

Runners often do not want to “waste” time strength training or doing anything other than running, when it comes to training. The training principle of specificity says, to get better at an activity, you must do that activity (i.e. if I want to get better at running fast, I need to run fast). To get even better at doing the activity, you need to do activities to help you become better. Strength training will improve your performance, economy, efficiency and will make you a better runner. If you are more interested in weight loss or maintaining weight loss strength training will help you do that as well. Here are some reasons why you should do your strength training:

1. The more muscles you have the more calories you burn.

- a. Even at rest. So for calorie counters and those concerned with weight loss, this is good. This means you are able to be a calorie burning machine. In terms of weight loss at the end of the day what matters is calories in and calories out. If you are naturally burning more calories because you have more muscle mass, you will be less likely to gain weight and more likely to lose weight.

2. Your running economy will improve.

- a. Strength training will improve the endurance and strength of your muscles. This translates to be able to run longer and faster without fatiguing because your muscles are adequately trained and prepared for the challenge. In other words, with increase strength of your muscles you have to work “less hard” to exercise at the same intensity as you would if you were not strength training. A small study performed on six female distance runners, who ran 20-30 weekly miles 4-5 days per week. showed this to be exactly the case. One group kept up with running *only*, the other group added strength training to their running routine. By the end of the 10 week study, obviously the strength training group got stronger. But what is interesting is that the heart rate of the strength training group was on average 4 beats lower when running the same tempo as they did before they started strength training. This is to say it “cost” the strength training runners less oxygen (energy) to run at the same pace. This of course improves your time and makes running feel easier. How can this be?
 - i. Each muscle fiber got stronger and more efficient so less oxygen needs to be consumed.
 - ii. Form, technique and muscle control improved so there was no wasted movement and less energy wasted
 - iii. Improved coordination of neuro-muscular system. The nerves are talking to the muscles more clearly so movements are more efficient and smoother.

- 3. Injury prevention.** Lower body exercises such as squats, dead lifts, single leg activities are important to improve stability around joints such as the hips and knees. Core strengthening exercises as well are important for runners as they help improve performance, increase stamina, and decrease injury. Your limbs emanate from your core so for your arms and legs to move properly and efficiently they have to be moving from a solid foundation.

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STRENGTH EXERCISES

Sets and Reps

- Start with 3 sets of 5 reps and build to 5 sets of 5 reps

Rest Period between sets

- 60 seconds

1. SQUAT



- Eyes looking up
- Head straight
- Arms out in front
- Feet straight or slightly toed out
- Feet slightly wider than shoulders
- Knees over toes
- Abs tight, butt tight



- SIT BACK, NOT DOWN!
- Push feet out
- Push knees out
- Keep the arch in the lower back
- Chest up
- Shoulder blades together



2. BRIDGE OFF TWO LEGS



Lie on your back with your arms out above head and bent at elbow. Your feet are flat and knees are bent. Contract your buttocks (like you are holding in a bowel movement) and then slowly raise your hips off the floor until your knees, hips and shoulders make a straight line.

2a. SUPINE BRIDGE OFF ONE FOOT



Lie on your back with your arms out above head and bent at elbow. Your feet are flat and knees are bent. Contract your buttocks (like you are holding in a bowel movement) and then slowly raise your hips off the floor and extend one leg until your knees, hips and shoulders make a straight line.

3. CORE

Prone Plank

Progression #1: Off Knees

Elbows under shoulders, knees behind hips. Make sure your abs and glutes are tight when you hold this position. Start with 15 seconds hold, rest for 30 seconds and perform 3-5 holds. Build to 60 seconds hold before going to Progression #2.



Progression #2: Off Toes

Elbows under shoulders, on toes. Make sure your abs and glutes are tight when you hold this position. Start with 15 seconds hold, rest for 30 seconds and perform 3-5 holds. Build to 1-minute hold.



Side Bridge

Progression #1: Off Knees

Lie on your side, knees bent to 90°, supported by elbow bent to 90°. Place the free hand on your opposite shoulder or leave it along your side. Keep torso straight and lift buttocks off the ground. Keep hips forward, squeeze buttocks and abs tight. Hold right side for 15 seconds, then left side 15 seconds, rest 30 seconds. Perform 3-5 holds. Build to 1-minute hold on each side before moving to Progression #2.



