referral, while others will allow you to enrol yourself. Some programs may have restrictions on who can be referred. Some programs may restrict enrolment to people who have previously quit smoking, whereas others may offer help to quit smoking as part of their program.

You should discuss the benefits of enrolling in a pulmonary rehabilitation program with your specialist lung doctor, GP, physiotherapist or respiratory nurse.

To find out more information about pulmonary rehabilitation, or where your nearest pulmonary rehabilitation program is located, contact Lung Foundation Australia (phone: 1800 654 301, or visit the *Lung Foundation website*.

Maintenance exercise

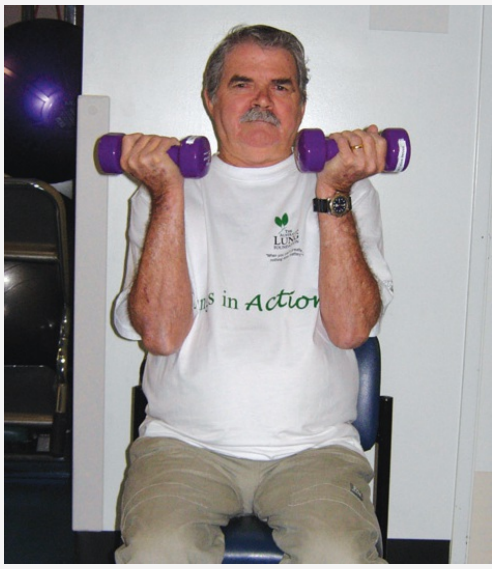


What you learn and practice during a pulmonary rehabilitation program ideally carries over into your daily life after the program finishes. The benefits from pulmonary rehabilitation, such as improvements in exercise performance/fitness or quality of life, have been shown to decline gradually over 12 to 18 months after completing these programs.

Therefore, to maintain the health benefits of pulmonary rehabilitation, it is very important to keep exercising. If your exercise program stops, you lose fitness and muscle strength very quickly.

To maintain the benefits you have achieved, it is very important that you continue with your exercise program. Many pulmonary rehabilitation programs offer a maintenance exercise program so that you can continue to exercise with others. Participants who have completed pulmonary rehabilitation can also access ongoing exercise in the community through the Lung Foundation's Lungs in Action programs (contact the Lung Foundation phone: 1800 654 301, or visit www.lungsinaction.com.au).

Lungs in Action



Lungs in Action is the community- based exercise maintenance program that is suitable for all people who have stable chronic lung conditions or stable chronic heart failure and who have completed rehabilitation. They are conducted by specially trained exercise professionals who provide a safe environment to continue your exercise using evidence based programs.

It is important to understand that programs in the community might look a little bit different to what you have been used to in pulmonary rehabilitation, especially if you were attending a multi-disciplinary program at a hospital. Ongoing community-based exercise programs are often run by only one person and they may be conducted in a community hall or local gym.

Often these programs won't have access to oxygen supplies and therefore if you are prescribed oxygen, you will need to have your own supply in order to attend the programs. This doesn't make the programs any less important to your health.

If you are attending this program, it is because you have reached a level of health and fitness where you can exercise safely in the community again, rather than requiring medical supervision. This is a great achievement!

What to expect from Lungs in Action

Due to the fact that Lungs in Action programs might be run in a variety of locations depending on what is available to the providers, sometimes the equipment might look different to what you are used to. However, if your pulmonary rehabilitation health professional has referred you to the program, they will feel confident that the program is appropriate for you.

There may be times when your Lungs in Action or maintenance exercise instructor will refer you back to pulmonary rehabilitation. This may occur after a hospitalisation or if you are experiencing any new symptoms. This is so that you can be restored to a level of conditioning that will enable you to continue exercising safely without medical supervision.

Talk to your doctor, physiotherapist or the Lung Foundation about local programs, such as Lungs in Action to help maintain your health benefits.

Home-based exercise program

It is important to keep up an exercise regime to maintain the benefits of pulmonary rehabilitation. If you are the type of person who is self-motivated and you responded well to the initial pulmonary rehabilitation program, you may be able to undertake a home-based program. Your pulmonary rehabilitation program providers can develop a home-based program with you, for you to follow at home.

Alternatively you can ask your doctor to refer you to a physiotherapist or accredited exercise physiologist to write you a home based exercise program.

Before starting a home-based exercise program

Before starting a home-based exercise program, you should:

- Talk to your doctor or relevant health care professional (e.g. Physiotherapist or Accredited Exercise Physiologist). They will help you set a plan to meet your current health concerns.
- Always choose activities you enjoy and vary them to help you stay motivated.
- Start slowly and build up gradually.
- Set goals to keep you on track and use strategies like an exercise diary to monitor your progress and symptoms.
- Have a safety plan in place: If living alone advise friends and family members of the times you would generally be exercising and ensure you have a working personal alarm system and in reach whilst exercising.
- Know the danger signs; become familiar with signs and symptoms which indicate you should not be exercising. This may include: nausea, chest pain, dizziness, feeling faint, extreme shortness of breath, excessive wheezing or coughing up blood.

The recommended guidelines for exercise

An exercise program should include:

An **aerobic program** that involves **walking**, as this is the most relevant exercise for daily living. Other types of aerobic exercise can include cycling on an exercise bike or even using a rowing machine. You could use these exercises to add variety to your program or when you have difficulties with walking.

A **strength training program**, which will keep your muscles strong and minimise some of the effects of having a chronic lung condition. Strength training should include exercises for your arms, torso and legs. Pelvic floor exercises are also very important as these can be weak due to persistent coughing.

