



# Activating Your Life

A guide to exercise for persons  
with multiple sclerosis



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## **Introduction**

In the past, many individuals with multiple sclerosis (MS) were advised to avoid exercise due to the risks of elevated body temperature, physical exertion, fatigue, and unpredictability of the disease. Recent research, however, has shown that exercise is beneficial and safe for individuals with MS and is now recognized as an important part of the care plan for MS. The goal of exercise is to improve your overall health and maintain function so you are able to maintain your independence and quality of life<sup>1</sup>.

This publication is designed to provide individuals with MS with information on the benefits of exercise, recommended exercises, how much exercise is required for health benefits as well as special considerations while exercising. Before beginning an exercise program, be sure to talk to your doctor. A physiotherapist or exercise physiologist experienced in MS can also work with you to develop an appropriate exercise program. There are many things you can do to add activity to your day. Don't let your MS symptoms stop you from participating in exercise or activities you enjoy.

## What is MS ActiveNOW?

MS ActiveNOW is a health promotion initiative for persons with multiple sclerosis (MS) designed to:

- ✓ Increase awareness of the benefits of daily physical activity and exercise for persons with MS and providers in the health, fitness and lifestyle industry.
- ✓ Increase the intention of persons with MS to participate and be active in daily physical activity and exercise.
- ✓ Help fitness providers design exercise programs for persons with MS so you can enjoy the benefits of exercise safely and with confidence.
- ✓ Increase access to active living and exercise opportunities in the community for persons with MS.

## **Benefits of Exercise and Physical Activity**

We all know we should exercise and be active, but sometimes it is just too hard to get motivated. It can be especially difficult if you have multiple sclerosis (MS), as fatigue can be a problem. Also, MS symptoms can worsen as the body overheats with exercise and activity. Overheating leads to weakness and fatigue which may lead to less activity. This may lead to more weakness, fatigue and other health risks associated with inactivity. Inactivity itself can contribute to weakness and daily fatigue, as well as other health risks. There are many benefits of being active for persons with MS<sup>2</sup>. Planned exercise sessions and/or daily lifestyle related physical activity can improve:

- ✓ aerobic fitness
- ✓ muscle strength and endurance
- ✓ physical self-esteem
- ✓ mental health including depression and anxiety
- ✓ quality of life

Exercise and/or physical activity plays an essential role in the prevention of many chronic diseases including, but not limited too:

- ✓ cardiovascular disease
- ✓ diabetes
- ✓ osteoporosis
- ✓ obesity
- ✓ some cancers
- ✓ depression
- ✓ hypertension & stroke

Exercise has also been shown to improve symptoms related to MS including:

- ✓ balance
- ✓ spasticity
- ✓ fatigue
- ✓ mobility
- ✓ lung function
- ✓ sleep and appetite

A significant portion of the improvement in these symptoms is likely the result of increases in aerobic fitness and muscular strength and endurance<sup>2</sup>. An increase in these components of fitness improves the efficiency of your movements. This decreases the energy required to perform daily tasks and activities, thereby, decreasing overall fatigue.

Flexibility exercises, such as stretching and joint range of motion, assist in the prevention of contractures due to muscle spasticity. Spasticity or stiffness of the muscles can cause permanent shortening if stretching is not done. Research has shown that gentle sustained stretches of the legs can help to decrease the stiffness. This helps to maintain or improve mobility. The benefit of stretching is seen over time. It prevents contractures and deformities from affecting movement. By keeping the legs stretched and maintaining flexibility, walking becomes less tiring and much easier.

There are many physical and psychological benefits to participating in exercise<sup>14</sup>. A well rounded exercise program should include endurance, strength, and flexibility exercises to achieve the most health benefits. These types of activities are discussed in the next section.

One of the most frequently asked questions are “what kind of exercise should I be doing to improve my condition?” The answer is not so much about what you do, but that you are active NOW! Any type of activity that gets you up and moving is great. Some people go for walks, do yoga or take Tai Chi, while others prefer something a little more structured, for example, exercising on a treadmill, stationary bike, or stair climber. It doesn't really matter what you do as long as you are active NOW.

## **Planned Exercise vs. Daily Physical Activity**

When we think of being active or having an active lifestyle, we tend to think that planned exercise (i.e., scheduled or planned activity) is the only way to be active, however this is not always the case. Being active can consist of simple daily activities that are done on a regular basis to keep your body moving. For example, walking or climbing stairs.

