Principles of training

Overview

- F.I.T.T. Principle
- Adaptation
- Progressive overload
- Recovery
- Reversibility
- Specificity
- Needs analysis Task

F.I.T.T. Principle

F.I.T.T. Principle

- **F** = frequency
- How often

- **I** = intensity
- How hard

- **T** = time
- How long/ much

- **T** = type
- What ?

F.I.T.T. Principle

Underpins and is central to all other principles of training

Frequency

- How often ?
- Appropriate to the age of the athlete?
- Appropriate to the stage of the season ?
- Appropriate to the individual (Think of the other demands imposed on the athlete)
- Frequency dependent on focus of training (Foundation strength, strength endurance etc.)
- Manipulation of frequency to create peak performance
- Higher levels of frequency may be required for higher levels of conditioning

Intensity

- How hard is the exercise ?
- How to measure intensity - R.P.E. (Rate of Perceived exertion, Heart rate (Bpm), % of Repetition maximum, Scaling of exercise (Basic, level 1, level 2 etc.), work to rest ratios (1:1, 2:1 etc.), repetition speed (normal, fast or slow).
- How do you control intensity ?
- Important to provide variety in intensity.
- Importance of detailed record keeping

Type

- The type of training carried out ?
- Speed and agility
- Endurance
- Flexibility
- Resistance training (Phases of RT, - Intro phase- Foundation Strength - Strength endurance (Work capacity) - Power - Power endurance

Time

- Record of how long the session lasts ?
- Total time per week ?
- Total time allocated to RT ?
- Total time allocated to other high intensity activity ?
- Take into account other teams/ sports etc.
- Consider volume of session also not just time

  eg. Sets and reps, number of exercises
- Again shows the importance of record keeping

Adaptation

Adaptation

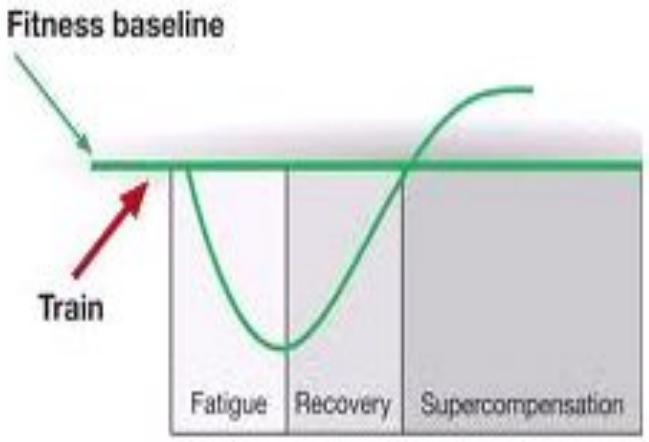
The body will react to the training loads imposed by increasing its ability to cope with those loads.

Adaptation occurs during the recovery period after the training session is completed.

(McArdle Katch & Katch, 2010)

Adaptation to exercise

During and immediately after training, performance decreases due to fatigue. During the recovery period the body adapts to the stresses of training and supercompensation occurs (increased performance)



Practical implications of adaptation

To ensure the required adaptation occurs the training load must be appropriate and adequate recovery must be provided.

It is during the recovery process that the body adapts and performance increases occur.

Adaptations occur gradually over time in response to the demands of training and as such should not be rushed due to risk of injury or overtraining.

Progressive overload

Progressive overload

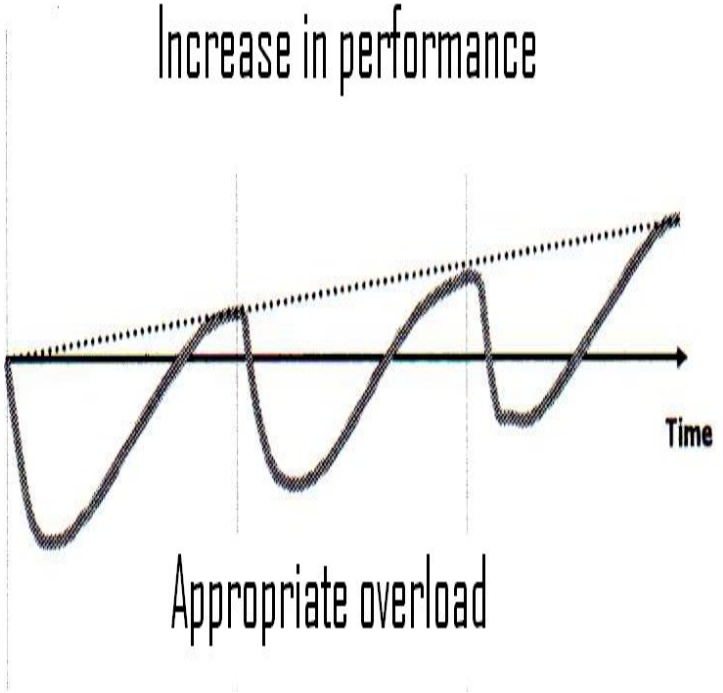
For a training adaptation to occur, a physiological system must be exercised at a level beyond to which it is accustomed to.

