

Hot and cold

the effects of temperature on MS

A lot of people with multiple sclerosis (MS) find they are affected by the heat. In fact, over 60% of people with MS report heat sensitivity. It doesn't affect everybody, but many people find that at least some of their symptoms get worse when they get hotter. Some people find the cold more of a problem. We look at this later in this factsheet.

Too hot

When you get too hot, you may notice changes to how you feel - like difficulties with balance, weakness, or fatigue, or changes to your vision or sensation. These are all common effects from the heat. But it's an individual thing. Some people find it harder to concentrate, or might notice it affects their reflexes.

Uhthoff's phenomenon

The temperature effect is often described as Uhthoff's phenomenon, after Dr Wilhelm Uhthoff who first described it in 1890. Dr Uhthoff was a German eye specialist who noticed that people with optic neuritis had worse symptoms when they were exercising. His name is still associated with temporary changes in symptoms due to heat.

What are the long-term effects?

No long-term harm is thought to come from body warming. Symptoms usually return - often in less than an hour - to their usual (existing) levels as your body cools down. Some people notice that they feel more fatigued than usual for several hours, or even a few days, after over-heating, but recovery can be, much quicker.

However, it's important to check that there isn't another reason for any increase in symptoms, such as an infection. Speak to your GP or MS nurse if you're concerned.

Is it the weather?

Heat or exercise-related symptoms might be brought on by activity, sunbathing, hot baths, strong emotions, exercise, fever or other things associated with an increase in body temperature, such as an infection.

People with MS are more sensitive to warm environments than people without MS and many people with MS do find hot weather difficult, but, even in cooler weather, taking a hot shower or even using a hair dryer can sometimes be a problem.

Your type of MS could be an influence as some studies show that people with relapsing MS could have slightly higher body temperatures compared to people with progressive MS or those without MS.

For women with MS, changes in hormone levels, such as during the menstrual cycle and menopause, might cause changes in body temperature. Just before, and during a period, the core body temperature rises a little and this can sometimes make MS symptoms feel worse.

Exercise

Exercise is important for general health. If the heat affects you, you might want to change the exercise you choose – resistance exercise (using your bodyweight, free weights or machine weights) doesn't aggravate your symptoms as much as endurance exercise (increasing your breathing and heart rate for an extended period of time, such as, cycling or running).

Exercise in a place with air conditioning or try different ways of cooling down before, during and afterwards. But it doesn't have to be a reason to avoid exercising completely. For more information see the section How can I keep cool? on the next page.

Your GP, MS nurse, physiotherapist or occupational therapist might all be able to advise on exercising and staying cool. For more about exercise that's right for you, see our booklet Moving more with MS and our DVD introduced by Sally Gunnell, Exercising with MS.

How hot is too hot?

A 'normal' temperature is around 37°C . It varies slightly from person to person. If the heat does affect you, it might take only a small shift from your 'baseline' body temperature to notice an effect on your symptoms. Studies have shown that a rise in body temperature of only 0.5°C can affect how people feel.

Some people use a thermometer to see if they're getting too warm, but many find the most practical approach is to listen to their body and find ways to cool down if they feel overheated. See How can I keep cool ? on this page.

Why do my symptoms get worse in heat or cold?

It seems that raised temperatures stop nerve fibres from working properly. When the fibres or their protective outer layer (myelin) have already been damaged by MS, they are much more sensitive to the effects of heat. Small studies suggest that people with relapsing MS have a higher body temperature compared to people with progressive MS.

In the brain and spinal cord, messages pass along nerve fibres to control all the different parts of the body. These messages are passed as electrical impulses.

When things get too warm, messages find it even harder to pass along the nerve. So in a nerve where messages were already going slowly, they might not get through at all. This makes symptoms worse, until the nerve fibres cool down again.

How can I keep cool?

Here are just a few ideas for keeping cool. You might find your own that work better for you. You might find others that people have found helpful in our online forum: mssociety.org.uk/forum

Simple and cheap ideas:

- drinking cold liquids
- sucking ice cubes
- taking cool baths (start with warm or slightly warm water and increase the coldness to avoid a shockingly cold experience)
- opening a window or sitting in front of a fan

Some people use body-cooling garments, often in the form of 'cooling vests', though other options include cooling ties. Cooling garments can be passive or active. Passive garments, such as cooling ties, use evaporation or ice packs for cooling. Active garments use circulating coolants, rather like a fridge. They need a power source to work.

You might not use a cooling garment all the time. For example, if you find that heat is a problem when you eat, you might just try using one at mealtimes.

