

## ASPECTS REGARDING THE RECOVERY THROUGH KINETIC MEANS OF PERSONS WITH CERVICAL SPONDYLOSIS

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**Keywords: kinesiology, recovery, cervical spondylosis**

**Abstract:** The vertebral column is therefore, a rod, elastic and strength at the same time, forming the axial skeleton of the body. The joints between the vertebral bodies, as amphiarthrosis, allow movements of small intensity between each vertebra, but which, gathered on the whole column, gives it a special mobility. The mobility of vertebral column is higher at athletes. Due to the curvatures of the vertebral column, the projection of gravity centers of different segments can not be found in the projection's line of general center of weight of the body. The gravity action causes from one vertebra to another, rotational requests, which tend to stress the curvatures and which need to be neutralized in order that the column not to collapse.

### **Introduction:**

In the romanian medical dictionary from 1969 the vertebral column is defined as flexible support column of the body skeleton, formed from vertebra separated through intervertebrale discs and linked through vertebral ligaments.

In „*Functional Anatomy of Locomotor System*” by Clement Baciu (1972) it is written that the most important segment of the locomotor system is the vertebral column, from which all the other segments are tied of.

In ortostatism the vertebral column has a vertical direction. It is an elastic column with three curvatures, these offering a higher resistance to vertical pressures that act over the column. The curvatures have also the role to diminishate vertical shocks and to maintain column' balance on the tailbone, making easier the efforts of the muscular part of the column. This attitude and this form of the column are maintained due to the game of muscular tonicity, elasticity of ligaments and discs, as well as due to the anatomical joint of the 24 bone segments of the vertebral column, which adapt to each other the different articulation areas.

The vertebral column is therefore, a rod, elastic and strength at the same time, forming the axial skeleton of the body. The joints between the vertebral bodies, allow movements of small intensity between each vertebra, but which, gathered on the whole column, gives it a special mobility.

Due to the vertebral column's curvures, the projection of gravity centers of different segments can not be found in the projection's line of general center of weight of the body. The gravity action causes from one vertebra to another, rotational requests, which tend to stress the curvures and which need to be neutralized in order that the column not to collapse.

The forces which oppose to these rotational requests are the ligaments.

Other elements that have the role to absorb the requests are the intervertebrale discs. They do not stay in power like the ligaments, but they are pressured.

The mobility of the spine is not uniform. It is higher in the cervical and lombar regions, very reduced to chest level and absent at the level of sacrum bone.

### **Movements of the cervical column between C2 – C7**

#### a). The flexion movement of the cervical column

The movement is being executed on sagittal level. The layout of the joints of the articular apophyses is responsible for slipping the cervical vertebra between each other during the flexion movement. The vertebral disc, involved in this movement, it will diminish above, and back it will expand. During the flexion, the spinous apophysis and the vertebral blades will remove in fan way.

#### b). Extension movement of the cervical column

The movement is being executed on sagittal level. The layout of the joints of the articular apophyses is responsible for slipping the cervical vertebra between each other during the extension movement. During the movement, the back part of the intervertebrale discs is compressed, while the anterior vertebral ligament is energized. Extension is blocked in the last phase of coming into contact of the spinous apophyses.

c). Lateral tilt movement of cervical column. The lateral tilt is more pronounced than in other regions and it is compulsory associated with a rotation movement. The pure lateral tilt is hindered by the articular apophyses meeting with the transverse apophysis root of underlying vertebra.

d). The rotation movement at the cervical column level. This movement is performed around a longitudinal axis. Rotation is maximum at the level of cervical column level, reaching 75°.

### **Material-method:**

#### Assumptions

- Can kinesiology relax the patients with cervical spondylosis?
- Can be pain reduced through kinesiology and its means?
- Through kinetic means there can be maintained the circulation and nerves from cervical region to normal standard?
- Can kinesiology increase the amplitude of movements of cervical column and head?
- Can kinesiology help the patient to restore in the social-professional environment?

### **Project purposes and objectives**

The purpose of the project was to check the truthfulness of the above assumptions.

