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Wetzlar
Medical Symposium

MEDTEC
Medizintechnik GmbH

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Indication-specific use of therapeutic magnetic resonance technology in the case of spinal pathologies

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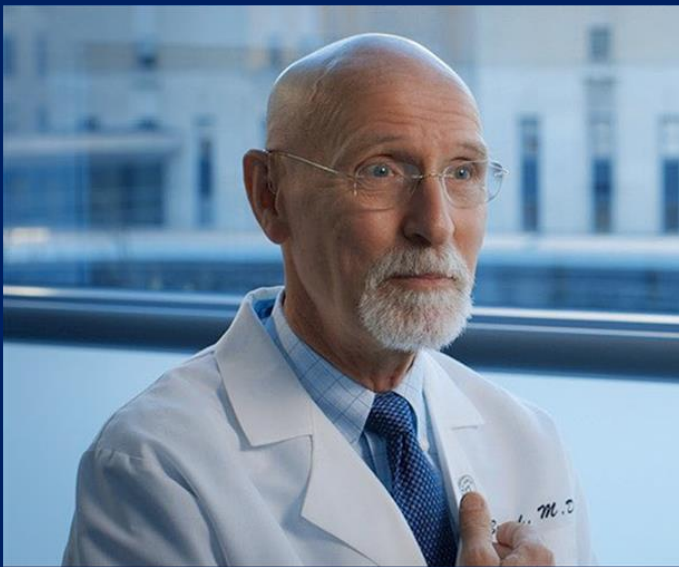
Conservative Tissue-specific Therapy Approaches
for Diseases and Injuries of the Musculoskeletal System

LOW BACK PAIN.

“The treatment of back pain falls primarily in the non-operative domain. Surgery for such a malady should be a relative exception”

Edward C. Benzel, MD
Cleveland Clinic Spine Institute
Cleveland, OH

**Results do not deceive
those that deceive are
expectations**



THE SPINE

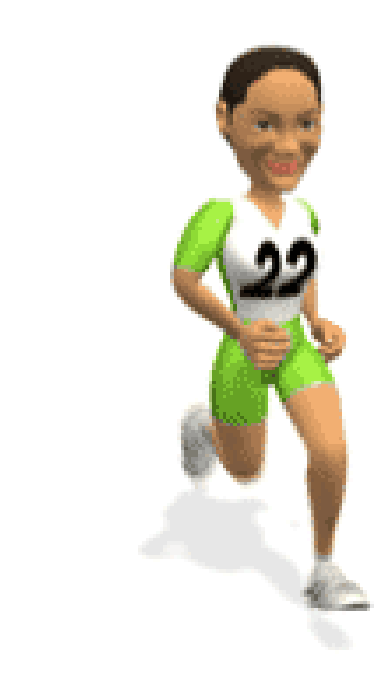
HEALTHY LIFE

Nobody is healthy after 50. Healthy are the young; old people always have one or several ailments that are typical of age

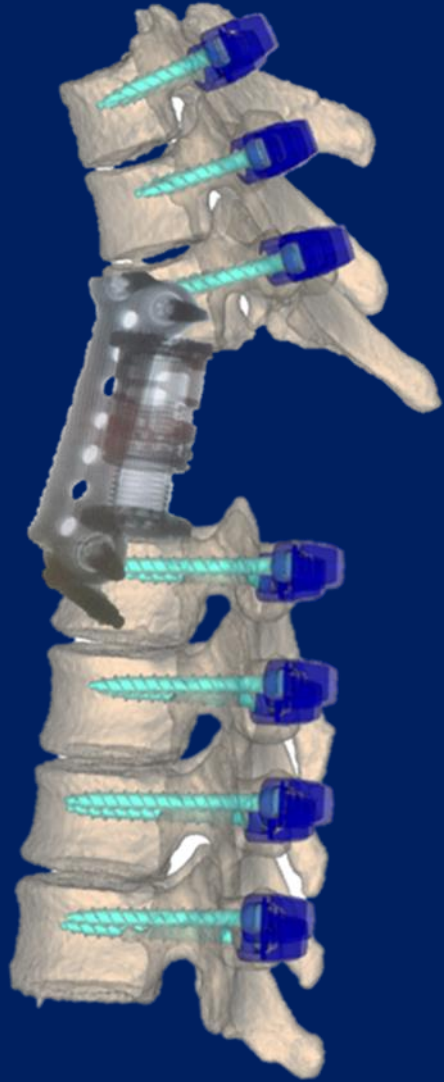
What it is about then is healthy aging, that is, with controlled ailments and without complications but...



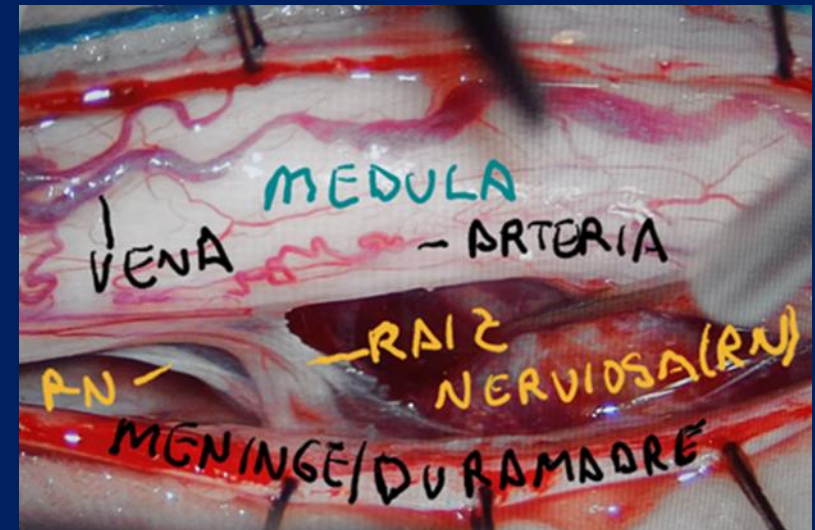
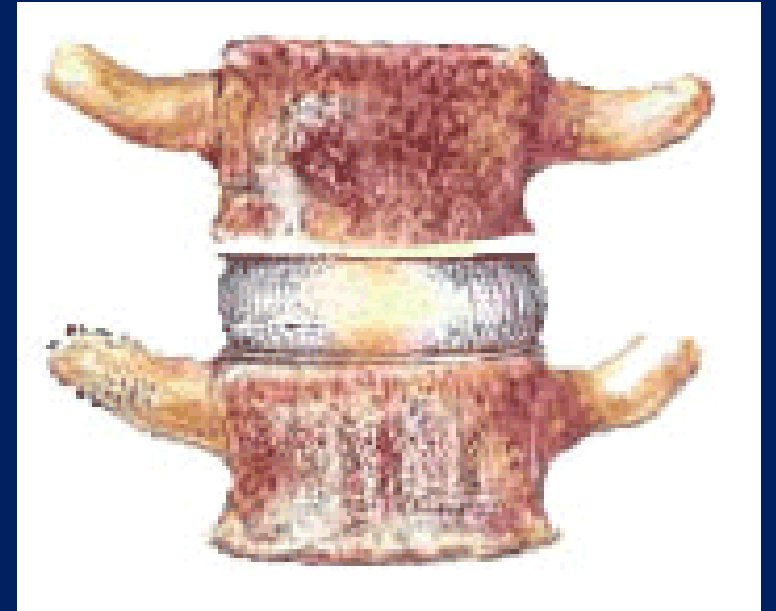
THE SPINE



FUNCTIONS OF THE VERTEBRAL COLUMN

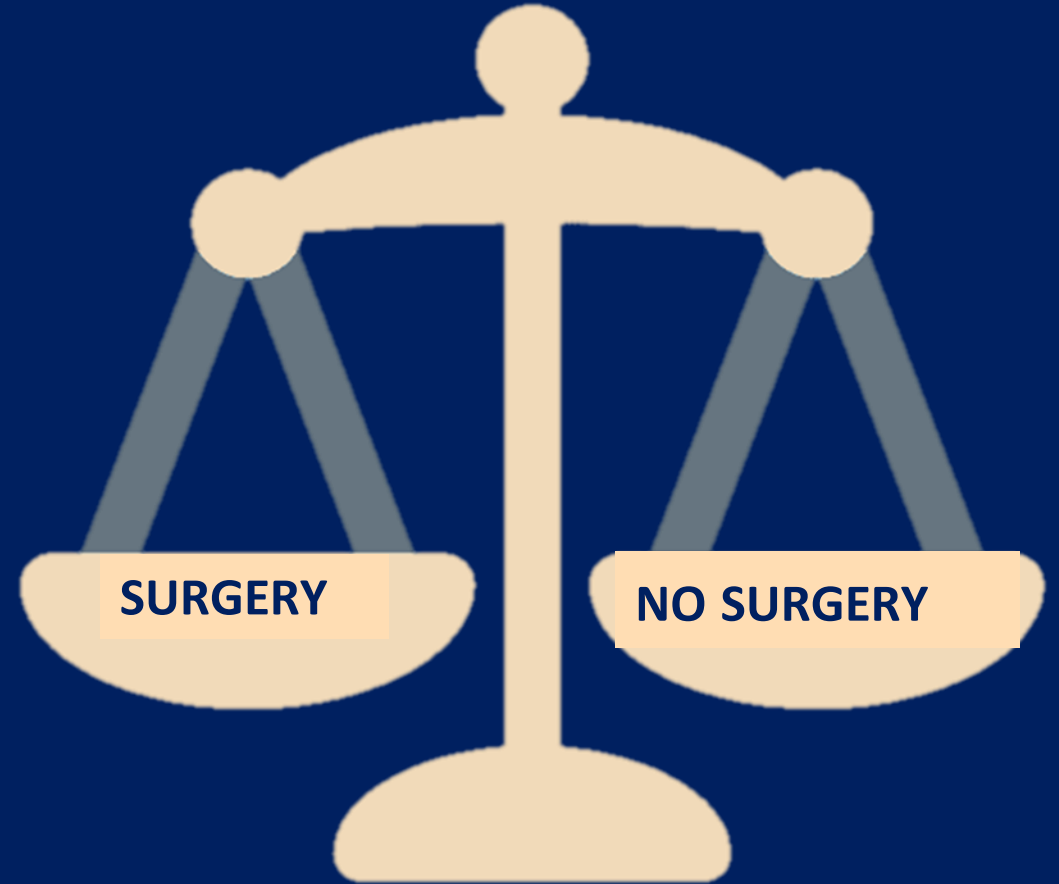


- Transmit weight
- Allow movement
- Protect the spinal cord



SPINAL SURGERY 3P/3W

- Porque (**why**)
- Para que (**for what**)
- Por donde (**where**)



LOW BACK PAIN.

COMPLEMENTARY STUDIES. RADIOLOGY

Disc degeneration is induced by:

- Biochemical alterations
- Mechanical alterations
- They progressively cause structural modifications.

Imaging methods according to their characteristics show these changes.

Clinic, Exploration and Image



TREATMENT

LOW BACK PAIN.

- **DISK**

- Decrease in height
- Yellow ligament fold (Buckling)

- **VERTEBRA**

- Pathological bone production
- Osteophytes, syndesmophytes
- Facet joint problems

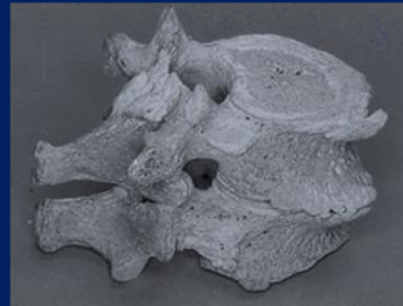
- **LIGAMENTS**

- Decrease in tension Hypertrophy (Infolding)

Balance point alteration of the affected segment



Ligament strain, hypermobility, and osteophyte production



PAIN



Reduction of the diameter of the spinal canal and nerve compression

LOW BACK PAIN

- **CLINIC HISTORY**

- Listen to the patient
- What hurts
- Since when
- What do you attribute it to?

