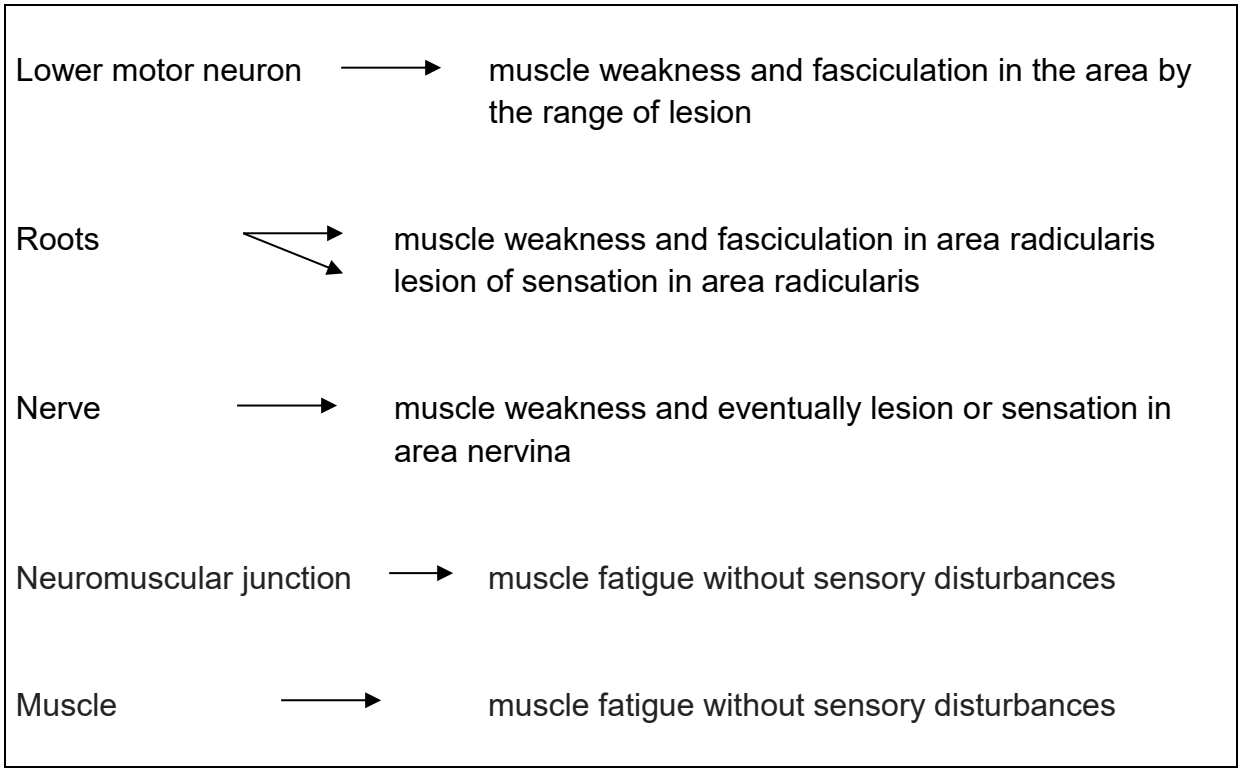
The syndrome of peripheral motor neurone (lower, alpha-motor neurone)

The damage is at the level of the alpha motor neurone and lower.
The basic features of each level of peripheral lesions are shown in Fig. 1.

Fig. 1 Levels of peripheral lesions



Note 1
Area nervina – area of one nerve supply
Area radicularis - area of one root supply

The clinical manifestations - general

Within the peripheral system, symptoms can vary depending on which part of the periphery is affected predominantly. It is understood that general manifestations of peripheral impairment are usually present (see Tab. 1).