The objectives are:

- Consulting literature;
- Identifying ways of verifying hypotheses;
- Selection of representative case of the paper;
- Organization of concrete recovery action and recording of the obtained results;
- Writing a paper which will include the final results.

The duration of recovery program was 3 months, the patient making kinesiology 3 times a week.

Study was made on one patient, having the following description:

- Gender - female;
- Age - 26 years;
- Occupation - Insurance broker;

#### **Program steps**

##### Phase 1

- The initial evaluation of the patient;
- Elaboration of the recovery program;

##### Phase 2

- Applying the recovery program;
- Observing and recording the effects (results) of recovery program;

##### Phase 3

- Recording and interpretation of final results

Kinesiology's objectives in cervical spondylosis are:

- Pain relief;
- Local relax and relax of the whole body;
- Improvement of circulation and local nutrition;
- increasing of the amplitude of cervical column and head's moves;

Methods and means used in recovery:

- Massage;
- Passive motion;
- Traction;
- Isometric contractions;
- Active -passive mobilization;
- Active exercises;

**Results and discussions:**

**1. Evaluation of cervical column mobility**

Table1.1. Evaluation of cervical column mobility

<b>EVALUATION OF CERVICAL COLUMN MOBILITY</b>			
<b>Evaluations</b>	<b>Normal distance</b>	<b>Initial examination</b>	<b>Final examination</b>
chin – sternum distance	0 cm	1 cm	0,5 cm
occiput-wall distance	0 cm	1 cm	0 cm
shoulder – ear distance	0 cm	3,5 cm	1,5 cm

**2. Pain evaluation**

Table 1.2 - Pain evaluation – initial and final evaluation

Pain	Values	Initial evaluation	Final evaluation
	0		
	1		
	2		●
	3		
	4		
	5		
	6		
	7	●	
	8		
	9		
	10		

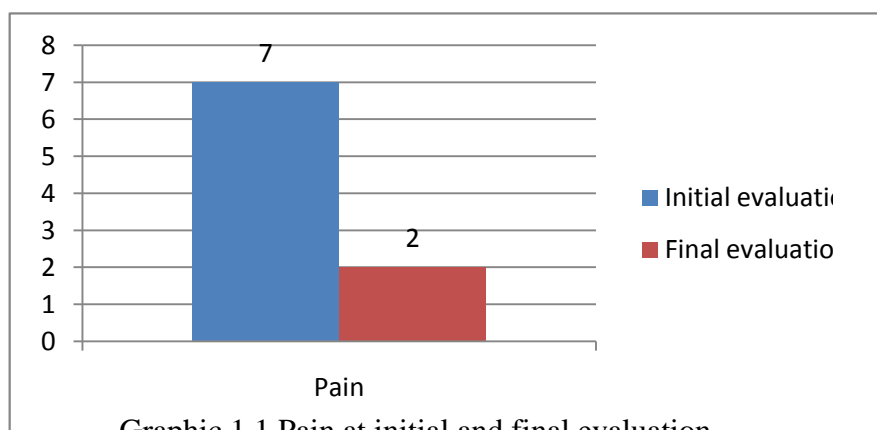
### 3. Vertigo evaluation

Table 1.3 - The impact of vertigo over everyday life– initial and final evaluation

Vertigo	Values	Initial evaluation	Final evaluation
	0		
1			
2			
3			
4		•	
5			

For the interpretation of results I chose an exposure mode representation, thereby highlighting the results after applying the kinesiology program

