CZU 616.711.5/.6+615.825:796

THE ROLE OF KINETOTHERAPY IN THE BODY EDUCATION OF CHILDREN WITH DORSAL KYPHOSIS

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Abstract. *The purpose of this research was to apply specific kinetotherapy programs to correct the kyphosis and to improve the cardio - respiratory capacity. This case study was conducted on a 10th grade student, aged 16 years. Everything took place over a period of 7 months. To evaluate the patient, were used subjective clinical methods (anamnesis, general and segmental somatoscopic examination) and objective clinical methods (anthropometric measurements, instrumental somatoscopy, assessment of force and mobility, assessment of cardio-respiratory capacity). Then the patient was evaluated by paraclinical methods (electrocardiogram, echocardiography, laboratory tests, radiological examination). All of these confirmed the positive diagnosis given by the doctor: dorsal kyphosis with narrowing of intervertebral spaces D9-D10, D10-D11, D1-D12, mitral valve prolapse and systolic murmur. More than that, after general somatoscopy the following characteristics were recorded: hyperstatural, underweight and global kiphotic attitude and after segmental somatoscopy: slight inclination of the head and neck to the right; small and atrophic chest, shoulder blades over the chest wall, mild scoliosis, stern in the hull, knees flexed.*
Keywords: *physical therapy, means of recovery, dorsal kyphosis, teenager, low effort, mitral valve prolapse.*

Introduction

More and more often, we meet around us teenagers with an incorrect spine, with a poor global attitude, shy and distrustful, and the preoccupations for prevention or correction are very poor. Adolescent lifestyle is very unbalanced: free time is used incorrectly and there is no correct report between school, rest and physical activity.

In most cases, those predisposed to physical deficiencies are adolescents who are in the process of growth and have particular characteristics at this age. Kinetic therapy specific to adolescents should be applied differently from adult education. Most of the time, young people are confused, with internal conflicts, behavior marked by agitation, impulsiveness and moments of mental anxiety. When physical deficiencies occur, these conditions are intensified and the main objectives of adolescent kinetotherapy are: removing inferiority complexes produced by physical appearance, group integration, increasing self-confidence, guidance to finding their own identity and motivation with regard to practicing regular exercise.

The most common physical defect is dorsal kyphosis, which is accompanied by incorrect head and neck positions, shoulders, and chest. It is of great importance to establish the diagnosis by specifying the type of kiphosis, etiology, gravity and evolution. The most serious complications that can be caused by this disease are respiratory and cardiac insufficiency, decreased chest movement amplitude and ischemic heart disease. Those who are most in need of kinetotherapy to improve the growth process and harmonious physical development are young people. This leads us to carry out research work on this issue, and try to engage and participate actively in the amelioration and prophylaxis of these often encountered deficiencies that affect the psycho-emotional profile and create a concept of inferiority for adolescents.

Material and method

The research hypothesis: The judicious choice of methods and means of kinetotherapy can achieve result in physical and mental results in the evolution of a teenager. Optimizing therapeutic exercises associated with respiratory gymnastics can benefit the adolescent who has a spine deficiency with negative implications on cardiovascular and respiratory sistem and which also influences the process of harmonious development.

Research goal: In this research we aim to apply the best means and methods specific to kinetotherapy, in order to correct the kyphosis, improve

the cardio-respiratory capacity and the general effort capacity. Achieving this goal is possible based on observing the principles of kinetotherapy and choosing the best guidelines.

The research methods: the study of the bibliographical material, the observation method, the experiment method, method of tests, methods specific to kinetotherapy, the statistical-mathematical method and the graphical representation method.

Materials used in research: extensor, dumbbell, treadmill, bobath ball, gym bench, massage pillows, multipurpose fitness apron with pulleys for work of each muscle group, metric band, instrumental somatoscopy, weighing machine, pulse monitoring device.

Recovery program: The recovery program was conducted in a physiotherapy room and at the patient's home. He sometimes worked alone and sometimes under the supervision of the specialist for 45-50 minutes. The program proposed by us included:

- exercises to restore the correct body position;
- analytical gymnastics exercises;
- methods and techniques of breathing;
- fixed postures maintained by the patient;
- muscle toning exercises;
- exercises to increase vertebral column mobility;
- aerobic exercise to increase general fitness (required for patients with cardiovascular disease).

The recovery program started with postural exercises and continued with the corrective stage that included exercises for toning back muscles and stretching for the anterior thoracic muscles. The last step was to consolidate and re-establish the exercises. The session of kinetotherapy begins with the analytical warming of the body, followed by dynamic exercises. Between muscular toning exercises, postural exercises are performed to relax and recover. At the end of program the breathing exercises are performed.

