CORRECTION OF SPINE DEVIATION IN THE SAGITTAL PLANE – KYPHOSIS THROUGH KINETIC MEANS

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Abstract: This paper presents the correction of a physical disability of spine quite common in adolescents. The correction process consists in using kinetic means both on land and in water. The correction period of physical disability of the two patients was three months. In this way the process can be affected by the personality traits specific to each patient.

Introduction

One of the actual health problems of teenagers is physical deficiency kyphosis that results from adopting a vicious posture, but at the same time, this deficiency appears from the lack of practicing any physical exercise. In this paper I assessed the correction of physical deficiency using the kinetic means applied on the two subjects with the same age.

Physical deficiency kyphosis is a pathological change of the somatic part of the body and it appears both in external part but also in physical functions of the entire body or some regions. [1]

According to the worldwide statistics, physical deficiency kyphosis affects up to 8% of people of all ages. This is due to the sudden increase in height, avoiding regular sports practicing (Strengthen back muscles), rickets, Scheuermann illness, vicious attitudes for a long time, all these can contribute to the appearance of kyphosis.

The deficiency can affect young people social life, causing in time lower self- esteem and even the isolation of that person.

Studying the major importance of these chronic deficiencies at school population, there can be seen that some of them are specific to a certain age, so at the level of pupils from the V and XII grades there are commonly seen the acquired spine deformities and some other endocrine and metabolic diseases.

Materials and methods

Paper's hypothesis: it is assumed that applying an adequate kinetic program, both in water and on land, there can be corrected the deviation from normal values of the spine.

In order to achieve this study I chose two pupils, boys, age of 13 years, having different characters: A.S. is a child with an orientation towards art, introverted; he presents an average functional typical kyphosis, myopia. B.M. is an energetic child, extrovert; he presents a short typical functional kyphosis. They present kyphosis deformities of the spine in different stages. In this regard we have made the following measurements: height, occiput-wall distance, Stibor sign, the difference between inhale and exhale, expressed in centimeters. The examinations were made before and after physical therapy program.

The study was conducted over a period of 3 months, and it was carried out a kinetic program with the following objectives:

- general toning;
- asuplisation dorsal spine;
- correcting the vicious postures through forming a stable reflex of correct attitude of the body;
- toning in shortening regime of muscle groups from dorsal region;
- toning in stretching regime of muscle groups previous to thorax;
- prevent the formation of a lordotic countervailing curvature ;
- correcting the vicious attitudes of shoulders, shoulder blades, thorax, pelvis and inferior members that accompany kyphosis;
- prevent respiratory restrictive through respiratory gymnastics.

Exercises were performed at Complex of Swimming and Physical Therapy from Suceava, using the following materials: mirror, stick, Bobath ball, elastic band, mattress and materials specific to water therapy. Sessions lasted between 30 and 50 minutes, structured in three parts: warming, kinetic program and recovery. During warming and recovery there were introduced corrective and hipper corrective positions. We mention that the two subjects have completed the program of introductory swimming.

Table 1 Initial evaluation

		A.S. Age: 13 years	B.M. Age: 13 years
Height		145 cm	141 cm
Occiput-wall		5 cm	3 cm
Stibor sign		10 cm	9 cm
Chest perimeter	Inhale	70 cm	73 cm
	Exhale	63 cm	66 cm

Specific means on land:

1. Standing with the back at the wall, correcting cervical and lumbar curves, trying to stick the back on the wall; isotonic contraction of the extensor muscles -3x;
2. From the sitting position, with obliquely stick back, down, grabbed by the ends: carrying the stick back up, with head in extension– inhale, come back on exhale– 3x;
3. Walking with hands behind the head and elbows pulled back; isometric contraction of dorsal extensor muscle -2x5m;
4. From the ventral decubitus position, the stick is fixed over the shoulder blades, grabbed by the ends: head and body– in inhale, with coming back on exhale– 2x;
5. From the ventral decubitus position, feet slightly apart, knees bent with feet on the ground, lifted “in bridge position” in inhale, with coming back on exhale – 2x;
6. Runs of the back on Bobath ball, with the lateral extension of arms and with hands at the back neck– 4x;
7. From orthostatic position it is used the elastic band that is grabbed from its ends: there are performed lateral extension of arms simultaneously with head extension in inhale, with coming back on exhale – 3x;
8. From sitting position on a chair with backrest, it is used the elastic band in the occiput area and it is performed head extension, inhale - flexion, exhale – coming back –2x;
9. Normal walking with corrected back; isometric contraction of dorsal extensors and isotonic contraction of lower members muscles 2x 10m.

Specific means in water:

1. Walking through water with hands at the back neck performing body extension at 3 steps -2x 7m;
2. Standing with the back at the edge ”breaking wave” with the hands ‘ support, leading the right foot forward with body extension, coming back in the initial position, the same exercise for left foot - 6x;
3. Floating, there are performed foot movements crawl with outstretched arms and head in extension, 4x7m;
4. Standing with the back at the pool wall with the ball between shoulder blades and wall, there are performed half squats with running the ball - 4x;
5. Back slip with arms in body extension - 4x7m;
6. Back slip with arms along the body, at 6 foot beat a rowing arm - 6x 7m;
7. Execution of back swimming procedure - 4x 12,5m;
8. Execution of double back of swimming – 3x12,5m.

After performing the programs, it was made the final evaluation of the two subjects. The achieved results are centralized in table 2.