Exercise, frequency, duration and intensity are the variables most often manipulated to provide overload to the systems of the body

(Baechle and Earle, 2000)

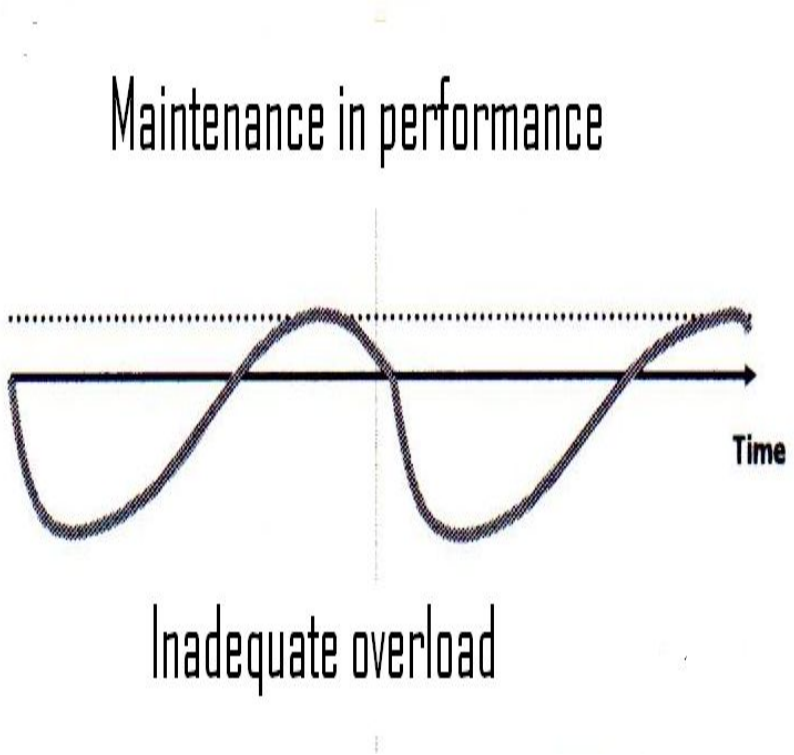
Appropriate overload

Well timed and progressive overload leads to an increase in performance



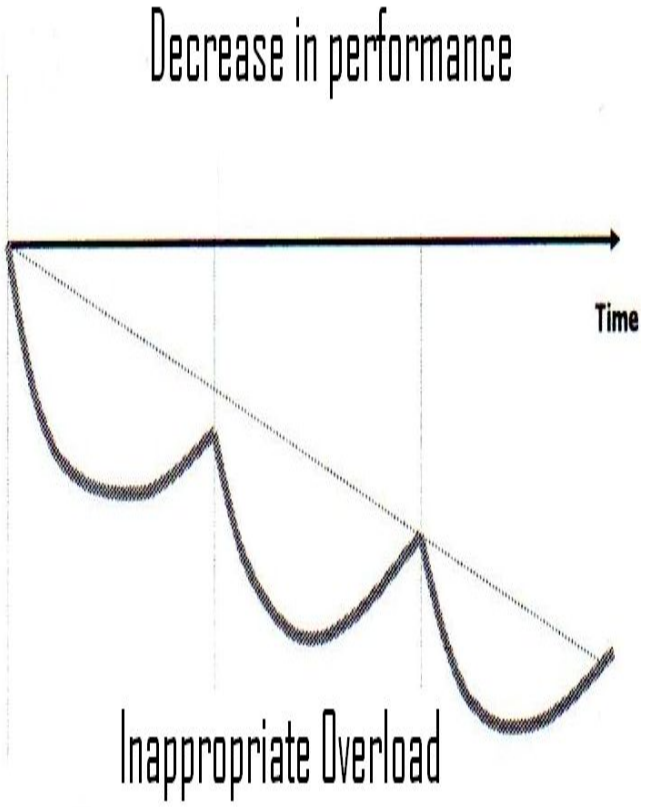
Insufficient overload

Overload is inappropriate and poorly timed leading to stagnation in performance



Too much overload

Overload is poorly timed and designed and does not allow time for recovery resulting in decrease in performance



Practical implication of progressive overload

Body only adapts if it works harder than normal.

