

EXERCISE AND CYSTIC FIBROSIS

Published by the Cystic Fibrosis Trust, UK and written by Mary Dodd, Consultant Physiotherapist, Manchester Adult CF Centre, Wythenshawe Hospital, Manchester.

The health benefits of exercise for the general population are well publicised and there is medical and public concern about the present inactivity of the nation's children and teenagers. Exercise in Cystic Fibrosis has been extensively studied over the past 20 years to improve our knowledge of the benefits and to give a clearer understanding of how exercise can be prescribed.

Contents

What happens during exercise?	1.
What are the benefits of exercise?	2.
Is exercise safe?.....	2.
What sort of exercise is best?	2.
How much exercise?.....	3.
Can exercise replace physiotherapy?	3.
What if I don't like exercise?	3.
Are there any contraindications to exercise?.....	3.
What if I have diabetes?	4.
Will I lose weight if I exercise?.....	4.
Can commercial drinks help my exercise performance?	4.
How can I help my child to exercise?	4.

What happens during exercise?

During exercise the working muscles need more oxygen to carry out the work. The lungs work harder to take in the oxygen and the heart rate increases to deliver the oxygen to the working muscles. After exercise training, the muscles become more efficient and they can perform the same amount of work for less oxygen. This is called *cardiorespiratory fitness*. Muscles, including the breathing muscles will feel more comfortable for the same amount of exercise than before training started. Consequently you will also be able to do more exercise. This is called *increasing your exercise tolerance*. People *feel better* after exercise because endorphins are released into the blood stream. Exercise stops due to breathlessness or aching muscles.



What are the benefits of exercise in CF?

Many studies have evaluated the short-term benefits of exercise (2-6 months). We know that cardiorespiratory fitness can be improved and exercise tolerance increased. Exercise training reduces breathlessness and strength training improves muscle bulk and body image. The respiratory muscles can be trained to improve endurance ie work for longer before getting tired, both with respiratory trainers and upper body exercise. Everyday activities feel easier to perform and general wellbeing improves. Recently studies have examined the benefits over a longer period (1-3 years). Lung function values were better in the group who exercised compared to the non-exercising group. Although this is still a relatively short time, it may be that exercise can preserve and prevent deterioration of your lung function. Exercise may also help to prevent your bones from becoming thin and improve your posture.

Is exercise safe?

We have known for a long time that people with mild to moderate lung function can do the same amount of exercise as their friends. In some people the oxygen levels in the blood fall during exercise. This doesn't mean you shouldn't exercise but your programme has to be planned more carefully. Considerable improvements over time can be achieved in this group.

Your CF physician and physiotherapist will recommend that you have an exercise test to give information about your level of fitness and what stops you exercising.

Most people stop because their muscles ache and only a few because of breathlessness. This tells us that most people with CF are unfit and their lungs have lots of reserve for exercise. From the test an effective and safe exercise programme can be recommended.

It is important to protect ligaments and joints from injury - warm-up, cool down and stretching exercises are important components of any programme.

What sort of exercise is best?

There are two sorts of exercise: *aerobic endurance* exercise eg cycling, walking, swimming, running and *anaerobic exercise* eg sprint and weights. Low weights and high repetitions are more aerobic and will increase strength compared to high weights and low repetitions which constitute bodybuilding. Flexibility and stretching exercises are good for your posture. A mixture of endurance, strength and flexibility activities for upper and lower body is ideal but it is more important that you choose the type of exercise that you enjoy so that you will continue. Exercises which strengthen bones are weight bearing endurance activities, eg running, walking, dancing and stair climbing. Discuss with your physiotherapist what you would like to achieve, because training is specific to the muscle groups which are exercised. You may wish to improve fitness, reduce breathlessness, improve muscle tone or muscle bulk or improve your posture.

How much exercise?

