**Swinging child support**

Therapeutic device for facilitating the postural and locomotory development in subjects with disabilities, comprising a fix base (1), movable support means (2) for holding up a child, connecting means (4, 5) between the base and the support means, motor means (6) co-operating with the connection means for producing in the movable support means a swinging motion.
Description

[0001] The present invention concerns a device for the postural and locomotory rehabilitation in those subjects showing disabilities, in particular children showing a retardation following to a cerebral damages, hypotonia, deformity, etc.

[0002] The methodologies applied for the rehabilitation of disabilities in the postural and locomotory development used at present, are based on manual stimulation carried out by the child’s parents or by volunteers. They comprise some non-intensive methods (like Vojta, Bobath, Neuro-Evolutive Treatment, Puccini-Perfetti, etc.), and other methods which provide for an intensity up to 12 hours a day (e.g. Doman and variants).

[0003] This means that such rehabilitation methods consider a treatment intensity - extremely important, specially in the initial development phases - that either is not provided for or is provided for in such a manner as to be approachable only to few families with a strong motivation and with considerable financial possibilities, and which can rely on the co-operation of many people and volunteers.

[0004] Furthermore, said treatments last for the whole day and are carried out by different persons, and therefore they won’t be homogeneous and they will be difficult to plan and to control so as to define a personalized therapy and to verify its effects.

[0005] It is the aim of the present invention to eliminate or to reduce above mentioned inconveniences of the methods for rehabilitation of the postural and locomotory development disabilities, used at present.

[0006] It is the main aim of the present invention to realize a mechanic device that allows to supply the child with prolonged changes of the position of its body with respect to the force of gravity, oscillations and rotations, measured out according to the needs and the kind of reply, so as to obtain reactions of verticality, of resting, of balance which are the basis of the postural and locomotory development. The device according to the present invention implies a reduction of persons necessary for carrying out determined manoeuvres and a reduction of engagement required, and all this will allow dedicating more time to improving family relationships.

[0007] It is a further aim of the present invention to realize a device that allows carefully determining and planning the therapy, according to the needs and to the reply of the child.

[0008] Another aim of the present invention is to realize a system that allows recording in time the stimulation given to the child thus offering a method for comparing the stimulation with the obtained results.

[0009] At last, the device according to the present invention may be used also by non-professional persons at home but also by professional personnel for diagnostic purposes, for preparing a treatment programme and for verifying the evolution of the child.

[0010] The aims set forth are reached by means of the device for the postural and locomotory rehabilitation according to the present invention, consisting of a therapeutic device comprising:

- a fix base;
- movable support means for holding up a child;
- connecting means between the base and the support means;
- motor means co-operating with the connection means for producing in the movable support means a swinging motion.

[0011] The fix base advantageously comprises a control panel for allowing the regulation of the kind and intensity of the therapy. It comprises at least a start control and controls for regulating the speed and the width of the swinging motion, a timer for switching off and a signal of treatment end.

[0012] The therapeutic device according to the present invention further advantageously comprises systems for non-volatile recording of the fix or removable kind, for allowing setting out and recalling predetermined therapy programmes and the recording of the data concerning the stimulation given to the child. It also comprises special means for interface with the user and for connection to external peripheries like personal computers, printers, remote control devices and computer networks.

[0013] The advantages obtained by means of the device according to the present invention consist of the possibility of giving to all those children who may need it a therapy for the rehabilitation of the postural and locomotory development, economical and that may be carried out at home even by non-professionals.

[0014] Further advantages consist of the possibility of carrying out a homogeneous therapy based on stimulation specially regulated on programmes predetermined or defined at the moment, given the possibility of easily recording the data concerning the kind of therapy carried out and also the possibility of making use of the device according to the present invention by non-professional persons as well as by professional personnel, for diagnostic purposes.

[0015] The device for the postural and locomotory rehabilitation according to the present invention will be described in more detail herein below relating to the enclosed drawings in which two preferred embodiments are shown.

[0016] Figure 1 shows an axonometric view of a device for the postural and locomotory rehabilitation according to the present invention.

[0017] Figure 2 shows a scheme of a longitudinal section of the device according to figure 1.

