



Evidence based and common sense approach to prevention of repetitive use injury

A group of healthcare professionals 29 researchers, clinicians, training officers, and epidemiologist representing the 4 U.S. military services critically reviewed the scientific evidence related to physical training-related injuries (Bullock SH, 2010). Their conclusions have specific applications to the prevention of repetitive use injuries (running injuries).

They critically reviewed over 328 research papers, and identified 31 interventions. The interventions were categorized into 3 levels according to the strength of the recommendation either recommended not recommended, insufficient evidence to recommend or not recommended. Some of the 31 interventions are applicable to preventing running injuries.

The 29 healthcare experts recommended:

- Avoid exercise volume and intensity that exceeds the injury threshold. Exercising at a volume above injury threshold there is minimal or no improvement in fitness level, and a significant risk of injury. There is a significant amount of research showing that running a lot of miles will increase the risk of injury. Signs of over training are an increase in resting heart rate, insomnia, irritability, infections, and decreasing performance, or slower running times.
- Training should follow a gradual systematic progression of running distance and speed. This is especially true for individuals just starting an exercise program. For example instead of initiating a marathon training program 6 months before the event initiate training 9 months before the event.
- Run for a specified time periods not distance. This will allow the least fit to run shorter distances than the most fit, thus accommodating low and high fitness groups simultaneously. Runners will often record the metric of miles run. Consider using the metric of time exercised rather than miles run.

- Replace some distance runs with interval running. This increases speed and stamina more rapidly than distance running while limiting the total running miles.
- Avoid exhaustive training maximal efforts on successive days. Allow adequate recovery time between maximal efforts. Muscle soreness peaks at 48 hours post exercise. Three to 5 days between exhaustive maximal efforts is recommended.
- Injuries are reduced by increasing the amount of cross training with exercise that are in multiple planes; involve coordination, balance, and agility. Strengthening exercises involving free weights, polymetric drills, calisthenics type exercise are better as compared to weight machines which stabilize the body while the extremities move on a single plane of motion.

The 29 healthcare professionals did not recommend taking ant-inflammatory medication prior to exercise. There is insufficient evidence to support its use and the potential for harm out weight any potential benefits. The potential for harm includes stomach ulcers, kidney damage, joint cartilage degeneration, slower muscle protein synthesis after exercise, and impaired healing processes.

There is not sufficient evidence to recommend stretching exercise as a means to prevent injury. There is good evidence that stretching is ineffective as an injury prevention strategy. While the working group does not endorse stretching as a method to prevent injury, there is insufficient evidence that it may cause harm in those who perceive a benefit. Additionally, studies to date have not specifically targeted individuals with limited range of motion.

A large amount of products, services, and training advice is proffered as a means of preventing injury. Unfortunately most of what has been proffered is based on opinion not evidence. This working group of experts did a good job of critically reviewing available evidence. They provided a common sense approach to preventing repetitive use injuries.

Prevention requires an individualized approach, and plan. The individual plan should be based on self assessment of previous experiences. Include the advice of experts in the plan. Keep a log or journal documenting time exercised, race times, and signs of over training. This information can be used to develop a training plan. The data in the training log and your training plan can be shared with coaches and healthcare professionals.