

## IMPLICATIONS OF PHYSICALTHERAPY REGARDING THE REHABILITATION OF PATIENT WITH SPINA BIFIDA OCCULTA

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**Key words:** spina bifida occulta, low back pain, physicaltherapy, rehabilitation program.

**Abstract:** Today, physicaltherapy requires a wide field of knowledge (anatomy, pathology, psychology, rehabilitation medicine), its applications are common in various diseases of various devices and systems of the body. It certainly does not concern only the physical side but also the psychological, the social side, etc. [1].

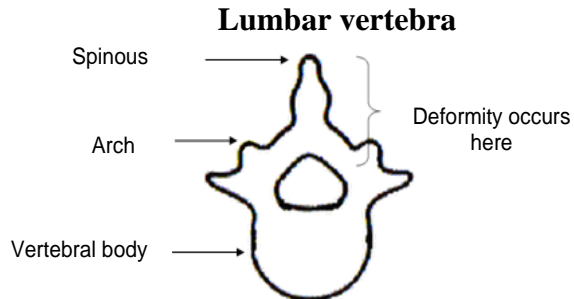
Physical exercise and also the other sides of physicaltherapy have an important implication for spine disorders associated with low back pain, including spina bifida occulta [2].

### **Introduction:**

Spina bifida occulta is a disease witch have many implicatins on the spine - a structure made up of vertebrae. The spine is responsible for supporting the human skeleton, including nervous tissue that transmits information between the central nervous system and body. This disease is a congenital abnormality involving incomplete development of the neural tube or bone. Its name comes from Latin and means "broken column" or "open column" [3].

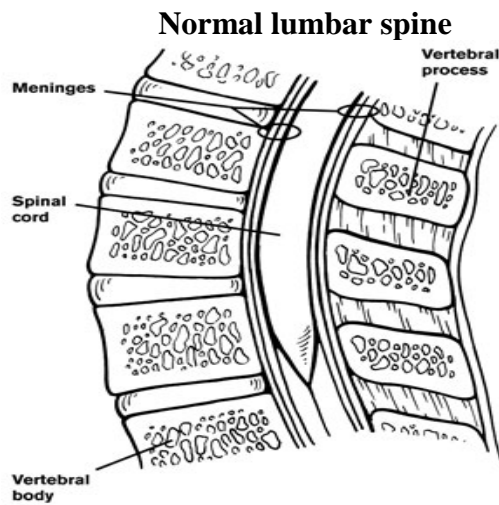
There is evidence that spina bifida occurs after the first months of pregnancy, when the two sides of the fetal spine fail to join together, leaving an open area (called fistula) [4].

Spina bifida occulta commonly occurs on the healthy population, having a weight of 10-20%, being found, by chance, after a lumbo - sacral spine radiography [5].



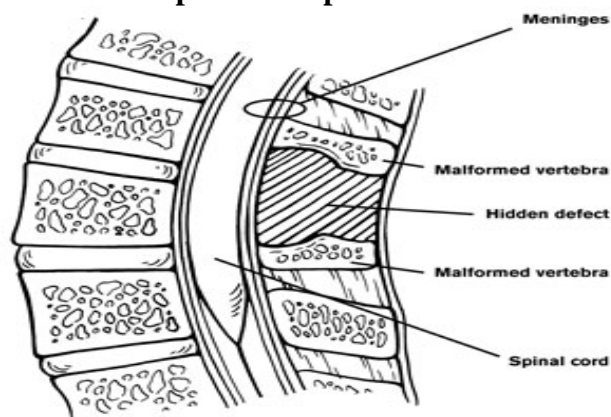
*Image 1. Representation of a lumbar vertebra*

The term "occulta" comes from Latin and means "hidden" and this disease involves a disorder of the vertebral arch without protrusion of the intraspinal contents to the surface, the skin is usually normal but may have some tuft of hair on the area, a dimple in the skin, a lipoma, a dermal sinus or a birthmark.



*Image 2.  
Representation of the normal lumbar spine*

### Lumbar spine with spina bifida occulta



**Image 3.**

*Representation of the lumbar spine with spina bifida occulta*

Physicaltherapy, is defined as a movement therapy made by rehabilitation programs aimed of different function recovery or functional increasing in various sufferings, being a form of individualized therapy, it can be used in therapeutic programs for the recovery of spinal disorders, as spina bifida occulta.

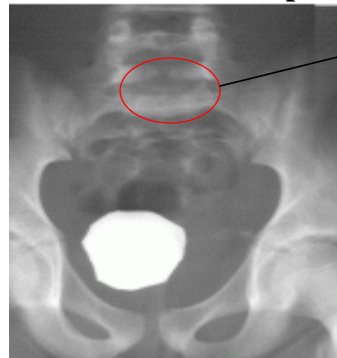
#### **Material – method:**

In this study is taken in observation a 25 years old patient, suffering of low back pain on the lumbar spine area, pressure sensitivity, tension pain and muscle spasm with limitation joint movement, such as trunk extension, maintaining prolonged orthostatic position, lifting weights, difficulty in maintaining physiological body alignment etc.