Tab. 1. The basic difference between the peripheral and central disabilities

Parameter	***The peripheral lesions***	***Central lesions*** *(with predominant impairment of pyramidal pathways after remission of the acute stage)*
The proprioceptive reflexes	*Decreased or absent*	*Increased*
The muscle tone	*Decreased (flaccid paresis)*	*Increased (spasticity)*
The pyramidal irritative phenomena (Spastic signs)	*Absent*	*Present*
The sensitivity disturbances	*If they are present, so in the corresponding distribution (area nervinae, radiculares or with distal maximum)*	*If they are present, they are extensive, whole limbs*
The muscle atrophy	*Yes, from an early stage in the respective distribution*	*Only in the late stages*
Twitching (fasciculation)	*Yes*	*No*
Muscle weakness	*In the respective distribution*	*In the respective distribution*

The clinical manifestations - of each level of peripheral lesions

Damage of muscle

- muscle weakness (location depends on the distribution of disability)
- atrophy, hypertrophy, pseudohypertrophy (replacement of dysfunctional muscle tissue in some types of muscular dystrophy)
- hypotonia
- reduced proprioceptive reflexes (but may be normal)
- no sensory loss, but it can be a pain (myositis, rhambdomyolysis)

Disability of the neuromuscular junction

- muscular fatigue, weakness, depending on the previous exercise
- no sensory loss, no pain
- normal muscle tone, normal proprioceptive reflexes, normal muscle trophic

Affection of the peripheral nerves

- muscle weakness, hypotonia and hyporeflexia, hypotrophy of muscles (peripheral "weak" paresis) in the distribution area nervina with prolonged condition
- sensory loss in the distribution area nervina or in "glove, sock distribution" (not always present, depending on whether the affected nerve has a sensitive component)
- can be a pain

Affection of plexus

- Muscle weakness, hypotonia and other manifestations of weak paresis
- sensory disturbances in the distribution of inadequate area nervina or radicularis (is the larger, plurisegmental)

Affection of roots

Affection of posterior root

- sensory loss and possibly pain in the distribution area radicularis
- decreased the proprioceptive reflexes (if not compensated by the neighboring roots supplying the same muscle)
- no weakness
- not muscle twitching

Affection of front root

- muscle weakness, hypotonia and other manifestations of weak paresis in the distribution area radicularis
- muscle twitching
- no sensory loss, no pain

At the root disability are usually combined handicap of posterior and of front root.

Affection of lower motor neuron

- muscular weakness, hypotonia and other manifestations of flaccid paresis in the area corresponding of the range of affected anterior horn cell may not match the area radicularis
- otherwise identical finding as the of front disability root

Dermo-neuro-muscular therapy

Author: Elizabeth Kenny (1886-1952)

This method was originally intended for to theat poliomyelitis anterior. At present, methodology is used primarily for treatment of peripheral paresis and some therapeutic element for treatment of functional disorders of motor.

Methodical procedure
Kenny's method comprises the following therapeutic elements intended for application depending on the stage of disease (poliomyelitis anterior acuta).

1. **Bed rest:** i tis indicated in the acute stage
2. **Application of splints:** they ate used in the acute stage of the disease with the aim of influencing contractues
3. **Hot packs:** application of moist heat to reduce muscle pain and relaxation of muscle spasms and contractures – pre-warm cotton drapes at 80°C are laid on entire body except the chest and joints – in acute stage for the whole day, in the subacute stage 8 hours a day, the according to the condition of the patient.
4. **Manual stretching or pulling out the soft tissues:** skin, subcutaneous tissue, fascia and muscle
5. **Positioning:** to ensure a physiological position of individual body segments and to prevent muscle shortening
6. **Stimulation:** it is designed to prepare the neuromuscular system to tutorial the movement. Stimulation must be precise, it relates to only a respective muscle, it is performed in the direction of maximum muscle contraction and in the optimal position for the function of the muscle.
   Procedure
   - Passive stretching of the muscle to be stimulated: muscle sprindle is irritated byquickly passive stretching of muscle, the excitability of motor neurons innervating the muscle increases
   - Approximation of muscle tendons by fast, trembling movements: facilitation of antagonist occurs on the basis of reciprocical inhibition, agonist is tempered - activity of gamma fibres is increased and thus the sensitivity to stretching of muscle sprindles in the next phase of stimulation. Facilitation of antagonists is followed by their depression which causes a positive induction in original motoneurons.
   - Reuse passive stretching of the muscle: provoces an icrease of excitability of motoneurons at elevated gamma activity
7. **Indications and verbal instructions:** therapist shows insertions and muscle contraction direction, which is subsequently required from the patient. The patient checs the indication by eyesight.
8. **Reeducation:** tutorial fluent slow passive or active movements. When finding incoordination, it is necessary to return to the implementation of passive movements.