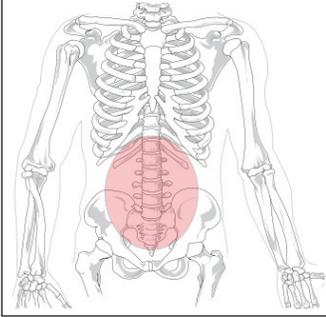




# Lumbar/Core Strength and Stability Exercises

## Introduction

Low back pain can be the result of many different things. Pain can be triggered by some combination of overuse, muscle strain, and/or injuries



to the muscles, ligaments, and discs that support the spine. Over time, a muscle injury that has not been managed correctly may lead to an overall imbalance in the spine. This can lead to constant tension on the muscles, ligaments, bones, making the back more prone to injury or re-injury.

Since low back pain can be caused by injury to various structures in the spine and its supporting structures, it is

important to consult your physician or athletic trainer if you have had back pain lasting longer than 1-2 weeks. Your physician can provide a diagnosis and explain what structure is injured so that your physical therapist or athletic trainer can guide you as to which exercises are appropriate for your specific injury. Each diagnosis are treated with different protocols, therefore it is important that you consult a medical professional before beginning any strenuous rehabilitation program. Low back exercises and flexibility can be the best treatment option for almost all types of back problems as it is likely to help restore balance in the spine.

Low back exercises concentrate on strengthening with the abdominal muscles, to be able to give stabilization of the spine. Rehabilitation

programs or preventative rehabilitation programs that focus on strengthening lumbar muscles combined with core stability and proprioception will reduce the risk of low back pain if exercises are done correctly, and on a regular basis.

The Lumbar/Core Strength and Stability Program below can be utilized as a preventative rehabilitation program or if you are recovering from an injury. The program includes a flexibility and strengthening section. Flexibility should be done at least 5 times a week, and the strengthening section should be done 3-4 times a week. The program is divided into levels “Easy”, “Medium”, and “Difficult”. It is recommended to start with the “Easy” exercises, and perfect them before moving onto “Medium” or “Difficult”.

Please take the time to overview the information below before beginning the Lumbar/Core Strength and Stability Program. It is important to understand the way certain muscles work, and how the exercises should feel in order to know if you are doing the exercises correctly.

## What is my “core”?

The “core” is comprised of several groups of muscles including the transversus abdominus, multifidus, diaphragm and pelvic floor muscles. These muscles work together to produce maximum stability in the abdominal and lumbar (lower) back region, as well as coordinate the movement of the arms, legs, and spine. Engaging these muscles is not something that most people do consciously, therefore it is important to learn how to effectively co-contract these muscles while performing these rehabilitation exercises.

## How do I engage my core?

Place two fingers on the bones on the front of your hips (ASIS). Move

your hands in an inch towards your belly button and down and inch towards your toes. You should now be directly over the transversus abdominus muscle. When you contract your core correctly, you should feel a gentle tightening under your fingers, as if you took in your belt one extra notch. If the muscles under your fingers start to “dome”, then you are contracting too much and compensating with larger muscle groups. It is important to learn how to engage your core in various positions and well as during activity to provide maximum stability for your spine.

## FLEXIBILITY

A lack of flexibility through the hips (hamstring, hip flexors, gluteus muscles) can contribute to low back pain, therefore it is important to work on this if you are experiencing back pain. Please make sure all stretches are “pain free”. If you feel discomfort, you may not be ready to do that specific stretch.

### 1- Quadriceps Stretch

Using a towel, or band, lie on your stomach, attach the band to affected foot and pull your heel to your butt. Hold this stretch for 1 min. Repeat 3 times.



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## 2- Hip Flexor Stretch

Kneel with affected knee on the ground, same side arm goes back causing pelvis (hips) to shift forward, and back to extend. Hold for 20-30 seconds. Repeat 3 times.



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## 3- Adductor Stretch

Prop the inside of your ankle up on a table, lean into the side you're stretching. Hold for 20-30 seconds. Repeat 3 times.



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## 4- Hamstring Stretch

Prop the back of your heel up on a table, keep your back straight, and lean forward at the hips. Hold for 20-30 seconds. Repeat 3 times.



