

Consensus Conference:
Role of Physical Activity and Exercise Training in Progressive
Neuromuscular Diseases (NMD)

On September 30 – October 3, 2001 the RRTC in Neuromuscular Diseases hosted a consensus conference to discuss the state of the science on the Role of Physical Activity and Exercise Training in Progressive Neuromuscular Diseases. The conference brought together 22 scientific leaders from the fields of exercise sciences and medical rehabilitation to exchange information and develop a consensus statement.

The role of exercise in the rehabilitation of individuals with neuromuscular disease is controversial. Maintaining or improving muscle strength is a major functional concern for those with loss of strength and loss of cardiorespiratory (aerobic) endurance that is secondary to neuromuscular disease. Determining whether or not exercise helps or causes further injury in muscles undermined by a progressively disabling genetic disease is complicated by a number of factors, not the least of which is the widespread belief among lay people and professionals alike that, given ample opportunity, the body can often heal itself with a self-help remedy, such as exercise. Exercise has been shown to be effective in improving or maintaining strength and endurance at particular points in the disease process, but many questions remain. The use of exercise for the many different NMD is not known. A copy of the background material and literature review on which the conference was based is available at: <http://nmdinfo.org/training/lectures/conf2001.pdf> and a copy of the program is at: <http://nmdinfo.org/training/lectures/conf2001-program.pdf>.

The conference opened with remarks by Wm.F.Fowler, Jr.,MD, followed by a patient's perspective on NMD by William Lewis, MD, a cardiologist at UC Davis who has fascioscapulohumeral dystrophy, and an overview of the conference by Craig M.McDonald, MD, principal investigator at the NIDRR RRTC on NMD.

The first day's proceedings centered around presentations on "**Adaptations to Exercise Training in Able-bodied Humans and Animals.**" Presentations on whole organ system adaptations were followed by presentations of adaptations at the cellular and molecular levels and on muscle injury due to exercise in able-bodied humans and animals.

The second day's proceedings were centered on "**Adaptations to Exercise Training in Humans and Animals with Neuromuscular Diseases.**" Fatigue as a response to exercise testing and electrical stimulation was presented first, followed by adaptations to disuse atrophy, cardiopulmonary training and resistive training in humans with NMD and then by adaptations to training and simulated exercise in animal models of NMD.

The third day of the conference was devoted to three simultaneous round table discussions, which were, followed by presentations of these summary discussions to all in attendance:

- Fatigue Response to Exercise Testing and Electrical Stimulation

- Adaptations to Exercise Training in Humans
- Adaptations to Exercise Training and Simulated Exercise in Animal Models of NMD

General recommendations for those with NMD are:

- Adopt an active lifestyle.
- Moderate intensity resistive exercise will usually result in modest increases in strength if the weakness is not severe and the disease progression is relatively slow.
- Moderate aerobic exercise training programs may be recommended without any deleterious effect.
- Individuals with NMD will have a variable response to training depending on their degree of weakness, the rate of progressions of their weakness, their fatigability and their level of conditioning.

Conference proceedings have been published as a special supplemental issue of the **American Journal of Physical Medicine and Rehabilitation (Volume 81, November 2002, Number 11(supplement))**. Permission was granted allowing unrestricted web access to 11 of the 18 conference presentations. Available on the web site are written and audio transcripts of these and the slide presentations. These are available at <http://www.nmdinfo.net/training/lectures/>