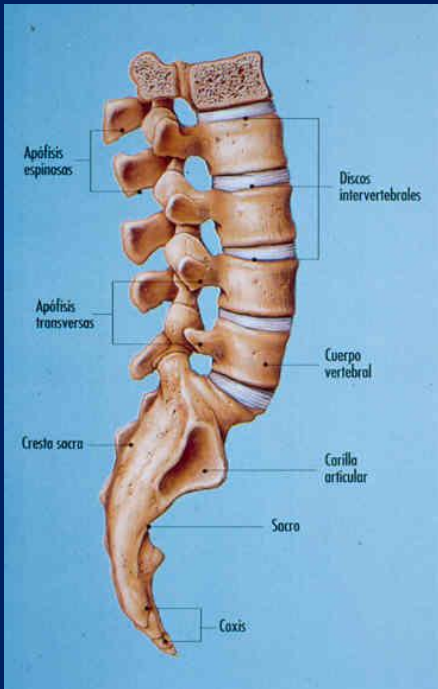
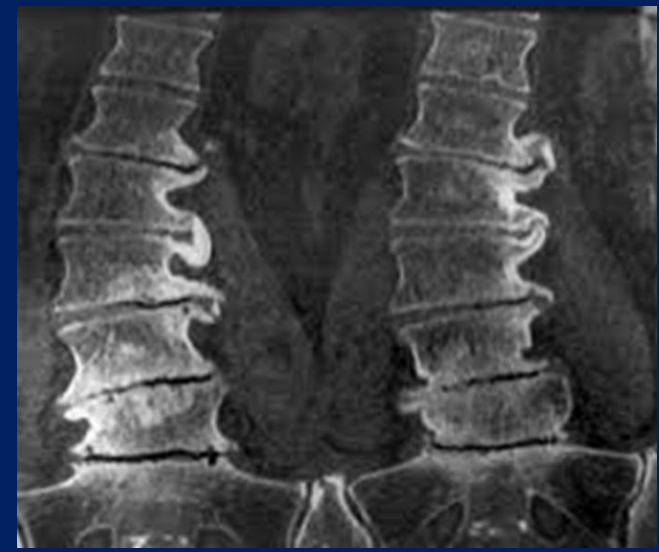
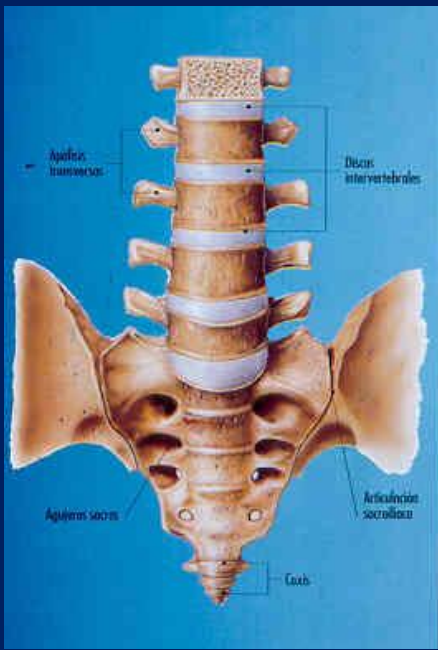


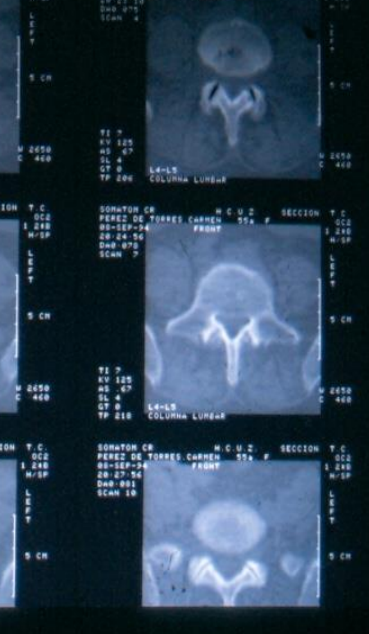
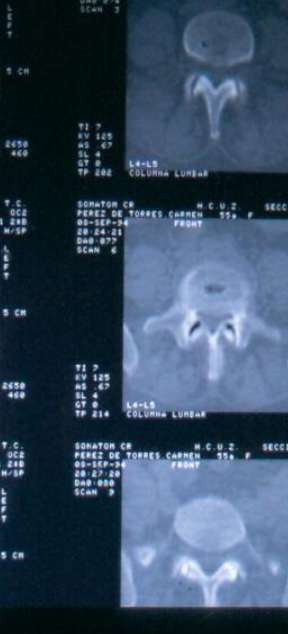
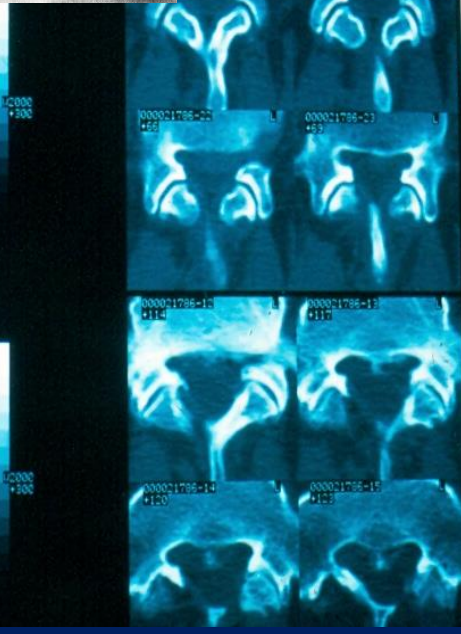
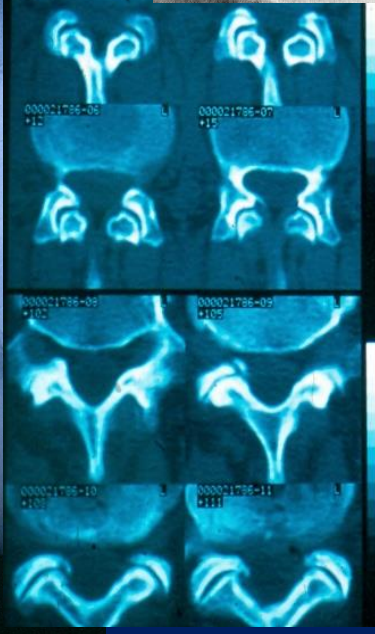
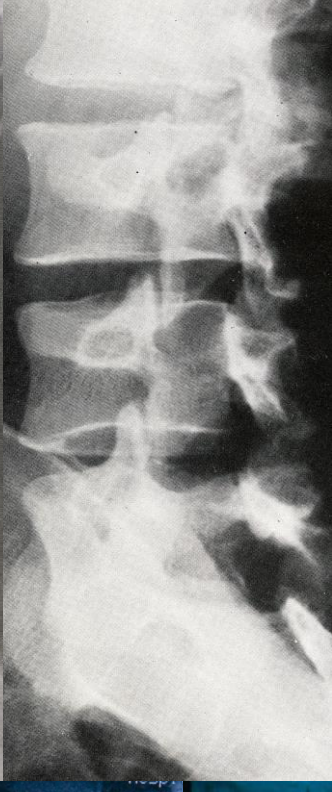
- **CLINICAL EXAMINATION**

- Trigger points
- Mobility ranges
- Neurological focal signs
- Motor déficit
- Reflex disturbances



ANATOMY





LOW BACK PAIN.

Simple radiology

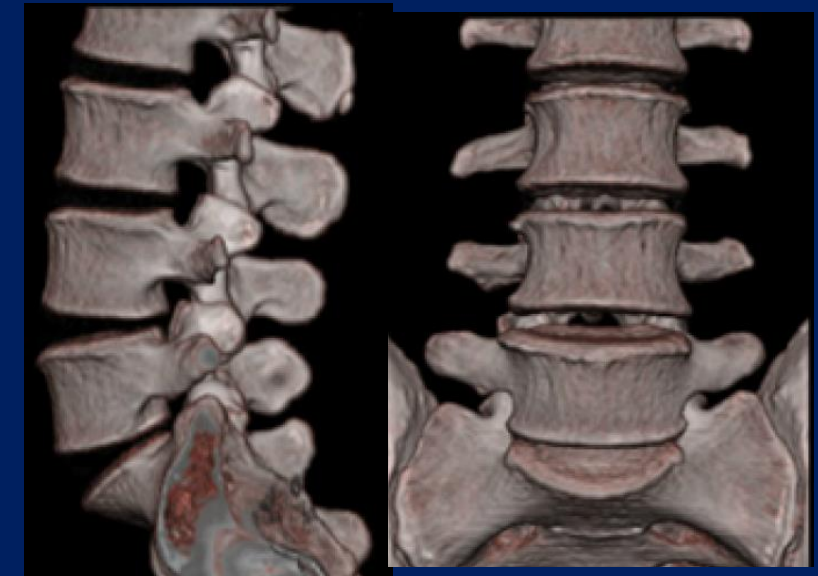
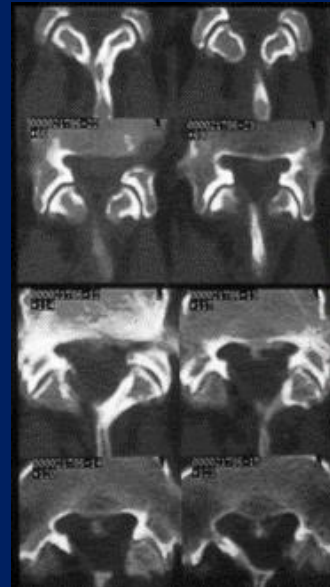
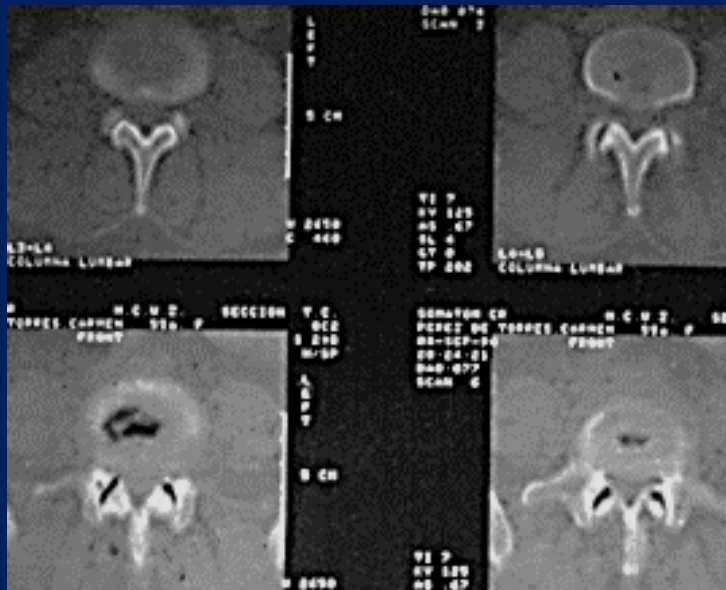
- RX Ap., L. , Oblique and dynamic
- Vertebrae, alignment and displacements. Interbody space. Gas, vacuum sign



LOW BACK PAIN

CT (computed tomography)

- Reconstruction of bone alignment and morphology.
- Alterations of the articular facets and their position.
- Lysis of the articular pars and listhesis.
- Fissures or fractures, erosion or infiltration of the bone.
- Recess stenosis.