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## 5- Dynamic Hamstring Stretch

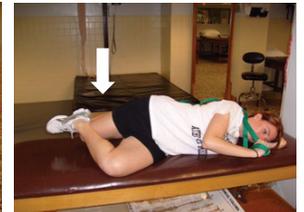
Lie on your back, reach hands behind your knee, keep knee at 90 degree angle, and kick up until you feel stretch. Repeat 15-20x each side.



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## 6- Sidelying ITBand Stretch

Lie on your side, use a towel, or band and pull foot back as if stretching quadriceps, use opposite foot to push down on distal part of leg. Hold this stretch for 1 min. Repeat as needed.



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## 7- C stretch for ITBand

In standing, place affected leg behind the good leg, and lean away. Hold for 20-30 seconds. Repeat 3 times.



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## 8- Glute Stretch

Prop the outside of your ankle up on a table, make sure leg is at 90 degrees, keep your back straight, and lean forward at the hips. Hold for 20-30 sec. Repeat 3 times.



### 9- Prayer → Cat → Camel

Start on all fours. Prayer- Exhale as you sit back onto heels, lower head, tuck chin and reach arms out. Cat- Inhale as you arch the back up and hollow out abdominals while head remains tucked. Camel- Exhale and lower abdominal and reach chin towards ceiling. Tuck chin and sit back into Prayer position. Repeat 5 times.



## STRENGTHENING EXERCISES

### EASY

#### Supine hip twist on physioball

Lie on your back on floor with hips and knees bent to 90 degrees over a physioball; draw in abdominal muscles and maintain throughout exercise; slowly and with control, rotate knees to one side keeping hips in contact with the floor; engage obliques to pull knees back to center and repeat on opposite side; Repeat 10-20 times on each side.



#### Supine Abdominal Draw In

Lie on your back on a table or mat, knees up with feet flat on table/mat; pull the abs in and push your low back to the table/mat. Repeat 20 times.



#### Abdominal Draw In with Knee to Chest

Lie on your back on table or mat, draw one knee to the chest while maintaining the abdominal draw in; do not grab the knee with your hand. Repeat 10-20 times each leg.



#### Abdominal Draw In with Heel Slide

Lie on your back on table or mat, draw the heel back towards the buttock while maintaining the abdominal draw in. Maintain as you return to the start position. Repeat 10-20 times each leg.



#### Abdominal Draw In with Double Knee to Chest

Lie on your back on table or mat, bring both knees to your chest at the same time. Maintain the abdominal draw in throughout the entire exercise. Repeat 10-20 times.



### Supine Twist

Lie on your back on floor with hips and knees bent to 90 degrees with feet flat on floor; draw in abdominal muscles and maintain throughout exercise; slowly and with control, rotate knees to one side keeping hips in contact with the floor; engage obliques to pull knees back to center and repeat on opposite side; Repeat 10-20 times.



### Prone Bridging on Elbows

Lie on your stomach on a table or mat with your forearms/elbows on the table/mat; rise up so that you are resting on your forearms and toes; maintain abdominal draw in; your back should be completely straight; hold this position for 15 sec - 1 min. Progress in increments of 15 seconds. Repeat 5-10 times.



### Side Bridging on Elbow

Lie on your side with your elbow underneath you; rise up so that you are resting one forearm/elbow and foot on same side; hold this position for 15sec - 1min. Progress in increments of 15 seconds. Repeat 5-10 times. Make sure to complete exercise on both sides.



### Press Ups

Lie on your stomach on table or mat with legs extended and hands palm down just above shoulders; retract shoulder blades down and in towards the midline of your spine; maintaining that position, lift your chest off of the floor; hold for 3-5 seconds keeping the back of the neck long and making sure front hip bones stay in contact with mat during entire movement.. Repeat 10-20 times.



### Prone Cobra's

Lie on your stomach on a table or mat with your arms at your side; lift your head and chest off the table/mat; hold your glutes (buttock muscles) tight and squeeze your shoulder blades together; hold briefly and return to starting position. Repeat 10-20 times.



### Superman's

Lie on your stomach on table or mat with arms and legs extended; retract shoulder blades down and in towards the midline of your spine and draw in abdominal muscles; maintaining this position, lift opposite arm and opposite leg ensuring that your hips stay in contact with the floor; hold for 3-5 seconds and reverse sides. Repeat 10-20 times.



