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PHYSICAL THERAPY FOR KYPHOSIS

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Abstract
I chose to approach this subject because I discovered that lately a lot of persons, mostly kids,are suffering from this deviation of the spine. The incorrect posture, the wrong positions adopted at the office and the physical activity done incorrectly or not at all are huge factors that lead to deformation of the spine. From the specialized literature, the affection occurs in a proportion of 60% in fourteen years-old children, affecting between 0.5-8% of the healthy population aged between teen and fourteen years old.

Keywords: *physical therapy; posture; the spine;*

Introduction

Because of the increasing use of the technology at an early age, a lot of children get addicted to their phones and tablets, which leads to an incorrect position. Children and youngsters use smartphones between 2 to 4 hours a day and they are facing a new disease called by US specialists "the text-neck"(Damasceno GM, Ferreira AS, Nogueira LAC, Reis FJJ, Andrade ICS, Meziat-Filho N, 2018)(Sunil Neupane, U T Ifthikar Ali, Mathew A, 2017). Practically, from the fact that they are seriously leaning over their smartphones, tablets or laptops, young people develop a gibbosity that can lead to a serious damage of the spine. Surgeon Kenneth Hansraj explained that in a neutral position, the weight of the head, which the column supports, is about 5 kilograms and progressively, at a 60 degree angle, the pressure exerted on the column reaches almost 37 kilograms .(Kenneth Hansraj,2014).

From the specialized literature, the kyphosis occurs in a proportion of 60 % in fourteen years-old children, affecting between 0.5-8% of the healthy population aged between ten and fourteen years old.Scoles and his collaborators found an incidence greater than 10% but with different manifestations (clinical and radiological) (Scoles, 1988, 23-29).The age with the maximum incidence of illness corresponds to the installing of puberty, a stage of growth predisposing to this condition due to the rapid increase in height, the vicious position in the bank at school and the lack of physical activity.

A study realised by Dr Ciortan Ionică at schools and high schools from Constanța showed that out of 1857 examined students, 97 of them had kyphosis. Most of them have been discovered in 7 to 10 years old children which is contrary to the literature (Ionica Ciortan, 2010).
The excessive use of smartphones correlates with the increased incidence of vertebral static disorders, especially of kyphosis and cervical recurrence, which will in time lead to an increased incidence of the cervical and dorsal discopathies among the young adults with an important social-economical impact.

A study realised by Asma Alonazi, called "The Effects of Frequent Smartphone Use on Childhood and Pulmonary Function" ("The Effects of Frequent Smartphone Usage on Children's Upper Posture and Pulmonary Function") has shown that "the head-ahead" or "the text-neck" is more common in children dependent of the phone. The curvature of the spine can negatively affect the vertebral mobility and the pulmonary function (Asma Alonazi, 2017).

THE OBJECTIVES ANDHYPOTHESES OF THE PAPER STUDY

I started this studywith the following question: Will kinetotherapy contribute to the postural re-education?

During my work, while I documented more about the deformities of the spine and also working with the patient, I came with the elaboration of several hypotheses:

- Could the physical therapy decrease the pain caused by the vicious attitude?
- Can you get with the help of the exercises, a slowdown or even a recovery in the stress of the spine deformations?
- Couldthe kinetic exercises improve the mobility of the spine and the posture?

The objectives of the paper are :

- Consultation of the specialized literature in order to determine the degree of topicality of the subject and the level of research in the field;
- Structuring of some recovery programs with the most effective exercises to achieve the proposed goal;
- Establishing conclusions regarding the results obtained from the application of physiokinetotherapeutic means and techniques;

THE PURPOSE OF THE STUDY

The aim of the paper is to highlight the role and effectiveness of kinetotherapy in the patient recovery program. In order to achieve the most efficient recovery, the emphasis is on collecting the results closest to the established objectives.

The purpose of this paper is to check the listed assumptions and on the basis of the results of an improvement in the recovery program.

MATERIALS AND METHODS

The documenting method

The research in this work is necessary and has an individual character. Any documentation implies that after choosing the subject, the study of a larger bibliography will help to find the means to solve the work. For the purpose of documentation and research, specialized material (articles, books, etc.) was used in the elaboration of the theoretical part of the paper and the therapeutic plans.

The method of investigation

It is part of the research method and has a role in knowing the causes and conditions that generated the deformation of the spine.

The method of observation

The observation at this method was performed visually, somatoscopically and functionally. Applying it consists of systematically tracking the patients and the effect of exercise on them.

The measurement methods used are:

The Ott test is performed as it follows: The patient being in orthostatism is measured distally from the spinoid apophysis of the T1 vertebra at a distance of 30 cm. After

executing the maximum trunk flexure, this distance increases to 33-33.5 cm.

The Schober test is performed as it follows: The patient is in orthostatism and the spinoid apophysis of the L5 sacral vertebra is measured in a cranial sense of 10 cm. After the maximum flexion of the trunk, with the knees stretched out, the distance between the two landmarks increases by 5cm.

Distance fingers - soil is appreciated by measuring the distance between the soil and the peak of the medius, after performing the maximum torsional flexion. Normally, the distance between the two must be 0.

The acromion - sacrum distance is appreciated by measuring the distance between acromium and the sacral vertebra S1 (Daniela Chimingica, 2018).

The objectives of the recovery program:

- Correction of the vicious posts;
- Combating musculo-ligamentous imbalances;
- Development of the muscle groups necessary to maintain the correction obtained;
- Maintaining, correcting the positions and alignment of the body throughout recovery;
- The increase and restore of the joint mobility;
- Toning of the affected muscles in shortening and elongation regime;
- Maintain and keeping the muscle tone;
- Correcting or preventing the compensatory deviations of the spine.

