



Parkinson's
Disease Society

Freezing in Parkinson's

What is freezing?

Many people with Parkinson's experience 'freezing'. This is a term that describes the experience of stopping suddenly while walking, or when beginning to initiate walking, and being unable to move forward again for several seconds or minutes. People feel as though their feet are 'frozen' or stuck to the ground, but that the top half of their body still wants to move on.

People with Parkinson's can also sometimes experience freezing when doing other activities, or when starting a movement, for example when stepping off after rising from sitting, beginning to speak, when raising a cup to drink or starting to get out of bed. Difficulty getting started is sometimes called 'start hesitation'.

About 30% of people with Parkinson's will, at some time, encounter difficulties with freezing. For many people, it is a particularly disturbing symptom, as the loss of automatic movement means that a person has to consciously think about each separate phase of the simplest movement. This can lead to the person being discouraged from important sources of interest or satisfaction, such as social outings or any situation involving public places.

Freezing, which is often preceded by frequent and small shuffling steps (festination), can also lead to problems with balance. This increases the risk of falling and makes freezing a potentially dangerous symptom of Parkinson's. This information sheet discusses the nature and possible causes of freezing and goes on to describe the various techniques that can be used to avoid or overcome freezing episodes.

What causes freezing?

It is now thought that freezing occurs when a normal sequence of movement is interrupted, although its exact cause is not clearly understood. Freezing becomes noticeably worse if a person is anxious, finds themselves in an unfamiliar situation or loses concentration. It can occur in a number of places or situations, but particularly in the following:

- crowded or new places
- entry to doorways and lifts
- narrow spaces, such as theatre aisles or church pews
- when the surface a person is walking on changes suddenly, such as a different pattern on a carpet, or a change from a smooth to an uneven surface

There is no consistency in these occurrences. A person may be able to walk without difficulty on uneven surfaces and freeze on approaching a smoother level. Exactly the opposite may also happen.

It is impossible to predict whether a person will experience freezing or not, although it has been observed that it is slightly more common in people whose initial Parkinson's symptoms involved difficulties with gait (such as problems with balance). It is also far more likely to occur in people who have had Parkinson's for some time and who have been on levodopa treatment for a number of years. However, as freezing can occur in people who are not being treated with levodopa, the condition cannot be simply described as a side effect of medication. It has been suggested that other chemicals in the brain besides dopamine, might be involved in freezing.

Whatever the immediate cause, one theory of how freezing occurs is that the brain fails to make the changes necessary when an alteration in stride length occurs. The length of a person's stride changes when walking from level to uneven ground or from open to narrow spaces. It is thought that when walking on one surface for any length of time the decision to make a stride of the same length is automatically made without conscious processing by the brain. This has been described as the brain going into 'autopilot'. If the person with Parkinson's then comes across an obstacle, a change of surface or pattern or a more confined space (such as a doorway), the decision to change the length and pace of the stride is not made automatically as it may be in other people. Freezing can also happen when people have to turn suddenly, again suggesting that the switch from 'autopilot' is disrupted.



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Many people may find that they experience freezing when they are having 'off' periods. The 'on/off' phenomenon is a side effect of levodopa treatment found, again, in some (but by no means all) people who have had Parkinson's for some time. It can best be described as an unpredictable shift from mobility ('on') to a sudden inability to move ('off'), but shifts from 'off' to 'on' can occur just as suddenly. It is important to recognise that freezing is not the same as the 'on/off' phenomenon. Different techniques are used in the management of freezing and 'on/off' swings so it is important that they are recognised as separate problems. For more information on 'on/off' swings, see the PDS information sheet *Motor Fluctuations*.

What treatments are available?

Drugs

If freezing episodes tend to occur during 'off' periods, then they may also respond to adjustments in the drug regimen. 'On/off' episodes are thought to be related to increased sensitivity in the brain to quite small variations of dopamine in the bloodstream and can sometimes be reduced by adjustments to the type or timing of medication. Any changes to your medication should be discussed with your GP or Parkinson's specialist.

