



Stretch and Strengthen

Presented by: Dr. Gwynne Jones, DPT, MSCS

Alexis Crispino:

Good evening. My name is Alexis Crispino, and I'm the Director of Education and Healthcare Relations with the Multiple Sclerosis Association of America. I just wanted to thank you all so much for being here with us tonight, and I hope that you and your community are doing well during this time.

As you may know, MSAA is a 501(c)(3) non-profit organization based in Cherry Hill, New Jersey, but all of our programs and services are available nationally at no cost to people living with MS. I'll keep it brief before handing the evening over to Dr. Jones because she has such an incredible presentation ready for us tonight but I wanted to make sure and highlight some of the available resources from MSAA that might be of interest. It's likely that if you've given us a call before you've chatted with these individuals, but MSAA's toll free Helpline and Chat is staffed by trained and compassionate specialists who have a social services or counseling background and are familiar with MS. Helpline specialists can offer encouragement, recommend programs offered by MSAA, identify other resources that could be of help and assist with applications and more.

I'll also note the MSAA cooling garment and equipment programs that are available to individuals who might be experiencing financial or insurance barriers to accessing tangible items that can help to manage some of the symptoms of MS. Examples of products available through these programs include items such as cooling vests to help those experiencing heat sensitivity and seated four prong walkers to help for mobility support. We also have the MSAA MRI Access Program for those who are also experiencing financial barriers to accessing their cranial or c-spine MRI for diagnosis of MS or to track disease activity.

For more information about eligibility criteria, applications or just more details about these and other MSAA programs, please visit us online at mymsaa.org, pass us over an email or give us a call.

This is just a friendly note that while Dr. Jones is an expert in her field, all activities being presented today are for reference and informational purposes only and do not constitute for formal medical recommendations. Please be sure to check with your trusted care provider before attempting activities.

And finally, we ask if you could please complete the MSAA Patient Education Program survey. We'll link the survey in the chat box and it will also pop up in a separate window at the conclusion of the event. Your feedback helps us to ensure programs like this one are beneficial and effective.

Now, the reason we're here today. I am delighted and honored to introduce our expert speaker for tonight, Dr. Gwynne Jones. Dr. Jones is a physical therapist at Advance Spine Physical Therapy in Fort Collins, Colorado. Dr. Jones attended Muhlenberg College in Allentown, Pennsylvania, where she double majored, earning a Bachelor's of the Arts in Dance and a Bachelor of Science in Biology. She went on to earn her Doctorate of Physical Therapy at Regis University, as well as her certification from the consortium of MS Centers as a multiple sclerosis specialist. Dr. Jones is a holistic-minded physical therapist who encourages patients to follow their hearts in building a healthy lifestyle by applying strategies that address physical, emotional and psychosocial well-being. Without further ado, I am delighted to hand the evening over to Dr. Jones.

Dr. Gwynne Jones:

Thanks so much, Alexis, and I want to also thank the MSAA for inviting me to share some information with you all today. October is actually National Physical Therapy Month, so this presentation seems to be right on schedule.

The main topics of our discussion are listed here in our first slide. And these include an overview of how physical therapy can help people with MS, a more specific look at decreased strength and flexibility, some tips to overcome some common barriers to a regular exercise program, advice for caregivers to help those with MS with transfers and safe exercise set up, then we will practice some strengthening and stretching exercises together.

I'm sure that many of you who are listening have worked with a physical therapist at some point in your life and are therefore familiar with what we do. But for those who aren't, physical therapists are movement experts who work with people of all ages and levels of ability to rehabilitate after an injury or surgery, to manage chronic conditions, to return to sports, prevent injury, avoid surgery and also to create a healthy lifestyle. For patients with MS, our overall goals are to optimize mobility, improve function and enhance quality of life, with an emphasis on working collaboratively with the patient's MS Care Team, which might include neurologists, occupational therapists, speech pathologists, orthotists and assistive device providers, personal trainers, etc. Working as a team really does enhance patient outcomes by ensuring that everyone is in the know and on the same page.

While this is not an exhaustive list, the main categories of treatment provided by PTs for patients with MS are functional strengthening, which improves one's ability to complete gross motor movements such as standing up from a chair, going up and down stairs, getting in and out of the car or lifting a grocery bag.

Postural strength and stability, which can help to decrease fatigue throughout the day and provides a stable base from which to move the arms and legs, whether in sitting or standing.

Balance and gait re-education helps you prevent falls, increase the efficiency of walking and improve the ability to participate in community activities.

Fatigue and spasticity management occurs through exercise and also in collaboration with medical management. And importantly, we provide a lot of helpful patient and caregiver education and resources.

In addition to all of this, physical therapy can help patients with their general wellness by improving cardiovascular function, elevating mood, improving cognitive function and reducing the chances of developing secondary diseases. PTs provide individualized treatments based on your specific needs and goals. We work with you to create home exercise programs that are appropriate for your lifestyle and that allow you to safely engage in physical activity, which is so important for all people.

Based on the timeline of your MS journey and your level of ability, your PT might choose one of these care schedules that are noted on the slide. If you have had a recent relapse, your physical therapist might ask to see you one to three days a week. And during this time, things that might be focused on are regaining function, adapting to current functional limitations and general conditioning.

During periods of stability, your PT may choose a maintenance schedule. This might look like going into the physical therapy clinic one to three times a month and focusing on maintaining and improving functional mobility and conditioning and continuing an active lifestyle.

If your symptoms have been stable for long enough, wellness check ups may be sufficient. It's recommended to have a wellness check up every four months when you have been diagnosed with MS. At these visits, your physical therapist can help catch or monitor any additional or changing aspects of your condition that might be happening for you. And they can also update any home exercise programs that need to be either progressed or made harder or regressed, made easier.

OK, so I wanted to talk a little bit more about weakness and tightness, which are two common impairments experienced by people with MS and we wanted to highlight them. There are primary and secondary causes of both weakness and tightness. As we know, the disease course of MS involves damage to the myelin covering of nerve fibers, which is known as demyelination. This process interrupts the flow of information between the brain and the muscles. This can result in primary weakness in which muscles don't turn on when you want them to. Sometimes it may feel that your muscles have a mind of their own. This primary weakness is not due to any damage to the muscle itself, but rather results from decreased communication from the brain through the nerves to the muscle. It is a problem of muscle activation.

Primary weakness in the body can lead to secondary weakness, which is decreased strength in a muscle with possible muscle atrophy due to disuse of the muscle. Muscles may turn on in this case, but because they don't... they haven't been worked as much as usual, the muscle itself has actually lost strength. Both primary and secondary weakness can affect our ability to balance, walk, get out of bed, stand up from a chair, climb up stairs or sit up with good posture.

Drop foot is a common result of primary weakness in the anterior tibialis muscle of the ankle, which dorsiflexes the ankle or lifts the foot when we're walking. We treat this impairment frequently in physical therapy. Weakness, no matter the cause, can also lead to increased fatigue overall because functional movements and walking become less efficient. Therefore, the body has to work harder.

Demyelination of nerves can alternatively lead to hypertonicity or spasticity. These muscles will often feel like tightness or pulling. This primary tightness is the result of a problem with the nerve, not the muscle itself. The strong spasms of spastic muscles can make transfers and bed mobility very difficult.

Secondary tightness may occur due to decreased use of whole range of motion or poor positioning. Individuals who spend most of their day sitting without frequent repositioning and daily stretching are predisposed to joint contractures in which the resting length of the muscle becomes shorter and limits the flexibility of their corresponding joints.

Hip or knee flexion contractures can make it quite challenging to stand, walk or balance efficiently. This can also lead to increased fatigue. A physical therapist can help you determine whether your weakness or tightness is primary or secondary and can provide appropriate treatments based on this distinction.

OK, a few common barriers to exercise, particularly for individuals with MS. Exercise is important for all of us, of course, but it can be challenging to adapt to and maintain an exercise routine, especially with a condition like MS. Physical therapists have great tips on helping you to overcome barriers to maintaining an active lifestyle with consistent and appropriate physical activity.

Fatigue is one of the most common and debilitating symptoms of MS and often limits activity tolerance. While fatigue with exercise doesn't increase disease progression, it can increase any of your MS symptoms. Allow yourself to rest at your first sign of fatigue, or before that point, even if you feel good, to prevent excessive fatigue when you're exercising. You may just need a short rest before you can continue to exercise. Your level of fatigue may depend on the time of day or your medication cycle.

Try to exercise during the times when you have more energy. Alternatively, you can spread exercise throughout the day, performing short bouts every couple of hours. And if exercising causes you to be fatigued, so much so that you can't complete self-care activities, that type of exercise is too intense for you.

If you have heat sensitivity, consider using cooling devices during or after exercise to avoid heat related fatigue. If your fatigue is very limiting, a physical therapist might suggest the use of an assistive device and can educate you on how and when to use it. Medication may be necessary to manage fatigue if deemed appropriate by a neurologist.

For some people, exercising might just seem too hard. This could be the case if you're expecting yourself to be able to do a certain type of exercise which is beyond your level of conditioning or abilities.

