

**37\_CONCORSO PUBBLICO, PER TITOLI ED ESAMI, PER LA COPERTURA A TEMPO DETERMINATO, DELLA DURATA DI CINQUE ANNI PER N. 1 POSTO DI COLLABORATORE PROFESSIONALE DI RICERCA SANITARIA, DA ASSEGNARE ALLA SC NEUROLOGIA 6 – NEUROFISIOPATOLOGIA**

**PROVA I**

1. Progetto di ricerca SNP VCN/EMG
2. Quando si riduce ad icona una finestra:
  - a) rimane un pulsante sulla barra delle applicazioni
  - b) si attiva un collegamento sul desktop
  - c) è necessario prima salvare il suo contenuto
3. Leggere e tradurre il testo seguente

The 'split hand' phenomenon is evident in approximately 70% of ALS patients at time of diagnosis (Corcia et al., 2021), and refers to preferential wasting of the lateral group of intrinsic hand muscles [i.e. the thenar eminence and first dorsal interosseous] (Kuwabara et al., 2008; Wilbourn, 2000). The split-hand sign is more frequently observed in the spinal-onset ALS but is evident irrespective of the degree of disability (ALSFRS-R), thereby suggesting potential diagnostic utility (Fang et al., 2016; Kuwabara et al., 2008). The split hand index (SI) is a neurophysiological measure of the split hand phenomenon derived by the following formula (Menon et al., 2013):

$$SI = \frac{CMAP_{AMPLITUDE-APB} * CMAP_{AMPLITUDE-FDI}}{CMAP_{AMPLITUDE-ADM}}$$

where CMAP = compound muscle action potential, APB = abductor pollicis brevis, FDI = first dorsal interosseous and ADM = abductor digiti minimi.



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PROVA NON ESTRATTA

DARDAR SELSABIL AYA

18/06/29

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**PROVA 2**

1. Progetto di ricerca SNP PE
2. Un programma può essere installato su qualsiasi computer?
  - a) no, si deve controllare la compatibilità con il sistema operativo e le caratteristiche hardware
  - b) sì
  - c) sì, se il computer è potente
3. Leggere e tradurre il testo seguente

**3.2 Methods to estimate the number of motor units**

The development of methods to estimate the numbers of functional motor units in human subjects began with the landmark studies of [McComas, Fawcett, Campbell, and Sica \(1971\)](#). This first study used the standard motor nerve conduction study output – the supramaximal CMAP – together with an incremental approach to stimulation of the motor nerve, starting at low intensity and gradually increasing the stimulus strength. The step increases in the amplitude of the response were attributed to the activation of additional motor units. The amplitude of the largest response was divided by the number of steps, producing an estimated amplitude of an average single motor unit potential (SMUP). This was then divided into the CMAP amplitude to produce the motor unit number estimate (MUNE).

The following forty-plus years have led to the development of increasingly sophisticated techniques. The first development was that of multi-point stimulation, in which SMUPS are obtained through stimulation at different points along the nerve, an approach specifically developed with the problem of ‘alternation’ in mind ([Brown & Milner-Brown, 1976](#); [Kadrie, Yates, Milner-Brown, & Brown, 1976](#)). In this, two motor units with similar activation thresholds are seen to alternate between being



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PRONA ESTRATTA

DARDAR SELSABIZ AYA

12/06/25



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**PROVA 3**

1. Progetto di ricerca SNP Riflessi
2. Per creare una cartella?
  - a) clicco con il tasto destro su un punto vuoto della finestra e scelgo nuovo – cartella
  - b) non si possono creare cartelle
  - c) dalla barra dei menu, clicco su visualizza – nuovo – cartella
3. Leggere e tradurre il testo seguente



**1. Part I: Neurophysiology and the diagnosis of MND**

**1.1 EMG and the diagnostic criteria**

Lambert was the first to propose a set of electrodiagnostic criteria to support diagnosis of ALS. He recognized that in less affected muscles fasciculation potentials (FPs) are observed, associated with motor unit potentials (MUPs) of increased amplitude, duration and complexity, without signs of reduced number of motor units (MUs) during a maximal contraction (Lambert, 1969). In addition, in weak and wasted muscles, fibrillation potentials and sharp waves (fibs-sw) were more consistently observed and associated with a poor pattern of full contraction and MUPs with more neurogenic features (Lambert & Mulder, 1957). Even in these early studies, the disproportion between slight atrophy and weakness of the investigated muscle, and clear neurogenic changes on needle electromyography (EMG), due to the innervation process by collateral sprouting, was emphasised (Wohlfart, 1960). This latter observation underscores the high sensitivity of EMG in detecting changes in clinically normal muscles of ALS patients. Regarding motor conduction velocities (MCVs), Lambert described a mild reduction of about 15% when recording motor responses from weak and atrophic muscles, associated with small compound muscle action potentials (CMAPs, <1 mV) (Lambert, 1962).



PROVA NON ESTRATTA

DARDAR SELSABIL AYA

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