

# Increasing Physical Activity as We Age Exercises for Low Back Injury Prevention

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Most adults suffer from back pain at some point in their lives. This pain is often relatively mild and passes within a couple of months. Chronic back pain lasts longer than three months and affects about 25% of Americans.

Most bouts of back pain can be prevented. Physical inactivity can contribute to some risk factors for chronic low back pain, such as excessive sitting. Sitting too much is a major cause of low back pain because muscles of the back shorten, stiffen and become weaker. Other causes are poor posture and inflexibility.

Poor posture can force the bones in the spine out of alignment. This puts pressure on the body's pain sensors, the nerves. Inflexible muscles, particularly in the hamstrings (at the back of the thighs), are strongly associated with back pain. Tight hamstrings can affect range of motion. Inflexible hip flexor muscles may also cause back pain. The hip flexors are located on the upper thighs just below the hipbones and allow you to lift your knees and bend at the waist.

Low back pain can be prevented by addressing these common causes of pain: weak and inflexible muscles of the hamstrings and hips. Other important areas to target are the buttocks, abdominal muscles and the muscles of the low back. When



muscles of the low back are tight and abdominal and buttocks muscles are weak, the pelvis tilts forward and can put extra pressure on the spine. This may cause low back pain. Carrying extra weight around the midsection can also cause the spine to tilt and trigger back pain.

Most Americans are not active enough. Regular physical activity can improve your overall sense of well-being; reduce risk of chronic diseases like diabetes, heart disease and hypertension; and help with weight management. A well-rounded exercise routine includes strengthening, stretching and stabilizing exercises, in addition to aerobic exercise. Aim for 150 minutes of aerobic or cardiovascular activity, such as walking, each week.

Exercises targeting the muscles of the lower back, hips, buttocks and hamstrings can increase strength and flexibility. Increased strength and flexibility in the muscles supporting the back may very well prevent or reduce back pain. Perform the exercises in the following routine at least two to three times per week to improve strength and flexibility.



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# Sample Exercise Routine

## Stabilizing Exercises

Each of the exercises in the stabilizing section has three levels or variations. Exercise at the level that meets your needs. After you have completed the exercise on one side, return to the starting position and repeat on the other side. Complete one to three sets of eight to twelve repetitions unless otherwise instructed.

### Hip Extension (Targeted muscle groups: back, buttocks, hips)

#### Level 1

1. Stand behind the back of a chair with your feet hip-width apart.
2. Place both hands on the back of the chair (see Figure 1).
3. Shift your weight to your left leg and raise your right foot up off the floor.
4. Keeping your leg straight, press your right foot straight back (see Figure 2).
5. Tighten your abdominal muscles to help keep from arching your back.
6. Hold for three seconds.



Figure 1



Figure 2

#### Level 2

1. Get down on your hands and knees in table-top position.
2. Make sure your hands are below your shoulders and your knees are below your hips (see Figure 3).
3. Keeping your knee bent, raise your right leg up off the floor until your thigh is parallel to the floor (see Figure 4).
4. Tighten your abdominal muscles to help keep from arching your back.
5. Hold for three seconds.



Figure 3



Figure 4

#### Level 3

1. Stand with your feet hip-width apart (see Figure 5).
2. Shift your weight to your left leg and lift your right foot up off the floor.
3. Keeping your right leg straight, press your right foot straight back (see Figure 6).
4. Tighten your abdominal muscles to help keep from arching your back.
5. Hold for three seconds.



Figure 5



Figure 6

**Chair Pose** (Targeted muscle groups: back, hamstrings)

1. Stand with your feet close together.
2. Raise your arms in front of you until they are parallel to the floor.
3. Bend both knees and squat slightly (see Figure 8).
4. Push backwards through your hips and keep your weight in your heels.
5. Make sure your knees do not extend over your toes.
6. Hold for three seconds.

Variations: To decrease the intensity, you may hold on to a chair (see Figure 7); to increase intensity, raise your arms over your head (see Figure 9).