Walking program

- When first starting out an interval program of smaller amounts of walking may be more achievable. Remember to always start slowly and build up gradually. For example, to start with, you may be only able to walk 1-2 minutes before needing a break. Over time you may be able to walk 5-10 minutes before needing to stop, or even longer.
- Rather than setting a pace based on speed set your walk pace on your Rating of Perceived Exertion/Breathlessness. You should be aiming to be exercising within the moderate to somewhat severe zone – that is 3-4 on the *Modified BORG Scale*.
- Aim for 20-30 mins of walking 4-5 times per week. Remember, however, the time can be broken up into smaller amounts if it is more achievable for you. For example you may walk three times throughout the day for three, 10 minutes walks throughout the day, or complete a 10 minute walk and a 15 minute walk per day.
- Starting slowly is important so it may take some time to reach the recommended amount of walking. To help you meet your goal, keep track of your progress and use an exercise diary or recording sheet.
- When commencing a new walking program plan your route prior to setting out. Make sure there are safe paths and areas to rest if needed.
- If possible recruit a friend or family member to walk with you. This will help with motivation and can make the walk safer and more enjoyable.

Strength training program

There are many different types of strength training programs available. Following is an example of a strengthening program. Please discuss with your physiotherapist or exercise physiologist about a suitable program for you to undertake.

- Aim to do three sessions per week of the following strengthening exercises with a day off between training.
- Aim to achieve muscle fatigue between 6 and 10 repetitions. If you have not achieved muscle fatigue after 10 repetitions, then you may need to either add arm or leg weights to the exercise or increase the weight of the arm or leg weights.
- If you find doing all the exercises at each session is too much, you can split the exercises in half and do them on alternate days. For example:
    - Day 1: You may choose to do the bicep curl, wall push up or bench press, lateral pull down, leg press or squat, and step ups (outlined under ‘Examples of strength training’).
    - Day 2: You may choose to do the shoulder press, sit to stand, standing row or seated row and lunge (outlined under ‘Examples of strength training’).

Examples of strength training: Arms

Skeletal muscle weakness is present in people with COPD and this weakness can affect leg and arm upper limb strength. Strengthening these muscles is important as these muscles are used on an everyday basis.

one | two | three | four | five | six | seven

1. Biceps curl

- **Hold the arm weight at your side**
- **Curl arm towards your shoulder**
- **Do 6 to 10 repetitions for each arm**
- **Do one to three sets**

Examples of strength training: Legs

one | two | three | four | five

1. Sit to stand

- **Sit on the edge of your chair**
- **Stand upright**
- **Do 6 to 10 repetitions**
- **Do one to three sets**
- **Progress to not using your arms**

Stretching program

A **stretching program** can help you to maintain your flexibility.

These stretches should be performed a few times each week. A stretching program should be performed before and after the aerobic and strength program.

Examples of a stretching program

1. Side neck stretch

- Slowly tilt head towards one shoulder
- Hold for 10 seconds
- Repeat two to three times
- Repeat toward other shoulder

2. Thoracic stretch

- Hold hands behind your back as shown
- Move your hands away from your back
- Hold for 20 seconds
- Repeat two to three times

3. Shoulder rotation

- Place hands on your shoulders as shown
- Slowly make forwards and backwards circles with your elbows
- Repeat five times each way

4. Shoulder stretch

- Gently pull on your elbow with your other hand until a stretch is felt in the shoulder
- Hold for 20 seconds
- Repeat two to three times

5. Triceps stretch

- Gently pull on raised elbow until a stretch is felt in the arm
- Hold for 20 seconds
- Repeat two to three times

6. Quadriceps stretch

- Pull your foot towards your buttock until a stretch is felt in the front of your thigh
- Hold for 20 seconds
- Repeat two to three times

7. Calf stretch

- Place hands on a wall or a bench

- Slowly lean forwards until you feel a stretch in the back of your calf
- Hold for 20 seconds
- Repeat two to three times

8. Side stretch

- Reach one arm straight over your head
- Lean to that side as far as is comfortable
- Hold for 20 seconds
- Repeat two to three times

9. Hamstring stretch

- Place your foot on a block
- Slowly lean forwards until you feel a stretch in the back of your thigh
- Hold for 20 seconds
- Repeat two to three times

Balance exercises

Balance retraining

As you get older, your balance may be affected. Some medicines can also make you feel dizzy, resulting in a loss of balance. Please discuss balance retraining with your physiotherapist or an accredited exercise physiologist as they can give you exercises that are appropriate to improve your balance.

Interval exercise program

You may find it better to exercise using an interval program with regular rest periods rather than trying to exercise continuously without any rests.

For example, an interval program might be: walk for one to two minutes, rest for one minute and then walk again. You may need to repeat this interval many times to achieve at least 20 minutes of total walking time. Don’t worry if you cannot achieve a total of 20 minutes the first time you exercise. You can aim to build up to this over time.

Interval exercise programs have many advantages. These include helping you to tolerate your exercise routine better as well as enabling you to exercise at a higher intensity, which can give you a greater improvement in your fitness.

How often should you exercise?

Exercise needs to be part of your weekly routine and you should plan enough time to fit this into your week.

You should try to exercise at least three days per week. This might seem like a challenge at first so you may need to work up to it but the effort is worth it as this amount of exercise per week will help you improve your fitness and better engage in the activities of daily living that you enjoy. The good news is, the more you exercise the easier it becomes so don’t give up!

How hard should you exercise?

When attending your pulmonary rehabilitation program the staff will assess your exercise tolerance at the start of the program. From this assessment, you will be prescribed a program at the right level for you. If being a prescribed a home-based program, similar assessments will be made before determining the best intensity of exercise for you.

How hard should you exercise?

There are a number of ways to measure exercise intensity. The fitness industry often uses heart rate measures. This is not recommended for people with chronic lung conditions, heart failure or other cardiac conditions because some medicines can affect heart rate, making this method unreliable.

The best method for measuring exercise intesity for people with chronic lung conditions is rating your breathlessness:

1. **Your level of breathlessness** can be measured during an activity and rated against the Borg or modified Borg scale (see the following diagram). The highlighted section is the target training intensity. Please note that for those with chronic heart failure, pulmonary hypertension or other conditions involving the heart or blood pressures, the target training intensity may be lower. You can discuss this with the person developing your home exercise program.
2. Exercising according to heart rate is not recommended for lung disease, heart failure or other cardiac conditions as medicines can affect heart rate and people who have these conditions may be limited by their breathlessness. Check with your doctor if your medications affect your heart rate.

