USE OF, AND THE APPROPRIATE TIME TO INITIATE,
NEUROMUSCULAR ELECTRICAL STIMULATION PROGRAMMES
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NMES after an upper motor neuron lesion (UMNL) is used increasingly in research, clinical, and community based programmes to achieve gains in mobility, function, and physical fitness. This work usually starts after subjects have completed rehabilitation, so any benefits more likely to occur during the acute stage may not be possible.

NMES programmes tend to be applied to achieve one of two general aims:

1. To facilitate functional gains, including muscle strengthenig, gait re-education and facilitation of motor return. If achieved during early rehabilitation these can provide maximum benefit, improving the functional outcome.
2. To induce physiological / cardiorespiratory benefits. These can be achieved either during early rehabilitation, or at a later stage, in outpatient groups.

Clinical and research programmes using NMES have led to a number of important “secondary” benefits being identified. These include reduced levels of spasticity (1), overcoming contractures (2), and greater venous drainage from the lower limbs (3) due to direct effects of the muscle contractions. Indirect effects like improved skin condition (4), increased fibrinolysis (5) and more normal endocrine responses to exercise (6,7) are generalised systemic benefits, and can be argued to be more important during acute rehabilitation than the direct effects.

Disruption of the cerebral motor map commences very soon after spinal cord injury (8), making relearning movement more difficult for those with an incomplete spinal cord injury. If a similar effect occurs after CVA NMES will have a role to play in proprioceptive re-education.

Investigations into the use of NMES in the management of lower motor neurone lesions has also provided evidence of a benefit (9). It seems, therefore, that the potential of NMES, as knowledge of its uses exists at the moment, is still being explored.

It must also be remembered that there can be complications associated with medical use of electric devices, and with increasing intensity of exercise in cardiorespiratory diseases. Careless use of stimulation must therefore be avoided, while encouraging broadening its use and acceptance.

For the full benefits of NMES / FES to be realised, and available to those who need it, the hardware, and the expertise to use it, must be available in all rehabilitation settings. The subject populations most commonly investigated now include spinal cord injury, stroke, musculoskeletal and orthopedic conditions. However, it may be appropriate to explore its use in other clinical groups like burns and amputees, where benefits could reasonably be expected according to existing knowledge.

REFERENCES: