

FIT FOR LIFE



A GUIDE FOR ADULTS WITH CEREBRAL PALSY



Exercise



Nutrition



Psychology

This resource can help you get Fit for Life. It starts with the basics and teaches you how to lead a healthy, well-balanced and active lifestyle as an individual with cerebral palsy and allows you to progress at your own pace. If you then choose to take up a sport, you can download the Fit for Sport section which will help you understand how to adjust your training and nutrition, and how to use some psychological skills to improve your performance. No matter what level you are currently at, or even if you are just getting started, this guide can help you to achieve your own personal goals. Most importantly this guide will hopefully give you the confidence to lead a healthy, more active lifestyle and maybe try something new. **Good luck!**

SASCHA KINDRED OBE

ParalympicsGB Swimmer

5 x Paralympian

6 x Paralympic, 10 x World and 11 x European gold medallist

European gold medallist

2002 World Male Swimmer of the Year

Patron of Hemichat, Megan Baker House and Hereford/Worcester Scouts

“When my passion for Swimming began as a child, I would never have dreamt that I would have the honour of representing my country (Great Britain) in five Paralympic Games. Competing at an elite level is not everybody’s aim but finding a form of physical activity and exercise that you enjoy is an important part of leading a healthy lifestyle. You may want to be fit enough to play with your children, to take part in an organised event such as a 5 km, or to take up a new sport. Whatever your goal, this guide will hopefully help you to achieve it.”



IS THIS SECTION FOR ME?

FIT FOR LIFE

- ✓ Do you want to get fitter and healthier?
- ✓ Do you currently do little physical activity and exercise?
- ✓ Do you have limited nutrition knowledge?
- ✓ Do you want to learn and/or recap the basics?

THIS SECTION IS DOWNLOADED



FIT FOR SPORT

- ✓ Do you already regularly (at least three to four times per week) take part in exercise and/or sport?
- ✓ Do you want to improve your performance?
- ✓ Do you want to tailor your nutrition to your sport?
- ✓ Do you want to understand how to use some psychological skills to improve?

CLICK HERE TO VIEW SECTION AND DOWNLOAD SEPARATELY



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FIT FOR LIFE



From a health perspective, regular exercise can make everyday living easier and also more enjoyable.

Other benefits include:

- Improved well-being and decreased stress
- Improved health (lower cholesterol and blood pressure, reduced risk of obesity, diabetes and heart disease)
- Weight management
- Improved ability to perform activities of daily life
- Increased fitness (better breathing, increased strength and endurance)
- Improved balance and co-ordination
- Improved range of movement and joint mobility

It is well-known that if you want to be healthy, then physical activity and/or exercise should form part of your lifestyle.

PHYSICAL ACTIVITY = Any action or movement that requires you to contract your muscles.

EXERCISE = A planned and purposeful action from which we aim to improve our fitness levels and our health.

You may sometimes face potential barriers to exercise but remember that many activities can be adapted to suit your needs. A large number of fitness facilities are now fully accessible for disabled people too.



HOW TO OVERCOME BARRIERS TO EXERCISE

Taking part in some form of activity or sport is necessary for you to become physically fit.

Additionally, physical activity and exercise can help you become mentally fit. Exercise can help improve health and well-being by improving mood, reducing stress, and decreasing depression. It can also help boost your self-esteem and give you confidence in other areas of life. To gain these psychological benefits you must maintain a regular exercise routine but this isn't always easy. Disabled people may face a number of barriers to physical activity which can make becoming and staying active a real challenge.

Here are a few of the common barriers and how you can try to overcome them:



“I really don't know where to start”

The most important thing is to find an activity that you enjoy doing so that you will keep doing it. Join a friend at the gym, try an exercise class or head to the park with your family; adding a social element can make it much more fun. Don't be afraid of trying new and unfamiliar activities as these can often surprise you and leave you wanting more. Find some like-minded people to exercise with so that you can help motivate each other. Also visit www.parasport.org.uk for information on what sports are available for disabled people and to help you find local sports clubs.

“I just don't have the time”

Many people live hectic lifestyles that are busy with both work and family commitments. Not having sufficient time to exercise is a genuine concern. Difficulties with travel can make your trip to an exercise venue annoyingly long or expensive and so it is important to consider where else you might be able to exercise. A long commute to your local gym is no longer needed if you can do a workout at your local park or even in your own home/garden. The amount of exercise you need to do to gain benefits is often overestimated too. As little as 30 minutes of moderate intensity activity a day, five times a week is enough to help you feel physically and mentally fit. Multiple bouts of at least 10 minutes are also just as good; how about before or after work and a short session during your lunch hour?

“My local facility isn't accessible”

Accessibility is a common issue faced by disabled people. However, you do not necessarily need a gym or leisure centre to become more active. You can do lots of exercises with minimal equipment in many different environments such as in your home or at the park. However, if you do fancy the gym, the Inclusive Fitness Initiative (IFI) has an application where you can find a local club that has accessible equipment for disabled people. Visit www.efds.co.uk/inclusive_fitness/ifi_gyms.

“I feel too tired to exercise”

If this sounds like you then consider when it is that you are most tired. If it's in the evening after work, then try to exercise in the early morning or during your lunch break. If you feel most fatigued first thing in the morning simply plan to do your exercise later in the day. These simple steps are common sense but will help you get started. It is also worth considering that regular exercise can actually reduce fatigue and help you sleep better. After a few weeks of regular physical activity you should notice your energy levels improve.

“Because I've always been rubbish at exercise and sport”

You may have disliked PE at school because of an emphasis on competitive sport, the group atmosphere, due to a lack of choice or that age old classic of being picked last. It may be hard to forget these feelings but remember that as an adult you can choose exactly what type of exercise and/or sport you do, who you do it with, when and also whether you do it for leisure or competitively; you are in control! Finding a type of exercise that you enjoy will hopefully prolong your involvement.



