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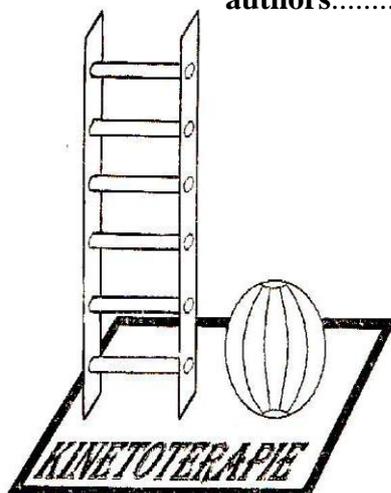
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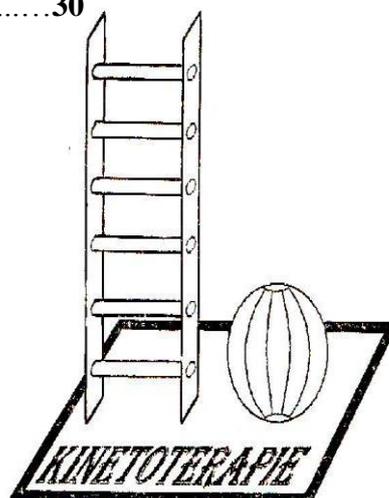
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EFFECTS OF RESPIRATORY EXERCISES ON THE CHEST MOBILITY AND PHYSICAL PERFORMANCE

EPECTELE EXERCİȚILOR RESPIRATORII ASUPRA MOBILITĂȚII CUTIEI TORACICE ȘI A PERFORMANȚEI FIZICE

*Katalin Mátyás-Mitruczki,
Dóra Farkas,
Zsuzsanna Némethné Gyurcsik¹*

Key words: respiratory exercises, chest mobility, physical performance, intentional apnea, Cooper test

Cuvinte cheie: exerciții de respirație, mobilitatea cutiei toracice, performanță fizică, apnee voluntară, testul Cooper

Abstract: It was supposed that respiratory exercises improve the cardio-respiratory endurance. 26 young adults took part in the investigations. We used a questionnaire for mapping the risk factors, and then a series of respiratory exercises were carried out. Before and after the training programme the circumference of chest, the voluntary apnoea time and the results in Cooper test were measured. All of the parameters were significantly improved. We conclude that these exercises are suitable even for patients with contraindication of cardiovascular endurance training.

Rezumat: S-a presupus că exercițiile de respirație îmbunătățesc rezistența cardio-respiratorie. Am luat în studiu un număr de 26 de adulți tineri. Am utilizat un chestionar pentru identificarea factorilor de risc și apoi am efectuat o serie de exerciții de respirație. Am măsurat înainte și după exerciții circumferința pieptului, timpul de apnee voluntară și rezultatele la testul Cooper. Toți acești parametri s-au îmbunătățit semnificativ. Concluzionăm că aceste exerciții sunt adecvate chiar și pentru pacienții cu contraindicații în ceea ce privește antrenamentul cardio-respirator de rezistență.

Introduction

It is well known that respiratory exercises have many beneficial effects. They improve the abdominal breathing and the function of the respiratory muscles, so the respiration becomes more effective. The more effective breathing provides better oxygen supply for the peripheral tissues. By the way the mobility of the chest as well as the whole respiratory mechanism will be improved. Circulation becomes better by the increase in cardiac output. Altogether the respiratory exercises help to keep a pleasant daily lifestyle, create the vegetative balance. It was supposed that the respiratory exercises can result in the improvement of physical stress tolerance and increase in cardio-respiratory endurance. The aim of our experiments was to examine the effects of respiratory exercises on the chest mobility and aerobic endurance. The circumferences of the chest at three different locations, the voluntary apnoea time [1] and the results in Cooper test were measured. If the hypothesis that respiratory exercises have positive effect on the aerobic endurance would be proved, the endurance of patients who are excluded from cardiovascular endurance training on account of contraindication could be improved.

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Methods

26 clients took part in the investigations. The age of participants was 24.7 ± 1.2 years in average (mean \pm SEM, n=26), the ratio of female:male was 24:2.

We used a self-constructed questionnaire for mapping the risk factors and the knowledge of participants about respiratory exercises. The thoracic circumference of participants was determined at three different levels by using a measuring tape: in the axillary region, at the level of the nipples, and at the level of the rib 10. The difference in circumference at the end of the maximum expiration and inspiration was taken as the measure of chest motility. We also measured the duration of the voluntary apnoea (breath-hold time) as the indicator of the physical endurance. The examiner asked the participants to make a forced expiration, then to inspire at maximum amplitude and hold the air in. The process was repeated three times and the best result was used. To characterize the aerobic endurance the result in Cooper test was also measured, that is the distance performed by running in 12 minutes. Then we carried out a training programme containing respiratory exercises in a 5-week period, twice a week. During the training programme the participants have done common respiratory exercises in different body positions. We used hardened positions, and the movements of the arm aimed to increase the movement of the chest. At the end of the training programme we asked the participants to fill in a second questionnaire about their subjective opinions regarding the whole procedure and we measured the parameters mentioned before again.

Statistical analysis was performed by Microsoft Excel. The significance was evaluated by paired t-test.

Results

We experienced that the average value of BMI (22.6 ± 0.8 ; mean \pm SEM, n=26) was in the ideal range (18.5-24.9). There were also obesity and underweight state in the group (the highest value was 33, and the lowest one was as low as 18). It was found that 22.7% of the clients are smokers, the 76.2% of participants do exercises weekly (mainly aerobic activity is performed).

As it is shown in Figure 1, the chest deflection increased considerably in each 3 measuring levels as an effect of respiratory exercises. The change was significant ($p < 0.001$).

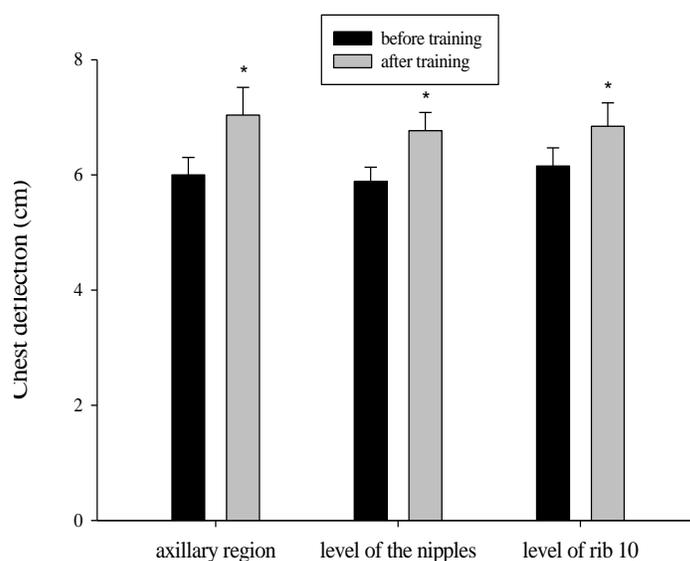


Figure 1: Effect of respiratory exercises on chest deflection. The thoracic circumference was measured in the axillary region, at the level of the nipples and rib 10. The difference in circumference at the maximum expiration and inspiration

was taken as the measure of chest deflection. Columns and bars represent mean±SEM, n=26, * p<0.001 after versus before training.

The Figure 2 shows the results of Cooper test and the duration of voluntary apnoea. The Cooper test (12-minute running) showed significantly better results at the end of a 5-week training containing respiratory exercises. The result of Cooper test before the training was 1859.6±59.2 m (mean±SEM), which was increased to 1984.6±44.6 m (mean±SEM) at the end of the 5-week period (p<0.001).

The duration of voluntary apnoea increased from 62.1±5.6 s to 74.3±7.2 s (mean±SEM), the difference is significant (p<0.001).

The results of the Cooper test and the duration of voluntary apnoea show correlation (Figure 3), the correlation coefficient: 0.53602.

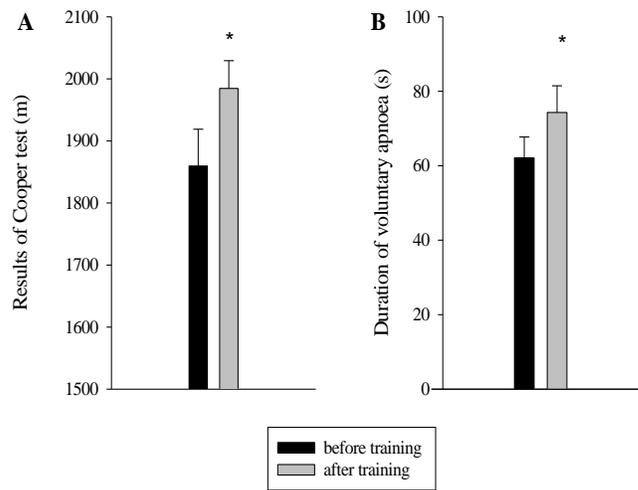


Figure 2: Effects of respiratory exercises on the results of Cooper test performed in running and the duration of voluntary apnoea. Columns and bars represent mean±SEM, n=26, * p<0.001 after versus before training.

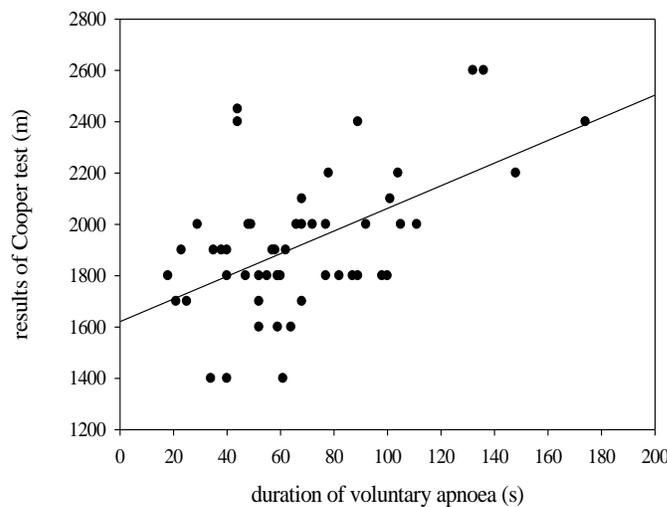


Figure 3: Correlation between the distances performed in Cooper test and the duration of voluntary apnoea. Correlation coefficient: 0.53602.

The evaluation of questionnaires at the end of the intervention programme revealed the positive effects of respiratory exercises not only on the physical but on the psychic status, too.

Discussion

The respiratory exercises used for a long while in the physiotherapy are based on the “pranajama” in the yoga 0. The majority of people get accustomed to inappropriate breathing techniques in spite of the fact that the suitable respiration facilitates other vital processes as the circulation, the neural regulation etc. The right breathing technique improves the function of the diaphragm, decreases the O₂ and energy requirements of the respiratory muscles, so increases the efficiency of breathing. It is supposed that these changes are manifested in the improvement of the aerobic endurance and the physical loadability.

Our data showed a significant increase in the mobility of the chest which could result in an increase in the tidal volume and the vital capacity. The duration of the voluntary apnoea was elongated on the effect of respiratory exercises. The voluntary apnoea can be used as an indicator of aerobic endurance 0, since the better the oxygen consumption, the longer the breath-hold time, the greater the aerobic endurance. The performance in the running Cooper test showed remarkable correlation to the duration of voluntary apnoea. Since the breath-hold time seems to be improvable by respiratory exercises these findings can be valuable in the improvement of endurance in elder age or in the pathological conditions when the intensive endurance improving trainings are contraindicated.

Conclusion

The respiratory exercises can be effective tools for improvement of physical endurance and performance for preventive and also curative purposes.

References

1. Barnai M, Laki I, Gyurkovits K, Angyan L, Horvath G Relationship between breath-hold time and physical performance in patients with cystic fibrosis. Eur. J. Appl. Physiol., 2005, 95: 172-178
2. Barnai M, Laki I, Dr., Az akaratlagos apnoe idő, mint a fizikai terhelhetőség megítélésének egyszerű mutatója. Mozgásterápia, 2000/3, IX. évf., 17-18 o.
3. Cooper K H, The aerobics program for well-being. M. Evans and Company Inc., New York, 1982.
4. Sodhi C, Singh S, Daudona P K: A study of the effect of yoga training on pulmonary functions in patients with bronchial asthma. Indian J Physiol Pharmacol. 2009, Apr-Jun;53(2):169-74.

THE OPTIMIZATION OF KINETIC TREATMENT IN THE RHEUMATIC DISEASES OF THE DORSAL SPINE BY USING MECHANIC VIBRATIONS OF LOW AND MEDIUM FREQUENCY

OPTIMIZAREA TRATAMENTULUI KINETIC ÎN AFECȚIUNILE REUMATICE ALE COLOANEI VERTEBRALE DORSALE PRIN UTILIZAREA VIBRAȚIILOR MECANICE DE JOASĂ ȘI MEDIE FRECVENȚĂ

Vasile Pâncotan¹

Key words: rheumatic disease, mechanic vibration, spine mobility, physical therapy

Abstract: This thesis aims to study the effect of mechanical vibrations over the articulations between two vertebral bodies that are placed next to each other in order for the intervertebral disc to function better, for improving its physiology, for improving its form and height, positively contributing to the spine's statics and dynamics. The effect of mechanical vibrations over this unique structure of the locomotor apparatus is known and signaled by the Health Service as a malignant factor, for protecting the operators who work on machines that produce vibrations of different frequencies and amplitudes. However the possible positive effects that could be gained by controlling and modulating rigorously their parameters are not yet known. If we start by getting to know the effects of vibrations (trepidations) and controlling rigorously their parameters one can estimate that the mechanical vibrations can have a valuable therapeutic effect.

Cuvinte cheie: afecțiuni reumatice, vibrații mecanice, mobilitatea coloanei, kinetoterapie

Rezumat: Scopul acestei lucrări este de a studia efectul vibrațiilor mecanice asupra articulațiilor intervertebrale alăturate, pentru o mai bună funcționalitate a acestora, pentru îmbunătățirea fiziologiei, a formei și înălțimii, contribuind astfel la îmbunătățirea staticii și dinamicii vertebrale. Efectul vibrațiilor mecanice asupra acestei structuri unice a aparatului locomotor este cunoscut sub denumirea de factor malignizant, pentru protecția celor care lucrează pe mașini ce produc vibrații de diverse frecvențe și amplitudini. Posibilele efecte pozitive ce pot fi obținute prin controlul și modularea acestor parametri nu sunt cunoscute încă. Dacă se va începe prin cunoașterea efectelor vibrațiilor (trepidațiilor) și prin controlul riguros al parametrilor acestora, se poate estima valoarea terapeutică a acestora.

Introduction

Contemporary life and its increasing requirements in all fields of activity claims a constant concern for finding all scientific and technological ways of increasing the efficiency and optimizing both the methods and techniques used in achieving our goals and in the decision making process, which is always according to the present needs and demands. Regaining the health of the human body with its different systems has always been a constant concern of human beings along history.

The use of the benefic action of physical exercises in different diseases, the deliberate use of environmental factors, of natural remedies has always been among the main concerns of scientists: doctors, pharmacists, biologists, chemists, physicists, physical therapists, etc. Physical therapy, in

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order to become even more effective, can use alternative methods in order to improve the therapeutic process. Until now this has been accomplished by using methods such as: massage, elongations, pressopuncture, thermotherapy or cryotherapy, electrotherapy, mechanical vibrations, shock waves etc. About mechanical vibrations one can state that their benefic effects are known just over muscles (relaxation and tonification), over the bones in treating osteoporosis, over some bronchopulmonary diseases (drainage) and over the blood flow.

The studies continue at the level of these anatomo-functional structures because by modulating the parameters one can obtain marvelous effects. This thesis aims to study the effect of mechanical vibrations over the articulations between two vertebral bodies that are placed next to each other in order for the intervertebral disc to function better, for improving its physiology, for improving its form and height, positively contributing to the spine's statics and dynamics. The effect of mechanical vibrations over this unique structure of the locomotor apparatus is known and signaled by the Health Service as a malignant factor, for protecting the operators who work on machines that produce vibrations of different frequencies and amplitudes. However the possible positive effects that could be gained by controlling and modulating rigorously their parameters are not yet known. If we start by getting to know the effects of vibrations (trepidations) and controlling rigorously their parameters one can estimate that the mechanical vibrations can have a valuable therapeutic effect.

Studying their effects we considered that these could be an efficient means in a wide kinetic strategy together with other associated means already known and appreciated. We have had the example of cervical and lumbar elongations at the level of the spine, resembling to stretching, i.e. kinetic procedures. We have noticed that these elongations would improve, sometimes a lot, the effect of the kinetic treatment.

Our personal opinion is that by associating the mechanical vibrations to physical therapy we can obtain positive results, comparable, by effect, with the one of elongations, which are successfully applied in the lumbar and cervical areas. The research theme that we set to do is:

THE OPTIMIZATION OF KINETIC TREATMENT IN THE RHEUMATIC DISEASES OF THE DORSAL SPINE BY USING MECHANICAL VIBRATIONS OF LOW AND MEDIUM FREQUENCY. We manifested a special interest in this matter starting with 1989. We wanted to emphasize the value of mechanical vibrations at the level of the intervertebral disc with the purpose of slowing the process of its deterioration and obtaining the remodeling of its shape, height and functions.

The degenerative rheumatic diseases are almost always installed in one or more soft or hard tissues of the spine. Considering that the state of attrition of these tissues is the main cause of the majority of spinal diseases we thought that a study on this theme would be welcome by putting to use the professional experience that we have acquired both in the kinetic treatment of the spine and in applying therapy by using elongations at the level of the cervical or lumbar segments of the spine (with a deliberate effect on the intervertebral disc). We considered that for this kind of scientific and experimental research a deep knowledge of anatomy and physiology of the spine is also necessary because the installation of the dysfunctions and of the pathology by degeneration of its structures cannot be made objectively unless we report it to its normal state. We have registered the various degenerative forms and their causes, the diseases they generate and the therapeutic strategy which can be applied to improve health and the quality of life for these patients. We have done an incursion into the various forms of evaluation of the spine, indicating the objectives of the kinetic treatment that can be performed. This thesis being at the interference between two scientific areas, physics and medicine (physical therapy), apparently with no common ground we have also included a theoretic study on vibrations (trepidations) in order to know better the characteristics of various types of vibrations, especially the mechanic ones for exploiting them therapeutically. We have had a special concern for the studies and recommendations of the Health Service which signals the

malignancy of mechanical vibrations. We deducted the causes and the possible perils over the human body and also the technical and legislative measures that are implied.

The requisites of research start from:

- 1) knowledge of the anatomo-functional and biomechanics of the spine in general and of the motor segment in particular;
- 2) the pathology of the spine in general and of the disc in particular (causes and effects);
- 3) professional requisites or the practical application of our professional experience of over 20 years in this field with special emphasis on a methodic and didactic approach of the physical therapy sessions.

Hypothesis

The hypotheses of our work are:

- The mechanical vibrations of low and medium frequency can contribute to the remodeling of the shape and height of the intervertebral disc with possible positive effects in the treatment of degenerative rheumatic diseases of the dorsal spine, equal or superior to other procedures.
- This kind of vibrations, although they are considered malignant by the Health Service (because of long term exposure) in the conditions of rigorous control of their parameters: frequency, duration and amplitude = force, can have therapeutical value in the complex treatment of the degenerative rheumatic diseases of the dorsal spine.
- By associating mechanical vibrations of low and medium frequency to the kinetic treatment one may obtain superior results by comparison to the kinetic treatment alone. The vibrations contribute to the improvement of functional indices and parameters, to the relief of pain or discomfort, to the reduction of the treatment time.

Research objectives

The use of mechanical vibrations of low and medium frequency in the kinetic treatment of back pain, in an experimental way as an associated means to obtain better results in treating this disease; - the construction of a machine which produces mechanical vibrations to correspond the limits of use for vibrations with low and medium frequencies with a possibility to adjust the parameters: exposure time, force=amplitude (intensity), frequency, application method; - the determination of the functioning limits of the mechanical vibrations' parameters with a therapeutic purpose and circumscribing these from some possible negative effects; - the knowledge and application of all the regulations concerning the use of medical installations in order to protect the patients and the operators during the activity of the machine; - the determination of the collaboration protocol with the management of the Clinical Hospital of Rehabilitation in Băile Felix concerning the use of the machine and determining the collaboration protocol with the patients who take part of the experiment; - the collaboration with the physical therapists in the mentioned location.

The stages of research:

The stages of research are the determination of the research period; - the selection of the lot undergoing the research by criteria of age, sex, diagnosis; - informing the patients regarding the rights, advantages and possible disadvantages of their participation to the experiment; - submitting the patients to the experiment and gathering data; - the chart completed by the doctor and the physical therapist; - the filling of the tables; - processing the data.

