

Strength Training for Runners

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Strength Training for Runners

- ⦿ Why?
- ⦿ What?
- ⦿ When?
- ⦿ How?
- ⦿ Where?

Why Strength Training?

Improve Performance

&

Decrease Injury Risk

Does Strength Training Improve
Performance in Long Distance
Running?



Improved Long Distance Running Performance due to Strength and Power Training

Maximal Strength Training Improves Running Economy in
Distance Runners

-Storen et al, 2008

Explosive Strength Training Improves 5k Running Time by
Improving Running Economy and Muscle Power

-Paavolainen et al, 1999

Short-Term Plyometric Training Improves Running Economy
in Highly Trained Middle and Long Distance Runners

-Saunders et al, 2016

Using Strength Training to Improve Cardiovascular Fitness

- ⊗ Strength Training Can:
 - ⊗ Decrease resting heart rate by 5-12%...
 - ⊗ Increase stroke volume...
 - ⊗ Decrease resting blood pressure...
 - ⊗ Increase maximal oxygen consumption (VO_2max) by 5 to 8%...

...in previously sedentary or untrained individuals

Does Strength Training Decrease
Injury Risk in Long Distance
Running?



Risk Factors for Running Injuries

- ⊗ Ground reaction forces which are between two and four times bodyweight
 - ⊗ Effect on body's tissues (muscle, connective)?
 - ⊗ New or rapidly progressed stimulus or insufficient recovery from these stresses
- ⊗ Uniform, cyclic motion
 - ⊗ Overuse
 - ⊗ Imbalance of muscle characteristics
 - ⊗ Risk exponentially increases with poor mechanics and footwear/surface

Hip Abductor Weakness in Distance Runners with Iliotibial Band Syndrome

-Fredericson et al, 2000

“association between hip abductor, adductor, and flexor muscle group strength imbalance and lower extremity overuse injuries in runners”

Hip Muscle Weakness and Overuse Injuries in Recreational Runners

-Niemuth et al, 2005

“while both legs of each uninjured runner had very similar hip muscle strength, among the injured runners, the injured side's hip abductor and flexor muscle groups were significantly weaker than the uninjured side”

Benefits of Strength Training for Runners

- ⊗ Increased Strength of Muscle and Connective Tissue
 - ⊗ Tissues that are stronger tend to be more durable
- ⊗ Increased Movement Variability
 - ⊗ Decrease muscle and strength imbalances
- ⊗ Enhanced Recovery of Muscle and Connective Tissue
 - ⊗ Increased androgenic hormone release

Why Strength Training?

Decrease Injury Risk

&

Improve Performance

Why Strength Training?

Decrease Injury Risk ✓

&

Improve Performance ✗

Why Strength Training?

Decrease Injury Risk

=

Improve Performance

Injury Reduction

Most important ability of any athlete is availability

Most important training variable is consistency

TRAINING TO REDUCE
INJURY RISK WILL HAVE
A SIGNIFICANT IMPACT
ON THE POTENTIAL FOR
RUNNING
PERFORMANCE

What Constitutes an Effective Strength Program for Runners?