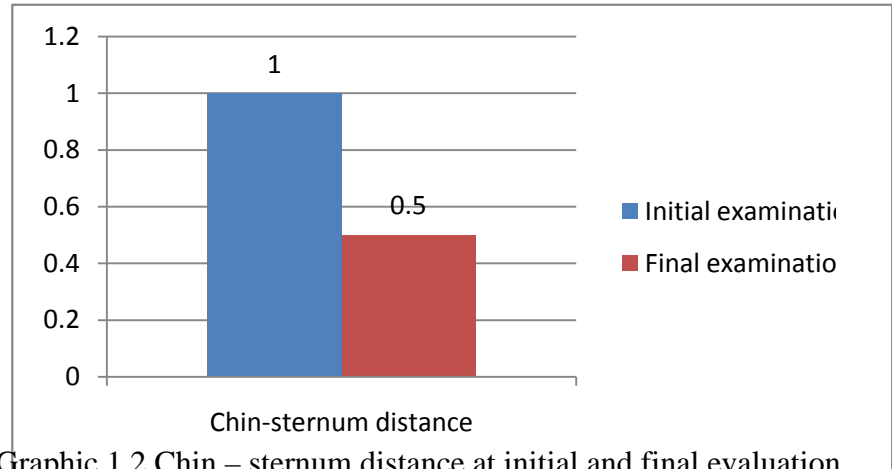
#### 1. Pain evaluation



Graphic 1.1 Pain at initial and final evaluation

Graphic 1.1 gives the intensity of pain from the initial evaluation, and also the pain intensity during the final evaluation. According to this graphic I found out a decrease in pain.

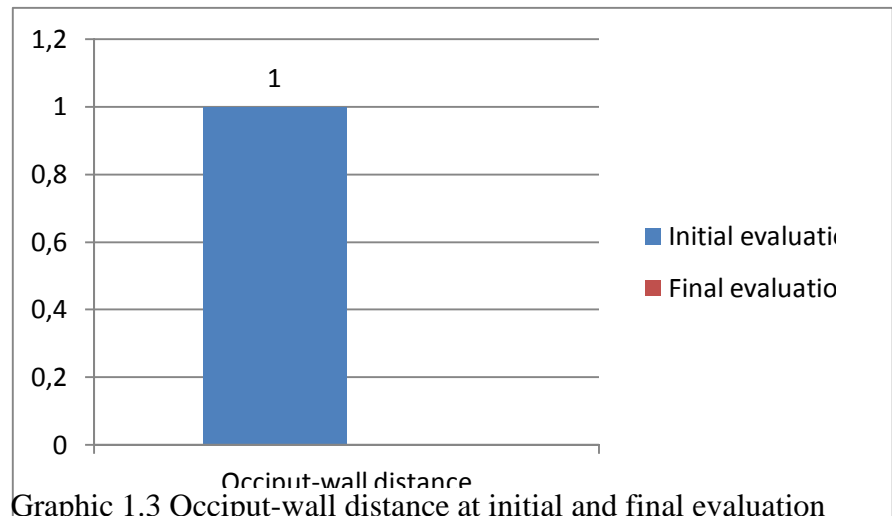
## 2. Evaluation of cervical column mobility



Graphic 1.2 Chin – sternum distance at initial and final evaluation

Graphic 1.2 gives back the mobility degree of cervical column in the moment of initial evaluation, but also in the moment of final evaluation.

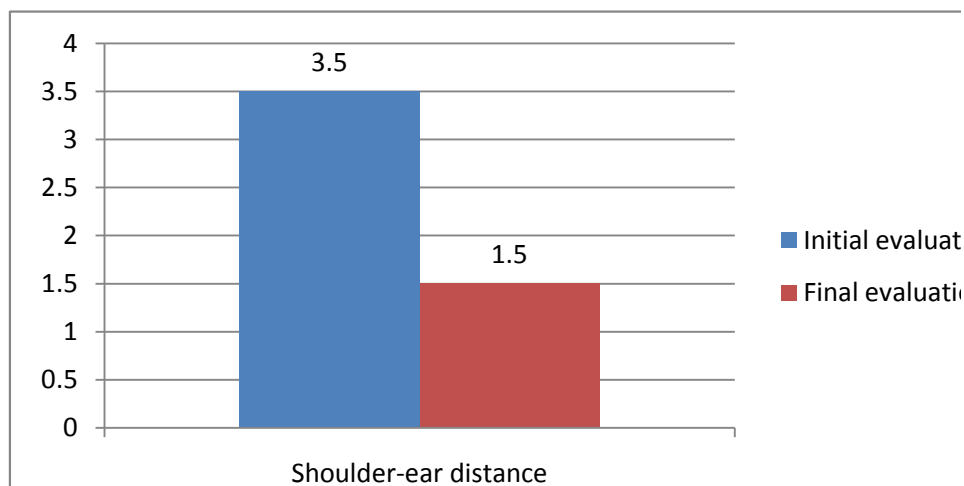
According to the schedule I found out an increase of cervical column's mobility in the flexion movement of the head.