[0018] Figure 3 shows a scheme of a square section of the device according to figure 1.

[0019] Figure 4 shows a realization variant of the device according to figure 1, provided with a different support for the child.
Figure 5 shows a scheme of a longitudinal section of the device according to figure 4.  

Figure 6 shows a scheme of a square section of the device according to figure 4.  

Figure 7 shows the use of the device according to figure 1, showing one of the possible positions of the child during treatment.  

Relating now to the embodiment shown in figure 1, the device according to the present invention comprises a fix base 1, a support 2 for holding up the child and a control panel 3. Said control panel advantageously comprises a start button 10, a speed control 11, a control for the swinging width, a small control keyboard 13 with a viewer 14 and a timer 14.  

The embodiment as shown in figure 2 comprises at least two cylinders 4 and 5, rotationally supported around their longitudinal axis from said base 1, and onto which said support 2 is resting; a motor 6 and a transmission belt 7 between the said motor and the cylinder 5.  

Relating now to the section shown in figure 3, said cylinders advantageously have a central groove 8 in which a projecting guide 9, provided on the outside of the bottom of said support 2, gets engaged.  

In the realization variant of figure 1, said support 2 has a mainly concave cot shape, with its bottom degrading towards the central line.  

Said support furthermore has longitudinal lifted edges 16 and end edges 17 for containing the movements of the child.  

In the further variant of figure 4, said support 2 has a plane shape; figures 5 and 6 show realization details similar to those shown in figures 2 and 3.  

According to the present invention, the working of the device for the postural and locomotory rehabilitation is the following: the operator starts the device for the postural and locomotory rehabilitation according to the present invention by means of switch 10 and, by means of controls 11 and 12 and timer 15, he regulates the speed and the width of the swinging motion of the support 2 as well as the duration of the treatment; in an alternative, by means of a small keyboard 13 he may select a previously recorded treatment programme, available on a magnetic support.  

Relating to the section of figure 2, during working motor 6 operated cylinder 5 by means of the transmission belt 7 and makes it rotate alternatively and for short distances in the two directions, thus giving a swinging motion to said support 2, resting on said cylinders 5 and 4.  

At the end of the treatment, an optic and/or acoustic signal - not shown nor described - marks the end of the therapeutic treatment.  

The coupling between a groove 8 and a guide 9, shown as a particular realization detail in figure 3, allows avoiding that said support 2 slides along the longitudinal direction of said cylinders 4 and 5, causing a danger of fall for the child being treated.

Claims

1. Therapeutic device for facilitating the postural and locomotory development in subjects with disabilities, characterized in that it comprises:

- a fix base (1);
- movable support means (2) for holding up a child;
- connecting means (4, 5) between the base and the support means;
- motor means (6) co-operating with the connection means for producing in the movable support means a swinging motion.

2. Device according to claim 1, characterized in that it comprises a control panel (3) for controlling the functions of said device.

3. Device according to claims 1 and 2, characterized in that said control panel comprises control means (11, 12, 15) for regulating the speed, the width and the duration in time of the swinging motion of said support means.

4. Device according to claims 1 and 2, characterized in that said control panel comprises signal means for marking the end of the treatment.

5. Device according to claims 1 and 2, characterized in that said control panel comprises signal means for recording and recalling special treatment programmes by means of a non-volatile memory.

6. Device according to claims 1 and 2, characterized in that said control panel comprises a non-volatile memory for recording determined parameters of the chosen therapeutic treatment.

7. Device according to claim 1, characterized in that said movable support means for supporting the subject comprise a resting cot.

8. Device according to claim 7, characterized in that said resting cot comprises lifter edges (16, 17) for preventing a casual falling of the subject.

9. Device according to claim 1, characterized in that said movable support means for supporting the subject comprise a plane rest for the subject itself.

10. Device according to claim 1, characterized in that said connection means comprise at least two rotating cylinders (4, 5) with a square groove (8).

11. Device according to the preceding claims, characterized in that said movable support means (2) comprise a projecting guide (9) that gets engaged
in said transversal groove (8), preventing the sliding of said support means.