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Guidelines for Running Specific Strength/Stability Training

Presented in Three Phases

B&B Physical Therapy

12/7/2010

- I. First Stage
 - Always the “core.” This is your power base.
 - This includes the 3 B’s (Butt/back/belly). Focus first on back/extensor control, then gluts and abductors to finish the bracing effect of these muscles.
- II. Second Stage
 - Move through the hip groups
 - This includes the hip flexors, hip rotators, hip adductors and abductors, hamstring and thigh groups (quads)
- III. Third Stage
 - Lower leg intrinsic of the foot for “paw back” control and “toe flick”

Remember: Exercise frequency = 2 times per week
1 set = 25-30 reps

As your endurance improves and your training time increases, muscular core strength decreases unless you stay consistent with your running specific strength training. This imbalance can lead to injuries.



Stage 1: CORE (3 B's)

On the ball:

Prone leg lifts



Bridging



-Advance to single leg bridges

Prone extension and diagonals



-Add dumbbells as you get stronger
-5 to 8 lbs
-Also add rotation sets

Crunches: straight and rotation



-20 to 30 rep each direction
-Hold belly button in tight
-Later, add weight or sport cord

On the Mat Table:

Prone planks



-Add single leg raise or
Arm opposite leg lifts
-Hold 5 to 10 secs

Side Planks



-Goal: 20 to 30 sec repetitions

Knee ups



-thigh drive strength
-legs straight or knees flexed

Ball Squats



-20 to 30 reps with 2 legs
-work up to 1 leg or lunge



MORE PLANK-CORE DRILLS

Goal: 20 to 30 reps

Side Plank:



Side Plank w/leg lift:



Plank:



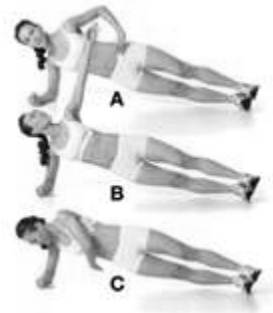
Plank w/leg lift:



Plank w/knee drive



Side plank w/side rotation





STAGE II: HIPS

Clams (3 way: side-lying and on back)



-20 to 30 reps each position
-Hold back tight & motionless

Hip abduction



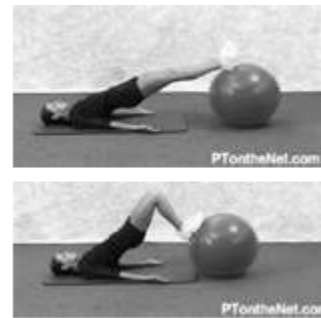
-20 to 30 reps

Squats w/band around knees



-Drive the knees out against the theraband
-“Knees over toes”

Hamstring curl w/ball



-“Paw Back” Power

Adductor lifts



-20 to 30 reps

Box Squats – 1 leg at a time



-“Knee over toes”
-Balance & Control are important

“Knee up” drills w/Sport cord



-“Thigh Drive” drills
-Toe off – “Toe Flick”

Retros on treadmill w/band around knees



-Stay off heels, use “active” feet
-Shoot for 15% incline, 2 to 3 mph

***Don’t forget about Monsters (forward, sideways, and backward)**



STAGE III: Lower leg and foot intrinsics

1. Arch lifts 1 foot 20 to 30 reps

2. Toe taps – lift toes only, 20 to 30 reps

3. Calf raises w/arch lifts

4. Forefoot raises



-add arch lift

5. Wobble board 4 way

6. Stretch calf group



-or use a BOSU ball



Directions:


- lean forward
- bend front knee
- back leg is straight
- heels are down

-Distance/trail runners need 20° to 30° of movement

-check distance R vs L

7. Toe Hops:

-3x30

-vary directions 

-NO AIR initially

- Develops “active foot” strength



Runner's checklist for knee pain

1. Worn/Improper shoes
 - Broken down inside counter
 - Glued in crooked
 - Too rigid (too rigid orthotics?)
2. Check flexibility
 - Especially quads
 - Ankle – Achilles tightness may lead to over pronation
3. Running form
 - 'heel strikers'
 - Increased toe out
 - Rotation of knee or heel
 - Overstride – Cadence should be 90 steps/min
4. Strength
 - Core → Hips → Lower leg/intrinsic
 - Weakness can lead to poor form, increased pronation, increased impact
5. Rule of "2's"
 - Too little base
 - Too much downhill without preparation
 - 2 - 2 - 2

