

Criticizing lumbar spine flexion for low back pain: A narrative review.

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Abstract

Background: Low Back Pain (LBP) is a severe musculoskeletal issue that may affect an individual's health and daily life activities. Whenever a patient gets LBP due to any cause whether it occurs due to any injury or muscle spasm, the health care providers criticize the lumbar flexion for low back pain and suggest patients to avoid the movement immediately. We summarized the evidence for solely criticizing lumbar flexion as a relevant issue in low back pain patients.

Methods: Two reviewers independently analyzed articles that evaluated about the disc space and height during flexion movement, exposure of spine to risk at flexion/rotation movement and pain related fear in patients with LBP. The aim of this study is to investigate the effects of lumbar spine flexion on LBP.

Results: There was no significant difference observed between the anterior and posterior disc heights from neutral to flexion at the same level while identifying the segment-dependent changes in lumbar intervertebral disc space height during motion. Pain related fear was observed in patients with LBP that ultimately lead to reduction in mobility and muscle activity. Moreover, there was decrease in lumbar flexion movement due to pain in patient with LBP.

Conclusion: The health care suggests patient not to flex the trunk, which is still unclear about its suggestion to the patients. Studies show no correlation between pain and flexion. Less studies has been conducted related to the pain and spinal flexion that shows no pain in case of spinal flexion with patient suffering from LBP and future researches are required to prove this fact.

Keywords: LBP, Lumbar spine flexion, ADLs, LDH.

Introduction

Low Back Pain (LBP) is a chief musculoskeletal issue which cause considerable amount of social burden on an individual's health [1]. It has been calculated that the lifetime incidence of LBP is 84%. LBP is described as a tension in the muscle or stiffness with or without radiating pain in the lower limb and localized with the coastal margin and inferior gluteus folds [2]. Though it has been proposed that many factors can be responsible for low back pain, however, little is known about the conditions. There are several hypotheses that have formed to explain the condition but the evidence has been conflicting on the universal applicability for everyone. One significant hypothesis is the biomechanical concept that indicates about the low back pain leading to muscle imbalances and low muscle activity level [1, 3]. Other theory indicates that low back pain can occur due to poor posture and/or protective response to any injury. Some researchers indicate that an abnormal musculature movement can also lead to a dysfunction of the spinal cord, which can increase the capacity for aggression at nerve endings and may cause pain. In addition, it is also

propose that a specific muscle to micro contractures along with myofascial release and some other components like disc, joints, and ligaments can cause pain [3].

There is indeed a clear assumption about lumbar flexion associated with low back pain. Heavy lifting can be related to low back pain attributed due to simultaneous angular (kinematic) positioning or burden (kinetic) on the lumbar spine [4]. Lumbar flexion is considered as a significant component in activities of daily living (ADLs) as well as an evaluator in clinical assessment of LBP [5, 6]. Among normal populace, the spinal loads and muscle movements have a change when they ask to alter their lumbar rhythm. Frequently, individuals having LBP regulate their lumbar rhythm due to pain, which raise the spinal loads, muscle forces and thus expose the lumbar arrangement into advanced risks leading to back disorders, tissue injuries, and exhaustion [5]. Generally, medical professionals and safety workers in the hospital tend to recommend the patients to avoid the lumbar spine flexion eliminated while lifting so that the risk of LBP can get minimize while lifting an object in a lumbar neutral

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or lordotic posture. Moreover, trying to lift an object with a 'straight back' is becoming a widely recognized concept in physical and global health [4]. The aim of this study is to investigate the effects of lumbar spine flexion on LBP and why the health care professionals criticize the lumbar spine flexion for low back pain.

Comparison of Lumbar disc space and height during flexion with neutral and extension

The study depicts no significant difference observed between anterior and posterior disc heights from neutral to flexion of spine. Moreover, the subsequent component-dependent fluctuations in the lumbar intervertebral disc space and height while flexion-extension movement at a stand still unknown. There is a study that shows that there was no difference between the changes in anterior and posterior disc heights from neutral to flexion at the same level [7, 8].

