



# Running Injury Prevention

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BPTh. MSc Sports Injury Management. CMP

- ❖ Back on Track Physical Therapy. (Harvard Sq and memorial drive location).
- ❖ Orthopedic and sports Physical therapist with expertise in manual therapy, dry needling, kinesiotaping and aquatic therapy.
- ❖ University of Brighton, UK.
- ❖ Pravara Institute of Medical sciences. India

# Incidence

❖ 20 million regular runners, 79% injury

16 million per year

❖ 46 million recurrence

7.4 million

Annual reports Running USA, 2014



# KEY Rules

- ❖ There's no one way to Run
- ❖ Speed is strength in disguise
- ❖ Consistency is the key
- ❖ Endurance : repeat an activity over and over again
- ❖ Hydrating and eating
- ❖ Rest for recovery

# Running Biomechanics

- ❖ Running style depends on physical size, natural posture, leg length, feet arches, alignments of hips and knees
- ❖ Leg-torso ratio is important, longer legs -higher center of gravity, faster runner

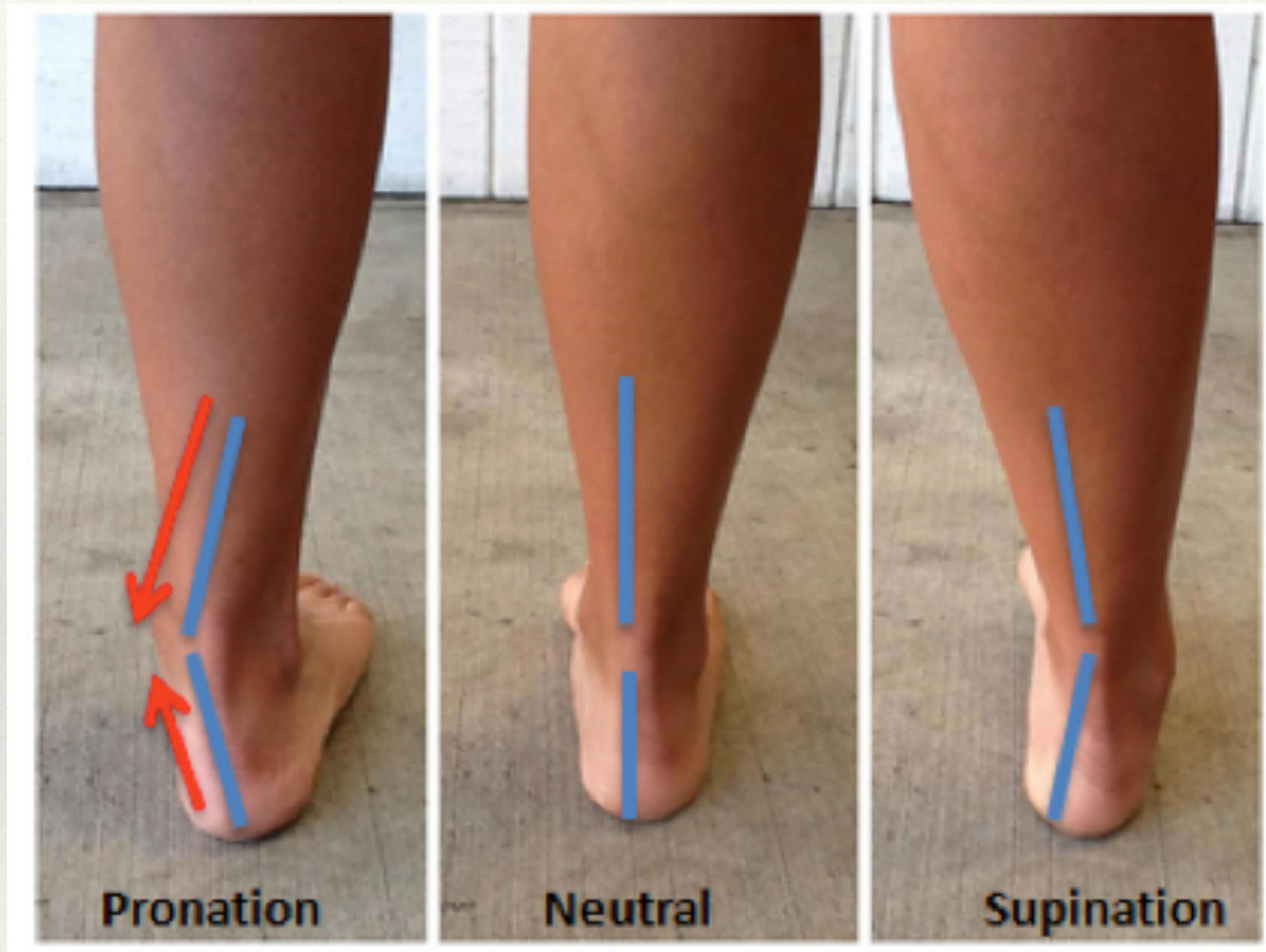
# Efficient way to Run

- ❖ Walking 60% stance 40% swing
- ❖ Running 40% stance 60% swing – speed dependent
- ❖ Each foot contact 80-100 times / min
- ❖ Rarefoot vs forefoot striking
- ❖ Foot should strike the ground slightly ahead of your hips , soft landing
- ❖ Fairly erect upper body with shoulders over hips
- ❖ Swinging leg 45 deg from ground
- ❖ Good form momentum

# Breathing

- ❖ 6 second breathing rule
- ❖ 2 inhale , 2 hold and 2 exhale
- ❖ Uphill shorten stride (easier), avoid longer strides