Overload should be progressive, gradual, well timed and individual to the player.

Record keeping is essential to be able to provide the appropriate stimulus


Recovery

Recovery

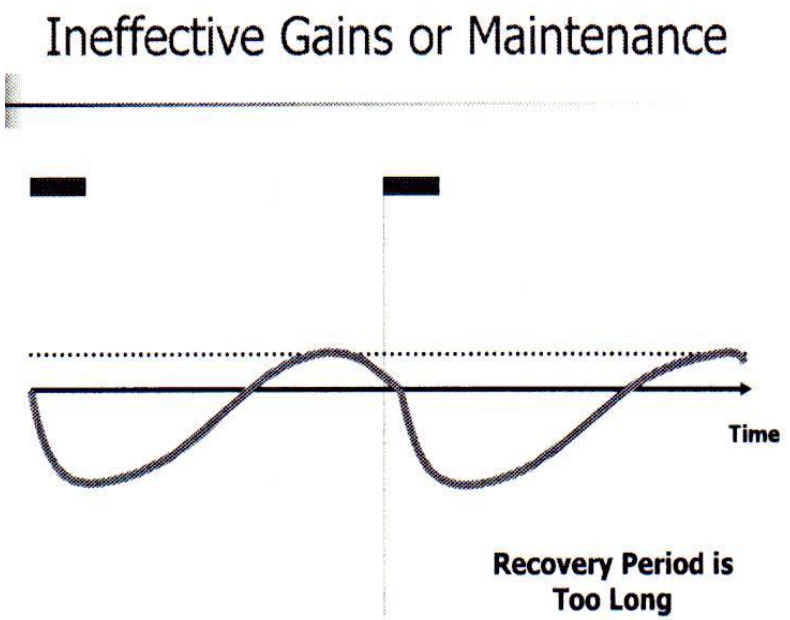
The Recovery Principle suggests that athletes need adequate time to recuperate from training and competition.

It is during rest periods that athletes' adapt to the stress placed upon them during intense training sessions and competitions.

(McArdle Katch & Katch, 2010)

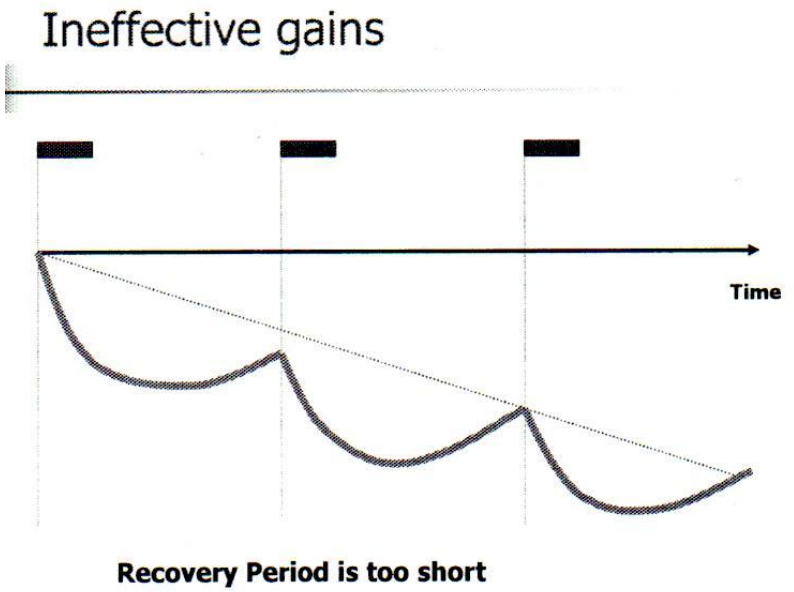
Too much recovery

Too much recovery between training sessions leading to detraining in the athlete preventing improvement in performance