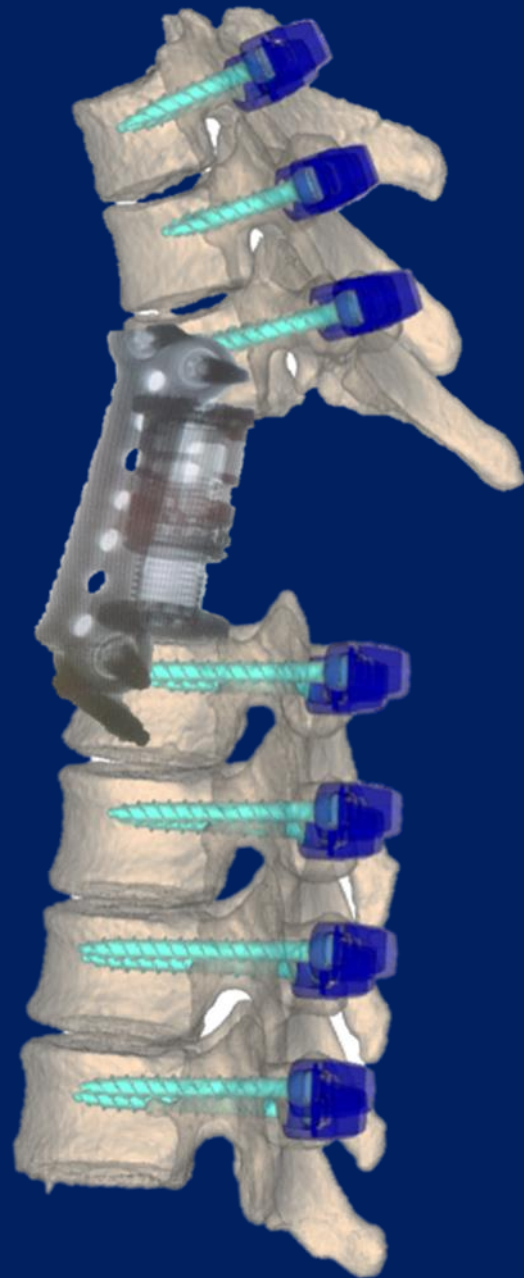


LOW BACK PAIN

MRI (magnetic resonance imaging).

- Technique of choice for the valuation of the disc
- Includes sagittal and axial cuts in T1 and T2 sequences. Today FSE T2
- FLAIR sequence cancels out the water in skull
- STIR sequence erases fat is used in musculoskeletal studies. Assessment of edema
- Intravenous contrast Gadolinium. Assesses disk overload and degree of degeneration



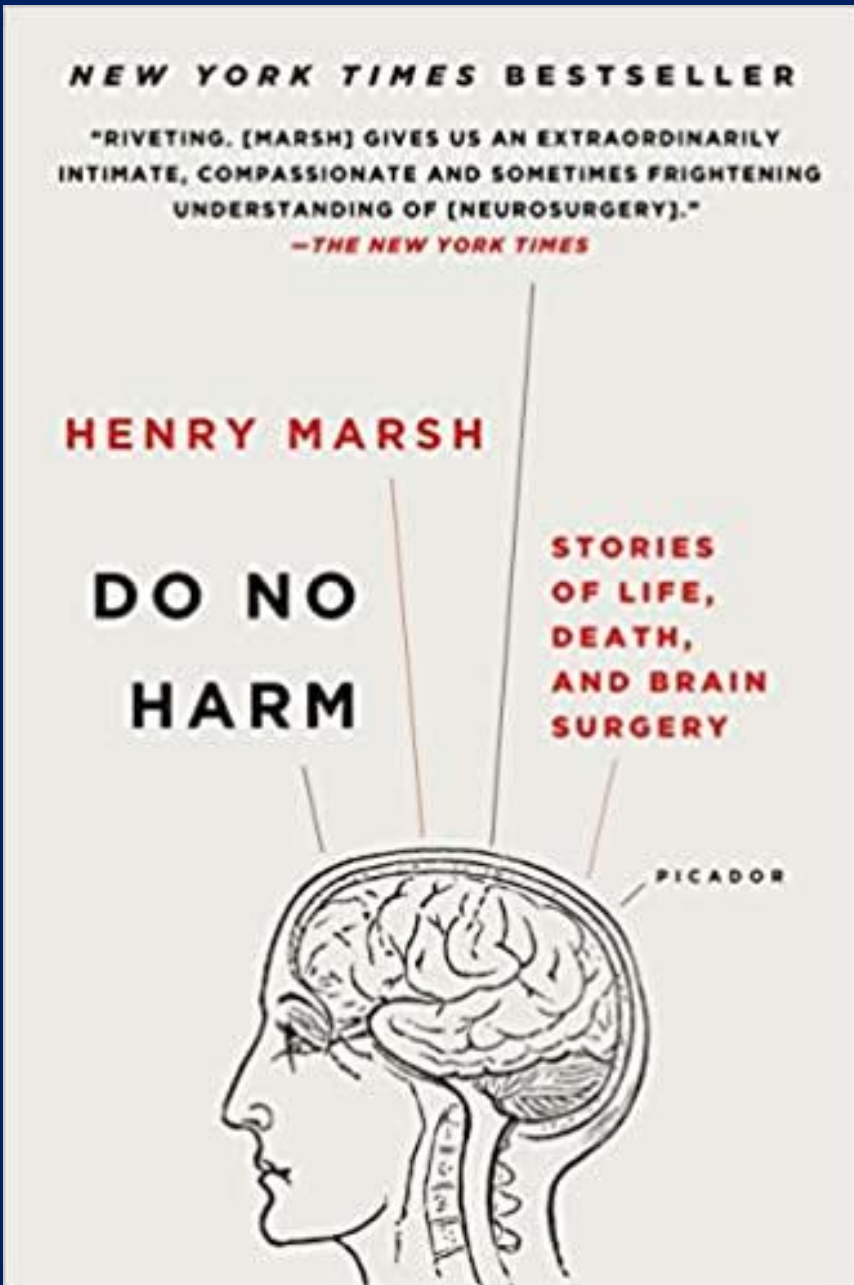


MAKE A GOOD DIAGNOSIS

We must make a good diagnosis to choose the right target to improve treatment.

- Bone
- Muscle
- Nerve
- Disk

“It takes 3 months to learn how to do an operation, 3 years to know when to do it, and 30 years to know when not to do it.”



**But as long as we live in
the best possible way.**

Thank you

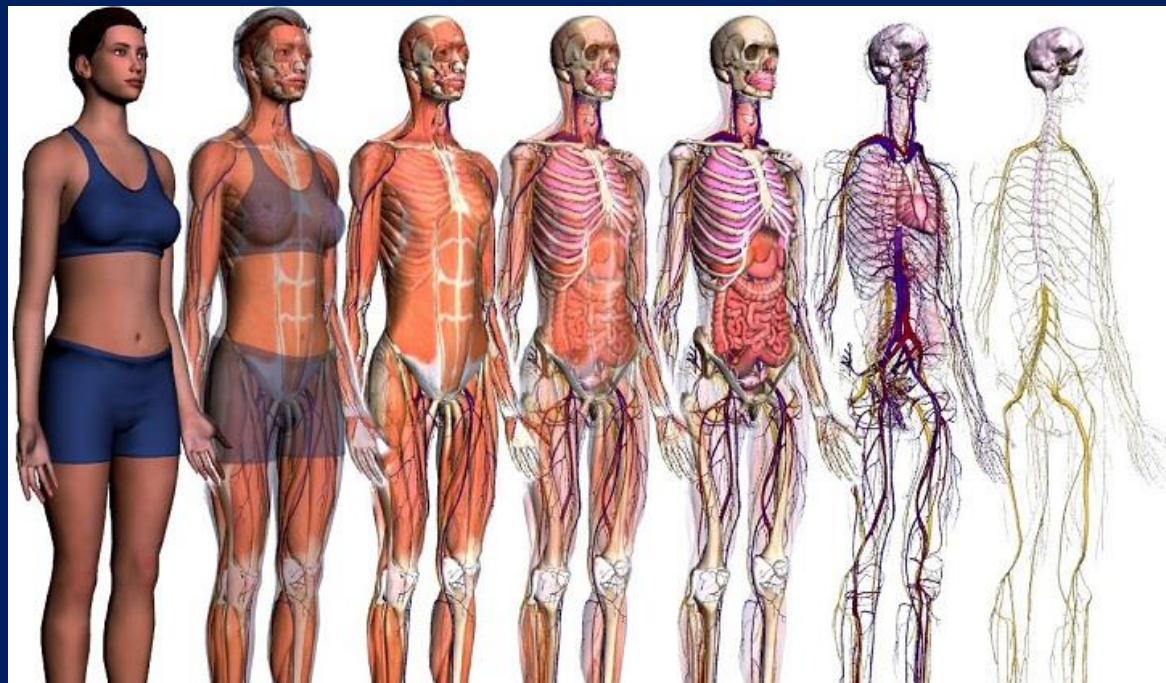


antero-poste

THE SPINE

“Complexity of the system”

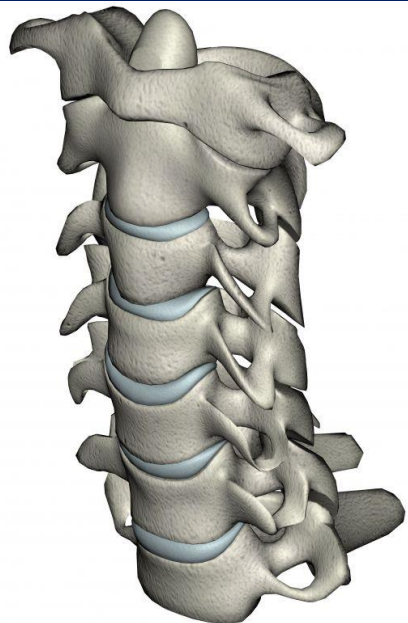
Neural-mechanical-metabolic dysfunctions



PHYSIOTHERAPY TREATMENT PROTOCOL FOR SPINAL PATHOLOGY



Why do we combine TMR technology with physiotherapy in spine pathologies?



