

Running Injuries Avoidance Seminar

The principal objective of the seminar is to provide the participants with a fundamental knowledge of the following subjects so that they can proactively avoid future running injuries:

Most science-based injury knowledge has been developed in the last 2 decades. Factual, proven information is difficult to find. Generally information found in popular literature is anecdotal and typically false.

Injury Types [*This seminar primarily addresses overstress and cramp types*]

- Traumas: External [falls, etc.] and internal [extraordinary forces, uncommon for recreational runners].
- Overstress: Short-term development [marathons, etc.] and long-term development [typically DOMS]
- Cramps & Spasms: Sudden onset [ham and calf cramps, etc.]

Basic Mechanical Members

- Bone
- Muscles
- Ligaments, bone-to-bone, are elastic [Typically trauma injuries]
- Tendons, bone-to-muscle, are inelastic
- Adaptation to overstress; the overstress-recovery cycle

Injury Fundamentals

- Running injuries are caused by exercise activity, not by happenstance.
- Injuries occur to the weakest mechanical members subjected to the aggregate stress.
- Injuries can and often occur due to imbalanced mechanical members. Note about strength machines.
- Overstress type injuries are incipient in nature, muscle and/or tendon damage has increased over time.
- For each individual, the best predictor for a future injury is their own history.
- Non-steroidal anti-inflammatory drugs [NSIDs] [e.g., Ibuprofen, Advil, etc] cause ligament injury.
- Excessive junk miles needlessly overstress muscles, tendons and ligaments.

Brain and Muscle/Tendon Communications

- Early warning symptoms, subliminal recognition causing a reluctance to run [Pre injury classification]
- Early soreness symptoms, muscles are requesting the brain to issue an early warning [Class 1 injury]
- Pain, muscles are requesting the brain to issue an impending disaster warning [Class 2 injury]
- Debilitating pain. Brain won't allow running [Class 3 injury]

Muscle Contractions

- Concentric
- Eccentric, importance when running
- Modern research has established the paramount importance of eccentric contractions

Prehistoric Human Model

- Provides a good basis for determining the potential efficacy of unfamiliar situations, training techniques, and equipment, etc.
- As predators and prey
- Master long distance runners
- Athletic conditioning [Stretching, strength training, etc.]

The following are proactive actions you can take to minimize injuries.

Training Issues

- Rest provides the time for creating new and stronger tissue to deal with future levels of greater exercise stress.
- Training drills designed to share the load among the different muscle and tendon groups.
- The importance of the hard/easy cycle.
- Tapering for anticipated extra stressful demands, [e.g., races, LSD run for marathon training, etc.]
- Post race and LSD rest for complete recovery.

Stretching, the Research

- Before workouts
- After workouts
- Affect on ligaments
- The majority of folks who signed up said they stretched to avoid injuries.

Running-Specific Strength Training [RSST]

- Generally strengthens muscles and tendons used for running.
- Strengthens weak mechanical members that may not be routinely involved in your typical runs.
- Can materially help balance the mechanical members [e.g., quads/hams same leg, hams both legs, etc.]
- Foot-ground contact time. *Slightly off subject; but related.*
- Incidentally, strengthened muscles and tendons help improve running performance.

Key Points About RSST drills:

- For maximal benefits, conduct the drills two or three times a week.
- Always accentuate eccentric muscle contractions. Fast concentric contractions, followed by slow and deliberate eccentric contractions.
- When doing upright, on your feet drills, try to maintain a feeling that you are actually running while doing the exercises. Don't tense your upper body and gaze downward at your legs as you exercise (you wouldn't do that while running). Also, perform the exercises rhythmically and smoothly, not with choppy timing and movements.
- Create your own drills to strengthen your weakest members [e.g., hams, quads, abductors, etc].
- Warm up 5 to 10 minutes with a slow jog, with a couple of moderately fast, short sprints thrown in.
- Cool down with a 5 to 10 minute jog

Demonstration and Practice by the Participants of Several RSST Drills [This are just a sampling]

- Hams, one leg on exercise ball, 2x15 sets per leg
- Adductor/abductor rubber band crab walk, 2x15 sets per leg
- One-leg squats, elevated rear foot, 2x15 sets per leg
- Single-leg heel raises, 2x15 sets per leg
- Single-leg heel hops, 2x15 sets per leg
- Single-leg bar lifts, 2x15 sets per leg
- Run fast 4x100m on grass taking slightly longer strides than usual.

Proactive Actions You Should Take

- In response to "Brain and Muscle/Tendon Communication" signals?
- Best RSST drills to address my particular weaknesses?

Do not become complacent, do your RSST drills forever