It is important to know the appropriate level of exercise for you if you're new to exercise, start slow at a low intensity and progress slowly over time. If exercising on your own is too difficult, assisted exercises may be appropriate for you. This would be including the use of an exercise partner, perhaps. Find a knowledgeable and experienced physical therapist to help you determine which exercises are best for you.

Fear of falling can be a big barrier to exercise. However, there are ways for every person to exercise safely. There are ways to use usual household items to set up your environment for safe exercising. You may need to hold onto a counter or the back of a chair while exercising to keep

your balance. Or you may want or need an exercise partner, as I mentioned, to guard you in case you lose your balance or to assist you with transfers in and out of different positions for exercising. Again, you want to make sure the exercises you're performing are at the appropriate level for you.

If you need help but can't find an exercise partner, work with your physical therapist to create a safe exercise program that you can do at home without help. Additionally, look for community resources, such as adaptive exercise classes, which might have assistants available to help you. Working with a personal trainer who is experienced in training people with neurological conditions is another option.

Lack of motivation is another common barrier that all people deal with at some point. Sometimes we just feel... we just don't feel like exercising or we're having trouble staying consistent with our exercise routine. Be sure to set appropriate and attainable goals related to your exercising to help you with this motivation. Your PT can help you with setting goals if you need it. When you meet those goals, no matter how big or small, celebrate and reward yourself. This is positive reinforcement, which will train your brain to continue the new habits.

Make exercising part of your daily routine and stick to it. Build exercise into the day. I like to suggest doing one set of a simple exercise before each meal of the day. Or practice and exercise, for instance, while waiting for your food to cook. If you're consistent, you will see progress, and that will give you motivation.

As I've mentioned, some people with MS may need assistance transferring into and out of certain positions in order to perform certain exercises. I wanted to provide a few tips for caregivers or helpers so that those individuals can avoid injuring themselves.

First of all, don't lift beyond your comfort limit. If you're questioning whether or not you're going to be able to lift the amount of weight in question, don't do it, or at least don't do it alone. Recruit a second pair of hands, whether it be a family member, friend or neighbor.

Next, let the liftee do as much work as they can. This is beneficial for both the lifter and the liftee. It decreases the chance of injury for the lifter and it provides an opportunity for the liftee to strengthen their own muscles.

By keeping your center of mass close to the liftee's center of mass, you are limiting the amount of strain that is placed on your spine. A wide base of support with knees bent and hips bent as well. And also remembering to maintain a neutral position of your back, which means more straight, instead of rounding the back forward, will also decrease strain on the spine and back muscles. This will allow you to utilize your powerful leg muscles to lift upward.

Many of you may have heard the phrase "no bending, lifting and twisting". This rings true when helping someone transfer, especially if you already have back pain. Lifting while simultaneously bending your back forward or twisting it puts a lot more pressure on the spinal structures. So try to pivot your feet on the floor or move your feet with you so you don't have to twist your back.

Try to keep your nose and toes pointing in the same direction. There are many different ways to help someone transfer based on their abilities and the situation in which the transfer is being made. However, these tips should be applicable no matter what the situation is.

OK, moving on to our stretching exercises. Let's discuss the benefits of stretching. Stretching helps us to prevent contractures, which I mentioned earlier. Contractures are relatively permanent shortening of muscles due to prolonged postures or positioning. Regular stretching helps us to increase or maintain our functional range of motion so that we can walk and balance efficiently.

When one muscle is too tight, opposing muscles have to work harder to fight against that tightness when we're trying to ambulate or stand up straight. Well, spastic muscles often limit our range of motion over time, you may have a sensation of tightness. Research has shown that stretching does not actually decrease spasticity. This is because spasticity is rooted in the nervous system, not in the muscle itself. That being said, stretching is important to maintain sufficient range of motion.

Muscles that often get tight for people with MS include the trunk muscles, hip muscles, knee flexors or the hamstrings and the ankle plantar flexors, which are called the gastrocnemius and the soleus.

This slide just provides a list of the exercises that we are going to go through here. As Alexis mentioned in the beginning, just remember that these are a sample of exercises and they may not be appropriate for everyone. So if you're trying them with me today, just be cautious and make sure that you are being safe as you're trying them. I also wanted to mention quickly if you do have any pain while doing any of these exercises, don't... probably don't do that exercise until you've spoken with a healthcare provider or a physical therapist who can make sure that you are not hurting or injuring yourself while trying to do these exercises. OK, we'll get started with our stretches here.

All right. So we have here a few exercises for stretching the hip. The first one is supine hip flexion. For these three exercises, you would start out laying down on your back, either on the floor or you could lay on your bed. It doesn't make a difference.