These scales can be used to guide training intensity and to set personal goals for exercise. You should aim to exercise to a level where your breathlessness is at a moderate to somewhat severe level. This level is where you can still talk (but are huffing and puffing a bit), but cannot sing or laugh, and are not gasping for breath.

This is highlighted below:

Modified Borg scale – Levels of breathlessness

0	Not short of breath
0.5	Very, very slightly
1	Very slightly
2	Slightly
3	Moderately
4	Somewhat severe
5	Severe
6	
7	Very severe
8	
9	Very, very severe
10	Maximal

Borg scale – Levels of Breathlessness

9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard
16	
17	Very hard
18	
19	Very, very hard
20	

Adapted from: Borg G. Perceived exertion as an indicator of somatic stress. Scand J Rehab Med. 1970;2:92-9; Borg G. Psychophysical bases of perceived exertion. Med Sci Sports Exer. 1982:14:377-81; Mahler D. The measurement of dyspnoea during exercise in patients with lung disease. Chest. 1992;101:242-7.

General precautions

- Avoid strenuous exercise if you have a fever, an infection or the common cold.
- Restart your program at a lower intensity if your exercise routine is interrupted.
- Do not exercise immediately after a big meal.
- Do not exercise in extreme heat or cold.
- Take your bronchodilators (inhaled reliever medications that open the breathing tubes or airways) before exercising.
- Use recovery positions to manage breathlessness.

Danger signs

If you experience any of the following symptoms when you are exercising, stop and call 000:

- Chest pain or pain radiating up into your jaw or down your left arm.
- Feeling faint.
- Extreme shortness of breath.

If you experience any of the following symptoms when you are exercising, stop and rest immediately:

- Dizziness.
- Excessive wheezing.
- Extreme pain.
- Coughing up blood.
- Palpitations.
- Blurred vision.
- Nausea.
- Feeling of palpitations or a racing heart.

None of these symptoms are normal and should prompt you to seek medical attention.

NB. If you have diabetes, heart failure, asthma, angina or any other diseases that may affect your ability to exercise discuss these with your health professional to ensure you know the danger signs related to your condition.

Download the 'Danger Signs' Fact Sheet here.

Exercising at Home

- Exercise regularly – aim for at least three sessions per week.
- Aim to exercise for at least 20 to 30 minutes per session. However, this can be broken into smaller chunks of time that are more achievable.
- Aim for moderate intensity.
- Wear comfortable clothing and footwear.
- Ensure you stay adequately hydrated while exercising.

Some other activities you can choose

If you are bored with walking or are looking for variety, you can always consider alternative forms of exercise that might interest you.

You might like to consider gardening, bush walking, dancing, tai chi, playing golf, lawn bowls and/or water-based exercise such as swimming, walking in water or aquarobics.

If you have heart failure, angina or any other diseases that may affect your ability to exercise be sure to speak with your health professional before taking on any new physical activities.

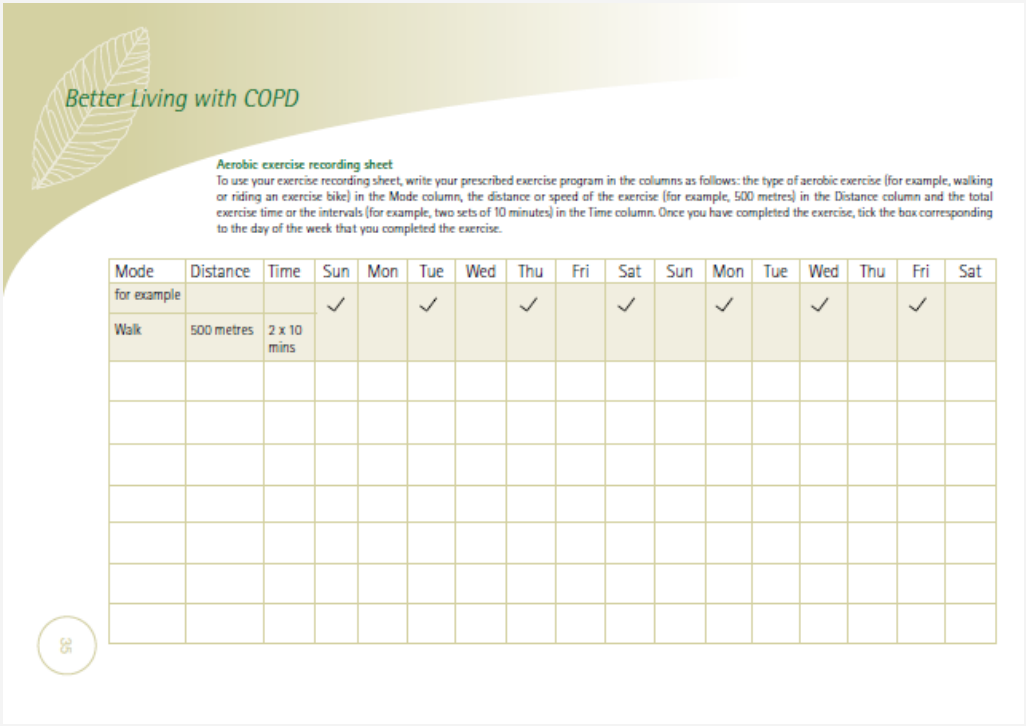
Aerobic exercise recording sheet

To use your exercise recording sheet, write your prescribed exercise program in the columns as follows:

- the type of aerobic exercise (for example, walking or riding an exercise bike) in the Mode column,
- the distance or speed of the exercise (for example, 500 metres) in the Distance column, and
- the total exercise time or the intervals (for example, two sets of 10 minutes) in the Time column.

Once you have completed the exercise, tick the box corresponding to the day of the week that you completed the exercise.

Click here to download the *Aerobic Exercise Recording Sheet*.



