

Editor's Page

Spinal Cord Editor's Page November 2007



Dear *Spinal Cord* reader,

Functional electrical stimulation (FES) remains one of the most interesting topics in spinal cord medicine. In this issue, Hook and Grau present a good review on FES. As they explain, the focus of most FES training paradigms has been on the direct (motor) consequences of stimulation elicited by the activation of efferent motor neurons and/or selected muscles. It is envisaged that, through the appropriate placement and tuning of the stimulation, adaptive behavioural patterns can be regularly elicited and maintained. What makes their review so special is that they go beyond this idea and look closely at what has been published on the afferent inflow of FES.

Stimulation also engages sensory fibres that relay signals to the spinal cord.

This afferent input can, depending upon its nature and strength, activate spinal circuits that induce, modulate or even inhibit the performance of the target response.

Hook and Grau discovered surprisingly little about how spinal circuitry impacts the consequences of FES. In many cases, the implicit assumption appears to be that surviving spinal circuits play little or no role. They discuss recent evidence that spinal neurons can foster adaptive behaviour in an FES paradigm. Grau and colleagues have published a large number of studies on instrumental learning in the *Spinal Cord*. In 1990, they found that a conditioned nonopioid antinociception could be established after rats had experienced a spinal transection at the level of the second thoracic vertebra. In another experiment, they showed that a postshock distractor can speed the decay of shock-induced antinociception in the spinalized rat. These findings suggested that the circuitry needed to obtain associative and memory-like effects is present within the spinal cord. Meanwhile, many studies have followed, which you can read about in the review published here.

De Vivo has made a large evaluation of the spinal cord injury model systems programme in the United States by documenting treatment outcomes from 1973 to 2006. Learn about the evolution of acute care and rehabilitation lengths of stay, functional independence measure (FIM) motor score at discharge and gain during rehabilitation, the probability of neurologic improvement from admission to discharge, medical complications, rehospitalizations, community integration and many more.

Two original works by Kalkan *et al.* and Yang *et al.* describe experiments in spinal cord injury animals. Subbanna *et al.* present a prospective, randomized, double-blind trial on topical phenytoin for pressure ulcers.

Three interesting case reports are also included in this issue.

Enjoy all this new knowledge.

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