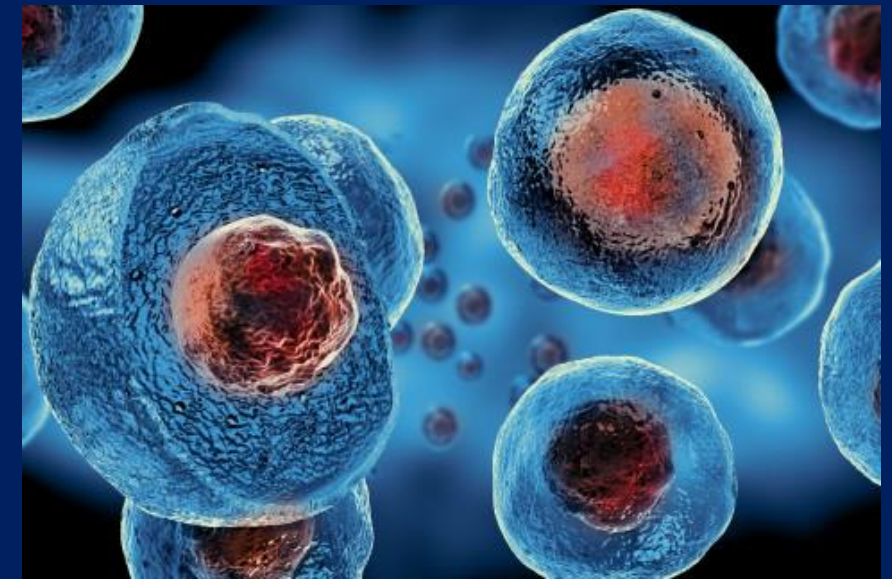
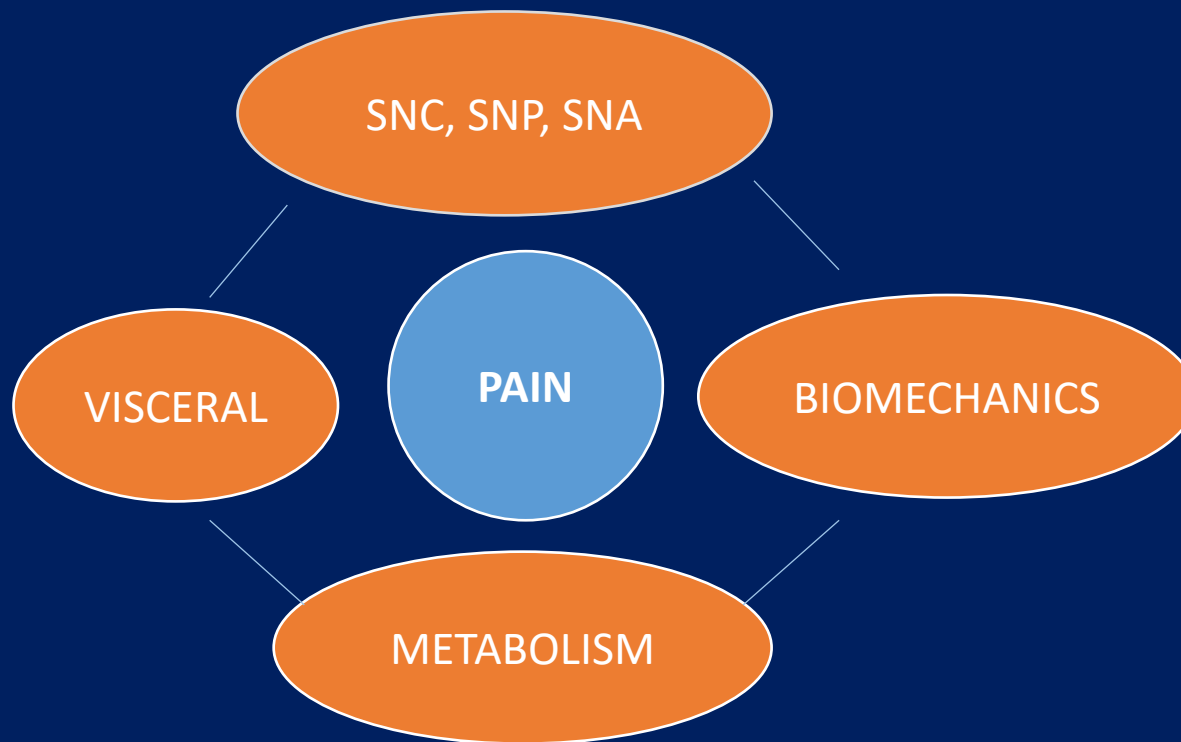
"The combination of physiotherapy and MBST therapies multiplies the therapeutic effects."

PHYSIOTHERAPY TREATMENT OF SPINAL PATHOLOGY PROTOCOL

MBST + NEUROFUNCTIONAL THERAPY

TRM therapy aims to trigger therapeutic effects at the cellular level on tissues.

Physiotherapy aims to restore lost function and correct neural, mechanical, and metabolic alterations that have caused the injury.

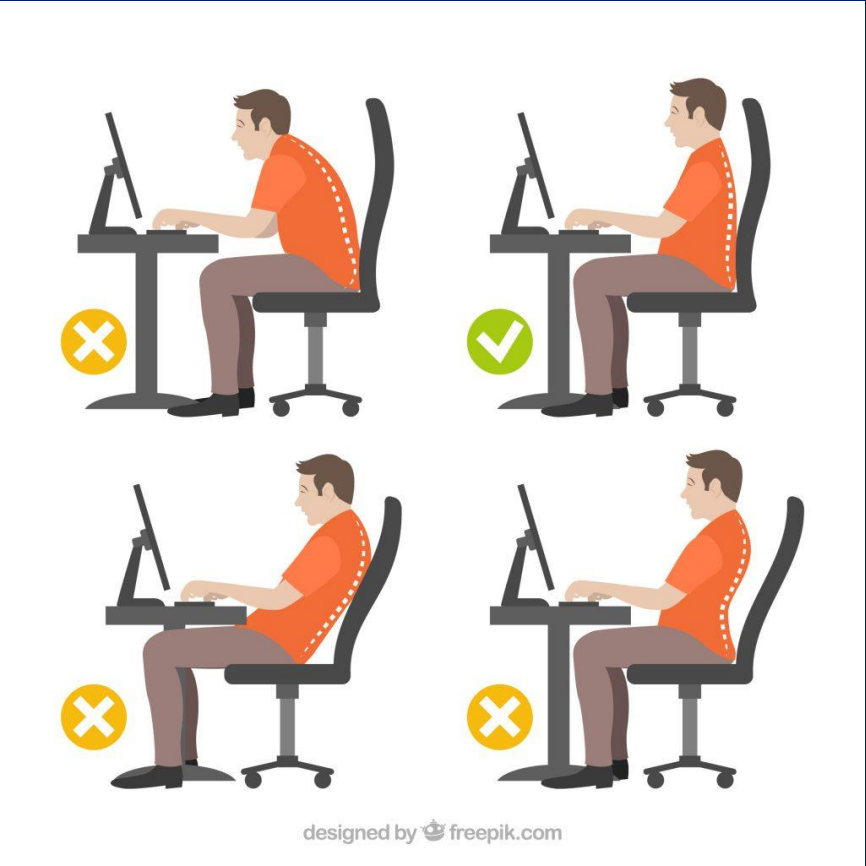
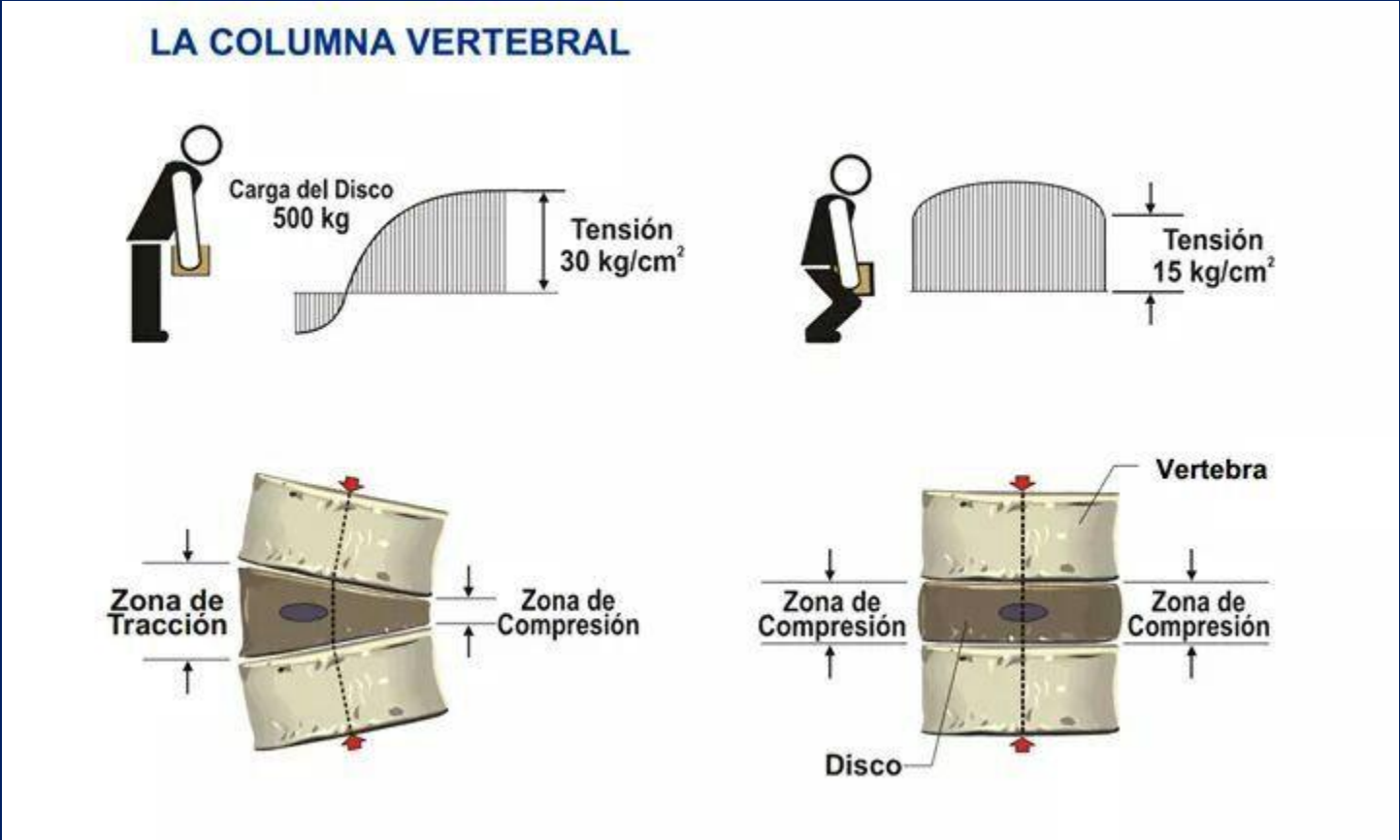


TRM+ PHYSIOTHERAPY

- Patient had a L4/L5 disc herniation surgery 5 years ago
- Constant low back pain with right leg radiation for the past year
- MRI in 2022: degenerative pathology with lumbar stenosis and multilevel disc pathology from L3-S1
- Work sitting 50% of their workday and the other 50% involves lifting weights