Graphic 1.3 Occiput-wall distance at initial and final evaluation

Graphic 1.3 gives back the mobility degree of cervical column in the moment of initial evaluation, but also in the moment of final evaluation.

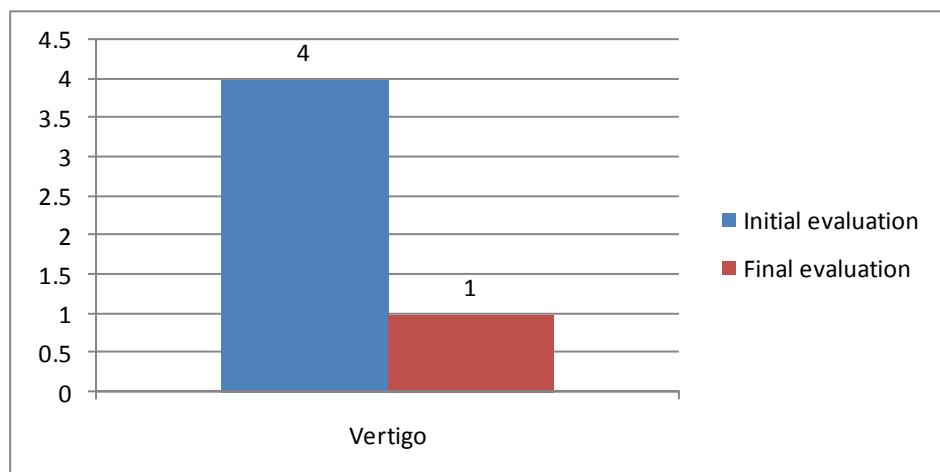
According to the schedule I found out an increase of cervical column's mobility in the extension movement of the head.



Graphic 1.4 Shoulder – ear distance at initial and final evaluation

Graphic 1.4 gives back the mobility degree of cervical column in the moment of initial evaluation, but also in the moment of final evaluation. According to the schedule I found out an increase of cervical column's mobility in the lateral tilt movement of the head.

### 3. Vertigo evaluation



Graphic 1.5- The degree in which the vertigo affects patient's everyday life

In graphic 1.5 I exemplified the impact of vertigo on everyday life in the initial evaluation, as well as in the final evaluation. I found a decrease of intensity of these symptoms, a lower impact over everyday life.

### **Conclusions:**

I reached to the following conclusions after the obtained results:

- Through kinetic methods and means it was obtained the relaxation both at local level, but also relaxation of the entire body.
- Pain's intensity decreased a lot after applying the program of kinesiology.
- As a result of applying the kinetic techniques it was found an improvement of the amplitude of cervical column's moves.
- As a result of the improvement of physiological parameters, the patient has become capable to conduct his everyday activities with a higher yield compared to the period before the treatment.

### **References:**

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**Titlul:** Aspecte privind recuperarea prin mijloace kinetoterapeutice a persoanelor cu spondiloză cervicală

**Cuvinte cheie:** kinetoterapie, recuperare, spondiloză cervicală

**Rezumat:** Coloana vertebrală, este deci, o tijă în același timp elastică și rezistentă, formând scheletul axial al corpului. Articulațiile dintre corpurile vertebrale, ca amfiartroze, permit mișcări de mică amplitudine între fiecare vertebră, dar care, însumate pe întreaga coloană, îi dau o mobilitate deosebită. Mobilitatea coloanei vertebrale este mai mare la sportivi. Datorită curburilor coloanei vertebrale proiecția centrelor de



greutate a diferitelor segmente nu se găsește pe linia proiecției centrului general de greutate a corpului. Acțiunea gravitației determină de la o vertebră la alta, solicitări rotaționale, care tind să accentueze curburile și care trebuie neutralizate pentru a nu se prăbuși coloana.