The Physiotherapy of Dorsal Arthrosis. The Dorsal Arthrosis as a degenerative rheumatic disease of the spine poses some special problems from a kinetic point of view because the ribs are attached to the 12 vertebrae of this segment protecting the chest in which the vital organs are housed.

Mobility between two adjacent vertebral bodies of the thoracic segment is smaller by comparison to the mobility between two vertebral bodies at the other mobile segments of the spine. The objectives of the kinetic treatment can only be met with the same efficiency regarding these peculiarities. It is important for the physical therapist to have a thorough theoretical training in this respect blended with a rich practical experience in applying the exercises, the techniques and the kinetic methods according to the known principles of teaching from The Methodology of Physical Education and Sports.

Treatment method for degenerative rheumatic diseases of the dorsal spine disc by means of vibrations of low and medium frequency

In this paper we wanted to associate to the kinetic treatment mechanical vibrations of low and medium frequency in the degenerative rheumatic diseases of the dorsal spine originating in the disk. The patient's position during exposure to vibrations was supine with the dorsal segment over the three vibrating segments, with the hips and knees bent, feet on the bed surface, back muscles relaxed. **Patient size** and **the parameter finger-ground** (which expresses the functional status of the spine and highlights some of its dysfunctions related to mobility) were measured at admission and at discharge (10 days of treatment) because these parameters express the overall effect of treatment regardless of its type. To highlight the effect of treatment in a comparative manner between the two types of separate treatment, we have taken into consideration several somatoscopical and anatomico-functional parameters. These parameters are: the spine's length measured in mm, spirometry (vital capacity), expressed in cm^3 , chest elasticity, expressed in cm, the assessment of pain or discomfort expressed on an Analog scale in percentages. Tracked data were entered in tables 1-8. **The spine's length, spirometry = vital capacity**, expressed in cm^3 , **chest elasticity, pain and / or discomfort** were measured before and after the kinetic treatment and also before and after the treatment with vibrations. These measurements were made within 5 days before and after the kinetic treatment and in the following five days before and after the vibration treatment, followed by the kinetic treatments. In other words the kinetic treatments were made on all 10 days of treatment, in the first five days, only kinetic treatments and over the next five days vibrations were introduced, measured before and after exposure, followed by the kinetic treatment. Afterwards we proceeded to comparing each parameter separately; of the kinetic treatment and of the vibration therapy, then we highlighted the results. Afterwards comparisons were made between sexes in the same age category and between different age groups to the same sex.

Vibration parameters: - **frequency** expressed in Hz is between 1 and 30 Hz; - **Power** of the vibrations = **amplitude**, expressed in percentages and - **time of exposure** to vibrations was no less than 8 minutes and no more than 12.

The analysis and interpretation of results highlights the following results: **size** increases by approximately as many mm as the dorsal spine elongates under the combined influence of kinetic treatment with vibrations. The gained millimeters do not persist for a long time, however, are beneficial and relevant to treatment effectiveness as they express the restoration of the disc's height and shape, treat pain and contribute to the installation of a state of comfort; **the parameter finger-ground** "is also much improved under the combined influence of the two types of treatment, expressing a gain in mobility and even a temporary return to a state of normality. The other indices increase as follows: **The spine's length** is increased by treatment with vibrations about 3-4 times more than just by kinetic treatment; **Spirometry** (vital capacity) is improved by treatment with vibrations about 3 times more than by kinetic treatment alone and the chest elasticity about 2 times more.

Patients in groups of 18 to 29 years of age, respond better to the combined action of the two forms of treatment than older patients, the groups of 30-60 years of age. **The pain and / or**

discomfort drop dramatically under the influence of vibrations while under the influence of kinetic treatment alone drop little or not at all. This is plausible because by an exposure to vibrations of about 12 minutes muscle relaxation is produced, which leads to a decrease in pain or discomfort.

Conclusions

1) The kinetic treatment of degenerative rheumatic forms of the dorsal spine, on a range of 10 to 12 days of treatment, in a hospitalized or ambulatory regime in hospitals or spa clinics, can benefit significantly higher results by the intake of low and medium frequency mechanical vibrations, these proving to have therapeutic value in such diseases.

2) The application of mechanical vibrations on the dorsal spine when discharged and relaxed contributes substantially to the restoration of the disc's shape and height. This is the cause of the vast majority of the spine's degenerative diseases and is the only anatomic-functional part which can modify its shape and volume under the influence of vibrations.

3) The dorsal spine's exposure to mechanical vibrations in the conditions of strict control of their parameters is not harmful.

4) Patients accept and cooperate with interest to this new form of treatment (decreases the pain or discomfort).

5) Comparatively, in 2 x 5 days of treatment with vibrations applied experimentally to the same group of patients with different forms of Dorsal Arthrosis, who were doing kinetic treatment over 10 days, in the second period of treatment (with vibrations) a significant increase in the dorsal spine was found; the contribution of vibrations being 3-4 times higher than that of simple kinetic treatment.

6) The increase (elongation) of the spine by restoring the shape and height of the intervertebral disc under the influence of vibrations results in reducing the pain or discomfort due to the restoration within normal limits of the conjugation hole through which spinal nerves exit and thus the functional indices are improved.

7) Young patients, of 18-29 years of age, males or females, with early disc diseases, recorded significantly better results, which entitles us to consider that the vibrations have a better therapeutic effect compared to their effects on older people, of 30-60 years of age who are more moderate in their responses to vibrations and gain less in height, the intervertebral disc being more damaged, which can be seen from the diagnosis. Regarding pain and discomfort relief, and better functional indices we discovered that there were no significant differences to the younger people.

8) The influence of vibrations occurs with the same efficiency on the costovertebral joints as well; the gain in mobility is proportional to the elongation of the spine. This can be seen from the increase in vital capacity and thoracic elasticity, parallel to the elongation of the spine.

9) The gain recorded in the assessment of thoracic elasticity and vital capacity is illustrative, confirming their positive effect and sustain the possibility of their combination with the kinetic treatment.

10) The functional mobility parameter "finger – ground is significantly improved in the overall context of treatment, particularly by kinetic treatment and less significantly by vibrations.

11) By inducing relaxation in the paravertebral muscle by improving local blood circulation, by decreasing pain and by improving comfort, by superior results in functional indices, mechanical vibrations have an important contribution to the optimization of kinetic treatment. After the treatment with vibrations patients declared on many occasions "I need to sit straighter".

12) The most effective and the best liked frequencies proved to be those between 4-8 Hz (x 2 or x 3, depending on how many segments were activated).

References

1. Cordun, M., Kinetologie medicală. București, Editura Axa, 1999
2. Crețu, A., Afecțiuni reumatice care beneficiază de kinetoterapie, Editura Romfel, București, 1996
3. Crețu, A., Ghid clinic și therapeutic fizical-kinetic în bolile reumatice, Editura Bren, București, 2003
4. Crețu, A., Boboc, Fl., Kinetoterapia în afecțiuni reumatice, București, A.N.E.F.S, 2003
5. Cristea, C., Lozincă, I., Principii de kinetoterapie recuperatorie la vârsta a treia, Editura Universității din Oradea, 1999
6. Duțu, Al., Boloșiu, H.D., Reumatologie clinică, Cluj-Napoca, Editura Dacia, 1978
7. Flora, D., Tehnici de bază în kinetoterapie, Editura Univrsității din Oradea, 2003
8. Marcu, V., Bazele teoretice ale exercițiilor fizice în kinetoterapie, Editura Universității, Oradea, 1995
9. Marcu, V., Chiriac, M., Evaluarea în cultură fizică și sport, Editura Universității din Oradea, 2009
10. Marcu, V., Dan, M., Kinetoterapie, Editura Universității din Oradea, 2006
11. Marcu, V., Matei, C., Facilitarea neuroproprioceptivă în asistența kinetică, Editura Universității din Oradea, 2005
12. Marcu, V., Pâncotan, V., *Evaluarea bolnavilor în afecțiunile reumatice degenerative ale coloanei vertebrale*, Editura Universității din Oradea, 2005
13. Moraru, Gh., Pâncotan, V., *Evaluare și recuperare kinetică în reumatologie*, Editura Universității din Oradea, 2008
14. Moraru, Gh., Pâncotan, V., *Recuperarea kinetică în reumatologie*, Editura Imprimeriei de Vest, Oradea, 1999
15. Nemeș, I.D.A., *Metode de explorare și evaluare în kinetologie*, Editura Orizonturi Universitare, Timișoara, 2001
16. Nestor, R., *Diagnosticul bolilor reumatismale*, Editura Medicală. București, 1972
17. Pâncotan V., *Revista Română de kinetoterapie, Aspecte esențiale ale patologiei discului intervertebrat din zona lombară joasă și profilaxia secundară a afecțiunilor degenerative prin posturări și kinetoterapie*, Editura Universității din Oradea. 22/2008
18. Pâncotan, V., *Importanța cunoașterii noțiunilor teoretice de reumatologie clinică și a aplicării lor practice în profilaxia și tratamentul afecțiunilor reumatismale de către absolvenții facultăților de kinetoterapie*, „Rev., Română de Kinetoterapie nr. 11, Editura Universității din Oradea, 2002
19. Pâncotan, V., *Studiu comparativ privind eficiența metodei Williams în asociere cu metoda Kabat în afecțiunile discale degenerative ale coloanei vertebrale lombare joase*, Rev. Română de Kinetoterapie nr. 17, Editura Universității din Oradea. 2006
20. Pâncotan, V., *Compatibilitatea și incompatibilitatea metodelor de tratament Williams și McKenzie în afecțiunile discale degenerative ale coloanei vertebrale lombare*, Rev., Română de Kinetoterapie, nr.21, Editura Universității din Oradea, 2008
21. Sbenghe, T., (2002), *Kinesiologie, știința mișcării*, Editura Medicală, București..
22. ***, [www.Healty.ro/...../vibrație- vs- fitness- clasic](http://www.Healty.ro/...../vibrație-vs-fitness-clasic) din 23 iulie 2007.
23. ***, www.Kineactu.com, Kine actualite (janvier 2010). Nr.1177-*Interets therapeutiques de la vibrotonie*.
24. ***, www.sportscience.ro/...../reviste_2007_56_3.html.
25. ***, www.sportscience.ro/hotmail/reviste_2007_61-4.html. *Aplicații ale vibrațiilor pasive în sport și recuperare neuromotorie*.

COMPARATIVE STUDY ON THE RECOVERY OF PATIENTS POST STROKE

STUDIU COMPARATIV PRIVIND RECUPERAREA PACIENTILOR POST ACCIDENT VASCULAR CEREBRAL

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Rares D.Ciocoi-Pop²*

Key –words: stroke, rehabilitation, physical therapy, women, men

Abstract: This is a study and aims to compare the degree of recovery of patients after stroke female and male. Study duration of 4 months (January-April 2010).

Evaluation consisted of three tests at the beginning and end of study, Berg balance Assessment, PASS Assessment and Fugle-Meyer Test.

Results: The female patients had a more pronounced trend towards the male in all three tests. Women are more persistent than men, more active, eager and ambitious to do exercises.

Cuvinte cheie: accident vascular cerebral, recuperare, kinetoterapie, femei, barbati

Rezumat: Lucrarea este un studiu și are ca scop compararea gradului de recuperare a pacientilor post accident vascular cerebral de gen feminin și masculin. Durata studiului este de 4 luni (Ianuarie-Aprilie 2010). Evaluarea a constat din 3 teste efectuate la începutul studiului și la sfârșitul lui.

S-au utilizat: Testul pentru echilibru Berg, Testul Posturii PASS și Testul Fugle-Meyer.

Rezultate: pacientii de gen feminin au o evolutie mai pronuntata fata de cei de gen masculin, la toate cele 3 teste. Femeile sunt mai perseverente decat barbatii, mai active, dornice de mișcare și ambitioase.

Introduction

Stroke is the second leading cause of death worldwide and the third in developed countries. Strokes disability occurs more frequently than deaths, 20% of patients requiring assistance in daily activities (Bonita, 1997).

Quality of life will change even in patients who totally recovered. Stroke's consequences are not limited to individuals: family, friends and caregivers are also affected. Society as a whole suffers.

Patients who suffered a stroke become apathetic because of the limited social activities, are constantly worried and feeling a heavy responsibility. Decreased quality of life leads to depression.

This work is a comparative study of male and female patients on functional recovery after a stroke, are four female and four male gender, mean age being 68.8 years. We started with the assumption that women have a greater recovery than men because they have more active social life, family and are doing more physical work than men.

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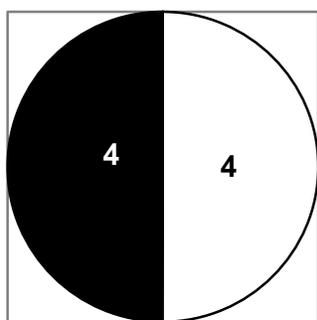
In physical therapy session, we performed active and passive exercises, passive -active and active with resistance. As materials used were: chear, walk helper, paper, rope of various colors, and other. Physical therapy took place at tha patients home.

Table 1 Mean of pacient's age
Descriptive statistics

	Patients	Minimum	Maximum	Mean	Std. deviation
Age	8	55	82	68.88	8.951

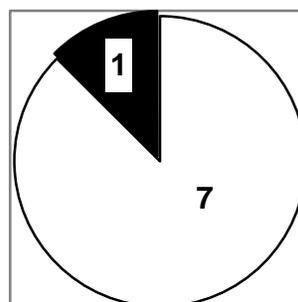
Table 2. Pacients by name, age, type of stroke and the affected side

Nr	Name	Gend er	Age	Type of Stroke	Affected side
1	A M	F	70	Ischemic In the territory of middle cerebral artery right side	Left hemiplegia
2	L E	F	72	Ischemic, repetitive in right carotidian territory	Left hemiparesis, partially recovered
3	P D	F	64	Ischemic punto-mezencefalic	Right hemiparesis
4	W E	F	82	Bleeding (hematoma capsulo-thalamic right)	Left hemiplegia
5	A P	M	74	Ischemic brain stem (bulbar)	Left hemiplegia, upper limb more affected
6	B A	M	55	Ischemic right carotidian	Left hemiplegia
7	BH	M	59	Ischemic right carotidian	Left hemiparesis.
8	S L	M	75	Ischemic Sylvian left	Wright hemiparesis



□ Women
■ Men

Graph 1 Patients on gender

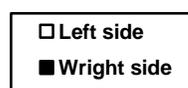
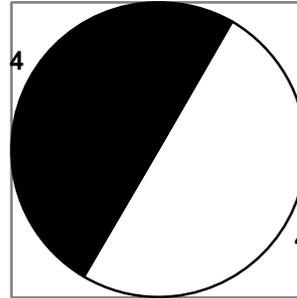
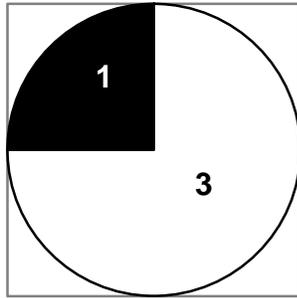


□ Ischemic
■ Hemorage

Graph 2 Patients on type of stroke

Table 3 the mean of patient's ages
Descriptive statistics

	Patients	Minimum	Maximum	Mean	Std. deviation
Women	4	64	82	72.00	7.483
Men	4	55	75	65,75	10,243



Graph 3 Affected side on women

Graph 4 Affected side on men





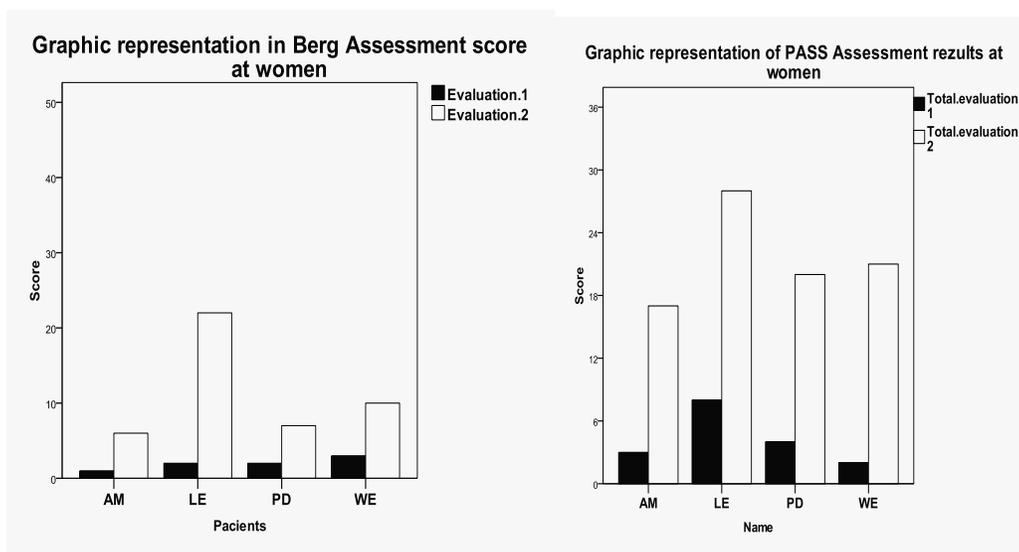
Walking reeducation exercises, the learning again the alphabet, active and passive mobilization on the bed, in sitting and standing.

Two of the patients do not remember the alphabet and memory exercises were needed for learning it.

Assessment

Table 4. Evaluation tests for women

Nr.	Name	Berg Assessment		PASS Assessment		Fugl-Meyer Test	
		Evaluation 1	Evaluation 2	Evaluation 1	Evaluation 2	Evaluation 1	Evaluation 2
1	A M	1	6	3	17	38	75
2	L E	2	22	8	28	80	94
3	P D	2	7	4	20	40	42
4	W E	3	10	2	21	37	64



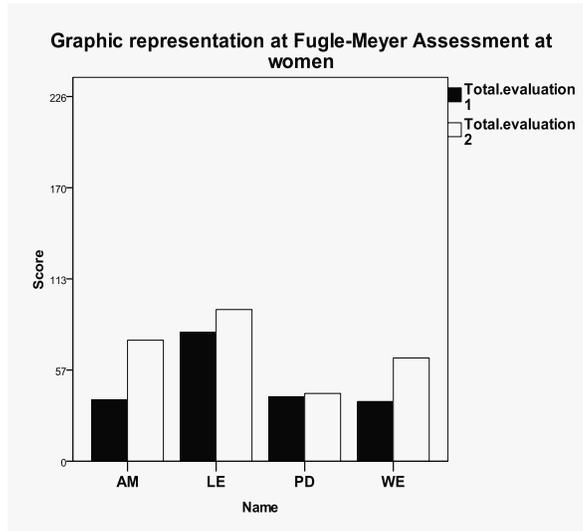
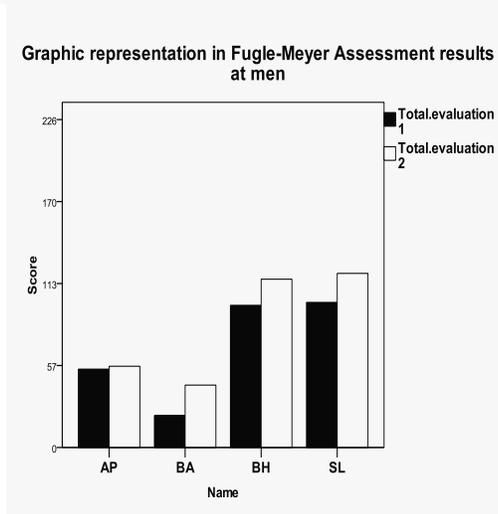
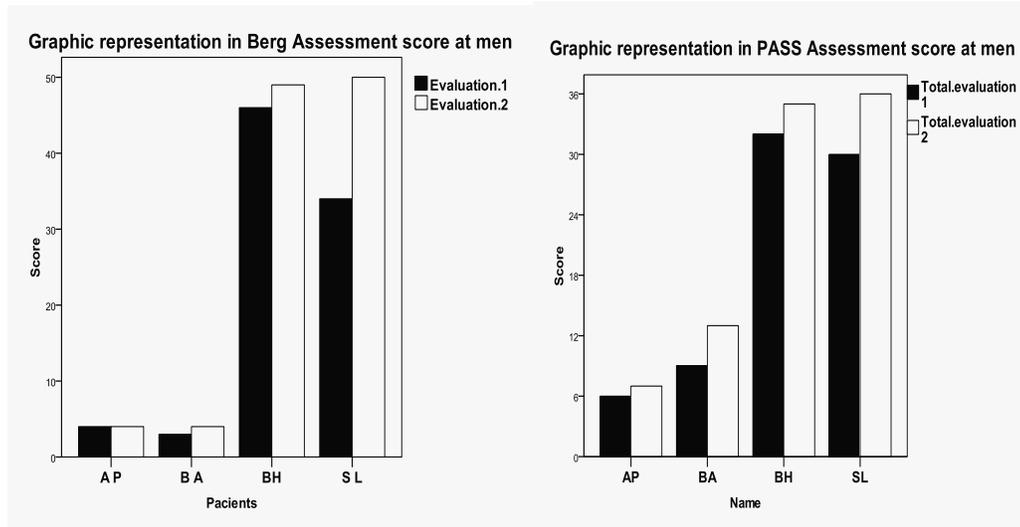


Table 5. Evaluation tests for men

Nr.	Name	Berg Assessment		PASS Assessment		Fugl-Meyer Test	
		Evaluation 1	Evaluation 2	Evaluation 1	Evaluation 2	Evaluation 1	Evaluation 2
1	A P	4	4	6	7	54	56
2	B A	3	4	9	13	22	43
3	BH	46	49	32	35	98	116
4	S L	34	50	30	36	100	120



Results

Table 6 comparative evolution on Berg test

	Patients	Minimum	Maximum	Mean	Std. deviation
Women evolution	4	5	20	9.25	7.228
Men evolution	4	1	16	5.50	7.047

Table 7 Comparative evolution on PASS test

	Patients	Minimum	Maximum	Mean	Std. deviation
Women evolution	4	14	20	17.25	2.754
Men evolution	4	1	6	3.50	2.082

Table 8 Comparative evolution on Fugle-Meyer test

	Patients	Minimum	Maximum	Mean	Std. deviation
Women evolution	4	2	37	20.00	15.253
Men evolution	4	2	21	15.25	8.921

Evolution of female patients is more pronounced than those of male, although in the first two months and half were not seen improvements, however, consistently and correctly effectuate exercises led to significant results. Degree of evolution is higher in women than in men because women are more physically active are more socially involved, go shopping, organizing household, while men are watching television, they live a passive life, physically speaking.