PHYSICAL ACTIVITY AND EXERCISE

In order to keep fit and active and to realise some of the benefits mentioned earlier you should include some physical activity and exercise in your daily routine. The key to getting active in the first place is to find activities/sports that you enjoy doing, which will hopefully ensure that you continue to do them in the long-term. Regardless of your type or level of cerebral palsy (CP) there are very few activities that you can't do and some will need very little adaptation.

The general guidelines for getting fit do not differ greatly from those for non-disabled people however, this guide discusses specific topics, adaptations and areas of emphasis for individuals with CP.

If you are new to any type of exercise, especially if you are pregnant or suffer from other medical conditions you should seek advice from your health professional such as your general practitioner (GP) treating clinician, physiotherapist or a registered exercise professional. They should provide you with advice regarding the type and amount of physical activity and exercise that will be appropriate for you in the early stages.

The main goals of Fit for Life are to improve function for daily living and to stop the onset of a variety of problems associated with inactivity. Your individual goals may be to walk/wheel to the shops without getting out of breath, the ability to play football with your kids or to take up a new sport. Whatever you wish to achieve, getting to grips with the basics is a great place to start.

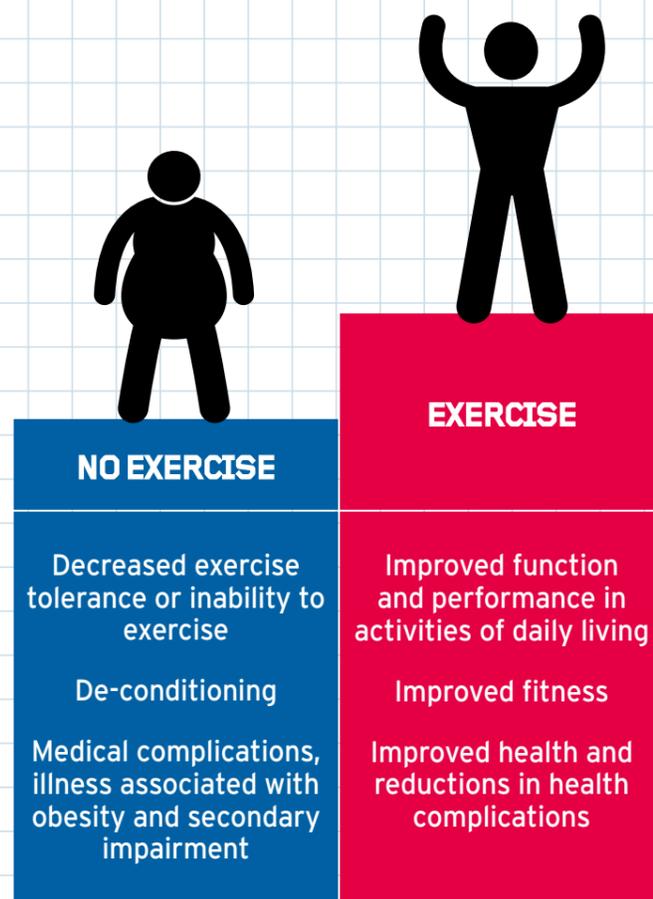


Figure 1. The effects of no exercise vs. the benefits of exercise.

General Guidelines

If you currently do very little physical activity or exercise, you should start by increasing everyday activities. This will help to improve your health, increase your energy output and therefore help weight management. Consider some of the following ideas:

- Gardening
- Cleaning and other household chores
- DIY
- Walk/wheel to work or to the shops rather than getting in the car
- Jogging around a local park or trail
- Playing games with family members
- Dancing
- Consider volunteering for a local organisation, charity or sports club

Do what you can and take breaks when you need to. Once you feel ready you can consider progressing to some planned exercise sessions.

An exercise session usually consists of three components; a warm-up, the main session and a cool-down. The main difference as an individual with CP is the type and duration of exercise that you will perform. This will be further influenced by whether you are a wheelchair user.



Organised Exercise

Warm-up

An effective warm-up is designed to prepare your body for exercise and is essential prior to any training.

- 5-10 minutes low to moderate intensity activity will raise your heart rate and increase your muscle temperature.
- You should gradually increase the intensity of activity to that of which you will be exercising.
- Try to involve the movements that you will use during the activity you are warming-up for. Movements that move through your individual range of motion can be useful to prepare your body for the demands of exercise.
- A prolonged warm-up may be of benefit if you have spastic CP whereas individuals with athetoid CP may benefit from more relaxation and stress-relieving activities.

Main Workout

In the initial stages of your programme it is important that you choose an activity you find enjoyable. Do what you can and build on it until you can achieve the recommended 30 minutes for moderate intensity exercise (you should be able to have a conversation), or 20 minutes for vigorous intensity exercise (you can't say more than a few words without pausing for breath). As your fitness improves, you can gradually increase the duration and/or intensity.

Cool-down

- 5-10 minutes gentle exercise/activities which gradually decrease large muscle group activity and help to aid the clearance of waste products.
- Stretching exercises for multiple joints/muscle groups.
- The cool-down is also a good time to reflect on your session.



The Main Components of Fitness

CP varies from person to person and therefore so should an exercise programme. It needs to be designed to suit your individual needs and will likely depend on your balance and coordination, and whether you are a wheelchair user. Whatever exercise you choose to do, you can benefit from a regular exercise programme focusing on **Flexibility**, **Strength** and **Aerobic** exercise. See page 16 for recommendations on how long and hard your exercise session should be.

Flexibility

Flexibility is simply the range of motion you have around a joint. Take a gymnast for example, they are clearly very flexible because they are able to put their bodies into positions that many of us would not even attempt. The American College of Sports Medicine (ACSM, the largest sports medicine and exercise science organisation in the world, www.acsm.org) guidelines state that adults should try to do flexibility exercises at least two to three days per week to improve their range of motion.

