

# APPLICATIONS FOR SECONDARY KINETOPROPHYLAXY IN CERVICAL SPONDYLOSIS – CASE STUDY

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**Abstract:** *Over the years the bones and ligaments from the spine level gradually deteriorate, especially at neck level, producing a disease called cervical spondylosis.*

*Therefore, we can state that the research in the given direction should be deepened and there should be proposed solutions in order to help improve this situation.*

*In this regard we propose a program of kinetic-prophylactic exercises applied to a patient with cervical spondylosis. In this regard, we propose a program of kineto-preventive exercises applied to a patient with cervical spondylosis, and for this, it is required providing analgesia and modulation of individual reactivity towards the pain; improvement, correcting the inflammatory process; improvement of tone's changes, force, resistance of different groups of muscles; favourable balance of agonists – antagonists muscles; neurovegetative rebalance, metabolic, endocrine produced by the conditions which have led to spondylosis.*

*Recovery progressivity has an important role that is why we will begin with simple, easy exercises, passive executed at the beginning of program, increasing gradually the program duration, the resistance opposite to movements and to execution rhythm. Drug treatments are only helpful to combat the unpleasant symptoms in the evolutionary phases of disease, but basic preventive and curative treatment it is provided by daily gymnastics performed with perseverance and early correcting of vicious positions of cervical spine during and at the end of professional activity.*

**Key words:** *kinetoprophylaxy, patient, cervical spondylosis, kinetic therapy.*

## 1. Introduction

Study of specialty literature, both from the point of view of somatic-functional characteristics, motor and psychological characteristics confirms that human body, in order to defense itself, has two big systems: inhibitory and morph-mimetic.

The most important inhibitory mechanisms are: gate control and descending inhibitory system. There has been initiated scientific research towards practical achieving of some stimulation methods of the body's own pain relievers systems [1].

Living and working conditions from our life, unusual for previous generations, put

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the spine in different situations, for instance, the sedentary activity which increases among the modernization of production processes, transport development, extension of school periods, strikes and so on [2].

Somatic development of young generations, superior related to the height growth to the parents and grandparents generation, represents a reality that should be taken into account when talking about the prevention of spine's sufferings [4].

Very high frequency – and growing – of spine's diseases it is explained through the incriminated risk factors, increasingly present in our society: obesity, waist, static disorders, driving vehicles, stress and not least the professional life. Association of trauma and inadequacy syndrome of thermoregulation increases the susceptibility of the spine to the functional decomposition [3].

In specialized literature [5, 6, 7] we found different treatment methods for this disease but we consider that the most effective application is kinetic therapy.

Therefore, we can say that the research from the given direction should be thorough and there should be proposed solutions in order to help improve this situation.

## **2. Material and Method**

### **2.1. Study's Assumptions**

Does proper drug treatment along kinetic exercises, specific to cervical spondylosis maintain the life quality of the patient?

Can a complete physiotherapy program applied to patient D.V. early diagnosed with cervical spondylosis lead to the delay of all discomfort states caused by the disease?

The purpose of the paper is to deliver a program of kinetic-prophylactic exercises in cervical spondylosis.

General objectives in cervical spondylosis target pain reduction, muscle relaxing and if possible, it targets to obtain a restoration of joint function.

### **2.2. Study Organization**

As a case study we will present patient D.V. 31 years old, who had pain in the cervical region with irradiation in right shoulder and in superior right arm, paresthesia, migraines, dizziness, sometimes loss of balance. The time in which we worked with the patient was 10 weeks, time in which he came 3 times a week at the program. Our patient was cooperating and he did not miss any meeting. In weeks IX and X physiotherapy sessions took place at patient's home.

In these training stages it is necessary to provide analgesia and individual reactivity modulation to pain; improving, correcting the inflammatory process; improving the tone changes, force, strength of different muscle groups; favorable balance of agonist muscles – antagonists; neurovegetative rebalance, metabolic, endocrine produced by the diseases that lead to the appearance of spondylosis.