Better Living with COPD

Aerobic exercise recording sheet

To use your exercise recording sheet, write your prescribed exercise program in the columns as follows: the type of aerobic exercise (for example, walking or riding an exercise bike) in the Mode column, the distance or speed of the exercise (for example, 500 metres) in the Distance column and the total exercise time or the intervals (for example, two sets of 10 minutes) in the Time column. Once you have completed the exercise, tick the box corresponding to the day of the week that you completed the exercise.

Mode	Distance	Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
for example			✓		✓		✓		✓		✓		✓		✓	
Walk	500 metres	2 x 10 mins														

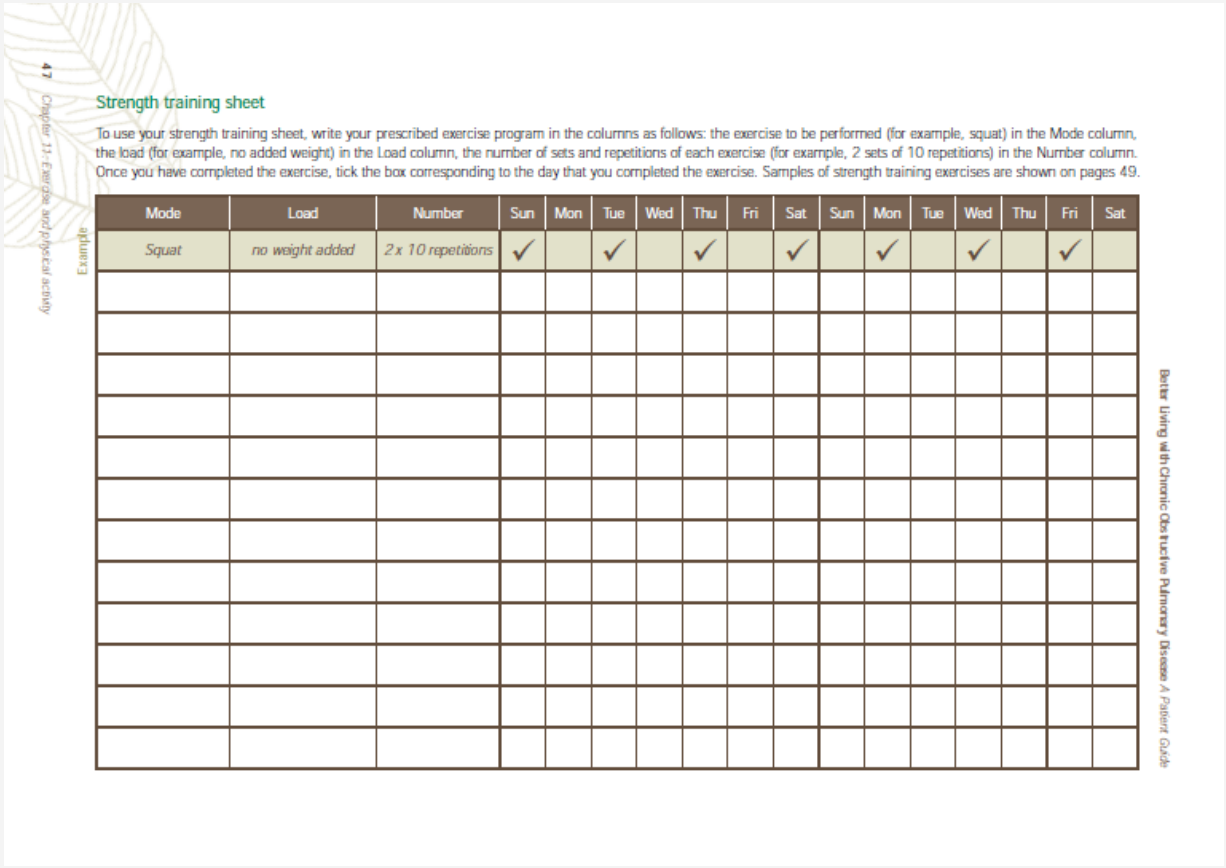
Strength training sheet

To use your strength training sheet, write your prescribed exercise program in the columns as follows:

- the exercise to be performed (for example, squat) in the Mode column,
- the load (for example, no added weight) in the Load column, and
- the number of sets and repetitions of each exercise (for example, 2 sets of 10 repetitions) in the Number column.

Once you have completed the exercise, tick the box corresponding to the day that you completed the exercise.

Click here to download the *Strength Training Sheet.*



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Strength training sheet

To use your strength training sheet, write your prescribed exercise program in the columns as follows: the exercise to be performed (for example, squat) in the Mode column, the load (for example, no added weight) in the Load column, the number of sets and repetitions of each exercise (for example, 2 sets of 10 repetitions) in the Number column. Once you have completed the exercise, tick the box corresponding to the day that you completed the exercise. Samples of strength training exercises are shown on pages 49.

Mode	Load	Number	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Squat	*no weight added*	*2 x 10 repetitions*	✓		✓		✓		✓		✓		✓		✓	

Example

Better Living with Chronic Obstructive Pulmonary Disease: A Patient Guide

General FAQs

What if I am on oxygen?

If you have low oxygen levels in the blood and are prescribed oxygen therapy, keep wearing your oxygen so you can tolerate the exercise more easily.

When exercising, be careful to avoid tripping on your oxygen tubing.

Never turn your oxygen up higher than prescribed for exercising unless you have discussed this with your Health Care team (doctor, nurse, physiotherapist or exercise physiologist) first.

> Please note – oxygen isn't prescribed for breathlessness alone.

What if I am unwell?

If you find it hard to do your usual exercise program, this can be an early warning sign that you are becoming ill.

When you are unwell, your body is working harder to fight off the infection and your breathing may become more difficult. Therefore, you should not be exercising as hard as you would normally or at all.

What should I do to prevent losing my fitness after I have been unwell or experienced a flare up?

