Top 10 Rules of Injury Prevention

Due to running's repetitive nature, **running carries the risk of overuse injuries**. Repetitive movement in one plane of motion can lead to muscle imbalances, which increase the risk of injury. According to the Sports Medicine Journal, the yearly incident rate for injuries is in the range of 37-56%, and of these, 50- 75% are overuse injuries.

The ideal strategy is to prevent muscle imbalances before they happen. A regular program consisting of strength exercises, dynamic flexibility exercises, myofascial work with the foam roller and static stretching will keep your body in balance. Strength workouts are a major component of pre-habilitation, or "pre-hab" - preventative exercises that help your body withstand and counteract the repetitive stresses of running.

To run efficiently and stay injury-free, you need the unified and balanced function of many muscles. The prime movers are the muscles that propel you forward which include the glutes, hamstrings, quads and hip flexors. The torso, core, and hips are known as stabilizer muscles, which work to support the pelvis and spine. The calves and lower leg muscles assist with forward motion and balance. The shoulders and back swing the arms to move in sync with the legs.

1. INTEGRATE STRENGTH TRAINING

Strength training is essential for preparing the body for the rigors of training and racing. It facilitates bone health and enhances injury resistance, including factors that contribute to overuse injuries. It boosts your lactate tolerance and aids in delaying fatigue.

To properly balance your body, you need to work your primary running muscles, as well as your supportive musculature. Spend 30 minutes or less 2-3x a week and choose eight to 12 exercises to work the entire body during each workout, and complete 2-3 sets of each exercise as a circuit.

The Muscles of the Lateral Subsystem are of special concern to runners:

Muscles	Location	Exercise
Quadratus Lumborum (QL)	Lower spine to top of pelvis	Side squats, side leg raises, side lunges, cross over lunge, fireball, single leg squat, side steps with bands
Gluteus Medius	Rear of the hip	
Tensor Fascia Latae (TFL)	Front of the hip	
Adductors	Inner thigh between knee & pelvis	

2. INCORPORATE RECOVERY TECHNIQUES & BODYWORK

Doing soft tissue rejuvenation and recovery work post-exercise using the Stick, a foam roller, small balls, foot massages, and stretching maximizes recovery. Do not use so much pressure that you cause pain. You want a gentle massaging of the muscles to promote blood flow and release any constrictions in the connective tissue.

3. SLEEP

Getting a good 7 - 9.5 hours sleep on a regular basis is your most important step in recovery. During sleep your parasympathetic nervous system is most active and working on rebuilding and repairing the damage caused by training. Cutting back on your sleep cycle reduces or impedes production of hormones like melatonin, growth

hormone, testosterone and estrogen that are vital to optimal health. Cardiovascular performance can be compromised by up to 20 percent with sleep deprivation while reducing reaction time, the ability to process information and emotional stability.

4. REST AND RECOVER

Include rest days into your training plan by taking a complete break from training both physically and mentally. Get off your feet, rest your mind, AND rest your body for the day. I recommend training no more than 6 days consecutively without resting. Novice and/or masters athletes may require "off" days more frequently. You should always follow a hard training day with a recovery day, which is an easy non-intense training.

5. REPLENISH & REHYDRATE

The goal of post-exercise nutrition is to restore muscle and liver glycogen stores, improve hydration and repair muscle tissue. You should eat 15 to 30 minutes after exercise, preferably as soon as possible, when the muscles are most receptive to fuel. Muscle replenishment and tissue repair can be accelerated if you combine carbohydrates and protein together in a ratio of 4 to 1. The carbohydrates will replenish your glycogen while the protein will help with carbohydrate uptake. It will also provide amino acids to repair structural damage and some of the raw materials needed for hormone production. Stay hydrated by drinking water before, during and after a run. Carry a hand-held water bottle, wear a hydration pack or fuel belt, or plan your routine to incorporate water fountains. Include electrolytes drinks or powders to help and to eliminate the risk of hyponatremia (low or diluted sodium levels from excessive water) if engaging in activity for more than four hours.

6. WARM UP AND COOL DOWN

A proper warm up is a key component to preparing the body for the demands of any training session or competition. Warm-up periods of five to 15 minutes are recommended with the effects lasting up to 45 minutes. After 45 minutes of inactivity, re-warming may be needed. On the other side of the coin, the recovery process and preparation for the next day's training begins with a proper cool down. Low-intensity aerobic exercise, such as light jogging, cycling, yoga, and stretching are effective cool down activities for clearing lactic acid and lessening the severity of muscle soreness.

7. GET FITTED FOR YOUR PROPER SHOES!!!

Correct equipment (i.e. shoes) minimizes unwanted stress. Running shoes should fit your gait pattern. The road will wear your shoes faster than running on trails. Shoes expire after 300-500 miles of use, not by how long you've had them. Note that mid-sole foam may take up to 24 hours to recover from a run, so training with a second pair of running shoes may provide more protection for your body.

8. FOLLOW THE 10 PERCENT RULE

Increase training time or distance or volume by ten percent or less. For example, if you ran 20 miles this week, your total mileage next week should not exceed 22 miles. If you are training according to time, for example, and your training program called for 15 hours of training this week, it's recommended training hours not exceed 16.5 hours the next week.

9. INTERVAL TRAINING

Proper interval training can improve VO2 (how you maximize and utilize oxygen intake) and anaerobic threshold. Intervals allow your body to adapt to and eventually run at greater speeds.

10. TECHNIQUE & PACING

Using proper technique and pacing will aid in performance and recovery. If your technique is poor you'll be placing undue stress on joints, muscles and connective tissue. This creates excessive damage requiring more recovery time. Likewise with pacing. Going too hard, too often does more damage than good.