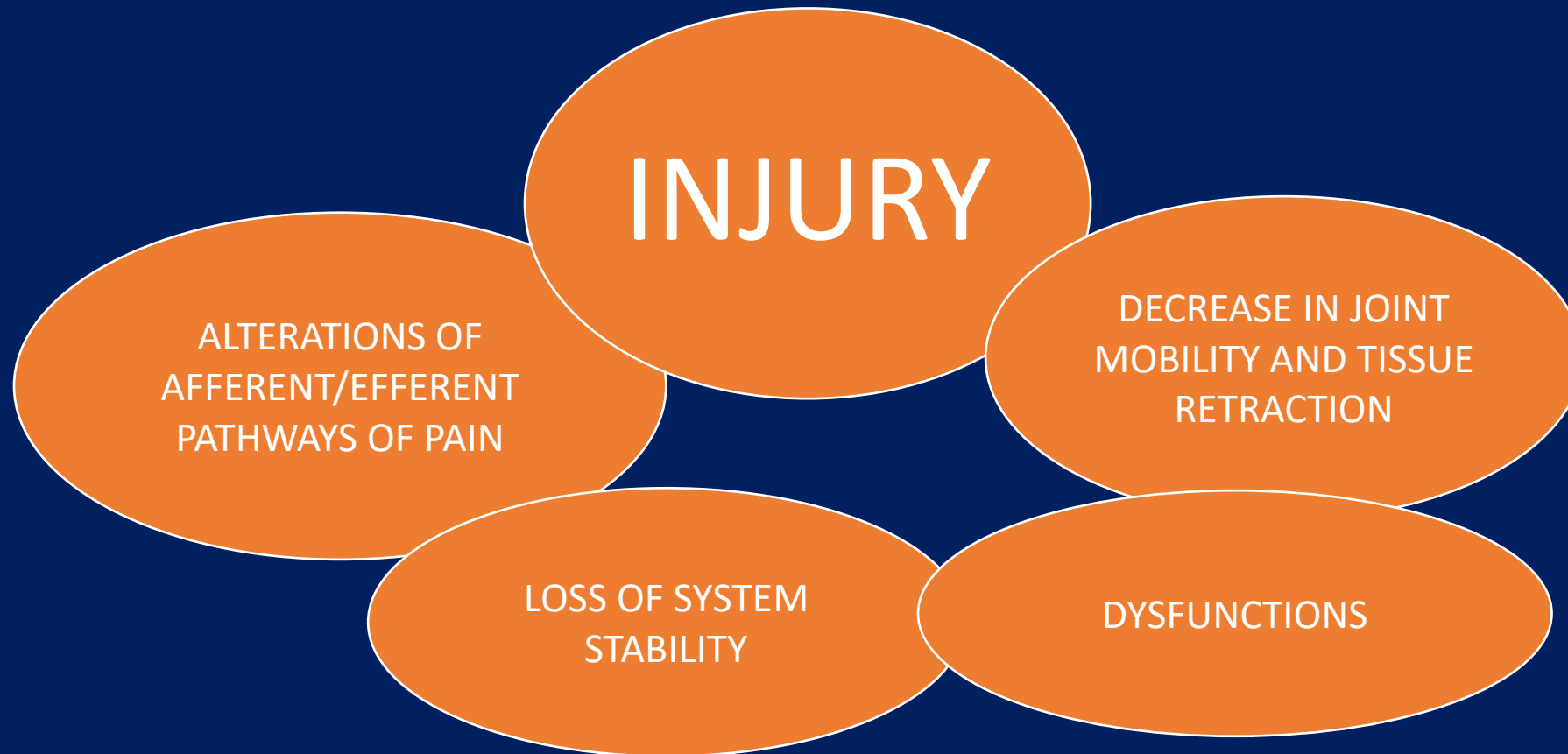
TRM + PHYSIOTHERAPY



Degenerative disease and poor load management

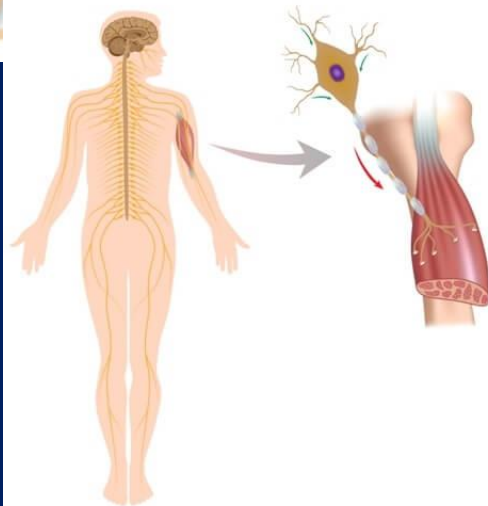
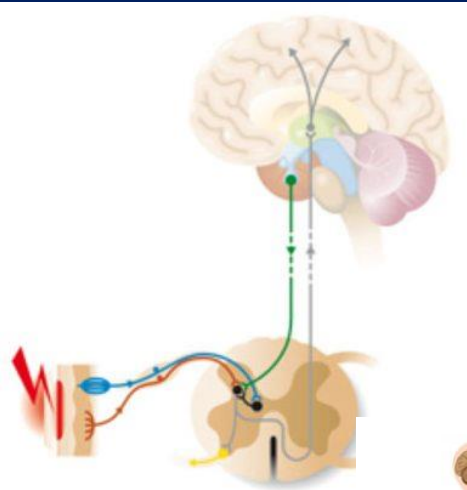
PHYSIOTHERAPY TREATMENT PROTOCOL FOR SPINAL PATHOLOGY

"Pain produces alterations in proprioception, which causes the patient to move incorrectly, and generates further injury"



PHYSIOTHERAPY TREATMENT PROTOCOL FOR SPINE PATHOLOGY

OUR GOAL AS PHYSIOTHERAPISTS IS TO CORRECT
NEURO-MUSCULO-SKELETAL DYSFUNCTIONS



PHYSIOTHERAPY TREATMENT OF SPINAL PATHOLOGY PROTOCOL

TREATMENT METHODOLOGY

- Medical clinic history
- Clinical reasoning
 - Therapeutic target
 - Origin of pain, neuropathic, chronic
- Postural study and evaluation of joint movement dysfunctions and neural tissue

INDIVIDUALIZED
TREATMENTS



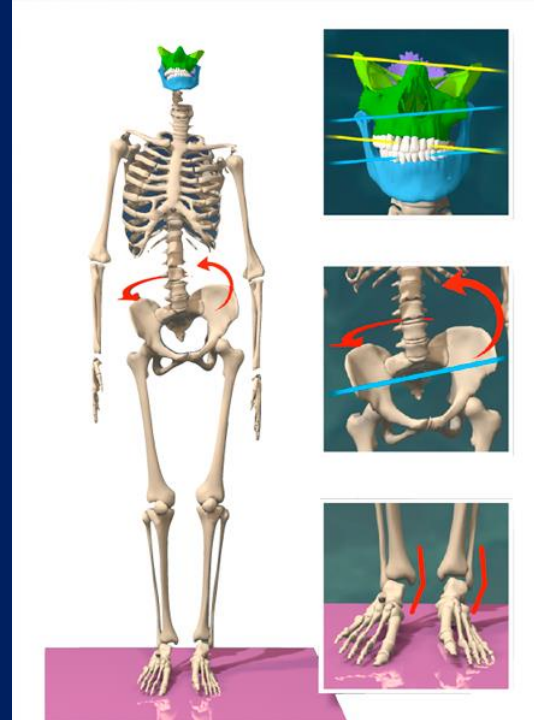
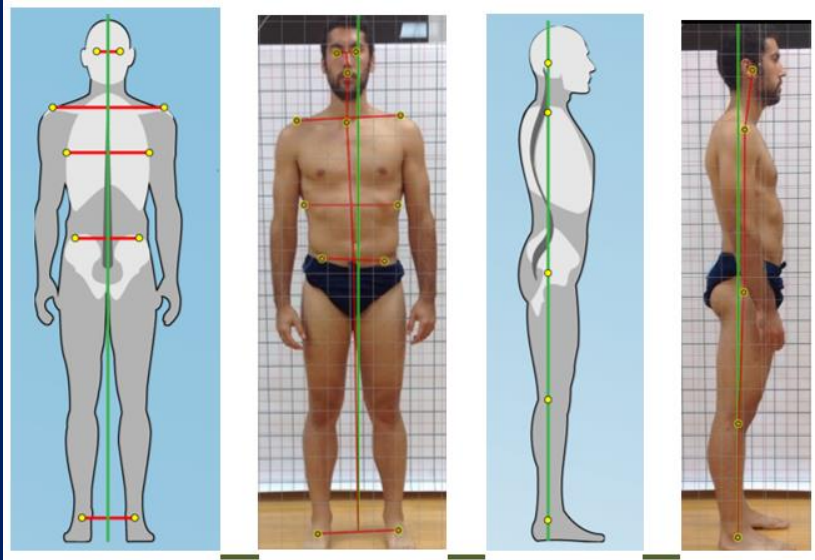
Different therapies

“Hernia at 40 is not the same as a hernia at 70”



PHYSIOTHERAPY TREATMENT OF SPINAL PATHOLOGY PROTOCOL

POSTURAL STUDY



Objective:

- Restore the adaptive potential of the system to avoid relapses
- Work on the absorption and distribution of loads
- Improve connective tissue slippage by avoiding mobility restrictions

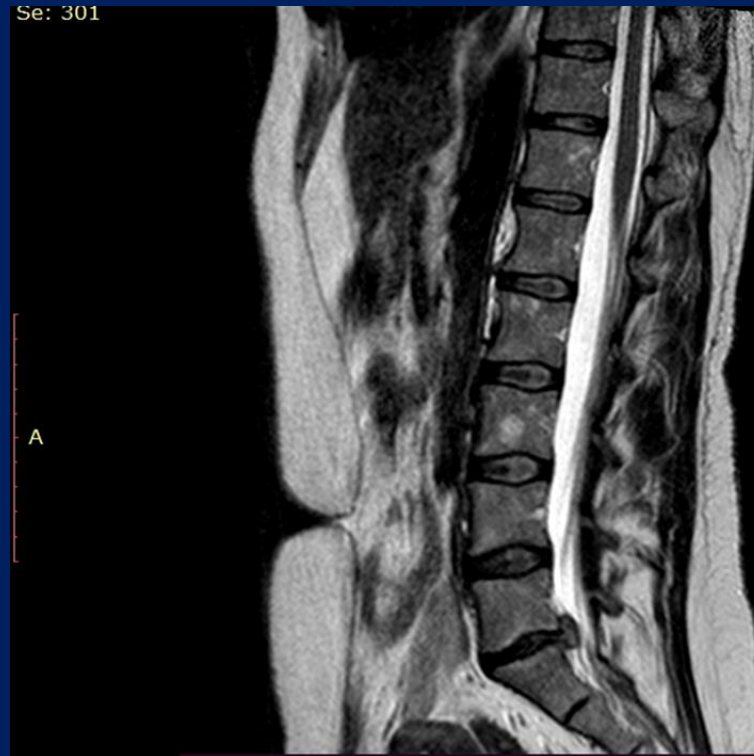
PHYSIOTHERAPY TREATMENT OF SPINAL PATHOLOGY PROTOCOL

ROBOTIC ANTALGIC TRAK TRM

MECHANO-METABOLIC DYSFUNCTIONS



- 2- 3 sessions per week of traction (12 sessions)
- 20 min of cervical or lumbar traction depending on the pathology
- 7/9 sessions MBST Therapy



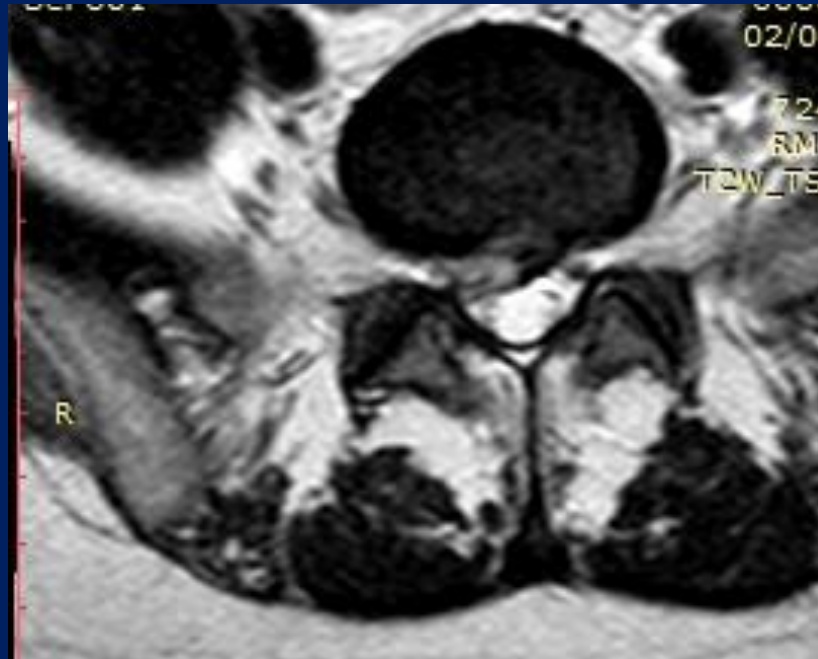
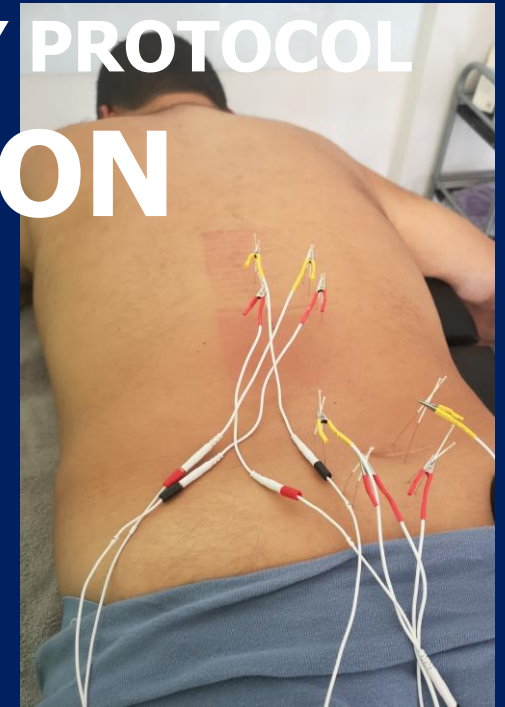
PHYSIOTHERAPY TREATMENT OF SPINAL PATHOLOGY PROTOCOL