So first exercise, you are taking one knee and you are using your hands to pull that knee toward your chest. This motion is called hip flexion. And it stretches some of the muscles in the back of your hip, your gluteal muscles. And it also gets your hip ready for the next two exercises here, which are supine hamstring stretches. These are two variations of the same exercise. The goal is to keep the leg that you are stretching or lifting up straight, so you're trying to keep your knee straight as best as you can.

If you're able to use your hands around your leg, then you can do the middle exercise without a strap. If you have difficulty reaching your leg, you can place a strap around your foot and use that to help you bring the leg toward you as you are laying there.

These are a couple of other exercises you can do laying down. The first one I call the butterfly stretch, you would lay on your back and then you would bend both knees. You would let both knees fall out to the side and toward the floor and bring the soles of your feet together. This stretches the hip adductors, which can often be spastic or have increased tone for people with MS. So this is a nice stretch to just make sure that those muscles have their appropriate range of motion, as I mentioned before.

The second two photos here are just the two sides that you can rotate your trunk to as you are laying on your back. This exercise, you might feel this stretch in a couple of different places. You might feel a stretch on the side or the back of your hip while you do this one in your glutes

or a smaller muscle called your piriformis. You might also feel this stretch in your back as you are rotating your spine and you have a lot of little muscles around your spine that might get a nice little stretch with this exercise as well.

OK. These are some good exercises for those of us who might sit a lot during the day, whether you're sitting in a wheelchair or you have to sit for your job. So these are stretches for your hip flexor muscles.

So in order to stretch the muscles that flex the hip, you want to do the opposite motion and we want to extend the hip. So for some of us, if we have a hip flexion contracture, in particular, just laying on your stomach, what we call "prone", might be enough of a stretch for you. You should feel the stretch with all of these exercises in the front of your hip. The second photo here, the second exercise, is called a prone knee bend. As you can see, I have two variations of this one.

The laying on your stomach, you can either bend one knee, that might give you enough of a stretch in the front of your hip alone. If that doesn't cause you to feel a stretch, you might be able to grab hold of that foot and pull the foot toward your hip or toward your lower back. And this will stretch your quadriceps muscles and your hip flexors as well. You could also have an exercise partner do this for you if you aren't able to reach your foot, or if it's just easier to have someone else gently bring your foot into that position.

The last exercise on this slide is called half kneeling. So what you would do is go down onto the floor on one knee and you're trying to make your front leg, your front knee, be bent in a 90 degree position, ideally. So you don't want your knee to be really far underneath you or too far out. You don't want your foot to be too far underneath you or too far out in front of you. And then once you are down on one knee and as you can see, you can hold on to something, I'm holding on to the wall in this picture, but any stable piece of furniture or a wall or the edge of your bed could all work here. Once you're down on one knee, you are going to move your whole pelvis or your hips straight forward.

And you want to think about tucking your tailbone underneath you so that you're not arching your low back. You might think about holding your stomach muscles strong while you're in this position. You should feel the stretch on the front of the hip of the leg that is behind you. So in the picture, that would be my left leg.

All right. Seated hamstring, piriformis, and glute stretches. So the first photo, these are all sitting in a chair, as you can see, for the first one here, we're trying to stretch the hamstring, which is the muscle in the back of your thigh.

So you would start out sitting in your chair. You would scoot your bottom to the edge of the chair so you don't want to be sitting all the way back. You want to be right at the edge of the chair, and you can see here, too, that I have my chair placed up against a wall. That way, the chair won't slide out from behind you. That would not be a good thing. So have the chair be nice and stable. Then you're going to put one leg straight out in front of you with your heel on the ground. And then you would lean your upper body forward, keeping your back flat as best you can or straight. And again, you should feel this stretch behind your thigh, you might feel it a little bit behind your knee as well.

This one can be easy to overdo. So when you're doing any stretches, you want to aim for a mild to moderate stretch feeling it shouldn't feel so intense that you can't hold it in that position. I'm going to mention this here since I am on the topic, but for all of these... all of these stretches, the

idea or the goal is to hold them for about 30 seconds. So if we don't hold the stretch for 30 seconds or 45 seconds, our muscles don't get enough time to really lengthen the way that we are wanting them to when we're doing stretching exercises. If we only hold the stretch for ten seconds or a shorter period of time, once we come out of the stretching position, the muscles will just shorten right back up again and it won't be as helpful. So try to hold any stretch you do, if you're trying to lengthen a muscle, you want to hold those stretches for 30 to 45 seconds.

There's no need, unless your healthcare provider tells you otherwise, to hold a stretch for longer than 30 to 45 seconds. In some cases, if someone has a joint contracture, like we talked about, then they might use casting or some other method to give a prolonged stretch. But for the purposes of what we're doing today, 30 to 45 seconds is ideal.