To ensure an appropriate response from the tissues it is required in advance a training program of the structures. This is achieved by using combined drug therapy and physical therapy.

Applications of mechanical factors: massage – mechanical action helps at venous return, drain the lymphatic spaces. It has an action on the superior capillary circulation, relaxing muscular effect and effect of local sedative; it reduces the superficial sensibility and increases the pain threshold. Manual massage applies with caution in cervical region, but not in the acute stage, massage-shower; underwater shower; cervical vertebra tractions in thermal water.

### 2.3. The Program

Following clinical history and objective physical exam on devices and systems it confirms the diagnosis of cervical spondylo - discarthrose of patient D.V.

We started by applying some tests to measure flexion, extension, lateral tilt and rotation of the cervical spine.

Table 1

*Normal medium amplitudes, on segment and totality*

Segment	Flexion	Extension	Tilt	Rotation
Cervical	70 <sup>0</sup>	60 <sup>0</sup>	30 <sup>0</sup>	75 <sup>0</sup>
Dorsal	50 <sup>0</sup>	55 <sup>0</sup>	100 <sup>0</sup>	40 <sup>0</sup>
Lumbar	40 <sup>0</sup>	30 <sup>0</sup>	35 <sup>0</sup>	5 <sup>0</sup>
Total	160 <sup>0</sup>	145 <sup>0</sup>	165 <sup>0</sup>	120 <sup>0</sup>

After the obtained results at tests, we decided the next kinetic program for the patient who has cervical spondylosis; he

came 3 times a week at the Complex of Swimming and Physiotherapy, Suceava.

### Kinetic program

*Week I*

Table 2

EXERCISES	DOSAGE	OBSERVATIONS
From the position of dorsal decubitus the patient performs active flexions of the head	8 times x 8 repeats, 4 series (T1 – T8 x 8 repeats x 4 series).	After exercises' execution it will be made cervical massage which will include: smoothing, frictions, kneading, vibrations
Walk with alternative lifting of arms	25 repeats	
Exercises at recovery device of cervical spine and shoulder	20 rotations with 1 minute break – 4 repeats	
From standing breathing exercises with lifting and lowering the arms		
From the position of dorsal decubitus the patient performs lateral tilts left/right of the head		
From the position of dorsal decubitus the patient performs twist left/right of the head		
From sitting, the therapist at patient's back, pulls up the chin and in occipital region, he performs easy elongations	3 seconds (12 repeats)	
From sitting, light spins, front and posterior, with extensions		
From the position of lateral decubitus left/right the patient performs head extensions	T1 – T8 extensions x 8 repeats x 4 series	

In week II there were performed static and dynamic exercises regarding the cervical spine (flexions, extensions, rotations, lateral tilt, and circumduction) and after performing the exercises it will

be done cervical massage that will contain: smoothing, frictions, kneading, and vibrations.

In week III, I raised the difficulty of exercises.

Week III

Table 3

EXERCISES	DOSAGE	OBSERVATIONS
From standing, heating exercises of cervical spine (flexions, extensions, rotations, lateral tilt, circumduction)	(10 minutes)	After exercises' execution it will be made cervical massage which will include: smoothing, frictions, kneading, vibrations
Walk through the physical therapy room with a ball over the head	(10 repeats)	
From sitting, the therapist at patient's back, pulls up the chin and in occipital region, performs easy elongations for 3 seconds	(12 repeats).	
Sitting patient gets the opposite shoulder with the right hand, trying an easy lateral flexion less forced.		
From sitting, the therapist at patient's back, pulls up the chin and in occipital region, he performs easy extensions with resistance		
From the position of dorsal decubitus, the therapist performs circumduction movements		

In week IV and V it continues with exercises from sitting position and from other positions.

In week VI the patient is tested (intermediate test), but the kinetic program is continued.

