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MULTIPLE
SCLEROSIS
AND
SPASTICITY

2ND EDITION

ms.

Multiple Sclerosis Society of New Zealand

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INTRODUCTION

Our muscles need to maintain constant tension to prevent our bodies from collapsing in a heap. The level of tension varies from day to day and hour to hour in everybody.

However, for some people with neurological conditions, the level of muscle tension can uncontrollably increase to a severe level. This is called hypertonicity or spasticity.

Spasticity is one of the most common symptoms in MS; some degree occurs in an estimated 80% of people with MS. It affects the legs and torso more frequently than the arms, and can also cause the calf muscles to rhythmically contract and relax (called clonus).

This increase in muscle tension can significantly interfere with daily activities.

This booklet has been written to help lessen the impact of spasticity on your life. It contains information on the best ways to manage spasticity, including some strengthening exercises especially designed for people with MS.

WHAT CAUSES SPASTICITY?

Within the body's central nervous system there is a complex interactive process that controls the contraction and relaxation of muscles. Nerve pathways direct messages between the brain and muscles to produce the movement that you want.

For example, when we make a fist, there is simultaneously:

- A 'go' message to the relevant muscles to curl the fingers.
- A 'stop' message to the muscles that keep the fingers straight to relax.
- A co-ordinating network that ensures the movement is smooth and sustained.

However, MS damages the nervous system and this interferes with the coordination or movement of muscles, particularly with getting them to relax.

Muscles affected by spasticity generally feel stiff or cramped, and can lock a joint into position until the muscle tension is reduced by fatigue or by stretch techniques. (See page 9 for more information on stretching.)

The level of spasticity may vary from a mild increase in muscle stiffness (which can be relatively easy to control), to sudden strong spasms that contract muscles in rigid positions (which can be difficult to overcome).

The strength of the reaction can depend on the damage to the central nervous system, i.e. the severity of the MS. The more nerve fibres that are affected, the more easily triggered and harder to overcome spasticity becomes.

Aside from the neurological damage, other common causes of a spastic reaction for people with MS are:

- A pain message from injury or joint inflammation, or aching from poor posture;
- Limb contact against an immovable object, triggering a spastic reaction to relieve the pressure;
- Overfull bladder or bowel, or constipation;
- Infections (e.g. bladder infection or 'flu');
- Sudden movement or stretch to affected muscles (e.g. quick aerobic exercises or being startled);
- Extremes of temperature;
- Increased skin sensitivity;
- Specific muscle actions or positions which produce a pattern of reaction (the next section discusses these);
- Increases in level of stress chemicals, e.g. adrenalin.

The next few sections of this booklet suggest some approaches for preventing and managing spasticity, and they can be used regardless of how the reactions were caused.

COMMON POSITIONS FOR SPASTIC MUSCLES

Hypertonic or spastic muscles go into spasm in patterns dictated by the strength of the muscle groups to which they belong.

LOWER LIMBS

In this muscle group, the most common position for spastic muscles is with the hips and knees pulled straight, legs pulled together and foot pointed down.

However, in a few cases, the opposite patterns may co-exist or predominate and the legs may draw up into a flexor pattern—hips, knees and feet pulled up towards the torso.

UPPER LIMBS

The common position for spastic muscles is with the elbows, wrist, fingers bent and the arm pulled across the body, similar to when you eat with your hands.

Again, in some people the opposite pattern may predominate and the elbow may be pulled straight.

TORSO

In the torso, the back muscles that lie on either side of the spine may also spasm. This produces a very strong pattern that arches the back and neck and very often triggers a straightening response in the legs. This response can make transfers from a chair to the toilet, car or bed very difficult.

Stretching your arms over your head will often trigger the back muscles into a spasm.

These spastic reactions can be frustrating, and interfere with your day-to-day activities. However, there are times when the presence of spasticity can be beneficial.

For example, it can assist positional changes in bed. A sharp pull on a bed bar can induce a flexor spasm—this raises the knees, and in turn allows you to turn onto your side, easing pressure points on back, buttocks and heels. A later push on the bar will trigger an extensor spasm—this allows you to return to your back.

So, whilst spasticity can be frustrating, it can also provide extra help with your movements.

CONTROLLING MILD SPASTICITY

It is important to address problems with spasticity, as it can eventually lead to muscle shortening as well as posture and joint troubles. The best management methods are concerned with prevention, using stress management and gentle exercise. Other tools include physical therapy aids and medication.

You should involve your family, carer and health professionals in your treatment, as a team approach can provide both physical and motivational support.

STRESS MANAGEMENT

Mental and emotional stress can increase muscle tension and contribute to spasticity, so it is important to include stress management in your programme of spasticity control.

Some good ideas for managing stress include:

- ➞ yoga and relaxation classes;
- ➞ relaxed swimming;
- ➞ careful massage; and
- ➞ social and leisure activities

Your local MS Society can help you arrange these.

