Recent Scientific Studies—A Review....

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Scientific research delving into the nature of the problems experienced by people who had polio, their causes, symptoms and remedies reminds us that there are indeed physicians and other health care professionals looking for the best ways to help people with PPS live their lives as best they can.

The *Archives of Physical Medicine and Rehabilitation* recently published an article entitled "The Relation Between Lower Extremity Strength and Shoulder Overuse Syndromes: A Model Based on Polio Survivors" (Klein, M.G., Keenan, M.A., Esquenazi, A., Polansky, ScD., June 2000). The authors are rehabilitation practitioners and scientists who work at several hospitals in Philadelphia. They asked the question, "What is the relationship between having long-term leg weakness and later developing shoulder overuse injuries among polio survivors?" Shoulder overuse injuries include tendonitis and rotator cuff injuries.

The researchers expected that those polio survivors with moderate weakness in their leg extensor muscles would be more at risk for shoulder injuries developed over a period of time. Leg extensor muscles include the quadriceps, the large muscle on the front of the thigh and the hamstrings and gluteal muscles, the muscles in the back of the hip (buttocks) and down the back of the thigh. The researchers assumed that people with weaker leg extensor muscles would use their arms and shoulders to do some of the work that their legs could not do, such as pulling oneself up from a seated position instead of pushing with leg muscles.

The results of the study included two significant findings. The first was that persons with decreased knee strength or with decreased knee and hip strength were more likely to have symptoms develop in the shoulders over time. The second finding was that as the overall body weight of a person with leg weakness increases, the more likely that person is to develop shoulder symptoms. The study also noted that women were more likely to have shoulder problems than men, probably because women have weaker muscles in general.

The study suggests some important strategies for injury prevention and for maximizing our health. For polio survivors who have minimal to moderate weakness in their legs (hips, knees, feet), closely monitored upper-body strengthening exercises (shoulder, back, arm) prescribed by a medical professional knowledgeable about post-polio can be done to maintain strength. Joint conservation strategies, such as the use of assistive devices for proper sitting, sleeping and mobility can sustain overall body resiliency and contribute to injury prevention. In some cases, cardio-respiratory training can be done to increase body resiliency. When possible, find ways to ensure that your shoulder, arm and upper back muscles are strong enough to prevent injury.

Managing body weight is a tough issue for everyone, but especially for people who had polio and are sometimes not able to be as active as they would like. I'd like to suggest an approach to compensate for not being able to exercise, a way to minimize the effects of weight gain and encourage your whole body to move as efficiently as possible. This can be accomplished by maximizing strength and flexibility in the muscle areas which have *not* been affected by polio and by learning how to move with more energy efficient gait patterns (how you move) and body mechanics (the way you position your body while moving, sitting, sleeping, standing). A consultation with a movement specialist (physical therapist, or practitioner of the Trager Approach, Feldenkrais Method, or Alexander Technique) can assist you in learning how to develop a more efficient gait pattern and set of body mechanics. Often using assistive devises to help in the process of being able to sit easier, move easier, stand easier, cook easier, or bathe easier, is a key to feeling better.