

Physical effects of stroke

A stroke can cause problems with physical activities like walking, writing and dressing, due to muscle weakness, stiffness, and changes in sensation. This guide looks at the physical effects of stroke, and the options for treatment and rehabilitation.

What are the physical effects of stroke?

Muscle weakness

Nearly three quarters of stroke survivors in the UK have leg weakness, and over three quarters have arm weakness. If your muscles are weak you could have difficulties with walking, moving your arms or holding things.

Weakness on one side of the body is often referred to as hemiparesis ('half-weakness'). Paralysis on one side of the body is called hemiplegia ('half-paralysis'). If you have weakness or paralysis, you may need help with everyday activities.

If you have weakness in your leg you may be more likely to slip, trip or fall. For example, your ankle might turn over when you put weight on it. For more information about falls and balance problems, see our guide F22, *Balance problems after stroke*.

Foot drop

This is a condition where your toes catch on the ground when you step forward, and you may lift your foot higher than usual

when walking, or swing the leg outwards. It is due to weakness in muscle groups in the foot and ankle that lift your foot. It can lead to difficulty walking, and a higher chance of falling.

Fatigue

After a stroke, some people have fatigue, or tiredness that does not get better with rest. You can also find that physical activities become tiring more quickly. For instance, you may find that objects slip from your grasp, or you may struggle to use your cutlery towards the end of a meal.

You might also find that despite walking safely at the start of a shopping trip, you become tired and more likely to trip towards the end. Many stroke survivors find that they lose cardiovascular fitness, because they become less active after a stroke. Exercise and stamina training can help you to improve your cardiovascular fitness and your stamina. Being physically active can also help you reduce your risk of a stroke. See our guide F18, *Fatigue after stroke* for more information.

Pain

Pain is another common physical problem. Some people have spasticity, or muscle tightness, which can lead to pain. Shoulder pain can be due to muscle stiffness, or because of weak muscles leading to a partial dislocation. Some people have painful or unusual sensations like tingling, cold or burning sensations, which may be due to damage to the nervous system. Headaches are common after a stroke. For further information on pain, please see our guide F30, *Pain after stroke*.

Spasticity

A stroke can damage the way the nerves control your muscles. This can lead to muscles contracting for long periods or going into spasm, known as spasticity, or hypertonia.

Muscle tone is the amount of resistance or tension in the muscles which enables you to move and stay in position. Muscles never completely relax: they keep some resistance even when they are not contracted, and feel springy to the touch.

In spasticity, muscles have increased tone, and are very tight. Spasticity affects around a third of stroke survivors. It can lead to some stiffness and tiredness in the muscles of the unaffected side, as you may be using them differently by trying to make up for weakness in your affected limbs.

Spasticity can develop within a week of a stroke, or some time later. It can be treated to help avoid problems like contractures. If you are having problems with muscle tightness, visit your GP and ask for treatment. See the *Treating the physical effects of stroke* section for more information.

Contractures

Sometimes spasticity can cause a permanent shortening of the muscles, known as a contracture. Spasticity can cause some muscles to change length, becoming shorter or longer. Sometimes these changes in length can become permanent and the muscle and joints become fixed in position. This can mean that the joint cannot be fully bent or straightened and the muscles cannot be stretched to their full length.

If you have a contracture, your arm might remain in a bent position. If you have a leg contracture you might find it difficult to walk, although some people will be affected more severely than others.

Changes in sensation

A stroke can affect your sensation in various ways.

- Feeling less sensitive to touch – this is called hypoesthesia. Your limbs may feel numb and this can cause difficulties. For example, if you are unaware of pressure on your skin, such as tight clothing or shoes, they might rub and damage your skin without you noticing.
- Feeling less sensitive to temperature. If you experience this you could be at risk of burning yourself or becoming too cold, so you may need to take extra measures to look after yourself. For example, you might need to carefully test water temperatures with your good hand if having a shower or when washing up.

- Feeling more sensitive to stimuli. This is called hyperesthesia and can affect a range of your senses such as your taste, hearing or touch. After a stroke, some people find watching television or being in crowded places difficult as they seem too loud.
- Feeling unaware of the position and movement in your limbs. Your body has a system which makes it aware of its position and movement. Some people have problems with this after a stroke. If this is the case for you, you may have difficulty moving around, and you might find that you need to look at your limbs to know where they are. Some people feel as if their limbs (or part of them) feel like they do not belong to them, or like they have altered size or shape.
- Having unusual sensations on your skin or in your limbs – this is sometimes called dysesthesia or paresthesia. Common sensations are pins and needles or tingling in your affected limbs. Sometimes these sensations can be unpleasant, such as burning, pressure or feeling like something is running over your skin.

Treating the physical effects of stroke

This guide can only give general information. You should always get individual advice about your own health and any treatment you may need from a medical professional such as a GP or pharmacist.

Everybody recovers differently from stroke, and the amount of recovery you will make will depend on many factors. These include the amount of damage to your brain cells, and where the stroke took place in your brain.