Unfortunately, freezing that occurs during 'on' periods or freezing that is not related to 'on/off' episodes does not tend to respond well to the more common drug treatments for Parkinson's, such as levodopa or dopamine agonists. If a person is taking frequent small doses of levodopa they may find that taking the same amount of levodopa over the day, but in larger, less frequent doses, may reduce the frequency of freezing episodes. Again, this should be discussed with your doctor.

Research carried out on the drug selegiline (trade names Eldepryl and Zelapar) suggested that people who were prescribed it were less likely to encounter freezing problems in the later stages of their Parkinson's. However, this study only suggests a reduced risk of

freezing. It does not suggest that selegiline can be used to treat freezing and the drug has not been found to treat freezing episodes effectively.

Surgery

Although surgical treatments have been found to be beneficial for many people with Parkinson's, the symptoms for which it has been found to be effective do not usually include freezing. Deep brain stimulation has been found to be effective in treating some, but not all, freezing episodes. For further information on surgery, see the PDS information sheet *Deep Brain Stimulation* and the PDS booklet *Surgery and Parkinson's Disease*.

Physiotherapy

As Parkinson's progresses, it can affect a person's posture and balance. If a person freezes in a stooped position with their heels off the ground, they are at a greater risk of falling, as the normal reflexes used to maintain balance function less well. A physiotherapist can instruct a person in a number of techniques to avoid freezing or to reduce the risk of falling and injury if it occurs. These generally involve exercises to alter the person's gait and posture, and may include:

- learning to put the heel down first
- straightening up to a correct posture
- trying different cues to overcome the problem (see over the page for details of some of these)

These techniques are of great importance in dealing with freezing. Learning to stand up straight and to put the heel to the ground at all times gives the person more stability and allows them to steady themselves. It is important also to remember not to lean backwards. The physiotherapist can teach techniques to help with this.

A physiotherapist should also be able to advise on the use of walking aids, as these can often be more of a hindrance than a help in dealing with freezing, if not chosen correctly. Some walking aids, such as Zimmer frames, are not recommended for people with



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Parkinson's so it is very important to get advice from a qualified professional. (For further information, see the PDS information sheets *Physiotherapy and Parkinson's* and *Falls and Parkinson's*.)

Occupational therapy

Occupational therapists are highly trained health professionals who help people with disabilities achieve maximum function and independence. They also assess an individual's ability to carry out daily activities and advise on ways of making homes and work places safer or more manageable. Sometimes, this involves advice about appropriate adaptations, aids or equipment.

An occupational therapist should be able to advise you on techniques to avoid or adapt areas in your home that provoke freezing episodes, and how to overcome an episode should one occur. Occasionally, carefully selected strategies or activities may be suggested.

For more information, see the PDS leaflet *Occupational Therapy*.

Footwear

Some people who experience freezing may find that leather-soled shoes help movement, but these may also increase the risk of slipping and perhaps of falling. Alternatively, other people may find that a sole with more grip will make them think about lifting the foot to walk and therefore maintain a more normal gait for longer. However, this does not necessarily reduce the risk of falls as preventing sliding may cause the person to fall forwards. As each person with Parkinson's is different, there are no set rules for what footwear to choose, but a physiotherapist or a chiropodist/podiatrist should be able to advise you on your individual needs. For more information, see the PDS information sheet *Foot Care and Parkinson's*.

What can I do myself?

The more common situations where freezing can occur have been listed earlier, such as when encountering narrow spaces, crowds or doorways. It may be useful

sometimes to consciously avoid such situations, but this is not always possible or indeed beneficial.

The embarrassment and discomfort that people may feel as a result of their freezing episodes may encourage them to avoid social contacts or public events or to withdraw from activities that they previously enjoyed. In many cases, therefore, avoiding situations where freezing may occur is less useful than devising a strategy to overcome them.

An initial period of trial and error will be needed to discover which method or methods work best for you. Once you have found out what suits you best, you will be able to restart your walking or maybe avoid freezing in problem areas, using your preferred method or 'strategy'. Over time, as Parkinson's develops, you might begin to find your chosen method less effective. If this happens, you will need to experiment again with some of the other methods described below to find one that now works for you – this may involve switching to a different category of stimulus or 'cue'.

All of the methods described below involve providing a stimulus or 'cue' to trigger the restart of movement.