Muscle symptoms are associated with the sacrum bone defects that are identified as spina bifida occulta. Bone abnormalities are accompanied with pathological changes of the spinal canal (fat and fibrous tissue) witch can irriatte nerve roots.

The subject performed a radiography and MRI images of lumbo - sacral area, which reveal specific signs of spina bifida occulta.

**Radiography and MRI images of lumbo - sacral spine, which reveal specific signs of spina bifida occulta.**



**Image 4.** X-ray image of lumbo - sacral affected area



**Image 5.** Nuclear magnetic resonance of lumbo – sacral area

This study was conducted in a Physicaltherapy Complex and the material and methods used are including:

- massage room: massage table, warm compresses;
- physicaltherapy room: mattress, trellises, ergometer bicycle, treadmill, etc.
- swimming pool: handrail, stairways, mobile devices (rafts, balls, etc.).
- electrotherapy: interferential current, ultrasound.

To recover the patient with spina bifida occulta, the following hypotheses were proposed to demonstrate:

- to what extent the implementation of the rehabilitation program can influence the evolution parameters of pain, posture, strength, stability.
- if after the treatment application, the subject could perform the movements and activities that were reduced or impossible.

The recovery period of the subject with spina bifida occulta was structured in two phases and lasted six weeks, time when the exercise were staggered according to certain principles that take account of load applied, the difficulty and complexity of their execution.

**STAGE I.**

Recovery program for spina bifida occulta includes the following objectives:

- pain relief;
- maintain joint mobility;
- increase muscular strength and endurance;
- posture and body alignment correction;
- improve the general condition of the subject.

Proposed means for achieving the objectives are:

- warm compresses applying to painful segment of the spine (lumbar spine);
- relaxing massage for the lumbar spine and thigh toning massage;
- hydrophysicaltherapy;
- analgesic electrotherapy: ultrasound, interferential current, Tenss;
- physicaltherapy:
  - posture;
  - pasivo - active mobilization, active and active resistance mobilization of torso and thighs segments;
  - treadmill walking and bicycle ergometer pedaling;
  - Bobath ball exercises.

Treatment program include three parts:

1. Preparation of the affected segment by:

- applying warm compresses to the lumbar spine (10 minutes);
- relaxing massage for the lumbar spine (5 minutes);
- toning massage for muscle thighs (7 minutes);
- hydrophysicaltherapy (15 minutes).

2. Analgesic electrotherapy:

- ultrasound (8 minutes / 5 times per week);
- interferential current (5 minutes / 3 times per week);

3. Physicaltherapy program:

- supine posturare on a hard bed with legs bent at 90 ° on the coxofemural joint and 90 ° of knee joint (10 minutes);
- pasivo – active and active mobilization of the trunk (10 minutes);
- Bobath ball exercise (5 minutes).

## **STAGE II**

Objectives:

- pain relief;
- maintain joint mobility;
- increase muscular strength and endurance;
- socio-professional reintegration of the subject;
- establishment of maintenance program.

Proposed means for achieving the objectives are:

- warm compresses applying to painful segment of the spine (lumbar spine);
- hydrophysicaltherapy;
- analgesic electrotherapy: ultrasound, interferential current;

- physicaltherapy:
  - posture;
  - active active resistance mobilization of the trunk and thighs;
  - trellis exercises;
  - treadmill walking and bicycle ergometer pedaling;
  - isometric exercises.

Treatment program include three parts:

1. Preparation of the affected segment by:

- applying warm compresses to the lumbar spine (10 minutes);
- hydrophysicaltherapy (15 minutes).

2. Analgesic electrotherapy:

- ultrasound (8 minutes / 5 times per week);
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3. Physicaltherapy program:

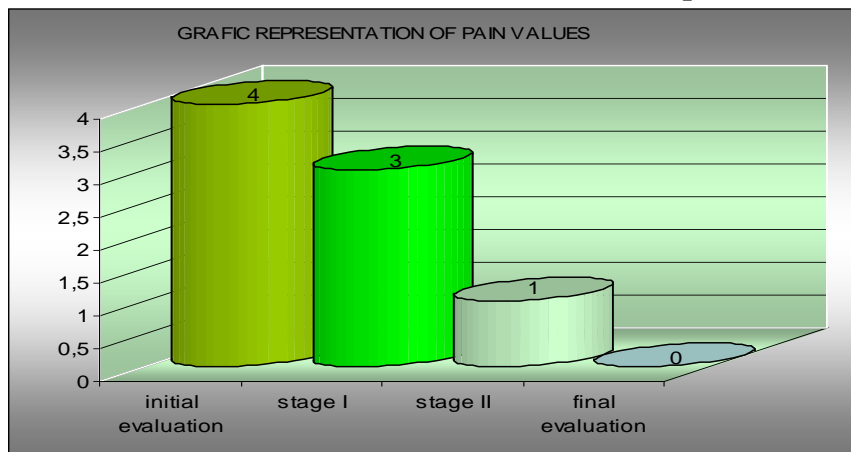
- supine posturare on a hard bed with legs bent at 90 ° on the coxofemural joint and 90 ° of knee joint (10 minutes);
- active and active rezistance mobilization of the trunk (10 minutes);
- trellis exercises in the hanging position (5 minutes);
- bicycle ergometer pedaling (7 minutes);
- treadmill walking (5 minutes);
- isometric exercises for the lower trunk and thighs (5 minutes).

