



## **Polio Biology V**

### **How To Avoid Limiting Variables While Exercising**

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It seems that we with PPS are in an awful fix. We have aches and pains and weakness which others can often counter with exercise. But we are told not to exercise. Rest is the prescription for us but often this, although necessary, results in disuse problems. These can mimic the same symptoms of overuse: aches and pains, atrophy, and an increasing intolerance for movement. If we are able we should stretch and use any unaffected muscles regularly. But we want to pick an activity that confers maximum benefit and doesn't make things worse.

During the past polio epidemics many physicians encouraged patients to swim. Swimming has many ideal aspects for polio patients who are not too disabled to participate. One plus is that swimming is not "muscle specific". This means that you use a lot of muscles and can even rest some while you are using others. No "Limiting Variable" problems to this activity as far as one single muscle group goes. You can simply switch to another muscle group. There is no minimum (or maximum) intensity of exercise in swimming either. You can float around luxuriating in a weightless environment, completely supported, while getting range of motion exercise by moving limbs, or you can simply rest. On the other hand you can swim rapid laps if you can tolerate it and if your doctor suggests it. If you are lucky enough to be able to do the laps your unaffected muscles will improve tolerance for the exercise and all of your body will get more oxygen. Done properly this could help a great deal. Done improperly it will hurt. But, if you are doing something wrong you can be confident that your body will tell you. You simply will not be able to continue.

To give you an example of the lack of specificity which avoids limiting variables in this form of activity let me provide some pool scenarios for someone with post-polio syndrome. You can tread water while remaining upright. While you tread water you can kick or not kick your feet. You can move arms from side to side while treading or you can push down. This can be stationary or you can move forward. If you move forward you can do it with a sidestroke with or without a kick, or you can dog paddle with or without a kick. You can do a crawl swim with or without a kick or a backstroke, using opposing muscles to the crawl, with or without a kick. When you do a sidestroke emphasize your strong muscle side. You can do all of this with or without assistive floatation devices. There is such a range of possibilities that by varying conditions one can avoid limiting variables altogether thereby avoiding strain and overuse of a particular muscle group.

I have always felt that stopping all movement worsened PPS and introduces confusion regarding disuse and overuse weakness and fatigue. We are so tired from the effect of overused muscles that we sometimes stop everything without the understanding of the limiting variable principle. It is one or a group of muscles that is often being overused that cause smothering body fatigue. When we react by stopping everything we become deconditioned and can actually exacerbate the problem. It is very important to undergo a complete evaluation

by a specialist and, with the specialist's blessing, begin some kind of a movement program. I recommend pool exercise because they eliminate the gravity that has taken its toll over our lives. There is hope and conditioning after PPS. Finding the way without straining limitations is one path toward feeling better.

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