**Figure 7**  
Level 1



**Figure 8**  
Level 2



**Figure 9**  
Level 3

**Triangle Pose** (Targeted muscle groups: hamstrings, hips)

1. Stand with your feet hip-width apart.
2. Step forward with your right foot.
3. Turn the toes of your right foot forward and keep the toes of your left foot outward.
4. Bend your right knee.
5. Lean forward and place your right hand on your right ankle.
6. Raise your left arm up toward the ceiling.
7. Look up toward your left hand (see Figure 11).
8. Hold for ten seconds. Work your way up to 30 seconds. This completes one set.

Variations: To increase the intensity, keep both legs straight (see Figure 12). To decrease the intensity, place your right hand in the seat of a chair while you lean forward and raise your left arm up toward the ceiling (see Figure 10).



**Figure 10**  
Level 1



**Figure 11**  
Level 2



**Figure 12**  
Level 3

**Pyramid** (Targeted muscle group: hamstrings)

1. Stand with your feet hip-width apart.
2. Step forward with your right foot.
3. Make sure your toes on both of your feet are pointing forward.
4. Keeping your back and legs straight, lean forward and reach your fingertips toward the floor (see Figure 14).
5. Hold for ten seconds. Work your way up to 30 seconds. This completes one set.

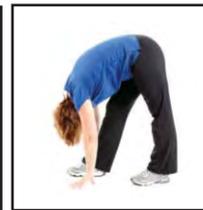
Variations: To increase the intensity, place your hands on the floor and your forehead on your shin (see Figure 15). To decrease the intensity, place both hands in the seat of a chair while following the directions stated above (see Figure 13).



**Figure 13**  
Level 1



**Figure 14**  
Level 2



**Figure 15**  
Level 3

**Bird Dog** (Targeted muscle groups: abdomen, back, buttocks)

1. Get down on your hands and knees in table-top position.
2. Make sure your hands are directly under your shoulders and your knees are directly under your hips.
3. Slowly raise your right leg behind you.
4. Keeping your right leg straight and raised, raise your left arm in front of you (see Figure 17).
5. Hold for three seconds.

Variations: To increase the intensity, perform the exercise standing. Raise your right leg and left arm until your arm, back and leg are parallel to the floor, without using the chair (see Figure 18). To decrease the intensity, lean forward and place both hands on the back of a chair. Raise the right leg until it is parallel to the floor (see Figure 16).



**Figure 16**  
Level 1



**Figure 17**  
Level 2



**Figure 18**  
Level 3

**Modified Downward Dog** (Targeted muscle groups: back, hamstrings, hips)

1. Get on your hands and knees in table-top position.
2. Keeping your hands on the floor and your left leg bent, straighten your right leg and press back through your right heel (see Figure 20).
3. Keep your neck and back straight and your head pointed toward the floor.
4. Hold for ten seconds. Work your way up to 30 seconds. This completes one set.

Variations: To increase the intensity, keep your hands on the floor, straighten both legs and press back through both heels (see Figure 21). To decrease the intensity, keep your legs straight and feet flat on the floor. Lean forward and place both hands in the seat of a chair (see Figure 19).



**Figure 19**  
Level 1



**Figure 20**  
Level 2



**Figure 21**  
Level 3

## Strengthening Exercises

Strengthening exercises are designed to make the muscles of the lower back, as well as those supporting the lower back, stronger. Complete one to three sets of eight to twelve repetitions on each side unless otherwise instructed. Some exercises in this section use a small stability ball. If one is not available for your use, use a rolled up towel or a cylinder pillow instead.

**Hamstring Curl** (Targeted muscle group: hamstrings)

1. Lie on the floor face down.
2. Bring your right foot up to 90 degrees.
3. Place a small resistance ball between the bend of the knee and the hamstring (see Figure 22).
4. Press your foot toward your buttocks until slight tension is felt (see Figure 23).
5. Hold for three seconds.
6. Release the tension and bring your foot back to 90 degrees.