Progression #2: Off Toes

Lie on your side, supported by elbow bent to 90°. Same as above. Hold right side for 15 seconds, then left side 15 seconds, rest 30 seconds. Perform 3-5 holds. Build to 1-minute hold on each side.



All Fours

Get on all fours, knees under hips and hands under shoulders. Squeeze your buttocks and abs. Reach forward with one arm to a horizontal position and hold for 5 seconds. Reach back with one leg to a horizontal position and hold for 5 seconds. Make your limbs "long" when you reach. Repeat with opposite arm and leg.



Once you can reach with a single limb and keep your torso stable, reach forward with the right arm and reach back with the left leg to a horizontal position. Hold for 5 seconds on each side and perform 3-reps. Repeat sequence 1-2 more times.



Suggested Reading: *Ultimate Back Fitness and Performance*, Stuart McGill
www.backfitpro.com

3. SHOULDER BLADE SQUEEZE



Lie facedown on a mat or with a folded towel under your chest. The shoulders and elbows should be positioned at 90 degrees. Squeeze the shoulder blades together without picking the arms off the ground. While keeping the shoulder blades together and the elbows at 90 degrees lift the elbows and hands (thumbs up) towards the ceiling. Be sure to maintain the 90/90 position and the shoulder blades squeezed together. Perform 10 reps.

4. TUBING SHOULDER PRESS



Stand on tubing. Press one arm straight up. Repeat with other arm.

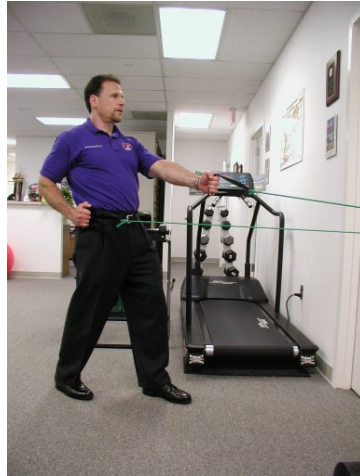
5. TUBING CHEST PRESS



Wrap tubing around doorknob. Stand with your back to door in a split stance (one leg forward, one leg back) and look straight ahead with the chest up. Punch forward alternating right and left. Switch the leg position after each set.

6. TUBING ROW

Wrap tubing around doorknob. Stand facing the door in a split stance (one leg forward, one leg back), looking straight ahead and keeping chest up. Pull backward alternating right and left. Switch leg position after each set.



Push-Up



Keep your body in a “tented” position throughout the entire range of motion. Do not let your middle sag. Stay tight in the buttocks and abdominal area and keep the shoulder blades tight. Lower until several inches is between your chest and the floor. Squeeze your lats tight as you return to the starting position.

ONE-LEG DEADLIFT

Hold a dumbbell in the left hand. Push your buttocks back while bending at the waist until the dumbbell brushes the floor. The right leg straightens out as you lower down toward the floor. Keep your head in line with your spine and return to the start position while keeping the raised foot from floor. Hold for one second and execute 5 repetitions on each side.



STRETCHING METHODS

STATIC STRETCHING

Static stretching is the simplest method of stretching. I recommend this type of stretch AFTER your workout has been completed. It can be done immediately after or several hours later. The key to static stretching is what I call the BREATHING STRETCH. It is as simple as this:

1. Place your body part into a position of gentle stretch.
2. Take a deep breath in.
3. Exhale and increase the stretch position ever so slightly. Just take what your body will give you. THIS SHOULD BE COMFORTABLE, NOT PAINFUL! DO NOT HOLD YOUR BREATH!
4. Repeat this process until you can no longer increase your range of motion. It may be two cycles or 10 cycles, again, just take what your body gives you.

Reference:

Sport Stretch, Michael Alter, Human Kinetics

ACTIVE ISOLATED STRETCHING (AIS)

AI is a unique, active way to stretch muscles developed by Aaron Mattes (www.stretchingusa.com). It uses an active contraction of the muscle OPPOSITE to the one being stretched. For example, if you lie on your back and raise one leg as high as you can, eventually you will feel the stretch in the rear thigh (hamstring), but you are contracting the front thigh and hip muscles (quadriceps and hip flexor muscles) to raise the thigh. It is this contraction of the opposing muscle group that allows a greater stretch in the muscle being stretched. It would be very helpful to get an anatomy book and learn the different muscles and their function.