### Quadruped Opposite arm/leg

In a quadruped position (on all fours); keep head straight with knees bent to 90 degrees. Engage your core to keep back straight during entire exercise and use your hamstrings, glutes, and low back muscles to lift your leg straight while simultaneously lifting opposite arm; Repeat 10 times each side.



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### Supine Butt Lift with Arms at Side

Lie on your back on table or mat with hips and knees bent to 90 degrees with feet flat on floor and arms palm-down at sides; draw in abdominal muscles and maintain throughout exercise; slowly raise your butt off the table/mat by using your glutes and hamstrings until your torso is in line with thighs; hold for 3-5 seconds. Repeat 10 - 20 times.



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### Supine Butt Lift with Arms Across Chest

Lie on your back on table or mat with hips and knees bent to 90 degrees with feet flat on floor and arms across chest; draw in abdominal muscles and maintain throughout exercise; slowly raise your butt off the table/mat by using your glutes and hamstrings until your torso is in line with thighs; hold for 3-5 seconds. Repeat 10 - 20 times.



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### Supine Single Leg Butt Lift

Lie on your back on table or mat with hips and knees bent to 90 degrees with feet flat on floor and arms palm-down at sides; draw in abdominal muscles and maintain throughout exercise; lift one leg so that thigh is perpendicular to the floor and knee is bent to 90 degrees; slowly raise your butt off the table/mat by using your glutes and hamstrings until your torso is in line with thigh; hold for 3-5 seconds. Repeat 10-20 times on each leg



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### Supine Single Leg Marching

Lie on your back on table or mat with hips and knees bent to 90 degrees with feet flat on floor and arms palm-down at sides; draw in abdominal muscles and maintain throughout exercise; slowly raise your butt off the table/mat by using your glutes and hamstrings until your torso is in line with thigh; alternate raising right leg followed by left leg off table/mat into hip flexion while maintaining proper alignment. Repeat 10-20 times each side.



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### Abdominal Draw In, Seated on Physioball

Begin by sitting on Physioball with your spine straight, knees at 90 degrees and your hands on your hips. Your feet should be shoulder width apart; draw in abdominal muscles and maintain this position for 3 - 5 seconds. Repeat 10 - 20 times.



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### Abdominal Draw In, Seated on Physioball, Add Marching

Begin by sitting on Physioball with your spine straight, knees at 90 degrees and your hands on your hips. Your feet should be shoulder width apart; draw in abdominal muscles and maintain this position throughout exercise. Begin by slowly raising your right knee into hip flexion and hold for a 3 -5 second count; keeping hips level than bring knee down to starting position; repeat on opposite side. Repeat 10-20 times.



## MEDIUM

### Abdominal Draw In with feet on the ball

Lie on your back on table or mat with hips and knees bent to 45 degrees and your feet flat on the medicine ball; draw in abdominal muscles and maintain throughout exercise; hold for 3-5 seconds. Repeat 10 - 20 times.



### Abdominal Draw In with feet on the ball- add movement

Lie on your back on table or mat with hips and knees bent to 45 degrees and your feet flat on the medicine ball; draw in abdominal muscles and maintain throughout exercise; hold for 3-5 seconds. As you tilt your hips back raise your butt about 2 to 3 inches maximum off the floor. Hold this position for 3 - 5 seconds; slowly bring your butt back to start. Repeat 10 -20 times.

### Supine Dead Bugs

Lie on your back on table or mat with arms perpendicular to floor and hips and knees bent to 90 degrees; draw in abdominal muscles and maintain throughout exercise; extend one arm above head while simultaneously lowering the opposite foot to the floor; contract abdominal muscles to bring arms and legs back to starting position; repeat on opposite side. Repeat 10-20 times.



### Rolling Like a Ball

In a tucked position draw in abdominal muscle maintain balance; Hold for 1-2 sec. then roll on to your shoulder blades, and back into starting position. Repeat 10-20 times.



### Prone Bridging on elbows with single leg hip extension

Lie on your stomach on a table or mat with your forearms/elbows on the table/mat; rise up so that you are resting on your forearms and toes; maintain abdominal draw in; your back should be completely straight; Now extend hip/leg upwards and hold, one leg at a time; alternate legs. Repeat 10-15 times each side.



