

## Cold Sensitivity

Many individuals with a history of polio experience difficulty in tolerating cool or cold temperatures. Cold sensitivity has been reported by 46<sup>71</sup> to 62<sup>72</sup> percent of subjects in post-polio surveys. In the study by Lynch (2000)<sup>74</sup> on a sample of the Queensland post-polio population, 57 percent of subjects reported sensitivity to the cold.

On examination, the core body temperature of these individuals is almost always normal but limbs with significant atrophy tend to be cool to touch with a bluish discoloration and variable amounts of swelling. Individuals often report increased levels of fatigue and weakness when exposed to the cold. Bruno and colleagues (1985)<sup>96</sup> found that people with PPS lost 75 percent of their muscle strength when the room temperature dropped from 29 degrees to 18 degrees celsius.

Damage to the intermediolateral cell column (from acute polio infection) causes a decrease in sympathetic vasoconstrictor outflow. In paralysed muscle, the process is facilitated by an impaired muscle pump mechanism that allows the blood to pool and contributes to swelling in the limbs. The engorged capillaries of the skin release heat into the environment, decreasing skin temperature. As a result, arteriolar sphincters constrict, diminishing the blood flow and further lowering tissue temperature. This cooling produces a slowing in the nerve conduction velocity, an increase in the muscle fibre membrane refractory period, a decrease in muscle spindle firing and an increase in muscle viscosity resulting in a decreased muscle response to motor stimuli.<sup>95</sup>