# Common Mal-alignment





HIP drop



Genu Valgus

# Common Injuries

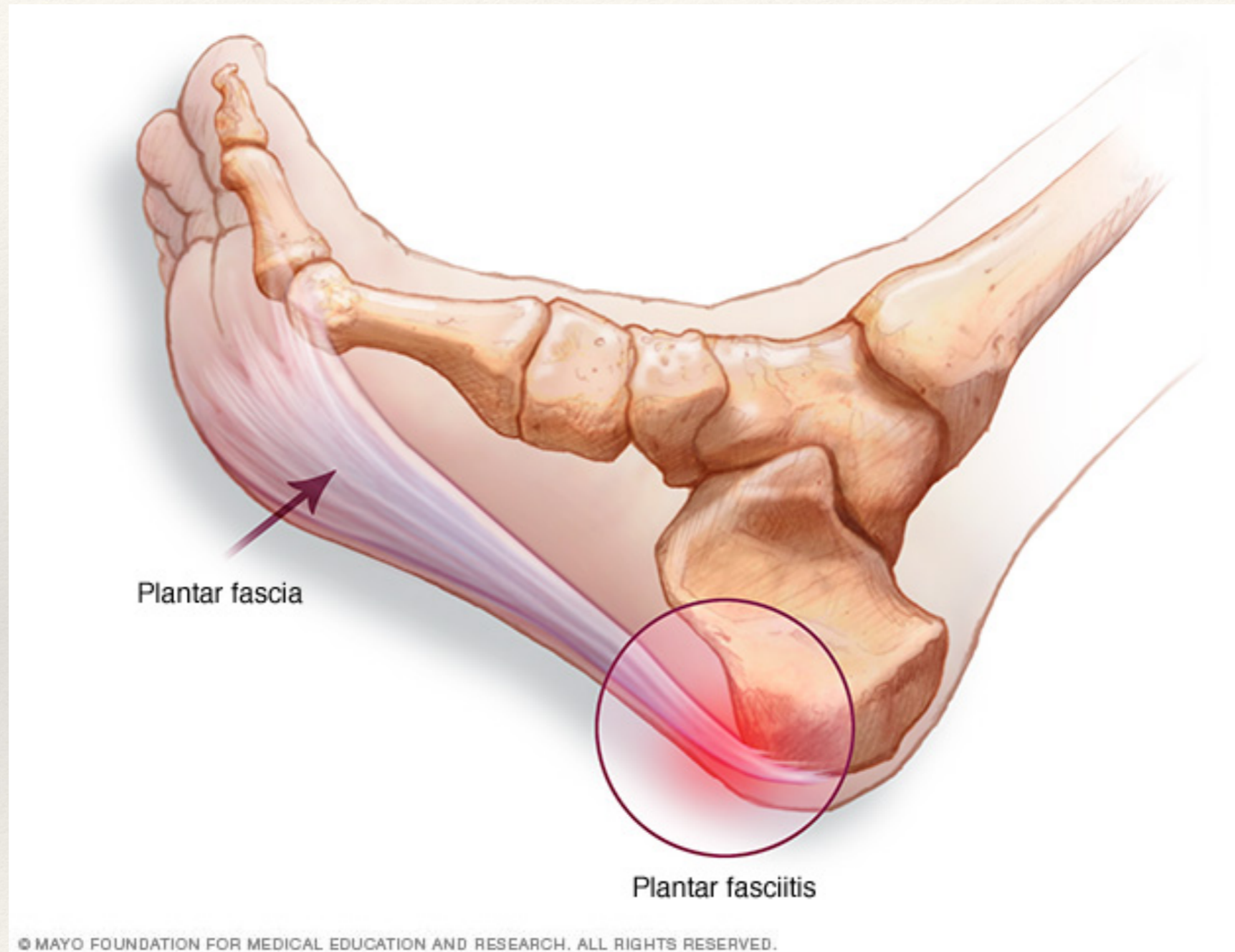
- ❖ Achilles tendinitis



# Posterior Tibial tendinitis



# Plantar fasciitis



# Shin Splints



# IT band syndrome



# Runners knee: Patellofemoral syndrome



❖ Back pain

❖ muscle cramps

# First time runner vs regular marathoner

- ❖ Complete the marathon and don't worry about time
- ❖ Regular : strength training , speed work
- ❖ Anaerobic Vs Aerobic training
- ❖ Strength training will build lean muscle mass and as result more ms fibers are recruited
