

**LECTURE 1**

# Principles of Programme Design

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**Introduction to Planning  
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LECTURE

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# Principles of Programme Design

One of your primary concerns, and one of the main reasons for entering the fitness industry, is to help people towards their goals. The way we do this is by developing training plans tailored to the needs of our clients.

In order to achieve this successfully, there are several training principles that you should keep in your mind to ensure the client is consistently progressing and is engaged in the process in the long term. We have covered these principles in the 'Introduction to the Principles and Components of Fitness' lecture but they are worth repeating...

## **Specificity**

If you want to get stronger, then you have to systematically lift heavier weights. If you want to get better at running, then you need to run.

If you don't practise the skill that you want to improve then you are unlikely to gain success in it. Remember that while both swimming and running increase your cardiovascular fitness, only one of those will make you a more effective runner.

## **Individuality**

The reason we must tailor programmes to our clients' needs is that not everyone responds to stimulus in the same way.

Running suits some people but not others. There are many ways we can achieve results for our clients, but we need to ensure we give due consideration to them as individuals.

## **Progressive Overload**

When you start a new programme, it will change you and you make improvements as a result. If you continue to perform the exact same programme with the same variables, once you have adapted to it you will have stagnated.

The body's primary focus is to adapt to the stress and become more efficient. This gives you an opportunity to make further progress by adapting the variables and making the workouts more challenging.

## **Recovery**

Exercises is a stress, and it is damaging / traumatic for the body. This however, is exactly the stress the body needs to make progressions in relation to fitness.

But continual stress without recovery to allow for the repair and progress to take place can see your efforts wasted.

Your body grows, repairs and strengthens at rest, not during your workout. So putting importance on rest is crucial.

## **Reversibility**

'If you don't use it, you lose it' is a good summary of the principle of reversibility.

If you have been working hard for 6 months in the gym and have made progress, you will still need to work to maintain those results. If you cease training altogether, the body will gradually begin to revert.

# The FITT Principle

(Frequency Intensity Time Type)

## Frequency



Frequency indicates the regularity of exposure to the training stimulus. How often you train is your frequency. Equally, how often you train a particular body part or perform cardiovascular exercises are also training frequency.

## Intensity



Intensity means different things to different people. It is measured during a session using the rate of perceived exertion (RPE) scale, which is not particularly scientific.

A more accurate measurement is the heart rate (how fast or slow the heart is beating). The most common way of measuring this is by using a wearable device while exercising.

You can read more about this further down under “Heart Rate Training Zones”.

## Time



Time is an important variable to consider. We can look at the time a session takes to complete, the total time of work (used in interval training for example), or the rest time. If the client is working more than they are resting and this increases over time, they are showing progression, assuming other variables don't decrease.

## Type

F.I.T.T.	CARDIOVASCULAR ENDURANCE	FLEXIBILITY	MUSCULAR ENDURANCE	MUSCULAR STRENGTH
<b>F</b> FREQUENCY	4-5 days per week	Should be a part of every warm-up and cool down, but at least 3 days per week	3 – 4 times per week Vary the muscle groups used	3 times per week
<b>I</b> INTENSITY	Add more intensity as student becomes more fit	Static stretches held for 15 to 30 seconds	15 or more reps/ 1-3 sets Less than 60% of predicted maximum rep	8 reps/1-3 sets
<b>T</b> TYPE OF ACTIVITY	Running, cycling, swimming, biking, skipping rope, soccer or basketball, skating – uses large muscles	Controlled stretches (usually part of yoga, dance, gymnastics, pilates, martial arts)	Medicine balls, Resistance bands, Free weights, Sprinting, Sit ups, Planks, Push ups	Medicine balls, Resistance bands, Free weights at a level where you can do 8 reps but it is difficult
<b>T</b> TIME	At least 30 minutes of continuous exercise	About 10 minutes	About 30 minutes	About 15 minutes

The type of exercise can be loosely categorised such as **resistance** or **cardiovascular**. Or it can be more specific such as **interval training** or **hypertrophy training**. The type of exercise performed, and all the variables that encompass a training style will dictate the results.

The table above shows how to apply the FITT principle to varying types of exercise goals.

# Other Considerations

**So, we have established the need for progressive overload, and we have looked at the FITT principle as a tool to use to help make this possible. What else do we need to consider in the planning phase...?**

## **Periodisation**

To avoid stagnation, the variables should be manipulated over time to ensure that clients continue to progress towards their goals. This planned progression is called periodisation.

This should also help with continued challenge and motivation for your clients, but it needs to be well considered and properly planned.