Intra-discal forces in the spinal region

Lumbar Disc Herniation (LDH) patients demonstrate compressive forces and shear forces during the trunk flexion movement for all five lumbar motion segment units. Lumbar Intervertebral Discs (LIDs) shows increase in the flexion angle during both ipsilateral picking up and contra lateral picking up movements. There was significant increase in all LIDs in the middle range of the picking up movement in LDH patients. As the flexion angle increase, the LDH patients demonstrate larger shear forces on LIDs during all three movements [5].

Flexion and rotation

An insignificant enhance in threat was found with increasing experience to lumbar rotation; however this relation was not considerable. As a consequence of small number of personnel who exhausted extra 10% of their working time with the lumbar during 60° of flexion, or in excess of 15% of their working time with the trunk in rotation, it was not possible to determine whether there was an additional risk at increase levels of exposure [9].

Pain related fear

LBP patients tend to have pain related fear and this fear seems strongly linked to reduced mobility and muscle activity amongst people with LBP. The study indicates that when analyzing EMG activity across medical and healthy communities, the degree of flexion regarded as confounding. The correlation test shows that due to pain there is decrease in lumbar flexion movement in patients suffering from LBP. After healing of the tissues there was still fear in the patients related to pain during limited lumbar flexion [3].

Conclusion

There are recent studies published which indicates that there is lumbar flexion during LBP which is not an actual risk factor. The health care suggests patient not to flex the trunk, which is still unclear about its suggestion to the patients. As there are studies, that shows no correlation between pain and flexion. Less studies has been conducted related to the pain and spinal flexion which shows that there is no pain in case of spinal

flexion with patient suffering from LBP and future researches are required to prove this fact.

Literature Review

There are few studies that has been published proving the fact that spinal flexion is not the only factor responsible for patient suffering from low back pain. Moreover, health care professionals are suggesting the patients to avoid doing spinal flexion and considered it as an important factor solely for LBP. According to the studies, it suggest that there is no any kind of relationship between the spinal flexion and pain. However, patients are unaware of this fact and they have been always asked to modify or avoid performing this movement to reduce the pain by the healthcare professional, which is a myth. Therefore, the importance of writing this paper is to change the mindset among the individuals and to avoid the fear of performing the movement since spine is a robust and made for movement.

Conflict of Interest

The authors have no actual or potential conflicts of Interest.

References

1. Setchell J, Costa N, Ferreira M, et al. Individuals' explanations for their persistent or recurrent low back pain: a cross-sectional survey. *BMC Musculoskelet Disord.* 2017;18(1):1-9.
2. Elik M, Zgorzalewicz-Stachowiak M, Zeńczak-Praga K. Application of Pilates-based exercises in the treatment of chronic non-specific low back pain: state of the art. *Postgrad Med.* 2019 1;95(1119):41-5.
3. Geisser ME, Haig AJ, Wallbom AS, et al. Pain-related fear, lumbar flexion, and dynamic EMG among persons with chronic musculoskeletal low back pain. *Clin J Pain.* 2004;20(2):61-9.
4. Kuai S, Liu W, Ji R, et al. The effect of lumbar disc herniation on spine loading characteristics during trunk flexion and two types of picking up activities. *J Healthc Eng.* 2017.
5. Marras WS, Lewis KE, Ferguson SA, et al. Impairment magnification during dynamic trunk motions. *Spine.* 2000;25(5):587-95.
6. Arjmand N, Shirazi-Adl A. Biomechanics of changes in lumbar posture in static lifting. *Spine.* 2005;30(23):2637-48.
7. Arshad R, Zander T, Dreischarf M, et al. Influence of lumbar spine rhythms and intra-abdominal pressure on spinal loads and trunk muscle forces during upper body inclination. *Med Eng Phys.* 2016;38(4):333-8.
8. Fu M, Ye Q, Jiang C, et al. The segment-dependent changes in lumbar intervertebral space height during flexion-extension motion. *Bone Joint Res.* 2017;6(4):245-52.
9. Hoogendoorn WE, Bongers PM, De Vet HC, et al. Flexion and rotation of the trunk and lifting at work are risk factors for low back pain: results of a prospective cohort study. *Spine.* 2000;25(23):3087-92.

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