

## **5. Sports training, training unit and a training session, how to develop a training plan, athlete development, overtraining: its causes and symptoms**

### **What are a training unit and a training session?**

A training unit is a single activity (e.g. 6 × 60 metres at 90% effort with 2 minutes recovery) with a set objective (e.g. develop specific endurance). A training session is made up of one or more training units e.g. warm up unit, Technique drills unit, Speed Endurance unit and a cool down unit.

### **How to develop a Training Program**

The process of creating a training program to help develop an individual's level of fitness comprises of 6 stages:

1. Gather details about the individual
2. Identify the fitness components to develop
3. Identify appropriate tests to monitor fitness status
4. Conduct a gap analysis
5. Compile the program
6. Monitor progress and adjust program

#### **Stage 1**

The first stage is to gather details about the individual:

- Age
- Reasons for wanting to get fit
- Current or recent injuries
- Health problems
- The sports they play and how often
- Their dislikes and likes with regards training
- What sports facilities they have access to - gym, sports centre etc.

This is not an exhaustive list but an example of the sort of information to collect

#### **Stage 2**

The second stage is to determine which components of fitness they need to improve. This could depend upon what the individual wants to get fit for. This could be to improve general fitness, get fit enough to play in the Saturday hockey league, run a local 5 km fun run or compete in next year's London Marathon. Exercise scientists have identified nine elements that comprise the definition of fitness. The following lists each of the nine elements and an example of how they are used:

1. Strength - the extent to which muscles can exert force by contracting against resistance (holding or restraining an object or person)
2. Power - the ability to exert maximum muscular contraction instantly in an explosive burst of movements (Jumping or sprint starting)
3. Agility - the ability to perform a series of explosive power movements in rapid succession in opposing directions (ZigZag running or cutting movements)
4. Balance - the ability to control the body's position, either stationary (e.g. a handstand) or while moving (e.g. a gymnastics stunt)
5. Flexibility - the ability to achieve an extended range of motion without being impeded by excess tissue, i.e. fat or muscle (Executing a leg split)

6. Local Muscle Endurance - a single muscle's ability to perform sustained work (Rowing or cycling)
7. Cardiovascular Endurance - the heart's ability to deliver blood to working muscles and their ability to use it (Running long distances)
8. Strength Endurance - a muscle's ability to perform a maximum contracture time after time (Continuous explosive rebounding through an entire basketball game)
9. Coordination - the ability to integrate the above listed components so that effective movements are achieved.

Of all the nine elements of fitness cardiac respiratory qualities are the most important to develop as they enhance all the other components of the conditioning equation. You will need to consider which of these elements are applicable to the individuals training program based on what it is they want to get fit for.

### Stage 3

The next stage is to identify appropriate tests that can be used to initially determine the individual's level of fitness and then to monitor progress during the training. Identified test should be conducted and the results recorded.

### Stage 4

We now know the individual's background, objectives and current level of fitness. We now need to conduct a gap analysis of the individual's current fitness levels (from test results at stage 3) and target fitness levels (identified at stage 2). The results of this process will assist in the design of the training program so that each component of fitness is improved to the desired level.

The following is an example of a gap analysis:

Test	Fitness Component	Current	Target
<a href="#">Multistage Fitness Test</a>	Aerobic	Level 12 Shuttle 2	Level 12 Shuttle 5
<a href="#">30 metre acceleration Test</a>	Speed	4.3 seconds	3.9 seconds
<a href="#">Illinois agility run Test</a>	Agility	20 seconds	<16 seconds
<a href="#">Standing Long Jump Test</a>	Leg power	2.4 metres	2.8 metres
Over head medicine ball throw	Arm power	16.1 metres	16 metres

Gap analysis - Aerobic fitness and arm power are good and just need to be maintained - sprint, agility and leg power tests are below target - leg power needs to be improved.

### Stage 5

The next stage is to prepare a training program using the results of the gap analysis and FITT principles. "

- F - frequency - how often should the individual exercise?
- I - intensity - how hard should the individual exercise?
- T - time - how long should each session last?
- T - training activity - what exercise or training activity will help achieve the individual's fitness goals?

For frequency, intensity and time you should start at an easy level and increase gradually e.g. 10% increments. Aerobic training should last for 20 to 40 minutes. Strength work should last 15 to 30

minutes and comprise of 3 sessions a week with 48 hours recovery between sessions.

Plan the program in four week cycles where the work load in the first three weeks increase each week (easy, medium, hard) and the fourth week comprises of active recovery and tests to monitor training progress. The aim of the four week cycles is to:

- Build you up to a level of fitness (3 weeks)
- Test, recovery and adjustment of the training program (1 week)
- Build you up to higher level of fitness (3 weeks)
- Test, recovery and adjustment of the training program (1 week)
- Build you up to an even higher level of fitness (3 weeks) " and so on

The tests used to assess the individual's initial level of fitness should be planned into week 4 of the program in order to monitor progress and effectiveness of the program. The test results can be used to adjust the program accordingly.

The program needs to last 12 to 16 weeks in order to see any real benefits and the planning (initial & subsequent adjustments) should be conducted with the individual so that they feel they own the program. This will ensure the program is enjoyable and convenient to do.

## Stage 6

The program has now been agreed and the individual can undertake the program. Every 4 weeks meet and discuss with the individual:

- how the training has gone
- the test results
- progress towards target fitness levels
- adjustments to the training program

## OVERTRAINING

A basic principle of training is to stress, or overload, the physiological systems. Positive overloads cause the body to respond with, for example, increases in strength, muscular endurance, or cardiorespiratory capacity.

The basic training principle of using progressive increases in overload or intensity carries a risk of overtraining. Overtraining is a combination of stress that is experienced through work, home, social interactions, and training load. It can lead to exhaustion and injury. You must avoid overtraining the client by first placing work and recovery cycles into the plan and then altering the training program when it becomes apparent that the client is overtrained or at risk of becoming overtrained.

susceptibility to overtraining can result from a combination of a hard-driving trainer and a client who is extremely motivated. The underlying causes of overtraining are a combination of emotional and physical factors. Hans Selye (1978) in his book *The Stress of Life* noted that a breakdown in tolerance of stress can occur as often from a sudden increase in anxiety as from an increase in physical distress. Although the symptoms of overtraining may vary greatly from one individual to another, the most common are feelings of heaviness and the inability to perform well and concentrate. Working out is no longer a joy. If you believe this situation exists, it is time to make some immediate changes in the program.

Relief from overtraining usually comes from a significant reduction in training intensity, a change of activity or complete rest.

**Which of the following are the causes(C) and which are the symptoms(S)of overtraining?**

- Improper nutrition C
- Fatigue during workout and throughout the day S

- Anxiety and irritability S
- Excess of competition with maximum demands C
- Disturbances in rhythm and flow of movement S
- Elevated resting heart rate, blood pressure, or both S
- Recovery is neglected S
- Oversensitivity to criticism S
- Demands are increased too quickly C
- Inappropriate increase in frequency of training C
- Unusual muscle soreness after training S

Source:

<http://www.brianmac.co.uk/plan.htm>

<http://www.brianmac.co.uk/articles/scni27a6.htm>