Conclusion

It is important for every patient who had a stroke to do exercises, to want to get better, to have a purpose for future, also is important what kind of life he or she lived before, active or passive one.

References

1. Barnes, M. Dobkin B., Bogousslavsky J., Recovery after stroke, Cambridge University Press, SUA, 2009
2. Caplan, L., Stroke, American Academy of Neurology, Saint Paul, 2006
3. Cordun, Mariana), Kinetologie medicală, Editura medicală, București, 1998
4. Mohr, J.P. Choi D., Grotta J., Weir B., Wolf P., Stroke Pathophysiology, Diagnosis, and Management – Churchill Livingstone, Philadelphia, 2004
5. Pasztai, Z., Kinetoterapia în recuperarea funcțională posttraumatică a aparatului locomotor (Physical therapy in functional recovery of posttraumatic locomotor sistem), Editura Universitatii din Oradea, Oradea, 2001
6. Robanescu, N., Reeducarea neuro-motorie (Neuro-motor reeducation), Editura Medicală, București, 1992
7. Rudd, A. Irwin P., Penhale B., Stroke at your fingertips, Class Publishing, Londra, 2005
8. Sbenghe, T., Kinetologie profilactica, terapeutica si de recuperare (Physical therapy prophylactic, therapeutic and rehabilitation) – Editura Medicală, București, 1987
9. Smith, T., Cum să învingi atacurile cerebrale – Antet, București, 2006
10. http://www.farmaciata.ro/SitFiles/articol_no_ph.php?id=5

EFFECTIVENESS OF RAPID MOBILIZATION, APPROXIMATION AND BRIDGING ON EARLY TERM FUNCTIONALITY IN A STROKE PATIENT: A CASE REPORT**EFICIENȚA MOBILIZĂRII PRECOCE, A TELESOPĂRII ȘI TRANSLĂRII ÎN FUNCȚIONALITATEA IMEDIATĂ A PACIENTULUI DUPĂ ACCIDENT VASCULAR CEREBRAL: STUDIU DE CAZ***Nilufer Cetisli Korkmaz¹**Tuba CAN²**Emre BASKAN³*

Key –words: stroke, rehabilitation, mobilization, approximation, bridging

Cuvinte cheie: accident vascular, recuperare, mobilizare, telescopare, translare

Abstract: Muscle weakness and impaired postural control in individuals with stroke lead to decreased weight bearing on the hemiplegic lower limb that result with moderate to severe impairment in functionality. The aim of this study was to emphasis the effectiveness of rapid mobilization, approximation and bridging exercises on regaining functionality from the early terms in a stroke patient.

Subject and Methods: A stroke patient, whom was 38 years old woman, with left sided hemiplegia included to this case report. Before and after the treatment patient was assessed with sensation tests, The Stroke Rehabilitation Assessment of Movement (STREAM), Berg Balance Scale, Functional Independence Measurement (FIM), Hospital Anxiety Depression inventory (HAD) and Nottingham Health Profile (NHP). The patient was treated totally 20 sessions with neurorehabilitation program. The exercises (e.g. mobilization, approximation, bridging) were chosen from Bobath concept for strengthening and improving mobility.

Results: While initial treatment scores of STREAM was 19, it increased to the 49; especially improvement in the mobility and lower limb movements'(LE-STREAM) scores were higher than the upper limb movements'(UE-STREAM) score.

Rezumat: Slăbiciunea musculară și controlul motor afectat la acești pacienți duc la o încărcare deficitară a greutății pe membrul afectat, ceea ce conduce la o afectare gravă a funcționalității. Scopul acestui studiu a fost să accentueze importanța telescopării și a exercițiilor de ridicare a bazinului din culcat dorsal în ceea ce privește recâștigarea funcționalității la debutul AVC.

Subiect și metode: Studiul urmărește cazul unei femei de 38 de ani, cu hemiplegie stângă postAVC. Înainte și după tratament, pacientei i-a fost evaluată sensibilitatea, Stroke Rehabilitation Assessment of Movement (STREAM), Berg Balance Scale, Functional Independence Measurement (FIM), Hospital Anxiety Depression inventory (HAD) and Nottingham Health Profile (NHP). Pacienta a urmat 20 de ședințe de recuperare. Exercițiile (e.g. mobilizări, telescopări, translări) au fost alese din metoda Bobath, pentru îmbunătățirea forței și mobilității.

Results: În vreme ce scorul STREAM inițial a fost 19, acesta a crescut la 49; s-a îmbunătățit în special mobilitatea membrilor inferioare (LE-STREAM) scorul obținut fiind mai mare decât scorul (UE-STREAM) obținut la membrele superioare.

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And also BBS score (0 to 38) and FIM-motor subscale score (78 to 35) improved. It was obtained that the approaches that were used in neurorehabilitation program have a positive effect on health profile, anxiety and depression.

Conclusion: Functionality from the early terms should be one of the first targets in early term neurorehabilitation of a patient with stroke, therefore rapid mobilization, approximations and bridging exercises in the neurorehabilitation programs could aid to achieve this aim.

De asemenea, scorul BBS (de la 0 la 38) și scorul subscalar FIM – motor (de la 78 la 35) s-au îmbunătățit. S-a observat că abordările adoptate în procesul de neuroreabilitare a avut efecte pozitive asupra sănătății, anxietății și depresiei.

Concluzii: Funcționalitatea precoce trebuie să fie unul dintre primele scopuri ale recuperării precoce a pacientului cu AVC, totuși, mobilizarea cât mai rapidă, telescoparea și translarea introduce în procesul de recuperare ajută la obținerea acestui obiectiv.

INTRODUCTION

Stroke is one of the most common neurological disorders leading to chronic disability. It is an acute onset neurological dysfunction due to an abnormality in cerebral circulation with resultant signs and symptoms that correspond to involvement of focal areas of the brain [1]. The most common manifestations of stroke are deficits in motor control that involve abnormal synergistic organization of movements, impaired force regulation, muscle weakness, sensory deficits and loss of range of motion. Muscle weakness and impaired postural control in individuals with stroke lead to decreased weight bearing on the hemiplegic lower limb that result with moderate to severe impairment in functionality [2-4]. As a result of this impairment of posture, balance and stability also affects the ability to perform the activities of daily living and causes inactivity [5]. If inactivity is not replaced with activity, the reduction of function will lead to disability [6].

Rehabilitation following stroke aims to maximize recovery through the provision of labor-intensive treatment. However, European and American investigations in the 1980s found that patients spent most of their day alone and inactive and that therapy occupied a small percentage of day [7]. Several important factors underscore the potential value of exercise training and physical activity in stroke survivors. Previous studies have demonstrated the trainability of stroke survivors and documented beneficial physiological, psychological, sensorimotor, strength, endurance, and functional effects of various types of exercise. Although they require additional validation by randomized clinical trials and other appropriately designed studies, these observations make recommendations for stroke survivors to participate in regular physical activity highly compelling at the present time. Clearly, stroke survivors can benefit from counseling on participation in physical activity and exercise training. However, most healthcare professionals have limited experience and guidance in exercise programming for this diverse and escalating patient population [8]. This case report is intended to help bridge the current knowledge gap of effectiveness of rapid mobilization, approximation and bridging on early term functionality in a stroke patient.

Impaired postural control greatly influences the activities of daily living (ADL), independence and gait. Therefore, it's essential to rapidly achieve postural control in order to improve independence, social participation and general health. In spite of the multiple therapeutic approaches to promote recovery of postural control, no definitive conclusions can be drawn on which one is the best. For this reason, the present case study is designed to improve postural control with rapid mobilization, approximations and bridging exercises and to emphasize the effectiveness of this neurorehabilitation program on regaining postural control, balance and functionality from the early terms in a stroke patient. Also it was planned to assess its effect on functional independence, depression and health status levels.

Subject and methods

Case Description:

Stroke was defined as an acute event of cerebrovascular origin causing focal or global neurological dysfunction lasting more than 24hrs, and diagnosed by a neurologist and confirmed by magnetic resonance imaging (MRI).

A stroke patient, whom was 38 years old woman, had complained from vertigo and eye pain before the onset of hemiplegia and admission. After then left sided paralysis developed in the following days. There was not any specialty in her personal and family history. Acute infarct areas were seen in surface of centrum semiovale and basal ganglion including the putamen and inferior globus pallidus on MRI. It was seen that patient was left sided flask hemiplegic.

Measurements:

Before and after the treatment and after the follow-up period patient was assessed with The Stroke Rehabilitation Assessment of Movement (STREAM), Berg Balance Scale (BBS), Functional Independence Measurement (FIM), Hospital Anxiety Depression Scale (HADS) and Nottingham Health Profile (NHP).

To assess the patient's voluntary motor ability of the upper and lower extremities and basic mobility activities the STREAM was used, which has good inter-rater and intra-rater reliability and internal consistency, and is sensitive to changes in people with stroke. The STREAM was developed as an outcome measure for assessing the motor impairments and basic mobility of people with stroke. It contains 30 items divided among 3 subscales: 10 items for voluntary motor ability of the upper extremity (UE-STREAM), 10 items for voluntary motor ability of the lower extremity (LE-STREAM), and 10 items for basic mobility. A 3-point ordinal scale is used for scoring voluntary movement of the limbs, and a 4-point ordinal scale is used for basic mobility. The extra category for basic mobility was added to allow for one of the score choices to be independent in the activity without the help of an aid (e.g., walking aid, splints). A total score for each subscale is calculated, out of 20 points for the UE-STREAM and LE-STREAM subscales and 30 points for basic mobility. To allow for the possibility that occasionally an item can not be scored, the subscales are converted to a percentage score out of 100 even though the scores are not interval based, and the total score is calculated as an average of scores obtained for the 3 subscales. The STREAM requires approximately 15 minutes for administering [9].

Assessing the balance was important to evaluate the functional level of patient. For this purpose, Berg Balance Scale (BBS) was used for the assessment of the balance in different activities such as reaching, balancing on one limb, and transferring. The BBS is a 14-item test (56 points maximum) using a 5-point (0–4) scale to rate each item, with 0 indicating an inability or need for maximal assistance to complete the task or performs task with safety concerns and 4 indicating independent and safe ability to perform task. Concurrent validity of data for the BBS has been examined in people with stroke [10].

To assess the functional independence level in daily living activities like locomotor, transfer, self and home-care physiotherapist generally prefer to use FIM. The FIM consists of 13 motor and 5 social-cognitive items, assessing self-care, sphincter management, transfer, locomotion, communication, social interaction and cognition. It uses a 7-level scale anchored by extreme rating of total dependence as 1 and completely independent as 7 [11].

It was shown that stroke has really severe effects on patients mood and general health status. And more than these the patients' self-perception of these, affects the functionality more than we expected. Because patient could have good motor performance but if he/she has depression patient will not participate to the rehabilitation program and as a cause of depression immobility will increase motor impairment in stroke patients. As a result of these, patients' actual motor and

functional levels will progressively decrease. To prevent these, our case's depression and anxiety level was assessed with HAD, while the general health status was evaluated with NHP. We had chosen these questionnaires because they are easy and each of them just takes 5min to complete. The HAD is a self-report rating scale of 14 items on a 4-point Likert scale (range 0–3). It is designed to measure anxiety and depression (7 items for each subscale). The total score is the sum of the 14 items, and for each subscale the score is the sum of the respective seven items (ranging from 0–21) [12].

The NHP is a questionnaire designed to measure social and personal effects of illness. It is used as a measure of need for health care and as an outcome measure in evaluation. It has 38 questions (requiring a yes/no response) on energy, pain, emotion, sleep, social isolation, and mobility, and the scores on each component are weighted to give a score from 0 to 100; a higher score indicates more problems [13].

Intervention:

The intensive training was performed 1 hour per day for 2 weeks (totally 10 sessions) with neurorehabilitation program, from the 3rd day of onset. At present, the Bobath concept, based on neurophysiological principles, remains probably the most widely used approach. The exercises were chosen from Bobath concept for strengthening and improving mobility. This approach aims to improve recovery of the hemiplegic side by focusing on normalizing tone and movement patterns with the guidance of a therapist using specialist handling techniques, preferably within real life situations [14].

Strength of the trunk muscles is cornerstone of the posture, balance and stability. Meanwhile, balance testing of patients with hemiparesis secondary to stroke has revealed a greater amount of postural sway during static asymmetry with greater weight on the non-paretic leg, and a decreased ability to move within a weight bearing posture without loss of balance. Furthermore, researches demonstrated moderate relationships between balance function and gait speed, independence, appearance, dressing, wheelchair mobility, and reaching [15]. Trunk stability relies on correct perception of body attitude and on the development of adequate muscular responses. With these basic knowledge, in neurorehabilitation program of our stroke case, scapular mobilization, bridging activity, approximation to the lower extremities in bridging, straight leg rise in bridging, rapid mobilization, weight shifting and approximation to the upper extremity in sitting position, were chosen to improve trunk stability and sensory input. For ambulation coming to sitting and standing position from different height levels were taught to the patient. In addition to these, balance training started in sitting position with the conscious/unconscious proprioceptive education. In gait training funeral gait was used for the treatment of balance and decreased range of motion in hip and knee during swing phase. Rehabilitation program was progressed according to the patient's level.

Mobilization of acute stroke patients – in bed and out of bed as early as possible – is currently recommended to prevent general and neurological complications. However, mobilization protocols are poorly defined and need to be standardized in order to evaluate their clinical benefits [16]. Our patient's mobilization had started in bed level from the 3rd day of the onset and then progressed to the walking activity.

Bridging activity, which is a pelvic elevation to maximal hip extension with knees flexed and feet fixed by the examiner, is one of the basic bedside activities that almost all stroke patients can perform even early in a rehabilitation program [6]. Bridging activity also improves trunk movement control which is an indispensable basic motor ability for the execution of many functional tasks. In the first sessions to come to bridging position and then to keep bridging position was wanted from the patient. To help and increase the muscular activity in trunk and lower extremities, approximations were done from the flexed knees. After increasing co-contraction in lower extremity muscles with approximation, rhythmic stabilization from proprioceptive neuromuscular facilitation

technique was done to hip to increase co-contraction activity of hip and trunk muscles more. Following these first steps, rehabilitation program was improved to the straight leg rise in bridging position. By this way, more trunk and hip control wanted from the patient.

Because the motor control and balance were the best predictors of gait performance, in all exercises approximation was added. With the approximation, there was a common regulation of posture and spatial components of the movement. Somehow, subjects consider the upcoming mechanical effect of the movement on balance control. It also suggested that balance constraints can play an important role in endpoint trajectory formation [17].

Balance is defined as a complex process involving the perception and integration of sensory inputs, planning and execution of movements, to achieve a goal requiring upright posture [1]. Therefore, balance is an essential part of all daily living activities, especially for sitting, coming sit to stand and walking. And postural control is fundamental to maintain balance. Because of this, balance training was started in sitting position with keeping the position and then progressed to the conscious/unconscious proprioceptive education. To improve trunk control and sensory input and to correct the posture, weight shifting to the hemiplegic side was added. Also to increase sensory input to the hemiplegic left upper extremity weight shifting and approximation to the upper extremity in sitting position was done. In the last stage of the balance treatment, coming to sitting and to standing positions from different height levels were taught to the patient.

As the patient gain more control in trunk, gait training was added to the rehabilitation program. In gait training free and self paced walking and also funeral gait with auditory input were used for the treatment of balance and decreased range of motion in hip and knee during swing phase.

Results

While initial treatment scores of STREAM was 19, it increased to the 49 after the treatment; especially improvement in the mobility and lower limb movements' (LE-STREAM) scores were higher than the upper limb movements' (UE-STREAM) score. After the patient was treated with 20 sessions, she obtained maximum level in the LE-STREAM score (Table 1). It was recorded that also the basic mobility-STREAM scores improved significantly from 7 to 25 (Table 1), especially in the activities those had been taken place in the neurorehabilitation program of her.

Table 1. Pre- and post-treatment and follow-up results of STREAM scores.

	Pre-Treatment		Post-Treatment		Follow-Up	
	0/20		4/20		7/20	
STREAM-UPPER EXTREMITY						
Scapular protraction	0	0	0	0	0	0
Elbow extension while supine position	0	0	1a	1	1a	1
Scapular elevation	0	0	0	0	1c	1
Raising hand to touch top of head	0	0	0	0	1c	1
Moving hand on to sacrum while sitting	0	0	0	0	1b	1
Raising arm to fullest elevation	0	0	0	0	0	0
Supination and pronation	0	0	1a	1	1c	1
Making a fist	0	0	1b	1	1b	1
Total extension of fingers	0	0	1a	1	1c	1
Opposition	0	0	0	0	0	0
STREAM-LOWER EXTREMITY	12/20		20/20		20/20	
Bending hip and knee while supine	1b	1	2	2	2	2
Hip flexion while sitting	1b	1	2	2	2	2

Knee extension while sitting	2	2	2	2	2	2
Knee flexion while sitting	2	2	2	2	2	2
Dorsi flexion while sitting	2	2	2	2	2	2
Plantar flexion while sitting	2	2	2	2	2	2
Knee extension and dorsi flexion while sitting	2	2	2	2	2	2
Effected hip abduction with knee extension while standing	0	0	2	2	2	2
Knee flexion while standing	0	0	2	2	2	2
Dorsi flexion while standing	0	0	2	2	2	2
STREAM-BASIC MOBILITY	7/30		25/30		25/30	
Rolling	3	3	3	3	3	3
Bridging (i.e., raising hips off bed)	1b	1	3	3	3	3
Moving from supine to sitting	3	3	3	3	3	3
Moving from sitting to standing	0	0	3	3	3	3
Standing for 20 counts by the rater	0	0	3	3	3	3
Placing affected foot onto first step	0	0	3	3	3	3
3 steps backward	0	0	1b	1	1b	1
3 steps to affected side	0	0	2	2	2	2
10 meter walking	0	0	2	2	2	2
Walking down 3 stairs	0	0	2	2	2	2
STREAM-TOTAL	19/70		49/70		52/70	

When we compared pre and post treatment BBS score it was seen that score increased from 0 to 38. This indicates that she could do most of the activities independently, but she still has risk of fall. FIM scores; especially motor subscale was improved from 78 to 35. It was obtained that the approaches that were used in neurorehabilitation program have positive effects on health profile; anxiety and depression which were assessed with HAD inventory. Anxiety and also depression scores decreased respectively; from 11 to 1, from 10 to 2. After the neurorehabilitation program 5 dimensions in NHP (energy, pain, emotional reactions, sleep and physical activity) were significantly different from the pre-treatment assessments (Table 2).

Table 2. Pre and post treatment result of BBS, FIM, HAD and NHP.