**Figure 22**



**Figure 23**

## Back Extension (Targeted muscle groups: abdomen, back)

1. Lie face down on a mat or towel with your forehead resting on the backs of your hands (see Figure 24).
2. Tighten the muscles on both sides of your back, buttocks and legs.
3. Slowly lift your chest, head and shoulders up off the floor (see Figure 25).
4. Be careful not to arch your back.
5. Hold for three seconds.

Variation: To increase the intensity, perform the exercise with your arms stretched overhead (see Figure 26). Slowly lift your arms, chest, head and feet up off the floor (see Figure 27).

*Advanced:*



Figure 24



Figure 25



Figure 26



Figure 27

## Plank (Targeted muscle groups: abdomen, back)

1. Get down on your hands and knees in table-top position.
2. Walk both feet backwards until your body is parallel to the floor.
3. Your arms should be straight and your hands should be directly below your shoulders (see Figure 30).
4. Tighten your abdominal muscles to help keep your back from swaying.
5. Hold this position for 10 seconds. Work your way up to 30 seconds. This completes one set.

Variations: To decrease the intensity, this exercise can also be performed by placing your palms shoulder-width apart in the seat of a chair (see Figure 29) or by leaning into a wall with hands placed at chest level and shoulder-width apart (see Figure 28).



Figure 28  
Level 1

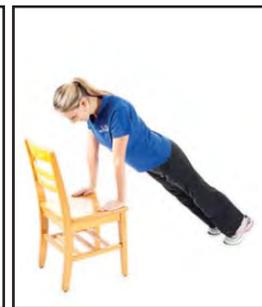


Figure 29  
Level 2



Figure 30  
Level 3

## Seated Abdominal Crunch

(Targeted muscle group: abdomen)

1. Sit on a mat or towel with your knees bent and feet flat on the floor.
2. Cross your arms in front of you.
3. Place a small resistance ball on the floor behind you at the base of your back (see Figure 31).
4. Keeping your back straight, slowly lean backwards until your torso is at 45 degrees (see Figure 32).
5. Hold for three seconds.



Figure 31



Figure 32

## Supine Bridge (Targeted muscle groups: abdomen, buttocks)

1. Lie on your back on a mat or towel.
2. Bend your knees and place your feet flat on the floor.
3. Hold a small resistance ball between your knees (see Figure 33).
4. Keeping your head, neck and shoulders on the floor, raise your pelvis up off the floor (see Figure 34).
5. Hold for three seconds.

Variation: To increase intensity, keeping your left foot on the floor, raise your right leg until it is straight, and follow directions for supine bridge (see Figure 35).



Figure 33



Figure 34



Advanced:

Figure 35

## Stretching Exercises

These stretching exercises help relax the muscles of the core and reduce stress on the lower back. Hold each stretch for 10 to 30 seconds. For the exercises that work each side of the body separately, return to the starting position and repeat on the opposite side. Perform all stretches two to five times.

### Gluteal Stretch (Targeted muscle group: buttocks)

#### Level 1

1. Sit upright in a chair with both feet flat on the floor.
2. Cross your right ankle over your left knee.
3. Place your right forearm on your right thigh.
4. Place your left hand on your right ankle.
5. Keeping your back straight, lean forward as far as possible (see Figure 36).



Figure 36  
Level 1

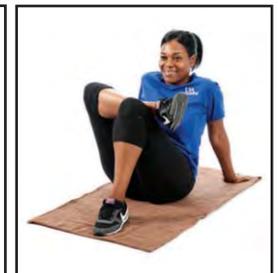


Figure 37  
Level 2

#### Level 2

1. Sit upright on a mat or towel.
2. Bend both knees and place your feet flat on the floor.
3. Keeping arms straight, place both arms behind you, with palms flat, for support.
4. Place your right ankle across your left knee (see Figure 37).