Most people will make the most significant improvements in the first few months after their stroke. After this time, recovery usually slows down but can continue for a long time. Many people carry on making improvements and become fitter and stronger for some time after their stroke.

Rehabilitation

After a stroke, you should be assessed to find out what your difficulties are. You should get all the rehabilitation you need to help with your recovery, and to enable you to be as independent as possible.

You can start having rehabilitation from 24 hours after a stroke. You should get 45 minutes a day of any therapy you need, for at least five days a week. The therapy should have clear goals, agreed between you and the therapist. If you have physical effects like problems with movement, balance or sensory disturbances, you may be offered physiotherapy. If you have movement

difficulties, physiotherapy should carry on until you are more independent, or able to move with the help of others.

After you leave hospital, if you need help with a physical effect of a stroke, you can ask your GP for help at any time. They can refer you to a specialist such as a physiotherapist.

If you have difficulty getting the rehabilitation you need, contact our Helpline for advice and information.

Some people pay for private therapy, sometimes to avoid a waiting list, or to supplement their treatment. You are entitled to have private treatment while having NHS care, but you should tell your therapist or doctor. The treatment should be carried out in a separate time and place. For more details see our guide R10, *Private treatment*.

Your rehabilitation therapy should be delivered by a qualified professional. It may be carried out on a one-to-one basis or in a group. You may have exercises to practise on your own, and with the help of your family or carers.

Treatment for muscle weakness

Physiotherapy

A physiotherapist will assess your problems and recommend suitable exercises and activities for you. There are different types of exercise to increase strength, stamina and flexibility. Physiotherapists use a variety of interventions to help you to do this. For example, your physiotherapist will help you to practise specific activities such as standing, walking and reaching for objects.

You can work to strengthen your muscles to make them work more efficiently. You can also learn to move and use your muscles in a different way to make up for weak muscles. Rehabilitation begins with help from therapists, but you can continue on your own and with help from family and friends.

To access physiotherapy after leaving hospital, you can ask your GP for a referral at any time. In some areas of the UK you can self-refer.

Occupational therapy

Occupational therapists play an important role in helping you to find ways to carry out everyday activities and help you maintain your independence. For example, they may make sure that you have any special equipment that you require at home.

They assess any difficulties you have, including problems with movement. They might ask you to practice certain activities to regain skills and build your strength. They often work with other professionals, like physiotherapists and speech and language therapists.

To access occupational therapy after leaving hospital, you should ask your GP for advice. Depending on your physical problems and where you live, you may receive treatment via the NHS or via the local council. Your GP can refer you for assessment. For further information about therapy, read our guides F16, *Physiotherapy after stroke* and F17, *Occupational therapy after stroke*.

Treatments for foot drop

Physiotherapy can sometimes help foot drop, by strengthening ankle and lower leg muscles.

Ankle-foot orthosis

An ankle-foot orthosis (AFO) is a type of brace that controls your ankle and foot in a straightened position, to reduce the risk of tripping or falling. They can help to improve your walking speed, stability and balance.

Your AFO should be fitted by a qualified professional, and you may be referred to an orthotist by a GP or a physiotherapist. You'll be assessed to ensure you can put the AFO on yourself, or have help if you need it.

Functional electrical stimulation

Functional electrical stimulation (FES) can be used to improve walking ability. It can help you walk more quickly, avoid falls, and gain independence.

It uses small electrical signals to directly stimulate the weak muscles to work. These electrical signals replace the nerve impulses that have been interrupted by damage to the brain. The electrodes can be applied to the skin to deliver electrical stimulation. Electrodes may be implanted directly on to the affected nerve, although this service is not widely available.

Having FES on the skin can cause redness, and can have an effect on spasticity, so it is advisable to be assessed at a specialist FES centre after consulting with your therapists. Your doctor can refer you to a specialist FES centre or therapist for assessment and fitting, if it is a suitable treatment for you.

Treatments for spasticity, muscle stiffness and contracture

If you have weakness after your stroke you will be assessed for changes in your muscle tone, including spasticity. There are lots of ways to try to reduce spasticity and contractures. While you are in hospital, your medical team will make sure that you are positioned carefully so that your arms and legs are supported and your muscles are stretched. They will also encourage you to move about as much as possible to make sure that your muscles and joints do not become tight.

Your therapy and nursing team may also do stretches, exercises and massage techniques with you. They will aim to keep your muscles supple to prevent spasticity and contractures from developing.

If you do develop spasticity or contractures after your stroke you should be assessed to find the best treatment for you. This may include a combination of physiotherapy, treatment with botulinum toxin type A and medication.

Physiotherapy

If you have spasticity you should have physiotherapy regularly to move your joints. Your physiotherapist will gently place your affected limb into as many different positions as possible. This stretching should be taught to your family and carers so that they can help you to practise your exercises. See our guide F16, *Physiotherapy after stroke* for more information.