	Pre-Treatment	Post-Treatment	Follow-Up
BERG	0	38	56
FIM Total	63	113	126
FIM cognitive	28	35	35
FIM motor	35	78	91
HAD Total	21	3	2
Anxiety	11	1	1
Depression	10	2	1
NHP Total	307.59	102.48	48.93
Energy level	100	36.8	0
Pain	9.99	0	0
Emotional reaction	48.63	9.31	23.75
Sleep	60.51	0	12.57
Social isolation	0	0	0
Physical activity	88.46	56.37	12.61

Discussion

Hemiplegic patients with stroke have decreased trunk control, poor bilateral integration and impaired automatic postural control those were resulting in balance dysfunction. Impaired balance and increased risk of falling toward the hemiplegic side is found to be significantly correlated with locomotor function, functional abilities, length of stay in inpatient rehabilitation facilities and early term rehabilitation [3, 14]. Therefore, strategies on improving trunk control, as well as falls and injury prevention strategies are suggested as an integral part of each patient's rehabilitation plan after stroke [18]. While the early rehabilitation increases the possibility of recovery, dysfunction compensation; decreases stroke results and has influence on further patient's history, many stroke patients could not begin rehabilitation program from the onset of stroke [8].

The terms 'early mobilization' and 'early neurorehabilitation' after stroke are not well defined. They include various interventions beginning within 1 day up to 3 months after stroke onset [16]. Our case's neurorehabilitation program had begun within the 3rd day of onset and as the patient's medical status had become stabile. International guidelines recommend early mobilization (the application of fascilatory techniques during bed rest) and mobilization (getting out of bed) as early as possible after stroke, but do not give precise information about the scientific basis, rapidity and the way to proceed for heterogeneous stroke patients [16]. Although our patient has flasticity and could not ambulate herself, the intensive training was performed 1 hour per day for totally 20 sessions with neurorehabilitation program.

The exercises were chosen from the Bobath concept for strengthening and improving mobility, such as scapular mobilization, approximation to the lower extremities in bridging, straight leg rise in bridging, weight shifting and approximation to the upper extremity in sitting position, were applied. For ambulation coming to sitting and standing position from different height levels were taught to the patient. In addition to these, balance training was started in sitting position with the conscious/unconscious proprioceptive education. In gait training funeral gait was used for the treatment of balance and decreased range of motion in hip and knee during swing phase. Rehabilitation program was progressed according to the patient's level.

The benefits of this early mobilization in and out of bed and of neurological rehabilitation have not been tested in randomized trials. Diserens K, Michel P and Bogousslavsky J showed that the introduction of rehabilitative efforts within the first few weeks, as opposed to later, favors better recovery and is cost-effective [16]. It was obtained that our case had gained functionality and mobility, all scores of the STREAM, BBS, FIM and NHP improved significantly. As she became more mobile, she discharged soon than expected. As a result and in association with the literature we concluded that neurorehabilitation program of a stroke patient could begin in the first week of the onset and as soon as the patient became medically stabile. Also it was thought that shorter time to start of mobilization/training and neurorehabilitation was the most important factor associated with discharge to home.

The most common deficits of stroke are abnormal synergistic organization of movements, impaired force regulation and muscle weakness. These impairments have the potential to affect function. Therefore, in addition to early rehabilitation postural control, balance and functional mobility are the key focus areas for therapeutic intervention after stroke [14, 19]. In the literature also the effects of different intensities of arm and leg rehabilitation training on the functional recovery of activities of daily living, walking ability and dexterity of the paretic arm, were investigated. It was concluded that greater intensity of leg rehabilitation improves functional recovery and health-related functional status, whereas greater intensity of arm rehabilitation results in small improvements in dexterity, providing further evidence that exercise therapy primarily induces treatment effects on the abilities at which training is specifically aimed [16]. In our case study, it was found that patient's STREAM scores for lower extremity and basic mobility activity

improved more than the upper extremity scores (Table 1). In addition to improvements in lower extremity and mobility, it was also found that the balance and independence in functional activities improved dramatically, which were shown by the BBS, FIM and NHP.

Prolonged bed rest may increase the risk of orthostatic hypotension at the time of mobilization. With the prolonged bed rest muscle strength and trunk control worsens. In a stroke patient, decreased postural stability is the common problem which increases the risk of falling on paretic side. Trunk control allows the body to remain upright, to adjust to weight shifts, to control movement against the constant pull of gravity [14, 19]. Meanwhile, balance is a somewhat ambiguous term used to describe the ability to maintain or move within a weight-bearing posture without falling. Balance can further be broken down into three aspects: steadiness, symmetry, and dynamic stability. All of these components of balance (steadiness, symmetry, and dynamic stability) have been found to be disturbed following stroke [15]. The importance of trunk muscles in providing adequate spine stability is well established and the role of trunk muscles during a variety of tasks has been well documented. Our neurorehabilitation protocol provided increased postural and trunk control thus they might help in improving balance. Therefore the gains of trunk control improved the mobility, lower limb activity and balance for sitting

Physiotherapy intervention, using a 'mix' of components from different 'approaches' is more effective than no treatment control in attaining functional independence following stroke. There is insufficient evidence to conclude that any one physiotherapy 'approach' is more effective in promoting recovery of disability than any other approach [14]. But it was thought that Bobath concept with bridging activity and approximations helped in regaining symmetry. Because with these exercises, symmetry has been addressed by providing feedback on the percentage of weight on the paretic limb and by having subject maintain her body in the center. Dynamic stability, which was referring to movement within the limits of stability, was done by subject with shifting her weight. Exercises like the weight shifting, straight leg rise, coming to sitting and standing from different height levels, balance training in sitting position with the conscious/unconscious proprioceptive education, funeral gait had given support for the training of dynamic stability. The training protocol which provides increased postural & trunk control thus may have improved balance. Because post-treatment results of STREAM and BBS scores showed that subject could shift her weight almost normally. In the future studies, more different exercises could be chosen that contains shifting component.

Conclusion

Increased steadiness, decreased asymmetry, and enhanced dynamic stability are consistent with the therapeutic goals set for most patients with hemiplegia secondary to stroke. This case study shows a clear benefit of early neurorehabilitation after stroke, which includes rapid mobilization in bed and out of bed, approximation and bridging exercises, on regaining functionality from the early terms in a stroke patient.

References

1. Shah SB, Jayavant S. Study of balance training in ambulatory hemiplegics. *The Indian Journal of Occupational Therapy*. 2006 April-July; XXXVIII(1): 9-15.
2. Tyson S, Hanley M, Chillala J, Selley A, Tallis RC. Balance disability after stroke. *Phys Ther*. 2006; 86(1):30-38.
3. Sackley CM. Falls, sway, and symmetry of weight bearing after stroke. *Disability and Rehabilitation*. 1991; 13(1):1-4.
4. Sackley CM, Baguley BI, Gent S, Hodgson P. The use of a balance performance monitor in the treatment of weight-bearing and weight-transference problems after stroke. *Physiotherapy*. 1992; 78:907-913.
5. Dean CM, Shepherd RB. Task-related training improves performance of seated reaching tasks after stroke: A randomized controlled trial. *Stroke*. 1997; 28:722-728.

6. Tsuji T, Liu M, Tsujiuchi K, Chino N. Bridging activity as a mode of stress testing for persons with hemiplegia. *Arc Phys Med Rehabil.* 1999; 80:1060-1064.
7. Ada L, Mackey F, Heard R, Adams R. Stroke rehabilitation: Does therapy area provide a physical challenge? *Australian Journal of Physiotherapy.* 1999; 45:33-38.
8. Gordon NF, Gulanick M, Costa F, Fletcher G, Franklin BA, Roth EJ, Shephard T. Physical activity and exercise recommendations for stroke survivors: an American Heart Association scientific statement from the council on clinical cardiology, subcommittee on exercise, cardiac rehabilitation, and prevention; the council on cardiovascular nursing; the council on nutrition, physical activity, and metabolism; and the stroke council. *Stroke.* 2004; 35:1230-1240.
9. Daley K, Mayo N, Danys I, *Daley K, Mayo N, Danys I*, Cabot R, Wood-Dauphinee S. The Stroke Rehabilitation Assessment of Movement (STREAM): refining and validating the content. *Physiother Can.* 1997; 49:269-278.
10. Berg KO, Wood-Dauphinee SL, Williams JI. The Balance Scale: reliability assessment with elderly residents and patients with an acute stroke. *Scand J Rehabil Med.* 1995; 27:27-36.
11. Keith RA, Granger CV, Hamilton BB, Sherwin FS. The functional independence measure: a new tool for rehabilitation. In: Eisenberg MG, Grzesiak RC, eds. *Adv Clin Rehabil.* New York: Springer; 1987; Vol 1, p. 6-18.
12. Zigmond AS, Snaith RP. The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavia.* 1983; 67:361-370.
13. Ebrahim S, Barer D, Nouri F. Use of the Nottingham Health Profile with patients after stroke. *J Epidemiol Community Health.* 1986; 40:166-169.
14. Pollock A, Baer G, Pomeroy V, Langhorne P. Physiotherapy treatment approaches for the recovery of postural control and lower limb function following stroke: A systematic review. *Clinical Rehabilitation.* 2007; 21:395-410.
15. Nichols DS. Balance retraining after stroke using force platform biofeedback. *Phys Ther.* 1997; 77:553-558.
16. Diserens K, Michel P, Bogousslavsky J. Early mobilisation after stroke: Review of the literature. *Cerebrovasc Dis.* 2006; 22:183-190.
17. Berrigan F, Simoneau M, Martin O, N Teasdale. Coordination between posture and movement: interaction between postural and accuracy constraints. *Exp Brain Res.* 2006; 170: 255-264.
18. Mackintosh SFH, Hill K, Dodd KJ, Goldie P, Culham E. Falls and injury prevention should be part of every stroke rehabilitation program. *Clin Rehabil* 2005; 19:441-51.
19. Walker C, Brouwer BJ, Culham EG. Use of visual feedback in training balance following acute stroke. *Phys Ther* 2000; 80:886-95.

CONTRIBUTION OF NEURO-MOTOR REHABILITATION PROGRAMS IN THE EVOLUTION OF CHILDREN WITH CP/HEMIPARESIS (STUDY N°3)

CONTRIBUTIA PROGRAMELOR DE RECUPERARE NEUROMOTORIE, IN EVOLUTIA COPIILOR CU PC/ HEMIPAREZĂ (STUDIUL III)

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Key –words: children with CP stroke, quality of life, static-kinetic function, hemiparesis

Cuvinte cheie: copil cu paralizie cerebrală, calitatea vieții, funcția stato/kinetică, hemipareză

Abstract: Emphasizing the importance of neuromotric recovery programs in motric acquiring for regaining the major human function – the gait, and the functional independence of first and second level (according to *Gross Motor Function Classification System – Expanded and Revised GMFCS*)(5)

We preferred to present the data in three separate studies (in extenso) because of the large number of parameters studied and because we wanted to offer a generic picture over the etiologic, clinical-functional, developmental and recovery aspects.

We evaluated the motric and functional acquisitions of the children with CP hemiparesis, using the *Gross Motor Function Classification System – Expanded and Revised GMFCS – E & R* (8,9,10,11) taking into consideration various ages.

We obtained an optimum functional tonus of attitude, balance within the agonist-antagonist muscular chains and we increased the muscular force almost adequate to the particular age – necessary in basic daily activities (BADL), and we also obtained the instrumental ones (IADL) with functional amplitudes in joints.

The applied methodology was efficient in all circumstances and for every experimental groups of the 3rd study, so that the experimental

Rezumat: Punerea în evidență a programelor de recuperare neuromotorie, în achiziționarea motrică, pentru recâștigarea funcției majore umane, mersul biped și a independenței funcționale la nivele de I și II după (*Gross Motor Function Classification System – Expanded and Revised GMFCS*)(5)

Data fiind multitudinea parametrilor studiați și pentru a putea oferi o imagine de ansamblu asupra aspectelor etiologice, clinico-funcționale, evolutive și de recuperare, am preferat prezentarea datelor noastre în trei studii distincte cu următoarele apariții și prezentări (lucrare in extenso).

În cadrul studiului am evaluat achizițiile motorii și funcționale a copilului diagnosticat cu PCI hemipareză, prin Sistemul de Clasificare a Funcției Motorii Grosiere Extinsă și Revizuită (*Gross Motor Function Classification System – Expanded and Revised GMFCS – E & R*)(8,9,10,11) în funcție de diferite vârste din evidențele înregistrate și prelucrate.

S-a obținut un tonus funcțional optim de atitudine, echilibru în cadrul lanțurilor musculare agonist-antagonist și am reușit să dezvoltăm o forță musculară qvaziadecvată vârstei, necesare vieții în activitățile zilnice de bază (BADL) și cele instrumentale (IADL) obținând și amplitudini funcționale în articulații.

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investigation had significant results for the studied parameters.

The implemented and used methodology was accepted by the physical therapist and children.

The most significant results are in children of 4 - 12 years, because the progress and motric acquisitions after this age are slow and scarce.

Metodologia aplicată și-a dovedit eficacitatea în toate situațiile și la toate eșantioanele studiului III astfel încât demersul experimental s-a soldat cu rezultate semnificative la parametrii studiat.

Metodologia de lucru implementată, parcursă și executată, a fost acceptată de copii și kinetoterapeut.

Purpose of research

The purpose is to emphasize the neuro-motor rehabilitation programs, in motor acquisition, in order to regain the major human function, two legged gait, and functional independence at levels I and II after (Gross Motor Function Classification System – Expanded and Revised GMFCS)(5)

Theoretical fundament, through metastudies regarding ischemic hemiparesis in children and motor behavior maturing.

Congenital hemiplegia is one of the best known forms of cerebral palsy in infants born at time and it takes the first place among the causes of cerebral attacks (strokes):

The ischemic neonatal attack includes the ischemic arterial perinatal attack; the assumed pre- or perinatal attack and sinovenous cerebral thrombosis are important factors which determine cerebral palsy. The attack induced by traumatism is focused and keeping the normal areas of the brain provides unique opportunities of plastic adjustment. The implications of this essential difference can also be emphasized from the discussion regarding the way in which epidemiology, pathophysiology, diagnosis and the therapeutic neuro-motor programs after the perinatal attack connect with cerebral palsy.

The days before and after birth represent a period of special risk, for mother and child, probably connected to the activation of coagulation mechanisms form this critical period. The ischemic arterial attack around birth occurs in one out of 4000 children born in time, presenting neurological and systemic signs in new-born children. (6) The neonatal crises are most often encountered in clinical analyses. In other children, the attack is recognized only retrospectively, after the onset of hemiparesis or of crises after the first months of life.

The risk factors for perinatal attack include hereditary or gained thrombophilia and environment factors. The perinatal attack is at the basis of congenital hemiplegia, cerebral palsy, spastic tetraparesis and epileptic disorders. There is much to learn about the history of perinatal attack, as currently there are no prevention or treatment strategies based on concrete evidence. (The fetal attack occurs in the 14th week of gestation and at the onset of labor. This article presents a few cases of fetal attacks diagnosed in-utero and the review of 47 cases of fetal attacks from the specialty literature, March, 2004. California 0(6.7)

Chemical traumatism, the new-born' brain can be deprived of oxygen through two mechanisms: Hypoxemia (decrease of oxygen quantity in the cerebral blood flow); Ischemia (decrease of blood entering the C.N.S.); Hypoxia generates the suffering of nervous cell which, under these prolonged circumstances, dies and becomes necrotic. Consequently, acidosis occurs, determined by the increase of CO₂ concentration, fact which, in its turn, increases the venous stasis, dilatation of the capillary, rupture possibility and, implicitly, the intoxication of the nervous cell. Oxygen does not reach anymore in the injured area where the ischemic condition sets in. Thrombosis of capillary vessels occurs, up to infarct, affecting a smaller or wider area, usually with diffuse character with confluent tendinitis. During prolonged labor, hypoxemia can occur under two aspects: total acute asphyxia, sudden and total interruption of O₂ and CO₂ exchanges between mother and fetus. When the duration of total asphyxia is reduced, most of the new-born children

survive, but they will later present permanent cerebral lesions. Occurring rarely and only if the mother suffers a sudden heart arrest, partial asphyxia determines, first of all, lesions at the level of the cerebral trunk (reversed as in the case of total asphyxia). The cerebral lesion determining spastic paralysis is often the result of an obstetrical traumatism or of a neuro-vascular syndrome produced during or after the head goes through the cervix uteri, therefore intrapartum. Given the fact that anoxia and its effects appear after expulsion, other authors consider these lesions as being postnatal. However, most often it is demonstrated the idea that cerebral lesion is not an effect mainly of obstetrical traumatism, but an anatomo-pathologic fact based on certain preexistent pathological phenomena.

The postnatal (postpartum) phenomenon represents 15% of the C.P. cases, either immediately after birth, or later in infant and child, before the N.S. reaches maturity. (6, 7, 8, 9).

During the acquisition of neuro-motor functions and behaviors, the evolution occurs towards progressive corticalization, which implies joining the old structures with the new ones, in a new unit. Concomitantly the functional hierarchy occurs in a subordination relation of the inferior structures compared to the new ones, but also the dependency of the new structures on the old ones.

Thus the child will not walk before it manages to hold its head up or assume the sitting position and it will not acquire these behaviors until the pyramidal fascicle has been sufficiently myelinated. Maturing happens only under the influence of stimuli from the external environment. This stimulation must happen during a period well determined for each structure, named the “critical period”. The mere presence of stimuli from environment is yet not enough, a response is also necessary. Action is needed in order to acquire a motor behavior. There is an inborn maturing potential which is not validated unless in the presence of stimuli and actions (3, 4, - Pasztai Z. 2004, 2009). The motor behavior becomes mature slowly and sequentially. Action generates the feed-back mechanism which leads to the acquisition of functional autonomy. The first phase of psycho-genesis is achieved during the period of 0-2 years old being constituted by the “sensorial-motor intelligence”. The acquisitions during one phase do not disappear, but they are integrated into the new functional model acquired, serving as basis for interaction with environment. Generally, we use five systems to determine the place where our body is in relation with the environment and the relationship between all body components.

II. Material and methods

II.1. Theoretical methods: theoretical research of sources, concepts and conceptions, theoretical and practical approaches of existing results. Gathering and processing of epidemiological, demographic data, evaluation of risk factors, of maximum neuro-motor function, all these have been accomplished transversally for each case.

II.2. Specific objectives: Given the multitude of studied parameters and in order to be able to provide a general image of etiologic, clinical-functional, evolutionary and rehabilitation aspects, we preferred the presentation of our data in three distinct studies with the following appearances and presentations:

Study n° 1 – title: “Characteristics and stadiality of neuro-psycho-motor evolution of children aged 0-1 according to the specialty literature in Romania”, table 3 (1).

The study – theoretical research of sources, concepts and conceptions, of theoretical clinical-functional and etiologic approaches, descriptive and of transversal type, was carried on in the Clinical Hospital of Medical Rehabilitation-Felix Spa, children’s ward-1st of May Spa, during the period October 2008 – March 2009 and it initially included a group of n=921 cases, out of which it was later selected a representative lot of n=674 children diagnosed with CPI/ESI and other locomotor disorders, aged between 1 and 18.

Study n° 2 – contains the evaluation and statistic processing of existing data about the children who benefited of neuro-motor rehabilitation. It was carried on in the Clinical Hospital of Medical Rehabilitation-Felix Spa, children’s ward-1st of May Spa, during the period January 2009 –

February 2010; it is a study of longitudinal observational type, prospective, non-experimental (descriptive) and it included n=409 children aged between 1 and 12, diagnosed with ESI/CPI, spastic form, selected from the anterior lot of n=921 children (1-18 years old), for which the following parametric data from the data base were processed and it was presented at the 3rd Balkan Physical Therapy Congress (2)

Study n° 3 – contains the period February 1st-April 30th 2010, a number of 359 patients (February 2010 –April 2010) and it is the next step of a new selection and making up of 6 lots of children according to the age/diagnosis criterion: 0-2, 2-4, 4-6, 6-8, 8-10 and 10-12 in implementing study n° 3. Out of 359 subjects admitted in hospital, a number of 203 children aged between 0-12 are selected for the study.

Hypothesis Which is the contribution of the neuro-motor rehabilitation program to motor acquisition according to GMFCS classification, in children with CP hemiparesis diagnosis?

Evaluation – Within the study, we have evaluated the motor and functional acquisitions of the child diagnosed with CPI hemiparesis through the Gross Motor Function Classification System – Expanded and Revised GMFCS – E & R (8, 9, 10, 11) according to the different ages from the recorded and processed data.

Implementation of the neuro-motor rehabilitation program

The functional neuro-motor rehabilitation and treatment took place during the school semesters in the physical therapy and gym halls and at the children's homes during holidays when hydrotherapy was mainly applied. Some exercises were made under the form of a game; the principle applied was team-work with the physical therapists and 3rd year students and master students in physical therapy, 1st and 2nd year, from the University of Oradea.

