Dr. Bernadette Murphy is the Director of the Human Neurophysiology and Rehabilitation Lab at the University of Auckland. She is also the Academic and Clinical Director of the MSc in Exercise Rehabilitation run in the Department of Sport and Exercise Science. She originally trained as a chiropractor in Canada before completing her MSc and PhD in the Physiology department of the University of Auckland.

The overall theme of her research is neural adaptation in humans and the role of physical interventions like spinal adjustments and exercise in aiding the re-establishment of meaningful neural connections. In order to measure altered neural function in humans, she has acquired skills in a number of non-invasive techniques which can be used to measure changes in neural processing and function in humans. These include nerve stimulation, somatosensory evoked potential techniques to measure processing of sensory input by the brain, electromyography to measure electrical activity in muscles, and transcranial magnetic stimulation, which is a technique used to investigate the output of the motor cortex, which is the part of the brain controlling the muscles. Recently she has begun to use magnetic resonance imaging (MRI) to measure changes in muscle function and functional MRI to investigate changes in brain function with exercise.