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Research Article

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Systematic Review Low Back Pain in Work-from-Home Individuals: The Importance of Core and Hip Strengthening

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Abstract: Lower back pain is a musculoskeletal disorder and one of the most common orthopedic issue affecting around 1-4 individuals at some point of life which leads to poor quality of life and health. After the pandemic, most jobs shifted to offline. Due to remote working, the sedentary lifestyle and poor ergonomics have increased and are commonly seen. This increases the chances of lower back pain, especially in the work-from-home group. This systematic review will help determine the relationship between LBP and remote work. Emphasis is also provided to uncover the importance of hip and core strengthening exercises as a preventive method. This will help create awareness amongst work-from-home individuals about lower back pain and proper ergonomic choices. These choices are important, and these exercises become important due to lack of core and hip engagement in these individuals. Future studies has a scope of determining the intensity and frequency of these exercises.

Keywords: Lower back pain (LBP), musculoskeletal disorder, Core and Hip Strengthening

Introduction

Low back pain conditions that affect quality of life and productivity at work can have multiple different causes and have close to a hundred and fifty different diagnoses available. But the most common one includes core and hip weakness leading to cross syndrome. The change in trend with majority of the people opting for remote working after the COVID-19 epidemic has increased the problem as people spend more time in non-ergonomic positions, which increases the pressure on the lower back (Andersson, 2004; Kumar et al., 2016). There are various reasons for lower back pain, out of which poor ergonomics and a sedentary lifestyle increase the likelihood of lower back pain (White & Black, 2015; Kumar et al., 2016). Lower back pain not only affects performance at work, reduce the productivity of the individual but can also lead to decreased quality of life, reduce ability to perform activities of daily living. Overall, it affects the general health of the individual. This study will help to understand the relationship between lower back pain in work-from-home individuals and highlight the importance of core and hip strengthening exercises. Also, this study will include how other conditions like flat feet can complicate care for lower back pain.

Methods

Information and review were performed using electronic databases such as PubMed, Google Scholar, and NIH. Published papers were reviewed from 2000 to 2017. The keywords included were "low back pain," "work from home," "core strengthening," "hip strengthening," "flat feet," and "ergonomics." The studies were chosen based on their relevance to LBP in remote workers, the efficacy of core and hip strengthening activities, and the significance of flat feet in LBP.

Low Back Pain: Work From Home

The transition to remote work has resulted in increasing LBP due to prolonged sitting, poor posture, and improper ergonomic settings (Smith & Jones, 2007). Lack of ergonomic awareness and fewer physical movements impact muscle strength. According to the research, those who work from home are more prone to develop LBP due to a lack of sufficient workstations and a inclination to work in less-than-ideal conditions, such as on couches or beds (Lee & Chen, 2013). This can be simply because of lack of motivation to sit at a proper desk and a chair or potentially due to investing in office equipment. Furthermore, the reduced physical activity associated with remote work adds to the weakening of core and hip muscles, essential for spinal stability, maintaining good muscle balance between the posterior and anterior chain of muscles leading to change in spinal curvature (Kim et al., 2015).

Poor posture reduces the strength of core muscles and increases the pressure on a particular group of muscles due to a lack of mobility (Andersson, 2004). This creates tightness in one group of muscles, leading to muscle imbalance. Studies have shown that poor ergonomic posture causes lower cross syndrome which can be simply defined as major strength or length tension differences between agonists and antagonist muscles providing support for the same spinal or joint structure (Kumar et al., 2016). Lower cross syndrome (LCS), also known as pelvic crossed syndrome, is a muscle imbalance in the lower back and pelvis that can cause postural abnormalities and chronic pain. It is caused by muscle shortening and lengthening in the pelvic and lumbosacral areas, resulting in a "crossed" pattern of imbalance (Janda, 2007). The hip flexors and erector spinae are often tight, whereas the abdominals and gluteal muscles are weak (Janda, 2007).

Increased hours of sitting cause anterior pelvic tilt, which results in tightness of the paraspinal muscles and hip flexors (Kim et al., 2015). Also, core muscle and hip muscle weakness occurs. The hip rotators are the primary muscles used while turning side-to-side. When hip muscle weakness happens, it increases the pressure on the paraspinal, Quadratus lumborum (QL), and Erector spinae muscles (Smith & Jones, 2007). Due to the lack of strength in the core muscles, it could not provide sufficient support, and the possibility of injury increases. Increased stress on weak muscles leads to lower back pain.