Results and discussion

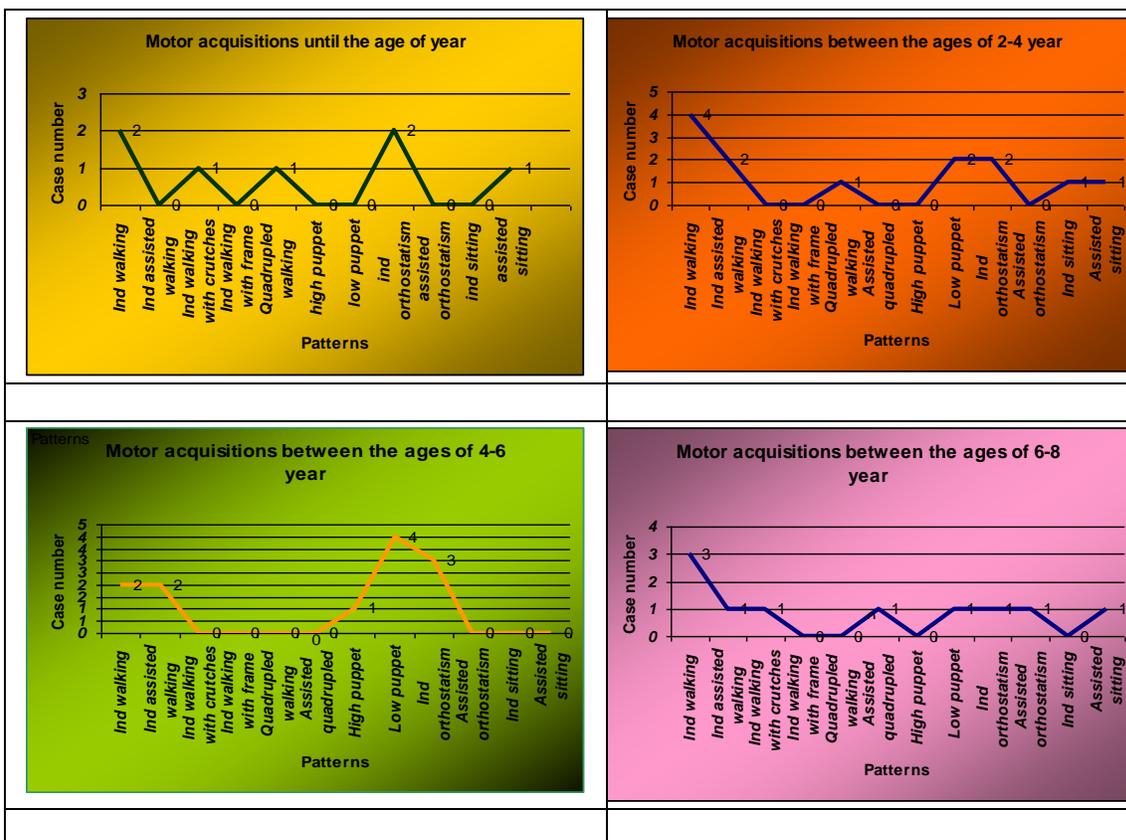
Interpretation of study n° 3 results

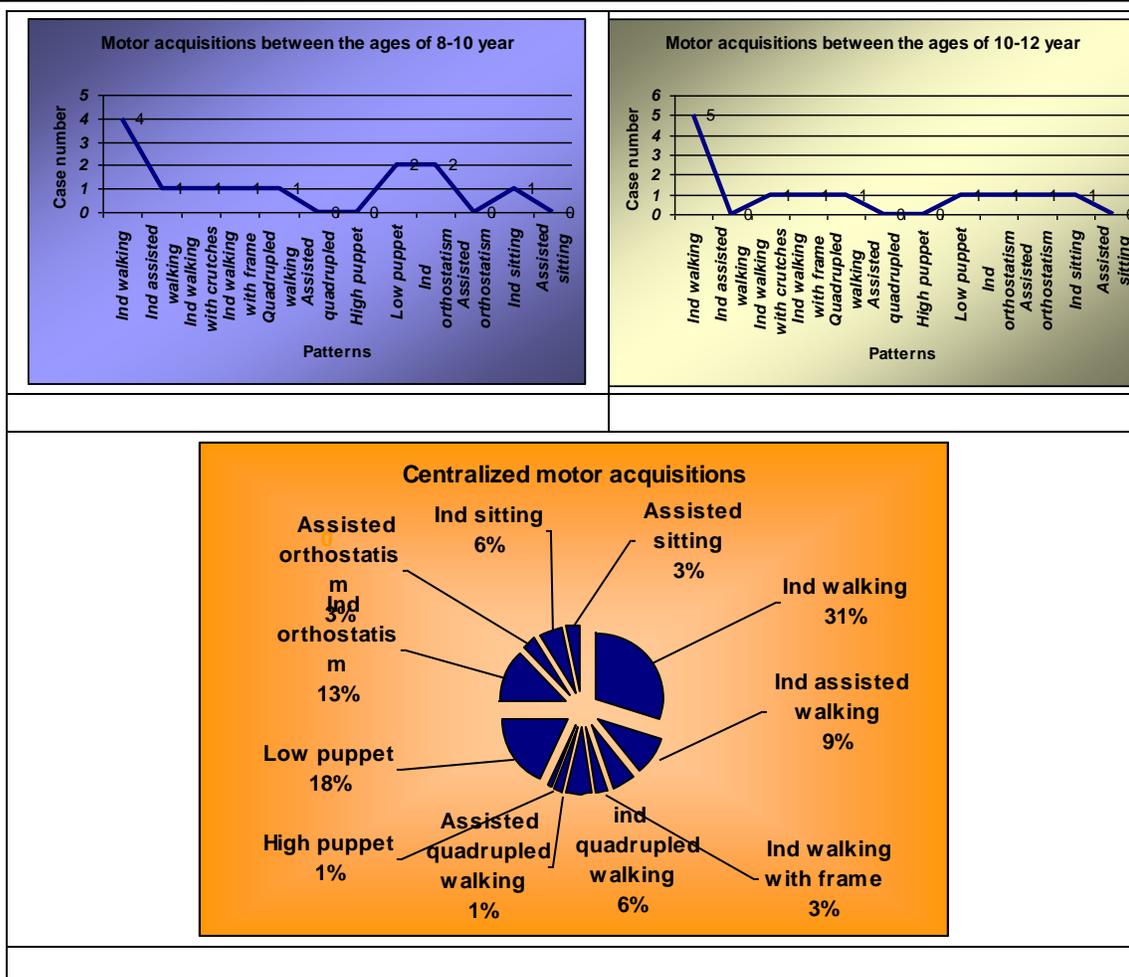
Table n° 1. Studied subjects from the Clinical Hospital of Rehabilitation-Felix Spa, children's ward-1st of May Spa

Hemiparesis	67	patients	33,6%
Paraparesis	63	patients	31,2%
Tetraparesis	39	patients	18,7%
Ataxic-cerebellar sy	20	patients	9,8%
Other disorders	14	patients	6,7%
TOTAL=	203	patients	
Research period 01.February - 30April 2010 from a number of 359 patients			

Table N° 2 Dg. Hemiparesis

	Motor engrams/ age subjects	2 years old	4 years old	6 years old	8 years old	10 years old	12 years old	Total =N
Walking	Independent walking..	2	4	2	3	4	5	20
	Assisted walking laterally.	0	2	2	1	1	0	6
	Walking with crutches	1	0	0	1	1	1	4
	Walking with frame	0	0	0	0	1	1	2
Quadrupedal walking	Independent.	1	1	0	0	1	1	4
	Assisted	0	0	0	1	0	0	1
“Puppet” posture	High	0	0	1	0	0	0	1
	Low	2	2	4	1	2	1	12
Orthostatism	Independent	0	2	3	1	2	1	9
	Assisted	0	0	0	1	0	1	2
Sitting	Independent.	1	1	0	0	1	1	4
	Assisted	0	1	0	1	0	0	2
								67





Final conclusions

1. The approach of this **topic** was imposed by the necessity to bring in discussion a reality presented only vaguely by the specialty literature;
2. In order to achieve the purpose and to confirm our hypothesis, that is to obtain growth, normal development and normalization of static-kinetic function, it was necessary for us to emphasize the perseverant work in the field of education for movement, using physical therapy;
3. Thus we have contributed to the increase of these individuals' quality of life. The physical therapist used the means which are most specific to this age, easily accepted and used by the subjects in any location (in classroom, at home, in the bathtub – hydro-stretching).
4. Optimum functional tonus of attitude has been obtained, balance within the agonist-antagonist muscle chain and we have managed to develop muscle strength quasi-adequate to the age, necessary in basic daily activities (BADL) and in instrumental daily activities (IADL), also obtaining functional amplitudes in joints.
5. The applied **methodology** proved its **efficiency** in all situations and at all study samples, so the experimental work had significant results in the parameters from studies 1, 2 and 3.
6. The implemented work methodology, followed and applied, was accepted by children and physical therapists;
7. Amelioration and decrease of symptoms regarding the tension, hyper tonicity-spasticity condition;

8. Obtaining **efficient muscular control on the dysfunctional muscles** and even the disappearance of dysfunctional condition in several children from the lot with hemiparesis;
9. Increase of neuro-motor performances regarding motor and muscular control of ability and finesse in the lot with hemiparesis;
10. the increase rhythm of all parameters is slower in the subjects aged 8, 10, 12, because of the already onset pathologic muscular hyper tonicity and of more reduced mobility in space, less motor acquisitions;
11. **Stability of trunk-pelvis-lower limbs** is obtained by all those who manage orthostatism and alternative quadrupedal walking variants;
12. **Independent walking**, quite coordinated, is obtained by a number of 20 subjects out of 67. We suggest induction as a successful therapeutic means for the future > *the technique of muscle stretch – stretching and techniques on the big Bobath ball* in the prophylaxis and treatment of static-kinetic dysfunction, from the age of 4-12, as a future method which will allow the elimination or fast recovery of dysfunction, that is the normalization of the static-kinetic function at the age of 6-12;
 - There are still uncertain **the issues of fitness** for these children for **the increase of quality of life in the future**. Therefore, these issues must be studied, researched, requiring a separate experimental study.
 - Through **an adapted physical activity program** (APA) this can also be achieved in well adjusted and expensive locations.

References

1. Pásztai Z., Pásztai Elisabeta, Chiriac M., Bogdan R., Șerbescu Carmen (2009), *-Studiu privind evaluarea neuro-psihomeotorie a sugarului între 0-1 an-*, Vol. IX, ISSUE 2, 2009. *Journal B+ 29 code, recognized by CNC SIS Bucharest, Romania. ISSN 1224-7359. OVIDIUS UNIVERSITY PRESS. Constanta*; www.analefefs.ro/anale-fefs/2009/COVER%20issue%202%202009.pdf
2. Pásztai Zoltán, Fărcășan Monica, Adaus Dumitru, Chiriac Mircea, Bogdan Radu, Pásztai Elisabeta, Cristea Andrei, Jakab István(2010) „*Contribuții la studiul „Identificarea momentului locomoției” în recuperarea neuromotorie funcțională*”Formatori în Kinetoterapie studii și cercetări al III-lea Congres Balcanic de Kinetoterapie, editura „Vasile Goldiș University Press”Arad ISBN 978-973-664-394-1, pg 104-110 ,2010;
3. Pásztai, Z., (2009), *-Rolul stretchingului în normalizarea funcției stato-kinetice-*; Editura Corson, Iași, pg.,227+232;
4. Pásztai, Z., (2004), *-Kinetoterapia în neuropediatrie-*, Editura Arionda, Galați, pg. 110, 123, 127, 136;
5. Robert Palisano, Peter Rosenbaum, Stephen Walter, Ellen Wood,Barbara Galuppi (2007) *-Gross Motor Function Classification System* Dev. Med. Child Neurol.1007:30:214-223, F.;
6. Kirton, A., deVeber, G.(2006, Iunie),*Pareza cerebrală secundară atacului perinatal ischemic*, Canada;
7. Nelson, K.B., Lynch, J.K., (Martie,2004) *Atacul cerebral infantil.*,Maryland USA;
8. **(1993)-Promoting Development of Young Children with Cerebral Palsy-*, Geneva, World Health Organization;
9. **** American Medical Association: (1995) Ghids the Evaluation of permanent Impairment, AMA;*

CONTRIBUTIONS CONCERNING THE ROLE OF SPORTS PHYSICAL ACTIVITIES IN THE DEVELOPMENT OF HUMAN BALANCE**CONTRIBUȚII PRIVIND ROLUL ACTIVITĂȚILOR FIZICE DE TIP SPORTIV ÎN EVOLUȚIA ECHILIBRULUI**

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Key –words: balance, posture, center of mass oscillations

Abstract: The modern researches concerning the human balance reveal that the real balance could not exist in the biological system, in the meaning of a null deviation from a fix point. The main interest in the present research is focalized on the opportunity to establish the tendency of the recorded data. Through these recorded data we can identify the middle values of the main parameters of postural stability in two of the three faces – statistic normality and exceptional normal as sport performers.

Cuvinte cheie: echilibru, postură, oscilațiile centrului de masă

Rezumat: În privința echilibrului uman, abordările moderne argumentează faptul că echilibrul real, în sensul unei deviații egale cu zero față de un punct fix, nu poate exista în sisteme biologice. În lucrarea de față interesul major este acordat posibilității de a stabili tendința datelor înregistrate în vederea identificării poziției centrale a valorilor principalilor parametri ai stabilității posturale în două dintre cele trei ipostaze: normalitate statistică și normalul de excepție (incluzând sportivii de performanță).

Introduction

Balance in biomechanics refers mainly to the internal forces generated by muscular contraction. The stability of a human being is not perfect, permanently there are oscillations of weight center projection, as the command and balance control system is based on feed-back corrections of some errors, including the aware changes of body segments positions or of the body, which will determine the change of position of the body weight center and, implicitly, the quality of balance. (Gagea A., 2006)

In the human evolution, balance has had countless opportunities to adjust to effects induced by earth gravity or other external forces. There are good reasons to consider that human beings accomplished this adjustment process a long time ago, fact which may constitute one of the reasons for which balance in orthostatism has represented a special scientific interest.

In sports activities the external forces can be very big and, in this situation, the required conditions to maintain balance of the entire body should be regarded as a function of an ensemble of complex regulation phenomena for which scientific concepts are only partly accessible.

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Modern approaches reveal the fact that real balance, in the sense of null deviation from the fixed point, cannot exist in biological systems.

In this research, the major interest is directed towards identifying the central tendency of values and labeling the main parameters of postural stability in two out of the three situations: statistic normality and exceptional normal (including sport performers).

Gagea A., (2006) considers that a body is in balance as long as the projection of its weight center falls within the support area, and balance labeling can be made in three categories: stabile balance, unstable balance and lack of balance.

According to Sbenge T., (2002), balance is defined as “a complex process which interests the reception and organization of sensorial input as well as the program and execution of movements, elements which provide erect posture, that is, permanent maintenance of gravity center within the support base”.

Purpose

Knowing the way in which body balance is achieved, as well as the elaboration of certain modalities of its evaluation, has a major role. It represents a means of understanding and emphasizing the functioning of systems which interfere in posture control. In sports activity, it represents a way of assessment and training of motor qualities, especially for those who practice high performance sports which require increased balance level. It also represents an aid in clinical diagnosing (neurology, traumatology, etc.), in order to notice the presence of possible balance disorders, and in assessment of applied treatment efficiency. Last but not least, it can be used to identify elderly people with balance disorders in the past or with predispositions for such disorders.

Hypothesis

It is estimated that the dynamic recordings of static balance have the tendency to group around a central value, which can represent the reference for diagnosis and selection.

Research methods

The testing was made with the help of POSTUROTEST software. This type of testing belongs to the test category that regards sensorial organization (SOT), method also encountered under the name of computerized posturography. It is a postural stability test which provides information about motor control or balance function in various environment conditions. The connections between all components of the system providing balance are tested – eyes, somato-sensitive system and vestibular system; it measures an individual’s reaction to environments in which the amount of information sent by eyes and somato-sensitive system is varied.

The statistic hypothesis was verified through several methods. The Anderson-Darling test was used to verify if a data sample came from people with a certain distribution. The Analysis of Variance method (ANOVA) is one of the variation method group, used to study if there are or are not statistically significant differences between the result averages obtained by the two groups at the analyzed test. Mann-Whitney test is a non-parametric one used to test the statistic hypotheses referring to a characteristic measured for two lots of subjects.

Contents

The improvement of movement parameters is achieved by continuously improving the reflex-conditioned connections and dynamic stereotypes, by forming a number, as varied as possible, of motor engrams which are at the basis of maintaining balance. However, this is meant less for the morphological and biochemical structures of the body, regarding especially the functional improvement under the aspect of movement coordination.

Within the study, under lab reproducible circumstances, we have complexly investigated 62 subjects divided into two lots: a non randomized sample of 31 subjects belonging to the statistical population named: “healthy young people, practicing consequent and moderate sports” (yet not at performance level) and a sample of 31 “target shooters” (performance sportives) with long experience in sportive training and competitions.

The test consists in maintaining position on a platform (POSTUROTEST) looking at a certain target. The pressure sensors on the platform record the body weight movement (swing) while the tested person maintains balance.

This was meant to investigate postural stability and it started by informing the subjects about the testing conditions. Each subject received indications about the position required for investigation: standing with legs slightly spread, legs on the platform with toes at the same level, arms hanging relaxed next to the body, forward look; a position as relaxed as possible, which should be maintained for 30 seconds.

The stabilometric evaluation allows a balance test with visualization, by comparison, of the movement of body center inside the ellipsis, lateral and antero-posterior oscillation values, oscillation velocity, swinging area, Fourier transformations and Romberg index. The oscillations are measured from the initial balance position to the final balance position, after suspending one of the sensors, the information from the visual analyzer are modified (the patient closes his/her eyes). The analyzed aspects were the mass center oscillations with and without visual control. The mass center is considered to be a controllable variable in the analysis of postural oscillations.

Results

The tested groups are from statistically different types of people – students at the National University of Physical Education and Sports and high performance sportives and in this case the entrance measurements and the functional blocks “conditions” are different, becoming independent variables. Under these circumstances, we have tried to establish which of these independent variables are relevant in establishing the boundaries for balance scaling and labeling. The obtained data were recorded in personal files (fig.1) which contain the values of mass center oscillations in anterior, posterior, left and right plan, values measured in millimeters.