Results and interpretation

Table 1. Anthropometric parameters and anthropometric indices of the patient

ANTHROPOMETRIC PARAMETERS		
Weight	61 kg	
Height	184,5 cm	
Torso	90,5 cm	
Lenght of the upper limbs	86 cm (Left arm)	87 (Right arm)
Lenght of the lower limbs	98 cm (Left leg)	97 (Right leg)
Lenght of the hand	20, 5	
Range of arms	187 cm	
Perimeter of the chest at rest	89 cm - inspiration	86 cm – expiration
Waist	67 cm	
Abdominal perimeter	71 cm	
ANTHROPOMETRIC INDICES		
Skeletal Index Giufrida Ruggeri (B/T) X 100	49 (Macroscheletic - long legs and short trunk)	
Erissman Index (Chest harmony: Pt – T/2	- 4 (For men the values are between 5 si -3)	
BMI (Body Mass Index)	17,8 (underweight)	

Table 2. Results of patient evaluation

No crt.	Tests	Initial testing	Intermediate testing	Final testing
1	The Ruffier Index	14,1	12,5	10,3
2	Trunk flexion	- 30 cm	- 26 cm	- 22 cm
3	Side flexion	21 cm	19	18
4	The sign of Ott	38 cm	37 cm	37 cm
5	Assessment of attitude	Cervical distance – 8 cm Lumbar distance– 5 cm	Cervical distance– 7 cm Lumbar distance– 5 cm	Cervical distance– 6 cm Lumbar distance– 4 cm
6	Cobb angle	43^0	-	39^0

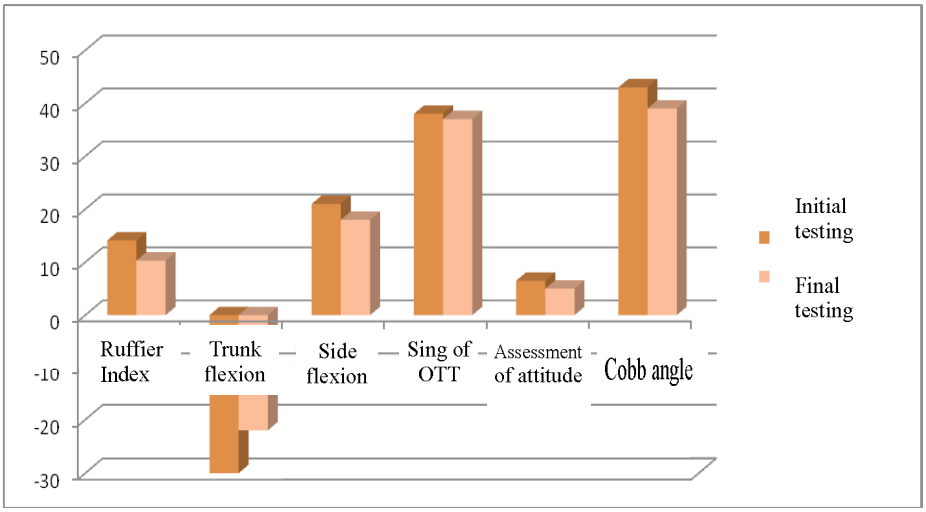

Fig. 1 Graphic representation of the results

The study began with the assessment of physical growth by making anthropomentric measurements. Data recording helped us to calculate the body mass index, skeletal index and Erissman index. After comparing the patient's values with those of the average population in our country, it was found that the patient far exceeds the average of the height and weight. If average values of weight and waist at the age of 16 are between 54.2 ± 8.0 kg and 166.9 ± 7.9 cm, the patient weighs 61 kg and 184.5 cm. This means an excessive rise in height (about 25-30 centimeters) and a low weight relative to the height.

To evaluate the body's attitude, we used the arrow test (which measures the distance between the cervical curvature and the wall and the distance between the lumbar curvature and the wall). As we can see, in the first test, the patient has a distance of 8 cm at the cervical curvature and a distance of 5 cm at the lumbar curvature. This indicates an accentuated kiphotic attitude offset with a lumbar lordosis. At the final test, a distance of 6 cm and 4 cm was measured.

For the assessment of cardiovascular capacity, paraclinical examinations and clinical assessments were performed. In the Ruffier test, the results were: rest 5-6 minutes: HR - 108 bm; 30 squats in 30 seconds: HR - 120 bm; break 1 minute: HR-114 bm. After calculation, the patient accumulated 14.1 points and received the mediocre rating, which is close to the poor rating. It is believed that a patient who has obtained the poor

grade needs a specialist cardiology consultation, which has happened. The patient performed an ECG and echocardiogram. Moreover, TA was 11/6 cmHg.

Regarding the mobility of the spine, at the trunk flexure a value of -30 cm was obtained at the first test and -26 cm at the final. At the test - lateral flexion of the trunk we had an increase of 3 cm, and at the sign of Ott there was a difference of only 1 cm. Using the Cobb method, we calculated the degree of dorsal column curvature, on radiograph with goniometer. The degree of curvature of the column was 43 at the first test and 39 final testing.

Conclusions

Physical therapy is required in all therapeutic programs, either alone or in combination with the other means of treatment. Physical therapy should accompany the deficient patient throughout the treatment. It would be desirable for the patient to assimilate his usual habit of doing daily gymnastics throughout his life. Once we have completed our research, the patient continued to carry out the program daily, acquiring his skills to practice physical exercise independently and understanding the effects they have on physical and mental health.

Physical exercise occupies an increasingly insignificant place in the lives of young people. School schedules are difficult, leisure time is used by static activities such as computer games, internet conversations, etc. All this brings physical and mental imbalances and working with adolescents becomes increasingly difficult.

Some of the causes that lead to a change in normal body alignment are the incorrect positions they adopt in front of computers, at school in the study bank, or during sleep, lack of physical exercise, imbalance between daily activities, and lack of awareness of the normal position (lack of self-control on body attitude). Because adolescents are in the period when general maturation begins to stabilize, they all have negative repercussions on the spine and beyond.

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