Completing a flexibility routine is good practise for individuals with CP. For those who have spastic CP, where contractures may occur (shortening of muscles and connective tissue), gentle stretching and flexibility sessions are recommended. Remember that the full range of motion at affected joints may not be possible so it is important to work within your own capability.

- Stretching is most effective when the muscle is warm so always do some light to moderate aerobic activity beforehand.
- You should move into a stretch to the point of tightness or slight discomfort and then hold.

- Hold static stretches (once you are in the stretch position you do not move) for 10-30 seconds during the warm up, or use dynamic stretches (stretching as you are moving, without bouncing) that mimic the movements of the subsequent activity.
- During the cool-down stretch all of the major muscle groups that you used in your workout and any smaller muscles that you may have targeted (20-30 seconds per stretch). Static stretches can be useful for this.
- Regular stretching should also be performed on days you are not exercising to maintain a normal range of motion around your joints.
- To develop flexibility further it is worth holding stretches for at least 60 seconds or alternatively, repeat the stretch to accumulate this time.

Strength Training

Strength training in the initial stages of a programme is defined as anything that challenges your body above its norm in terms of lifting or moving weight. Strength training does not have to take place in a gym; lifting a bag of sugar, tins, bottles or simply your own body weight can be classed as strength training and can be quite difficult depending on the weight, number of repetitions, and exercise selection.

Out of the gym, strength training can be done using a number of training alternatives:

- You can do some exercises using simply your own body weight such as press-ups, dips, squats or chin-ups.
- Small wrist and ankle weights with Velcro straps can also be useful to increase the resistance during any type of exercise.
- Partner resisted strength exercises. You can still do the same movements as you would on gym machines but with a partner resisting these movements rather than a weight. These can be done at home, at work, in the park, almost anywhere!
- Elastic tubing (often called dyna bands, therabands or clini bands) are simply pieces of elastic which offer more resistance the greater you stretch them. Again these give you the freedom to mimic many of the movements that can be done in the gym.

Many individuals with CP suffer from stiff and/or weak muscles and so you should seek advice from an experienced exercise professional if you are new to this type of exercise prior to trying new techniques. Start gently before gradually building up. Trying to progress too quickly and lifting weights that are too heavy can cause damage so increase your training load gradually based on how quickly your body responds.

It is important to note that strength exercises should try to use the full range of motion/flexibility that you possess as this will enhance functionality. Increased range without increased strength will not produce much benefit and conversely, increased strength in a shortened range may exacerbate issues of function.

If you choose to go to a gym perform exercises without any or with minimal weight when learning new techniques. Once you have mastered the technique (ideally under supervision) choose a weight that will produce a moderate amount of muscular fatigue during the number of repetitions you have planned. Your chosen weight should allow you to complete a full set without stopping and you should be able to maintain good technique throughout.

Visit www.efds.co.uk/inclusive_fitness to find a local inclusive fitness facility and take advantage of an induction and the knowledge of trained staff.

Aerobic Training

Aerobic training is any activity that raises your heart rate and gets you out of breath for a sustained period of time. It trains the cardiovascular (heart, blood and blood vessels) and respiratory (lungs) systems to help reduce fatigue and improve endurance. It may take you a little longer to master movement patterns so keep movements simple, large and repetitive, especially during activities such as aerobics classes.

During any type of exercise but especially aerobic sessions, it is important that you avoid exercises that cause you to experience excessive and early fatigue, and that you learn when to stop. If you do get tired very quickly or your muscles become fatigued you should rest and recover, and consider starting at a lower intensity next time you do the same type of exercise. Individuals with athetoid CP will benefit from intervals or movement patterns that include stop-start repetitions.

There are various forms of aerobic exercise that you can do and many will require no adaptation at all. See page 18 for some ideas.





Considerations for Individuals with Spastic CP:

- Prolonged stretching during the warm-up will help optimise range of motion and therefore help improve performance. For best results combine stretching techniques with core activation exercises and some body weight strength work for the affected muscle group(s).
- Prolonged stretching in the cool-down might help prevent the spasticity which can occur following vigorous exercise.
- Where possible limit stretches and exercises to one limb at a time.
- When using static stretches try to use slow, deliberate movements to avoid causing a stretch reflex.
- Incorporate relaxation exercises where possible.
- Try stretching in a warm pool where the temperature may soothe and relax the muscle to allow a greater stretch.

Considerations for those with Impaired Balance:

- Consider alternative positions or support to ensure your safety and to improve the effectiveness of a stretch or exercise (seated position, use seat belts/wraps/stretch bands, use a wall or ask someone to help support you).
- Some common standing stretches/exercises such as a quadriceps stretch can be performed whilst lying down.
- In a gym environment most exercises can be performed on a fixed resistance machine, which will help stabilise your body and guide the direction of movement.
- Consider more supportive exercise modes such as arm cranking, the cross trainer or the use of a tricycle.

Considerations for those with Impaired Coordination:

- If you find simultaneous bilateral movements (e.g. moving both arms at the same time during a bicep curl) hard then try exercising each side of your body separately.
- Hemiplegia: consider using your unimpaired arm to help move your impaired side into the correct position and to guide movement. Exercise your unaffected side/limb first.
- Stretch/exercise with a partner for support and take your time to assume the correct position.

Considerations for those with Impaired Sensation:

- To help prevent any injuries avoid using passive stretches where someone else moves your limbs.
- If you find it hard to grip weights or cables you can use gripping aids such as flexion mitts or straps to help you perform these exercises safely and effectively.
- If you find it hard to perform some exercises in the traditional way the use of therabands, suspension cables or towels can help you to perform strength and flexibility exercises because they complement any individuality in actions.