The weight shift method

When you freeze, don't try to move forward, but instead try to gently shift the majority of your weight sideways to one leg. This will often break the over activity of your leg muscles (associated with freezing during walking), allowing you to take a step forward with the opposite leg. You can say something like 'shift weight to left (or right) leg, and step with right (or left) foot' as you do this. Another thing you could try is stamping your feet on the ground to maintain stepping. Rather than stopping, for example, when opening doors, it helps to maintain a rhythmic stepping movement on the spot.

Sound and vision methods

When you freeze, decide which foot you are going to move first and then simply say 'One, two, three, step', 'ready, steady, go', or a similar phrase. Attempt to restart walking on the trigger word 'step' or 'go'.



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This can be done silently in your mind, spoken aloud by yourself or said by someone who is with you when you freeze. Whichever method you use, a clear commanding tone of voice will be the most effective to get you restarted.

Other strategies to try include using rhythm (again, either in your mind or aloud) by singing or humming a tune as you walk. Or by counting your steps, for example count from 1 to 10 and then count from 1 to 10 again, chanting 'one, two, one, two, one, two', or chanting 'left, right, left, right'. It may also be helpful to use rhythm as you approach an area that tends to cause you to freeze. This may let you pass the 'trouble spot' without freezing. Slowing the stepping rhythm down and thinking about making large steps as you walk may help if you tend to shuffle as shuffling can precede a freeze.

Some people with Parkinson's find a mini metronome can be used to restart their walking. One PDS member writes: "After a particularly bad fortnight with the frustrations of sticky feet, my husband decided to try the mini metronome tip we were told about by the Society's Helpline. It's the size of a wrist watch and can be clipped onto a waist belt or pocket. It is readily activated by pressing two buttons and the initial bleep initiates foot movement. It's a real help with managing this problem."

Another tip to consider is to notice if contrasting colour rugs or mats cause you to freeze, for example in the bathroom. If so, remove the rug or mat or reposition it away from your usual route through the area.

If someone who understands your difficulties is with you when you freeze, they may be able to help you by placing one of their feet in front of yours at a right angle to give you an obstacle to step over to restart your walking.

Floor strips

If you are prone to freezing in the same place or places at home and the methods described so far don't suit you, floor strips may solve your trouble spots. These are of particular use in doorways where you need to turn a corner in a corridor or pass through a narrow area.

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Any coloured sticky tape, for example masking tape or electrical insulating tape, can be used. The important thing is to use a colour that contrasts with the floor or carpet below.

Figures 1 to 3 illustrate how the strips should be placed on the ground. Strips of approximately 16 to 22 inches in length should be firmly stuck to the floor or carpet at intervals of about 14 to 20 inches. Where a corner needs to be negotiated, place the strips as shown in figure 3 to fan around the bend.

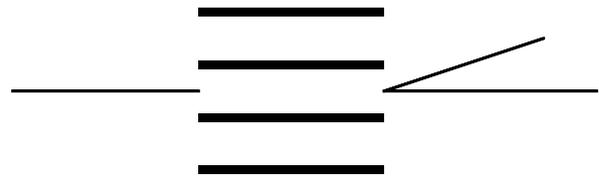


Fig.1 Strips placed through a doorway

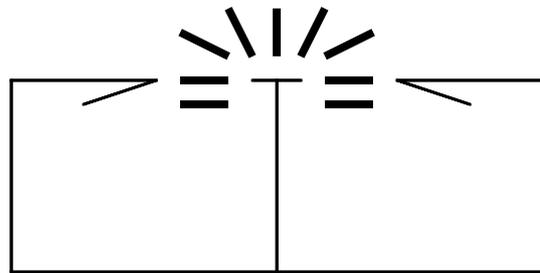


Fig. 2 Strips placed between two doorways

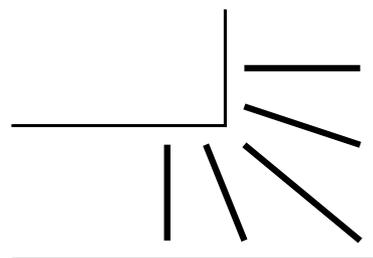


Fig. 3 Strips placed around a corner in the corridor



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In doorways, if the flooring colour or type changes at the threshold, place a strip at the joint. If the flooring is the same on each side of the doorway, place strips equally on each side of the threshold.