The second stretch on the slide is stretching a muscle called your piriformis. It's a small muscle in the back part of your hip underneath your glutes, and this muscle externally rotates your hip. So, for the stretch for this muscle, you would be sitting in your chair. For this one, you can sit against the back of the chair if you want to. You would cross one ankle over your opposite knee, making a figure-four position, as we say. Then you're going to use your hand on that same side to push that knee down and away from you. So you're trying to make that... kind of trying to make a shelf with your lower leg. Alternatively, you can, if you don't feel a stretch with just using your hand to push your knee down, you can lean your body forward, similar to the first exercise where you're stretching the hamstring, and that will be a more intense stretch. So if you're relatively flexible, you might need to lean forward in order to actually feel the stretch.

The third stretch here is from that same position as the previous exercise, so you would cross one ankle over the opposite knee. This time instead of pushing the knee down away from you, you're using your hands to pull the knee up and toward your opposite shoulder. So if you're holding on to your right knee, you're pulling the right knee toward your left shoulder.

You can turn your shoulders, as you can see I'm doing here, you can kind of turn your trunk toward the knee. And this exercise stretches your gluteal muscles, which again are in the back of your hip. And can often get tight.

Some exercises you can do in standing. I chose here to use the back of a chair to hold on to, but you could use a counter top, the back of the couch, the wall would even work.

So the first two stretches are for the muscles in the calf, which are your ankle plantar flexors, and these are called the gastrocnemius and the soleus. So the first two here are pretty similar. You have one foot forward and one foot back. The front knee is bent in both stretches. In order to stretch the gastrocnemius muscle, your back knee is going to be straight. In order to stretch the soleus muscle, your back knee is also going to be bent. In either stretch you want to reach your back heel down toward the floor. So the idea is to flex, to dorsiflex the ankle in order to stretch the muscles of the calf. So you're pushing down into that feel as much as you can.

The third exercise on the slide, I call it the Standing "L" stretch. Again, you might feel this in a couple of different places. What you're doing is you're walking your feet back away from whatever surface you're holding on to and then you're trying to make an L shape with your body. So ideally you want your back to be relatively flat. You don't really want to be rounding the back forward, but you want to rather think about hinging from your hips. So if you imagine that your hips are like a door hinge, you are trying to move in that way.

The straighter you have your knees, the more you're going to feel the stretch in your hamstring muscles. And again, the hamstrings are in the back of your thigh, so you might feel it there. If it's too intense for the hamstrings, you can also bend your knees slightly, and that will decrease the amount of stretch that you feel in the back of the thigh. You might also feel this stretch in your shoulders, which might be a good stretch for you, and... or the fronts of your shoulders and potentially in your back.

So a few different places that you're stretching with that one. The last exercise here is lumbar extension. So again, you can hold on to something. Here, you are just trying to keep your legs relatively straight and then you are gently and slowly moving your upper body backward, so you're trying to extend your lower back. Be gentle with this one, because I don't want... this one can often give you a little bit of back pain, which we don't want, so it's just a gentle stretch for the front part of your body and your trunk muscles.

All right, before we practice some strengthening exercises, let's talk about what strengthening exercises are, what they do for us and why it's important to include them in our exercise routines. Strengthening exercises refer to any exercises which require your muscles to work against any amount of resistance. This resistance might simply be gravity, your own body weight or any added weight, including free weights, resistance bands or a weighted sled, anything of that nature. Increased muscle activation is a great benefit of strengthening exercises for individuals with MS. With high repetitions, our body is able to use the power of neuroplasticity to build new neural connections from the brain to the muscles, or to strengthen existing connections.

With strengthening exercises, we see an increase in muscle output or force, which can be accompanied by muscle hypertrophy or an increase in muscle size. This increased muscle force is what leads to improved functional mobility and independence, with tasks such as standing up from a chair or going up the stairs.

Perhaps a lesser known benefit of strengthening exercises is a decrease in spasticity. Weight bearing exercises have been shown to decrease spasticity in the limbs. Strengthening exercise or strengthening muscles that oppose spastic muscles make it easier to manage the strong increase in tone. In addition, it's important to strengthen spastic muscles themselves, because interestingly, spastic muscles are often weak muscles.

Common areas of weakness for individuals with MS include the trunk and core stabilizers, which are small muscles close to the spine, as well as some of the larger back and abdominal muscles. The hip muscles are another area of common weakness. The knee extensors or the muscles of the thigh and the muscles that move the ankle can often get weak.

We'll go through just a sample of exercises in this presentation, but know that there are endless strengthening exercises out there. Make sure you stay within your limits of safety and get individualized exercises that target your specific areas of weakness from a physical therapist, if you're able to.

