

# NON-SPECIFIC LOW-BACK PAIN AND CORRECTIVE EXERCISE SOLUTIONS

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**A** sedentary lifestyle has now become the new normal as COVID-19 sweeps the land and restricts activities once enjoyed, including activities that were important for both physical and mental health. This has become a new health concern. For some individuals, sitting in front of a computer for eight or more hours a day is now a regular routine. This routine has been known to cause some negative results, which can cause secondary health concerns, such as high blood pressure and increased risk for diseases like diabetes, obesity, and cardiovascular disorders (1,3). Research has shown that people that live sedentary lifestyles and are inactive for two weeks will lose large amounts of muscle strength and decrease oxygen uptake affinity of hemoglobin in blood (1,3,5). The intention of this article is to focus on non-specific low-back pain and provide potential exercise solutions.

Non-specific low-back pain (NSLBP) is more of a category than a specific disorder. NSLBP is pain felt in the lower back region with no known specific cause. There is no specific pathoanatomical cause for the condition. NSLBP is not caused by one specific event, such as a traumatic event, a fall, a sport impact, or a vehicle accident. Instead NSLBP seems to arise from a broad collection of multiple disorders that originate from the components within the back (1,2,7). People living in a sedentary lifestyle may complain of aggravating symptoms, such as pain. People may describe the pain as a feeling of a dull ache that can be worsened with excessive bending.

The structure of the back is mostly made up of the vertebral bones, intervertebral disks, fascia, ligaments, and muscles. In between each vertebral bone, there are disks known as intervertebral discs. They are arranged in a way that resembles a stack of pancakes. The role of the vertebral disk is to act as a shock absorber against outside forces acting on the body and to contribute to the shape of the spine (1,7). Each vertebral disk is comprised of two substances: an outer and inner layer. The outer layer consists of multiple bands of concentric shaped tough fibro-collagen material, which acts as a protective layer. The inner layer is made up of a water-based, gelatin-like material that is mostly responsible for shock absorption as well as taking on forces imposed on the spine, such as compression. Compression forces are imposed on the vertebral column from walking, prolonged standing, and carrying heavy objects (e.g., back packs, suitcases, purses, etc.). The spinal column contains multiple structures for stability, such as ligaments and the osseous vertebra. The vertebral discs act as shock absorbers, cushioning against compressive forces that act on the vertebral column during standing and walking. The muscles allow movement in multiple planes of motion in the body such as flexion, extension, side bending, and rotation. A sedentary lifestyle's NSLBP symptom may be caused in two ways: poor postural habits and lack of physical activity (3,7). For many, this is a new issue of concern as society is forced

into isolation away from outside daily activities, such as walking on the sidewalk with others (very common practice for people in cities and urban areas), walking to the train station, and engaging in recreational activities like team sports, marathons, triathlons, Tough Mudder™ races, etc.

## CORRECTIVE EXERCISES FOR NSLBP

A possible treatment for NSLBP is increased physical activity. Physical activity includes many activities, such as walking, running, swimming, hiking, climbing, and skiing (2,6). NSLBP can cause pain and discomfort to a person living a sedentary lifestyle. Although there is no known direct cause to NSLBP, there are evidence-based interventions that can help reduce the pain and discomfort (7,8).

Research has indicated that performing low back and core exercises can produce an increase in cross-sectional strength of the deep back and core muscles, which can have a fitness and therapeutic benefit (7,8). Performing the following exercises with a combination of physical activities, such as walking, jogging, and swimming, can reduce the incidence of low back pain during social distancing within the new societal norms of today.

## BASIC EXERCISES THAT CAN BE DONE AT HOME:

1. **Pelvic Tilt:** Start by lying supine on a bed or on a mat. Keep the knees bent at a 90-degree angle and keep the feet flat on the bed or mat. From this position, bring the pelvis/belt line up towards the head by flattening the lower back against the mat or bed. Hold for 2 – 3 s, then release. Perform three sets of 10 repetitions.
- 2a. **Floor Bridge:** Lie supine on a mat on the floor with the feet, back, and buttocks flat on the floor. Start by pushing the buttocks off the floor by pushing the feet against the floor until the thighs and lower leg are at a 90-degree angle. Hold for 1 – 2 s and return back down to the floor. Perform three sets of 10 repetitions (see Figures 1 and 2).
- 2b. **Ball Bridge:** For more of a challenge, add a physioball. If a ball is not available, a foot stool can also work well. Position the body supine, so the head and upper shoulders are resting on the stool, and the lower back and legs are off the stool. The knees are flexed at a 90-degree angle. Bend at the waist and have the hips flexed. Try not to allow the buttocks to touch the ground. To begin the exercise, raise the hips up towards the ceiling until the abdomen and pelvis are level and parallel to the ground. Perform three sets of 10 repetitions (see Figure 3).



FIGURE 1. FLOOR BRIDGE – START



FIGURE 2. FLOOR BRIDGE – FINISH



FIGURE 3. BALL BRIDGE

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3a. **Plank (2):** This exercise is recommended to do on the mat on the ground. Lie prone so the chest, pelvis, legs, head, and feet are pointed towards the ground. Slide the elbows under the chest and keep the elbows bent. From this position, raise the whole body off the ground while keeping the elbows bent at a 90-degree angle and toes touching the ground. Start by holding for 10 s and then bring the body down to rest for 25 s. Try to progress each week by holding for 10 s longer than the previous week until the position can be held for a period of 60 s per set. Perform three holds for 60 s 3 – 4 times a day (see Figure 4).



FIGURE 4. PLANK

3b. **Side Plank (2):** This exercise is a little more challenging than the normal plank. The principle is the same, except one is positioned on their side. Start by positioning the body sideways. Stack the top foot on top of the foot that is against the ground. Bend the elbow at a 90-degree angle and place it underneath the body. With only the side of the foot and elbow touching the ground, hoist the body off the ground and try to maintain this position for 10 s. Try to progress each week by holding for 10 s longer than the previous week until the position can be held for a period of 60 s per set. Perform three holds for 60 s 3 – 4 times a day (see Figure 5).



FIGURE 5. SIDE PLANK

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