Considerations for Wheelchair Users:

Flexibility: It is quite common to suffer from postural problems due to slumping and/or you may have a rounded posture caused by tightness in your chest and front shoulder muscles. Flexibility training that focuses on the shoulder region can help to prevent this.

If you spend the majority of your day in a sitting position this can also cause tight and weakened hip flexors (the muscles that are designed to move your thigh towards your trunk). It is therefore good practise to stretch and exercise the muscles around your trunk, hips and knees on a regular basis.

Strength Training: To help prevent muscle imbalances ask a physiotherapist or qualified exercise professional to help you identify the areas that may require additional stretching and/or strengthening exercises. When planning a session ensure you include a combination of exercises for your chest and back muscles to prevent any imbalance occurring between the two. Remember to secure your chair prior to beginning any strength or flexibility exercises.

Aerobic Training: If you are able to exercise without your chair or simply without having to propel your chair, this may have additional benefits as you will be using different muscles. Try stretching in a warm pool where the temperature may soothe and relax the muscle to allow a greater stretch.

Considerations for Power Chair Users

- To get your heart rate going try using an arm crank (found in many fitness facilities across the country), doing some assisted Swimming or performing some standing frame exercises.
- To improve your strength try using cable pulleys or an elastic/theraband to perform a set of exercises.
- Remember that you don't have to do it all at once; a few 5-10 minute sets throughout the day are just as good.
- Try chair Yoga or Pilates to help improve your balance, coordination and flexibility.
- Try Power Chair Sports such as Football, Wheelchair Dance or Boccia to add a competitive and social element.

Exercise Considerations

- For those who experience spasticity, in the initial stages of your programme consider the duration more important than the intensity.
- Longer periods of rest to prevent fatigue may help to avoid worsening of unwanted or abnormal movements.
- Avoid high-intensity exercise that causes you to experience excessive and early fatigue. Such exercise will cause movement patterns to deteriorate and ultimately cause you to stop exercising early. Try exercising in blocks with rest in between (known as intervals).
- Closely monitor the effect that exercise has on your impairment. If you see deterioration in your function consult a registered health and exercise professional to help you evaluate and adjust your programme.
- If you use relaxants or anticonvulsive medications be aware that these can have an effect on your tolerance to exercise and on your overall exercise performance. Discuss this with your doctor where necessary.





TABLE 1. Goals and Recommendations for Flexibility, Strength and Aerobic Training

Type of exercise	Goals	Intensity/frequency/duration
Flexibility • Stretching	<ul style="list-style-type: none"> • Improve your range of motion • Help prevent injury • Improve posture/muscle balance 	<ul style="list-style-type: none"> • Before and after exercise or as a standalone session • Two to three days per week
Strength • Body weight exercises, free weights or weight machines	<ul style="list-style-type: none"> • Improve strength of involved and uninvolved muscle groups 	<ul style="list-style-type: none"> • Three sets of 8-12 repetitions • Two sessions per week
Aerobic • If you are able, you could run, cycle or play sports • If you are a wheelchair user, try arm cranking, Swimming or wheeling	<ul style="list-style-type: none"> • Increase aerobic capacity and endurance • Improve your ability to perform tasks of daily living 	<ul style="list-style-type: none"> • 20-40 minutes/session • RPE* of 12-14 (moderate intensity) or 15+ (vigorous) • Three to five days per week

NOTE * RPE = Rating of Perceived Exertion, which will be explained in more detail on page 30.

> Not got enough time?

Evidence also suggests that you can accumulate the desired amount of cardiovascular training in multiple, smaller chunks of time such as 10 minute bouts of walking/running or resistance exercises. This is useful if you are starting to exercise for the first time or if you simply don't have big blocks of time to spare.



NOTE:

Quality is more important than quantity! More is not always better so exercise within your own limits and don't push yourself too soon, especially if you are new to exercise.

Safety Always Comes First

Please consider these safety points before starting your exercise programme:

1. Consult your doctor if you are considering starting an exercise programme for the very first time or if you experience any adverse consequences.
2. Be prepared to modify an activity or exercise if you need to but remember very few activities will be off limits!
3. If you choose to go to a local leisure centre or gym, ask for an induction (if you are not offered one) so that you become familiar with the equipment and environment.
4. Start slowly and build up the duration and intensity of your exercise sessions gradually to prevent any undue fatigue.
5. Stop exercising if you experience pain, discomfort, nausea, dizziness, light-headedness, chest pain and/or shortness of breath.
6. Seek professional advice from a registered exercise professional or physiotherapist if you are unsure of the correct technique for any exercise or stretch.

What Type of Exercise Can I Do?

The most important thing is to find something that suits you and that you enjoy doing. There are always plenty of options and alternatives.

TABLE 2. Types of Exercise Suitable for Individuals with Cerebral Palsy.