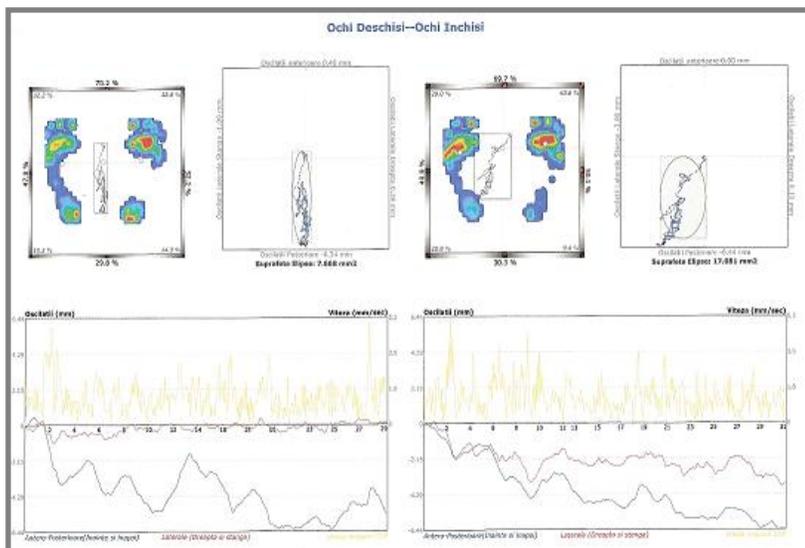
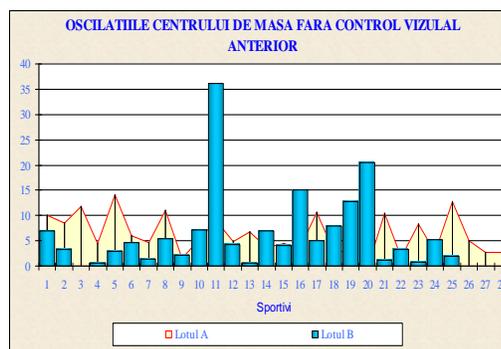
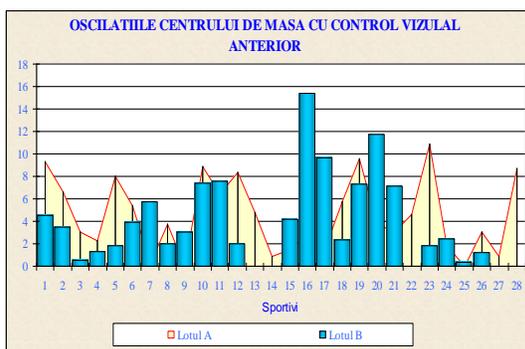
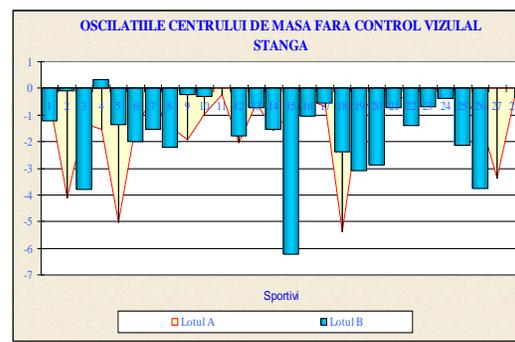
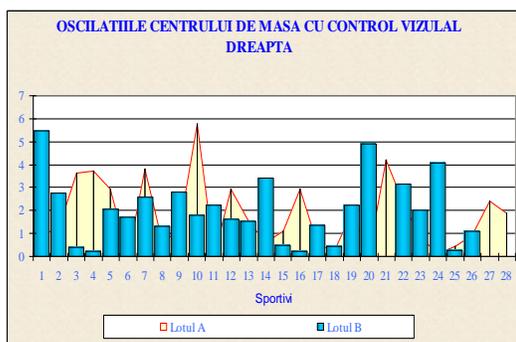
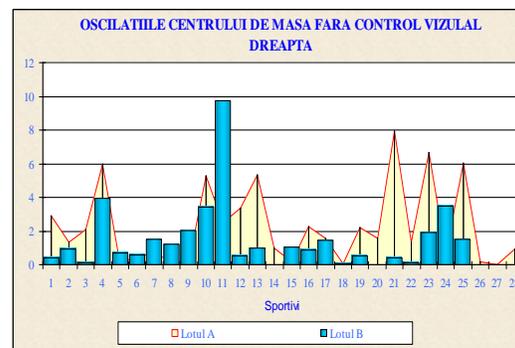
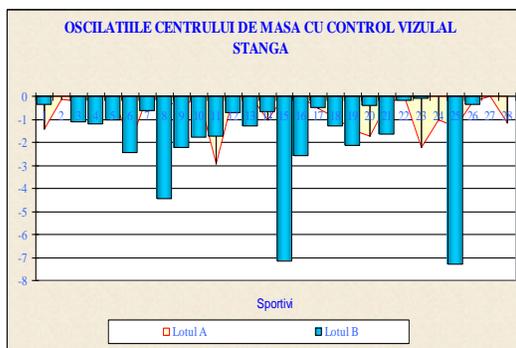
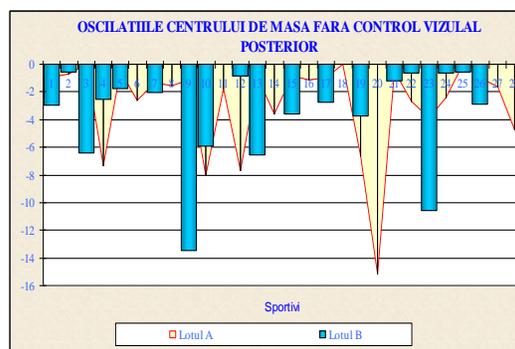
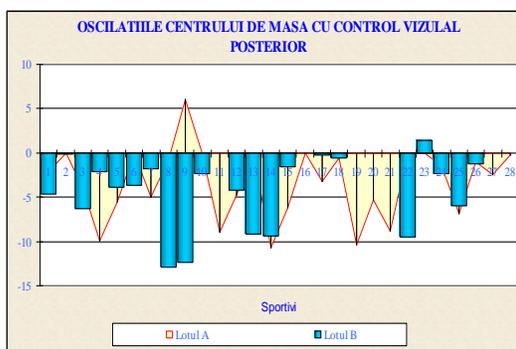


Fig. 1 – Mass center oscillations file

In the beginning, we analyzed the distribution of results applying the Anderson-Darling Normality statistical test in order to detect deviations from normality. Generally, all natural phenomena are distributed, or have normal distributions, when they are assessed under normal circumstances. The normality of phenomenon distribution in the domain of physical education and sports is provided by respecting nominal conditions, without the influence of any disturbing factor, be it intended or accidental. In labeling distribution as being normal, we have considered the shape, which can have three variants: normal distribution is symmetrical, normal distribution has only one maximum and normal distribution has (arms with) only one inflexion. The lack of concordance of shape with normal distributions can suggest the presence of some factors with hidden influence which could be difficult to notice. The absence of normality characteristics does not always lead to the rejection of normal distribution labeling.





The results of mass centre oscillations: the following have a normal data distribution (P-value > 0,05):

- in anterior plan, with and without visual control, the U.N.E.F.S, sportive lot;
- in the case of mass center oscillations in lateral-right plan with visual control, high performance sportive lot;

Data distribution is not normal (P-value < 0,05):

- in anterior plan with and without visual control, high performance sportive lot;
- in the case of obtained results by the two lots for mass center oscillations posterior, lateral-left plan, with and without visual control;
- in lateral-right plan, with and without visual control, for the U.N.E.F.S. students lot;
- in the case of testing with eyes closed in lateral-right plan, the sportive lot.

Conclusions

Maintaining balance in orthostatism is an important motor activity in keeping an individual's autonomy. From documentation, it is revealed the existence of mainly four control mechanisms which permanently regulate postural stability in orthostatism. These mechanisms are represented by:

- instantaneous muscular and joint reaction depending on their properties and modulated at spinal level;
- muscular activity triggered by detection of body oscillations based on information received at periphery;
- muscular anticipatory activity determined by the existent internal model;
- cognitive intervention of the nervous system' superior centers.

For the category of mass center oscillations with visual control, Anderson-Darling Normality Test shows a normal data distribution ($P\text{-value} > 0,05$) in anterior plan, U.N.E.F.S. students lot and in lateral-right plan, high performance sportives lot. In the case of mass center oscillations without visual control, Anderson-Darling shows a normal data distribution ($P\text{-value} > 0,05$) in anterior plan, the U.N.E.F.S. students lot and in lateral-left plan, the high performance sportives lot.

The difference of results noticed in anterior plan may have a plausible explanation in the fact that high performance sportives, in order to obtain performances, resort to solutions to ameliorate position stability in the area of vestibular and visual analyzers, phonotypically developing the ability to maintain balance in positions specific to the sports event. The mass center oscillations with visual control in lateral-left plan, statistically processed with MANN-WITHNEY test show that between the two lots there is a statistically significant difference ($P\text{-value} < 0,05$).

From biomechanical point of view, the force used to maintain balance in orthostatism is much more inferior to the maximum force an individual can develop. The position and velocity of mass center in orthostatic balance are situated in the comfort and safety area, defined as stability limit. Thus, postural oscillations can be associated with compensatory strategies which allow keeping certain essential motor functions such as maintaining the head in a fixed position while making a movement. The statistic results of the main indicators confirm the hypothesis according to which the dynamic recordings of orthostatic balance have the tendency to group around a central value.

References

1. Gagea A., Biomecanica analitică, ANEFS, București, 2006
2. Gherghel Carmen Liliana, Aspecte ale echilibrului dinamic la tineri care practică activități fizice în mod organizat, Teză de doctorat, București, 2009
3. Marcu V., Matei Corina, Normal și patologic în evoluția echilibrului uman, Editura Universității din Oradea, 2005
4. Maurer C., Mergner T., Bolha B., Hlavacka F., Human balance control during cutaneous stimulation of the plantar soles, *Neurosci Lett* 302, 2001
5. Sbenge T., Kinesiologie Știința mișcării, Editura Medicală, București, 2002

ICF AND CLIENT EVALUATION IN NEUROLOGICAL PHYSIOTHERAPY

EVALUAREA PACIENTULUI ȘI ICF ÎN RECUPERAREA NEUROLOGICĂ

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Key –words: ICF, evaluation, neurological rehabilitation, participation

Cuvinte cheie: ICF, evaluare, recuperare neurologică, participare

Abstract: Introduction of ICF guides the evaluation of the clients. We have to choose the appropriate tests for evaluation at the level of impairments, activity and participation. The aim of this lecture to introduce the relationship between Bobath Concept and ICF through a

Rezumat: Ghidurile ICF în evaluarea pacienților. Trebuie să alegem testele potrivite pentru evaluarea nivelului dizabilității, pentru activitate și implicare. Scopul acestei lucrări este de a sublinia relația dintre conceptul Bobath și ICF prin intermediul unui studiu de caz.

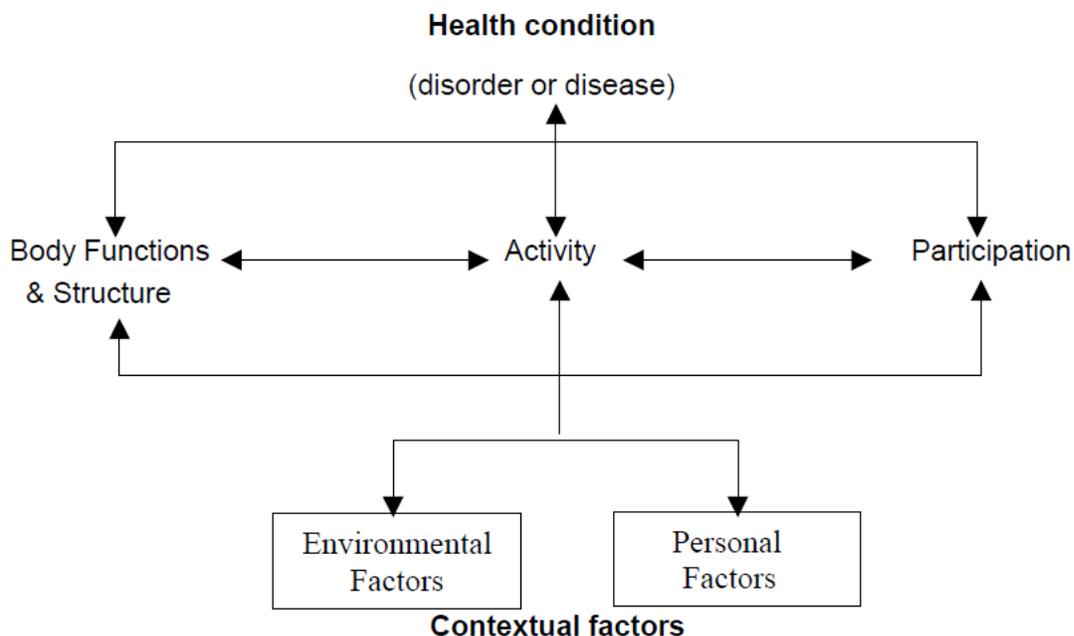
Introduction

International Classification of Functioning, Disability and Health (ICF) has been developed by the World Health Organisation (WHO).

The aims of the ICF are: to provide a scientific basis for the consequences of health conditions; to establish a common language to improve communications; to permit comparisons of data across countries, health care disciplines, services and time; to provide a systematic coding scheme for health information system. The ICF is a tool for classifying different aspects and factors which influence a person's life and describe how people live with their health condition.

The ICF domains contain the Body function and structures, the Activities and Participation and it is related to personal and environmental factors.

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The body function and structures domain is very specific recording of detailed functional abilities and impairments.

Activities and participation describes **individual's** functioning as a whole person, as opposed to function and structure of his/her body parts. What is most important is that there are a range of activities going from basic to complex that describe a person's ability to live independently and be integrated into their communities.

In this meaning **activity** is the execution of a task or action by an individual, while **participation** is involvement in a life situation. We have to mention **activity limitations** which are difficulties an individual may have in executing activities. **Participation restrictions** are problems an individual may experience in involvement in life situations.

Environmental Factors make up the physical, social and attitudinal environment in which people live and conduct their lives.

ICF may be used to ensure that all aspects of a person's situation have been evaluated as a basis for his rehabilitation process.

Within rehabilitation, the assessment and understanding of participation and understanding their major determinants is essential not only to understanding the broad health-related impacts of chronic illness or conditions, but to evaluate the effectiveness of rehabilitation intervention.

Assessment

The aim of physiotherapy assessment is to understand the client situation including his personality, life situation and condition, family relations, work situation and his resources as well as the analysis of his functional movements. The assessment should be therefore resource and problem orientated. The aim of the treatment is to improve the client's functional level to his full potential therefore

evaluation of patient's potential is essential. The assessment helps to make hypotheses what can be the reason for the problem.

During assessment, the therapist collects information and starts a process of clinical reasoning to form hypotheses about the client's main problem regarding to activity and function – why the client moves as he does. After taking the history the therapist evaluates the functional activity. It contains interview, observation, analysis and handling, if necessary aids. The aim is to determine the client abilities, the degree of his independence. Evaluating the functional abilities provides information about the quantity (what he is able to do) and quality (how he is performing the movements, activities) and why he is using that way (clinical reasoning).

Through observation the therapist can have information about the client's security, effort, movements' efficiency, movement patterns, balance, compensation, associated reactions, perception, cognition, interaction with environment and so on. (B Gjelsvik, 2008)

Clinical reasoning requires an ability to analyze the interaction between the various ICF dimensions. The therapist needs to understand the client's needs and expectation, to gain an impression of the client's resources and limitation in all three dimensions, formulate hypotheses about the most important factors, to choose goals together with the client, to choose treatment interventions, to evaluate treatment intervention and to re-evaluate the client's activity/function.

Outcome measures

It is an important question how to select outcome measurement. We need to consider the client's potential outcome level, the goal and outcome measures for the different domains of the ICF. WHAT? WHY? HOW? For answering these questions we have to also consider the determining factors which will influence our selection.

These factors are the internal needs (to verify the way of treatment), external pressure (insurance company, institution) and purpose of the measurement, suitability, availability, usefulness of the test, reliability, sensitivity and validity, and so on. Most rehabilitation centers and hospitals have had already preferable tests in their working context.

Evaluating the client at the level of **Body Function and Structures** we can use several tests. Here you can see only few examples.

Ashworth scale (Bohannon and Smith, 1987) can be used for measuring the muscle tone. There are common test used by the therapist for evaluating muscle power, muscle length, sensation, range of motion. The Trunk Impairment Scale for example (Verheyden et al. 2004) evaluates the trunk stability and movement in sitting.

At the **Activity** level we can evaluate mobility in the bed, gait, reaching, standing up, sitting down, balance, running, driving. The tests we can mention here can be the 10 m walking test, the Dynamic Gait Index (Shumway-Cook et al., 1997), Timed Up and Go ([Podsiadlo D](#), [Richardson S](#), 1991), Step test (Hill et al., 1996), GAS (Kiresuk et al., 1994), Berg Balance Scale (Berg et al., 1992), Functional Reach (Duncan et al., 1990) and many others.

At **Participation** level we evaluate the quality of life. For this purpose we can use SF-36 health survey, IQOLA (Aaronson, 1992), GAS (Goal Attainment Scale).

For getting a good, complex picture about our client we need to take several tests at different domains and it usually cannot be done in one session.

In our profession the most difficult part is to find the balance between the art and science not only in our therapy but also in our evaluation to judge our hypotheses and intervention. We need numbers to prove the effectiveness of our treatment. Therefore we have to use our creativity as well as our scientific, professional knowledge for getting the best possible result in our clients.

References

1. Aaronson N K, Acquadro C, Alonso J, Apolone G, D. Bullinger B M, Bungay K, Fukuhara S, Gandek B, Keller S, Razavi D, Sanson-Fisher R, Sullivan M, Wood-Dauphinee S, Wagner A and Ware J E Jr.: International quality of life assessment (IQOLA) project, *Quality of Life Research*, Volume 1, Number 5 / October, 1992
2. Bohannon, R W, Smith, M B: Interrater Reliability of a Modified Ashworth Scale of Muscle Spasticity, *Phys Ther.* Vol. 67, No. 2, February 1987, pp. 206-207
3. Gjelsvik, Bente E B: *The Bobath Concept in Adult Neurology*, Thieme, Stuttgart 2008
4. Hill KD, Bernhardt J, McGann AM, Maltese D, Berkovits D: A New Test of Dynamic Standing Balance for Stroke Patients: Reliability, Validity and Comparison with Healthy Elderly *Physiotherapy Canad* Volume 48, Number 4 /1996 257-262
5. Kiresuk, T J, Smith A, Cardillo J E: *Goal Attainment Scaling: applications, theory, and measurement*, Lawrence Erlbaum Associate, Inc, 1994
6. Schädler S, Kool J, Lüthi H, Marks D, Oesch P, Pfeffer A, Wirz M: *Assessments in der Rehabilitation, Band 1: Neurology* Verlag Hans Huber Bern, 2006
7. Podsiadlo D, Richardson S: The timed "Up & Go": a test of basic functional mobility for frail elderly persons, *J Am Geriatr Soc.* 1991 Feb;39(2):142-8.
8. Shumway-Cook A, Baldwin M, Polissar NL, Gruber W. Predicting the probability for falls in community dwelling older adults, *Phys Ther* 1997;77:812-9.
9. *Towards a Common Language for Functioning, Disability and Health – ICF*, *World Health Organization, Geneva 2002*

THE ROLE OF PHYSICAL THERAPY IN BALANCING THE SCOLIOTIC SPINE**ROLUL KINETOTERAPIEI ÎN ECHILIBRAREA COLOANEI VERTEBRALE SCOLIOTICE***Burcea Claudia¹*

Key –words: scoliosis, functional rehabilitation program physical therapy**Cuvinte cheie: scolioză, recuperare funcțională kinetoterapie**

Abstract: The studied lot consisted in 20 patients with scoliosis. All the patients, students at University of Medicine and Pharmacy “Carol Davila” Bucharest were physically treated. The patients were evaluated before and after the rehabilitation program. The results prove that the majority of the patients gain good results, if they beneficiate of an early and sustained treatment. The therapeutic success was based on a good knowledge of the clinical entity and its impact upon the body, kinetic techniques adequate to each particular case, a proper cooperation between the physical therapist and the patient.

Rezumat: Studiul a fost realizat pe un lot de 20 pacienți cu scolioză. Toți pacienții, studenți la Universitatea de Medicină și Farmacie “Carol Davila” București, au fost tratați fizical-kinetic. Pacienții au fost evaluați atât la începutul cât și la sfârșitul recuperării funcționale. Rezultatele detaliate în lucrare arată că majoritatea pacienților care încep tratamentul de recuperare funcțională și programul este susținut, sunt foarte bune. Succesul terapeutic a fost sprijinit și de o bună cunoaștere a entității clinice și impactului acestuia asupra organismului, tehnici kinetice adecvate fiecărui caz în parte, precum și de buna cooperare dintre pacient și kinetoterapeut

Introduction

The physiological curvature deviations of the spine from those considered normal finally lead to the onset of physical deficiencies of this axial system which provides the entire attitude of the human body.

Scoliosis is one of the most frequent diseases which affect the spine during the growing period.

Containing most of its essential elements – aspect, manifestation, evolution – C. Zaharia defines scoliosis as “an evolutionary disease, characterized by one or several lateral curvatures of the spine, visible in frontal plan, accompanied by vertebrae rotation, with superior and inferior compensating tendency of the curvatures, but without tendency of their complete reduction by hanging or decubitus and with an echo on the trunk morphology”.

Approaching scoliosis as research theme has never been done at random as it seems to be the most frequent physical deficiency of the spine encountered in girls, just as kypho-lordosis predominate in boys.

Scoliosis can present one or several curvatures (2-3 or even 4) in frontal plan, accompanied by vertebral rotation with with superior and inferior compensating tendency of the curvatures, but

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without tendency of their complete reduction by hanging or decubitus and with an echo on the trunk morphology”.

This chapter of orthopedic pathology should be very well known in order to be able to depict the cases as early as possible and to direct them towards one of the specialized services for corrective therapy. The treatment of many scoliosis is very difficult and should be continued systematically on long term, using, according to the form of scoliosis and the moment, varied and complex treatments.

Work hypothesis

In the research we tried to go through the stages necessary when treating scoliosis so as to accomplish a correlation to reality as correct and complete as possible, both from the point of view of diversity of scoliosis and that of the concrete means and methods to resolve functional rehabilitation.

Physical therapy represents the basic procedure in the treatment of scoliosis, the only one capable to provide a correction of the vertebral statics as well as an appropriate further evolution of the patient. We have also tried to verify the efficiency of physical therapy, depending on the evolutionary stage of scoliosis, respectively on its severity and vertebral curvature angle, and to verify the opportunity and efficiency of physical therapy in the treatment of scoliosis according to its etiology.

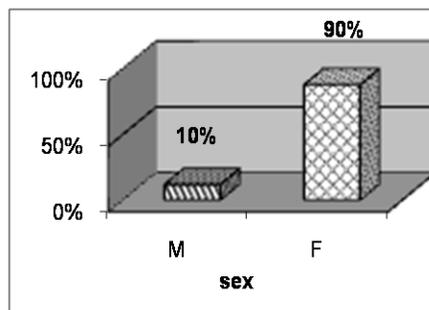
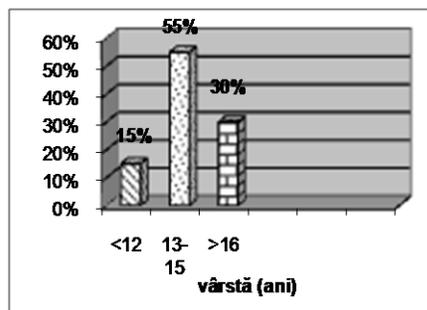
Material and working methods

Our purpose was to accomplish a practical study made on the casuistic of “Carol Davila” University of Medicine and Pharmacy from Bucharest, observing the epidemiological, etiological and treatment elements. We also observed the diversity of therapeutic procedures and we tried to emphasize the efficiency of physical therapy in the treatment of scoliosis.