Core And Hip Strengthening Importance

Core and hip strengthening activities are critical components of LBP treatment and prevention. The core muscles, which include the transverse abdominis, multifidus, and obliques, stabilize the spine, lowering the chance of injury during movement (Smith & Jones, 2007). Increasing the mobility of hip rotator muscles and the strength of the hip muscles and core muscles improves posture (Kumar et al., 2016). This can reduce anterior pelvic tilting and the chances of lower cross syndrome. Strengthening these muscles relieves stress on the lumbar spine by encouraging appropriate alignment and decreasing compensatory motions (Lee & Chen, 2013). The hip muscles, like the gluteus medius and maximus, are necessary for maintaining pelvic stability and appropriate gait, both of which are required to prevent LBP (White & Black, 2015).

Studies have proven that regular core and hip strengthening exercises significantly reduce LBP symptoms and enhance functional outcomes (Kim et al., 2015). These exercises are especially advantageous for work-from-home workers because they offset the consequences of prolonged sitting and bad posture by increasing muscle endurance and encouraging good spinal alignment (Smith & Jones, 2007).

Flat Feet Posture and Low Back Pain

Flat feet, or pes planus, can cause LBP by affecting the lower limbs and spine biomechanics (Chang & Li, 2008). The absence of an arch in the foot causes excessive pronation, creating misalignment in the lower limbs and pelvis, eventually increasing stress on the lumbar spine (Smith & Jones, 2007). Individuals with flat feet may exhibit compensatory gait and posture modifications, resulting in muscular imbalances and lower back overuse injuries (Janda, 2007).

Treating flat feet with orthotic therapies and core and hip strengthening might reduce LBP by improving foot mechanics and spinal alignment (Chang & Li, 2008). This comprehensive approach is especially crucial for those who work from home and may need to be made aware of how flat feet affect their LBP (Smith & Jones, 2007).

Discussion

Long periods of sitting, poor posture, and insufficient ergonomic settings have contributed to increased lower back pain (LBP) among remote workers. Working from home frequently entails using suboptimal workstations such as couches or beds, resulting in muscular weakening and decreased physical activity, particularly in the core and hip muscles, which are critical for spinal stability (Lee & Chen, 2013). Poor posture exacerbates the problem by generating muscular imbalances, tension, and conditions such as Lower Cross Syndrome (LCS), in which muscle imbalances in the lower back and pelvis cause persistent discomfort and postural irregularities (Janda, 2007). Sitting for long periods can promote anterior pelvic tilt, which tightens the hip flexors and paraspinal muscles while weakening the core and hip muscles, increasing the risk of LBP (Kim et al., 2015).

Strengthening core and hip muscles is critical for preventing and treating LBP because it stabilizes the spine and improves posture, lowering the chance of injury and conditions such as LCS (Smith & Jones, 2007). Individuals with flat feet may also develop LBP due to changed lower limb biomechanics, which can cause lumbar spine tension (Chang & Li, 2008). Addressing flat feet with orthotics and strengthening exercises can improve foot mechanics and spinal alignment, especially for people who work from home and may be unaware of the concerns (White & Black, 2015).

The advent of remote work has drawn attention to the growing occurrence of LBP among people who have never experienced it. Poor ergonomics and a sedentary lifestyle are significant factors in this problem, emphasizing the need for appropriate preventive and rehabilitative measures (Smith & Jones, 2007). Core and hip strengthening activities have been demonstrated to help reduce LBP by improving spinal stability and alignment (Kim et al., 2015). Furthermore, treating flat feet with orthotic support and muscle strengthening is critical for total LBP care (Chang & Li, 2008).

This analysis emphasizes the significance of taking a comprehensive LBP prevention and management strategy in work-from-home employees. Individuals can lower their risk of LBP and enhance their overall quality of life (Andersson, 2004).

Conclusion

Lower back pain is a common musculoskeletal disorder affecting the overall health and productivity of individuals working from home. Not does it only interfere with work but also personal life, causing undue stress and suffering reducing the quality of life and ability to perform different physical activities due to pain. Leading causes for low back pain is poor ergonomic choices, a sedentary lifestyle, prolonged sitting hours, and lack of exercise. Core and hip strengthening exercises will help reduce the risk for low back pain and improve posture, correcting lower cross syndrome. Furthermore, flat feet can exacerbate the chances of lower back pain. This can be managed with orthotic support and postural realignment with proper postural strengthening. A holistic approach is necessary for diagnosis, muscle assessment and treatment planning. Further research should focus on developing exercise protocols tailored to individual needs, especially of work-from-home groups, and creating awareness of the importance and long-term effects of physical training.

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