Better Living with Chronic Obstructive Pulmonary Disease
A Patient Guide

Second Edition
November 2012

“When you can’t breathe...nothing else matters”™
Exercise and physical activity

This chapter will help you to understand:
- Why it is important to maintain or improve your fitness.
- How you can benefit from exercise and physical activity.
- What the recommended guidelines for exercise are.
- What to do if you are unwell.
- How you can maintain your fitness level.

Why is it important to maintain or improve your fitness?
People who have chronic lung conditions are often less active, can have reduced fitness and reduced muscle strength. By exercising regularly, a person’s fitness and muscle strength can be maintained or improved.

People who have chronic lung conditions and who exercise regularly, such as by walking or cycling for more than two hours per week, can improve their health. As a result, they will feel better, keep well and are more likely to stay out of hospital.

How can you benefit from exercise and physical activity?
Exercise will help to:
- Make your heart stronger and healthier.
- Improve your arm, body and leg muscle strength.
- Improve your breathing.
- Clear sputum from your lungs.
- Reduce your breathlessness during daily activities.
- Increase the number of activities that you are able to do each day or each week.
- Improve your balance.
- Improve your mood and make you feel more in control.
- Make you more independent.
- Assist your weight control.
- Improve and maintain your bone density.

The benefits from pulmonary rehabilitation, such as improvements in exercise performance 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.

Talk to your doctor, physiotherapist or The Australian Lung Foundation about local programs available to you to help maintain your exercise program, such as the Lungs in Action classes.

People who exercise regularly can reduce their need for hospital admission.
What are the recommended guidelines for exercise?

What is involved in an exercise program?
An exercise program should include:

1. An aerobic program which involves a walking program as this is the most relevant exercise for daily living. Other types of aerobic exercise can include cycling, riding 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.

2. A strength training program, which will keep your muscles strong and prevent some of the effects of having a chronic lung condition. Strength training should include exercises for your arms, torso and legs (see page 49).

3. A stretching program, which can help you to maintain your flexibility (see page 48).

Exercise guidelines
- Exercise regularly – aim for 4 to 5 sessions per week.
- Aim to exercise for at least 20 to 30 minutes per session.
- Aim for moderate intensity.
- Wear comfortable clothing and footwear.
- Ensure you drink enough fluids while exercising.

Getting started with your exercise program
You may find it better to exercise using an interval program rather than trying to exercise continuously.

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.

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 should give you a greater improvement in your fitness.

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 reduce breathlessness (see page 54).

What if I am on oxygen?
If you have low oxygen levels in the blood and are prescribed oxygen therapy, then when you exert yourself, wearing oxygen can help you tolerate the exercise more easily.

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

Never turn your oxygen up higher than prescribed for exercising unless you have discussed this with your doctor or physiotherapist first.

An exercise program is an important part of your management of your respiratory condition.
How often should you exercise?
Exercise should be part of your weekly routine, and you should plan enough time to fit this into your week. You should exercise for a minimum of 4 to 5 days per week. Anything less will not allow you to gain health benefits or improve your fitness.

How hard should you exercise?
When attending your pulmonary rehabilitation program, your physiotherapist 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.

There are many ways to prescribe a training intensity for your exercise program:

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.

2. Your physiotherapist can set you an exercise program at 60% to 80% of an exercise test. The exercise test, such as a six minute walking test or shuttle walking test, may have been undertaken at the start of your program.

3. Exercising at a percentage, such as 60% to 80%, of your maximum heart rate. This method is generally not the best way to measure training intensity for people who have lung conditions as usually they are limited by their breathlessness.

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 as highlighted in the scale below.

<table>
<thead>
<tr>
<th>Borg scale</th>
<th>Modified Borg scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 - Very very slightly</td>
<td>0 - Not short of breath</td>
</tr>
<tr>
<td>7 - Very slightly</td>
<td>9 - Very slightly</td>
</tr>
<tr>
<td>8 - Slightly</td>
<td>10 - Light</td>
</tr>
<tr>
<td>9 - Moderately</td>
<td>11 - Somewhat hard</td>
</tr>
<tr>
<td>10 - Somewhat severe</td>
<td>12 -</td>
</tr>
<tr>
<td>11 - Severe</td>
<td>13 - Hard</td>
</tr>
<tr>
<td>12 - Very severe</td>
<td>14 - Very very hard</td>
</tr>
<tr>
<td>13 - Very very severe</td>
<td>15 - Maximal</td>
</tr>
<tr>
<td>14 - Very very hard</td>
<td>16 -</td>
</tr>
<tr>
<td>15 - Maximal</td>
<td>17 - Very very hard</td>
</tr>
<tr>
<td>16 - Very very severe</td>
<td>18 -</td>
</tr>
<tr>
<td>17 - Very very hard</td>
<td>19 -</td>
</tr>
<tr>
<td>18 - Very very severe</td>
<td>20 -</td>
</tr>
<tr>
<td>19 - Very very hard</td>
<td></td>
</tr>
<tr>
<td>20 - Maximal</td>
<td></td>
</tr>
</tbody>
</table>


What are some other activities that you can choose?
If you are bored with walking or are looking for variety, you can always consider other alternatives that might interest you. You might like to consider gardening, bush walking, dancing, Tai Chi, playing golf, lawn bowls and water-based exercise.