- ❖ Stronger ms gives more cushion

# Pre Run Stretches

- ❖ To stretch or not Stretch ??
- ❖ Dynamic warm up, brisk warm up
  - Side kicks, Leg swings
  - Walking lunges
  - Bowler exercise
  - Figure four stretch
  - Side lunge with side bends
  - Runner balance exercise

# Post run Routine

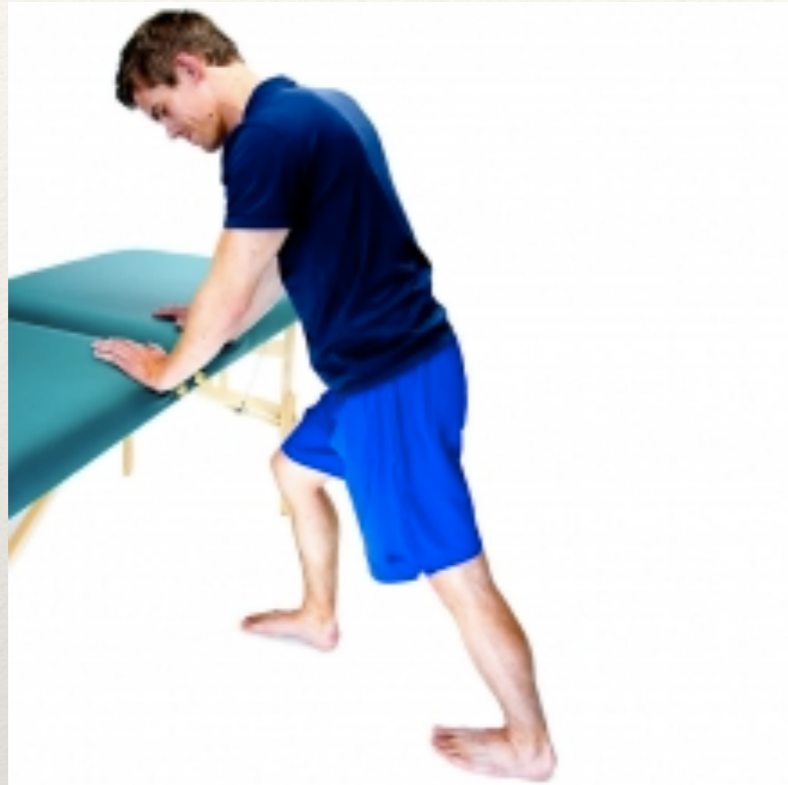
- ❖ Muscles are warm and elastic they will stretch out better
- ❖ Flush out lactic acid and toxins
- ❖ Helps maintain flexibility, strength, endurance
- ❖ Prevent DOMS