The severity of a flare up will affect the exercise level you are able to do. You may be so unwell you need to rest, so start exercising again as soon as you able to. Remember, you may need to restart at a lower level of exertion.

Generally, the aim is not to exercise as hard as usual. Instead, you could:

- Walk at a slower speed (that you can tolerate) and use more rest breaks.
- Ride an exercise bike rather than going for a walk. You are moving less body weight while riding an exercise bike; therefore, it may be easier to do.
- Do a strength training program for your arm and leg muscles, perhaps with lighter weights.

It is important for you to resume an exercise programme promptly following a flare up so as not to lose the fitness gains you have already achieved and to prevent re-admissions to hospital. In some cases, you may need to return to pulmonary rehabilitation.

When returning to your exercise program after being unwell, base what you do on your level of breathlessness or fatigue and

increase as you feel able.

How can I maintain my fitness?

As discussed earlier, physical fitness is important for improving your health.

There are a variety of options available that can assist you in maintaining your fitness, including:

1. Enrolling in a structured and supervised maintenance exercise program

Following the completion of your pulmonary rehabilitation program, you may enrol in a maintenance exercise program. For information on a maintenance exercise program, or the Lung Foundation's Lungs in Action classes, contact:

- the Lung Foundation (phone: 1800 654 301) for maintenance programs in Western Australia,
- or call 1800 654 301 or visit www.lungsinaction.com.au for Lungs in Action Programs in other Australian States and Territories.

2. Joining a community-based walking group

These walking groups are based at your local parks, beaches or shopping centres. For further information regarding the walking groups available in your area, contact your local council, your local shopping centre or the Lung Foundation Australia (phone: 1800 654 301, or www.lungfoundation.com.au).

3. Asking your doctor for a referral

Ask your doctor to refer you to a physiotherapist or an accredited exercise physiologist to provide some additional supervised sessions.

4. Joining a local gym or community group

This can provide you with some support while you continue to exercise regularly.

5. Exercising regularly with someone else

This is another simple way to commit to maintaining your fitness and exercising regularly. This option can work quite well, providing the individuals have similar exercise goals.

6. Participating in a home exercise program

Some people may prefer to exercise on their own. A home exercise program can be effective if the person makes this part of their daily routine. Some people find using an exercise recording sheet or an exercise diary can help to make this a regular commitment.

Why is healthy eating important for people who have lung conditions?

Lung conditions increase the risk of poor nutrition, weight loss and reduced muscle strength because of:

- Increased energy needs. Studies have shown that people who have chronic lung conditions expend 25% to 50% more energy than healthy people due to the increased work of breathing and fighting chest infections.
- Poor appetite, or for some people on steroids, a bigger appetite.
- Increased need for certain vitamins, minerals and antioxidants.
- A lack of energy to shop, cook and eat meals.
- Poor malnutrition adversely affects lung structure, respiratory muscle strength and endurance.
- If you are overweight, you are likely to become more short of breath during activities such as walking up stairs or carrying the groceries. Carrying additional body weight increases the risk of high blood pressure, high cholesterol and diabetes.

What is healthy eating?

The Australian Dietary Guidelines helps people to choose wisely from a wide range of foods and drinks. A selection of servings from each of the five food groups each day will provide the energy, vitamins, minerals and antioxidants your body needs to maintain good health.

The recommended number of servings for each food group is given in this table.

	Grain (cereal) foods
	3 to 6*
	1 slice (40 grams) of bread or ½ medium (40 grams) roll or flat bread or ½ cup (75-120 grams) cooked rice, pasta, noodles, barley, buckwheat, semolina, polenta, bulgar or quinoa) or ½ cup (120grams) cooked porridge or 2/3 cup (30 grams) wheat cereal flakes or 1/4 cup (30 grams) muesli or 3 (35 grams) crispbreads or 1 (60 grams) crumpet or 1 small (35 grams) English muffin or scone
	Vegetables and legumes
	5 to 6*
	1/2 cup cooked green or orange vegetables (for example, broccoli, spinach, carrots, pumpkin) or ½ cup cooked dried or canned beans, peas or lentils or 1 cup green leafy or raw salad vegetables or ½ cup sweet corn or ½ medium potato or other starchy vegetables (sweet potato, taro or cassava) or 1 medium tomato
	Fruit
	2*
	1 medium piece of fruit (for example, an apple, banana, orange or pear) or 2 small apricots, kiwi fruits or plums or 1 cup diced or canned fruit (no added sugar) or only occasionally: 125ml (1/2 cup) fruit juice (no added sugar) or 30 grams dried fruit (for example, 4 dried apricot halves, 1 ½ tablespoons of sultanas)
	Milk, yoghurt, cheese and/or alternatives
	2 1/2 to 4*

	1 cup (250ml) fresh, UHT long life, reconstituted powdered milk or buttermilk or ½ cup (120ml) evaporated milk or 2 slices (40grams) or 4 x 3 x 2cm cube (40g) of hard cheese, such as cheddar or ½ cup (120 grams) ricotta cheese or ¾ cup (200 grams) yoghurt or 1 cup (250ml) soy, rice or other cereal drink with at least 100mg of added calcium per 100ml
	Meat, poultry, fish, eggs, tofu, nuts, seeds and legumes
	2 to 3*
	65 grams cooked lean red meats such as beef, lamb, veal, pork, goat or kangaroo (about 90-100 grams raw) or 80grams cooked lean poultry such as chicken, turkey (100 grams raw) or 100 grams cooked fish fillet (about 115 grams raw) or one small can of fish or 2 large (120 grams) eggs or 1 cup (150 grams) cooked or canned legumes/beans such as lentils, chick peas or split peas or 170 grams tofu or 30 grams nuts, seeds, peanut or almond butter or tahini or other nut or seed paste

**Number of serves is dependent on age, gender, height, weight and physical activity levels, and also whether you are pregnant or breastfeeding.*

The five food groups

It is recommended you should enjoy a wide variety of nutritious foods from these five food groups every day:

- Plenty of vegetables of different types and colours, and legumes/beans
- Fruit
- Grain (cereal) foods, mostly wholegrain and/or high fibre cereal varieties, such as breads, cereals, rice, pasta, noodles, polenta, couscous, bulgar, oats, quinoa and barley
- Lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans
- Milk, yoghurt, cheese and/or their alternatives, mostly reduced fat

And drink plenty of water (if not on a fluid restriction).You should aim for 2L of fluid each day unless you have been told by your medical team to restrict your fluid intake to a particular amount.