Before buying anything, you might want to talk to your MS nurse. Perhaps try out several garments before deciding.

MS sometimes changes the way a person experiences hot and cold on the skin. So it's important that, for example, ice packs aren't left directly on the skin.

The Living Made Easy website has information about different cooling clothes and devices:

livingmadeeasy.org.uk
or call: 0300 999 0004

On holiday – or when it's really warm at home – there are several things you can try to keep cool:

- avoid hot environments like kitchens or very sunny rooms
- avoid long car trips unless you have effective air conditioning
- on long car journeys, spare cool collars and ties etc can be kept in cool boxes (the electric plug-in ones are great for re-cooling ones that have started to warm up)
- wear light-coloured, loose-fitting clothing
- keep your head covered if you're in the sun
- avoid direct sunlight (sit in the shade)
- keep curtains or blinds closed in the day to stop the heat building up
- search out air-conditioned hotels, cafés and restaurants
- increase your fluid intake (try cold drinks)
- keep a hand-held mini-fan close by
- moisten clothing using a water spray
- dip sports sweat bands in cold water and put them on both wrists
- use cooling garments
- try clothing with 'wicking' properties. They draw moisture away from the skin and, through evaporation, help keep your temperature stable
- try chilling pillows which you can put your feet on during the day and slip inside your pillowcase at night for all-day cooling

Too cold

It's less common than feeling the heat, but some people do find the cold is a problem. If you are affected in this way, you might notice sensory symptoms or mobility issues get worse when you're cold. Even some people usually more affected by the heat might notice that their muscles feel stiffer in the cold. Low temperatures might bring on spasms, or a feeling of tightness in the muscles.

As with heat, these changes are usually temporary - if you can find a comfortable temperature, these effects should fade away.

Your MS could be causing the blood vessels to overreact. There has not been a great deal of research into the effects of cold on MS symptoms, and we don't know for certain why it happens. But whatever the reasons behind it, for some people, keeping warm feels more important than keeping cool.

Raynaud's phenomenon

Some people find that the cold can cause their symptoms to worsen. Doctors don't know exactly why, but your MS could cause blood vessels in the hands and feet to overreact to cold temperatures or stress.

Raynaud's phenomenon happens when your fingers and toes lose heat and in extreme cases they change colour to white, then blue and then red, as the bloodflow returns. You may also feel numbness, pain, and pins and needles. These symptoms can last from a few minutes to several hours and is not exclusive to people with MS.

This happens when small blood vessels under the skin spasm, slowing down your blood supply that is helping to preserve your body's core temperature.

Other parts of the body that can be affected by Raynaud's include the ears, nose, nipples and lips.

Keeping warm

Our bodies can generate heat from moving around, so it can be harder to stay warm if your mobility is affected. Of course, warm clothes can help, as might heat pads and hand warmers.

But MS sometimes changes the way a person experiences hot and cold on the skin. So it's important that, for example, a heat pad or hot water bottle is not too hot and is not left directly on the skin. This can cause blisters and burns.

Some people also find that tight clothes feel painful, and might trigger muscle spasms, although some people who have tremor might find that tight clothing might help their tremor. So tight-fitting thermal wear, for example, might not be helpful. Layering looser clothes might be a better solution.

We can lose heat from anywhere on our body, so hats, thick socks and lined boots are all good for warmth.

Frequent hot meals and hot drinks can help warm the body. Storing a hot drink in a flask can help avoid repeated trips to the kettle.

You might also be able to claim financial and practical help with heating and insulating your home. Contact the Energy Saving Trust for information about schemes where you live:

energysavingtrust.org.uk

or call **0300 123 1234** for

England, Wales and Northern Ireland

and **0808 808 2282** for Scotland

or email **energy-advice@est.org.uk**

The **Living Made Easy** website has information on dressing for warmth:

livingmadeeasy.org.uk

or call **0300 999 0004**

Useful resources

Multiple Sclerosis: 300 Tips for Making Life Easier (Second Edition) (2006) by Shelley Peterman Schwartz. Published by Demos.

Multiple Sclerosis: the Questions You Have the Answers You Need (Third Edition) (2005) by Rosalind C. Kalb. Published by Class Publishing.

We're the MS Society. Our community is here for you through the highs, lows and everything in between. We understand what life's like with MS.

Together, we are strong enough to stop MS.

The MS Society provides this information free of charge but if you would like to help cover the cost, which will help towards our essential work, please call **0800 100 133** or visit the fundraising section of our website to make a donation. Anything you can give will be greatly appreciated.

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