# Hamstring stretch



Start by standing and prop your foot of the affected leg on a chair or a step. Next, slowly lean forward from the hip, until a stretch is felt behind your knee / thigh. Bend through your hips and not your spine. Hold 30s then return to starting position and repeat 3 times

# Calf stretch



- ❖ While standing and leaning against a wall, place one foot back behind you and bend the front knee until a gentle stretch is felt on the back of the lower leg. Your back knee should be straight the entire time. Hold 30s x 3 times



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# Quadriceps stretch



- ❖ Pull heel toward buttock until a stretch is felt in front of thigh. Prevent back from arching. Hold 30s x 3 times. Repeat on both sides.

# Piriformis stretch



- ❖ While sitting in a chair, cross your affected leg on top of the other as shown. Gently lean forward until a stretch is felt along the crossed leg. Hold 30s x 3times

# ITB with side bend



- ❖ In a standing position, cross the one leg behind your other leg. with your arm over head, lean to the side of the front leg. Hold 30s x 3 times

# Foam roller



# Overtraining and preventing injuries

- ❖ Frequent cold or illness
- ❖ Heavy legs
- ❖ Muscle soreness lasting for days

# Strengthening exercises

## Double and single Calf raises



While standing on a step, raise up on your toes as you lift your heels off the ground. Repeat 15, 2 sets

Next, bend the non-target leg. Then, lower your heel back down.

