

Aging Well with Post-Polio Syndrome: The Benefits of Muscle Strengthening

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Muscular Strengthening is one of the most common recommendations of physical medicine and rehabilitation for people with PPS struggling with symptoms. However, historically, any type of exercise was once thought to be bad for people with neuromuscular diseases (such as muscular dystrophy, post-polio syndrome, cerebral palsy, etc.) and this stigma has been difficult to overcome. Research has since shown exercise and physical activity to be the exact opposite – of great benefit – for people with neuromuscular disease.

In 2010, Tiffreau and colleagues published an article reviewing several studies that looked at muscular strengthening programs as a way to improve symptoms of post-polio such as fatigue, pain, sleep, muscle weakness or atrophy. This article looked at 14 different studies published from 1988 to 2008.

What types of muscle strengthening programs were studied?

Aerobic Training – Aerobic means “with oxygen” and is typically an exercise of low or moderate intensity for longer periods of time. Examples include bicycling, jogging, jumping rope, stair-climbing and swimming. In the studies, bicycling and walking on a treadmill were the most common form of aerobic training used.

Aquatic Physiotherapy – Also called “hydrotherapy” is done in warm (90–92 degrees), waist high water and the room is typically warm as well. A number of different activities can be done: balance exercises, range of movement, and strength and conditioning. Often activities are led by a specialist.

Muscle Strengthening Training – The studies used non-fatiguing progressive resistive exercises for people with post-polio. A typical program includes performing a small number of repetitions until fatigue, allowing rest between exercises for recovery and increasing the resistance as the ability to generate force increases. Activities include lifting weights, exercises that use the body as weight (push-ups or pull-ups), or using bands for resistance.

The studies reviewed typically measured how well the program worked by looking at the participants’ maximum heart rate, oxygen use, volume of muscle, blood pressure, amount of weight being lifted, walking speed, or a strength measurement (like hand grip strength). A few studies looked at electromyography (EMG), which measures the electrical potential generated by the cells in the muscles. A physical therapist can tell how healthy a particular muscle is by the EMG results. Two studies included a measure of pain. Overall, the studies supported the benefits of muscle training programs for people with post-polio:

- ◆ Main improvements were found in heart rate, increased oxygen use, blood pressure and pain reduction.
- ◆ No adverse side effects were reported for any of the studies.
- ◆ Muscle strengthening programs should focus on muscle groups which are still working and pain free.
- ◆ The programs must be individualized, moderate and regularly evaluated.

How do I start a muscle strengthening program?

- ◆ Always talk to your doctor before starting any new exercise program.
- ◆ Ask your doctor about muscle strengthening and find out if you can be referred to a physical therapist.
- ◆ Check your health insurance to see if a referral to a physical therapist or aquatic therapy is covered.
- ◆ Talk with friends and family and check out community resources (such as the YMCA). ▲

References and Resources:

Tiffreau V, Rapin A, Serafi R, Percebois-Macadre L, Supper C, Jolly D, Boyer F-C. Post-Polio and Rehabilitation. *Annals of Physical and Rehabilitation Medicine* 2010, 53: 42-50.

Taylor NF, Dodd KJ, Damiano DL. Progressive Resistance Exercise in Physical Therapy: A Summary of Systematic Reviews. *Physical Therapy* 2005, 85 (11)

YMCA of USA – www.ymca.net

Centers for Disease Control (CDC) Guidelines of Physical Activity for Older Adults – www.cdc.gov/physicalactivity/everyone/guidelines/olderadults.html

The National Center on Physical Activity and Disability (NCPAD) To Reap the Rewards of Post-Polio Exercise – www.ncpad.org/disability/fact_sheet.php?sheet=136