FUNCTIONAL NEUROMODULATION

NEURO-METABOLIC DYSFUNCTIONS

GOAL: REGULATE the activity and organization of the SN

Improving the tissue metabolic environment and tissue adaptive capacity



PHYSIOTHERAPY TREATMENT OF SPINAL PATHOLOGY PROTOCOL

POSTURAL TREATMENT AND REHABILITATION

GPR (global postural reeducation)



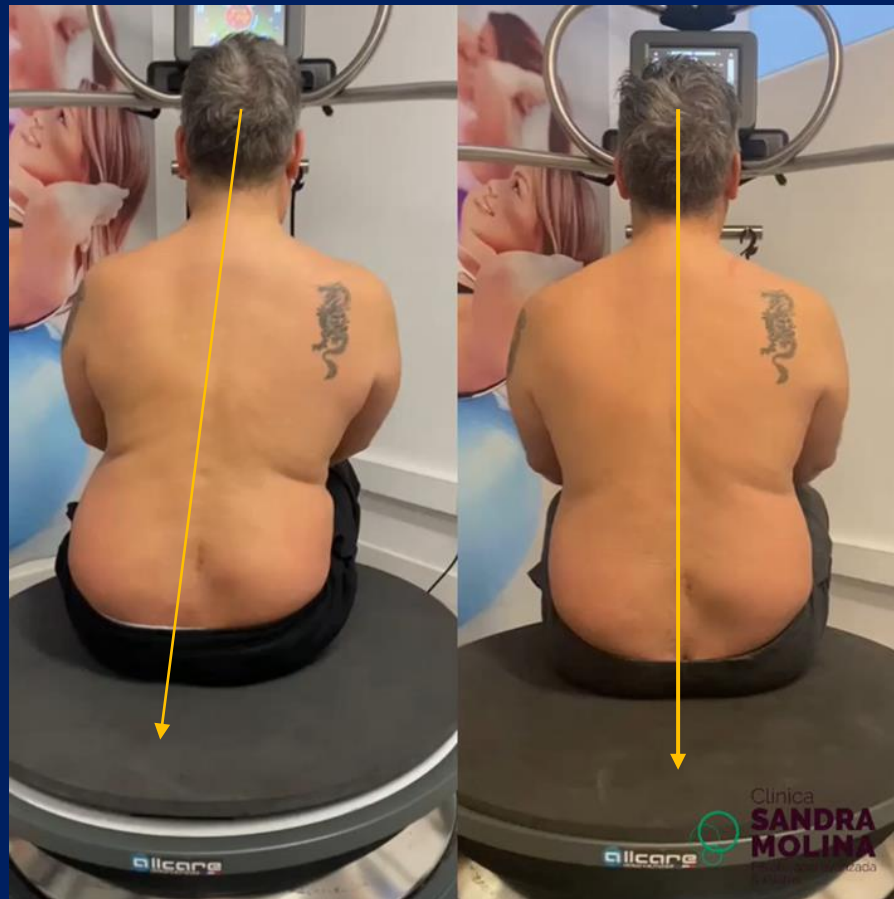
Red cord and therapeutic exercise



"Deficits in postural control have been shown to be related to injuries (lumbar, sprains, ACL ...)"

RESULTS AFTER TREATMENTS

**BEFORE
THE TREATMENT**



**AFTER
THE TREATMENT**

TREATMENT PROTOCOL COLUMN INTEGRAL

CELL TREATMEN:

Therapeutic Magnetic Resonance

TISSUE TREATMENT:

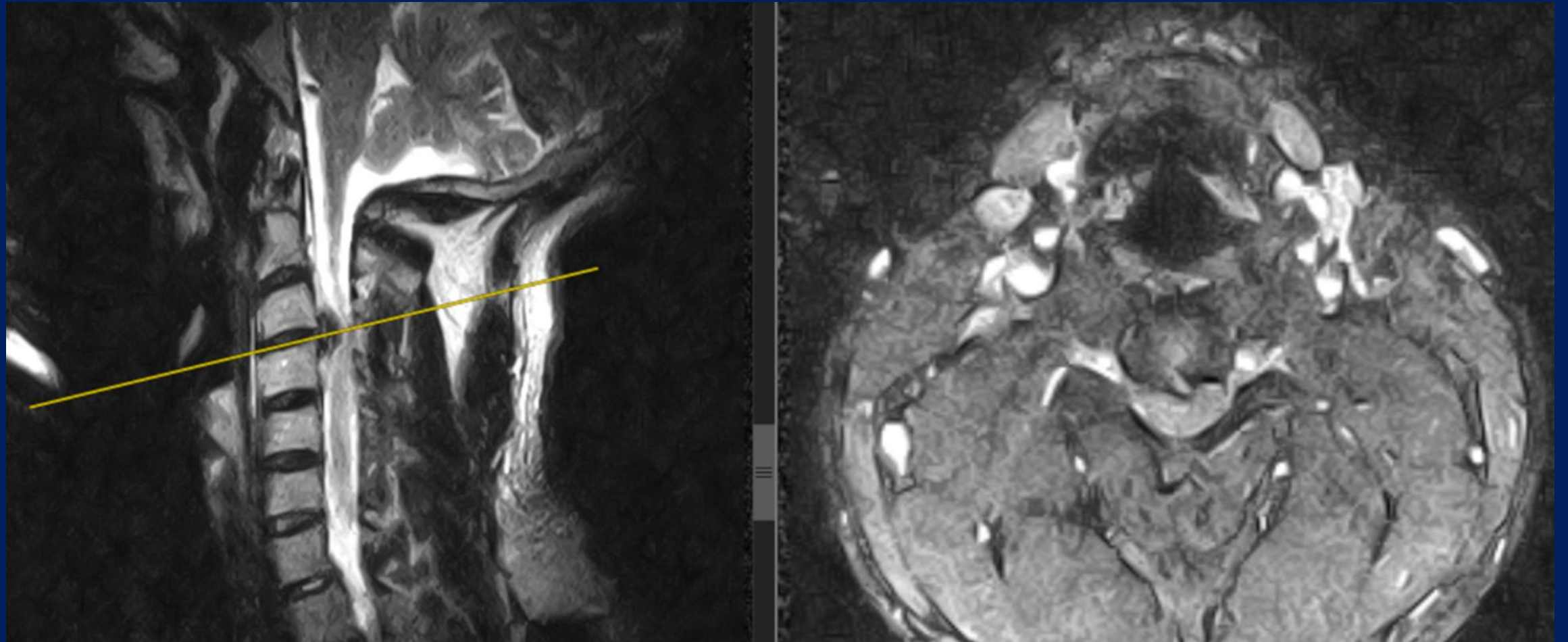
Advanced Physiotherapy

INTERVERTEBRAL DISCS PROTOCOL

- **OBJECTIVE:**
 - The Intervertebral Disc
- **CELL TREATMENT**
 - Origin of pain and Dysfunction



MEDICAL DIAGNOSIS



PROTOCOL INTERVERTEBRAL DISCS

TISSUE TREATMENT

- **POSTURAL STUDY**

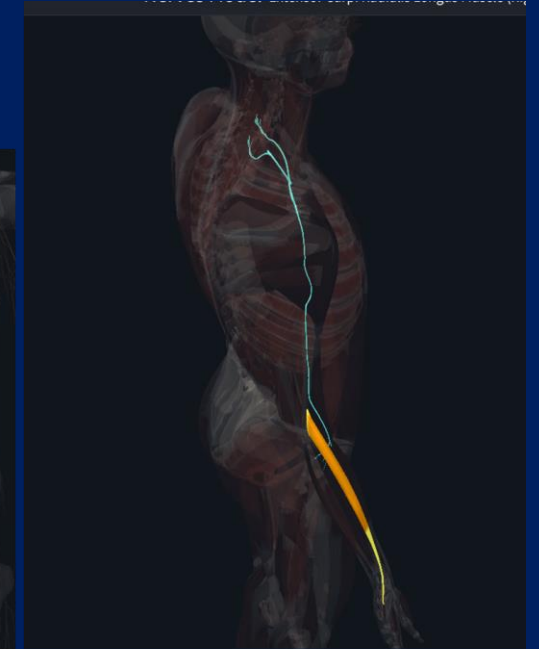
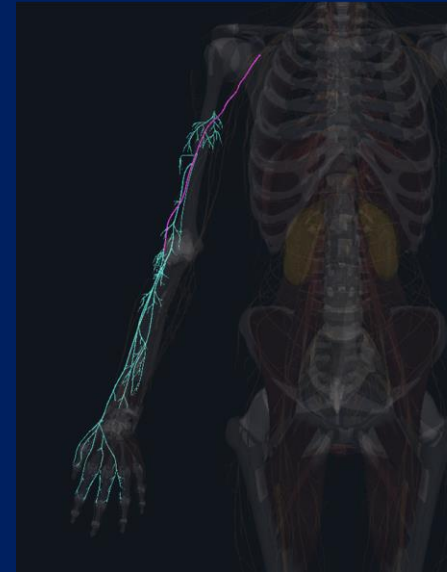
- Neuromodulation
- 3D Traction System
- Readaptation



- Perform a dynamic analysis of the postural
- Makes a complex pattern of movement of the spine and pelvis
- Detects muscle imbalances

PROTOCOL INTERVERTEBRAL DISCS

- Postural study
- **NEUROMODULATION**
- 3D Traction System
- Readaptation



DEFINITION

Method of clinical friction and therapeutic approach, in which electric current is used to establish the greatest expression of the function of the nervous system: motor, sensory and autonomic.

PROTOCOL INTERVERTEBRAL DISCS

- Postural study
- Neuromodulation
- **3D TRACTION SYSTEM**
- Readaptation

OBJECTIVES

- Opening of the vertebra disc space
- Give more space to the rehydrated disc



PROTOCOL INTERVERTEBRAL DISCS

- Postural Study
- Neuromodulation
- 3D Traction System
- **READAPTATION**

Therapeutic exercise
Motor control



PROTOCOL NERVES TORSO

OBJECTIVE:

- The nerve

CELL TREATMEN:

- Origin of pain and Dysfunction

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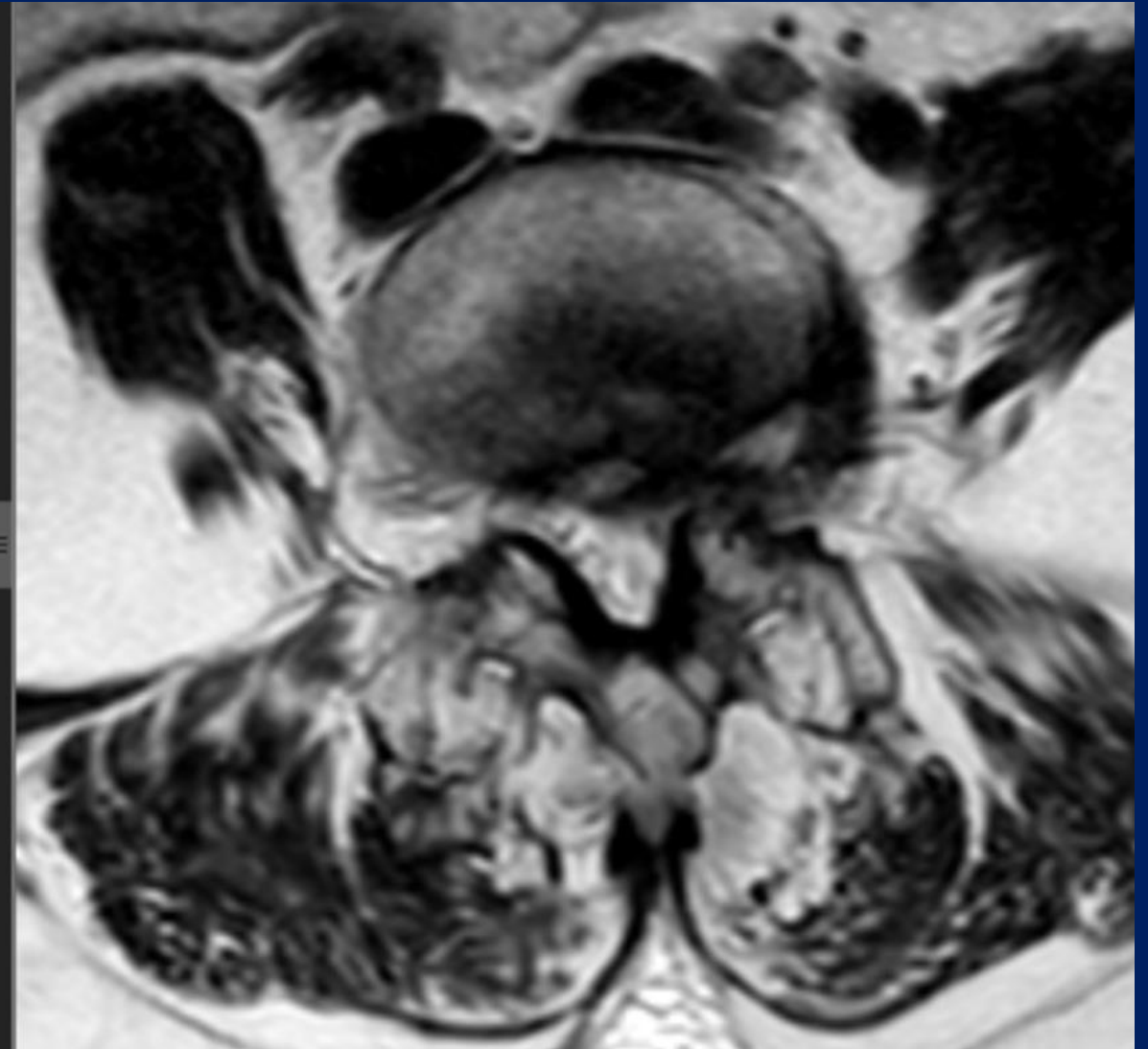


Patient: _____

Nerves torso

10	12	10	9	17	LOT	26		22
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MEDICAL DIAGNOSIS



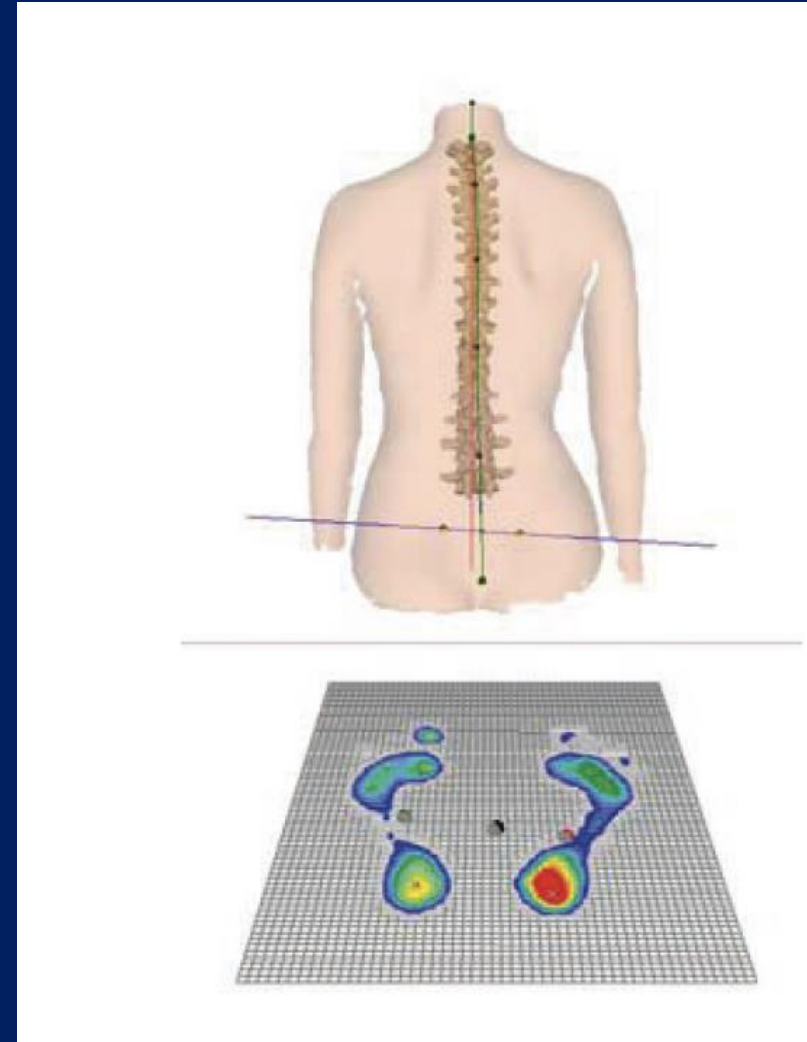
PROTOCOL NERVES TORSO

- **POSTURAL STUDY**

- Neuromodulation
- Readaptation

Study of the anti-algic posture

Study of postural compensations

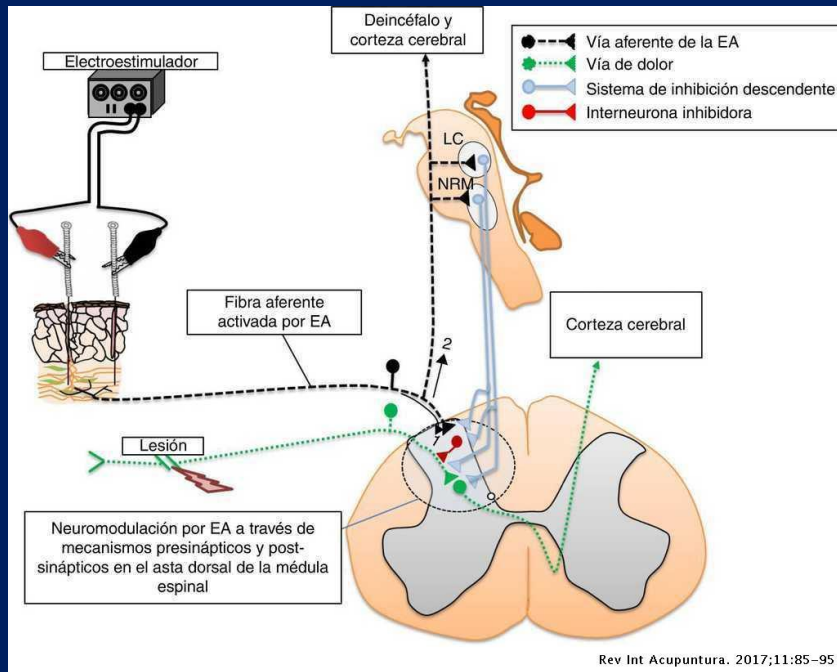


PROTOCOL NERVES TORSO

- Postural study
- **NEUROMODULATION**
- Readaptation

• OBJECTIVES

- At the sensory level
 - Gate control, nociceptive central depression
- At the motor level
 - Improved speed, strength and muscle control
- At the regional level
 - Improved trophism



PROTOCOL NERVES TORSO

- Postural Study
- Neuromodulation
- **READAPTATION**

Nervous system activation exercises



PROTOCOL BONE TORSO

OBJECTIVE:

The bone

CELL TREATMENT

ORIGIN OF PAIN AND
DYSFUNCTION

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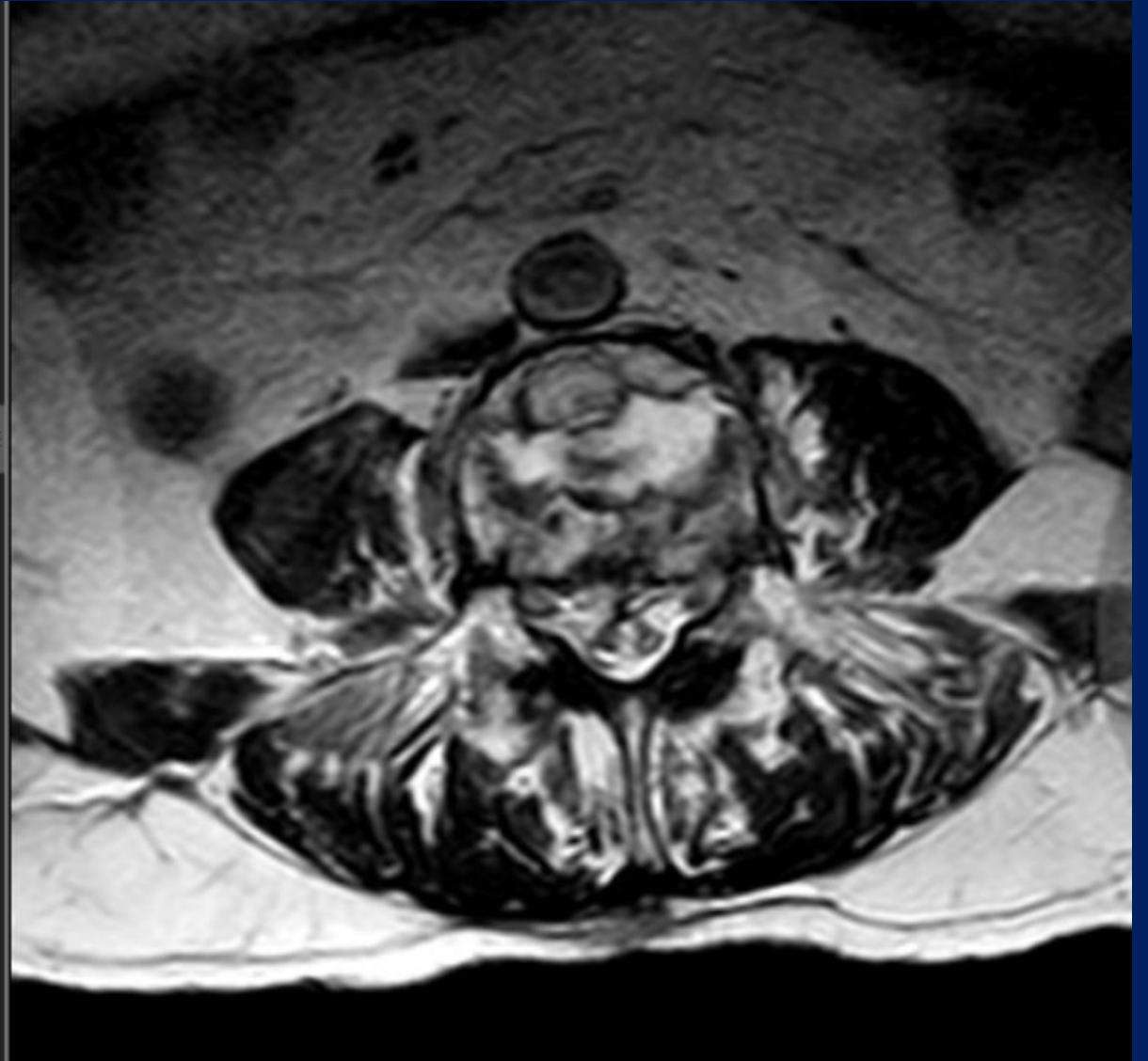
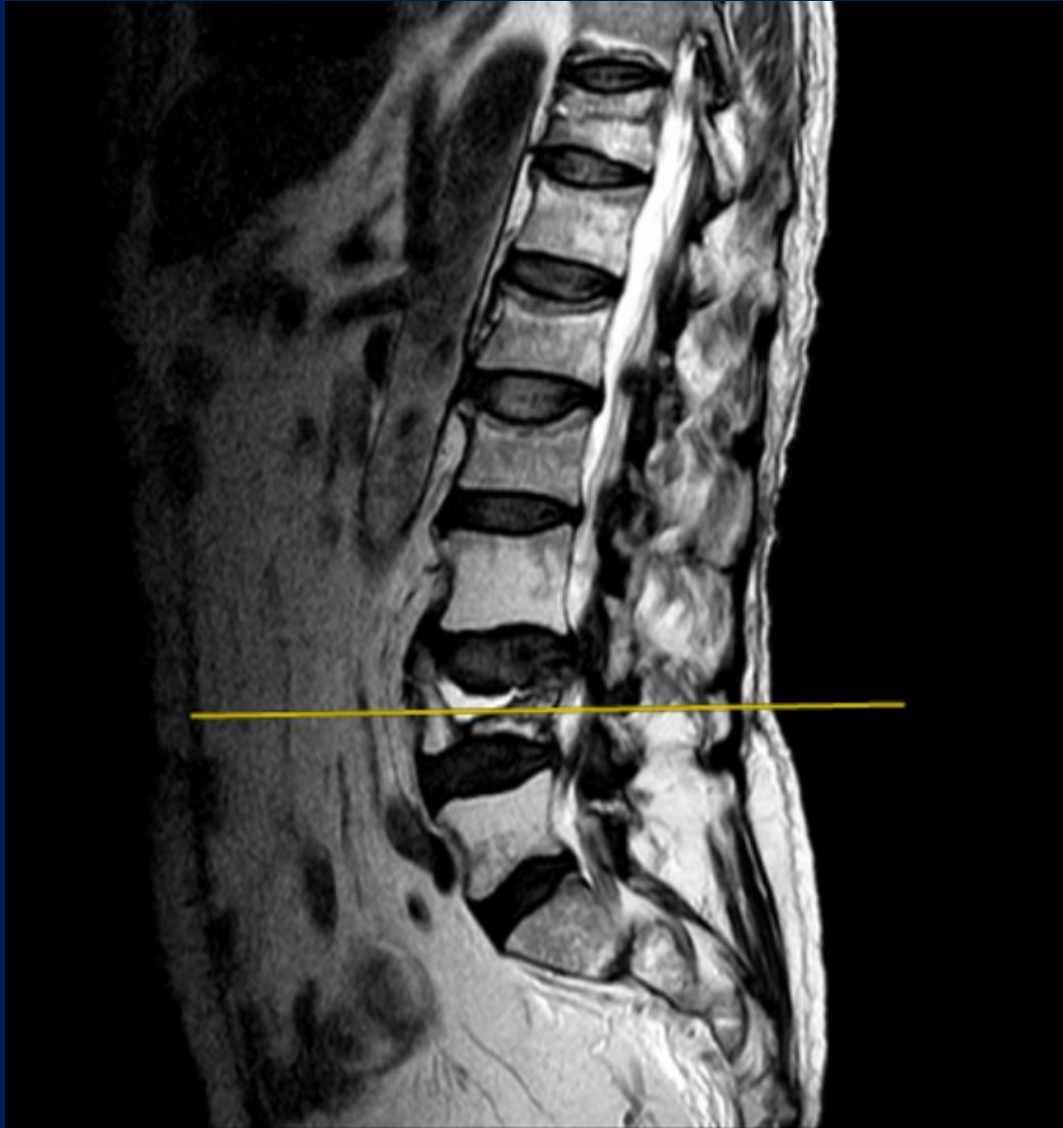


Patient: _____

Osteo/bone torso

10	12	02	9	17	LOT	26		22
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MEDICAL DIAGNOSIS



PROTOCOL BONE TORSO

- Postural Study
- **ADVANCED PHYSIOTHERAPY**
- Readaptation

INDICATIONS: FRACTURES, BONE EDEMA

- **LASER**

- Analgesic, anti-inflammatory biostimulant effect

- **MAGNETIC FIELDS**

- Analgesia in acute and chronic processes, Joint mobilization, stimulation of the musculature

- **DIATHERMY**

- Powerful relaxing effect on both smooth and striated muscles

PROTOCOL BONE TORSO

- Postural Study
- Advanced Physiotherapy
- **READAPTATION**

MUSCLE CONTROL
MOVILIZACION ARTICULAR



PROTOCOL CARTILAGE SPINE

OBJECTIVE:

The joint

CELL TREATMEN

ORIGIN OF PAIN AND
DYSFUNCTION

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Patient: _____

Osteoarthritis/cartilage spine

10	11	01	9	17	LOT	40 22
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MEDICAL DIAGNOSIS



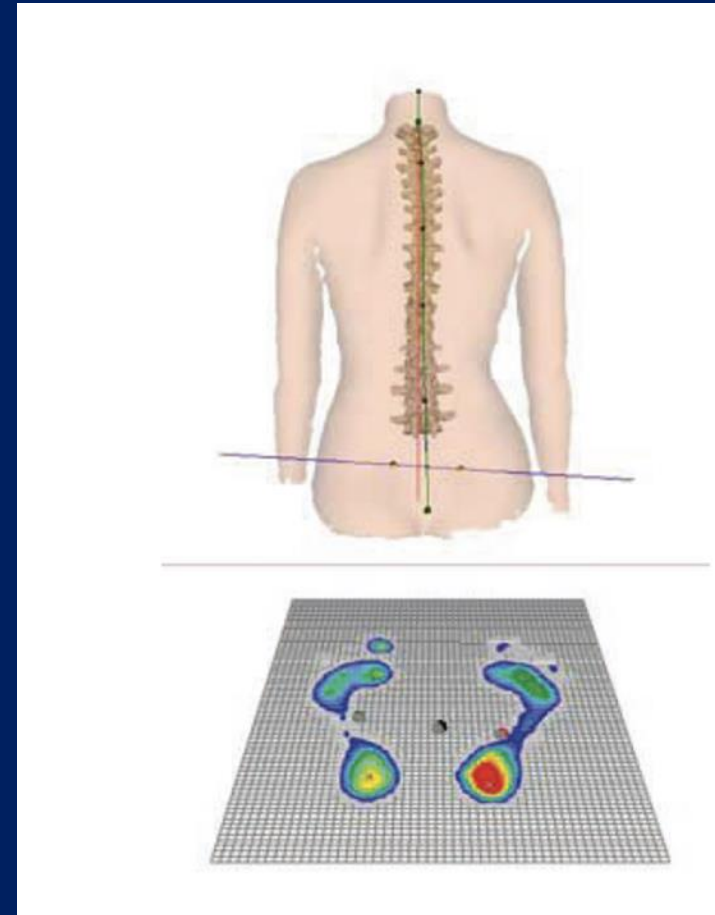
PROTOCOL CARTILAGE SPINE

- **POSTURAL STUDY**

- 3D Traction System
- Galvanic Current

Study of the anti-algic posture

Study of postural compensations



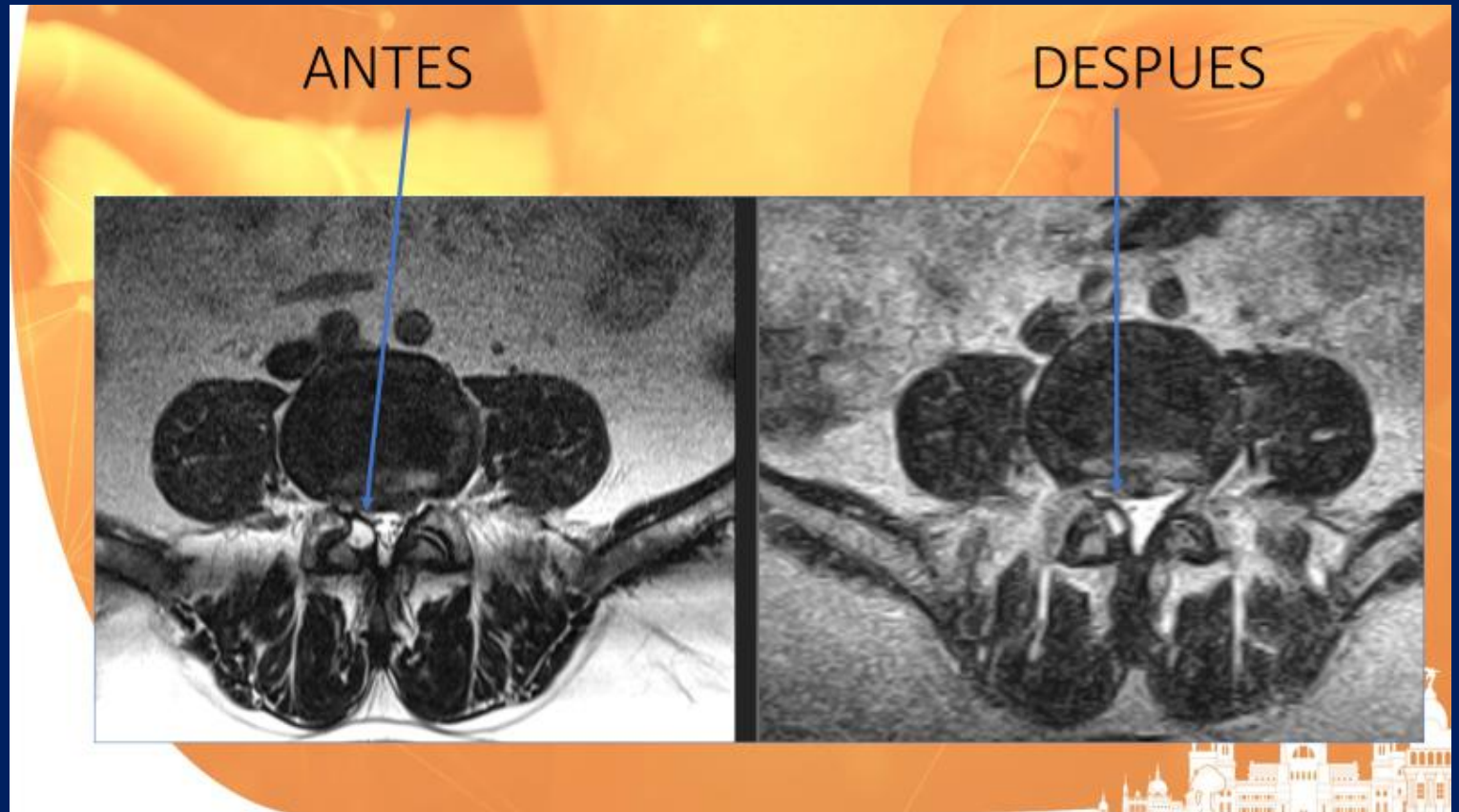
PROTOCOL CARTILAGE SPINE

- Postural Study
- **3D TRACTION SYSTEM**
- Galvanic Current

OBJECTIVE:

Mobilization of joint facets

Pumping effect on joints



PROTOCOL CARTILAGE SPINE

- Postural Study
- 3D Traction System
- **GALVANIC CURRENT**



ANTI-INFLAMMATORY EFFECT OF GALVANIC CURRENT

SANCHEZ IBAÑEZ, JB. Clinical course in the treatment of chronic patellar tendinopathy through ultrasound guided percutaneous electrolysis intratissue (EPI®) : study of a population series of cases in sport. ATLANTIC INTERNATIONAL UNIVERSITY HONOLULU, HAWAII WINTER 2009.

THANK YOU