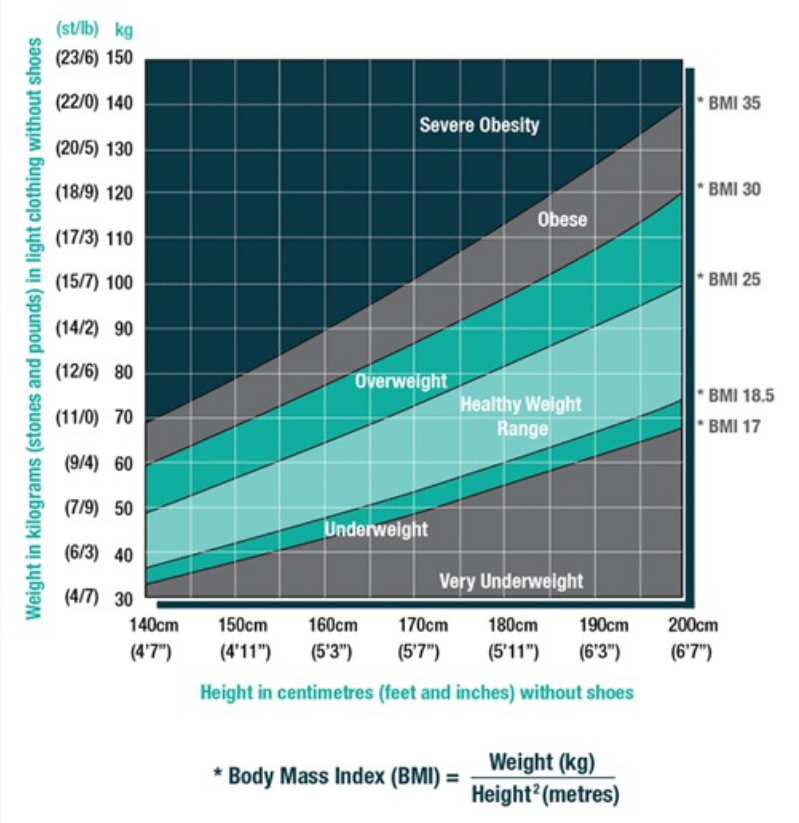
Australian Government National Health and Medical Research Council. Department of Health and Ageing. Australian Dietary Guidelines 2013. Available from: http://www.eatforhealth.gov.au/

What is a healthy body weight for me?

You can use the following graph to work out your Body Mass Index (BMI), which will indicate whether you are underweight, overweight or within your healthy weight range.

To work out your BMI, find your weight (in kilograms) along the left side of the graph and your height (in centimetres) along the bottom, then find where the two lines join in the graph.

A waist measurement is another way for adults to measure their weight-related health risk. A waist measurement which is higher than 94cm for men and higher than 80cm for women can increase the risk of chronic diseases, especially if your BMI is more than 25 as well.



Australian Government. National Health and Medical Research Council. Department of Health and Ageing. Australian Dietary Guidelines 2013. Available from:
http://www.eatforhealth.gov.au/

Underweight and overweight meal plans

If you are underweight, your body has less energy and nutrient stores to help it do its work.

Being underweight can cause your muscles to become weak which may limit your ability to complete the activities you enjo can increase your risk of falls. The respiratory muscles that help you to breathe can also be affected and they may fatigue quickly.

Being underweight can have a negative impact on your lung function, make it more difficult to exercise and possibly increa your risk of infection.

Issues with swallowing and breathlessness can contribute to being underweight and are both addressed in detail in this education program.

What if you are too tired to shop, cook, or eat?

When you are tired or unwell, it can be difficult to make sure you are eating enough. However, this is usually the time when good nutrition is most important.

Tips for when you are too tired to shop, cook, or eat:

- Remember to have a rest before meals.
- Eat slowly and chew foods well.
- Breathe evenly while chewing and sit quietly for 30 minutes after eating.
- Stop eating if you need too. Relax and take a few deep breaths before continuing to eat.
- Eat meals when your symptoms are best controlled.
- Try having five or six smaller meals or snacks rather than three large meals per day.
- Make all meals and snacks as nourishing as possible – make every mouthful count.
- Consider using a home delivered meal service
- If nauseated, try cold meals instead of hot.
- Softer foods are often better tolerated (for example, stews, mashed vegetables, mince or scrambled eggs).
- Never miss a meal. Try a smaller snack or nourishing drink if you can’t face a big meal.
- Prepare extra meals when you are feeling good and freeze for later use.
- If you have been prescribed oxygen, you could use this while eating your meal.
- Stock up the kitchen with low cost, healthy convenience meals for the times you are not feeling great. Bottled, frozen and tinned foods can be nutritious (remember to read the labels to see if it is a healthy food option). They are also easy to prepare and easy to stock up on when you are feeling well.

Simple to prepare meals

- Scrambled eggs on toast
- Baked beans or tinned spaghetti on toast
- Tinned soup with toast
- Frozen pre-prepared meal
- Peanut butter or avocado on toast
- Sandwich with meat, cheese, fish or egg and salad filling
- Rice sachet with flavoured tinned tuna/canned beans and steamed frozen vegetables
- Frozen quiche with side of steamed vegetables

Nutritious snacks

- Yoghurt
- Custard
- Dried fruit
- Nuts
- Cheese and crackers
- Raisin toast or fruit buns
- Milk drinks Nestlé MILO®, Ovaltine or fruit smoothies
- Milkshakes

What about dairy products?

