



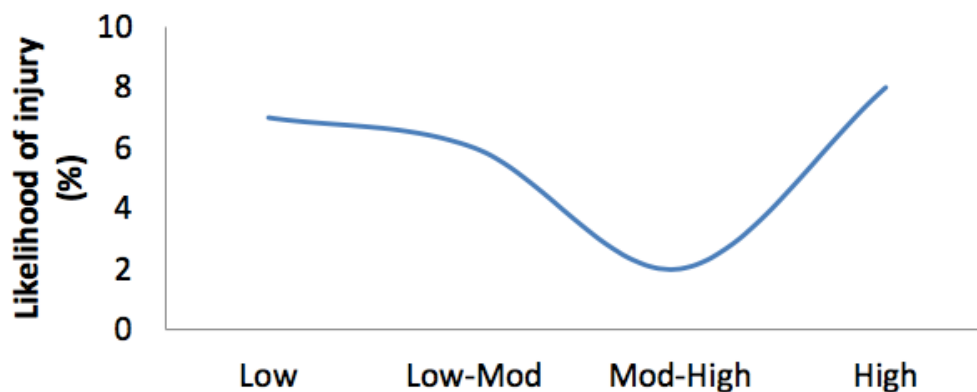
THE REHAB ROOM

Training workloads

Welcome to the New Year of training! Over the holiday season, resident rehab room writer and physiotherapist, Rowena Myrans, relocated to Hull to work with their rugby academy. I have therefore assumed the mantle left by Rowena. Given my background, these monthly write-ups will focus on the recent research developments in sports medicine relevant for 26 coaching athletes.

Introduction

For an athlete to be successful, he/she must be able to complete adequate quality preparation or training that is uninterrupted by injury or illness. Recently, researchers have found that the incidence of injury is associated with training loads (Dennis, Farhart, Goumas, & Orchard, 2003; Hulin, Gabbett, Lawson, Caputi, & Sampson, 2016). Training loads have the potential to protect an athlete from injury, but also to increase the risk of injury (Dennis et al., 2003; Hulin et al., 2016). Both high and low training loads are associated with increased likelihood of injury when compared to moderate training load achieved across a month.



What is training workload

Load is a broad term describing the total volume, intensity and type of physical activity an athlete undertakes during both training and competition.

'Training load' is broadly separated into two categories: internal and external.

How to measure training workload

Internal load

Internal load is the athlete's perception of effort for a given external stress (Halson, 2014). Rating of perceived exertion (RPE) is the most common method of measuring the athlete's effort and can be used on a 6-20 (Borg RPE) or 1-10 (Modified RPE) scale. Typically, the RPE is multiplied by the exposure (time, distance) to obtain an arbitrary number to determine the internal load.

BORG RPE	MODIFIED RPE	BREATHING
6	0	No Exertion
7		
8	1	Very Light
9		
10	2	Deeper but comfortable breathing. Able to hold a conversation.
11		
12	3	Aware that breathing is harder; able to talk but difficult to hold conversation
13		
14	4	
15	5	Starting to breathe hard and getting uncomfortable
16	6	
17	7	Deep and forceful breathing. Uncomfortable and not wanting to talk
18	8	
19	9	Extremely hard
20	10	Maximum exertion

External load

External load is the work performed by an athlete that is quantified externally. This includes the number of pitches thrown in baseball, or the number of jumps a volleyball athlete undertakes. For triathletes, the easiest measure is the distance the athlete runs, cycles or swims.

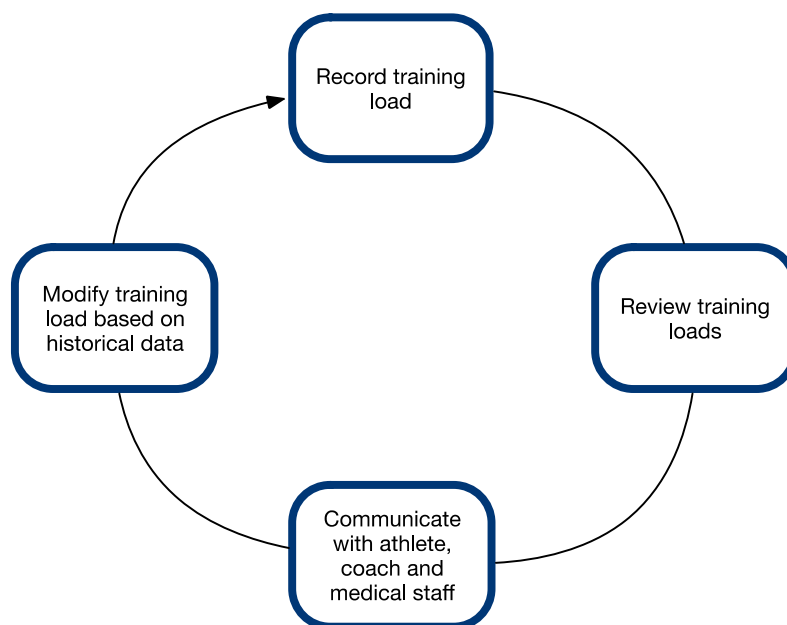
Absolute and relative training load

Acute training load is when the training sessions performed within a week are added up (Hulin et al., 2016). It has been shown that low and very high acute training loads are associated with increased risk of injury in various sports, moderate-to-high workloads can protect against injury (Cross, Williams, Trewartha, Kemp, & Stokes, 2016; Hulin et al., 2016).

Acute to chronic workload ratio (or historically known as “relative training load”) is the ratio between the most recent week (acute load) and average of the previous four weeks (chronic load) (Cross et al., 2016).

Load monitoring program

By measuring workload training, a load monitoring program can easily be created with triathletes to assist with training plans but also minimise risk of injury. The flow chart below summarises the process in a load monitoring program.



Key principles of load management

1. Establish and maintain moderate levels of chronic training loads as moderate to high training loads have been shown to protect athletes from injury if done in a safe manner
2. Increased training loads can take up to a few weeks before detected, with the risk of injury elevated for up to 4 weeks after a spike in acute training load.
3. Minimise large weekly fluctuations
4. Establish a floor and ceiling of safe training ensures that minimum training standards are met and reduces risk of injury
5. Training loads must consider the age, skeletal maturity and training history of the athlete. Younger athletes require longer periods to achieve moderate-high training loads safely.

Until next month, happy racing!

Alexander Chan is an Australian trained Physiotherapist working at PhysioCentral. He is about to complete his PhD on the management of low back pain and has a special interest in overuse sporting injuries.

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