Abstract

Impaired breathing is a devastating consequence of cervical spinal cord injury (SCI), representing a significant burden to injured people and increasing the risk of mortality. Respiratory dysfunction and associated secondary complications remain the leading cause of morbidity and mortality in people with cervical SCI. Particularly concerning are reports indicating that the number of cervical SCIs has increased in recent years. While there is mounting clinical and experimental evidence for spontaneous improvements in respiration, the extent of recovery – or functional plasticity – remains incomplete. However, plasticity is reliant on spared neural substrates after incomplete spinal cord injury (SCI). Thus, the extent of recovery without therapeutic intervention and anatomical repair is limited. To address this limitation, and amplify plasticity and recovery of breathing following cervical SCI, our ongoing research aims to use novel therapies to promote repair of phrenic motor pathways that control function of the diaphragm – a respiratory muscle essential to breathing.