Track and field
Injury prevention

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The problem of trying to run faster, jump or throw further is that it requires...

....More force
....In less time
....With precision
....Efficiently
....Consistently
...Injury ...rehab ...prevention

- Common injuries
- Most likely causes
- Prevention plan
- Q/A re specific injuries
Common run / jump injuries

- Medial tibial stress
- ITBFS
- Tendinitis/ tendononosis
- Patellofemoral pain
- Muscle strains
- Stress fractures
Throwing injuries

- Elbow tendinitis
- Bicep tendon tears
- Chronic shoulder instability
- Lumbar spine instability
- Rotator cuff tears
- Labral tests
- Growth plate injuries
- Knee ligament tears
related biomechanical factors

PFPS
Strengthen hips, control strike posture, recover mobility of psoas, stabilise foot

ITBFS
delayed or weak hip abductors, scissoring strike, trunk position

plantar fascitis
, strengthen weak plantar flexors, recover ankle mobility

Tibial stress syndrome
prior injury, training load, weak plantar flexors, heel strike with overstriding

achilles_tendinopathy
weak plantar flexors, loss of DF

patella tendinopathy
eccentric weakness in quad, hill running

Glut med injury
eccentric weak poor lumbar stability

Tibial stress #
heel strike, poor shock absorption curve, overstride, low cadence,

spine injuries
delayed contraction of core stabilisers, excessive lateral or forward trunk lean
Causes

- Training error
- Poor recovery
- Insufficient strength
- Poor quality movement
- Unmanaged risk factors
- Unresolved prior injury and adaptation
Causes

- Inadequate tissue adaptation time
- Capacity/capability deficit
- Tissue and joint mobility deficits
- Inefficient movement
- Persistent Pain
- (misdiagnosis)
Prevention

- Consistent/ variable training
- Recovery
- Fundamental strength
- Mobility
- Symmetry
- Education
- Quality movement
Focus on Quality Movement

- A dynamic warm up
- Control and length before load
- Postural stability - fundamental 4
Length- restore tissue & joint mobility to move efficiently
Mobility and tissue health -
High ratio of dynamic / static stretching
Strength always 'trumps' length
Dynamic posture

'Fundamental 4'

1. Runners march
Fundamental

2. Step up
Fundamental 4

3. Runners touch
Fundamental 4

4. Lunge or 'salsa'
Tim Gabbett - the ratio of high/low intensity workouts and fitness/recovery are key to prevention
THE 4 R'S OF RECOVERY

Rehydrate

Relax
Fundamental Strength

Eccentric strength for controlling ground reaction forces
Core strength for reduced trunk sway
Postural stability and joint proprioception
Fundamental Strength
Isolated first ....
SOME THOUGHTS ON GLUTES CUES...

E.g. Side-lying abduction

We can use many cues or areas of focus and vary them depending on the goal of the exercise. For example we might use internal cues, "keep your pelvis still and your hip in line with your body and abduct your leg"

We could use cues with a more external focus, pic A "don't knock the foam roller over" or pic B "slide your heel up the wall" the effect may be similar (we'll achieve abduction without hip flexion) but it may be much easier for the patient to follow.

An alternative focus could be 'feeling', "find a position where you really feel it in your glutes." Make the goal a sensation of fatigue rather than a specific position.

Isolate - gluts

Be precise, 60-90 sec, daily for three weeks
Muscle activation

Hip
Cuff & scapula
Core
Foot
Isolate - before you - integrate
Isolate. integrate
Isolate. integrate
Maximal Strength Training Improves Running Economy in Distance Runners

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Maximal strength training improves running economy in distance runners

Endurance performance in long-distance running is approximately 7-150 min, is 80-90 dependent on anaerobic metabolism (11,37). Training

The effect of concurrent strength training on endurance capacity, endurance performance, and muscle morphology is optimal. Some data suggest an attenuated cardiovascular and muscle hypertrophy response to combined endurance and strength training, with no changes in functional capacity observed. However, the effect of concurrent endurance and strength training on endurance capacity only rarely has been examined in top-level endurance athletes. This review describes the effects of concurrent endurance and strength training on endurance-trained subjects, ranging from moderately-trained individuals to elite top-level athletes. It is concluded that strength training can lead to enhanced endurance performance, and muscle hypertrophy and function. The authors also propose that concurrent endurance and strength training programs may lead to improved endurance performance.

Reference

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RUNNING-SPECIFIC, PERIODIZED STRENGTH TRAINING ATTENUATES LOSS OF STRIDE LENGTH DURING INTENSE ENDURANCE RUNNING

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Abstract

Recent studies have demonstrated that running-specific strength training maintains the base of stride length that typically occurs in endurance runners during long-distance running. Running-specific strength training programs performed over the specific period (3 weeks) via a 6-week maximum strength training program were effective in maintaining stride length during running tests of competitive runners. In a randomized, controlled, retrospective study, the authors investigated the effect of combining strength training with a running-specific training program performed over the specific period (3 weeks) on the stride length and performance of endurance-trained runners. The authors concluded that running-specific strength training programs can attenuate the loss of stride length during intense endurance running.

Introduction

The present study was designed to determine the effect of running-specific strength training on stride length and performance of endurance-trained runners during intense endurance running.”
Strength + length + Movement quality
Movement Quality - 3F's

- Form / technique / posture
- Force/ strength
- Frequency / cadence
Inefficient running form


- ↑ braking phase
- ↑ Ground Reaction Force
- ↑ Ground contact time
- ↑ Useless muscular work on arms
- ↑ Spine torsion
- ↑ Vertical movement
- ↓ Elastic recoil for propulsion
- ↓ Stability and alignment
- ↓ Cadence
Impact moderating behaviors

- Knee bent
- Vertical tibia
- Midfoot strike
- Close to the center of gravity
'Form' modification

- Willy, Dubois & Heiderscheit
- cadence,
- light stepping,
- external focus
- strike pattern
- Hills
- Strides
Reduce the effect of other Risk factors

Nutrition
Hydration
Low iron, amenorrhea
Previous unresolved injury
Pain behaviour
Stress
Systemic factors

1920s, Doreen taking an alligator ride
PACE - a SIMPLE approach

- Pain
- Education
- Length
- Strength
- Isolate & integrate
- Motor control
Summary

- Training
- Strengthening
- Lengthening
- Quality movement
PACE resources

https://www.therapeuticassociates.com/locations/oregon/portlandvancouver/north-portland/more/training-resources/
PACE): Here Is Your Workout

Hip Matrix: matt.walsh

1. Lie on side, knees bent
2. Reach up and pull your knee up towards your chest
3. Repeat on the other side

1. Stand on your right leg
2. Reach up and pull your knee up towards your chest
3. Repeat on the other side

1. Lie on your back with knees bent
2. Reach one arm up towards your head and the other arm down towards your hip
3. Repeat on the other side

1. Stand on your right leg
2. Reach one arm up towards your head and the other arm down towards your hip
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