The amount of exercise should be progressive and should be sufficient to leave you pleasantly tired without soreness or undue breathlessness. Your CF physiotherapist will recommend a starting level and advise how you should progress, based on your exercise test. It is generally recommended that 20-30 minutes 3-4 times a week will bring about a training effect. Weight training programmes should be performed on alternate days. Remember that any exercise is better than none at all. It usually takes about 8-12 weeks to see an effect from training. **Fitness is lost quickly when you stop** so it is really important to choose an activity which you enjoy to become part of your lifestyle.

Can exercise replace physiotherapy?

It has been suggested that exercise can replace physiotherapy. Studies have shown that a combination of the two is as good as physiotherapy alone, but exercise alone may not be sufficient. Talk to your CF physician and physiotherapist. Many patients prefer exercise to chest physiotherapy and find that it works for them. Following exercise the airways widen temporarily and people with CF comment that they produce sputum during exercise. However, it is important to recognise that there are times when you will not be well enough to maintain that level of exercise and chest physiotherapy will be required for sputum clearance.

What if I don't like exercise?

If you don't want to participate in an exercise-training programme you may gain considerable benefit just by changing your lifestyle and fitting in some extra activity. It is a good idea to look at your daily routine. You may be able to walk or cycle to school/work, use the stairs instead of the lift. Ask your friends/parents to join you; the exercise will also be beneficial to them.

Are there any contraindications to exercise?

You will be advised to temporarily stop exercising for the following reasons:

- an abdominal blockage
- an acute exacerbation with a temperature
- a flare up of arthritis
- a pneumothorax and haemoptysis.

Some sporting activities carry a medical risk. Contact sports, bungee jumping and parachute jumping are not advised if you have problems with your liver and spleen or diagnosed osteoporosis. Scuba diving is hazardous for some patients with severe lung disease and sinus disease. Skiing and other exercise at high altitude needs careful consideration. Discuss your plans with your CF consultant and physiotherapist.

If you exercise in the hot weather you can become dehydrated. You should take extra salt tablets and drink plenty of fluids.

High impact activities, eg skipping, trampolining and strenuous abdominal exercises such as sit-ups, should be avoided if leakage of urine is a problem. Extra care is advised at the time of puberty. If you are unsure or concerned, discuss with your physiotherapist.

What if I have diabetes?

Exercise is good for you if you have diabetes and sometimes improves blood glucose control by reducing insulin requirements. If your diabetes is well controlled exercise can cause your blood sugars to go too low (hypoglycaemia). It is important to talk to your CF dietitian and consultant to plan your insulin and carbohydrate requirements both for exercise and normal activity.

Will I lose weight if I exercise?

Regular exercise, unless particularly vigorous, should not cause you to lose weight if you are eating a good diet. Exercise will ensure that you convert excess fat to muscle and will help to tone your body. If you have concerns regarding your diet and exercise, discuss it with your CF dietitian.

Can commercial drinks help my exercise performance?

Most commercial drinks provide extra energy and/or protein. They may be of value if your diet is lacking in either of these and you are not able to take additional diet or nutritional supplements. Always discuss with your CF dietitian if you wish to use these products.

How can I help my child to exercise?

It is important to introduce exercise into your child's routine from a very young age so that regular physical activity becomes an established part of your whole family's lifestyle. Babies can swim and from an early age, daily physical activities can be encouraged through play. Even small children (from 6 months onwards) can take part in general "rough and tumble" activities. As the child gets older more vigorous activities can be introduced. Remember exercise is good for everyone not just your child with CF. Speak to your CF physiotherapist who will give you advice. It is widely known that levels of activity are reduced in children. We do not know the long-term result of increasing physical activity but we do know that exercise in CF has definite benefits. Placing more emphasis on regular exercise for children may ensure physical and clinical well being for longer.

This Factsheet may be copied in whole or in part, without prior permission being sought from the copyright holder, provided the purpose of copying is not for commercial gain and provided due acknowledgement is given