### **Planned Exercise**

Planned exercise usually consists of activities that are scheduled and routine for, and are typically structured. The most common type of planned exercise is going to a gym or fitness facility to workout, 3 times a week, for 30-60 minutes per time. Some of the typical activities associated with planned exercise are strength and endurance training (i.e., lifting weights and cycling).

### Daily Physical Activity

Daily physical activity consists of non-scheduled activities that get you moving and active. They are typically not scheduled or planned and follow a set schedule and regime. Daily physical activity for example can be going for a walk, walking to work, taking stairs instead of an elevator, doing yard work, going for grocery shopping, and/or shoveling snow.

### Risks of Being Inactive

As discussed there are many benefits associated with exercise and physical activity, but on the other hand being inactive can have potentially negative outcomes for persons with MS. In fact, it has many, often harmful, consequences, not only for a person's motor skills and physical condition but also for their emotional state and social relationships. Inactivity can result in a variety of medical complications, some of which could even have a significant impact on quality of life. The main medical complications that may be associated with inactivity in persons with MS are<sup>2</sup>:

- ✓ impaired neuromuscular function
- ✓ infection of the upper respiratory tract
- ✓ peripheral circulation disorder
- ✓ pressure ulcers
- ✓ bowel and bladder problems
- ✓ osteoporosis
- ✓ contractures
- ✓ obesity

## The FITT Principle of Exercise

An easy way to remember what you need to do for exercise is to follow the *FITT* principle which stands for *Frequency*, *Intensity*, *Time*, and *Type of exercise*. *Frequency* is how many times per week exercise is performed, *Intensity* is how hard exercise feels, *Time* is how long each exercise session is for, and *Type* is what kind of exercise. The FITT principle is discussed for each component of fitness below, but remember to make adjustments to your exercise program based on how you feel the day you are exercising. Take a rest day if you need to; you do not want to push yourself if you are already feeling overly fatigued. Finding a balance between exercise and rest is important.

### Endurance Exercise

Endurance, also known as aerobic exercise, consists of sustained movement of the large muscle groups in your body. Activities such as walking, swimming, cycling, and dancing are examples of aerobic activities. These types of activities increase your heart and breathing rate, strengthen your heart and lungs, and improve your endurance and capacity. As your aerobic fitness improves, the energy required to perform daily activities decreases allowing you to perform more work with less fatigue<sup>3</sup>.

An endurance exercise program is based on your current activity and fitness level as well as your symptoms. It is generally recommended that you try to include 30 minutes of moderate activity three days a week. The 30 minutes does not have to be performed all at once. You can accumulate it throughout the day such as doing three 10-minute or two 15-minute sessions. This

is a good strategy if you find you are easily fatigued from longer bouts of exercise. Activities such as stationary cycling, walking, chair exercises, and aquatic exercises are often appropriate. One way to monitor your intensity of exercise is by using the Perceived Exertion Scale (Table 1). A moderate intensity is indicated by an increase in your body temperature, heart rate and breathing rate. You should always be able to have a conversation with someone while you are exercising at a moderate intensity. If you are out of breath and cannot talk, you might be working too hard.

While doing physical activity or exercise, you should rate your perception of exertion. This reflects how heavy and strenuous the exercise feels to you, combining all sensations and feelings of physical stress, effort, and fatigue. Do not concern yourself with any one factor such as leg pain or shortness of breath, but try to focus on your total feeling of exertion.

Look at the rating scale below while you are engaging in an activity; it ranges from 0 to 10, where 0 means “no exertion at all” and 10 means “maximal exertion.” Choose the number from below that best describes your level of exertion. This will give you a good idea of the intensity level of your activity, and you can use this information to speed up or slow down your movements to reach your desired range.

Try to appraise your feeling of exertion as honestly as possible, without thinking about what the actual physical load is. Your own feeling of effort and exertion is important, not how it compares to other people. Look at the scales and the expressions and then give a number.

**Table 1. Perceived Exertion Scale**

<b>PERCEIVED EXERTION SCALE</b>	
0	No exertion at all
1	Extremely low
2	Very low
3	Relatively low
4	Low
5	Moderate
6	High
7	Relatively high
8	Very high
9	Extremely high
10	Maximal exertion (exhaustion)

For individuals with MS this scale can and does incorporate fatigue into determining overall level of perceived exertion. Sometimes fatigue can be felt well in advance of any increased levels of activity or exertion (i.e., light activity for some can be very fatiguing due to MS symptoms and functional ability). The Fatigue Scale (Table 2) below provides another option for measuring individual levels of fatigue before, during and after activity, and thus can be used to determine activity or workout level on an ongoing basis.

