



Professor Jarvis is a muscle physiologist with long-standing interests in the adaptive response of muscle to voluntary exercise and to applied stimulation. He has BSc (Physics with Physiology) and PhD (Biochemistry) degrees from the University of London and is now Professor in Physical Activity Intervention at Liverpool John Moores University. His own research in experimental

stimulation with miniature muscle stimulators is therefore surrounded by projects in whole human physiology and biomechanics.

Current research includes transcriptional analysis of stimulated, inactive and denervated muscles, to try to understand more completely how patterns of activation and loading of muscles are related to immediate and long-term cellular responses. Jonathan has worked for many years with the Vienna group to refine implantable neuromodulators for use in experimental work and we now have the opportunity to use fully remotely programmable devices that can produce any conceivable pattern of activity. These cellular responses are the determinants of force, speed, power and endurance.

Jonathan is interested in the limits to training: for example the threshold of activity above which slowing of muscle occurs, the internal signals for muscle hypertrophy, and the threshold above which muscle is damaged. These are important in FES to influence breathing and control of the airway (laryngeal pacing) and the use of skeletal muscle to assist the heart or to provide neosphincter function as well as FES for reanimation of limbs.

Jonathan was a member of the RISE consortium that focused on rehabilitation of long term denervated muscles. In that study recovery of mass and force was successful but endurance and parameters of excitation-contraction coupling remained abnormal. He has continuing interests in the potential benefits of muscle stimulation during the period of denervation in recoverable peripheral nerve injury.