Week VI

Table 4

EXERCISES	DOSAGE	OBSERVATIONS
From standing, heating exercises of cervical spine (flexions, extensions, rotations, lateral tilt, circumduction)	(10 minutes)	After exercises' execution it will be made cervical massage which will include: smoothing, frictions, kneading, vibrations
Walk through the physical therapy room with a ball over the head	(10 repeats)	
From the position of dorsal decubitus the patient performs left/right head extensions.	8 repeats × 4 series	
Patient in dorsal decubitus, the therapist performs an easy flexion from cervical spine, then an easy extension with isometrics	(6 repeats)	
From the position of dorsal decubitus, the therapist performs circumduction movements		
The therapist performs passive movements and active-passive in cervical spine, the patient being in standing position		

Kinetic program continues in week VII and VIII with more difficult exercises. From week IX the program took place at patient's home.

*Week IX*

Table 5

<b>EXERCISES</b>	<b>DOSAGE</b>	<b>OBSERVATIONS</b>
From standing, heating exercises of cervical spine (flexions, extensions, rotations, lateral tilt, circumduction)		After exercises' execution it will be made cervical massage which will include: smoothing, frictions, kneading, vibrations
The therapist performs passive movements and active-passive in cervical spine, (flexions, extensions, rotations, lateral tilt, circumduction)		
From sitting, the therapist at patient's back, therapist's hand catches the patient's forehead, the other hand fixes on the other shoulder, an easy isometrics, the patient tries to perform an easy flexion, then the therapist pulls up on cervical region, opposes resistance, the patient must perform an easy extension		
Patient in dorsal decubitus, the therapist performs an easy flexion from cervical spine, then an easy extension with isometrics	(6 repeats)	
Patient in dorsal decubitus, the therapist performs an easy flexion from cervical spine, then an easy extension with isometrics	(6 repeats)	
From sitting position, the therapist, at patient's back, pulls up the chin and in occipital region, performs easy extensions with resistance		
Sitting in front of a mirror on the medicinal ball, with raised arms he performs trunk's flexion on the thighs		

*Week X*

Table 6

<b>EXERCISES</b>	<b>DOSAGE</b>	<b>OBSERVATIONS</b>
In standing position, heating exercises of cervical spine, (flexions, extensions, rotations, lateral tilt, circumduction)	(10 minutes)	After exercises' execution it will be made cervical massage which will include: smoothing, frictions, kneading, vibrations
From the position of dorsal decubitus the patient performs left/right head extensions		
From sitting position, the therapist, at patient's back, pulls up the chin and in occipital region, performs easy elongations for 3 seconds	(12 repeats)	

From sitting, the therapist at patient's back, therapist's hand catches the patient's forehead, the other hand fixes on the other shoulder, an easy isometric, the patient tries to perform an easy flexion, then the therapist pulls up on cervical region, opposes resistance, the patient must perform an easy extension		
From lateral left decubitus, the patient performs lateral tilts to the right and twists to the right		
From lateral left decubitus, the therapist at patient's head, the patient gently lifts his head from the bed, the therapist makes an easy isometric	(5 repeats)	
From the position of dorsal decubitus the patient performs left/right twists of the head	8 repeats × 4 series	

### 3. Results and Discussions

We specify that from the first sessions from kinetic program, the symptoms reduce more and our patient's condition has improved.

From the obtained results after the conducted tests there can be easily observe

the improvement of mobility indices and of muscle strength from cervical region, this thing proving the efficacy of the applied kinetic treatment as well as reaching the proposed objective in this paper.

As a result of the kinetic program there can be seen the increase of mobility indices shown in the following tables:

*The increase of the mobility indices*

Table 7

Testing	Cervical-joint scale		Lateral tilt		Rotation	
	flexion	extension	right	left	right	left
initial	21	24	30	31	50	55
intermediate	23	26,5	31,5	33	60	63
final	26	29	33	35,5	65	67

Table 8

*Scale of cervical muscle*

Testing	Global strength flexion	Global strength extension	Global strength inclined
initial	2	1,5	1,5
intermediate	3	2	2
final	4	3,5	3,5