**Table 2. Fatigue Scale**

<b>FATIGUE SCALE</b>		<u>Instructions:</u> Circle one descriptor that best describes fatigue before during, and after activity or exercise.			
	None	Little	Some	Very	Extremely
Before					
During					
After					

## Strength Exercise

Many people with MS experience a loss in muscle strength, endurance, and power. This may be a result of a decrease in nerve signals to the muscles or related to a decrease in muscle mass due to neglect or medications. A decrease in muscle mass is associated with weakness, poor balance, and can increase the risk of falls<sup>4</sup>. Strength training exercises are important to include into your exercise program to offset muscle weakness and allow you to perform daily activities such as dressing, cleaning, laundry, and lifting groceries<sup>5</sup>.

Strength exercises and length of sessions should also be selected based on your level of functioning and MS-specific symptoms such as balance, coordination, and fatigue<sup>3</sup>. You can start with a few simple exercises that target specific areas of weakness using your own bodyweight or with simple equipment such as stretch bands or sand bags<sup>3</sup>. If desired, you can progress to a more formal strength training program. This program can include one to three sets of 10 to 15 repetitions performed on 2 or 3 nonconsecutive days per week<sup>4, 5</sup>, and working the major muscle groups of the body. Exercises should be performed through a full ROM, reaching

moderate fatigue at the end of the third set<sup>3</sup>. Consult with a physiotherapist or exercise physiologist to help you develop a strength training program that is appropriate for you.

## Flexibility Exercise

The body has many different joints which are surrounded by ligaments, tendons, and muscles that help support the joint. Our joints allow us to bend, reach, and stretch. Over time, muscles and tendons shorten and become tight which can limit our range of motion. When joints lose their range of motion, our mobility and ability to perform daily tasks may be reduced. Stretching exercises are very important for maintaining joint range of motion, decreasing spasticity of your muscles, and preventing contractures.

Stretching exercises should be performed one to two times per day depending on your level of activity and degree of spasticity. It is recommended that most stretches should be held for 30 to 60 seconds, without bouncing, and repeated three to five times<sup>6</sup>. However, with MS it is suggested that stretches are held for as long as the individual can hold the stretch, not exceeding the allotted time (30 to 60 seconds). Individuals with severe spasticity or contractures may require stretching ranging from 20 minutes to several hours<sup>4</sup>. Other exercises such as Tai Chi or yoga may also be effective in increasing range of motion<sup>3</sup>. You may want to refer to the MS Society of Canada's publication, *Everybody Stretch*<sup>7</sup>, or consult with a physiotherapist or exercise physiologist to help design a flexibility program.

### Daily Physical Activity

You do not always need to participate in a structured exercise program to receive health benefits. Participating in activities like gardening, house, or yard work will also assist in preserving your function. Other ways to include aerobic activity into your day is through active living. This strategy includes taking the stairs instead of the elevator, parking the car in a parking spot furthest from the store, or getting off the bus early and walking the few extra blocks. This is a great way to add activity to your day if you are short on time or if you find it difficult to perform activities continuously. If you have severe paresis from MS, it is still important to perform activities of daily living to maintain your function<sup>8</sup>. Assistive devices may help you complete these tasks leaving you with energy to participate in more meaningful activities such as those with family and friends.

## **Benefits of Specific Exercises**

### **Aquatics**

Exercising in water provides you with optimal exercise conditions. Chest-high water enables you to stand and maintain balance for exercises with less effort than on land and allows you to achieve a greater range of motion for your joints<sup>9</sup>. The resistance that water provides can also be utilized for strengthening the muscles, as well the buoyancy of the water helps to place less strain on joints. Water also helps reduce body heat that is generated by exercise which helps lessen exacerbation of symptoms.

### **Yoga and Tai Chi**

Meditative types of exercise such as yoga and Tai Chi may assist with decreasing stress, and improving relaxation, flexibility, and balance<sup>10, 11, 12</sup>. These types of activities involve slow, controlled movements along with breathing exercises that require attention and may help improve body awareness. The movements can be adapted to your specific needs and do not require any equipment.