Type of Exercise	Advantages	Disadvantages	Adaptations/Advice
Aerobic gym equipment e.g. cross trainer, arm crank, recumbent bike	Found in most gyms. Reduced environmental influencers which minimises the requirement for balance.	Remaining seated for long periods on a hard surface can increase the risk of pressure sores. (Try using a pressure cushion to reduce this risk).	Flexion mitts or straps can be used if you have limited grip.
Aerobics	Inexpensive. Can be performed at home or as part of an adapted exercise class.	It may take you longer to master some movement patterns.	Therabands can be incorporated into the routine. Ask about public classes that can accommodate your needs.
Circuit training	A weights circuit can be interspaced with low resistance arm cranking/cycling/jogging.		Use a number of exercise stations and alternate between muscle groups. Rest after each activity or when the circuit is complete.
Hand Cycling/Cycling	Relatively efficient form of locomotion. You can use a static bike in your home or at the gym.		Arm crank attachments can be used on everyday wheelchairs at minimal cost.
Power chair sports e.g. Boccia, Football	Competitive and social team environment. Controlled movement of the chair required.		Do as much as you are able to do and gradually build on it.
Pushing	Specificity training for wheelchair sports. You can wheel almost anywhere within reason e.g. the park, a local track or leisure centre.	Risk of overuse injuries due to increased stresses to the shoulder if training is not structured appropriately.	Use a hybrid day chair or sports wheelchair. Use a familiar circuit to monitor progression.
Rowing	Good all-round conditioning. It uses opposite muscle groups to those used during chair propulsion.	Safety issues may occur for some due to the fixed position of your feet.	A stationary seat can be incorporated into the Concept Rower (found in most gyms) enabling an isolated upper body rowing action.
Running	Inexpensive. You can run outdoors on a track, road, trail or indoors on a treadmill.	Running is not recommended for those who are unable to balance and maintain coordination.	Always attach the emergency cord when treadmill running.
Sports/Wheelchair sports e.g. Tennis, Fencing, Curling, Basketball, Football	Good cross-training or specific training for a given sport. Competitive and social environment.	You may have to purchase some additional equipment.	Strapping can be used to help stabilise you in your chair. Use the Parasport website to find a local club to play your chosen sport. Visit www.parasport.org.uk
Swimming	Good cross training as the water supports your body weight. Warm water pools can help soothe muscles.	You may need to consider how you will get from the changing room to poolside, especially if you are a wheelchair user.	Swim-jogger buoyancy vests/floats can be used for aqua-jogging or to support impaired limbs. Check your local pool has a hoist if you require one to enter the pool.
Tai Chi/Yoga	Improves balance, posture, flexibility and breathing patterns.		A focus on slow, deliberate movements may help improve balance and coordination.

For more information on exercise and sports for individuals with CP visit: www.cpsport.org



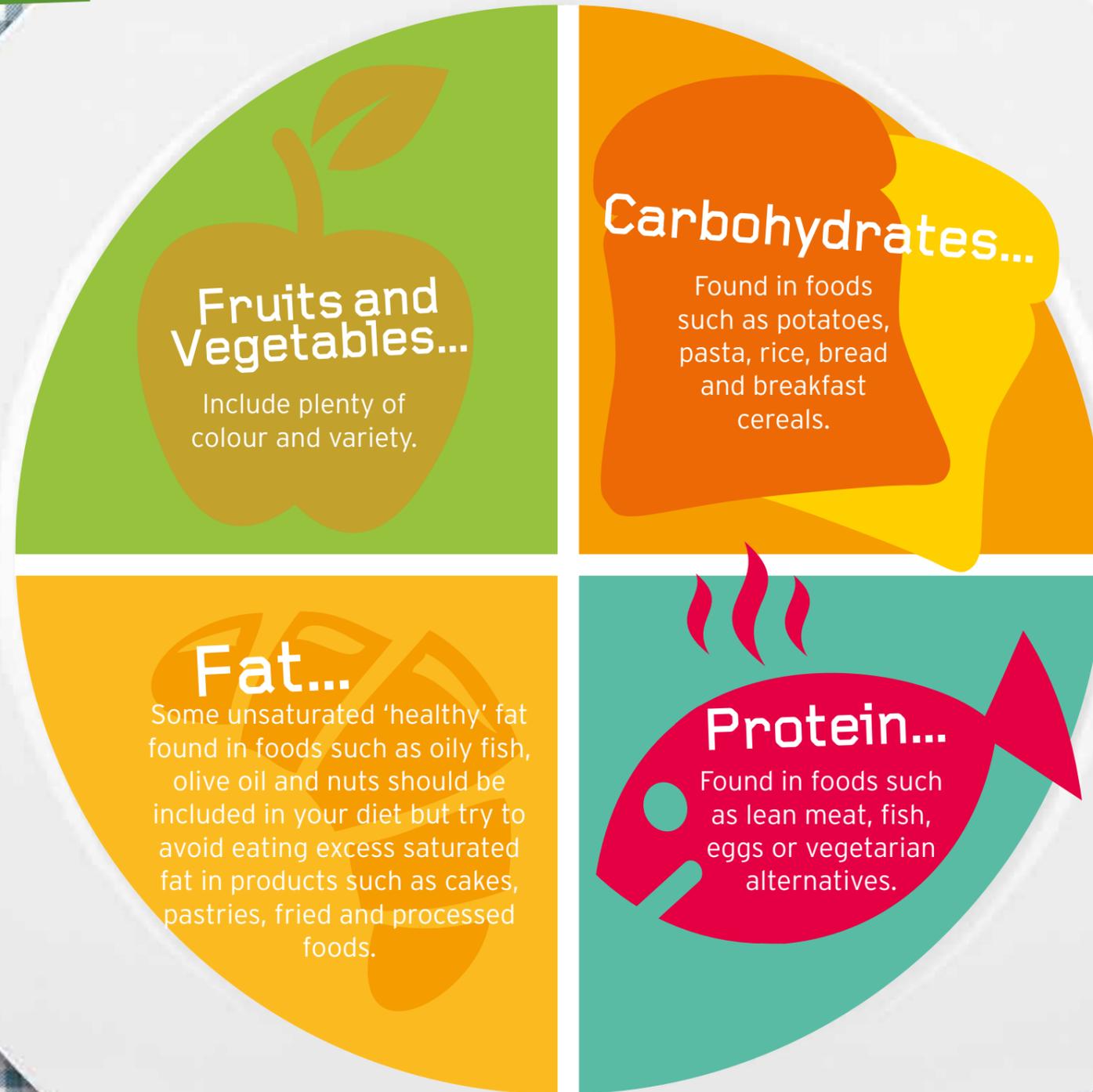
NUTRITION

Key Features of a Healthy Diet



An important component of being Fit for Life is your nutrition. With such a wide variety of food products on the market and the increased availability of convenience foods, it is important to make sure we know how to eat a healthy, well-balanced diet.

