

Don't Let Low Back Pain Sideline Your Workouts!

Low back pain (LBP) is one of the most common musculoskeletal injuries active Americans face today and one that plagues competitive skaters. It is the number one sports related disability and the third most prevalent orthopedic problem affecting those who exercise. This can lead to extended time out of the gym and off the ice which can have a big impact in your ability to reach your goals.

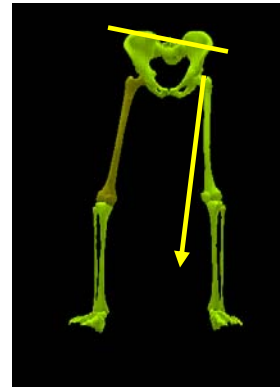
What do we know about low back pain?

Current research indicates that 80 percent of the population suffers from one form or another of LBP. Of those, 65-85 percent have had a recurrence of LBP within two years of the initial episode. The implication is that either our understanding of the complexity of the system is not well understood or that we are not educating patients well enough in prevention types of programs. Currently, LBP accounts for 14.3 percent of new patient visits to their primary care physician and is considered the second to fifth most common reason for someone to seek medical attention. Treatments vary widely based on the diagnosis, severity and the direction of health care your choose (chiropractic vs. neurologist vs. physical therapy). What ever route you choose, early treatment and education are the most ESSENTIAL components to faster recovery and return to sport.

Training for Prevention

When training to prevent LBP, there are several things to keep in mind.

1. **Stability is complex.** Stability of the spine and prevention of LBP depends on the interaction of more than 30 muscles throughout the core and lower extremities. It affects the entire system, from your feet to your core. Weakness in one link can result in misalignment of the system and add to wear and tear of the spine.
2. **Balance plays a critical role in stability of the spine.** Current research shows that those who lack stability or balance during dynamic balance activities are more likely to suffer from LBP than those who are more stable. This is especially more prevalent in those who are participating in athletic activities. In our current research study, we looked at more than 500 athletes and found a high correlation with lack of balance with an increased incidence of low back pain.



3. **Pain results in weakness.** Research shows that pain results in a 25 percent decrease in strength of muscles important to stability of the spine (multifidus). This same study shows that if you do not strengthen this muscle after experiencing low back pain, it does not return to it's previous level of strength. So, you have to strengthen your back to keep it strong, not just when you are having pain.

So, what kind of exercises can you do to prevent low back pain?

Core Basics: Dynamic Stretches

First lets discuss the concept of dynamic stretches. Dynamic stretches are not ballistic stretches (bouncing stretches), rather they increase flexibility via contract –relax methodology. These stretches should not cause pain and are shown here with the end points of the stretch. If you are too tight to obtain the optimal position, move into a range that is comfortable and eventually you will be able to obtain the full range of the movement.

Dynamic stretches are great for skaters because they increase proprioception/balance, increase strength and endurance and increase flexibility. Although these are used as a warm up exercise, they are difficult and will result in some muscle soreness. Prior to performing these exercises, it is essential to perform some type of cardiovascular activity for at least 10 minutes in order to increase core body temperature and prepare the muscles for this activity.

Dynamic Stretches: Lunge

Key points:
Hold each position for 5 seconds
Lunge Phase
Knee 90
Elbow to arch of foot
Opposite knee extended

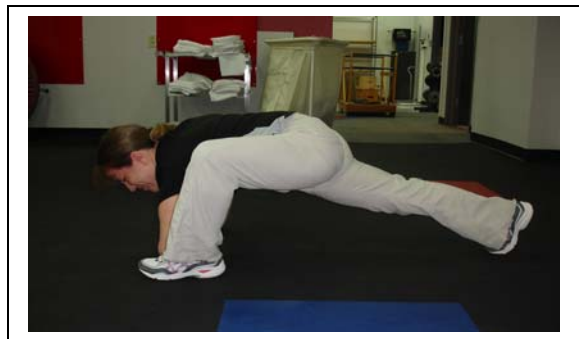


Figure 1: Lunge Phase

Stretch Stride:
Knees Straight
Back heel to floor
Hands on each side



Figure 2: Stretch Stride

Step Through Phase:
Step through all way to Lunge Phase on opposite side. Perform 1 set of 8 reps and progress to 2 sets of 10-15 reps

Dynamic Stretches: Sumo (Start)

Squat Phase

Full squat

Knees behind toes

Equal weight bearing (no lateral shift)

Pulling up on toes

Key Points:

Starting in squat position

Extend knees pulling up on toes

Walk hands out to push-up position

Perform one push-up

In the push up position – lumbar spine in NPP

Maintain NPP while pushing up

Toe walk up to hands

Return to squat position

Repeat

Start with 1 set of 8 reps and progress to

2 sets of 10-15 reps

Figure 3: Squat Phase



Figure 4: Hand Walk



Figure 5: Push-up



Figure 6: Toe Walk

Core Basics: Key Stabilizers

As we mentioned earlier, there are ~30 muscles that add to stability of the lumbar spine. However, there are some key muscles that traditionally are not addressed in our core stabilization. The following group of exercises are exercises that have been proven in the research to some of the most effective exercises for strengthening the gluteus medius,

obliques and multifidus. These exercises are not to cause pain but should result in muscle fatigue or muscle burn.

