

Ask a Post-Polio Specialist: Muscle strength and Exercise

with Vance Eberly, M.D

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Dr. Eberly has been the orthopedic specialist in the Rancho Los Amigos Post-Polio Clinic, in Downey, California, since 2001. His association with Rancho Los Amigos began as a young resident working in the post-polio clinic with the famous polio specialist Dr. Jacquelin Perry, who passed away in March 2013.

This authorized report uses excerpts from two previous issues of the Rancho Los Amigos Post-Polio Support Group newsletter. Dr. Eberly had answered pre-submitted questions during the group's meetings in 2008 and 2010. Many subjects were covered in the original reports, but this review focuses on his answers about muscle strength and exercise.

Q. What is the current thinking about exercise in post-polio syndrome?

Dr. Eberly said, "Before discussing exercise, let's review how we grade muscle strength."

Muscles are graded from zero (flaccid paralysis) to five (normal strength). This is not a linear scale. So when your strength goes from grade 5 to grade 4 you have actually lost about 50% of the strength in that muscle. When you drop to grade 3 you have lost another 50% and are then down to 25% muscle strength. Keep in mind that activities of daily living (ADL) do not require grade 5 muscle strength because you are not working at maximum efficiency all the time. Grade 3 muscle strength is all that is needed for ADLs. When you go down in strength, you are going down in endurance as well.

Muscle Strength Grading	
Muscle Grade	% functional strength
5	100%
4	40% to 50%
3	15% to 25%
2	10%
1	
0	

Exercise Guidelines

The rule of thumb is that if you have grade 3 muscle strength you really should not be doing an exercise program because ADLs are exercise. If you go beyond that, the muscles can get overworked, and there can be neuronal drop-off and permanent weakness.

If you had your muscle strength evaluated and you know that a muscle group is grade 3+ or better, then you can do a graded exercise regimen for that muscle group. It is recommended that you feel completely recovered after 15 or 20 minutes of exercise and do not feel exhausted later

that night or the next day, which would mean you have done too much. You need to be smart about what to do. Over time, you will get a little bit weaker. If you try to do exercises you did 15 or 20 years ago, you can't. "There is a little bit of denial in there as well," he said.

There have been some studies that show that a person with adequate strength can increase their endurance with some activity. The guidelines are:

- Some endurance activity for 30 minutes, 3 times a week, at 50-60% of your maximal heart rate.
- Strengthening exercise would be 5 or 10 repetitions per muscle group about three times a week.
- The repetitions do not need to be done all at once.

Again, it is recommended that you feel completely recovered after 15 or 20 minutes of exercise and do not feel exhausted later that night or the next day. Those muscles should not be aching later that day or the following day, which would mean you had done too much. You need to be smart about what to do.

Some people tell Dr. Eberly that exercise has made their muscles stronger. He responds that you are strengthening the muscles that are weakened from disuse. The polio-affected muscles are not getting any stronger.

There is a fine line between not doing anything and doing too much. A weak polio muscle that doesn't do anything is going to get weaker. You have to learn from your body and act accordingly.

After the age of 50, people lose about 1- 2% of their strength per year; people with post-polio syndrome seem to be on the higher end of this. Polio survivors who are not experiencing post-polio syndrome are on the lower end, the same as the general population.

Can I Exercise?

For those people who had polio and whose muscle strength is globally about 25%, then activities of daily living are exercise for those people. If they go out and try to exercise, then they run the risk of developing PPS because they are making those nerves work much harder than they should. Remember, you have damaged nerves doing more than they should. If you really push them you are going to wear them out sooner, and it is going to make you weaker by doing exercise rather than making you stronger. That weakness is permanent - it is not recoverable because you killed off those nerves by overworking them.

If a person is thinking about starting an exercise program, Dr. Eberly first recommends a manual muscle test (MMT) done by a good physical therapist. Then look at the MMT results. If most of those muscles are grade 3 or less you should not be doing an exercise program. However you should also avoid doing nothing, because a weak muscle group can be made weaker by disuse. There is a fine line between overuse and disuse.

People who have PPS usually know their bodies and understand what they can and cannot do. Exercise is based upon your muscle strength. Sometimes a small amount of exercise is good. It all depends upon the individual, and everyone is different.

Muscle Strength and Aging

Again, the normal population loses muscle strength at a rate of about 1- 2% a year after the age of 50, based on old data. People tend to be a little more active today so that data may be a little exaggerated at this time. With polio patients the decline is the same. Keep in mind that if you have post-polio syndrome, and you continue to exercise an affected muscle group to the point where it is aching all the time and having spasms and twitching (signs of overuse), you will accelerate the polio weakness, and that is not recoverable. That is why he tells patients to be smart about what they do in terms of exercise and activity.

When I overdo, what is the best way to treat my muscle pain, twitching, and spasms?

This is what happens when you overwork post-polio syndrome muscle groups: they ache, they will twitch, and you will have spasms. The best treatment for that is prevention.

Treatment and Preventing Overuse

You need to be smart about your activity level and you need to know your limitations. Remember, we are not saying don't do anything, just don't do too much. You have to learn from your body, and that is going to change over time. You may get a little weaker over time, so you can't do what you used to do. If there is something you must do, you may have to break it up into three parts.

Many people need to break up their day; they lie down for 15 or 20 minutes, two or three times a day. That helps especially with back pain. Post-polio syndrome frequently affects your spinal muscles and your antigravity muscles. So sitting down doesn't help because you are using those muscles to sit upright. If you didn't use them you would flop over, so you have to lie down. Polio survivors need to get out of the chair and lie down to rest those muscles. When you get to this point where you've overdone it and you are having these problems, the treatment is rest. Taking an anti-inflammatory medication might help and you can use ice packs, but it is best if you don't overdo in the first place.

If you have been going along fine and are now beginning to have these muscle spasms and achiness, it may be a sign that you are getting weaker and no longer have the strength and endurance. Maybe you need a brace which would help substitute for that muscle weakness. If you already have a brace, maybe you need a different one. These are signs that perhaps it is time to be re-evaluated by a polio specialist to learn your current muscle strength, and what recommendations will be made for your condition.

Another important way to prevent overuse, especially with antigravity muscles and walking, is with a wheelchair or scooter. They are great, especially for long distances. Many patients, especially younger ones, are resistant to wheelchairs. They have to get to the point where it is a little too late and they have caused that damage and have gotten weaker because they have been overdoing it; then they will begin using a wheelchair or scooter (depending upon their weakness).

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