Having CP does not change the general guidelines on how to eat healthily however, there may simply be a few extra things to consider regarding your nutrition and hydration.



Fruits and Vegetables...
Include plenty of colour and variety.

Carbohydrates...
Found in foods such as potatoes, pasta, rice, bread and breakfast cereals.

Fat...
Some unsaturated 'healthy' fat found in foods such as oily fish, olive oil and nuts should be included in your diet but try to avoid eating excess saturated fat in products such as cakes, pastries, fried and processed foods.

Protein...
Found in foods such as lean meat, fish, eggs or vegetarian alternatives.

Fluid...
Such as water, tea, squash, juice, milk and fruit will help maintain hydration, which is important for the day-to-day functioning of the body.

Calcium...
Rich food sources include milk, cheese and yoghurt.





The components of a healthy diet help provide the body with what it needs to fight infection, help prevent illnesses such as heart disease, and to maintain your day-to-day health so you can get on with leading an active lifestyle. Now let's take a closer look at each component:



Carbohydrate foods are an important source of energy, vitamins and minerals, and should be included in any healthy diet. Quantities should vary according to how active you are, (e.g. more activity requires more energy and therefore more carbohydrate).

Fibre Wholegrain and wholemeal versions of carbohydrate sources are a great source of fibre. Other sources of fibre include vegetables, fresh (with the skin!) and dried fruit, beans, nuts and oats. You should adjust your own fibre intake to maintain personal bowel movement. Note that some common medications may also affect bowel function.

Fruits and Vegetables are good sources of fibre and they provide a wide range of vitamins. They also contain 'antioxidants', chemicals which will help fight infection and prevent disease. The ideal target is 5-a-day; one portion might be one medium fruit, one small plate of salad, one tablespoon of dried fruit, three tablespoons of cooked vegetables or a small glass of fruit juice. Include a wide variety of types and colours. Boil or microwave vegetables in minimal water or try steaming, and keep cooking time to a minimum to prevent vitamins being lost. These are a great way to provide vitamins and minerals in your daily diet. If you struggle to masticate (chew) and swallow foods, fruits and vegetables can be easily puréed, mashed or made into smoothies or juices.

Protein is needed for growth and repair in the body. Opt for lean, low fat versions and use cooking methods that keep fat to a minimum such as grilling, poaching, boiling or steaming. Including some protein at each meal will help you meet the recommended two to three portions a day. Meat (red and white), fish, eggs, cheese, milk or vegetarian alternatives such as beans, lentils, tofu and Quorn are all good sources. Red meat can also help ensure an adequate iron intake but if you choose not to eat it, take care to eat other iron-rich foods. For those who struggle to obtain enough protein from their diet, protein or meal replacement supplements can be useful as a convenient way to help you meet your requirements.

Iron is important because it is used in the formation of haemoglobin, a part of the blood that carries oxygen around the body. Those at risk of low haemoglobin levels, also known as anaemia, include vegetarians, endurance athletes, teenagers and females. Foods containing iron include offal, fish such as pilchards, salmon and sardines, eggs, green leafy vegetables, nuts, pulses and breakfast cereals fortified with iron. The absorption of iron can be aided by eating foods containing vitamin C e.g. tomatoes, green leafy vegetables, peppers and citrus fruits at the same time as iron-rich foods, and can be hindered by drinking caffeinated drinks such as tea and coffee, so drink them after your meal instead.

Calcium is important for strong bones. It is therefore important to ensure that your calcium intake is optimal to aid bone health, especially if you are unable to perform weight-bearing exercise and may therefore be susceptible to osteoporosis and at risk of fracture if you fall.

Taking enough calcium into the body from food is possible and aiming for three portions of calcium-rich foods a day will help you ensure you meet your needs. Table 3 highlights some calcium-rich foods. If you can't tolerate milk or dairy products, or have a family history of osteoporosis, you should take extra care to ensure your intake is sufficient and you may consider using a supplement if you struggle to meet the guidelines.

Vitamin D aids the absorption of calcium to support bone health. It is also an important vitamin to consider for immunity as it may enhance your ability to fight infection.

The main source of vitamin D is produced due to the action of the sun on your skin but small amounts can also be obtained from the diet from foods such as eggs, offal, oily fish and fortified margarines, juices or cereals. Supplementation is also an option during the winter months or for athletes that spend a lot of their time training indoors.

As a minimum aim to get 20 minutes sun exposure three times a week. Safe exposure to the sun is important so do not stay out long enough to get burnt.

TABLE 3. Calcium Content of Foods

Food	Quantity (one portion)	Amount of calcium (mg)
Semi skimmed milk	1/3 pt/200 ml	237
Skimmed milk	1/3 pt/200 ml	249
Soya milk	1/3 pt/200 ml	25
Calcium fortified soya milk	1/3 pt/200 ml	230
Yogurt	One pot/125 g	225
Cheddar cheese	30 g/1 oz matchbox sized piece	216
Cheese spread	25 g large triangle	105
Cottage cheese	One pot/110 g	82
Tinned salmon	100 g	95
Tinned sardines/pilchards with bones	100 g	460
Bread white or brown	Two slices/72 g	72
Baked beans	200 g - A small tin	100
Tofu steamed	100 g	500

> NOTE: Lower fat dairy foods contain the same amount of calcium as full fat versions.



Fat plays an important role in your diet, it provides you with essential fatty acids and the fat-soluble vitamins A, D, E and K. Aim to eat small amounts of unsaturated fat (polyunsaturated and monounsaturated) but reduce the amount of saturated fat in your diet.