The casuistic was studied depending on the age when scoliosis appeared and the patients’ sex, the type of physical activity and social environment, type of affection, applied treatment.

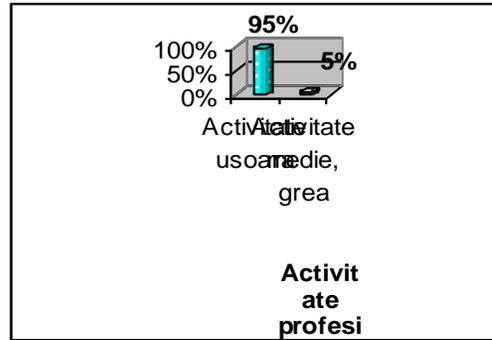
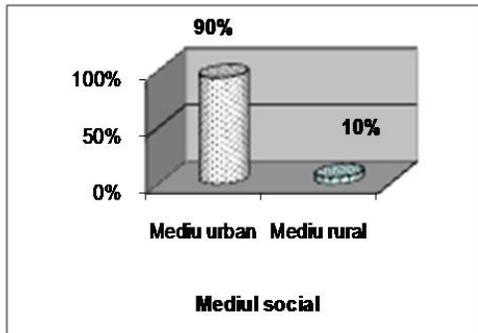
1. Analysis of patients’ lot according to the age when scoliosis appeared and sex

The study shows a special incidence of scoliosis if the age and sex criteria are taken as reference. The feminine sex represents 90%, compared to the masculine sex, where the percentage is 10%, the maximum incidence (of scoliosis debut) being encountered at the groups of age of 13-15 years old, representing a percentage of 55%, a percentage of 15% being encountered at the groups of ages under 12 years old, and the groups over 16 years old representing a percentage of 30%. So scoliosis appears at early ages in both sexes, that is at the groups of age of 13-15 years old, because there are vertebral anatomic changes which become worse during this period.



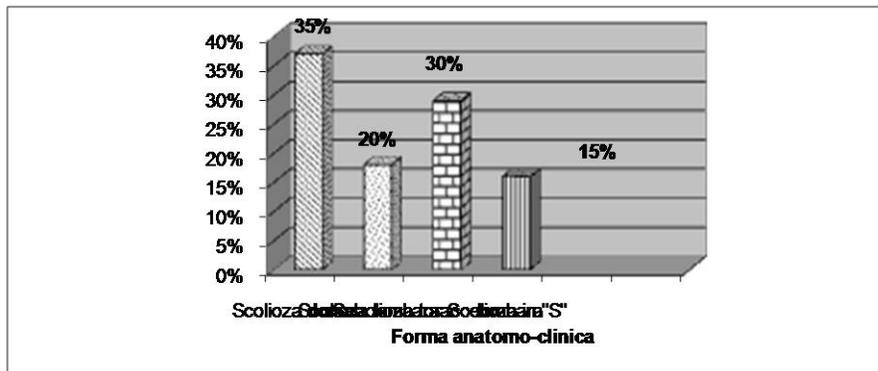
2. Analysis of patients’ lot according to the social environment and professional physical effort

From data analysis, we noticed that 90% of the patients come from towns, the rest of 10% from the country side. Considering professional activity as a study criterion, it can be noticed that the number of those who make easy (and sedentary) activities is much bigger, representing 95%, and those with medium and difficult physical effort only 5%.



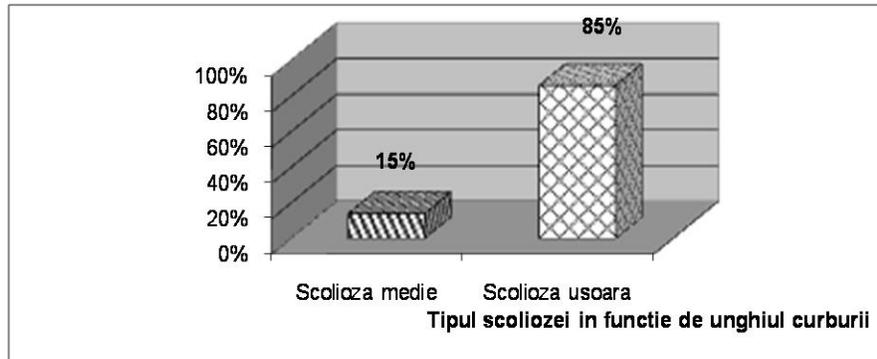
3. Analysis of patients’ lot according to the anatomo-clinical form of scoliosis

Analyzing the scoliosis graphic according to the anatomo-clinical form, it can be noticed that dorsal scoliosis is represented by a percentage of 35%, lumbar scoliosis by 20%, thoracic-lumbar scoliosis by 30% and “S” scoliosis by 15%.



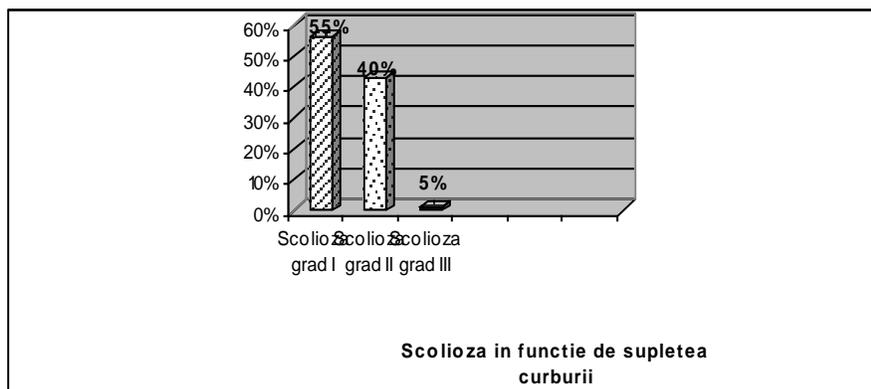
4. Analysis of patients' lot according to the scoliotic curvature angle value

Regarding the value of curvature angle we noticed that medium scoliosis has an incidence of 15% and light scoliosis of 85%.



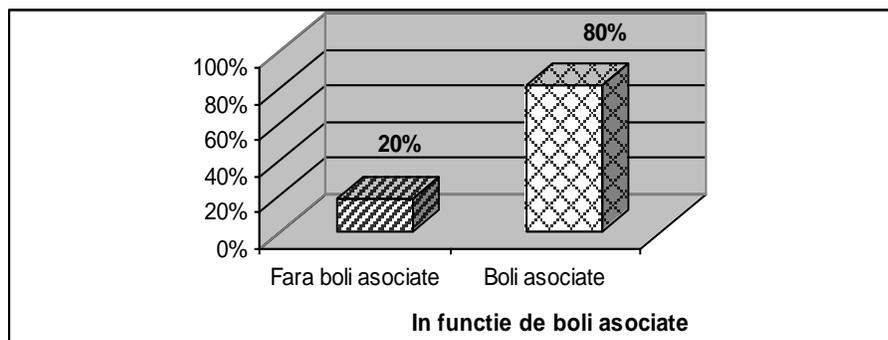
5. Analysis of patients' lot according to the curvature suppleness

Analyzing the scoliosis graphic according to the curvature suppleness, we notice that 1st degree scoliosis (reducible, mobile scoliosis) has an incidence of 55%, 2nd degree scoliosis (partially reducible, with reduced mobility) of 40% and 3rd degree scoliosis (fixed, irreducible scoliosis) of 5%.



6. Analysis of patients' lot according to associated diseases

From the graphic analysis it results that 20% of the patients do not present other diseases associated to scoliosis, the rest of 80% suffering of at least one more disease such as: dorsal kyphosis, unequal lower limbs, obesity, lumbar discopathy, hypothyroidism, chronic lumbago, sequelae of Osgood-Schlatter's disease – anterior tibial apophysitis of growth, sequelae of myocarditis, myopia forte, hyperlordosis, congenital hip dysplasia, discus hernia, flat foot, gonarthrosis.



Rehabilitation treatment of scoliosis

The purpose of treatment is to correct spine deformities and the conservative skeletal changes, to balance the spine and to maintain the obtained result and to remove cardio-vascular functional disorders and disorders of other organs.

The therapeutical means are:

Physiotherapy – with ultrasounds and diadynamics to reduce muscular reactions and contractures;

Orthopedic means – to achieve a maximum correction of curvatures with minimum risks, with apparatus such as: Milwaukee corset; distracter-deflector corset (Turubukle-Risser); Risser localizing corset, EDF (Cotrel-Morel): elongation, lateral flexion; Iznec corset (preferred by Stagnara); distraction halo-pelvic devices (accomplish a slow curvature correction);

Surgical means – consisting in performing posterior, anterior or mixed spondylosyndesis after the correction of curvatures through halo-pelvic distraction, in order to stop the evolution of deformity and to stabilize the spine;

Physical therapy – to correct deformities and functional insufficiencies, it is applied in all phases of scoliosis, from the prophylactic stage to the stage of patient's rehabilitation and reeducation;

Occupational therapy – completing physical therapy, represents a complex psychomotor method of active reeducation;

Hydro-physical therapy and swimming – by the physical action of water, represents an active means to balance the spine and develop respiratory capacity;

Massage – to relax contracted muscles, increase muscle tone and stimulate atonic muscular trophicity, it is applied at back, scapular belt and pelvic levels.

The physical therapeutic objectives followed in scoliosis were:

- Spine asuplisation;
- Scoliotic curvature recovery;
- Recovery of scapular belt elements (shoulder blades, shoulders, clavicles) and of the pelvic ones (pelvis and hips);
- Toning the muscle groups on the side of convexities in shortening regime;
- Toning the muscle groups on the side of convexities in lengthening regime;
- Normal development of thorax;

- Formation of correct spine posture reflex and of the entire body;
- Amelioration of respiratory function.

Within the physical therapy program there were used both positions in which the static loads of the spine are reduced, decubitus, four legged positions, and walking exercises, orthostatic position and sitting; static exercises (corrective positions) and dynamic ones (exercises of physical development with analytical character); applicative and respiratory exercises (exercises with corrective character).

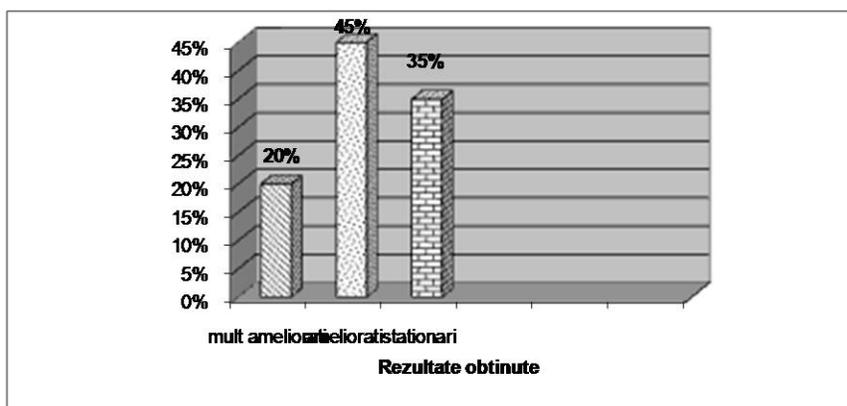
Techniques and methods used in achieving the objectives of rehabilitation in scoliosis

Klapp technique, Cotrel technique, Klapp four legged position, Cotrel elongation (to increase spine flexibility), Kabat technique, Wauger-Burger technique (to increase muscle strength).

In addition, swimming was used for many patients.

The results obtained after treatment were as follows:

45% ameliorated, 20% ameliorated a lot and the rest of 35% stationary.



Conclusions

The study shows a special incidence of scoliosis if the age and sex criteria are taken as reference. The feminine sex is prevalent, as presented in the specialty literature as well, especially in urban areas, with a maximum incidence of debuting age between 13-15 years old.

The most frequently encountered scoliosis type is dorsal scoliosis, followed by dorsal-lumbar scoliosis, the other types of scoliosis being encountered at a smaller number of patients.

The procedures most frequently used in the physio-physical therapeutic treatment were: physical therapy, massage, electro-therapy, and hydro-thermo-therapy.

Physical therapy is the most important part in scoliosis treatment leading to the increase of rehabilitation efficiency, improving not only the vertebral statics, but also the respiratory function.

By associating corrective corsets with physical therapy and swimming, the patients' pathological and functional modifications were improved.

The treatment with medicines in scoliosis, although without real importance in rehabilitation, was mainly based on analgesic medication and vitamins.

References

1. Antonescu D., Actualitati în scoliozele structurale, Editura Medicală, București, 1996
2. Antonescu, M.D., Patologia aparatului locomotor, vol. II, Editura Medicală, București, 2008
3. Duma, E., Deficiențele de dezvoltare fizică, Editura Argonaut, Cluj-Napoca, 1997
4. Sbenghe, T., Kinetologie profilactică, terapeutică și de recuperare, Editura Medicală, București, 1987
5. Sbenghe, T., Recuperarea medicală la domiciliul bolnavului, Editura Medicală, București, 1996
6. Zaharia, C., Scolioza, Editura Medicală, București, 1980

ASSOCIATING SULTANA METHOD AND THERAPEUTIC SWIMMING WITH THE TREATMENT OF SPASTIC DIPLEGIA

ASOCIEREA METODEI SULTANA ȘI ÎNOTULUI TERAPEUTIC ÎN TRATAMENTUL DIPLEGIEI SPASTICE

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Șișcă Cristina²*

Key –words: spastic diplegia, Sultana Method, swimming, scoliosis, hydrotherapy

Cuvinte cheie: diplegia spastică, Metoda Sultana, înot, scolioză, hidroterapia

Abstract: We present in this study the case of a 10 years old child (V.I.) suffering of spastic diplegie, whit the goool of highlight a certain performance due to the effort and perseverance of using complex rehabilitation treatment since birth, including the Sultana method and the aquatic education.

The Sultana Method of psychomotric stimulation of the new-born and young child, registred with OSIM in 2001, represents an alternate method to that of traditional care, which ensures a harmonious development of the new-born and young child. The method involves three steps: massage, gymnastics and aqua-therapy. In the above-mentioned case, the Sultana method has been applied on a daily basis starting right from birth and until the age of 3.

V.I achieved the perfonmance for his neuro-motor deficiency and this is due to his parents who have resorted to alternative treatment methods(Sultana Method) even from the first they of life.

The conclusions are that although spastic diplegia is a disabling disease,the subject managed to reach good results in the somatic-functional development because he has received since the birth the Sultana Method and after the age of 3 years he practiced therapeutic swimming.

Rezumat: În această lucrare prezentăm cazul unui copil de 10 ani (V.I.) cu diplegie spastică cu scopul de a evidenția o anumită performanță motrică la care a ajuns datorată efortului și perseverenței de a folosi tratamentul complex de recuperare încă de la naștere, printre care Metoda Sultana și educația acvatică.

Metoda Sultana de stimulare psihomotorie a nou-născutului și copilului mic, înregistrată la OSIM în anul 2001 reprezintă o metodă alternativă celei tradiționale de îngrijire, prin care se asigură o dezvoltare armonioasă a nou-născutului și a copilului mic. Metoda cuprinde 3 etape: masajul, gimnastica și hidroterapia. În cazul prezentat metoda Sultana a fost aplicată imediat de la naștere și până la vârsta de 3 ani cu o frecvență zilnică.

V.I. a ajuns la o performanta prin ameliorarea deficiențelor neuro-motorii cu care s-a nascut și acest lucru se datoreaza părinților care au apelat inaca din primele de viata la metode alternative de tratament (Metoda Sultana).

Concluziile sunt că deși diplegia spastică este o boală invalidantă subiectul a reușit să ajungă la rezultate favorabile în dezvoltarea sa somato-funcțională deoarece a beneficiat încă de la naștere de metoda Sultana, iar după vârsta de 3 ani de practicarea înotului terapeutic.

Nonprogressive cerebral palsy are not ereditary, are caused by the lesions of central nervous system and induced to the child before birth, during labour or early after birth. As early present is neurological simptomatology, and affects especially the voluntary motor activity. Spastic diplegia (Little condition) is one of the spastic of this group of affections.

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Spastic diplegia affects all limbs, but the most present is motor deficit of the lower limb; this will be always in flexion, semiflexion or extension, adduction and internal rotation. Very often it associate with prematurity in 80% from cases.

From anatomic and pathologic view there are focuses of periventricular leucomalacia, and it means focuses of necrosis in the white substance, to the border between superficial and profound circulation and affects the ascendent tracts that coordinates the motor activity, especially of the lower limb.

Leucomalacia is present mostly in germinative matrix and it is very often associated with intraventricular bleedings. The clinic aspects associates: congenital strabism, normal intelect or a certain degree of mental retardation, epileptic crisis. The evolution of the illness is gradual. In the hypotone stage, the child has feeding difficulties. In the dystonic phase (after 6-12 weeks) it shows buco-lingual dyspraxia and jumpy muscular tone. At 8-9 month it shows the pyramidal syndrome (spasticity).

At neurologic exam can be seen crossed legs when walking and a certain kind of support characteristic for pyramidal syndrome of lower limbs and fine motricity troubles, specific of a pyramidal syndrome of upper limbs.

Classification of spastic diplegia:

1. Easy spastic diplegia – subjects walk after 3 – 4 years old.
2. Mild spastic diplegia –waking with aids, with help, pathological walking.
3. Severe spastic diplegia – child never walk.

The associate symptomatology consist of: oftalmologic affectation, epileptic seizures, hip luxation due to vicious position, lumbar lordosis, vicious postures of lower limb. Treatment consist of neurologic and motor rehabilitation.

The case presented in this paperwork is from a 10 years old childboy, who obtain a certain motric performance due to his permanent effort and to perseverance to correct by different means, his deficiencies. The purpose of this paperwork is to bring into discussion the efficiency of treatment by applying the Sultana Method, based on the age of the client, of Sultana Method and on therapeutic swimming.

We suppose that association between Sultana Method and conventional rehabilitation means and methods in case of spastic diplegia leded to the improvement of client performance.

Sultana Method® for psychomotor stimulation of the infant and little children was officialy registred at the State Office for Inventions and Brands (OSIM) since from Decembre 2001 and represents an alternative care method, that offers a spectacular evolution of the child, from the moment he is cardiorespiratory stabilized.

The method is conceived as an educational program with profilactic role in body strenghtening, representing a secure mean for a harmonious growth. The program includes specific techniques and respects the own growing rhythm of each child, during some personalized sessions.

Having as starting point the concern for offering the adequate developmental frame, special care and respect for child's personality, this method is accessible and appropriate for being used both by specialists and parents.

Sultana Method has 3 steps: massage, gymnastics and hydrotherapy, with effects on immunity strenghtening, psychomotor development, harmonious development of a strengthened muscular system and bones, improving the capacity of cardio-vascular system, that offers a very good general oxygenation, strenght neuronal links, solving some postural deficiencies, improving the degree of emotional intelligence, of the ways of how they manage to solve extreme situations, beginning with very early ages, keeping the primary reflexes and changing them in automatic movements.

From 4 month and a half - 6 month, this method is completed by aquatic education, representing the ensemble of procedures in water for children, adolescents and third age persons of

persons with deficiencies, having prophylactic and leisure purpose due to adaptation to aquatic environment.

The case presentation is made with the help of parents and caregivers observation, but from medical files also, that we have.

From medical file we find that the pregnancy evolution was difficult, with several interments of the mother, because of bleedings. Client was born on 27.08.1999, after 6 month of pregnancy.

The first file of hospital release specifies: premature new-born, third degree, mild perinatal hypoxia, 1000 grams weight, 35 cm length, PC 23, PT 22.

Birth was spontaneous, cranial presentation, APGAR Score 7, resuscitation necessary. First month of life was marked by cardio-pulmonary complications, apnea episodes, augmented oxygen additio, medical treatment, assisted ventilation, cardio-vascular support, blood transfusions.

At hospital release in 19.10.1999, after 7 weeks of hospital internment, V.I. has 1600 gr, 39 cm length.

At 9 weeks, V.I. has 1950 gr weight, 43 cm length, PC 29 cm, PT 30 cm.

At 5 month, V.I. has 3950 gr weight, 53 cm length, PC 35cm, PT 37 cm, a good muscular tonus, good turgor, grasping and treadling reflexes present.

