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Reducing Injury Risk: The Facts!

Does fitness training really reduce the risk of injuries? Everyone says so, but **what's the proof**? And if it's true, **what kind of exercise is most effective**? Strength? Proprioception (body awareness)? Stretching? Let's take a look at **the evidence**.

First it is important to note that **published research studies have different levels of validity**. There is an established **hierarchy of evidence** (see figure below), with systematic reviews of randomized placebo-controlled clinical trials (RCTs) providing the **strongest evidence**, and editorials /expert opinion providing the weakest evidence.

Note that Facebook posts don't even appear in the hierarchy.

The Hierarchy of Evidence

There have been no systematic reviews of clinical trials that examine the ability of canine fitness programs to reduce the risk of injuries in dogs. But there have been several in humans. It is valid to examine these human studies and **apply their results to dogs** because the musculoskeletal systems of dogs and humans are very similar, with jus t a

few minor exceptions. In addition, **human studies might even be better** because humans can be given very specific instructions for how to complete strength, proprioception and stretching exercises, thus providing good fidelity to the results of the studies.

A systematic review (a study of the validity, bias and consistency of the results of a group of studies) of the role of strength training in **reducing injuries was just published** in August of 2018 (1). It examined 6 RCTs involving 7738 participants to determine whether there is any relationship between strength training and acute and/or overuse injury. The authors determined that these 6 studies had appropriate controls and statistical evidence and revealed no evidence of bias. Reviewing all of the data, the authors concluded that:

1. Strength training significantly reduced the risk of acute and overuse injuries by about 66%
2. The **higher the total volume of exercise**, measured by repetitions (reps), the **greater the reduction in injury risk**
3. **Working to muscle overload was more effective** in reducing injury risk than pre-determining a set number of reps.

A previous systematic review published in 2014 revealed that **both strength and proprioceptive exercises reduce injury risk**, but stretching does not (2). The finding that proprioceptive exercises reduce the risk of injury was also confirmed by another study (3).

How does strength/proprioception training reduce injury risk? A brain study was undertaken to address this very question (4). 10 fem ale soccer players underwent fMRI during the preseason. During the soccer season, 2 of the 10 athletes sustained injuries to their anterior cruciate ligaments. The fMRI studies showed that the **athletes that did not get injured had significantly better connections** between the area of the brain where voluntary movement is initiated and the area that is responsible for balance and coordination.

Bottom Line: There is strong evidence that **strength and proprioceptive exercises reduce injury**, likely **by strengthening connections between parts of the brain** that control voluntary movement and those that improve balance and coordination.

References (Full articles available here)**:**

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