- Saturated fat is found in foods of animal origin such as butter, lard, full fat milk, cream and the visible fat in meat. These can cause fatty deposits to build up in your arteries so opt for leaner or unsaturated versions if possible.
- Monounsaturated fat is found in olive and rapeseed oil, nuts, seeds and avocados. Olive oil can be used in cooking or as a salad dressing and is also used to make margarine.
- Polyunsaturated fat is further broken down into omega 6 and omega three varieties:
 - i. Omega 6 fats (sunflower, corn and soya oils and margarines made from them) do not cause the arteries to clog up in the way that saturated fats do.
 - ii. Omega 3 fats (oily fish such as sardines, pilchards, mackerel or kippers) do not produce fatty deposits in the arteries and are actually thought to protect the body from heart disease. The recommendation is that men, boys, and women past child bearing age can eat up to four portions per week of oily fish. Women of child bearing age, including pregnant and breastfeeding women, and girls can eat up to two portions per week.
- Don't forget that any high fat food is also high in calories, so over-consumption will likely result in weight gain and potentially obesity, which in itself is a health risk, so keep an eye on your portion sizes.

Fluid intake is vital for health. All aspects of a healthy body rely on good hydration, from brain function to good skin. Have a variety of drinks over the day such as fruit juices, squash and tea or coffee, but including some water is always a good idea. Don't forget that you get fluid from your food too. Most people need at least 1.5-2 litres of fluid a day, plus more to cope with exercise and heat.

Drinking adequate fluid is extremely important along with a high fibre diet to prevent constipation, maintain bowel function and also to help prevent urinary tract infections (UTIs).

Individuals with severe athetosis will often underestimate the amount of fluid they lose due to evaporation. It is therefore important to monitor your hydration as closely as possible. Check your urine, it should be a pale and straw-like colour (see page 38).

Energy intake

- It is important that you eat enough energy to meet your daily needs, to ensure essential growth and repair can occur, and so that your body's systems can function properly. Keeping track of your weight on a monthly basis is a good way to monitor whether you are eating the right amount for weight maintenance.
- If your energy requirements are low it can make meeting your nutritional needs hard e.g. a lack of vitamins and minerals, or protein, so it is important to choose the foods you eat carefully. Opt for nutrient-dense, fresh foods where possible rather than processed, refined products that possess very few benefits other than providing energy.

Food preparation

It is often suggested that when you start following a new, healthy diet you should try to cook homemade meals. Making your own meals and snacks means you know exactly what you are eating with no hidden surprises and you can easily adjust the composition of your daily diet to suit your needs. However, some individuals with CP may find food preparation or certain cooking techniques take a long time or require too much exertion. Follow some of the tips below to make cooking safer, simpler, healthier and more enjoyable:

- Reduce knife use, exertion levels and time by using a food processor to chop, mix or blend ingredients.
- You can buy utensils that are lightweight or have easy grip handles to make actions such as peeling, stirring or slicing easier and safer.
- Dishes/chopping boards with suction cups that help prevent slipping can make the kitchen environment safer.
- Choose quick and easy recipes such as stir-frys, salads, soups and pasta dishes. You can find simple recipes in cookbooks or you can search for them online.
- Cook meals in batches when you have plenty of time and freeze them in portions to reheat when you need a quick meal or if you don't have time. Remember to label what they are and how many portions are in each container.
- A microwave can be useful for reheating meals and ready-made sauces, and for cooking vegetables or microwavable rice.
- Use pre-prepared foods e.g. chopped or frozen fruit/vegetables and ready-made sauces/meals to save time. Be sure to read the label though as some ready-made meals can be high in fat, sugar and/or salt.
- Shopping for your groceries online can also be useful if you do not enjoy shopping and it allows you to compare ingredients and products at the click of a button rather than worrying about this in store.

Weight Management

Maintaining a suitable weight is important for health and weight should be neither too high nor too low. The major concern for anybody who struggles to maintain their weight is the potential effect on their health in terms of the risk of future development of diabetes, heart disease, joint problems and immobility. If you are active in sport then there is also the added issue of the effect this may have on your performance.



DO...

follow a well-balanced diet.
The first step towards healthy eating is choosing real, fresh and unprocessed foods and snacks but you must also keep an eye on your portion sizes. Be realistic about your energy requirements based on your activity levels.



DON'T...
aim for quick losses

It may be encouraging to see the weight drop off but this is rarely maintained because it usually results in the body losing muscle rather than fat, and is not helpful to general health or activity.

Typical daily energy expenditures vary greatly in individuals with CP due to varying modes of ambulation (how you move around) and the level of CP. Wheelchair users tend to have lower energy expenditures than those who ambulate (walk); with electric/power chair users showing even lower energy outputs.

Individuals who experience athetosis (uncontrollable, jerky movements), regardless of their mode of ambulation, appear to expend more energy at rest due to this action. However, if individuals counteract this increase in energy output by voluntarily reducing their daily physical activity levels their energy needs are unlikely to change.

These possible increases and decreases in energy expenditure simply highlight the importance of eating and drinking according to your own individual nutritional needs. There is no one size fits all strategy unfortunately and you must learn to balance your energy in and your energy out. For example if your physical activity levels are low your diet must reflect this to prevent weight gain but on the flip side, if you increase your physical activity/exercise levels your energy intake should also increase to prevent weight loss, unless this is your goal. If you have the opportunity to work with a registered dietitian or nutritionist they will help you understand how much energy you require and what type of foods you should be eating.

WEIGHT GAIN - When ENERGY IN is more than ENERGY OUT
WEIGHT BALANCE - When ENERGY OUT is the same as ENERGY IN
WEIGHT LOSS - When ENERGY IN is less than ENERGY OUT



What Else Might Help?