Sample of subjects included in the study

In order to carry out the bachelor's thesis, I comprised a group of 15 patients. The age of the patients is between 10 and 22 years. Of these 7 were male and 8 were female. Patients participating in the study were informed about the use of their personal data. People's data was protected according to the European Union Data Protection Regulation 2016/679 (GDPR).

The recovery program

The TENS current is indicated for the relief of chronic but also acute pain. The frequency used is between 1 Hz and 250 Hz depending on the patient's sensitivity.

The interferential current is indicated for the relief of both chronic and acute pain, reducing edema and improving blood circulation. The frequency used is between 4 000 Hz and 5 000 Hz depending on the patient's sensitivity.

Ultrasound is indicated for improving the blood flow, reducing local edema and chronic inflammatory processes and promoting better healing of the bone fractures. The intensity of the ultrasound can be adjusted according to the desired effect. Ultrasound has not been used in growing people because it has growth cartilage.

Massage is indicated for reducing the pain, in muscle contractions and the increasing of the mobility.

All patients have benefited of kinesiological banding.

The vertebral back school:

1. The patient should be aware of the position taken in various activities, so as not to cause pain. At the school or office, the height of the chair should be adjusted to the person's height.
2. The weight of the objects that the patient wishes to lift must not exceed 5 kg, the object should be lifted with both hands.
3. Lifting objects should be done with the back straight and not with the flexing of the spine.
4. Trunk twists should be avoided as much as possible.

5. People with the Body Mass Index above the normal limit should decrease in weight.
6. The footwear of the patient should be comfortable, with soft soles and a heel of less than 4 cm.

Posture :
1. The patient is seated in dorsal decubitus, with a pillow under the dorsal area of the spine, hands on the neck and elbows on the mattress.
2. The patient is seated in dorsal decubitus, with a pillow beneath the dorsal area of the spine and two sandbags placed on the shoulders.
3. The patient sitting in ventral decubitus with the pillow under the forehead and the chest, sandbags on shoulder blades and basin.

The Klapp method
Digging positions:
- „Overturned"- kyphosis quadruped
- Rectified – kyphosis quadruped
- Horizontal quadruped
- Leaning - kyphosis quadruped
- Semi-leaning – kyphosis quadruped

Lordozante positions:
- „Overturned" quadruped
- Rectified – lordosis quadruped
- Semi-rectified quadruped
- Horizontal quadruped
- Leaning quadruped
- Semi-leaning quadruped

Respiratory Gymnastics:
1. Slow and deep inspiration/expiratory exertion.
2. Exercises with inspirational resistance.
3. Exploration exercises with laced lips.
4. Exercises to inspire one nostril with the other being brushed.
5. Exercises with inspirational interruption.
6. Exercises with expiration while the person speaks vocally.

Kinetotherapy program
From orthostatism
- The flexion of the arm with inspiration and the return with expiration (8 reps)
- Palms at the neck, with folded elbows, torso twists (8 repetitions)
- The flexion of the arms with the toe-stick, the patient follows the stick (8 reps)
- The upper limb extension with the stick, inspiration with expiration in return (8 reps)

From the dorsal decubitus
- With the stick on the chest, stretch the arm to one side and then to the other one (8 reps)
- The arms are in horizontal abduction at 90 ° with the elastic band in the hands, the abduction is performed (8 repetitions)
- Lower limbs shear (8 reps)
- Palms at the neck, elbows and knees flared, reaching the knee with the opposite elbow (8 reps)

From ventral decubitus
- The arms extended with the stick held in, the flexion of the upper limb (8 reps)
- With his arms stretched forward, holding the Bobath's ball in his hands, the trunk rises (8 repetitions)

From quadruped
- Lower the basin on the heel and stretch the arms forward held on the Bobath ball, hold for 5 seconds and return (8 reps)
- 5-second lower limb extension (8 reps)
- Bringing the knees to the chest (8 reps)
- The flexion of a superior member simultaneously with the extension of the opposite inferior limb; (8 repeats)

From hanging
- Alternative bringing the knees to the chest (8 reps)
- Simultaneously bringing the knees to the chest (8 reps)

- The flexion of the lower limbs with extended knees (8 reps)
- Lower limbs shear (8 reps)

Riding the ergonomic bike - 10 minutes.

RESULTS AND DISCUSSIONS

Following the physiokinetotherapeutic treatment, an increase in spinal column mobility was observed in all its segments.

The recovery of the patient not only involves a complex kinetotherapy program but also involves engaging in the recovery program and continuing the exercises at home. The evolution of the patients was different because life conditions were different as well as the age and the body weight.

Also at the end of the study, it was concluded that no case had evolved to worse. Thus, it was possible to appreciate the importance of the early detection of the cifotic conditions and the timely application of the most recommended therapeutic procedures. It is necessary to re-evaluate the patient until the end of the growth period.

CONCLUSIONS

1) Kyphosis affects girls for most of the time, starting around the age of puberty.

2) Due to the age, not all cases have improved the amplitude.

3) For better results, the treatment needs to be applied especially during the growing period.

4) In my study, I noticed that if the recovery treatment begins immediately after the diagnosis, the results are very good.

5) The incorrect office positions and the excessive use of the smartphones lead to spine deviations.

6) As a result of the study, we can see that the treatment was well applied, individualize so that the patients have improved their quality of life.

Correction of kyphosis also improves the patient's mental state. Because of the unsightly aspect, patients are affected by self-esteem.

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