### **Chair Exercises**

When you feel that you do not have enough energy to exercise in a standing position, chair exercises can be a good alternative. Strengthening and stretching exercises can be adapted to be performed from a chair and will allow you to perform your activity while conserving some energy.

### Group Exercise Programs

The type of exercise environment that you exercise in is also important to consider. Previous studies on exercise in individuals with chronic diseases, such as cardiovascular disease or cancer, have found that individuals who exercise in a group not only receive the physiological benefits of exercise, but also important aspects of socialization, support, and motivation. It is important to remember that adding exercise to your day is not always the easiest thing to do, so you may find it more motivating to exercise in a group. Groups programs also provide you with supervision if needed<sup>14</sup>.

For more information about exercise and programs in your area, please contact your local Chapter of the MS Society of Canada or email [active@mssociety.ca](mailto:active@mssociety.ca).

## **Special Considerations while Exercising**

There are several factors that may influence how your body responds to exercise as well as the amount of improvement you will achieve with exercise. Some factors that you will need to consider with exercise are discussed in this section.

### **Temperature**

An increase in body temperature with exercise can cause a worsening of MS symptoms such as blurred vision or numbness<sup>15</sup>. These symptoms are temporary and will improve upon completion of exercise. Exercising in a cool environment such as an air-conditioned gym or in a swimming pool may help eliminate some of the symptoms that may occur. Cooling garments such as headbands or vests, wearing light weight clothing, drinking cold drinks, or pre-cooling the body before exercise may also help<sup>16</sup>. If blurred vision is a problem, you may find it helpful to exercise in a seated position such as on a stationary bike. Our body temperature is generally the highest in the late afternoon so exercising early in the day may decrease some of these symptoms as well<sup>4</sup>.

### **MS Relapses**

You will have to learn to be flexible with your exercise program especially in the case of exacerbations. You may need to modify your exercise program when you are ready to resume your activity after an exacerbation because of lasting motor changes<sup>17</sup>.

Depending on the severity of the exacerbation, light activity such as gentle stretching and ROM exercises are encouraged to avoid deconditioning<sup>3</sup>.

### Fatigue

Fatigue will affect the time of day that is best for you to exercise. Generally, MS fatigue worsens later in the day, so it may be best to exercise earlier in the day. Rest is also an important part of an exercise program and a balance between rest and exercise is needed to avoid becoming overly fatigued<sup>12</sup>. Resting for 10-15 minutes several times a day can be just as restorative as prolonged periods of rest which may include sleeping<sup>1</sup>.

### Balance and Coordination

Common symptoms of MS and exercising when you are fatigued can lead to a loss of balance and coordination. Exercises such as stationary cycling, rowing or aquatics would be good exercises in the case of poor balance. You should be aware of your exercise area, including the exercise equipment, to help decrease your risk of falls.

### Bladder Dysfunction

If you experience bladder dysfunction, make sure you void before exercise and intermittently during the exercise session, particularly if you are drinking fluids to prevent dehydration and overheating. Recognize that certain exercises can place pressure

on the bladder causing it to empty. This should not prevent you from exercising, however. Be aware of where the closest bathrooms are located in the facility and let the instructor know that you may have to leave the class occasionally.

### Hydration

Limiting your intake of fluids throughout the day may lead to chronic dehydration and general fatigue because of a reduction in circulating blood volume<sup>1</sup>. It is important to stay hydrated especially if you are exercising. You may need to speak with your physician about adjusting medications, such as oxubutynin, if you are increasing your fluid intake<sup>1</sup>.

### Medications

You may be taking several medications to control your MS symptoms. It is good to be aware of what symptoms they can cause and to discuss them with your exercise leader. Some medications may cause dizziness, low blood pressure, or a fast heart rate which may cause you to become lightheaded or dizzy during or after exercise. It is important to move slowly when switching from sitting to standing positions and to not stop exercising abruptly.

### Comprehension/Cognitive Aspects

Many individuals with MS will have some level of cognitive deficit which may, in turn, affect their ability to follow an exercise program. Areas that may be affected are memory, abstract reasoning and problem solving, attention and concentration,

and speed of information processing. If you have difficulty with memory or comprehension you can choose to exercise and be active with someone. Additionally, you may wish to allow yourself more time to process information or use multiple forms of information presentation (i.e., verbal and/or written instructions, diagrams and pictures) to ensure understanding.