Some people with lung conditions believe that milk increases mucus production. Scientific studies have not backed up this claim.

Milk can coat the back of the throat and make mucous secretions feel thicker. Rinsing the mouth with water or soda water after milky drinks can help prevent this.

Dairy foods are encouraged as they provide a rich source of calcium. Many people with lung conditions may require long-term steroid medication – this can increase the loss of calcium from the bones. The loss of calcium from the bones increases the risk of osteoporosis and bone fractures.

To maintain your bone strength and protect against osteoporosis:

- Ensure that your calcium intake is high (three to four serves of low-fat calcium rich foods each day).
- Increase your intake of foods that are sources of vitamin D, which helps absorb dietary calcium. Sunlight helps to produce vitamin D in your skin; however, make sure you protect yourself from UV rays during the hottest part of the day. People in southern states may need more sun during winter. Check with your doctor.
- Limit your intake of salt, caffeine and alcohol as these substances increase calcium excretion.

What about other supplements?

Omega-3 polyunsaturated fatty acids are known to be beneficial in helping reduce lung inflammation in people who have chronic obstructive pulmonary disease.

The best sources of omega-3 polyunsaturated fatty acids are:

- Oily fish (for example, mackerel, sardines, herring, salmon, trout, tuna and mullet):
  - Consume at least two fish meals per week.
- Canola oil, soybean oil, flaxseed oil and mustard seed oil.

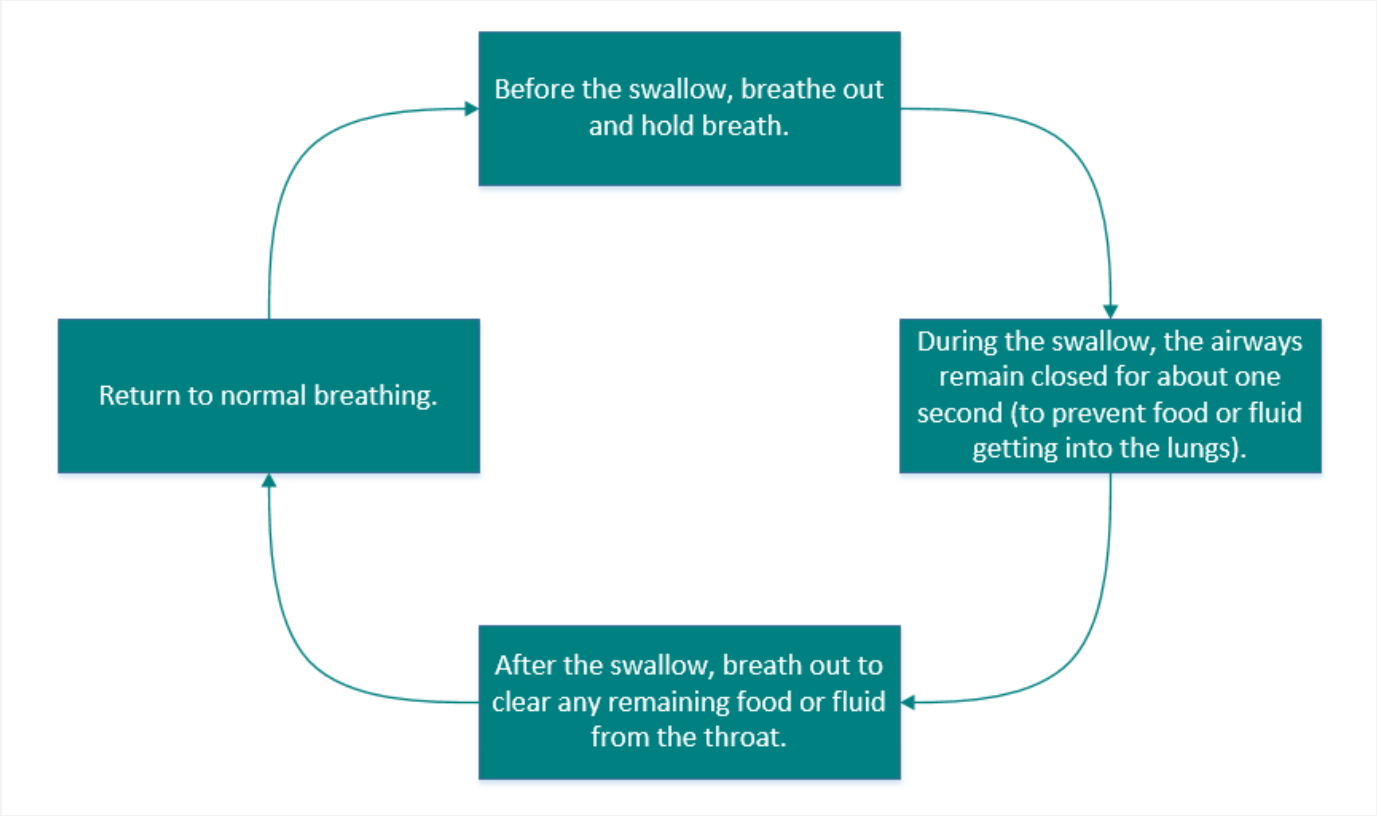
How are swallowing and breathing related?

Swallowing is a highly complex process involving the coordination of more than 26 muscles and six nerves.

For this process to occur smoothly, the body must also co-ordinate the breathing cycle during the swallow. Swallowing interrupts breathing. At the exact moment you swallow, you must momentarily hold your breath to close the airway. Closing the airway prevents any food or fluid from entering the lungs.

The normal swallow–breathing cycle (shown in steps 1 to 4 in the following diagram) should only take a few seconds to complete.

The swallow-breathing cycle



How does COPD affect your breathing and swallowing?

Breathing

COPD can cause you to breathe faster, which means that your breathing muscles can become tired and weak. Your coughing reflex can also become weak. As breathing and swallowing are related, a weak cough reflex can cause problems with swallowing.

Information on COPD and breathlessness can be found here.