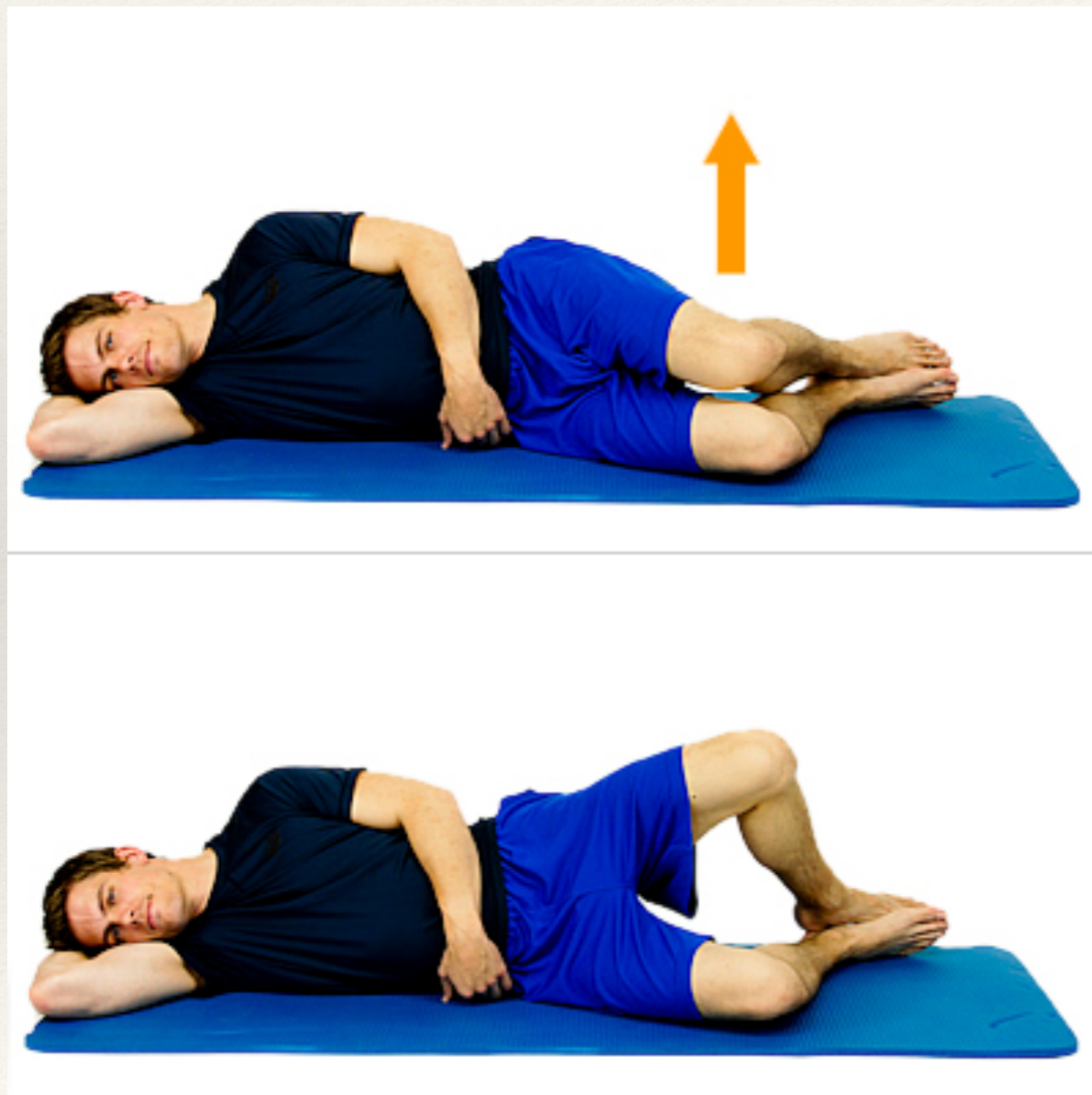
Repeat 15, 2 sets

# Single leg bridging



- ❖ While lying on your back and knees bent, raise your buttocks off the floor/bed into a bridge position. Next straighten a leg so that only one leg is supporting your body. Then, return that leg back to the ground and change to the other side. Try and maintain your pelvis level the entire time. Hold for 5s, repeat 10 times on each leg

# Clamshells



Begin lying on your side with your legs bent and feet together. Lift your top knee upward while keeping your feet together, then lower it back down and repeat. Hold for 5s x10 reps x 2 sets. Make sure that your hips do not fall backwards as you lift your leg. Focus on the movements of your leg.