### Exercise Checklist

One of the hard things to do when deciding to become active is knowing what to do or how to go about it. Here are some important points to help get started and to remember when exercising or being active:

#### Before starting any exercise program:

- ✓ Always consult with a physician prior to beginning an exercise program. You could also ask your physician for a referral to a physiotherapist to assist in advising you about exercise and specific program needs.
- ✓ Check out local facilities for programs or activities that interest you such as swimming or an exercise group. You can also check with your local MS Society chapter for programs and activities within your community.
- ✓ Check with fitness facility staff, so they are aware of MS and potential issues. This way they can provide an environment that is appropriate for you.

- ✓ Pick an activity that you will enjoy doing - for example swimming, walking or working out at a local fitness club.
- ✓ Get family and friends involved – exercising and being active is more enjoyable when it’s done with a partner or group.

### To avoid fatigue and reappearance of MS symptoms:

- ✓ Know your own limits and do not exceed them. Do as much as you feel you can do. Don't add to your fatigue by working to the point of exhaustion. It is okay to take breaks between activities or exercises.
- ✓ Wear light clothing and exercise in a cool environment (remember symptoms of MS can get worse with overheating).
- ✓ Avoid heat exhaustion – don't overdo it! Try to stay cool! When you feel fatigue, stop and rest or change exercises.
- ✓ When an MS attack occurs take a “time-out” from exercise until symptoms have subsided.
- ✓ Don't hesitate to ask for advice.

**Be active NOW!! And enjoy the physical and emotional rewards of being in the best shape you can be.**

### Conclusion

There are many exercise options for individuals with MS. The exercises selected will depend on your level of functioning, interests, and the availability of facilities. It is important to incorporate endurance, strength and flexibility exercises into your day as each type of activity provides its own benefits. Work with your health care provider to develop and make adjustments to your exercise program based on daily symptoms and energy levels.

The benefits of planned exercise and daily physical activity in MS are many. Improved strength, endurance and even bowel and bladder function are possible, as well as it lessens fatigue and improves mood. There are many options to being active, depending on your interests and abilities. It doesn't matter what type of MS, every individual can find and benefit from the right exercises and activity. Exercising and being active provides an opportunity to take charge of your life and learn to make the most of what you have. So, get active NOW!

## Need More Information

For more information on exercise and MS, contact your local chapter of the MS Society of Canada. This can be done by calling your local chapter or division (1-800-268-7582) or by accessing the MS ActiveNOW website at [www.mssociety.ca/alberta](http://www.mssociety.ca/alberta).

Below is a list of resources where you can find further information on MS and exercise.

### DVDs:

1. *MS and Exercise*. MS Society of Canada, Alberta Division.
2. *About MS*. MS Society of Canada, Alberta Division.

### Books:

1. *Exercises for Multiple Sclerosis*. (2006). Brad Hamler. Hatherleigh Press.
2. *Multiple Sclerosis: A Self-Care Guide to Wellness*. (2005). Nancy Holland & June Halper. New York: Demos Medical Publishing.
3. *Managing the symptoms of multiple sclerosis* (2003). R. Schapiro. 4<sup>th</sup> ed. New York: Demos.

## Web Sites:

1. Multiple Sclerosis Society of Canada: [www.mssociety.ca](http://www.mssociety.ca)
2. National Multiple Sclerosis Society: [www.nmss.org](http://www.nmss.org)
3. Multiple Sclerosis London: <http://www.lhsc.on.ca/programs/msclinic/exercise/exercise.htm>

