

Regina

## Post-Polio Fatigue--How It Can Change Your Mind

One of the most frustrating effects of post polio was the awareness that I could not concentrate and a feeling that I wasn't thinking clearly any more. For many of us who have compensated for our physical limitations through intellectual pursuits, this is a terrifying feeling. Is it not bad enough that our bodies are giving out? Must we undergo the indignity of losing our minds as well? Studies show that in spite of marked impairments of attention, polio survivors are within the high normal or superior range on measures of higher-level cognitive processes and IQ. They also show that if we allow ourselves to become fatigued we do lose our ability to focus our attention and to rapidly process complex information (requiring 23 to 67% more time to complete tasks requiring sustained attention and vigilance than did polio survivors with no fatigue or mild fatigue).

Polio survivors experience two kinds of fatigue. One is physical tiredness and decreased endurance. The other and often more distressing kind is "brain fatigue." Brain fatigue describes problems with attention, alertness and thinking. Between 70% and 96% of polio survivors reporting fatigue complained of problems with concentration (96%), memory (85%), attention (82%), word finding (80%), staying awake, and clear thinking, (70%). Tests indicate that an impairment of selective attention (related to damage as a result of polio) results in feelings of fatigue and cognitive problems.

The polio virus damages the anterior horn cells of the spinal cord but that is not all it damages. It also damages parts of the brain stem. Findings indicate that polio virus consistently and often severely damaged the brain areas known as the Reticular Activating System. These areas are responsible for activating the part of the brain involved in maintaining voluntary attention, memory, spontaneous interest, initiative and the capacity for effort and work, and for preventing feelings of fatigue. This is the area that keeps us awake and allows us to focus our attention. Polio Survivors report that they are most disabled by the visceral symptoms of fatigue. These feelings of exhaustion, passivity and aversion to continued effort that generate an avoidance to both mental and physical activity. Dr. R.L. Bruno suggests the existence of a Fatigue Generator in the brain. His findings suggest that there is a close relationship between fatigue and impaired attention. There would be survival value in a brain mechanism that promotes rest when attention and information processing ability are impaired. An area of the brain (the Basil Ganglia) may generate mental and physical fatigue. When the Reticular Activation System is damaged the Fatigue generator takes over and produces problems with focusing attention and physically moving without significant conscious effort. Damage caused by the polio virus chronically reduces the firing of the nerve cells in the Reticular Activating System. Rest or sleep would increase the firing of the brain activating system nerves, restore activation and once again allow motor behavior.

The damage would explain why polio survivors have no difficulty concentrating after the original infection but why we are developing problems thirty to forty years later. One theory is that the age-related loss of nerve cells combined with an already abnormal small number of nerve cells as a result of the original polio virus infection may impair the brain's activating system enough to produce impaired attention and fatigue as polio survivors reach mid life.

The first step in treating the disorders of concentration, memory, attention, word finding, staying awake and clear thinking is to deal with the fatigue. Energy conservation, work simplification and the proper provision of rest periods throughout the day are the treatments of choice in dealing with post polio fatigue. Stress management is also critical in the treatment of post polio fatigue. Dr. Bruno et al are currently studying the use of medication ( a post-synaptic dopamine receptor agonist currently used in the treatment of Parkinson's disease) in the treatment of post polio patients who do not respond to conservative treatments. They caution that there is a real danger that treatment with medications will allow polio survivors to resume their hyperactive lifestyles and further stress polio virus damages, "metabolically vulnerable" neurons in the brain stem and anterior horn.

As with any treatment strategy we must try to find the most effective treatment that will do the least damage while helping us to deal with our current problems. Certainly reducing physical and emotional stress in our lives and getting adequate rest make sense for everyone, even polio survivors. The good news is if you get rested, you will find your ability to concentrate, pay attention, remember words and stay awake will improve. You may even find that you can enjoy reading and thinking again!

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[Return to PPS Index](#)