Side Bridge

C/L spine in neutral

Feet together

Supporting weight on elbow (Do not perform if Shoulder pain)

#1 exercise for obliques

Start with 3/30 sec and progress to 4/1 minute

Figure 7: Side Bridge



Plank

C/L spine in neutral

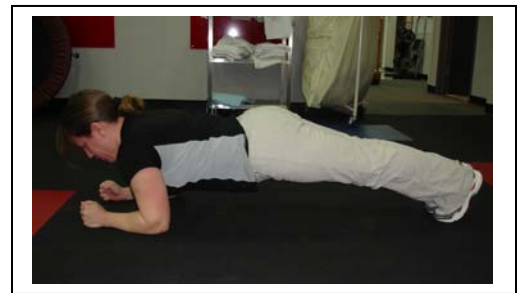
Feet together

Chest up

#1 exercise for multifidus

Start with 3/45 sec progress to 4/1 minute

Figure 8: Plank



Pike

Key points

Arms OH (at side is advanced)

Knees straight

Ankle at 90 degrees

Push hips in air/drive heels towards ceiling

Trains: abdominals and transverse abdominus

2-3 sets of 15-25 reps

Figure 9: Start



Figure 10: Finish



Side Step

Key Points:

Abs tight

Knees behind toes

Feet pointing straight ahead throughout motion

Most common compensation: toeing out

Out and together

10 one direction/10 back

Do not turn around

Start with 2 sets and progress to 4. Start with Red progress to black

Figure 11: NPP w/ Squat



Figure 12: Squat/feet straight



Figure 13: Stepping out



Monster Walk

Key Points:

Abs tight

Knees behind toes

Feet pointing straight ahead throughout motion

Most common compensation

Out at 45 w/ R, together, out 45 w/ L

Remain in a squat position throughout

2-3 sets of 10-15 reps

Figure 14: NPP with Squat



Figure 15: Feet straight



Figure 16: Step out at 45 in squat



SEBT

Key Points:

Abs tight and stand on one leg with slight bend in the knee

While maintaining alignment of the knee and hip (pointing straight ahead) perform the following:

Reach back and in with opposite leg (pictured)

Without touching return to start then reach straight back

Without touching return to start then reach out and back

Perform

2-3 sets of 10-15 reps in each direction

Figure 17: SEBT



Core Basics: Using a Physioball

Physioballs are devices often incorporated in core training as a way to increase the difficulty of the exercise. By introducing an unstable surface to core training you increase the demand for more musculature to be involved in the exercise, thus mimicking the demands placed on the core with sports performance. This also aids in recruitment of the transverse abdominus which has been shown to be an essential muscle associated with core stabilization, lumbar stabilization and hence transferring of force across the core. However, for these to have the most beneficial effect of the training session, we must first discuss some basics.

1. Stability of the surface. Stability to the surface is determined by three factors. The inflation of the ball, the base of support and support to the ball.
 - a. The more air in the ball the less contact area the ball has with the surface which results in a more unstable surface. Less air in the ball, more contact area and therefore more stability. More air makes the exercise harder, less air makes the exercise easier.
 - b. Base of support. The closer your feet are to the ball and the closer your feet are together, the less of a base of support there is and hence makes this a more unstable the ball is. Farther apart your feet are and further they are away from the ball, the more stable the ball is. Feet closer to ball and to one another, harder the exercise. Further feet from the ball and one another, easier the exercise.
 - c. Support to the ball. Any external support to the ball whether via placing the ball against the wall or equipment, gives this unstable surface a form of stability.
2. Control of the ball. Throughout the exercises, it is essential that you stabilize the ball and not let the ball move throughout the course of the exercise. By

stabilizing the ball you draw in the transverse abdominus which is an essential muscle for stabilization of core.

3. Size of the ball: Ensuring you are using the proper size of a ball is essential. Sitting on the ball your hips and knees should be comfortably at 90 degrees. Appropriate size and inflation of the ball during the course of the following exercise is essential.

Quick points on Physioball

Ball size

Too large in this case

Ball inflation

Too full in this case

Ball position

Positioned too low in this case

Appropriate size and inflation essential to this exercise

Figure 18: Poor fitting



Physioball 6 pack

Key Points

Start with 6 extensions to neutral w/ arms behind head

Arms straight ahead (superman position), hold 6 seconds

Arms at 45 degrees, hold 6 seconds

Arms in abduction, hold 6 seconds

Arms at side with scapular retraction (pinching), hold 6 seconds

Repeat for 4-6 reps

Figure 19: Superman



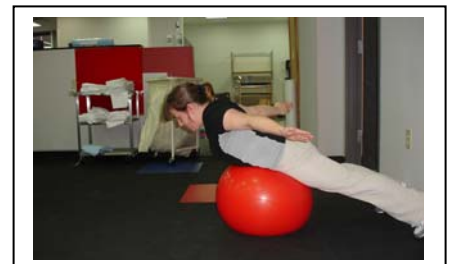
Figure 20: 45 degrees



Figure 21: Abduction



Figure 22: Arm @ side



Remember, proper core stabilization is an essential part of preventing LBP.

Don't let low back pain sideline your workout!

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