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**Neuromuscular Adaptations to Endurance and Strength Training**

Electrophysiological Assessment by Means of Advanced EMG Techniques

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The aim of this work was to systematically investigate the neuromuscular adaptations to distinct motor training programs, such as endurance and strength training, with particular emphasis on the neural mechanisms. To achieve this purpose different electrophysiological techniques were combined and applied, which allowed to concurrently assess both central and peripheral adaptations to specific motor training programs. Information on the discharge rate patterns was extracted from the intramuscular signals by employing digital signal processing and pattern recognition techniques. Based on this data, the present work showed that endurance and strength training elicits opposite adjustments in the spinal cord output. These distinct changes seem to match the divergent motor output expected for the two training programs. Endurance training increases resistance to fatigue and is accompanied by decreased motor unit discharge rates. In contrast, strength training enhances maximum force output and is accompanied by increased motor unit discharge rates. These distinct adjustments in the spinal cord output result from changes in different neural mechanisms located at supraspinal or spinal level.

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