## Selected References

- <sup>1</sup> Petajan, J.H. (2000). Weakness. In Burks J.S., & Johnson K.P. (Eds.) *Multiple Sclerosis: Diagnosis, medical management and rehabilitation*. (1<sup>st</sup> ed. pp. 307-321). New York, NY: Demos Publications.
- <sup>2</sup> Motl, R. W., & Gosney, J. L. (2007). Effect of exercise training on quality of life in multiple sclerosis: A meta-analysis. *Multiple Sclerosis*, 1-7.
- <sup>3</sup> Bjarnadottir, O.H., Konradsdottir, A.D., Reynisdottir, K., & Olafsson, E. (2007). Multiple sclerosis and brief moderate exercise. A randomized study. *Multiple Sclerosis*, 13, 776-782.
- <sup>4</sup> Mulcare J.A., & Jackson K. (2006). Neuromuscular diseases and exercise. In Kaminsky, L.A., & Ewing Garber, C. (Eds.). *American College of Sports Medicine resource manual for guidelines for exercise testing and prescription* (5<sup>th</sup> ed. pp. 514-527). Philadelphia (PA): Lippincott Williams & Wilkins.
- <sup>5</sup> Dalagas, U., Stenager, E., & Ingemann-Hansen, T. (2007). Multiple sclerosis and physical exercise: Recommendations for the application of resistance-, endurance- and combined training. *Multiple Sclerosis*, 1-19.
- <sup>6</sup> Gibson BE. (2003). *Stretching for people with MS: An illustrated manual*. National Multiple Sclerosis Society. New York.
- <sup>7</sup> Fowler J. Everybody stretch: A physical activity workbook for people with various levels of multiple sclerosis. Multiple Sclerosis Society of Canada
- <sup>8</sup> Petajan, J.H., & White, A.T. (1999). Recommendations for physical activity in patients with multiple sclerosis. *Sports Medicine*, 27, 179-191.

- <sup>9</sup> Schapiro RT. (2003). *Managing the symptoms of multiple sclerosis*. 4<sup>th</sup> ed. New York: Demos.
- <sup>10</sup> Oken, B.S., Kishiyama, S., Zajdel, D., Bourdette, D., Carlsen, J., Haas, M. et al. (2004). Randomized controlled trial of yoga and exercise in multiple sclerosis. *Neurology*, 62, 2058-2064
- <sup>11</sup> Lan, C., Lai, J.S., Chen, S.Y., & Wong, M.K. (1998). Twelve-month Tai Chi training in the elderly: its effect on health fitness. *Medicine Science in Sports and Exercise*, 30, 345-351.
- <sup>12</sup> Wolf, S.L., Barnhart, H.X., Ellison, G.L., Coogler, C.E., Atlanta FICSIT Group. (1997). The effect of Tai Chi Quan and computerized balance training on postural stability in older subjects. *Physical Therapy*, 77, 371-381.
- <sup>14</sup> Heesen, C., Romberg, A., Gold, S., & Schulz, K.H. (2006). Physical exercise in multiple sclerosis: supportive care or a putative disease-modifying treatment. *Expert Reviews in Neurotherapeutics*, 6, 347-355.
- <sup>15</sup> Gallien, P., Nicolas, B., Robineau, S., Petrilli, S., Houedakor, J., & Durufle, A. (2007). Physical training and multiple sclerosis. *Annles de readaptation et de medicine physique*, 50, 373-376.
- <sup>16</sup> National Multiple Sclerosis Society. (2006). Multiple Sclerosis Information Sourcebook – Exercise. Retrieved September 1, 2007 from [http://www.nationalmssociety.org/site/PageServer?pagename=HOM\\_LIB\\_sourcebook\\_exercise](http://www.nationalmssociety.org/site/PageServer?pagename=HOM_LIB_sourcebook_exercise).
- <sup>17</sup> White, A.T. (2001). Exercise for patients with multiple sclerosis. *International Sports Medicine Journal*, 2, 1-8.

# Workout Journal

Date:			
Exercise		Comments	Fatigue Level*
1.	Ex. Cycling	Spent 10 minutes on cycle set at level 2.	3
2.			
3.			
4.			
5.			
6.			
7.			
<b>General comments / observations:</b>			

Fatigue level\*: Rate how fatigued you feel after each exercise based on a scale of 1 to 5 (i.e., 1 = not fatigued, 3 = somewhat, 5 = very).

## Workout Journal

Date:		
Exercise	Comments	Fatigue Level*
1.		
2.		
3.		
4.		
5.		
6.		
7.		
General comments / observations:		

Fatigue level\*: Rate how fatigued you feel after each exercise based on a scale of 1 to 5 (i.e., 1 = not fatigued, 3 = somewhat, 5 = very).







## Contact the MS Society of Canada, Alberta Division

Phone: 1-800-268-7582

Email: [active@mssociety.ca](mailto:active@mssociety.ca)

Website: [www.mssociety.ca/alberta](http://www.mssociety.ca/alberta)

Address: #150, 9405 - 50 Street  
Edmonton, AB T6B 2T4

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### OUR MISSION

To be a leader in finding a cure for multiple sclerosis  
and enabling people affected by MS to enhance  
their quality of life.