- Eat routinely (two to three meals per day). Try not to skip meals because this usually leads to over-compensation at the next.
- Nibbling between meals can add more calories to a day's food intake than you might think. Keep to low calorie drinks and snacks, with post-exercise snacks used as just that, whilst being realistic about the amount of energy you used during your session.
- Avoid putting too much on your plate. Be realistic about how much you need.
- Write a food diary to monitor your progress and find areas for improvement.
- Set goals and reward yourself when you achieve them. Try rewards such as a massage or a new item of clothing rather than calorie-laden treats like chocolate, cake or crisps.
- Weigh yourself about once a month to monitor progress. More frequent weigh-ins are not recommended due to daily fluctuations in weight.



Food Safety and Hygiene

If you travel or work abroad, or you are simply going on holiday, you can be exposed to a whole range of situations which could result in illness; poor food hygiene, sanitation problems, poor water quality, or inadequate hygiene standards of others in public places. No individual wants to miss their holiday, work or as an athlete, their training or a competition because of illness. It is therefore sensible to be aware of the risks and to take reasonable precautions to avoid problems.

Safety Tips

- Buy bottled water abroad if the tap water is suspect. Use this to clean your teeth and your fresh fruit and vegetables, and avoid ice cubes.
- When taking a shower, washing your face or having a shave do not let water enter your mouth. Take care in swimming pools.
- Keep your drinks bottle clean. Use water or squash bottles that can be thrown away and replaced frequently, or sterilise your drinks bottle regularly (using a sterilising solution) to prevent contamination.
- Salads, raw vegetables and fruit can be a source of food poisoning because the food is handled and not cooked. Peel fruit rather than eating the skin.
- High risk foods include seafood (e.g. prawns, cockle, mussels), rare meat, unpasteurised milk, soft-cooked eggs and barbecued meats which can be undercooked in the middle.

Food Hygiene

Food hygiene is very important in the home and also when travelling abroad. Always try to follow some basic guidelines:

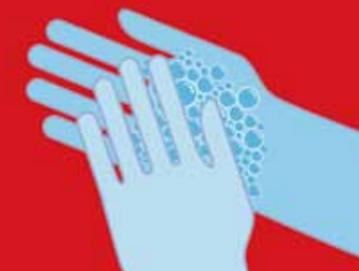
- Wash your hands before handling food and again after sneezing, coughing or using the toilet.
- Clean surfaces and floors regularly; food waste attracts insects and vermin.
- Cover any cuts with a waterproof plaster before handling food.
- Keep track of any food that you put in the fridge. Furry, mouldy food is unacceptable and it could contaminate other food.
- Keep raw meat at the bottom of the fridge so that it cannot drip blood onto other food.
- Check 'Best Before' or 'Use By' dates. Do not eat food that is past its date. Even if food is within its date do not eat it if it looks, smells or feels off.
- Transfer any left-over canned food into a covered container to be stored.

Diarrhoea and Sickness

This is most likely to happen as a result of food poisoning or an infection that has been picked up by touching communal objects such as door handles or toilet seats. Always wash your hands well after using the toilet. Alcohol-based gels can also be used after washing to reduce the risk of contamination. If you do develop diarrhoea or sickness you must be careful not to become dehydrated.

Wheelchair Users

When propelling a wheelchair, your wheels, and therefore hands, come into contact with any number of things that may have been on the floor. Please be careful to sanitise your hands prior to eating, or touching your eyes, nose or mouth to help prevent the spread of germs. Small bottles of hand sanitiser or wet wipes are easy to carry in your pocket or bag and are useful for this purpose.



This FIT FOR LIFE guide has hopefully taught you the basics about exercise and nutrition, and about how to lead a healthy, well-balanced and active lifestyle. If you have also chosen to take up a sport and you are now taking part in exercise at least three or four times per week, you may want to download our FIT FOR SPORT guide. This will help you tailor your training, nutrition and psychological skills to ultimately improve your performance. Good luck!



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About The Coca-Cola Foundation: Funder's of The Fit and Healthy Educational Resource

Since its inception, The Coca-Cola Foundation has awarded more than \$500 million to support global sustainable community initiatives, including water stewardship, community recycling, active healthy living, and education. For more information about The Foundation, please go to www.thecoca-colacompany.com/citizenship/foundation_coke.html

The creators of the Fit and Healthy Educational Toolkit (Toolkit) have taken reasonable measures to ensure the accuracy and validity of the Toolkit but the information therein is provided as a guideline only and may not be suitable for all disabled people as each person is unique. It is therefore important to adapt the recommendations to suit your own individual needs. Adults are encouraged to participate in a range of physical activities and exercises that are safe, enjoyable, and that help to improve both function and fitness.

If you are new to exercise, newly injured/impaired or have any secondary medical conditions, or you are unsure about the content of any of the information within the Toolkit we recommend that you consult a qualified medical professional such as your physician, before engaging in new types or intensities of activity. Remember it is important to start with small amounts of exercise and progress slowly.

All exercises are performed at your own risk. You must not rely on the information in this Toolkit as an alternative to medical advice from your physician or other professional healthcare provider. If you think you may be suffering from any medical condition, you should seek immediate medical attention. You should never disregard medical advice or discontinue medical treatment because of information in this Toolkit. The information in this Toolkit is provided without any representations or warranties, express or implied, or fitness for any purpose.

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email: phc@lboro.ac.uk

Find the online resources at: www.lboro.ac.uk/phc-toolkit

Useful links:

www.parasport.org.uk - Discover which sports you can play and where

www.paralympics.org.uk - Find out what's going on in the world of Paralympic sport

www.ukad.org.uk - Information on anti-doping issues for athletes

www.efds.co.uk/inclusive_fitness/ifi_gyms - Find your local accessible fitness facility

www.cpsport.org - Find out how to get involved in a variety of sports

