

Basketball is a highly demanding and stressful sport on the body and can lead to a lot of injuries. These injuries can be caused from contact with the floor, another player, an overuse injury, strength imbalances, lack of strength in certain muscles, and poor conditioning, agility and balance. Some of these injuries we cannot control as in contacting the floor or another player, and breaks. Some injuries we can control and in the game of basketball there are three injuries that I find most common with the sport, and the girl's that I coach. These are lower back problems, knee injuries, and the most common that I see is ankle sprains and injuries.

Lower back pain is a common injury I hear working with young girls. Many of them have a lack of overall body strength, in particular core strength. They are very weak in their core and this leads to improper techniques, lack of flexibility, poor balance, which ultimately leads them to lower back pain. The core is the center of the body and strengthening this will aide in not only getting rid of back pain, but make the athlete's entire body stronger. This will ultimately help in overall balance, strength, agility, conditioning, and help stop the cycle of overusing other muscles because of a weak core.

I see a lot of knee injuries in women, and I think it is important to realize that women are different in how we load our bodies because of the fact that we have hips. This immediately puts more force on our knees. When this is combined with lack of strength and muscle imbalances, particularly in the hamstrings and quadriceps, it usually results in some sort of knee problems. Strengthening the leg muscles is important for knee stability and support. Strong hips and ankles also help keep the knee more supported, as the knee won't have to make up for a lack of power elsewhere. In addition to strength, conditioning and agility is important for the girls in preventing knee injuries. When an athlete becomes tired, or feels slow on their feet this is usually a time that injuries take place. Strengthening combined with agility and conditioning work aids in the prevention of knee injuries.

Ankle sprains and injuries are the most frequent and common I see with the girls I work with. They are often minor, but each time an athlete sprains an ankle there is trauma which may lead to scar tissue that restricts the ankle's full range of motion. This prohibited ankle movement creates more stress up the kinetic chain, especially in the knee and hips. This can also add strain to the lower back, which I have already mentioned as a common injury I see in basketball. Balance training can help support the ankle, and also increase its strength, agility and flexibility. Improving overall core and body strength will help improve the balance of the body, including the ankles. Imbalances in the muscles of the body, particularly the leg muscles can also affect the strength of the ankle. This joint takes a lot of pounding in the game of basketball so a full range of motion, along with strengthening is needed to support the players.

Below are 10 strength and conditioning exercises to help aid in the prevention of these common injuries found in basketball.



## **Plank**

### Purpose:

- Improve Core Strength
- Increase and maintain stability throughout core
- Improve flexibility and strength in lower back, abs, and core of body

### Equipment:

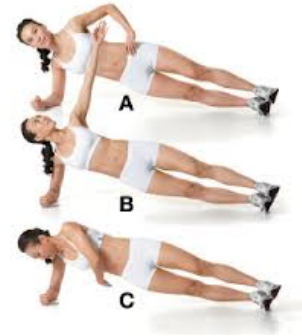
- None

### Description:

- Lie face down on the ground so that your forearms, knees and toes are all contacting the ground.
- Contract your core by locking your pelvis, and lift your body off the floor so the only parts of your body touching the floor are your toes and your forearms.
- Keep your back straight and your body in a straight line, from your head to your heels.
- Hold for at least 30 seconds; try to work your hold up to 60 seconds.

### Duration:

- 3 Planks x 30 seconds
- As you gain core strength aim to increase hold for 60 seconds
- 20 second rest between each plank



## Side Plank

### Purpose:

- Improves core strength, and strength and flexibility in lower back
- Maintains stability and balance throughout core, which makes entire body stronger
- Extension of arm works shoulder stability and balance of entire body

### Equipment:

- None

### Description:

- Lay on right side, bend right arm 90 degrees and place under your upper body
- Contract your core, by locking your pelvis and lift your body up off the ground. Think of lifting your hips up towards the ceiling.
- Once lifted, extend your left arm straight out, making a straight line with your shoulders.
- Maintain this straight line with your arms, as well as with your head, hips and feet.
- Hold this position for 30 seconds; try to work your hold for up to 60 seconds.
- If you have mastered this hold you may add a rotation with your extended arm. Do this by rotating extended arm underneath your hip closest to the ground. Hold for 5 seconds and then return arm to extended position. Hold for 5 seconds and repeat rotation. Do this for the 30 second hold, and try to work up to 60 seconds.