Also, it is crucially important that you contact your Field Worker, your GP, or a psychologist if stress from family or financial pressures, or the challenges of living with MS, become overwhelming. Help is available.

EXERCISE

Spasticity may be triggered by contraction of only one muscle, but relaxing the whole muscle group by slow, sustained stretching will ease the tightness. It is also good to use deliberate body positioning to prevent spasticity.

There are other activities that can help relax tight muscles, such as horse riding, swimming, massage and acupuncture.

Always talk to your doctor or a physiotherapist before starting any exercise programme. Don't overdo it when exercising, particularly at first. One of the symptoms of MS is decreased endurance with early fatigue. Usually 3-5 repetitions of a given exercise are an effective number. Gradually increase the number as you feel able. Progress may be slow, but persevere—try to set yourself realistic exercise goals. Be prepared to rest after your exercise time.

Note: Some health professionals suggest ice packs or splinting for spasticity. However, you should be very careful as they can increase muscle tension, and the ice packs can damage your skin.

Stretching to control spasticity

Before starting any strengthening exercises, you should do some stretching:

- ➡ Slowly and gently, because any quick stretch could actually increase the spastic reaction. If stretching triggers spasms, either ease off the stretch slightly until it is comfortable again, or stop completely.
- ➡ Regularly, because left alone a spastic reaction shortens the muscle fibres, so spasms are then more easily triggered.

a) Standing against a wall or chair, place one foot behind the other. With your front knee bent slightly, keep your back leg straight and your heel down. Lean your hips forward until you feel a stretch in your calf (Figure 1). Repeat with the other leg.



Figure 1

b) Sit on the front of a chair or bench. Place your legs fairly wide apart, with your knees bent and feet flat on the floor, pointing in the same direction as your knees. Place your hands against your lower thighs near the knees. Lean gently forward, while pushing your thighs apart (Figure 2).



Figure 2

c) Lying on your back, lift both knees to your chest. Wrap your arms around your legs just below your knees. Pull your knees to your chest while pushing your tailbone towards the ground (Figure 3).



Figure 3

Stretching with a helper

- a) Lie on your back while a helper bends your knee towards the body, making sure your knee does not turn outwards throughout the movement. Then move the leg back (Figure 4). Repeat with the other leg.



Figure 4

- b) With legs together and straight, have a helper move one leg apart, then back to the starting position (Figure 5). Repeat with the other leg.



Figure 5

Strengthening exercises

You should consult with your doctor and physiotherapist to ensure these exercises are within your physical capabilities and can be performed safely. Take care not to push yourself too hard and pace yourself to avoid fatigue.

These exercises are suitable whether you are mobile or spend much of the day sitting. They are best performed once the muscles have warmed up and before any fatigue sets in, i.e. mid-morning.

Repeat each exercise 3-5 times to begin with and gradually increase the number, as you feel able:

- a) Sit, stand or lie with a one metre loop of wide elastic around knees (or ankles for a stronger exercise). Pull your legs apart against the resistance (Figures 6a and 6b).



Figure 6a

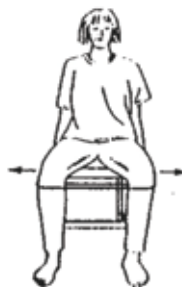


Figure 6b

- b) Sit with legs apart. Lift toes, then whole foot off the ground, one leg at a time. If this movement is very weak, give yourself some assistance with your hands. Try to hold your back straight and your stomach in (Figure 7). Repeat with the other leg.



Figure 7

- c) Sit with knees apart. Try to gently kick the underside of the seat, then straighten your knee out (Figures 8a and 8b). Repeat with other leg.



Figure 8a



Figure 8b

- d) Hold the elastic band and use it like a chest expander (Figures 9a and 9b). Keep your knees apart with a pillow, as this will reduce the spastic reaction of stretching above your head.



Figure 9a



Figure 9b

Some suggestions for comfortable positions throughout the day

Comfortable positions that oppose common spasticity patterns, and that can be held for one hour or more, can be beneficial.

These include:

- a) Sleeping on your side with hips and knees slightly bent and a pillow between your knees to stretch inner thighs.
- b) Sitting with pillow/padding between your knees.
- c) Pillows or padding to keep legs slightly bent at hips and knees, legs apart, and your feet supported with a pillow, rather than a hard board (Figure 10).
- d) Lying on your stomach with small pillows under feet, to relax knee joints. A fully straightened knee is often too uncomfortable to maintain, especially as the quadricep muscles at the front of the thigh are usually a major trigger in leg spasticity (Figure 11).

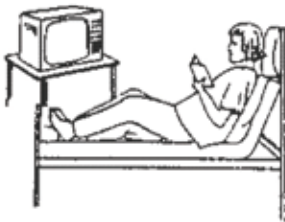


Figure 10



Figure 11

PHYSICAL THERAPY AIDS

Some adaptive devices are available to assist your gait, posture and movements. A consultation with a physiotherapist or an occupational therapist can be useful.