Note: Those with heart failure should always discuss exercise options with their health care team.
What if you are 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.

Why do you lose your fitness when you are unwell?

People who have COPD and who are unwell or have a flare up of their symptoms:
- Are less active in their day and spend more time sitting or lying down, and less time standing and walking than they would normally do.
- Lose muscle strength and conditioning as a result of this inactivity.

After an illness, you can take several months to regain your fitness level and muscle strength. This is true of all people who experience an illness and subsequent loss of fitness. But it is particularly true for those with COPD.

What should you do to prevent losing your fitness after a flare up?

The severity of a flare up will affect the exercise level you are able to do.

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 should be easier to do.
- Do a strength training program for your arm and leg muscles.

It is important for you to resume an exercise program promptly following a flare up.

How can you maintain your fitness?

As discussed earlier, maintaining your physical fitness has been shown to improve your health.

By completing a pulmonary rehabilitation program, you should have established an exercise routine that is suitable for you. Once you have completed your pulmonary rehabilitation, it is important to continue with your exercise routine.

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

1. Enrolling in a maintenance exercise program following the completion of your pulmonary rehabilitation program. For information on a maintenance exercise program, such as The Australian Lung Foundation’s Lungs in Action classes, contact: The Australian Lung Foundation (phone: 1800 654 301, or www.lungfoundation.com.au).

2. Joining a community-based walking group.

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

3. Joining a local gym or community group.

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

4. Exercising regularly with someone else.

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

5. Participating in a home exercise program.

   Some people may prefer to exercise on their own. A home exercise program can be effective if you make this part of your daily routine. Using an exercise recording sheet or an exercise diary can help to make this a regular commitment (see the following aerobic exercise recording sheet and strength training sheet on pages 46 and 47, respectively).
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.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Distance</th>
<th>Time</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walk</td>
<td>500 metres</td>
<td>2 x 10 mins</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Example
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.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Load</th>
<th>Number</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thu</th>
<th>Fri</th>
<th>Sat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squat</td>
<td>no weight added</td>
<td>2 x 10 repetitions</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Example
Examples of a stretching program

These stretches should be performed a few times each week. A stretching program should be performed before and after the aerobic and strength 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. **Shoulder rotation**
   - Place hands on your shoulders as shown
   - Slowly make forwards and backwards circles with your elbows
   - Repeat five times each way

3. **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

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. **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
7. 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

8. 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

9. 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

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

- Aim to do three sessions per week of the following strengthening exercises.
- 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.
  - Day 2: You may choose to do the shoulder press, sit to stand, standing row or seated row and lunge.

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

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
- If too difficult, alternate arms

Balance retraining
As you get older, your balance may be affected. As a result, you may find it useful to do some balance retraining exercises.

Please discuss balance retraining with your physiotherapist as they can give you exercises that are appropriate to strengthen your balance.
2. Shoulder press
- From the start position (sitting or standing), press the arm weight upwards to straight arms
- Do 6 to 10 repetitions
- Do one to three sets
- Avoid this exercise if you have shoulder problems

3. Wall push up
- From the start position, lean into the wall then push up away from wall
- Do 6 to 10 repetitions
- Do one to three sets
- To progress, move feet away from the wall

4. Bench press
- From the start position, press the arm weight upwards to straight arms
- Do 6 to 10 repetitions
- Do one to three sets

5. Standing row
- Lean forward onto a chair or bench
- From the start position, lift the arm weight up to your chest
- Do 6 to 10 repetitions
- Do one to three sets

6. Seated row
- From the start position and while keeping your back upright, pull your arms to your chest
- Do 6 to 10 repetitions
- Do one to three sets

7. Lateral pull down
- Lean back slightly
- Pull bar down towards the front of your chest
- Do 6 to 10 repetitions
- Do one to three sets
8. 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

9. Squat
   - Stand with your legs shoulder width apart
   - Lower your body as if you are sitting on a seat
   - Do not bend your knees beyond 90 degrees
   - Do 6 to 10 repetitions
   - Do one to three sets
   - To progress, hold hand weights and repeat exercise

10. Leg press
    - From the start position, press legs forward until knees are straight
    - Do 6 to 10 repetitions
    - Do one to three sets

11. Step ups
    - This activity can be either a strength or an aerobic exercise.
    - For strength:
      - Do 6 to 10 repetitions
      - Do one to three sets
      - To progress hold hand weights and repeat exercise
    - For aerobic:
      - Do a 30 second set of step ups, then rest for one minute
      - Repeat 5 to 10 times depending upon your fitness

12. Lunge
    - Stand with a wide stride
    - Bend both legs until forward thigh is parallel with the ground
    - Do 6 to 10 repetitions
    - Do one to three sets
    - To progress, hold hand weights and repeat exercise