### Duration:

- 3 Side Planks x 30 seconds (Right and Left Alternating Sides)
- As you gain core strength and stability aim to increase hold for 60 seconds and also add rotations.
- 15 second rest between each side plank



## Swimmer

### Purpose:

- Strengthen and improve flexibility in lower back
- Work on upper body and lower combination, while engaging core muscles
- Elongates the muscles of the body

### Equipment:

- None (mat if needed)

### Description:

- Lie face down on the ground
- Fully extend your body, from the tips of your toes to the tips of your fingers.
- Lift right arm and left leg off the ground at the same time while keeping them straight. (top picture)
- Lower them to the ground while at the same time lifting left arm and right leg.
- As you feel more stable and increase core strength aim to keep all limbs elevated while in a straight line, and lift your arm and opposite leg quickly in small swimming motions.(bottom picture)

### Duration:

- 3 sets x 25 reps (One rep equals both arms and legs lifted one time)
- 15 seconds of rest between sets



### **Squat (two leg/single leg) on trampoline or balance ball**

#### **Purpose:**

- Strengthens the leg muscles, in particular the hips, thighs, and hamstrings, which will help give much needed support to the knee.
- Works on balance and forces each legs muscles to strengthen when using a single leg
- Helps stability of ankles and core when having to hold balance throughout the squat exercise

#### **Equipment**

- Exercise trampoline or balance ball

#### **Description**

- Stand with your feet hip width apart on the trampoline or balance ball.
- Bend down from your knee and your hips and stick your butt out while dropping your bottom down. Imagine sitting on a toilet.
- Keep your knees behind your toes, and also keep your knees and toes straight ahead as you squat.
- Don't drop your butt down below what would form a 90 degree angle with your legs.
- Once squatted to this position hold for 2-3 seconds, return to start and repeat.
- Do the same for one leg squats, but pay attention to make sure you do not turn your knee inward! Engage your core for extra balance when on a single leg.

#### **Duration:**

- Two leg squats 3 x 15 reps
- One leg squats 3 x 10 reps for each leg



### **Walking Lunges into leg lift**

#### **Purpose:**

- Increase the strength of lower body, especially the balance between the quadriceps and hamstrings needed to maintain the health of the knee.
- Elongates muscles while also strengthening them.
- Works the hips, quads, hamstrings, knees and ankles, all of which need strength to stay healthy and productive on the basketball court.
- Hand weights can add extra resistance to this strength training

#### **Equipment**

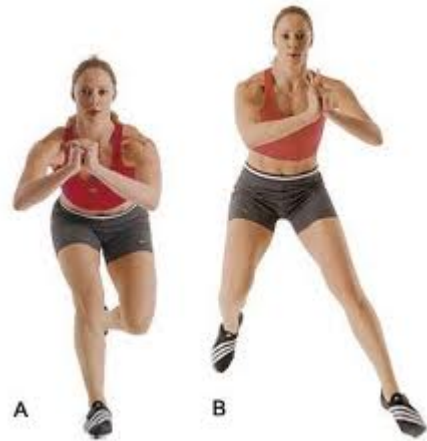
- None (light handheld weights if you want to add resistance)

#### **Description:**

- Stand with feet hip width apart. Hold hands down at your sides, holding light weights if you can.
- Take a lunging step forward with your right leg and as you do this keep your right knee over your ankle in line with your toes. Keep your torso upright and arms at sides. Hold for 2-3 seconds. (A)
- As you stand out of the lunge keep your torso upright and use the strength of your right leg to extend your knee upwards.
- As you come into an upright position lift your left and extend it behind you. Hold this position for 2-3 seconds and then return leg to floor and starting position.