Again, just a list of exercises that we are going to go through here, if you want to see all the names together. We can head right to the next slide. OK. So these two exercises and a couple of others are exercises you can do lying on the floor or on the bed again. The first exercise is supine marching, and also we have straight leg raise on this one, so these are exercises that help your hip flexors, your abdominal muscles. Those are the main ones we're targeting here.

So still, on the first video, when you are laying down, you are setting up your knees so that your knees are about 90 degrees bent. And as you lift each leg, you're trying to keep that 90 degree bend in your knee. It doesn't matter what your foot is doing so much in this exercise. But you do want to make sure your lower back stays right down against the floor.

The next sort of phase to this exercise is the straight leg raise, so you're just straightening out one leg, trying to keep that knee as straight as you can and lifting the leg up, using the hip flexor muscles and also engaging your core muscles, or your abdominals, to keep your low back stable and down against the floor. So we don't want to be lifting the low back up away from the floor.

So this exercise helps with your hip muscles again, so you are starting with both knees bent, both feet on the floor. You're letting one knee fall out to the side at a time, while the other stays straight up toward the ceiling. You're trying to keep your hip, the top points of your hip, level with the floor the whole time. So try not to let your pelvis roll from side to side, you're just moving your leg. To do that, you have to use your abdominal muscles to help stabilize.

This next exercise here is called a bridge. It's a pretty common one. A lot of people may have done this one before. And this exercise is great for strengthening your hip muscles and particularly your gluteal muscles, which are really helpful for us when we are standing and balancing and also standing up from a chair.

So you would start with both feet on the floor if you're doing a regular bridge and then you would tighten up the muscles behind your hip and lift your hips up off the floor. To make that harder, you might try doing it on one leg. So using one leg is, of course, going to be harder. As you can see I'm doing here.

Alright, so next exercise. OK, so this one is going to be on your hands and knees. And it's called Bird Dog. I love that name. It's an exercise that will target a lot of parts of your body, actually. Probably the hardest, or the muscle that's being worked the hardest is your core, your core muscles, many muscles. And, what you're doing is you're setting yourself up on your hands and knees, hands under the shoulders, knees under the hips.

And I have a couple of variations here, so as you can see, initially, I was lifting one arm out in front of me at a time. Now I'm lifting one leg behind me at a time. And the whole while I'm trying to keep my back nice and steady and straight. So I'm trying not to let myself twist or bend in my back by using my core muscles, my abdominal muscles and my hip muscles and shoulder muscles to keep myself steady. Once you've mastered lifting one arm at a time and one leg at a time, you can try lifting one arm and the opposite leg. One arm and the opposite leg. And then trying to hold that and keep your balance for a few seconds at a time.

OK. This exercise is called, well I call it the Tall Kneeling Squat. So it's a good exercise for your knee extensors or your thigh muscles. It's also a good exercise for your glute muscles, which extend the hips. You can try it with your hands on your hips or you can have your hands out in front of you, as I am doing here. Basically, you are bending your knees and straightening your knees, just like you're doing a squat, but you are. on the floor.

Next, in the video, I'm going to show you, I did show holding on to something, so if you have difficulty with balance, this one can be challenging to balance on your knees without holding on. So feel free to hold on to something, just try not to use your hands to really pull up, or your arms to pull up, try to use your legs to do the work. Then you can try doing a little side shuffle on your

knees, just have something soft under your knees, of course, so you don't bruise your knees. But this is a good exercise for your hip abductors which move your legs out to the side and they also stabilize your hip when you're walking.

OK, this second exercise is sitting on the edge of a chair. It's called the Seated Heel Toe Raise. So this one, as you might guess, exercises your ankle muscles, which we've talked about a lot, and both the ankle plantar flexors, which are your calf muscles, and your ankle dorsiflexors, which are your anterior tibialis primarily. This is a great exercise to do if you do have drop foot or if you find yourself tripping on your feet occasionally. You can also perform ankle rolls as I'm doing here and sitting. This exercises all of the muscles in your ankle and also feels pretty good for a lot of people if you just have stiffness in your ankles.

Okay, the last one on this slide, Seated Marching. So for this one, you would want to sit on the edge of your chair, if you can, if you can keep your balance there. You can see I'm holding on to the chair right now. To make it a little harder, you can add the arms. So as you lift one leg, you're lifting the opposite arm at the same time. This can also be a good exercise to practice for your coordination. Using the two different sides of your brain is kind of interesting because, as you probably know, the right side of your brain controls the motor functions of the left side of the body and the left side of your brain controls the right side of the body. So using the two sides of the brain simultaneously can be a challenge for some of us. This strengthening exercise is primarily for the hip flexors in the front of the hip, but also for those trunk muscles because they have to stabilize you in sitting to keep you upright.

