

# Flex Therapist CEUs

## Low Back Pain: EMG Findings

1. A side-to-side EMG activity imbalance in back muscles has been observed in people with LBP, suggesting greater level of asymmetry in the muscle activation of patients compared to healthy controls.

- A. True
  - B. False
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2. In LBP patient groups, the hyperactive superficial muscles are considered to represent an adaptive strategy aiming for postural adjustments as well as control the perturbation to the spine. There is strong evidence to suggest that the hyperactive muscular behavior serves to stiffen and protect the spine. Nevertheless, if maintained long term, this adaptive muscle activity pattern can be problematic because as the superficial trunk muscles stiffen the spine via sustained and augmented compression, a continuous stimulation of \_\_\_\_\_ in spinal structures may predispose and result in further injury.

- A. Mechanoreceptors
  - B. Nociceptors
  - C. Gamma fusimotor neurons
  - D. Alpha and gamma spindle systems
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3. Since ligaments are considered highly important in sensory function and feedback control of joint position, spino-ligamentous injuries are considered to cause:

- A. A disturbance of the control of trunk equilibrium.
  - B. Reduced proprioception.
  - C. Impaired postural control.
  - D. All of the above
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4. The increased erector spinae activation found in back pain groups compared to the control during flexion and full flexion, could be explained as a response of the particular muscle group to limit the segmental range of motion, restricting the excursion of the vertebrae with respect to each other where the passive stiffness is insufficient.

- A. True
  - B. False
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**5. Numerous studies have demonstrated that LBP patients exhibit reduced trunk muscle force due to:**

- A. Deep extensor muscle mass wasting.**
  - B. Reduced endurance of the trunk extensor muscles.**
  - C. LBP patients exhibit reduced trunk muscle force due to deep extensor muscle mass wasting and reduced endurance of the trunk extensor muscles.**
  - D. Neither muscle mass wasting nor reduced endurance of the trunk extensor muscles lead to reduced trunk muscle force in LBP patients.**
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**6. Compared to healthy individuals, LBP patients demonstrate a significantly higher proportion of \_\_\_\_\_ fibers.**

- A. Type I**
  - B. Type II**
  - C. LBP patients demonstrate a significantly higher proportion of both Type I and Type II fibers when compared to healthy individuals.**
  - D. There is no different in fiber types between healthy individuals and LBP patients.**
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**7. Compared to healthy controls, it has been observed that deep back muscles of LBP individuals:**

- A. Are more active**
  - B. Are less active**
  - C. Have an atrophic profile**
  - D. Are both less active and have an atrophic profile**
- 

**8. The anticipation of pain has been considered responsible for the development of chronic unremitting pain syndromes, and especially when it is associated with fear, it is believed to result in even more disabling conditions than pain itself.**

- A. True**
  - B. False**
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**9. It has been suggested that LBP patients require lower thresholds to evoke facilitation of inhibition of responses of the erector spinae muscle over the motor cortex compared with healthy control subjects resulting in altered muscle activity patterns.**

- A. True**
  - B. False**
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**10. The results revealed that the back pain group had a greater level of left / right asymmetry of the erector spinae compared to the control group, indicating a significant**

**level of muscle activation imbalance.**

- A. True**
  - B. False**
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**11. Asymmetric trunk loading stimulates neuromuscular imbalances resulting in reduced EMG activity patterns on the \_\_\_\_\_ body side.**

- A. Non-dominant**
  - B. Dominant**
  - C. Both the non-dominant and the dominant body side show reduced EMG activity**
  - D. Neither the non-dominant nor the dominant body side show reduced EMG activity**
- 

**12. Documented in numerous studies comparing patients with LBP to healthy controls, LBP has been considered to alter the physiological properties of the \_\_\_\_\_, resulting in stiffness and decreased flexibility.**

- A. Quadriceps muscle group**
  - B. Gluteus medius**
  - C. Hamstring muscle group**
  - D. Gastrocnemius**
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