At 7 month, V.I. has 5700 gr weight, 59 cm length, PC 40cm, PT 40 cm, good general status, is attentive, doesn't grasp toys, keep crossed fingers, doesn't turn from one side to the other.

At 9 month, V.I. has 6500 gr weight, 64 cm length, PC 41 cm, PT 42 cm.

At 8 month V.I. is kept at Gomoiu Hospital, where he is diagnosed with spastic diplegia, tetraplegic form. From psychomotor point of view, the development is satisfactory: head is up at 4 month, assisted sitting at 7 month, smiles, looks. Clinical exam describes increased spasticity in upper and lower limb.

In another medical file from 2001, 1 year and 8 month old appears: spastic paraparesis, motor retardation, cerebral motor infirmity due to perinatal ailment. Doesn't stand up and waking is made with aids only.

In 2002, he was hospitalized twice in the Dezna Rehabilitation Hospital, with the diagnostic of spastic paraparesis after sechelar encephalopathy. In the release note from the hospital is mentioned that psychic development corresponds with the age, spasticity is mild at lower limb level, with osteotendinous hiperflexia mostly on left side, left foot in valgus, with 1 cm difference between the two feet, flat feet, coordination difficulties, slow motion – in lower limbs, waking is possible with a larger base, unsecure due to spasticity. The rehabilitation program applied consist of subacval shower, ionizations, masage, physical therapy, occupational therapy.

In 2004 at 4 years old, our subject V.I. has supported a surgical intervention at Medical Centre Vaudois, from Lausanne, Elvetia. Was made an elongation of Achille's tendon from left lower limb, with immobilisation in contention device for 6 weeks. In this period of time of 2 month, client followed ergotherapy and fiziotherapy. Were made recommendation for a continuous physical therapy program, until the end of growing period..

Sultana Method was applied to V.I. from the hospital period early after birth and than at home until the patient has 3 years old.

Masage manouvres were made as follows:

- on the lower limbs – Shiatsu presopuncture;
- sole – press-point;
- foot fingers – pressions, rotations and pullings;
- at abdominal level – with split fingers and with 3 fingers in clock direction, following the colon trajectory;
- at thoracal level – tapping;

- on upper limbs – Shiatsu presopuncture;
- at back level – eflouraj and tapping;
- at the skull – circulary, gentle movements;
- at facial level – with forefinger round about eyes;
- at the neck level – roling with dorsal part of the hands.

After that follows the second part of Sultana Method, exercises, for relaxation and reducing spasticity of flexors.

- Putting the right lower limb in contact with the left upper limb and viceversa;
- Touching the both soles, with gentle tapping. By touching of soles it is made a gentle masage, that stimulates the internal organs activity;
- Rotation movements of lower limbs and crosing them;
- Swinging. With child in phrone position, he will be lifted with the back near the therapist chest. The child is held by the ankles above, with fingers bound. The child is left to slipp with the head down, held only by ankles and he is balanced as a swing, than back to phrone position.

HYDROTHERAPY – is the third phase of Sultana Method and begins with the srimulation of swimming primary reflexes and immersion in order to transform them into automatic movements.

For this phase was used an individual bathtub for infants, whisc was replaced after a few weeks with the bathtub from the bathroom of the house. The water temperature was initialy 37 Celsius degree, it means the temperature of the intrauterine liquid and reduse gradually month by month, by one degree untill 32 Celsius degree. The contact with water will be made gently and gradually, making the child feel comfortable and secure. The child is put on the therapist forearm, with the legs on one oth sides and the thorax sustained by the hand.

During hydrotherapy, the therapist sustained the child only in few tangent points, in order the child to have free movements as much as possible.

Contact with the child (Hand contacts):

- For supine position, was used a hand contact mode, in which the palm sustains a part of the head and neck and were made back and forth movements, in order to stimulate the swimming primary reflexes.
- Another type of hand contact, is the sandwich type, in wich palms are positioned gently on the child, one hand on the front side of the txorax and the other one on the back side of it. With this kind of hand contact were made turning manouvres from supine to phrone position and stimulations by back and forth movements.
- For phrone position, forefinger and innerfinger were put on both sides of mandibula, avoiding the soft tissues and structures of the neck, and middle finger was pu on the thorax, at 2 fingers distance up from the sternal bone, This type of hand contact offers the child the opportunity to move free, especially to upper limbs.

Immersion

Immersion was made after 10 minutes, when the child used to the water and the free movements. At first, the hands of therapist assisted the child through the same sustaining method. After 2 – 3 repetitions in the bathtub, came a moment of maximum relaxation, after that, the child was sustained in prone position, in order to have an immersion, simply by removing the therapist's hands. During swimming program, the child was left alone to swim under water and he managed to swim by himself making sincronized movements generated by primary reflexes.

Rotations

The child was rotated under water, as a new element added progresively in the swimming rehabilitation program.

Child on supine position, with the left hand of the therapist as support, with split fingers, was rotated with the sandwich hand contact, from left to right side, pushed gently under water, than lifted up gently and that back to supine position, in order to watch him and make him feel secure.

Divings

8 month after birth were introduced divings in the rehabilitation program of V.I. The therapist sustain the child's head and thorax with one hand, with the other hand he sustain the lower limbs, in the superior part of the calfs. The child's body and the water surface must have an ungle of 45 degree. The divings were made very easy, the left hand of the therapist having the first contact with water, and after that the child was easily pushed into the water. The child tried to pull over the water, being helped by the therapist with same sustainig manouvre, with hands as support.

The subject V.I. joined the aquatic education on age 3, at „Little Champions Club”, following the swimming program for beginners and therapeutic swimming.

At age 7 after a radiologic exam is discovered an associate scoliosis secondary to spastic paraparesis, requering physical therapy and correction corset. This scoliosis has a Cobb angle of 25 degree in 2007.

At age 9 the scoliosis was reduced due to physical therapy, but also swimming exercises according to his condition.

The proposed swimming exercises are:

CRAWL STILE – legg movements:

- an upper limb on the float, the other one near the hip, maintaining the torso in redressed position
- lower limb on the same side with the dorsal convexity is kikking hard and down.

CRAWL STILE – upper limb movements:

- upper limb on the same side with convexity rows hard
- inhale on the concavity side.

BACK STILE – legg movements:

- upper limb sided with concavity will be up, the other one will be down, near coapsă

BACK STILE – upper limb movements:

- rows the upper limb convexity sided
- the upper limb on the same side with the curvature is rows harder

BRASS STILE- legg movements:

- one upper limb is up, the other one is down, near the ham or on the back

BRASS STILE – upper limb movements:

- the subject will swimm only with the upper and lower limb on the same side.

BRASS STILE – as hole

- the subject will swimm only with the upper and lower limb on the same side with the convexity in order to shorten the muscles.

BUTTERFLY STILE - legg movements:

- one upper limb is up, the other one is down, near the ham or on the back

BUTTERFLY STILE - upper limb movements:

- it rows only with one upper limb

Conclusions

1. Spastic diplegia is a condition that requires early diagnosys and a complex treatment.
2. The treatment stages depend on age and associate pathology. The Sultana method can be use with good results, in case of the very young child (0 – 3 years old), who cannot respond to commands.
3. The case of V.I. presented here, followed since he was born the Sultana method, with positive results in his somatic and functional development.

4. These good performances for V.I. are also related to the parents perseverance, who applied all known rehabilitation means during all growing and developmental process.
5. The efficiency of therapeutic swimming is beyond doubt in the secondary pathologies of spastic diplegia, as scoliosis, by swimming elements which are promoted since the first sessions.

Proposals

1. Including the Sultana method in the complex rehabilitation treatment of neuromuscular pathologies of 0-3 years old children.
2. Accomplishing, in the future of a research paperwork having as purpose the analyse of differences between somato-functional and motric assessments of our subject, V.I., who followed the Sultana method and therapeutic swimming, and another subject who has the same illness but never followed these treatment means.

References

1. Cordon M., Kinetologie medicală, Editura Axa, București, 1999
2. Marcu V., Dan M., Kinetoterapie/Physiotherapy, Editura Universității din Oradea, Oradea, 2006
3. Miroiu, R., Kinetoterapia în afecțiunile neurologice, Editura Universității Naționale de Apărare, București, 2005
4. Sultana G., Metoda Sultana – Ghid practic pentru părinți și cadre medicale, Editura Olimp, București, 2009
5. Vasile L., Înot pentru sănătate, Editura Didactică și Pedagogică, București, 2007

**SPECIFIC RELATIONSHIPS BETWEEN
PHYSICAL ACTIVITY & MENTAL HEALTH
THE IMPORTANCE OF CONSIDERING
GENDER AND REFINING
RECOMMENDATIONS**

PhD book by Melinda Asztalos

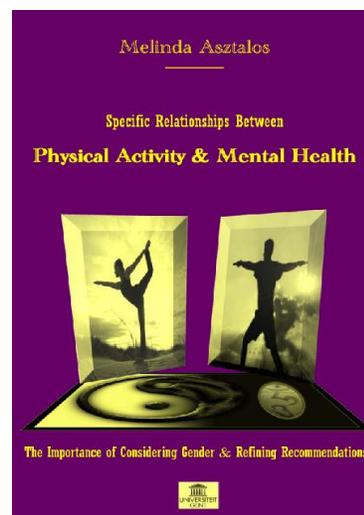
Thesis submitted in fulfillment of requirements for the
Academic Degree of Doctor in Sport and Movement Sciences
Specific Research Domain: Exercise Psychology

Review by prof. dr. Pedro J. Teixeira

University of Lisbon (Portugal)

Faculty of Human Kinetics

Department of, Nutrition, Physical Activity, Obesity & Weight Management, Exercise & Health



This thesis addresses the association between physical activity and aspects of psychological functioning and well-being, generally named mental health. It is divided into three main broad research questions, based on analyses of types of physical activity (and sedentary behaviors), domains of psychological well-being, and gender differences. It does so with an epidemiological approach, based on data from two large and representative cohorts in Belgium. The thesis includes two published/accepted papers in well-ranked journals and two other manuscripts submitted for publication, which reveals a high level of scientific achievement associated with the original research conducted. Additionally, it includes an in-depth review of the historical and current knowledge on the topics under scrutiny and a final section of discussion and conclusions, including research directions and final recommendations. The overall document is well-organized and very well-written.

The research questions addressed in this thesis are clearly relevant, which is made sufficiently clear throughout the document. In fact, Ms. Asztalos appears to be passionate about the potential of physical activity to improve psychological functioning, from protecting against mental health problems to promoting self-awareness and personal growth. Although the empirical findings do not clearly support some of the propositions, this does not detract from the well-justified need to study such associations. The overall plan for the thesis is sound and coherent, with some of the studies following on the questions left open in the previous reports.

My general evaluation on this body of work is that it meets, and in some regards goes beyond the minimum requirements for a doctoral level thesis, as I interpret them. Part I in particular shows a level of knowledge of various fields of enquiry (exercise science and exercise psychology, mental health, and gender studies,) which is clearly advanced, and it assures the reader that Ms. Asztalos has in fact reviewed the literature in extensive detail, was able to extract the most pertinent information and, most importantly, reflected upon her readings and successfully integrated all selected information into a coherent text, formulating adequate empirical hypotheses, and appropriately framing and justifying the relevance of her original research. Furthermore, Ms. Asztalos was able to generate innovative hypotheses and adequately integrate them into the overall research pursuit rather seamlessly. On top of this, great care appears to have been placed in the writing process, resulting in a clear, concise, and also fun and captivating read.

I feel confident that after the peer-review process is completed and all four papers are published, Ms. Asztalos and her co-authors will have contributed to the field of exercise science (and related areas) in a substantial way. It appears that following these studies with subsequent

original research using prospective, preferable experimental, methods would be the logical way to go, and I would be pleased to see such research come to fruition in years to come. With the theoretical background she now has accumulated, and supported by the current observational findings, Ms. Asztalos would most certainly be in a privileged position to lead that research in the near future. >>

Author's summary

Although there is good reason for promoting physical activity in the general public, both as preventive measure and as means of improving mental and social well-being, physical activity promotion meant for the promotion of mental health is a rarity. Not even a simple message for the amount and type of physical activity for optimal mental health exists, and physical activity recommendations only tangentially deal with the potential of physical activity for mental health benefits. Despite the growing attention toward the use of physical activity in the promotion and maintenance of mental health, and in the management of mental health problems, despite the mounting evidence associating physical activity with reduced depression and anxiety, improved self-esteem, enhanced physical self-perception, self-efficacy, and cognitive functioning, optimal stress management, better sleep quality, elevated mood, and significantly greater health-related quality of life, skepticism still prevents the proper recognition of physical activity as preventive and therapeutic means for mental health problems, and even its crucial role in stress management is uncertified.

The ingenious question of “What evidence would prompt scientists to “stick their necks out” in favor of more definitive statements?” (Landers, 1997) forms a perplexing dilemma when paralleled to Hippocrates's recognition of the effects of exercise on mental health from 2500 years ago, or to William James's conviction of the importance of physical activity in mental hygiene, which he shared in the “Gospel of Relaxation”, 111 years ago:

“I recollect, years ago, reading a certain work by an American doctor on hygiene and the Laws of Life, and the type of future humanity. I remember well an awful prophecy that it contained about the future of our muscular system. The writer said:

Human perfection means ability to cope with the environment; but the environment will more and more require mental power from us, and less and less will ask for bare brute strength. Wars will cease, machines will do all our heavy work, and man will become more and more a mere director of Nature's energies, and less and less an exerter of energy on his own account. So that, if the homo sapiens of the future can only digest his food and think, what need will he have of well-developed muscles at all?

I cannot believe that our muscular vigor will ever be a superfluity. Even if the day ever dawns in which it will not be needed for fighting the old heavy battles against Nature, it will still always be needed to furnish the background of sanity, serenity, and cheerfulness to life, to give moral elasticity to our disposition, to round off the wiry edge of our fretfulness, and to make us good-humored and easy of approach” (James, 1899, pp.205-207).

Nonetheless, the current state of matters regarding the physical activity – mental health relationship is that the question of whether physical activity results in mental health benefits, or better mental health increases the likeliness of participation in physical activity, which in turn accounts for the research findings confirming a positive relationship between physical activity and mental health, seems impossible to answer. The direction of causality in this relationship remains undetermined, mainly because a substantial number of variables align and change in the physical activity – mental health relationship, making it much more complex than the relationship between physical activity and physical health.

The aim of the present thesis was to create a more differentiated picture about the relationship between physical activity and mental health, in order to disentangle some of its great

complexity, and perhaps help strengthening statements about it. The potential of physical activity to improve psychological functioning was comprehensively considered, from protecting against mental health problems to promoting self-awareness and personal growth. The thesis includes an in-depth review of the historical and current knowledge on the topics under scrutiny, and it focuses on three main coordinates on which the complexity of the physical activity – mental health relationship appears to manifest: activity domains (i.e., different types and intensities of physical activity), domains of mental health (e.g., emotional well-being, depression, anxiety, perceived stress, psychological distress, stress appraisal), and individual differences (gender differences in particular). Variations within and between these coordinates were analyzed with an epidemiological approach. Empirical hypotheses were developed based on the information derived from the extensive literature review.

The thesis includes four original research articles, which are based on data from two large and representative cohorts in Belgium; one from the Belgian Health Interview Survey (B-HIS), including a total of 12,111 participants; 6,190 women (51.1%) and 5,921 men (48.9%), aged 0-99 years, representing the entire Belgian population, and another from the Flemish Policy Research Centre Sport, Physical Activity, and Health (SPAH), including 5,170 individuals; 2,746 men (53.1%) and 2,420 women (46.9%), aged 18-75 years, from 46 Flemish municipalities, representing the whole Flanders (the Northern part of Belgium).

The first study¹ differentiated between recreational and utilitarian forms of physical activity in their relation with levels of self-reported stress and distress in 1,919 adults aged 20-65 years, from the SPAH epidemiological data. Multiple Logistic Regression analyses were conducted, stratified by gender, age, and occupational category. Results were integrated in an adequate theoretical frame, and the proposition emerged that although physical activities of any content may be beneficial for physical health, when targeting psychological benefits, it may perhaps be insufficient to just climb the stairs instead of taking the elevator, or to engage in housework or gardening. The discussion on the findings revealed the question of whether the importance of motivation and enjoyment of physical activity is greater regarding mental health benefits than concerning physical health benefits.

The second study² differentiated between physical activities of three different intensities and five components of mental health, including general (i.e., emotional well-being) and specific (i.e., depression, anxiety, somatization, and sleeping problems) components of mental health. Gender specific multiple Logistic Regression analyses were conducted in 3,435 women and in 3,368 men aged 25-64 years from the B-HIS data. Findings suggested clear gender differences in the optimal intensity levels of the physical activity that associates with better mental health. Positive associations between physical activity and mental health in men included vigorous-intensity physical activity and specific components of mental health, whereas among women, they involved moderate-intensity physical activity and walking with both general and specific components of mental health.

The third study relied on previous findings suggesting that sports participation might associate stronger with mental health than other types of physical activity (e.g., Hamer et al., 2008) and on Salmon's (2001) unifying theory on how the role of physical activity in stress management might explain the physical activity – mental health relationship. Associations between participation in personally favoured types of sports and stress appraisal and emotional distress were examined separately in 783 sport participator men and in 644 sport participator women, aged 20-65 years, from the SPAH epidemiologic data. Multiple MANOVAs were conducted to analyze sport-type related variations (including 15 different types of sports) in the physical activity – mental health relationship. The findings were used in theoretical reasoning about the possible meanings that women and men might attach to their sports participation, which resulted in the presupposition that men might attach a meaning of distancing or escapism, while women might attach a meaning of developing self-awareness to participation in sports.

The fourth study aimed to gather insight about the relationship between sedentary behavior and mental health, based on the physical activity – sedentary behavior, and the physical activity – mental health relationships. Variations across gender, age, socio-economic status, and participation in recommended amounts of vigorous- and moderate-intensity physical activity were analyzed in the associations between sedentary time and five components of mental health, in 6,720 adults aged 24-65 years, from the BHIS data. Sedentary time and physical activity were separately measured, and examined via multiple Logistic Regression analyses; hence, the findings conveyed understanding of the potential independent mental health outcomes of sedentary behavior.

The present thesis does not provide proof of the positive effects of physical activity on mental health because the cross-sectional studies could not affirm that physical activity causes improvements in mental health. However, this thesis provides substantial evidence of an important and complicated positive relationship that incontestably exists between physical activity and mental health. Further, the thesis unveils novel hypotheses about the aspects of this relationship, which, provided that they are further explored, could advance and deepen the knowledge-base in the sciences of physical activity and exercise, and in their related fields. Moreover, the thesis elucidates the relevance of the complicated physical activity – mental health relationship in an attempt to argue for recommendations that are more specific regarding the role of physical activity in mental health. Eventually, the role of the investigations presented in this thesis may be only preliminary, but nonetheless they are valuable, because cross-sectional observation of associations and patterns between behaviors and their potential outcomes may materialize in theories, which can induce new investigations that may reveal new findings, leading to better theories. Moreover, throughout these investigations, understanding can be gained about the cognitive and emotional experiences of the individual participating in sport, exercise, or physical activity, and about why and how may psychological benefits follow from these behaviors.

Dr. Melinda Asztalos
Brussels, 12.07.2010

References

- Salmon, P. (2001). Effects of physical exercise on anxiety, depression, and sensitivity to stress: a unifying theory. *Clinical Psychology Review*, 21(1), 33-61.
- James, W. (1899). Talks to students on some of life's ideals. Chapter 1. The Gospel of Relaxation. Retrieved November 7, 2009, from: <http://www.des.emory.edu/mfp/james.html>.
- Landers, M. (1997). The influence of exercise on mental health. The President's Council on Physical Fitness and Sports Research Digest, originally published as Series 2, no. 12. Retrieved November 16, 2009, from: <http://www.fitness.gov/mentalhealth.html>.
- 1 Melinda Asztalos, Katrien Wijndaele, Ilse De Bourdeaudhuij, Renaat Philippaerts, Lynn Matton, Nathalie Duvigneaud, Martine Thomis, William Duquet, Johan Lefevre, & Greet Cardon (2008). Specific associations between types of physical activity and components of mental health. Submitted 31 October 2007; submitted in revised form 25 June 2008. Accepted 30 June 2008. Immediately published online & in July 2009 in paper format: *Journal of Science and Medicine in Sport*, 12(4), 468-474.
- 2 Melinda Asztalos, Ilse De Bourdeaudhuij, & Greet Cardon (2009). The relationship between physical activity and mental health varies across activity intensity levels and dimensions of mental health among women and men. Submitted 23 January 2009. Accepted 5 November 2009. First published online 17 December 2009, doi:10.1017/S1368980009992825. Paper format: *Public Health Nutrition*, 13(8), 1207-1214.

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- Full details are available on the website at www.wcpt.org/congress/fs with abstracts for all sessions and speaker biographies.
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- Closes 15 September 2010.
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