INTRODUCTION

In all modern communities, degenerative diseases have become a major problem of health, representing one-third of the causes that affect patients’ quality of life, requiring intensive care and a supported recovery.

The role played by balance in the recovery process (standing, walking etc.) is well-known by the majority of specialists in the field of medical recovery. Balance is a component of the coordinative abilities which, according to Blume (1981) quoted by R. Mano (1992), are organized under the form of a system.

An individual’s ability to achieve balance, as part of the coordinative abilities, is conditioned by the way in which the peripheral sensitive receptors are permanently sending information related to the environment, to the position of the body segments regarding the whole body (Shenghe, 2002, p. 376).

Due to some disturbing factors, the balance can be modified or even lost, restoration being possible through a complicated mechanism of exortion of the postural control, due to the selection and the adjustment of the muscle control schemes (Shenghe, 2002, p. 337).

According to the same author, the postural control is achieved with the help of three basic sources of information: somatic-sensitive receptors (exterioar or proprioreceptors), visual receptors and vestibular receptors.

The stability of a body depends on certain factors, such as: the projection of the position of the centre of gravity regarding the area of support, the weight of the body and the height of the centre of gravity regarding the support area (Hay, 1980, p. 154-157).

Maintaining the balance for a certain period of time depends on various factors some of which are genetically conditioned, the reflexes playing an important part in this sense (Bota, 2002, p. 391-393).

Stability may be developed both through exercises designed for such purpose, and by means of transfer (induction) as a result of doing exercises meant for any other purposes than for the improvement of balance.

PURPOSE

This study aims at researching whether the devices of physiotherapy (the posturograph) can be successfully used to restore balance in the patients with lower limb osteoarthritis.

METHODS

According to the studies that have been carried out, the posturograph has a significant potential for training the muscles required in statics and especially the muscle around the knee which may present a high instability, since, most of the times, this is the centre of most degenerative joint diseases. This study aims at establishing the effectiveness of the posturograph as a therapeutic device of training, in the cases of postural instability, the results on medium and long term being considerably superior to the conventional therapies.

20 subjects aged between 45 and 60 years old, diagnosed with gonarthrosis in different stages, being in the stage of balance recovery, have been randomly divided into two equal groups: one of active treatment (with the posturograph) and a group of control (without the posturograph).

The group of active treatment followed kinetotherapy sessions, daily, for 45 minutes, over a period of 5 weeks, in which the posturograph has been used for various exercises and positions.

The control group followed the same programme of kinetotherapy (recovery), the exercises being carried out in a traditional manner (using the balance board, air mattresses etc.), soft and unstable surfaces.

The active treatment group has carried out 6 weeks of applied training. At the same time, the control group had to

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carry out at home the daily training programme established by kinetotherapists. The two groups have been biomechanically and functionally examined and the following parameters have been recorded: (a) prior to the beginning of kinetotherapy, (b) after the completion of the 3 weeks of kinetotherapy, c) up to 1.5 months. The parameters of unipodal or bipodal support have been measured with the posturograph and a test for the evaluation of muscle force.

1. The analysis of the unipodal or bipodal support allows: the viewing and monitoring of the maximum pressures exerted on the thenar in a static condition (each point of the fingerprint corresponds to a certain percentage of the maximum pressure, thus, the areas of hypo and hyper support can be identified and quantified); the identification of the centres of weight in a static condition.

2. Muscle force evaluation test at the level of the impaired lower limb.

RESULTS

As a result of the evaluation carried out through the posturograph, data regarding the static balance have been obtained (assessment in a static condition). The analysis of the data in static condition allows the detection of the support dissymmetry.

After the processing of the data registered by using posturography, the results indicated that in the subjects who followed the training programme with the help of this device, the average percentage of the oscillations exerted by the lower limbs has been reduced at final testing compared to the initial one. The subjects who followed a recovery treatment with the device had an average percentage of balance less than (4-5 %) in relation to the subjects of the experimental group. This fact means that the reflex of balance, the reaction to correct the balance, is greater in the subjects who have followed the treatment using the posturograph.

The evolution of muscular force

The evolution of the affected lower limb muscular force at the level of the trunk

By comparing the results recorded after the two tests of muscular force, it results that the level of the muscular force recorded higher values in the subjects who have followed the recovery treatment with the posturograph.

The comparative analysis of the data obtained through this test shows a significant improvement of the values obtained after the treatment, in comparison with the values obtained before the treatment, which denotes the effectiveness of the programme that was carried out by using posturography, in order to control the posture during the daily activities, which represents the final purpose in the recovery of these patients.

CONCLUSIONS AND SUGGESTIONS

Like other devices and evaluation methods of balance, the posturograph can provide important data regarding the evaluation of the postural balance. These data allow us to perform an analysis regarding the level of training, the parameters of balance manifestation.

A very important quality in the treatment (recovery) of osteoarthritis is that balance can be recovered. The classical treatment (recovery) is a solution, and the new technology gives us other opportunities. Finding new methods and equipments that may contribute to the balance recovery in the degenerative diseases should be a constant concern for the specialists in the field.

The posturograph is a device which can assess, but it also represents a possibility to train (re-educate) the static and dynamic balance.

IBLIOGRAPHY