#### **Duration:**

- 2 sets x 20 reps (Reps are done walking forward. Will equal 10 lunges each leg per set)



### **Lateral Bounds**

#### **Purpose:**

- Works on knee and hip flexion, as well as ankle stability, balance and strength
- Strengthens the leg muscles that help aide in this knee and hip flexion, and also strengthens the balance of the muscles in the lower body.
- Works on coordination, balance and agility which will help the body's overall strength and conditioning

#### **Equipment:**

- None

#### **Description:**

- Stand with feet shoulder width apart with your body in an upright position.
- Begin to move the body downward, and shift your body weight to your right leg (A). Make sure to keep your knee over your toe, and your knee, hip and shoulders facing forward.
- Once in this down position, propel your body laterally with the power from your right leg and land on your left leg (B).
- Flex the knees and hips when you land, and again make sure that your knee is kept over your toe and is facing forward.
- Work to increase speed and distance of bounds as you feel stronger with them.

#### **Duration:**

- 3 sets of bounds x 30 seconds (work towards 60 seconds as you feel stronger)
- 30 second rest between sets



## Mountain Climbers

### Purpose:

- Strengthens and improves flexibility in hip flexors
- Strengthens core and lower back
- Increases range of motion and strength in hips which helps stabilize the hips, knees and ankles when playing basketball. Works on conditioning.

### Equipment:

- None

### Description:

- Get into the push-up position (A).
- Contract core and hold body in this position throughout exercise.
- Bring your right leg forward to your right elbow without letting your foot touch the ground (B).
- Return to starting position.
- Bring left leg forward to your left elbow.
- Repeat this procedure and as you feel confident in strength and the motion, work on increasing your speed.

### Duration:

- 3 sets x 60 seconds
- 30 second rest between sets





### **Heel Drop/Calf Raise**

#### **Purpose:**

- Works on strengthening the ankles, by strengthening the calves and muscles of the leg
- Works on flexion and extension of the ankle in the same exercise
- Increases balance and flexibility of ankles, which will help make them more stable on the court

#### **Equipment**

- Step
- Light weights in hand for added resistance

#### **Description:**

- Place toes on the step with your heels down and knees slightly bent.
- Rise slowly up on your toes extending as high as possible.
- Slowly lower as you drop your heels as low as possible while maintaining your balance on the step.
- If holding weights keep arms at side and keep your body upright without using any swinging motions from your arms. Let your legs do the work.

#### **Duration:**

- 2 sets x 25 reps
- 1 minute rest between sets



### **In/Out Ankles with band**

Purpose:

- Strengthens the muscles of the lower leg, in particular those supporting the movements of the ankle
- Works on range of motion and increases flexibility in the ankle
- Strengthens the ankle which is critical in the game of basketball.

Equipment:

- Resistance Band

Description:

- Sit on your bottom with your torso upright and your legs straight in front of you. Your feet should be pointing straight up.
- Place the band on your left foot and pull it to create resistance with your left hand.
- Rotate your ankle internally, hold for 2 seconds and then return it to starting position.
- Next place band on same foot but pull it to create resistance towards your right leg with your right hand.
- Rotate your ankle out or externally, hold for 2 seconds and then return it to starting position.
- Repeat this same procedure with your right foot.

Duration:

- 2 sets each rotation x 25 (Right leg and left leg)
- Each internal or external motion gets own set of 25 (so each leg has 4 sets)



### **Heel Walk/Toe Walk**

#### **Purpose:**

- Strengthens the muscles of the lower leg, which will provide more support and stabilization to the ankles
- Works on the ankles range of motion, and flexibility while it is being extended and flexed, and has to be held in this position while walking.

#### **Equipment:**

- None

#### **Description:**

- Stand with feet shoulder width apart facing forward.
- Shift your weight to your heels and flex your toes forward.
- Begin walking forward in this position, keeping your toes flexed the whole time while the rest of your body is upright.
- Walk this way the entire length of the basketball court.
- On the way back shift your weight to the balls of your feet and walk on your tip-toes. Keep your heels off the ground while you hold your body upright and balanced.
- Walk this way the entire length of the basketball court.

#### **Duration:**

- 2 times down and back the basketball court.
- (Heel walk 2 lengths, Toe walk 2 lengths)