Here are the rules for AIS:

1. Determine which muscle you wish to stretch and the opposing muscle you are going to contract. Make a mental picture in your head BEFORE you start the stretch.
2. Actively contract the opposing muscle BEFORE you start the stretch movement.
3. Maintain the contraction throughout the entire movement.
4. When you reach the end of the movement (as far as you can go COMFORTABLY), maintain that position for no more than 2 seconds. Maintain the contraction of the opposing muscle for those 2 seconds.
5. Release the contraction and return to the starting position.
6. Exhale during the stretching phase and inhale during the recovery phase. DO NOT HOLD YOUR BREATH!
7. Repeat the process 10 times and with each subsequent stretch attempt to increase the range of motion each time.

8. STRETCHING SHOULD NOT CAUSE PAIN!

References:

Specific Stretching For Everyone, Aaron Mattes www.stretchingusa.com
The Whartons' Stretch Book, Jim and Phil Wharton, Three Rivers Press

FACILITATED STRETCHING

Facilitated Stretching is another type of active stretching developed by physicians and therapists over the last 50 years. The method I describe below uses active motion and isometric muscle contraction to improve flexibility. Another name for facilitated stretching is CRAC – contract relax antagonist contract. You will need a strap (Stretch Out Strap) or partner for many of the stretches. Using the same example as in the AIS section, lie on your back with the strap around your foot and actively contract the hip flexor muscles to lift your leg to the point when you feel a stretch in the hamstring. Do not just pull your leg up with the strap. At this point, keep your leg in this position and push your heel into the strap toward the floor for 5-10 seconds. Now you are contracting the SAME muscle you are stretching. Then, release the contraction and ACTIVELY raise your leg higher; use your hip flexor muscles, not the strap. This will be repeated several times.

Here are the rules for Facilitated Stretching:

1. Determine which muscle you wish to stretch. Make a mental picture in your head BEFORE you start the stretch.
2. Actively contract the opposing muscle to move your limb or body to the point when you feel a MILD stretch.
3. Contract the muscle you are stretching into the strap or your partner and hold for 5 – 10 seconds. The force of the contraction should be relevant to the condition of the muscle. For example, if the muscle has been injured, do not apply a maximum contraction.
4. Release the contraction and use the opposing muscles to move your limb or body to the point when you feel the stretch again.
5. Inhale during the contraction phase (when you are contracting the muscle being stretched) and exhale during the lengthening phase (when you are contracting the opposing muscle group). DO NOT HOLD YOUR BREATH!
6. Repeat this process until you can no longer increase your range of motion. It may be two cycles or 10 cycles, just take what your body gives you.
7. STRETCHING SHOULD NOT CAUSE PAIN!

Reference:

1. *Facilitated Stretching*, Robert McAtee and Jeff Charland, Human Kinetics

Neck: Upper Trapezius Stretch

Stand up straight and draw the belly button inwards. Place left arm behind your back. Tilt your head to the right and slowly draw the right ear to the right shoulder. The stretch is felt on the left side.

**Neck: Levator Scapulae Stretch**

Stand up straight and draw the belly button inwards. Place left arm behind your back. Tuck the chin and slowly draw the right ear to the right shoulder. Rotate the head so you are looking into your right armpit. Use right arm to gently pull head forward and to the right. The stretch is felt on the left side.

**Behind Back Shoulder Stretch**

Grasp a towel and place your hands behind your back as shown. Use the top hand to pull the bottom hand up your back.

**Anterior Shoulder Stretch Supine**

While seated with legs extended, extend your arms behind you until you feel a mild stretch.



Rear Shoulder Stretch

While standing or sitting, place one arm across the chest with the palm facing toward your body. Use the other arm to apply pressure to area just above the elbow and gently pull the arm across your chest until you feel the stretch in the rear shoulder. Hold for 20-30 seconds and repeat on opposite side.

**Shoulder (Deltoid Muscle) Stretch**

Stand or sit and bring your arm across your body while turning your thumb down until you feel a mild stretch.