### Side Bridging- add single leg hip abduction

Lie on your side with your elbow underneath you; rise up so that you are resting on your one forearm/elbow and your foot; hold this position while lifting your hip/leg at your side up and down. Lift leg up and down 15-20 times each side.



### Quadruped Opposite Arm/Leg, add cuff or dumbbell weights

Start in a quadruped position (on all fours), head straight with knees bent to 90 degrees and hands on the mat. Make sure you add a cuff weight to your ankle, and/or hold a small dumbbell weight in opposite hand for progression. Tighten your hamstrings, glutes, and low back and lift to straighten your leg and opposite arm while maintaining proper alignment. Repeat 10-20 times alternating sides.



### Abdominal Crunches on Physioball

Start by having your hips just off the Physioball. Keep your feet about shoulder width apart, and place your hands across your chest.

Draw in abdominal muscles and maintain, crunch forward and lift your shoulder blades off the ball. Hold at the top for 1 – 2 sec. and lower back down to starting position. Repeat 10 – 20 times.



### Abdominals Crunches on Physioball with rotation

Start by having your hips just off the Physioball. Keep your feet about shoulder width apart, and place your hands across your chest. Draw in abdominal muscles and maintain, crunch forward and lift your shoulder blades off the ball. As you get halfway up twist your body to one side. Hold for 1 – 2 sec. at the top, and as you uncurl and lower back down to starting position; alternate sides. Repeat 10 – 20 times.



### Bridging with head on Physioball

Shoulder blades are aligned at the top and middle of the ball with arms across chest. Your feet are placed on the ground shoulder width apart; and your thighs should be parallel with the ground. Draw in abdominal muscles; engage glutes and hamstrings to maintain straight line from neck to knees. Hold this position for 3 – 5 sec. Then slowly relax and Repeat 10-20 times.



### Supine Bridging on Physioball

Lie facing upward on floor with knees straight, feet resting on physioball, arms at sides; draw in abdominal muscles and maintain throughout exercise; slowly lift your butt off floor until trunk is parallel to thighs; hold for 3-5 seconds; slowly return to starting position. Repeat 10-20 times.



### Abdominal Draw In, Seated on Physioball with leg extension

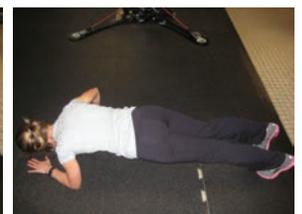
Begin by sitting on Physioball with your spine straight, knees at 90 degrees and your hands on your hips. Your feet should be shoulder width apart; draw in abdominal muscles and maintain this position throughout the exercise. Begin by slightly lifting your right or left knee and perform a leg extension hold for 3 -5 second count; keeping hips level then alternate repeating on opposite side. Repeat 10 – 20 times on each side.



## DIFFICULT

### Prone Bridging- “around the world”

Lie on your stomach on table or mat with your forearms on the table/ mat; rise up so that you are resting on your forearms and toes; maintain abdominal draw in; your back should be completely straight; hold this position while stepping to side with left leg/toe, followed by right leg/toe, left arm/hand, and right arm/hand. Repeat entire sequence 3-5 times.



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### Side Bridging- add single leg hip abduction with hip flexion/extension movement

Lie on your side with your elbow underneath you; rise up so that you are resting on one of your forearm/elbow's and your foot; maintain this while lifting your top leg and kicking it forward and then back. Repeat 5-10 times. Switch sides.



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### Quadruped Opposite arm/leg on "half foam rollers"

Lie facing down in quadruped position (on all fours), head straight with knees bent to 90 degrees and hands on the half foam rollers. Tighten your hamstrings, glutes, and low back and lift your leg to straighten it along with opposite arm; Repeat 10 times each side.



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### Seated Russian Twist with Medicine Ball

In a seated V position on a table or mat with a medicine ball in your hands, twist your body to one side and then the other while maintain V position. Repeat 10-20 x.



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### Seated on Physioball, Russian Twist with medicine ball

Seated on Physioball with feet planted; hold medicine ball out in front of you; maintain abdominal draw in while twisting your body side to side. Repeat 10-20 times.



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### Bridging with Head on Physioball

Position shoulder blades on physioball with hands on hips; extend hips until parallel to ground by engaging glutes, hamstrings, and core. Lift one foot off the ground and extend leg while keeping hips level; Alternate legs. Repeat 10-20 times.