Botulinum toxin type A

Botulinum toxin type A works by blocking the action of the nerves on the muscle, reducing your muscle's ability to contract.

Physical effects of stroke

It has several brand names including Botox, Dysport and Xeomin. It reduces muscle tone, which can help you to straighten out your limbs.

Botulinum toxin type A is given as an injection directly into the muscle, and is mainly used in the hands, wrists and ankles. The muscle-relaxing effects usually last for about three months and you should not notice any changes in sensation in your muscles.

You should have physiotherapy alongside treatment with botulinum toxin type A. This may include providing a splint, electrical stimulation or a brace to ensure that any range gained in the muscle is maintained. You should be assessed three to four months after the treatment, and you may be offered further treatments if helpful.

Medication

If you find that you are still experiencing muscle stiffness, you may be prescribed medication to help reduce this stiffness and the pain that often accompanies muscle spasms. There are different types of drugs available. They all work in slightly different ways, but they all help to relax your muscles, move more easily and stretch them further. You may also find that it becomes easier to straighten or bend your affected limbs, and you may notice fewer muscle spasms.

The main types of medication offered for spasticity are baclofen and tizanidine. If these drugs do not work, there are others that may help. This medication should only be prescribed by someone who specialises in managing spasticity.

Treatment for changes in sensation

Changes in sensation may improve with time and some people benefit from different techniques like cognitive behavioural therapy (CBT), relaxation and meditation. If you have painful sensation changes, treatment can include medication such as antidepressants.

You should also have regular reviews to check the impact of the pain or sensation on your wellbeing, sleep and lifestyle, and provide any treatment that's needed. If you have lost the ability to sense heat or pain, you should be taught how to take care of your body and limbs so that you don't injure yourself. For information about changes to taste and smell, see our guide F39, *Rare effects of stroke*.

Where to get help and information

From the Stroke Association

Talk to us

Our Stroke Helpline is for anyone affected by a stroke, including family, friends and carers. The Helpline can give you information and support on any aspect of stroke.

Call us on **0303 3033 100**, from a textphone **18001 0303 3033 100** or email info@stroke.org.uk.

Read our publications

We publish detailed information about a wide range of stroke topics including reducing your risk of a stroke and rehabilitation. Read online at stroke.org.uk or call the Helpline to ask for printed copies.

Physical effects of stroke

My Stroke Guide

My Stroke Guide is the stroke support tool and online community from the Stroke Association. Log on at mystrokeguide.com.

Our Enquiry Line can support you with using My Stroke Guide: call **0300 222 5707** or email mystrokeguide@stroke.org.uk.

Other sources of help and information

The Royal College of Occupational Therapists (RCOT)

Website: www.cot.co.uk

Tel: 020 7357 6480

The professional body for occupational therapists in the UK. Has an online directory that you can use to find an occupational therapist and publishes a range of useful leaflets and guides.

Physio2u

Website: www.physio2u.co.uk

Tel: 020 7306 6666

A register of physiotherapists who are recognised by the Chartered Society of Physiotherapy. You can sort therapists by a number of different conditions, including stroke.

HemiHelp

Website: www.hemihelp.org.uk

Tel: 0345 120 371

Supports children and young people with hemiplegia, as well as their families.

National Clinical Centre for FES

Website: www.odstockmedical.com

Tel: 01722 439 540

Offers more information about functional electrical stimulation (FES) and where you can get the treatment.

Physio First

Website: www.physiofirst.org.uk

Tel: 01604 684 960

Offers details of private therapists specialising in neurology.

ARNI Trust (Action for Rehabilitation from Neurological Injury)

Website: www.arni.uk.com

Tel: 0203 053 0111

Offers specialist physiotherapy for stroke survivors.

Glossary

AFO = ankle-foot orthosis.

Contracture = abnormal shortening of a muscle that results in deformity

Foot drop = the inability to lift the toes and feet properly when walking

Dysesthesia or paresthesia = abnormal and unpleasant sensations

FES = functional electrical stimulation

Hemiparesis = weakness of one side of the body

Hemiplegia = paralysis of one part of the body

Hyperesthesia = an increased sensitivity that can affect a range of senses

Hypoesthesia = a dulled sensitivity to touch

Spasticity = a form of muscle tightening

About our information

We want to provide the best information for people affected by stroke. That's why we ask stroke survivors and their families, as well as medical experts, to help us put our publications together.

How did we do?

To tell us what you think of this guide, or to request a list of the sources we used to create it, email us at feedback@stroke.org.uk.

Accessible formats

Visit our website if you need this information in audio, large print or braille.

Always get individual advice

Please be aware that this information is not intended as a substitute for specialist professional advice tailored to your situation. We strive to ensure that the content we provide is accurate and up-to-date, but information can change over time. So far as is permitted by law, the Stroke Association does not accept any liability in relation to the use of the information in this publication, or any third-party information or websites included or referred to.

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Together we can conquer stroke.

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