

Progression

LEOP has only been widely recognised for a short period of time. As a result, studies that have investigated the progression of symptoms are limited in number and have tended to focus mainly on the progression of muscle weakness.

Dalakas and colleagues (1986)²⁸ followed a group of post-polio subjects over an average period of 8.2 years and examined the progression of new weakness. Using manual muscle testing (MRC scale) they found that the pace of worsening differed from subject to subject, being generally slow and variable even within the same subject. Long periods (up to 10 years) of stability were not uncommon. However, for a cumulative 10-year period, the average progression of weakness was estimated as one percent per year. They reported that the subjects' gender, age at onset of new symptoms and physical activity level preceding the development of new weakness did not appear to contribute significantly to the rate of progression. They also commented that the impact of the new weakness on the functional capabilities of the individual is variable, but appears to depend mostly on the residual deficit the person is left with. The more severe the residual polio deficit following the acute illness, the greater the functional impact of new weakness on the individual's neuromuscular function.

A more recently published study by Grimby and colleagues (1998)⁵³ investigated quadriceps muscle strength in 30 legs in 21 post-polio subjects over a period of eight years. All limbs tested had EMG evidence of previous polio. On average, there was a decrease in isometric muscle strength of nine percent, in isokinetic strength at 60°/s angle velocity of 13 percent and in isokinetic strength at 180°/s angle velocity of 15 percent. They divided the legs into those in which increased muscle weakness had been perceived during the eight-year period (unstable) (n= 20) and those with no perceived new weakness (stable) (n=10). The decrease during the eight years was 12-19 percent for the three strength measures in the unstable legs and 1-7 percent in the stable legs. This was contrasted with a reduction of 4-8 percent over an eight-year period in healthy controls.

A group of 50 subjects from the Mayo Clinic, who had previously been studied by Windebank and colleagues (1991)⁴³ were re-examined five years later by Windebank, Litchy, Daube and Iverson (1996).⁵⁴ This group of 50 paralytic polio survivors were investigated on both occasions using a structured history questionnaire, scored neurological examination, detailed electrophysiological studies, isometric muscle strength measurement, pulmonary function tests, psychological inventories and timed tests of function including gait and upper limb dexterity. All measures of neuromuscular function demonstrated stability over the five-year period in this group of subjects.

Stanghelle and Festvag (1997)⁵⁵ investigated progression of symptoms over a three to five year period in a group of 63 subjects who had all received a diagnosis of PPS based on the criteria proposed by Halstead and Rossi (1987).⁵² All subjects had previously received comprehensive multidisciplinary assessment and intervention. The subjects answered a questionnaire about their subjective symptoms, medical and social situation, and underwent spirometry and symptom-limited exercise stress testing. Seventy-five percent of subjects reported new weakness in polio-affected muscles during the follow-up period. General fatigue was an increasing problem in 77 percent of subjects and 61 percent reported increased muscle and joint pain during the follow-up period. A pronounced reduction in peak oxygen uptake (compared to normal values) was seen at the first evaluation. At the second examination, peak oxygen uptake was decreased further than predicted by increasing age.

While studies of muscle weakness in post-polio groups have shown relatively slow rates of progression, the study by Stanghelle and Festvag (1997)⁵⁵ points to a more alarming deterioration in subjective symptoms, physical disability, and cardiorespiratory fitness in post-polio individuals despite comprehensive multidisciplinary intervention. These findings were in contrast with those of Windebank and colleagues (1996)⁵⁴ who reported stability on a range of measures over a five-year period. Stanghelle and Festvag (1997)⁵⁵ acknowledged that their sample consisted of subjects who had already been diagnosed with PPS and thus the extent of progression in these subjects could not be extrapolated to the polio population in general. Obviously further research is required to establish the likely prognosis for individuals with a history of polio.