For example, they may suggest orthotics - which are lightweight shoe inserts used to position a spastic foot correctly. Additionally, orthotics can reduce fatigue and increase walking stability.

MEDICATION

There are several drugs that can be valuable in controlling spasticity, but these drugs affect all the muscles of the body—not just the tight ones. The results can be increased weakness and fatigue.

Therefore, reducing the spasticity must be traded against other physical weakness and increasing your problems with standing, transferring from bed, chair, toilet, etc.

Your GP or Neurologist will be able to discuss your options in appropriate detail.

CONTROLLING SEVERE SPASTICITY

In cases where severe spasticity develops, or untreated spasticity has caused permanent muscle shortening, more aggressive intervention may be needed.

CHEMICAL NERVE BLOCKS

Botulinum Toxin (Botox) can be used for temporary management of severe spasticity in an isolated area.

A Baclofen pump can also be considered. This is a small disc inserted into the spinal column and programmed to release medication. After the initial operation, it is refilled by injection.

Phenol gives a long lasting reduction in tension in specific muscles. But it is no longer the preferred option, given the effectiveness of the above two chemicals.

SURGERY

Surgery may be necessary in severe cases—especially if the muscles have shortened and caused contracted joints. Your doctor will discuss this solution with you.

HELPFUL FIRST AID FOR MANAGING SPASTICITY

- If the legs spasm into a straight extension, slowly force knees apart and lift your hips and your knees carefully up into a slightly bent position (you may need help).
- If trunk and leg straightening spasms make getting into a car difficult, curl your head and shoulders towards your chest.
- If your muscles rapidly contract and relax, take the tension off the muscle then stretch it slowly. For instance, with a calf clonus (where the calf muscles rhythmically contract and relax) lift the leg—with assistance, if necessary—to allow the foot to point down, and then slowly replace your foot on the floor—or footplate if you use a wheelchair. Where clonus causes ‘tap-dancing’ for those in a seated position, use firm downward pressure on the knee. This forces the heel flat on the ground and will calm the spastic reaction (pushing the foot down only makes it worse).
- If you sit for most of the day (e.g. in a wheelchair) try to take some time in other positions. Stand for a minute or so (with the help of a support person), or stretch out on the bed or floor. If you can manage occasional stretches of the hips and knees, this will reduce the chance of triggering an extension spasm. If you are able to be upright for a short while, a good stretch is to stand and bend your head and neck forward, keeping your legs apart. It may help to use a handrail and/or support person.

FINAL THOUGHTS

Spasticity offers its own set of challenges for someone with MS.

However, the best—and simplest—message about spasticity and MS is that there are ways of controlling it.

Because it needs individual management, you should seek advice and assessment early. You can call on your GP, neurologist and/or hospital-based services.

We can also help. Regional MS Societies have trained and experienced Field Workers who provide a wide variety of services and practical support to people with MS, their carers and families, as well as advice on all matters concerning MS.

SOURCES OF SUPPORT AND INFORMATION

THE MS SOCIETY OF NEW ZEALAND

We can put you in contact with a regional Field Worker. They arrange social groups, exercise classes, support meetings and referrals within their regions. Some people with MS find support groups helpful as an occasion where they can share their experiences and learn how others deal with MS. Contact details for your nearest regional society are located over the page.

INTERNET RESOURCES

The Internet provides a great deal of information about MS, but the quality and accuracy of the information can vary. Some useful websites are:

MS Societies

MS Society of New Zealand	www.msnz.org.nz
MS International Federation	www.msif.org
Australia	www.mssociety.com.au
United Kingdom	www.mssociety.org.uk
United States	www.nmss.org

Disability

Weka: *What Everyone Keeps Asking*—about disability

website www.weka.net.nz

phone 0800 17 1981

CONTACT DETAILS

THE MS SOCIETY OF NZ

We are available to help you with your queries and give you information and guidance.

MSNZ

PO Box 2627 Wellington 6140 NEW ZEALAND

Phone 0800 MS LINE or 0800 675 463

OR 04 499 4677

Email info@msnz.org.nz

Website www.msnz.org.nz

REGIONAL MS SOCIETIES

Northland	09 438 3945	Manawatu	06 357 3188
Auckland & North Shore	09 845 5921	Wellington	04 388 8127
Waikato	07 834 4740	Marlborough	03 578 4058
Bay of Plenty	07 571 6898	Nelson	03 544 6386
Rotorua	07 346 1830	West Coast	03 768 7007
Gisborne	06 868 8842	Canterbury	03 366 2857
Hawkes Bay	06 843 5002	South Canterbury	03 684 7834
Taranaki	06 751 2330	Otago	03 455 5894
Wanganui	06 345 2336	Southland	03 218 3975



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