



EXERCISE - WHAT IS RIGHT FOR YOU

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Many people with a history of polio can improve muscle strength and cardiovascular conditioning with an exercise program. [1], [2] One of the problems that people with Post-polio Syndrome face is how much exercise they should be doing. We have all been told to conserve our energy. We know that too much exercise will further damage already weak muscles. We also know that if a muscle is not exercised it will lose strength. So what should we be doing?

Determining how much we should do isn't easy. We must learn to recognize fatigue. We must learn which pains mean overworked muscle. We need to pay attention to our bodies and use pain and fatigue as signals. We have to let go of the 'no pain; no gain'; philosophy we learned while we were recovering from polio. We must also learn to use how we feel today to assess activity yesterday or even the day before and plan for tomorrow.

The key to exercise for people with Post-polio syndrome is to suit the activity to the amount of damage to the muscle. This damage may be a result of the original polio and from Post-polio overuse. Different researchers use different methods of determining just how much a muscle or group of muscles is damaged and what exercises are appropriate. [1], [4], [6]

After consulting with our doctors to assure ourselves that we don't have some disease process other than PPS causing our problems, we must decide how much to do. What can we do when we don't have a Post-polio Clinic and physicians willing and able to do four limb specialized EMG techniques? We can still look at our histories and we can feel how we are doing now. Using this information we can try to set up or get the physiotherapists (who may or may not have knowledge of post-polio syndrome) to set up appropriate exercise programs for us. I suggest you try to figure out what each of your limbs should do based on your experience with that limb.

Dr. Agre and Dr. Rodriguez have shown that polio survivors can assess their own muscle fatigue. [3] For each limb, ask yourself "Which is the most severely involved muscle in this limb?" "Is that muscle weak?" and "Am I noticing signs of increasing weakness in that muscle?" Increased pain in the muscle, twitching, decrease in quality of movement, being able to walk shorter distances, having more trouble with stairs, more difficulty standing, muscle wasting, difficulty holding your arm up, driving, dressing and tiring with fewer and fewer repetitions during your regular exercise routine are common signs of increased weakness in a muscle or limb.

A limb that does not have any weakness is classed as no clinical polio [1] and you may be able to use it like any normal limb. These are the limbs you may be able to use to get a good workout for your heart and

lungs (cardiovascular workout). It is sensible to increase the amount of exercise you do gradually. If you notice *any* signs of increasing weakness, you must reevaluate you limb and your exercise program for that limb. Even muscles with no clinical polio may have silently lost up to 40 percent of their neurons. [6] If you don't have any signs of damage, you can gradually try to work up to being active 3-4 times a week for at least 20 minutes getting your heart rate up to 60%-80% of maximum.

If your muscle is mild to moderately weak but shows no signs of increasing weakness, the limb would be classed as clinically stable polio. [1] You can exercise these muscles with care. They should not be significantly fatigued. Try exercising 3 times per week for periods of no more than 10-20 minutes with frequent rests. Progressive resistance exercises (also called non-fatiguing strengthening exercises) with gradually increasing weights may be used to maintain and possibly gain strength. In a study by Chan et al, the progressive resistance training program [7] consisted of three sets of eight isometric contractions starting at 50% of maximum voluntary contractions, three times weekly for 12 weeks. Feldman et al [4] increased weight by less than half a pound at a time. Monitor yourself carefully while you exercise and if you notice any signs of increasing weakness, you must reevaluate your limb and your exercise program for that limb.

If your muscle is severely weak, the limb is probably appropriately classed as severely atrophic polio. [1] Active exercise of the limb is likely impossible. Passive range of motion exercises may be used to maintain flexibility.

If your muscle is weak and showing increasing weakness, ask yourself "Am I doing too much or too little?" Unless the limb has been immobilized recently (for example, in a cast or on bed rest) you are probably doing too much. The limb should be classed as having clinically unstable polio. [1] You should decrease the amount of activity that limb is doing, use energy conservation, and get your rests. These are the muscles that are being damaged by overuse. You must not fatigue them. It is probably a good idea to stretch to maintain flexibility and range of motion. (If you are sure the limb has been getting too little activity, you can try a carefully graduated program of non-fatiguing exercises.) Monitor yourself carefully while you exercise and if you notice any signs of increasing weakness, reevaluate your exercise program for that limb.

Whatever your exercise program, continue to make changes to help you conserve energy. Paying attention to fatigue in your exercise program may help you to realize how much activity overworks each limb. As you go through your day, be aware of fatigue and rest when you are tired (before you are exhausted). Dr. Peach and Dr. Olejnik found that patients who successfully control the factors responsible for neuromuscular overuse did not lose muscle strength. [5]

Resources.

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3. Agre JC, Rodriquez AA: *Neuromuscular Function in Polio Survivors*. *Orthopedics* (1991) vol. 14 No. 12: 1343 - 1347. [\[PubMed Abstract\]](#)
4. Feldman RM: *The use of EMG in the differential Diagnosis of muscle weakness in post-polio syndrome*. *Electromyogr. Clin. Neurophysiol.*, (1988) 28: 269 - 272. [\[PubMed Abstract\]](#)
5. Peach PE, Olejnik S: *Effect of treatment and non-compliance on Post Polio Sequelae*. *Orthopedics*

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6. McComas AJ, Quartly C, Griggs RC. Early and late losses of motor units after poliomyelitis. *Brain*, 1997; 120:1415-1421. [[Pub Med Abstract](#)]
7. Chan KM, Amirjani N, Sumrain M, Clarke A, Strohschein FJ, *Randomized controlled trial of strength training in post-polio patients*. *Muscle Nerve*. 2003 Mar;27(3):332-8. [[Pub Med Abstract](#)]

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