Table 2 - Final evaluation

		A.S. Age: 13 years	B.M. Age: 13 years
Height		145 cm	141 cm
Occiput-wall		4 cm	0 cm
Stibor sign		7 cm	5 cm
Chest perimeter	Inhale	70 cm	74 cm
	Exhale	63 cm	66 cm

Results and discussions:

As a result of this study, by comparing the measurements results, I found the beneficial effect of the practiced exercises for the correction of spine deficiencies.

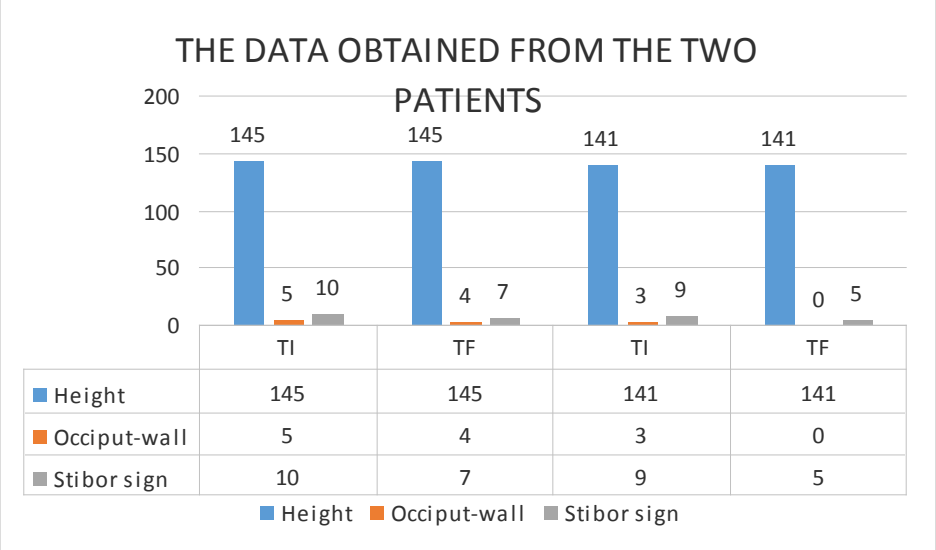

Chart no.1

In chart no. 1 there can be seen that the subject AS decreases the occiput-wall distance with 1 cm, and subject BM with 4 cm, and at the test Stibor sign, there can be seen a decrease of one unit at first subject and a decrease of two units at subject no.2.

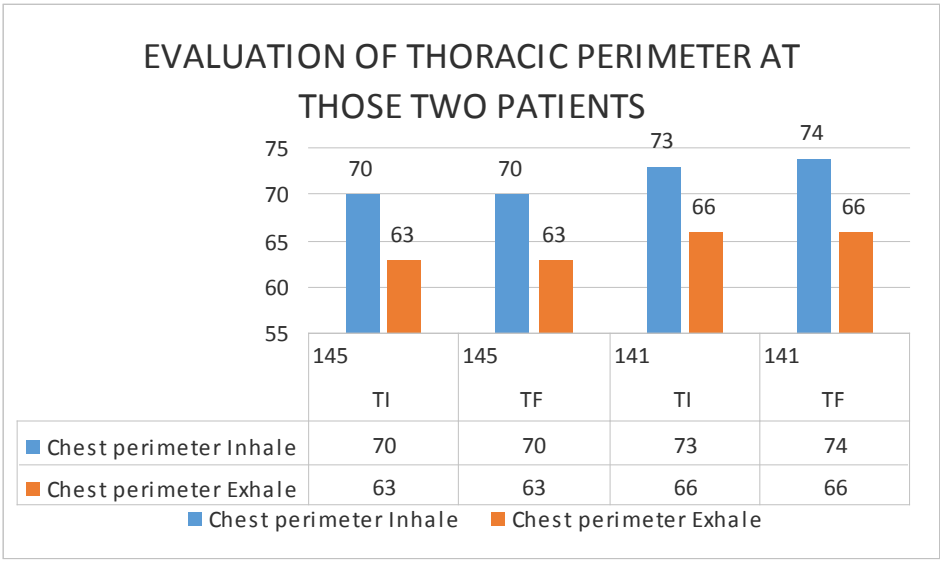

Chart no.2

At the evaluation of thoracic perimeter at subject AS there can be seen an increase of 3 cm in inhale and also 3 cm in exhale, while at subject BM the inhale increase is 4 cm, and at exhale 3 cm.

Table 3 - STATISTICAL CALCULATION

	Occiput-wall		Stibor sign		Perimeter thoracic inhale		Perimeter thoracic exhale	
	TI	TF	TI	TF	TI	TF	TI	TF
A.S.	5.00	3.00	10.00	9.00	70.00	73.00	63.00	66.00
B.M.	4.00	0.00	7.00	5.00	70.00	74.00	63.00	66.00
X	4.50	1.50	8.50	7.00	70.00	73.50	63.00	66.00
α	0.50	1.50	1.50	2.00	0.00	0.50	0.00	0.00
Cv%	0.11	1.00	0.18	0.29	0.00	0.01	0.00	0.00

Even if the two subjects followed the same kinetic correction program, there were different results at the final evaluation. The best results were achieved by the subject BM., this one being more cooperate,

and AS, insufficiently motivated and introverted had lower results. It was recommended to continue the exercises for maintaining and improvement of these parameters.

Conclusions

1. Results of this study show us that using permanently the exercises specific to physical therapy, there can be corrected the deficiency of spine – kyphosis at pupils of school age;
2. Through the study, it was confirmed that practicing physical exercises can be seen as a concrete measure of spine prophylaxis;
3. The achieved results are positive, thing that determine us to continue these correction programs.
4. The initial hypothesis was confirmed.

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