My favorite name of an exercise is Cactus Arms. So this is a great exercise for your postural muscles, which help you to sit or stand up straight and tall in a good, efficient posture. So what you're doing is you're trying to keep your elbows bent about 90 degrees and you're trying to keep your elbows at the level of your shoulders, so you don't want your elbows to be too low. You want them to be kind of high up around chest level. As you open your arms, you're trying to pinch your shoulder blades together on your back. While you do this, try not to let your shoulders come up toward your ears. You want to think about bringing both shoulders down and back together, remembering not bringing your elbows down, bringing your shoulders down, and squeezing them together. You can also think about bringing your chest forward in that exercise.

OK, the second exercise here is Sit to Stand. I've demonstrated it here first with a pillow on the chair. So if you have a hard time getting up from a chair that is a standard height, you might want to try elevating the seat a little bit. So you can use some sort of pillow, a piece of foam or rolled up or folded towel. So find what works for you and what feels safe and doable. You can start out using your hands on the chair if you need to. If you're able to do that and you want something a little harder, try reaching your hands out in front of you.

Alright, the next one is similar, except here we took the cushion away, and we're trying not to hold on to the chair with the hands. You're actually going to start out in a standing position for this one and then you're just sitting back and tapping the chair with your bottom. So you're not actually sitting down, hence the name "Touchdown Squat".

A harder version of this exercise is doing it on one leg. So in this instance, I did actually sit down when I did this standing up with one leg, but you could also do a single leg touchdown squat, where you don't actually sit down, you just tap the chair. This one is quite challenging, especially for balance, because as you can see, you have to stand on one leg. But it's a great strengthening exercise for your thigh muscles and your glute muscles.

Alright a few more here. This next one, the Standing Heel Toe Raise, similar to what we did in the Seated Heel Toe Raise. So you are just lifting your heels both together as high as you can and then lifting the front part of your foot, not just your toes, but the whole ball of your foot as well, if you can. Try not to rock your hips forward and back too much because then you're not really using your ankles as much to do the work. You're just kind of rocking your weight. You will have to rock your weight forward and back, but try to minimize it and see if you can feel the ankle muscles really working.

OK. Next exercise. The Standing Hip 3-way. So, we're going to move our hip in three directions or move our leg in three directions. To the front is first, as you can see, I'm standing on one leg, but I'm holding on, so I don't have to balance. If you want the added challenge of balancing on one leg, feel free to let go of that chair or the wall or whatever you might be holding on to.

The next one is going straight to the side with one leg. And then in a moment here, I'm going to bring that right leg back and lift it up. So the three directions are forward, sideways and backwards. I did about eight in each direction in this video, but based on how strong you are or time limits that you have, you can do however many make sense for you in each direction. You're trying to keep your hips and your trunk stable so you don't want to let your hips be moving all over the place if you can while you do this exercise.

So let's go ahead and go to the next one. The last strengthening exercise we have is the Back Lunge to Knee Drive. So you can start out holding on with one hand. You're stepping one foot back into a lunge where you bend both knees. And then you drive that knee forward. Here I go. I made it a little bit harder, I let go of the chair, so I have to balance as well, which just means I'm using more muscles, especially in the trunk and the hip.

All right, so just a little bit of a summary and a couple of other tips I have for everyone that might be helpful. So I wanted to just reiterate how important it is to have a team based approach to the care of a person with MS.

So the team should include all of your healthcare providers, but also you as a patient or an individual. Advocate for yourself as part of that team when it's necessary, especially if you feel that your needs aren't being addressed or you aren't getting the care that you feel is appropriate or best for you.

So speak up and tell your healthcare providers that, because you want to make sure you're getting the best care that you can. I hope that your health care team works together collaboratively, but it does help all of us on your team if the patient is able to shuttle relevant information from one provider to the other.

We do share information with each other, a lot of us when it's necessary, but sometimes you as the patient can get it to us quicker. So feel free to share anything that you have from your other healthcare providers. When you're seeking a new physical therapist, or the first one maybe, it's important to find one who is knowledgeable and experienced in treating patients with neurological conditions.

All physical therapists have some training in treating these conditions. However, not all of us work with this population after our schooling is over. So that being said, most physical therapists are willing to do their research to see how they can best help you, and getting help from any physical therapist is better than not receiving physical therapy care at all. So even if you can't find a specialized physical therapist, that's OK. See any physical therapist, I think that's better

than none at all. Try your best to participate in regular check ins with your physical therapist to make sure that your symptoms are under control and managed as best as you can.