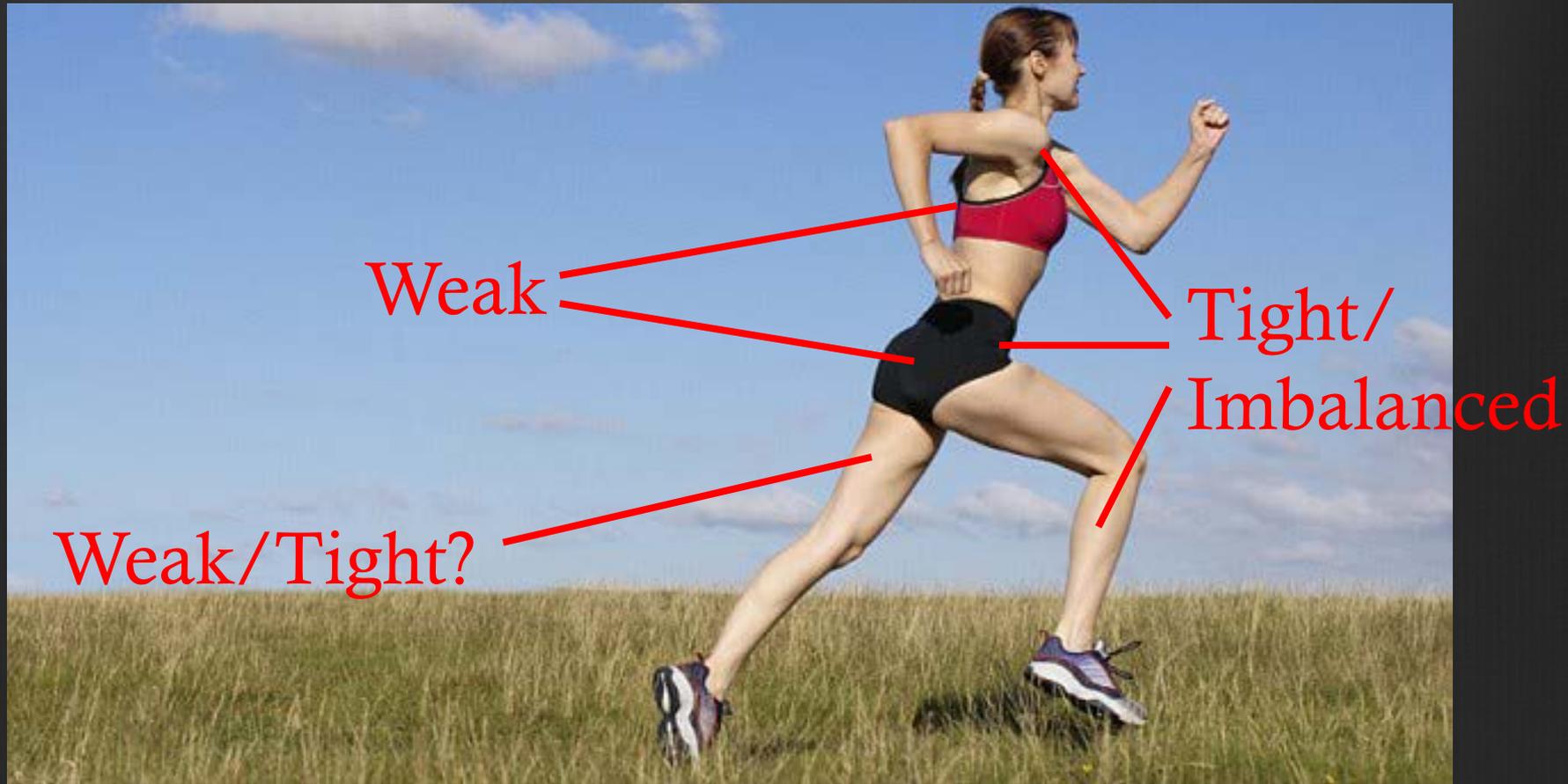
80/20 Strength Training

- ⊗ 80% of efforts dedicated towards both the areas of the body not addressed and training variables not achieved during running
- ⊗ 20% of efforts dedicated towards the areas of the body and training variables that are directly related to improving running performance

Runners: The Good



Runners: The Bad and Sometimes Ugly



Runner's Strength Training Needs

- ⊗ Posterior Chain Strengthening
 - ⊗ Back (especially lower trapezius, posterior shoulder), Glutes (hip extensors and abductors), Hamstrings
- ⊗ Three Common Areas of Mobility
 - ⊗ Ankle (and flexibility of surrounding muscles)
 - ⊗ Hip (and flexibility of hip flexor muscles)
 - ⊗ Thoracic Spine (and flexibility of muscles of anterior shoulder)
- ⊗ Symmetry of Strength, Flexibility and Mobility
- ⊗ Increased Muscle Stiffness (in contracted state)
- ⊗ Variety of Movement Planes and Tempo



Posterior Chain Strengthening

🎬 <https://www.youtube.com/watch?v=g2YGP6rGsAo>

Mobility

🎬 <https://www.youtube.com/watch?v=a54bzoMRbw8>

Symmetry

🎬 <https://www.youtube.com/watch?v=3CCfchYvP-8>

Muscle Stiffness

⊕ https://www.youtube.com/watch?v=UDaaNrnOx_4

Movement Variability

⊕ <https://www.youtube.com/watch?v=bttYMSWNsO0>

When Should Runners Incorporate Strength Training?

- ⊗ Strength training is supplemental to endurance training for runners
- ⊗ Minimal effective dose
 - ⊗ Bare minimum: 1x per week
 - ⊗ Optimal: 2x per week
 - ⊗ Bare minimum: Something is better than nothing
 - ⊗ Optimal: 30 to 45 minute sessions for beginner
45-60 minutes for advanced

When Should Runners Incorporate Strength Training?

- ⦿ Fitting it into the training schedule
 - ⦿ Keep rest and recovery days as such
 - ⦿ Add to low/moderate volume training session days or high volume training session day IF followed by rest/recovery day

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
3 Mile Tempo	4 Mile Run	400 Meter Repeats at Race Pace	6 mile run	Rest	10 mile long distance	Rest
Strength Training			Strength Training			

How Should Runners Strength Train?