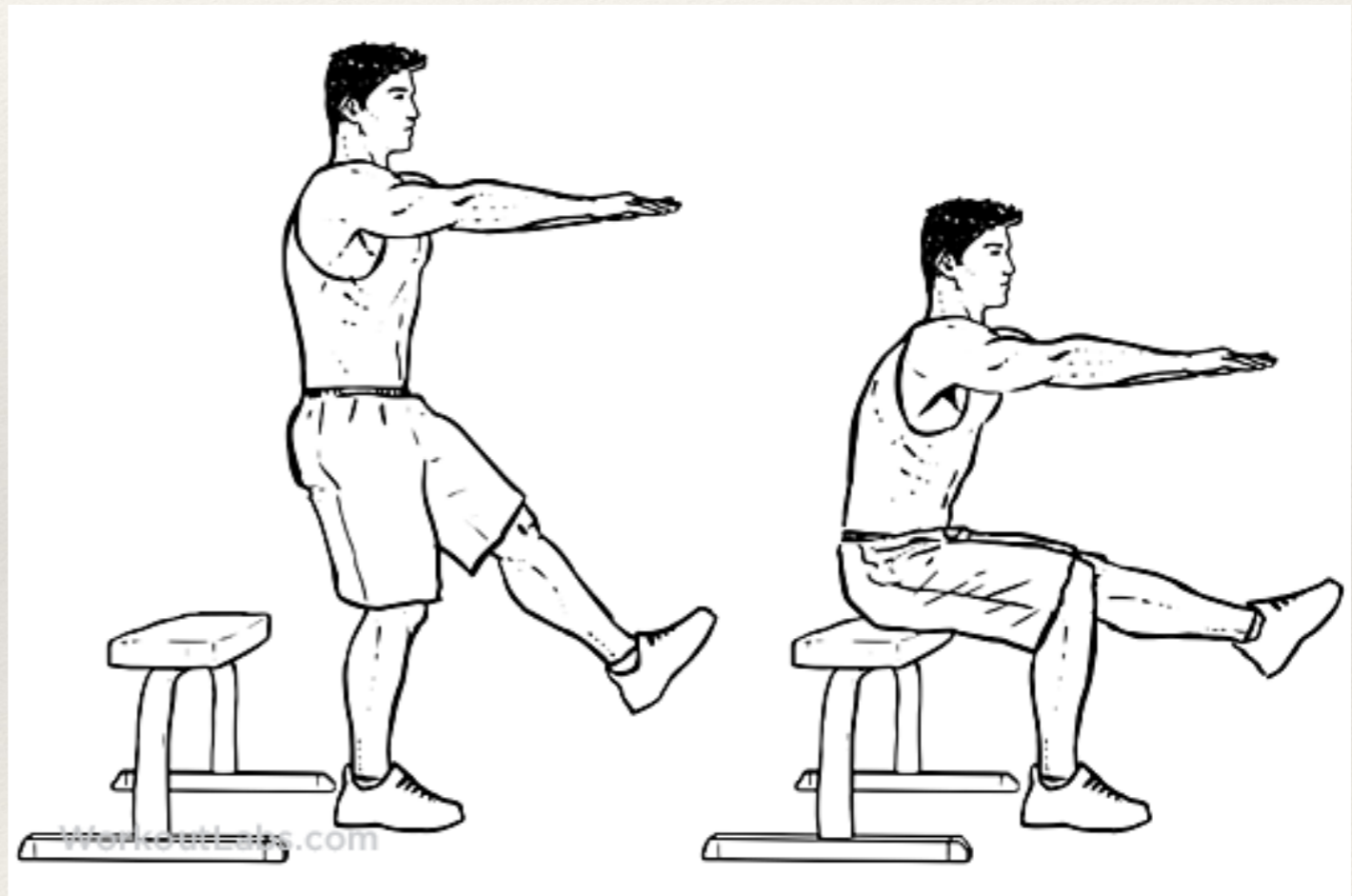
# Squats

- ❖ When squatting, tighten your stomach muscles keep your back straight while bending at your hips. Lower your buttock should as if you are going to sit on a seat. Emphasize your weight going through your heels do not let your knees pass in front of your toes and keep your knee in line with your 2nd toe. Repeat 15 reps, 2 sets



# Single leg squats

Stand on one foot maintaining your balance point. Lower hips as if seating as far as possible with good form. Do not wobble from side-to-side. Return to standing position 10 reps , 2 sets



