



# TRAINING LOADS & WELLBEING

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## Training – Performance

**Training-Performance relationship** – what is the optimum amount of training to improve performance?

**Performance response to training** = Difference between negative function (fatigue) and positive function (fitness).

**Primary goal of training** = maximise performance potential and minimise the negative consequences of training (i.e. injury, illness, fatigue, overtraining).<sup>1</sup>

**Training Load** = product of intensity and duration.<sup>2</sup>



## Training – Performance

Individual sports have reported a positive relationship between both:

1. Greater training volume and performance, and
2. Higher training intensity and performance.

Negative adaptations to exercise training are dose related:

- Highest incidence of illness / injury occurring when training loads are highest.<sup>1</sup>



## Training Load

Training induced adaptations = relative physiological stress imposed on the athletes (internal Training Load).

Internal TL is often different to a planned external TL

Individualisation of training – ensures all athletes are working within the range you so desire.

How to measure Internal TL = RPE is the athlete's own perception of training stress (includes both physical and psychological stress).<sup>4</sup>



## RPE Scale

Borg category ration scale (CR10-scale).<sup>7</sup>

0= rest	5= hard
1= very easy	6= 7=very hard
2=easy	8= 9= very, very hard
3=moderate	10= maximal
4=somewhat hard	

Whilst physical fitness improved in response to training, the odds of injury were increased with each arbitrary unit increase in training load (Gabbett, 2007).



## Team Sport TL

Issues of collision sports:

- Large numbers of tackles, sprints, accelerations/decelerations, changes of direction, high force production.
- Athletes must have speed, strength, power, agility and aerobic endurance qualities.

We as coaches therefore need to find a balance between

- the minimum TL to elicit fitness gains and the maximum TL tolerable before sustaining injury.



## Team Sport TL

Limited studies of the training-performance relationship of team sport athletes (Rugby, soccer)

Gabbett (2004) –

- 38.5% increase in training load from December through to February
- 95.4% increase in the incidence of injuries sustained.
- Most injuries were short term.



## Team Sport TL

Gabbett (2007)

The pre-season training loads were associated with:

- Higher incidence of lower-limb injuries, muscular strains, and joint sprains.
- Overuse injuries and over-exertion based injuries.

Most injuries occur in the pre-season preparation period when training loads are greatest.



## Overtraining

Overtraining syndrome is a problem for two reasons:

1. Athletes continually work towards heavier training loads for small performance gains.
2. The instinctive response to unfavourable results is to increase the effort of subsequent training sessions.<sup>3</sup>



## Overtraining

Negative overtraining = long-term decrement in performance.

- Restoration may take several weeks or months.

Overreaching = long-term decrement in performance.

- Restoration may take several days or weeks.

Profile of Mood state (POMS) questions focus on mood state responses to training.<sup>5</sup>



## Overtraining

Matos (2007)

Signs and symptoms of overtraining

- Increased perception of effort, followed by feelings of heaviness.
- Muscle soreness, sleep disturbances and loss of appetite.
- Psychosocial symptoms; social problems, negative feelings like decreased interest and frustration in training
- Psychological; decreased self-confidence and ability to focus, short temper, irritability, depression, sadness, elevated levels of perceived stress.



## AIS/AFL Academy Program

AIS/AFL Academy Program – Training Load and Wellbeing Monitoring

Injury / Illness - Excel spreadsheet

Feedback form spreadsheets

Overall analysis

Single Player Analysis



# References

1. Gabbett T.J, Domrow N. 2007. Relationships between training load, injury, and fitness in sub-elite collision sport athletes. *J Sports Sci.* 25(13);1507-1519.
2. Gabbett T.J. 2004. Influence of training and match intensity on injuries in rugby league players. *J Sports Sci.* 22:409-417.
3. Foster C. 1998. Monitoring training in athletes with reference to overtraining syndrome. *Med Sci Sports Ex.* 30:1164-1168.
4. Impellizzeri F, Rampinini E, Coutts A.J, Sassi A, Marcora M. 2004. Use of RPE-based training load in soccer. *Med Sci Sports Ex.* 36:1042-1047
5. Kentta G, Hassmen P, Raglin J.S. 2006. Mood state monitoring of training and recovery in elite kayakers. *Eur J Sport Sci.* 26(4);245-253.
6. Matos N, Winsley R.J. 2007. Trainability of young athletes and overtraining. *J Sports Sci Med.* 6:353-367.
7. Borg G, Hassmen P, Lagerstrom M. 1987. Perceived exertion related to heart rate and blood lactate during arm and leg exercise. *Eur. J. Appl. Physiol. Occup. Physiol.* 56:679-685