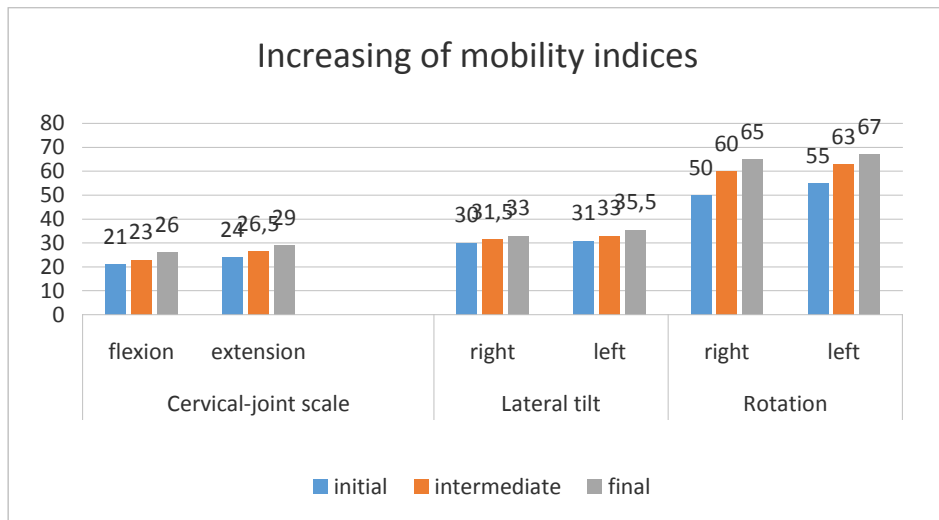


Chart 1. Patient's evolution at cervical - joint scale

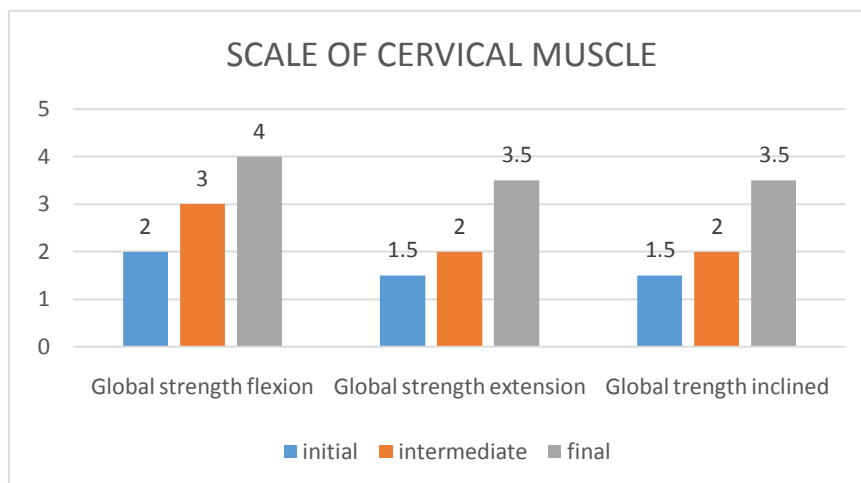


Chart 2. Patient's evolution at scale of cervical muscle

#### 4. Conclusions

Painful sufferings of cervical region are particularly common, especially at adults in full creative activity. That is the reason why, knowing some causes of the disease and the relapses, as well as illness prevention measures must very soon be known and applied.

As soon as the recovery treatment is initiated, so the chances of healing, namely improvements are higher, the patient

remains with no sequel or with minor sequels. Individualization of recovery programs is very important, these having the same therapeutically principles, but differentiated according to: age, gravity of disease, associated diseases, patient's mental state and so on.

The continuity of recovery program is decisive in disease's improvement, this being performed daily at the beginning or even 2-3 times a day, that later can be performed 3-4 times a week.

Recovery progress has an important role. So, it begins with simple, easy exercises, performed by the patient in a passive way, and then in an active way, gradually increasing the program's duration, the resistance movements, performing rhythm.

Drug treatments are only helpful to combat the unpleasant symptoms in disease's evolutionary phases, but the basic of preventive and curative treatment is represented by daily gymnastics, performed with perseverance and early correction of vicious positions of cervical spine during and at the end of the professional activity.

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