**Chest Stretch**

Stand facing a doorway. Place your hands at shoulder level and place one foot forward and one behind. Keep your torso up straight – do not arch your back or lean forward from the waist. Lean into the doorway feeling the stretch in the pectoral (chest) area. Repeat stretch with the opposite leg forward.

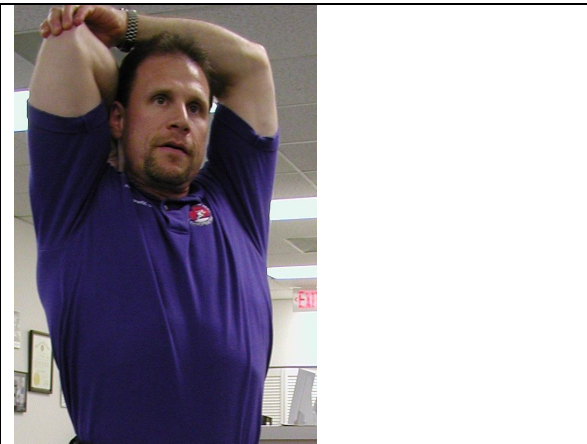


Biceps Stretch

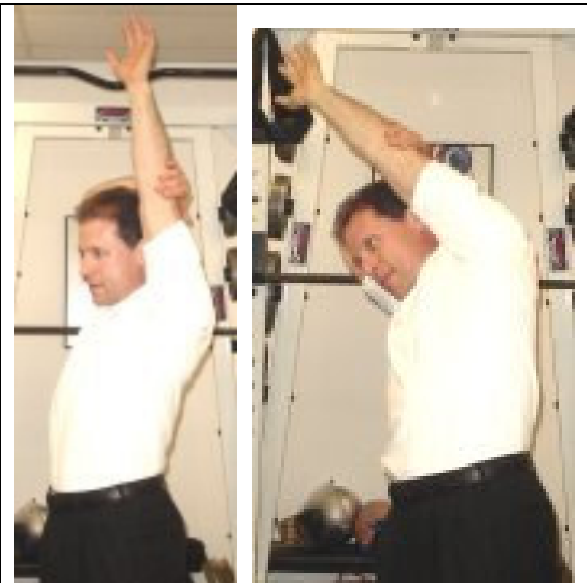
Stand with your back to a door way and grasp the door way frame with a thumb down grip. Rotate the opposite shoulder back toward the doorway until you feel a mild stretch.

**Triceps Stretch**

While standing or sitting place one hand behind your head trying to keep the elbow pointing straight up and reach to the back of the neck. Use the other arm to pull the tip of the elbow backward until you feel the stretch in your tricep and along that side of your body. Hold for 20-30 seconds and repeat on opposite side.

**Side (Lat) Stretch**

Reach straight up as high as you can. Keep your arm close to your ear. Bend to the side and keep your arm close to your ear. Do not let the arm move away from your ear while bending to the side.



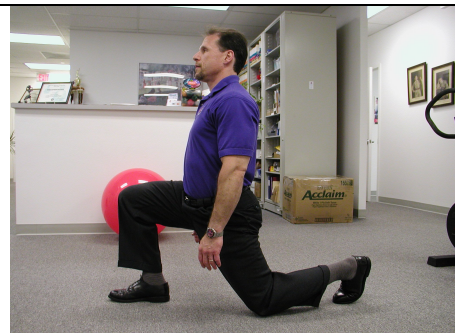
Hip Rotation/ Chest Stretch

Lay on your back. Bring the right leg across your body, keeping the knee straight. You will feel a stretch in your right hamstring. Reach over your head and out to the side with your right arm. You will feel a stretch in your chest (pecs). Switch sides.



Hip Flexor Stretch

Stand with one leg forward (slightly bent at the knee) and one leg back (with the foot turned in). Draw the belly button inward and tilt your body toward the front leg side. Reach up and to the front leg side with the opposite arm until you feel the stretch on the rear leg side. A variation is to place a club behind your back that will keep your spine straight. You should not feel this in your lower back.



Piriformis (Buttocks)

Lie on your back and with feet flat on floor. Bend hip and knee of one leg to a 90-90 position. Cross this bent leg across the other knee in a figure 4 position. Draw the belly button inward and pull the thigh toward your abdomen until you feel the stretch in the buttocks.