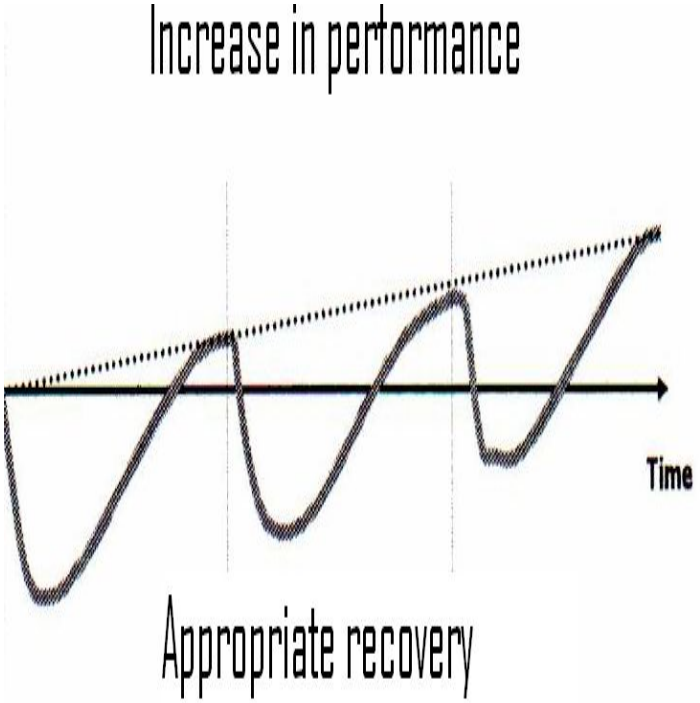
Inadequate recovery

Not enough recovery and the athlete will become over trained and risk injury



Adequate recovery

Appropriate recovery between sessions leading to increase in performance



Practical implications of recovery

To provide appropriate recovery you must take into account all training undertaken by the athletes (think all sports and activities)

Constant communication with the players, parents and other coaches is integral to individualising and providing appropriate recovery

Reversibility

Reversibility

The Reversibility principle states that athletes lose the effects of training when they stop training for a prolonged period of time.

(McArdle Katch & Katch, 2010)

"*If you don't use it, you lose it*"

Reversibility

A regular training stimulus is required in order for adaptation to occur and to be maintained. Without suitable, repeated bouts of training, fitness levels remain low or regress to their pre-training levels.

It takes a lot longer to improve fitness than it does to lose it

Practical implication of reversibility

To reap the benefits of RT, this mode of exercise must be maintained during the season, it is not just a pre-season activity

To meet this demand coaches must make time for RT throughout the season

Coaches must be able to implement RT during normal field based activities


Specificity

Specificity

The specificity principle refers to the fact that adaptations occur to the physiological and muscular systems used and overloaded during training

(McArdle Katch & Katch, 2010)

Specificity in Resistance training

- Speed of movement
- Energy systems
- Range of motion
- Intensity (loads)
- Joints involved (Multi-joint)
- Bilateral or unilateral
- Force production
- Movement patterns involved
- Direction (Mulit-directional)
- Planes of movement (Multi-planar)
- Musculature (Whole body, synchronised, nothing in isolation
- Force absoprtion
- Force reduction

Needs analysis task

TASK 1

Using the above info relating to specificity and the information presented in previous lectures conduct a brief (half page) needs analysis on the sport you work with. Taking into consideration each of the factors outlined and how they should effect the RT programme

Practical implication of specificity

Exercises must be specific to the competitive demands of the sport to ensure appropriate adaptations occur.

General exercises provide a strong base upon which highly specific exercise can be built, which is crucial in the youth athlete.

References and further readings

References and further readings

Baechle and Earle (2008), 3rd ed., *Essentials of strength training and conditioning*, Champaign, Illinois: Human Kinetics

Mcardle, W.D., Katch, F.I., & Katch, V.I. (2007). Exercise physiology: Energy, nutrition, and human performance (6th ed.). Baltimore: Williams & Wilkins

Key take home messages

Key take home messages

F.I.T.T. must be appropriately altered to provide progressive overload

Record keeping and open communication essential to providing appropriate overload and recovery to ensure adaptation

“Use it or lose it “

Key take home messages contd.

To reap benefits RT must be performed all season long. Coaches must make time for RT.

Exercises must be specific to the competitive demands of the sport but general exercises must be included in the preparation of the youth athlete

“Think mutli-joint, multi-planar and multi-directional”

Thank you