And, let's see, I'm going to skip a couple of things for time reasons, but try to be compliant with your, the exercises that a physical therapist gives you. However, you do want to take into account your fatigue and the fluctuating nature of multiple sclerosis and your symptoms, as these can be limiting at times.

So listen to your body and keep your therapist informed so that he or she can help you modify exercises as needed. And lastly, as I mentioned earlier, be sure to start any new exercise routine gradually and allow your body enough time to rest and adjust to this change. All of us, that's true for all of us, no matter what type of condition or situation we're in.

Alexis Crispino:

Dr. Jones, that was just incredible. Thank you so, so much. That was so much good information and your videos are really incredible.

I know we only have a few minutes left, but we did have a couple of really good questions come through about some of the exercises and stretches you talked about, and I was hoping that you might have a few minutes to answer those with us before we close out.

So the first question that came in, the first one was about the half kneel and being really similar to the supine leg hang. Are they different or how are they different?

Dr. Gwynne Jones:

They are similar. I think I know the exercise they're referring to, the supine leg hang. Both of those exercises are stretches for the hip flexors. So you kind of nailed it with that one.

The, I would say, the supine version for those of you who don't know is lying on your back, usually on the side of a bed or the side of the couch and you let one leg hang off the side of the couch or the bed. And sometimes you might pull the opposite knee toward you, but again it stretches the front of the hip. It uses gravity to help let the leg kind of come down and the hip to extend.

In the case of the half kneeling stretch, we're using our body weight to kind of push our hip forward and extend the leg. So, very similar.

Alexis Crispino:

Got it. Thank you. Yeah, that makes sense. Thank you for explaining that to us.

So then another question we had was about how many reps people should, might be trying when they're doing some of these activities.

Dr. Gwynne Jones:

Great question. For the stretching exercises, usually I would say about three times for each stretch. And again, holding 30 to 45 seconds, you can do that throughout the day. It doesn't have to be one right after the other, but give yourself a little break in between each one. You know, you could do one side and then switch to the other side and go back and forth. That way, that works well.

For the strengthening exercises, everyone is really different. So the amount of repetitions that you'll be able to do is just really going to depend. Some people can do two reps of an exercise and then they get, they're really fatigued and they may not be able to do that third rep before or until they rest for a little while. And then they can go ahead and go do a couple more repetitions. Others might be able to do ten or twelve repetitions at a time, then take a break and then do another set of ten or twelve. It's very variable, so that's a hard question, but a really good one.

So again, keep in mind your fatigue and try to give yourself more rest than you might think you need if you do struggle with that fatigue. That way, you can do this... you might be able to do the same number of overall repetitions, you just have more rest breaks in between, which is absolutely OK. It's the same benefit. Well, it's a great tip knowing that we can have space in between our workouts or stretches, that they don't have to be so consecutive because we're working to build the muscles, right? But it doesn't have to be that constant.

Alexis Crispino:

Yes, yes. Cool. And so I guess one more question that we can close out with, we're wondering should we stretch before or after we do our strengthening?

Dr. Gwynne Jones:

So a very interesting question. Again, I would say it depends. If you are someone who, well, let me put it this way - if you are trying to do a strengthening exercise and that particular exercise is challenging for you because you have a limited range of motion in a certain joint, you might choose to do your... a few of your stretching exercises first to loosen the muscles, and then you're able to better perform that strengthening exercise.

But if you aren't having trouble with a range of motion for that particular strengthening exercise, I would have you probably do the strengthening exercises first to get the muscles warmed up, get your blood pumping, and then usually we're actually looser. Our muscles are looser, which seems counterintuitive because when we're strengthening our muscle, we're kind of shortening it and contracting it. But then it's able to relax a little bit more and we can get a deeper stretch. So those would be my... that would be my rationale for either option.

Alexis Crispino:

Very, very awesome. Thank you so much for for giving us those details, that totally make sense and new tips for us to learn. So, this was amazing, Dr. Jones. You know, we appreciate you so, so much for being here with us tonight and sharing those videos and your expertise and, you know, know that they're going to be really wonderful and valuable for us.

And just a note for everybody who's still here with us - Thank you so, so much for being here tonight. This webinar will be on demand, available on the MSAA website, and there's a link in the chat box, it might take some time before we can get it up there, but it will be on demand.

Please be sure to complete our Patient Education Survey, which will pop up in another little web link as well. We've included our email and phone number here for MSAA.

Again, thank you all so much for being here with us tonight and a big, huge warm thank you to Dr. Jones too for being here. So thank you so much and we hope everybody just has a wonderful night tonight. We'll see you guys next time.