Quadriceps (Front Thigh)

Lie on your side. Bring your bottom knee up toward your abdomen. Use your bottom arm to grasp as low on your bottom leg (close to the ankle or foot) as possible. Grasp your topside ankle (not your foot) with your topside arm. Pull backwards from the hip. Do not pull your heel to your buttocks. Swing back from the hip and you will feel the stretch in the front thigh.

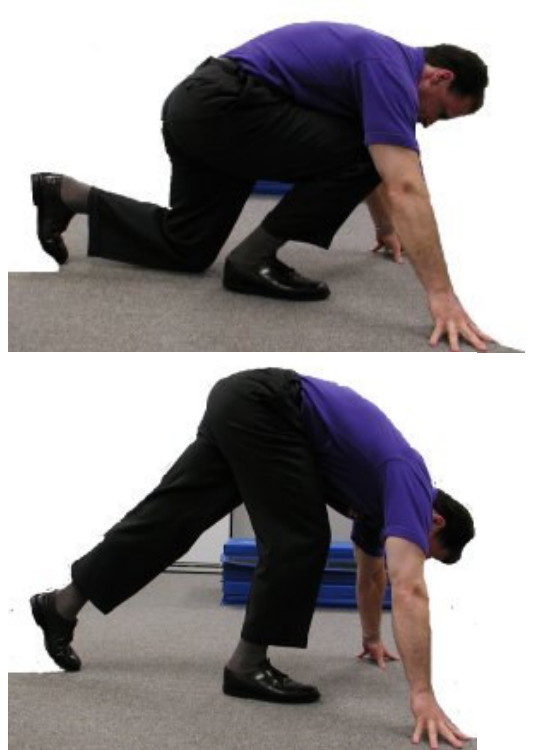
**Hamstring (Rear Thigh) Stretch #1**

Lie down on floor with legs flat. Flex hip and knee of one leg (90-90 position). Support the bent leg with the hands in the crease of the knee and draw belly button inward. Slowly straighten the leg until a tension is felt in the hamstring.



Hamstring (Rear Thigh) Stretch #2

Start in a standing position with one foot in front of the other pointing straight ahead. Slowly squat into a sprinter's start stance. Draw the belly inward and slowly raise the buttocks up until a stretch is felt in the forward leg in the hamstring.



Iliotibial Band



Stretch #1: Lie on your side. Bend your top knee and gently pull your foot toward your buttocks. Cross the bottom ankle over the top thigh just above the knee. Use your ankle to push the knee down.



Stretch #2: Sit and cross one leg over the other. Pull the crossed leg into your chest.

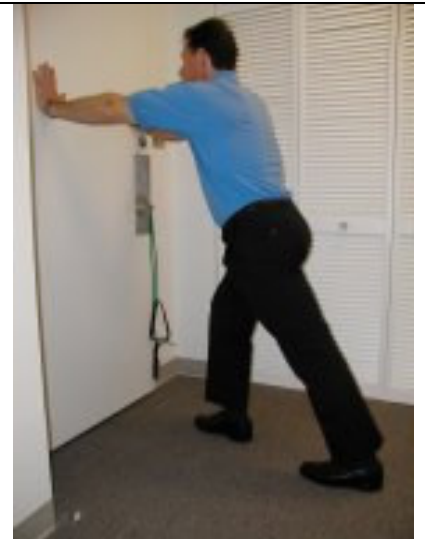
Iliotibial Band



Stretch #3: Stand and cross one leg in front of the other. You will be stretching the rear side IT Band (right side in the picture). Bend forward and toward the rear leg.

Calf Stretch

Place one leg forward and one leg back keeping both heels on the ground. The rear leg should be straight and the front leg should be bent at the knee. Place hands on wall at shoulder level and keep back straight by drawing belly button inward. Bend arms and move chest and hips toward the wall without arching your back. Stop movement when slight tension is felt in the rear calf.



Suggested Reading To Learn More About Stretching

Static Stretching

Sport Stretch, Michael Alter, Human Kinetics

Active Isolated Stretching

Specific Stretching For Everyone, Aaron Mattes www.stretchingusa.com

The Whartons' Stretch Book, Jim and Phil Wharton, Three Rivers Press

Facilitated Stretching

Facilitated Stretching, Robert McAtee and Jeff Charland, Human Kinetics