# Planks

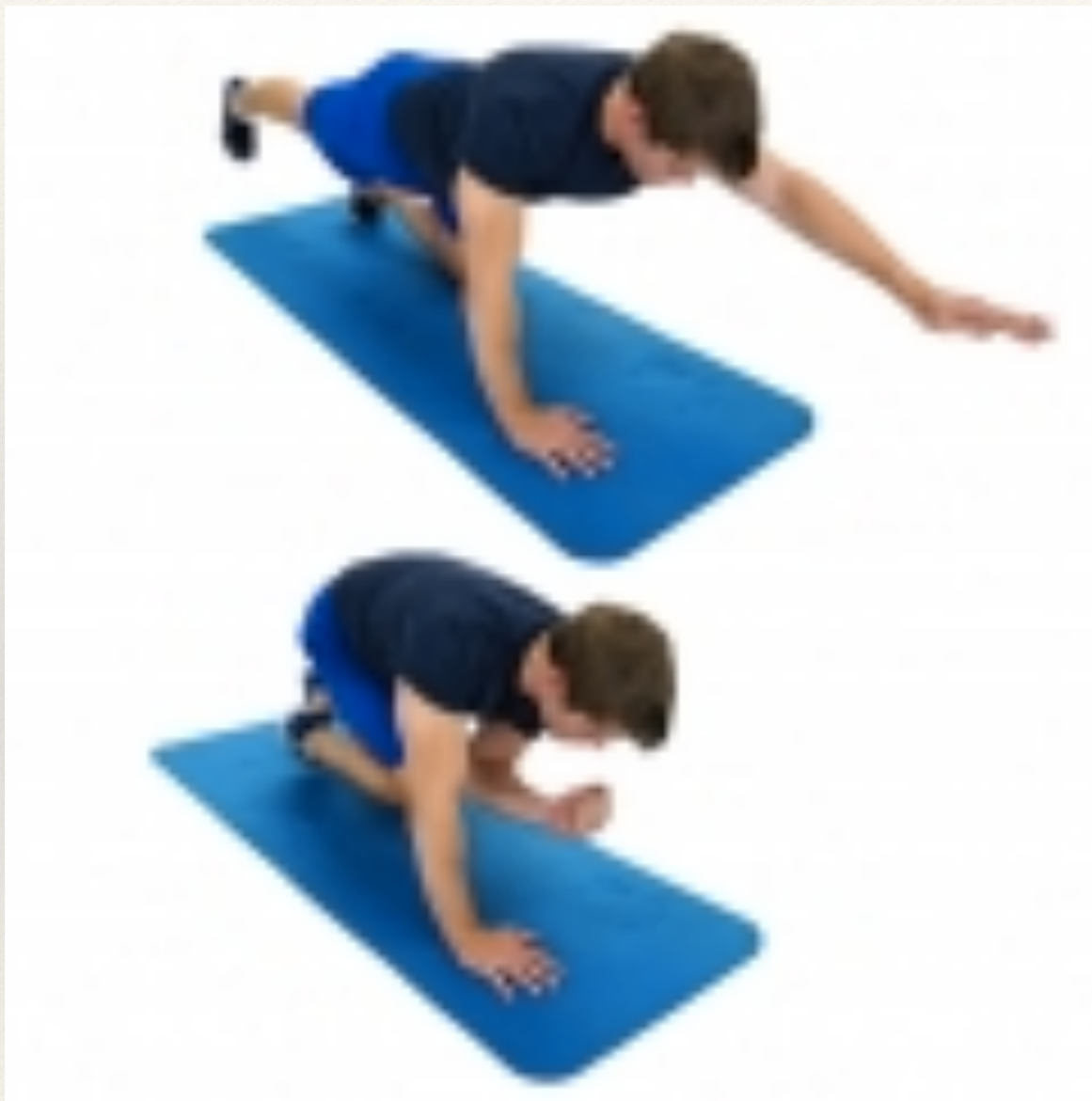


- ❖ While lying face down, lift your body up on your elbows and toes. Try and maintain a straight spine. Do not allow your hips or pelvis on either side to drop. Hold 20-30s, 3 times



While lying on your side, lift your body up on your elbow and feet. Try and maintain a straight spine. Hold 20-30s x 3times

# Bird dog



While in a crawling position, slowly lift your leg and opposite arm upwards. When returning your arm and leg down, do not touch the floor but instead touch your elbow to your opposite knee and lift and straighten them again. Then set them down on the floor. Next, perform on the other side and repeat.

# Wall push ups



Standing at a wall, place your arms out in front of you with your elbows straight so that your hands just reach the wall. Next, bend your elbows slowly to bring your chest closer to the wall. Maintain your feet planted on the ground the entire time.

# Toe yoga



- ❖ Lift your big toe without lifting the other 4 or rolling your ankle outward
- ❖ 2) Lift your 4 small toes without lifting your big toe or rolling your ankle inward.

# Runners Balance



- ❖ Stand and balance on one leg. Next, lean forward as you bring your other leg back behind you to tap the floor. Bring the same side arm forward as shown during the movement. Return to starting position and repeat 10 times , 2 sets.

**Thank you !**

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