When walking over the strips do not worry about where to place your feet. Step on or between the lines to suit yourself.

Strips will need to be replaced with fresh tape from time to time as they tend to get scuffed by vacuum cleaning and wear and tear.

Strategies for difficulties in starting an action/ start hesitation

If starting actions are a problem, try doing the action in your mind first. Imagine or remember doing the action(s) in detail and without any difficulty in your mind before you try to start moving. For example, to get up from an armchair when you feel stuck, imagine moving your bottom to the front of the seat, placing your feet tucked close to the chair and slightly apart, your hands ready to push down on the armrests. Then imagine the feeling of pushing down through your legs and arms as you rise up easily into a standing position.

After having briefly run through the actions in your mind, prepare for action with a 'one, two, three, stand' followed by the actions you have just imagined. The technique of imagining actions is sometimes called mental rehearsal and is commonly used by top sports people and by musicians to practise and improve their performances. This works because imagined movements activate the same areas of the brain that are used when you actually make same movements.

Freezing in busy places

Some people freeze in busy places, such as supermarkets, libraries or town centres. If this happens, allow time to pause, look and plan your route at regular intervals. To do this, step to one side, just inside the doorway or out of the main flow of other people (so as not to cause an obstruction), then look at the area ahead of you. Check for obstacles such as boxes,

children, or trolleys. Decide the exact route you will take for as far as you can see ahead or want to go and then set off to walk to that point. Repeat this strategy of 'pause, look, plan, and walk' as often as you need.

By finding out and using strategies that work for you, you will be able to restart or start more easily and get on with living despite episodes of freezing or start hesitation.

What risks are involved with freezing?

There are a number of risks involved with freezing, particularly as it can happen at any time and without any warning. If you are prone to freezing, extra care must be taken if you are engaged in activities such as swimming. You should have someone with you at all times.

Freezing also significantly increases the risk of falling. As Parkinson's symptoms progress, people will notice changes in their posture and balance. The body can become stooped with the knees bent and the head forward. This also encourages a change in walking with the body's weight pushed forward on the balls of the feet or even the toes. The heels will tend to lift off the ground, making the person less stable. If someone freezes in this posture, the momentum of the body continues and the person may feel themselves falling forward. The more they try to move their feet, the more unsteady they can become. For further information, see the PDS information sheet *Falls and Parkinson's*.

Anxiety increases the risk of freezing and also of falling once freezing has occurred, so it is important to remain calm and to try some of the methods outlined above or any others you may find useful. If you find that none of the methods you normally use are working and that you need to begin moving again quickly after falling, it can help to sink to your knees and 'walk' on in that position.

Every person develops their own methods for coping with freezing. These may or may not include the ones above. It is important to find out what is best for you and not to let the worry that you might freeze discourage you from any activities that you may enjoy.



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Other resources

The Rescue project was a European Commission funded project that investigated a cueing therapy programme to improve walking, including freezing, in Parkinson's disease. Information sheets about cueing have been developed for people with Parkinson's disease and their carers, and a CD-Rom has been produced for physiotherapists. Details can be found on the project website: www.rescueproject.org

Acknowledgements

The Section 'What can I do myself?' was written by Ana Aragon, Occupational Therapist, Bath and North East Somerset Primary Care Trust. The PDS would also like to thank Dr A Jones, Dr A Neuwboer, Dr R Pearce and Bhanu Ramaswamy, MCSP for their help reviewing this information sheet.

Parkinson's Disease Society

215 Vauxhall Bridge Road, London SW1V 1EJ, UK

Tel: 020 7931 8080 Fax: 020 7233 9908

Helpline: 0808 800 0303

Email: enquiries@parkinsons.org.uk Website: www.parkinsons.org.uk

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Charity registered in England and Wales No. 258197 and in Scotland No. SCO37554.

A company limited by guarantee. Registered No. 948776 (London)

Registered office: 215 Vauxhall Bridge Road, London SW1V 1EJ

Revised March 2008

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