⊗ Four Part Strength Training Session:

1. Warm-Up

- ⊗ Tissue quality, joint mobility, movement efficiency and movement preparation

2. High Velocity Training

- ⊗ Plyometrics and explosive strength training

3. Low Velocity Training

- ⊗ Strength training

4. Recovery

- ⊗ Flexibility, tissue quality, breathing

Sample Two Session Per Week Strength Training for Runners

⊗ Warm-Up

⊗ Tissue Quality

- ⊗ Focus on glutes, hamstring, calves, hip flexors, anterior shoulder/chest

⊗ Mobility

- ⊗ Thoracic Spine, Hips, Ankles

⊗ Movement Efficiency

- ⊗ Glute and rear deltoid/rotator cuff strengthening
- ⊗ Squat, hinge, press, pull, patterning
- ⊗ Opportunity for varied planes of movement

⊗ Movement Preparation

- ⊗ Move through range of motion at increasing velocity
- ⊗ Varied planes and speed of movement
- ⊗ Increased voluntary joint stiffness

Sample Two Session Per Week Strength Training for Runners

🌀 Warm-Up

🌀 Tissue Quality

- 🌀 Whole Body Foam Rolling
x10 rolls per area

🌀 Mobility

- 🌀 Side Lying Rib Roll x5/side
- 🌀 Spiderman x5/leg
- 🌀 Stick Shoulder Mobility Series
x5 each
- 🌀 Wall Ankle Rock x5 per leg

🌀 Movement Efficiency

- 🌀 Hip Press x5
- 🌀 Prayer Squat x5
- 🌀 Lateral Split Squat x5 per leg
- 🌀 Isometric Push-Up Hold x5
seconds
- 🌀 Band Pull Apart Series x5 each

🌀 Movement Preparation

- 🌀 Knee to Chest Walk x10 Yards
- 🌀 Heel to Butt Walk x10 Yards
- 🌀 SLDL to Reverse Walk x10
Yards
- 🌀 Knee to Opposite Shoulder x10
Yards
- 🌀 Lateral Band Walks x10 Yards
each way
- 🌀 Lateral Shuffle x10 Yards each
way
- 🌀 Carioca x10 Yards each way
- 🌀 Lateral Skips x10 Yards each
way

	Session A	Session B
High Velocity	1. Joint Stiffness	1. Joint Stiffness
	2a. Lower Body Explosive 2b. Sagittal Upper Body Explosive	2a. Lower Body Explosive 2b. Transverse Upper Body Explosive
Low Velocity	3a. Bilateral Hip Dominant 3b. Horizontal Pull 3c. Anti-Extension Core	3a. Bilateral Knee Dominant 3b. Vertical Pull 3c. Hip Control Core
	4a. Unilateral Hip Dominant 4b. Horizontal Push 4c. Anti-Rotation Core	4a. Unilateral Hip Dominant 4b. Horizontal Pull 4c. Loaded Carry
Recovery	Stretching, Diaphragmatic Breathing, Low Intensity Aerobic Exercise, Myofascial Release	Stretching, Diaphragmatic Breathing, Low Intensity Aerobic Exercise, Myofascial Release

	Session A	Session B
High Velocity	1. Skips a. Forward Start 2x10 Yards b. Lateral Start 2x10 Yards	1. Mini Hurdle Hops a. Linear 2x5 per leg b. Medial 2x5 per leg c. Lateral 2x5 per leg
	2a. Box Jumps 3x5 2b. Tall Kneeling Chest Pass 3x5	2a. Kettlebell Swings 3x10 2b. Half Kneeling Side Pass 3x5 per side
Low Velocity	3a. Trap Bar Deadlift 3x8 3b. TRX Row 3x8 3c. Ab Wheel Roll-Out	3a. Goblet Squat 3x8 3b. Half Kneeling X Pull-Down 3x8 per arm 3c. Wall Press Deadbug 3x8 per leg
	4a. Dumbbell Reverse Lunge 3x8 per leg 4b. Push-Up 3x8 4c. Half Kneeling Pallof Press 3x8/side	4a. Single Leg Deadlift 3x8 per leg 4b. DB Bent-Over Row 3x8 per arm 4c. Farmer Carry 3x40 Yards
Recovery	A. Belt Buckle Stretch x5 breaths per leg B. Band Leg Lowering x5 per leg C. Pigeon Stretch x5 breaths per leg	A. Bretzle Stretch x5 breaths per leg B. Groin Rock x5 per leg C. Downward Dog x5 breaths

Where to Perform Strength Training?



Power Hour



Power Hour by SAM Elite

Schedule:

- ⊗ Monday through Friday
 - ⊗ 6 to 8am
 - ⊗ 11:30am to 1:30pm
 - ⊗ 4:30 to 6:30pm

Cost:

- ⊗ \$99- now through the race (three months)

Samaritan Half Marathon Running Group

Schedule:

- ⊗ Thursdays at noon, January 19th to April 6th
- ⊗ Meet in SAM Elite
- ⊗ Warm-Up, 30 to 45 minute run, Recover

Cost:

- ⊗ Free

ALTER



Anti-Gravity Treadmill®

The New Standard of Care in rehab and conditioning!

Monday through Friday

6:00am to 6:30pm

Cost:

⦿ \$20 per session

⦿ \$50 for three sessions

To Participate or For More Information Please Contact

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THANK YOU