



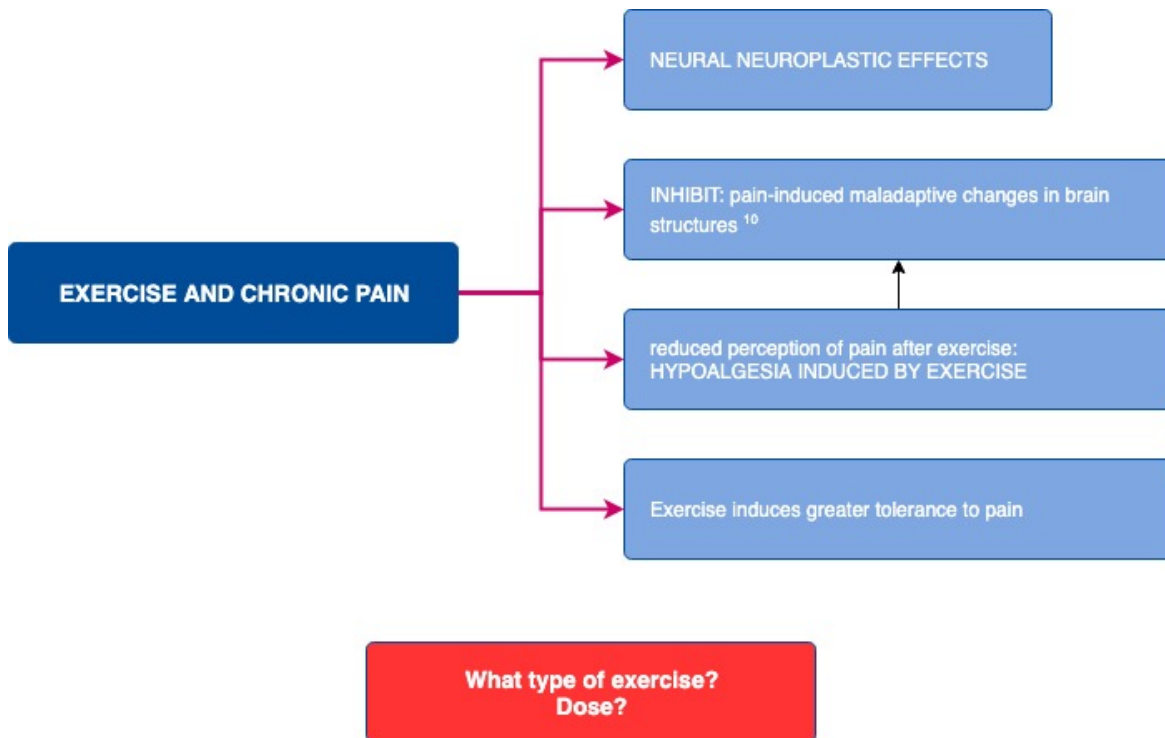
## EFFECTS OF EXERCISE IN PATIENTS WITH CHRONIC LUMBAR PAIN

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### EXERCISE AND CHRONIC PAIN

Exercise induces greater tolerance to pain. Positive effects on the cerebral cortex and neuroplastic changes in the perception of post exercise pain are recognized.

#### 1. NEURAL NEUROPLASTIC EFFECTS



**Image 1.** Wippert Pia-María, Christine. Stress and alterations un the pain Matrix: A Biopsychosocial Perspective on Back Pain and its prevention and treatment. International Journal Environmental Research and Public Health, 2018, 15(14), 785; doi. Published:18 April 2018

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## 2. WHAT KIND OF EXERCISE IS RECOMMENDED IN USERS WITH:

### CHRONIC LUMBAR PAIN?

- Stimulation of somato - sensory information::
  - Through the execution of passive techniques of Orthopedic Manual Therapy (it is suggested to involve plastic changes)<sup>1</sup>
  - Joint Manipulation<sup>2</sup>
  - Closed vs open kinetic chain exercise<sup>3</sup>
- Training with functional activities in specific parts of the body<sup>4</sup>
- Implicit motor learning, sequence and fragmentation of the task
- Feedback and feedforward training bases<sup>5</sup>
- Motor skills training: kinesthesia, sense of strength, balance, unstable dynamic bases
- Any active exercise will activate the proprioceptors, but a COMBINED APPROACH of exercises, based on the functional requirements of the joint or specific area of the body, functional level: home, work, sport.
- Co-activation of agonists and antagonists<sup>6</sup>
- Plyometric Training<sup>7</sup>
- Vibration Training
- Active positioning exercise
- Soft tissue techniques, myofascial release, massage<sup>8</sup>

## 3. PROPIOCEPTIVE FUNCTIONAL COGNITIVE REHABILITATION

Selecting a starting position / angle and an objective position / angle, and training implies moving as close as possible from one position to another, keeping each position for a short time; low external load 5-10% of the body weight<sup>9</sup>

### TRAINING IN THE SENSE AND PERCEPTION OF FORCE

Activating a muscle group with a predetermined amount of strength in a time period<sup>10</sup>

### PLYOMETRIC TRAINING

Sequence: eccentric - isometric - concentric



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## STRETCH AND CUTTING CYCLE

Proprioceptive reflexes and elastic properties of muscle fiber.

Speed and Strength: FeedForward - FeedBack

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## VIBRATION TRAINING

Oscillatory movements; Muscle spindle stimulation

Joint and sensory mechanoreceptors

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## TRAINING IN BALANCE CONTROL

Conscious and unconscious, triple, sequences, rhythms

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## TRAINING IN ACTIVATION AND MUSCLE CONTROL

Diagonal activation patterns with elastic resistances, pulleys with feedback, abdominal transverse, multifid, “neutral zone” or at lumbar physiological rest



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