Physical activity and Exercise in Cystic Fibrosis - Paediatrics

Why have you been given this leaflet?

Physical activity and exercise have an essential role in the treatment and management of Cystic Fibrosis (CF). Therefore the following leaflet aims to provide you with advice to help support you in promoting and facilitating activity with your child.

What is the difference between physical activity and exercise?

**Physical activity:**
Is any bodily movement produced using your muscles, which increases the amount of energy used. This includes activities like walking to school, housework and playing at home, school and with friends.

**Exercise:**
Is any kind of deliberate, structured and repetitive bodily movement performed to improve one or more components of physical fitness (cardiovascular, strength, flexibility, co-ordination, balance). This could include activities such as PE lessons, or sport.

Young children should engage in large amounts of play and physical activity which causes them to get out of breath and increases heart rate. As they get older, specific exercise is required to gain specific benefits, for example improving cardiovascular fitness, muscle strength, flexibility or training for a sport or activity. Structured exercise can be added at any stage and should be tailored to the individual child.

What are the benefits of exercise for your child?

- Promotes development & growth
- Social benefits (enjoyable, activity with family & friends, confidence etc)
- Reduces exacerbations and hospitalisations
- Promotes and maintains bone health
- Improves quality of life
- Improves lung function
- Reduces decline in lung function
- Improves airway clearance
- Improves glycaemic control/helps manage blood sugars
- Improves posture
- Improves sleep quality
- Reduces fatigue
- And much more

Recommendations for exercise

**Definitions:**

“Moderate-intensity” physical activity leads to faster breathing, increased heart rate and feeling warmer.

Moderate-intensity physical activity includes walking briskly, play and games.

“Vigorous-intensity” physical activity leads to very hard breathing, shortness of breath, rapid heartbeat and should leave a person unable to maintain a conversation.
Vigorous-intensity activity could include running, cycling and fast paced sports.

Aerobic exercise or cardiovascular exercise is prolonged exercise which uses large muscles which increases the body's need for oxygen making the heart and lungs work harder. This could include walking, running, cycling, dance, sport and play.

Resistance exercise is exercise that improves muscle strength by applying a weight causing the muscles to contract. Examples of this could be supporting your own bodyweight, lifting heavy objects. Exercise to improve strength could also include Yoga, Pilates or Gymnastics.

No single activity is ‘best’, activity should part of a healthy lifestyle. Activity should be enjoyable and a variety of activities should be encouraged.

**Young Children (1-6 yrs)**

60 minutes daily, in developmentally appropriate activities. (Sitting, reaching, rolling, crawling, climbing, infant swim)

Toddlers and preschool children should be doing lots of play and active activities which are fun. It is important that the whole family engage in whole range activities which may provide the opportunity for the child to pursue such activities later in childhood and adolescents. This may include ball games, throwing and catching, swimming, cycling, baby and toddler classes and anything else you might think of.

Support from the family is vital in encouraging an active lifestyle. At this point the child should not be doing formal exercise programmes but should perform activities to increase the rate and heart rate as well as activities using body weight to improve strength. Activities should also encourage normal development including balance and coordination.

**Benefits of exercise**

Aids development, learning of activity and develops habitual activity and provides positive reinforcement

**Children (7-12 yrs)**

60 minutes of moderate to vigorous activity daily.

60 minutes daily in a variety of activities which are fun, enjoyable and preferably involve family and friends. Activity should be moderate-vigorous in intensity. Resistance based exercise should be encouraged and for those who express an interest a formal programme can be introduced if properly supervised to promote correct technique. This could include joining a club or sports team such as Tennis, Football or Athletics. Ultimately anything enjoyable and engaging. Activities should also encourage normal motor development including balance and coordination.

**Benefits of exercise**

Develops physical activity behaviour, establishes social activity, promotes good bone health and muscle health.

**Adolescent (13-19 yrs)**

60 minutes daily in a variety of activities which are fun, enjoyable and preferably involve family and friends. 30-60 minutes should be spent performing aerobic based activity which should be moderate-vigorous in intensity. This could be achieved through structured or recreational sport and activity, at this stage a child may begin to demonstrate a preference for one activity over another and may begin to focus on participating in fewer activities. Resistance exercise should be encouraged on 2-3 days per week and a formal programme may be introduced to train for specific goals. This may include, Pilates, Gymnastics, Climbing, circuit and weights training.

**Benefits of exercise**

Peer support, improves confidence with exercise. Resistance exercise helps to prevent or minimize adverse postural changes.

**How do we measure exercise capacity?**

Your child will complete an exercise test as part of their annual review, there are a number of tests available but we predominately use the modified shuttle walk test, 6 minute walk and cardiopulmonary exercise test (CPET) (8years+). Each of these tests provides information about aerobic exercise capacity and allows us to do a
number of things. Firstly it allows us to measure exercise capacity over time and identify any changes in exercise capacity which may relate to changes in physical function. It allows us to identify limitations to exercise including exercise associated symptoms. It allows us to make training recommendations. Finally exercise capacity is related to quality of life and the ability to perform everyday tasks.

We can also measure daily activity in a number of ways including using accelerometers (physical activity monitors worn on the wrist), pedometers (measure steps) and diaries. This provides us with information on how much activity you do in your normal day and allows you to measure this in an accurate and visual way. There are also an increasing number of and variety of ‘apps’ able to track activity.

**Barriers to exercise**

Exercise capacity can often be reduced in CF and there are a number of factors involved in this, one of which is physical inactivity. It is important to encourage physical activity from a young age to help promote a healthy lifestyle and avoid inactivity. There is much more to exercise capacity than just lung function and it is also important to keep our cardiovascular system and muscles working efficiently.

Some people will find exercise causes them to cough more and they feel more breathless, although this can make exercising feel more difficult it does not mean that exercise should be avoided. This can be managed and if you have any concerns about your child you can speak to the CF team.

Many people have many barriers to exercise ranging from time, space and equipment to motivation and confidence. As a team we are here to help you overcome these barriers.

**What support is available?**

Your CF team is here to support you with leading an active lifestyle, below are just some of the ways we can support you;

- Face to face exercise sessions tailored to your child’s needs
- Exercise testing and training recommendations
- Skype exercise sessions
- Gym/local facilities referrals (where possible)
- Advice for training for specific goals
- Support with becoming physically active/ increasing physical activity
- Physical activity monitoring (accelerometers/ pedometer/ apps)
- Advice on exercise and other aspects of CF care (physiotherapy, nutrition, bone health, CF- related diabetes, O2 requirements, and implanted devices).

**Take home messages**

- Reduce time spent sitting, lying down and watching TV (being sedentary)
- Try to do some activity daily
- Fit activity into your lifestyle where ever possible, walking instead of taking the car or climbing the stairs instead of using a lift.
- Find an activity you enjoy and involve friends and family where possible
- Something is definitely better than nothing, start with something small.

**Contact details**

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