Swallowing

Swallowing and breathing are related. Many people with breathing problems also experience difficulty co-ordinating breathing and swallowing while eating and drinking.

During mealtimes, you may use the swallow–breathing cycle more than 100 times. People who have COPD often become short of breath during mealtimes because of the breath-holding that occurs during the swallowing–breathing cycle. The more short of breath you become, the more likely you will find it difficult to co-ordinate your breathing and swallowing.

Swallowing problems (called *dysphagia*) can occur because the need for oxygen will always overrule the need to protect the lungs from food or fluids.

Swallowing problems and aspiration

If breathing timing is even slightly changed during swallowing, the airway may not be fully closed and food or fluid may be breathed into the lungs. This is called aspiration and may lead to chest infections or pneumonia.

Normally, when food or fluid ‘goes down the wrong way’ (aspirated), you automatically cough up the food or drink. As people who have COPD often have a weakened cough reflex, they may not be able to clear all the food or fluid out of their breathing tubes or airways.

Aspiration is a symptom of swallowing problems. The extent of the swallowing problems can change over time and may depend on how bad your breathing problems are at the time (and other medical factors).

As many as 20% to 40% of people who have COPD, experience aspiration (particularly during a flare up). Swallowing problems are often under diagnosed in people who have COPD because silent aspiration can be difficult to detect.

Swallowing problems and nutrition

As you are using more energy to maintain your breathing during chewing and swallowing, eating and drinking can become more tiring. As a result, you may take longer to complete your meals and you may eat and drink less. Eating and drinking less could cause you to miss out on important nutrients and lose weight.

How can you tell if you are experiencing swallowing problems?

Read the following two lists of the common signs of swallowing problems. Take note of any sign that you experience when eating and drinking:

List 1

- Coughing or choking after swallowing food or drinks.
- Increased shortness of breath during meals.
- Wet or ‘gurgly’ voice after swallowing.
- Feeling like food is getting stuck in the throat.
- Difficulty chewing foods.
- Taking longer to start a swallow.

List 2

- Food or drink going into your nose.
- Food or drink remaining in the mouth after swallowing.
- Reflux or regurgitation.
- Taking much longer to finish meals.
- Getting more fatigued after eating and drinking.
- Unexplained weight loss.
- Unexplained temperatures or changes in sputum colour.

If you experience two to three items (particularly those in List 1), or are concerned about your swallowing, ask your GP (or respiratory specialist) to refer you to a speech pathologist who can assess your swallowing. Some pulmonary rehabilitation programs may have speech pathologists as part of their multi-disciplinary team.

How speech pathologists can help you with swallowing problems

Speech pathologists are trained to assess, diagnose and treat swallowing and communication problems. They can:

- Assess your current swallowing function and determine the cause of your swallowing problem.
- Recommend appropriate foods and fluids, as well as strategies to improve swallowing safety.
- Start you on swallowing therapy, if appropriate.
- Identify the need for further investigations.
- Liaise with other health care professionals.

Strategies you can use to help manage swallowing problems

If you are experiencing swallowing problems, a speech pathologist can give you specific advice to help you eat and drink safely.

Even if you are not experiencing swallowing problems, you should be aware that there are a number of strategies that can be used to protect the lungs. This knowledge could help you if you do encounter swallowing problems (for example, if you have a flare up). These strategies include:

- Try not to eat or drink when you are breathless.
- Always sit upright in a supported chair when you are eating and drinking.
- Eat slowly and take small mouthfuls.
- Select foods that are soft and easy to chew or add sauce or gravy to moisten foods.
- If worn at home, oxygen prongs should not be removed during meals.
- Have smaller, more frequent meals and take a break during your meal if you become too short of breath.
- Try to breathe out immediately after you swallow to help clear any food or fluid left in your throat.
- Alternate between sips of fluids and solids.
- Try swallowing twice per mouthful.
- Try to minimise talking during mealtimes to reduce the exertion on your breathing.
- Remain upright for 30 minutes after your meal.
- If you experience reflux or heartburn, discuss anti-reflux medication with your GP.

Managing swallowing problems due to dry mouth

People who have COPD often experience dry mouth. Dry mouth can be related to oxygen use (via a mask or nasal prongs), use of a CPAP machine, mouth breathing or medications.

Having a dry mouth is uncomfortable, can increase the risk of dental problems and can cause swallowing problems. To reduce dry mouth symptoms:

- Sip fluids frequently throughout the day.
- Always rinse and gargle after taking your medication or inhalers.
- Use artificial saliva products (for example, Biotene® or Oralube®), available at your local pharmacy, or other oral lubricants (for example, grape seed oil flavoured with peppermint essence).
- Suck sugar free lollies or chew sugar-free gum.
- Avoid medicated lozenges or alcohol-based mouthwashes.
- Reduce your intake of caffeine, alcohol, spicy foods and avoid smoking.
- Regularly brush your teeth and gums (or clean your dentures) to reduce bacteria build up in your mouth.
- Have regular dental check-ups.
- Talk to your GP about reviewing the medications you are taking.

To overcome difficulties with swallowing medications, try cutting or crushing your medications and mixing them with yoghurt, custard or jam before swallowing them. However, as not all medications can be cut or crushed, you should always check with your GP or pharmacist first.

Conclusion

The aim of this module was to provide you with information on how exercise, pulmonary rehabilitation, and a balanced diet can help you to control your COPD.

You should now understand:

- How exercise and physical activity can help you;
- The purpose of pulmonary rehabilitation and how these programs can help you to manage your COPD;
- How Lungs in Action can help you to maintain your exercise program;
- Examples of strength training;
- Examples of stretching;
- The precautions to be aware of when exercising;
- Your other options for staying active;
- How to keep track of your progress;
- Why healthy eating is important for those with COPD;
- What foods to eat to create a healthy and balanced diet;
- The best foods to eat if you are underweight;
- The best foods to eat if you are overweight; and
- How to manage your swallowing problems.

You can revisit this module at any time by selecting Module Four from the dashboard.