CLAIMS

~~1. Method for treating mobility handicap in a patient affected by a neurodegenerative disease, comprising steps for controlled and localised mechanical stimulation of the foot, at a plurality of selected areas of the foot comprising at least the tip of the big toe and the lower big toe metatarsal joint, said method being implemented according to predetermined parameters comprising at least: a predetermined mechanical stimulation intensity, a predetermined sequence for stimulating said parts of the foot, a predetermined duration of each mechanical stimulation step, and optionally a repetition of said sequence.~~

~~2. Method according to claim 1, comprising steps for mechanically stimulating:~~

~~a) the tip of the right big toe;~~

~~b) an area beneath the sole of the left foot corresponding to the lower left big toe metatarsal joint;~~

~~c) an area beneath the sole of the right foot corresponding to the lower right big toe metatarsal joint;~~

~~d) the tip of the left big toe.~~

~~3. Method according to claim 2, wherein said mechanical stimulation steps are performed according to the following order a), b), c), d).~~

~~4. Method according to one of claims 1 to 3, wherein said mechanical stimulation steps comprise reaching an operating pressure or threshold pressure, corresponding to the patient feeling a stimulus.~~

~~5. Method according to claim 4, wherein each mechanical stimulation step is~~

~~operated by a respective contact member having a rounded or substantially spherical tip, having a diameter ranging between 1.5 to 2.5 mm, the force imparted to said contact member being comprised between 2 and 3.5 kg.~~

~~6. Method according to anyone of the preceding claims, wherein the mechanical stimulation steps have a substantially equivalent duration with respect to each other.~~

~~7. Method according to claim 6, wherein the mechanical stimulation steps have a duration in the range between 5 and 10 seconds.~~

~~8. Method according to anyone of the claims 4 to 7, wherein the mechanical stimulation steps are performed separately and in sequence, obtaining that at any time of the treatment, the mechanical stimulation be equivalent or greater than the operating pressure in only one of said areas of the body.~~

~~9. Method according to anyone of the claims 1 to 8, said neurodegenerative disease being the Parkinson's disease.~~

1~~0~~. Apparatus (10) for mechanically stimulating the foot comprising at least one first mechanical stimulator (3a) arranged to operate, during use, on the tip of the big toe, and a second mechanical stimulator (3c) arranged to operate, during use, on an area localised beneath the sole of the foot and substantially corresponding to the lower big toe metatarsal joint; said apparatus further comprising a control system (4) suitable to actuate said mechanical stimulators according to a treatment programme comprising at least one mechanical stimulation intensity, a predetermined sequence for stimulating said parts of the foot, a predetermined duration of each mechanical stimulation step, and optionally a repetition of said sequence.

2~~1~~. Apparatus according to claim 1~~0~~, comprising a first mechanical stimulator (3a), a second mechanical stimulator (3b), a third mechanical stimulator (3c), a fourth mechanical stimulator (3d) wherein:

- said first mechanical stimulator (3a) is intended to operate, during use, on the tip of the right big toe of a patient;

- said second mechanical stimulator (3b) is intended to operate, during use, in an area beneath the sole of the left foot corresponding to the lower big toe metatarsal joint;

- said third mechanical stimulator (3c) is intended to operate, during use, in an area beneath sole of the right foot corresponding to the lower big toe metatarsal joint;

- said fourth mechanical stimulator (3d) is intended to operate, during use, on the tip of the left big toe;

and furthermore:

- the control system (4) is arranged for the actuation of said first, second, third and fourth stimulator (3a - 3d) according to said treatment programme.

3~~12~~. Apparatus according to claim 2~~11~~, wherein said control system (4) is arranged to obtain the actuation of said first, second, third and fourth stimulator in corresponding sequence.

4~~13~~. Apparatus according to claim 2~~11~~ or 3~~12~~, wherein said control system is arranged to adjust the actuation of each of said stimulators to obtain a predetermined threshold pressure.

5~~14~~. Apparatus according to claim 4~~13~~, wherein said control system (4) is arranged to command said stimulators (3a - 3d) in sequence, in such a manner that said stimulators reach said threshold pressure in sequence, maintaining it for a predetermined period of time, and in such a manner that - at any time during the execution of a stimulation programme - only one of

said stimulators reaches said threshold pressure.

615. Apparatus according to claim 413 or 514, wherein each of said stimulators comprises a motor and linearly moving member for contact with the foot, said member having a tip for contact with the foot, said tip being rounded or substantially spherical.

716. Apparatus according to claim 615, said tip of the contact member having a diameter ranging between 1.5 and 2.5 mm, and said control system being arranged to adjust said motor to obtain a mechanical stimulation force between 2 and 3.5 kg.

817. Apparatus according to any one of claims 110 to 716, wherein said control system (4) comprises at least a one-way or two-way data communication port (5).

918. Apparatus according to any one of the claims 110 to 817, comprising a first device (1) for treating the right foot and a second device for treating the left foot, said first (3a) and said third stimulator being associated to the first device (1), and said second (3b) and fourth (3d) stimulator being associated to the second device.

1019. Apparatus according to claim 918, wherein each of said first and second device comprises a base (11) for accommodating the foot, having an adjustable rear support (12) for accommodating the heel and a tiltable front support (13), for accommodating the toes.

1120. A method for controlling an apparatus (10) for mechanically stimulating the foot according to any one of claims 110 to 918, said method comprising the steps of activating said apparatus to mechanically stimulate:

a) the tip of the right big toe:

b) an area beneath the sole of the left foot corresponding to the lower left big toe metatarsal joint;

c) an area beneath the sole of the right foot corresponding to the lower right big toe metatarsal joint;

d) the tip of the left big toe;

according to treatment parameters comprising at least one predetermined mechanical stimulation intensity, a predetermined sequence for stimulating said parts of the foot, a predetermined duration of each mechanical stimulation step, and optionally a repetition of said sequence.

1221. A method according to claim 1120, wherein said sequence is sequence a) - b) - c) - d).