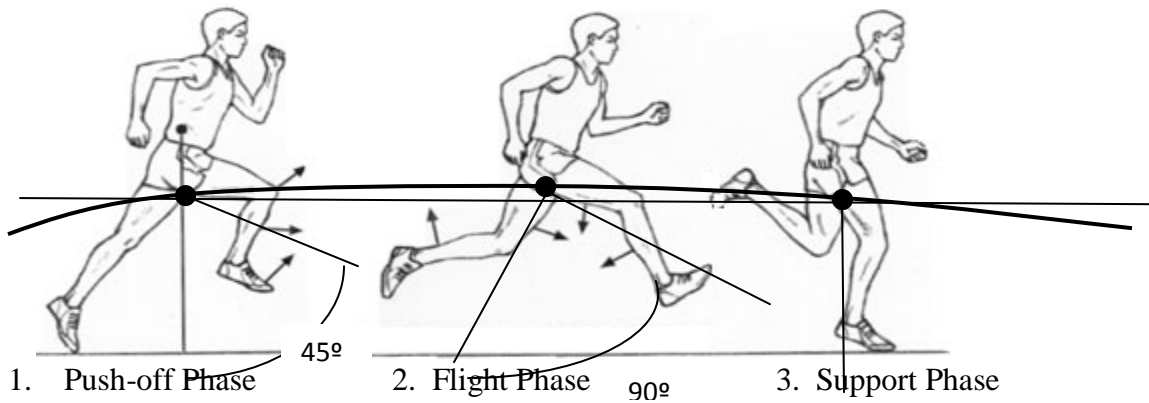
Treatment

1. Usual
 - Ice, RICE, NSAIDS friction massage, foam rollers, cross training w/decreased impact
2. Flexibility
 - Work on symmetry
3. Strength
 - Running strength program should be ongoing throughout season, at least 2x/wk
4. Form Training

Advancing four skills with drills

For Example:

1. High Knees: Don't let your knees turn inward
2. Butt Kickers: Hamstring control
3. Skips: Strong 'pop' off the ground
 - Don't flat foot this
 - Develops toe flick/active foot
4. Lunges: Straight ahead – chest up
 - Siders – stay low, move through the hip only
5. Monster band drills:
 - Forward, siders, backwards: hold low, strong position



Illustrations 1-3:

● =Center of Gravity

In long-distance running, the body is basically erect. The chest is slightly raised, the head is held naturally, and the eyes focus forward. The arms and wrists are relaxed, with the elbows bent to form a 90° angle. The arms move in a vertical plane without crossing in front of the body. The running stride can be broken down into three interconnected phases: (1) Pushoff, (2) Flight and (3) Support. During each stride, the thigh of the forward leg rises to about 45° from horizontal (1) and the foot comes down slightly ahead of the runner's center of gravity (3). When the runner is in the flight phase of a stride, where both feet are off the ground, the thighs form about a 90° angle (2). The foot comes down, where the heel and ball touch the ground at the same time. A runner's center of gravity lowers a little in the support phase (3). However, too much vertical motion during the support phase wastes energy. This extra work is detrimental to running economy and performance (see curved line).

Studies show that the muscles around the hips are relatively quiet in the push-off phase, preventing excessive

A runner who doesn't maintain 90° elbow bend or who overexaggerates their arm swing will waste energy.

up and down movement, which wastes energy.

The speed and force of the forward leg during push-off directly affect running speed. A runner who has a lot of strength and speed in the forward leg during the push-off will have a longer stride and, as a result, will be able to run faster. In long-distance running, it is important to concentrate on driving the knee forward rather than up. In the best marathoners, the thigh rises to form about a 45° angle. Sprinters have a more explosive push-off,

which drives their knees higher.