### **Results**

To highlight the subject's functional deficit caused by this disease on the spine and lower limbs areas were carried out a series of tests and measurements from the initial stage to the final stage, the collected values were interpreted and graphic represented.

So, we assessed pain parameters after Borg scale 0-10, from the first treatment day until it disappears.

### Pain assessment in lumbar spine



**Diagram 1**

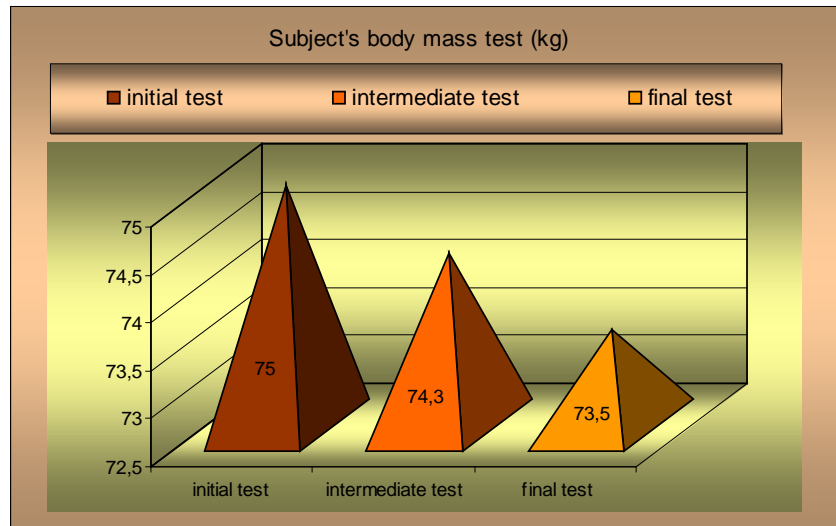
*Representation of pain parameters*

Another evaluated parameter, which showed an improvement, was the muscle contractures that cause pain in the back injury spine. The pain caused by muscular contractions was localized on the paravertebral and rotator muscles, pain that resolved after treatment program application.

Vicious body posture that was ascertained on the beginning of program treatment has improved, the subject has learned to adopt the correct body position during different work or daily activities.

The subject's weight, before the treatment program was 75 kg, and to the final testing the subject's weight was 73.5 kg.

### The evaluation of weight during the rehabilitation program



**Diagram 2**

*Graphic representation of patient's body mass*

### Conclusions

Recovery physicaltherapy is the most important part in the recovery program, seeking restoration of diminished function, increasing the functional compensatory mechanisms, improve the general condition and social reintegration of the subject.

The physicaltherapy exercises and the associated means, after performing this case study, concluded that the overall condition of the subject, the parameters of pain, degree of mobility and functionality lumbar spine were maintained at baseline without registering a regression.

Proposed assumptions were made through methods and means used, each helping to rehabilitate the subject with spina bifida occulta.

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**Titlu:** Implicațiile kinetoterapiei în recuperarea pacienților cu spina bifida occulta.

**Cuvinte cheie:** spina bifida occulta, durere lombară, kinetoterapie, program de recuperare.

**Rezumat:** Kinetoterapia cere astăzi un domeniu vast de cunoaștere (anatomie, patologie, psihologie, medicina de recuperare), aplicațiile acesteia fiind frecvente în diverse afecțiuni ale diferitelor aparate și sisteme ale organismului. Beneficiile acesteia nu vizează doar latura fizică, dar și cea psihică, socială, etc.

Exercițiul fizic, dar și celelalte mijloace ale kinetoterapiei au implicații importante în cazul afecțiunilor coloanei vertebrale, și anume în cazul spinei bifida occulta.

**Titre :** L'implication de kinésithérapie sur la récupération du patients avec le spina bifida occulta.

**Mots - clé:** spina bifida occulta, douleur lombaire, kinésithérapie, programme de récupération.

**Résumé :** Le domaine de kinésithérapie exige aujourd'hui un vaste domaine de connaissance ( l'anatomie, la pathologie, la psychologie, la médecine de la récupération), les applications du cela étant fréquentes dans les diverses affections des appareils et des systemès de l'organisme. Les avantages de kinésithérapie ne se rèsume seulement au l'aspect physique, mais aussi autres aspects: psychique; social etc

L'exercice physique, mais aussi des moyens de thérapie physique ont des implications importantes si les troubles du rachis, c'est à dire si le spina-bifida occulta.