#### Level 3

1. Lie on your back on a mat or towel.
2. Bend both knees and place your feet flat on the floor.
3. Place your right ankle across your left knee.
4. Place both hands behind your left leg and gently pull your left leg toward your chest (see Figure 38).
5. Be careful not to pull on your knee.



Figure 38  
Level 3

## Hamstring Stretch (Targeted muscle group: hamstrings)

### Standing Hamstring Stretch

1. Stand several feet away from a chair with your feet hip-width apart.
2. Raise your right leg and rest your foot on the chair (see Figure 39).
3. Lean forward slightly.



Figure 39

### Seated Hamstring Stretch (Targeted muscle groups: back, hamstrings)

1. Sit on the floor with your right leg extended at 45 degrees and your left leg bent.
2. Place your left foot on the inner part of your right thigh.
3. Reach forward as far as possible, and try to grab the bottom of your right foot (see Figure 40).

Variation: To increase intensity, tuck your chin and try to place your forehead on your right leg.



Figure 40

### Lying Hamstring Stretch

1. Lie on your back on a mat or towel.
2. Bend your left leg and place your left foot flat on the floor.
3. Keeping your right leg straight, raise it up toward your chest.
4. Place both hands behind your right leg and pull gently, being very careful not to pull on your knee (see Figure 41).

Variation: Keeping your left leg straight on the floor, raise your right leg up toward your chest (see Figure 42).



Figure 41



Figure 42

Advanced:

## Cow/Cat Stretch (Targeted muscle group: back)

1. Get down on your hands and knees in table-top position.
2. Make sure your hands are under your shoulders and your knees are under your hips.
3. Arch your lower back and look up (see Figure 43).
4. Hold for 10 to 30 seconds.
5. Pull in your abdominal muscles and round out your back while looking down (see Figure 44).
6. Hold for 10 to 30 seconds.



Figure 43



Figure 44

## Child's Pose (Targeted muscle groups: abdomen, back, buttocks, hips)

### Level 1

1. Sit in a chair with your feet flat on the floor.
2. Lean forward and place your hands on the floor (see Figure 45).

### Level 2

1. On your knees sit on the floor in front of a chair.
2. Keeping your arms straight, reach forward and place your hands in the seat of the chair.
3. Tuck your chin in toward your chest and press your buttocks back toward the heels of your feet (see Figure 46).

### Level 3

1. Sit on the floor on your knees.
2. Keeping your arms straight, reach forward and place your hands on the floor.
3. Rest your forehead on the floor and press your buttocks toward the heels of your feet (see Figure 47).



Figure 45  
Level 1



Figure 46  
Level 2



Figure 47  
Level 3

## Trunk Rotation (Targeted muscle groups: abdomen, back, hips)

### Level 1

1. Sit on a mat or towel with your legs straight in front of you.
2. Keep your left leg straight.
3. Bend your right knee and cross it over your left leg.
4. Keeping your right hand on the floor behind you for support, rotate at the waist and place your left elbow on the outside of your right knee. Press gently (see Figure 48).
5. Keep your right hand on the floor behind you for support.



Figure 48  
Level 1

### Level 2

1. Sit on a mat or towel with your legs straight in front of you.
2. Keeping it on the floor, bend your left knee in front of you.
3. Bend your right knee and cross it over your left knee.
4. Keeping your right hand on the floor behind you for support, rotate at the waist and place your left elbow on the outside of your right knee. Press gently (see Figure 49).



Figure 49  
Level 2

## References

Hoeger, W.K., and S. Hoeger. (2010) *Principles and Labs for Fitness and Wellness*. Belmont: Wadsworth.

McGill, S. (2007) *Low Back Disorders: Evidence-Based Prevention and Rehabilitation*. Human Kinetics ISBN13: 9780736066921.

Nelson, M.E. (2006) *Strong Women, Strong Backs*. New York: G.P. Putnam's Sons.

Vincent, J., L. Traywick and L. Washburn. (2012) *FSFCS23, Low Back Disorders: Injury Prevention and Risk Reduction*. Little Rock: University of Arkansas Division of Agriculture.

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