As the leg moves forward and the knee bends, the lower leg folds up behind the thigh. The folded leg creates the equivalent of a short lever. Short levers allow faster forward thigh movement. When the leg straightens and makes contact with the ground, it becomes a long lever. Long levers produce greater driving force than short ones. To illustrate these actions, try the following: Swing your hand back and forth at the wrist as quickly as possible. Since your hand is a short lever, it moves quickly without expending a lot of energy. Now hold your arm out straight (to form a long lever) and try the same thing, this time moving from the shoulder. The long lever requires more energy for movement and travels more

slowly than the short lever. However, long levers create more force than short levers. It's not necessary for long-distance

A runner who spends more time in the air than on the ground will lose speed. runner to fold the lower leg all the way behind the upper leg as is sometimes seen in sprinter. For better running economy, the foot merely needs to rise slightly higher than the knee (as shown in Illustration 3). Any more folding of the lower leg wastes energy.

Just before entering the flight phase, the ankle is fully extended and only the toes touch the ground (Illustration 1).

Article and Illustration from Peak Running Performance, Vol. 6/No. 3



Warm-Up Series:

Active flexibility (20-30 meters)

1. Skips



- pop up, drive knees up and out

2. Butt Kicks



-“stay tall”

3. Side Lunge



-stay as low as possible
-don't 'bob' up and down

4. Straight Lunge



-keep back leg as straight as possible in lunge position
-“stay tall”

5. Cross Over Running



-other names:
karaoke or
grapevine
-go both directions

6. Arm Drills from squat position

Hand position:
-“chin to hip”
-90° at the elbow
-progressively increase cadence with control



Flexibility Series:

Prone:

(GOAL: 20-30 sec/exercise)

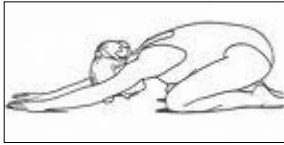
1. Cobra



2. Pretzel



3. Prayer



4. All 4's Downward Dog



5. All 4's Cat stretch



6. Figure 4



7. Planks



Basic plank: hold ____sec

Advanced: 20-30 leg lifts

More Advanced: arm to opposite leg

8. All 4's Hip Circles/Side



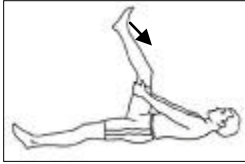
Supine:
(GOAL: 20-30 sec/exercise)

1. Knee to chest (Active)



-mobilize the hip:
inward, middle,
outward motions

2. Hamstring



-active stretch: 10 reps
-ankle circles and floss
(up/down with foot)

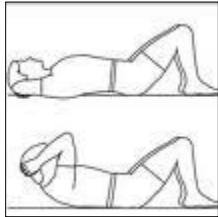
3. Rotation ITB

-leg circles, both ways
-up and down, KEEP back flat

4. Butterfly



5. Crunch x 2 mins



-hold belly button in
-advance to rotation
R/L oblique

6. Side Planks



GOAL: 20-30 leg lifts



Clam Series:

1. 3 Way with hip abduction



1A. Side lying w/ bent knees

- keep feet together
- keep back in strong position



1B. Side lying w/straight legs

- abductors: keep foot position horizontal



1C. Lying on back

- keep feet together and separate knees
- keep back in strong position

2. Standing clams



2A. Standing

- maintain "power position"
- keep heels off the ground
- partial squat position



2B. Squat w/theraband

- maintain "power position"
- keep heels off the ground



3. Foot Series:

-This is to develop an 'active' foot.

- 3A. clockwise circles w/ankle
- 3B. counter-clockwise circles w/ankle
- 3C. pump foot as though pushing a gas pedal



REMEMBER:
-Exercises A-C are done with theraband

- 3D. Barefoot striders:
-no heel striking

3E. Toe hops:

- stay off heels
- change directions

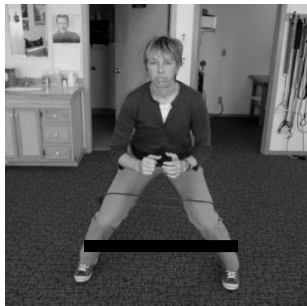


3F. Stretch ankles/calf group



- lean to wall
- hold stretch for ___secs.
- don't let arch drop

4. "Monsters"



ROUTINE:

- 4A. Forward walking
- 4B. Side/sliding
- 4C. Backwards

- band around ankle
- don't "bob" up and down
- stay as low as possible
- maintain "power position" and knees out
- keep heels off the ground
- drive knees up in forward monster
- 20 meters, each direction

Prep to Train:

1. speed shift – groups of 4
-4 definite speed changes: slow to fast
-always in control with good form
2. 3X40 meter gear pyramid
-try to pair up with faster/smooth runners