## **Overtraining**

A client can enter the fitness environment and be overzealous in their efforts early on. If you plan a programme that exceeds the client's current ability, they can become overtrained. This will come with fatigue symptoms.

It's important to remember that for clients that are new to training, their ability to perform and recover is not developed.

## **Beginner versus Advanced**

Typically, beginners adapt and make progress quickly. Every stimulus they are exposed to is new and the body is responsive. However, this slows down as they become more established in their training.

Your job is to design effective programmes that afford lasting results in an efficient manner.

## **Recovery**

A client's ability to recover from exercise is affected by things like age, nutrition, sleep, stress levels and biological gender so be aware of these factors when programming.

## **Programme Updates**

The human body is very responsive and will do its best to adapt to the stress it is exposed to. Exercise is a form of stress and assuming the dose of stress is correct and there is enough rest and recovery, the result will be positive.

You need to look to progress the challenge though for the client but offer a long enough period of time to ensure the client isn't pushed too far too fast.

## Overtraining

We alluded to it above when discussing the things you need to consider. Let's look at the specific symptoms you need to be aware of...

- Sudden poor coordination and performance reduction.
- Decreased concentration.
- Overly agitated, moody or sensitive.
- Poor sleep, general lethargy and excessive fatigue.
- Increased perceived effort in training.
- Low motivation for exercise.
- Coughs, colds and general illness.
- Psychological stress or depression symptoms.

Symptoms of overtraining should be honoured and the client should take a short break from training until the symptoms are corrected.

# The Planning Process

**Not everyone is training for a competition, sport or overwhelming aesthetic goal. Others train for health benefits alone. Let's look at the planning process for these individuals as there is a difference in the exercise prescription...**

### Health Defined

Health is defined as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

With that said there are a couple of categories here we need to consider before we can jump into the planning stage.

- A reduction in mortality risk. This is an improvement in a person's health and vitality. It doesn't speak to how physically fit someone is, although a greater level of fitness is known to offer benefits.
- General fitness improvements. This would indicate an improvement in the body's physiological performance.

### Decreased Mortality

Government guidelines recommend 150-300 minutes of moderate intensity aerobic activity per week, or 75-150 minutes of more vigorous intensity effort.

This might look like this...

- Frequency – 5 times a week.
- Intensity – moderate or 50-70% of maximum heart rate.
- Time – 30 minutes in total per day.
- Type – aerobic effort.

### **Fitness Improvements**

This would require more intense activity over lower frequency / duration.

- Frequency – 3 times a week.
- Intensity – vigorous 60-90% maximum heart rate.
- Time – 20 minutes in total per day.
- Type – more intense cardiovascular exercise.

### **In Summary**

Improvement doesn't require massive, all-out effort. There are progressions to be made in more subtle exercise regimes. The key is to balance the client's goals with the training principles.

One thing not mentioned here is the resistance exercise guidelines, which are usually for a minimum of two sessions a week working all major muscle groups.

## **Monitoring Effort & Intensity**

**So we are through the planning stage, and you are training your client. How do you monitor their effort and intensity?**

### **Methods**

Knowing how hard the client is working will provide a benchmark to compare future workouts against and also determine the success of the session. In addition to this it can provide insight into how hard or easy they find different types of exercise.

There are five methods that we typically use in the fitness industry to monitor exercise intensity:

- Heart Rate (HR)
- Rate of Perceived Exertion (RPE)
- Talk Test
- Visual Feedback of Physical Exertion
- Metabolic Equivalents (METs)



## Let's look at them in more detail...

### Rate of Perceived Exertion (RPE)

Borg's original scale was from 6-20. This has since been largely replaced by the far simpler scale of 1-10. The scale is easy to use, is familiar, and is easy to administer for the trainer and client. The easiest way to consider the scale is that 1 is completely relaxed and 10 is as hard as you could possibly work.

This scale is very reliable for most people, and it can show progression over time as well as giving insight into a client's level of fatigue if they find an exercise harder than they ordinarily would have. A key benefit to the RPE scale is that it can be used for all different types of exercise, resistance included.

Among the drawbacks of using RPE is that it can be easy for a client to overestimate or underestimate how hard they are working at a given time so it may be wise to use this in conjunction with other forms of monitoring...

### Talk Test

The talk test is a non-scientific method of monitoring intensity that takes into account how hard your client is working based on how easily they can hold a conversation. You can ask questions to your client as you increase intensity throughout an exercise session and assess how they are responding. When they get to a point where they are working really hard, they will not be able to hold conversation.

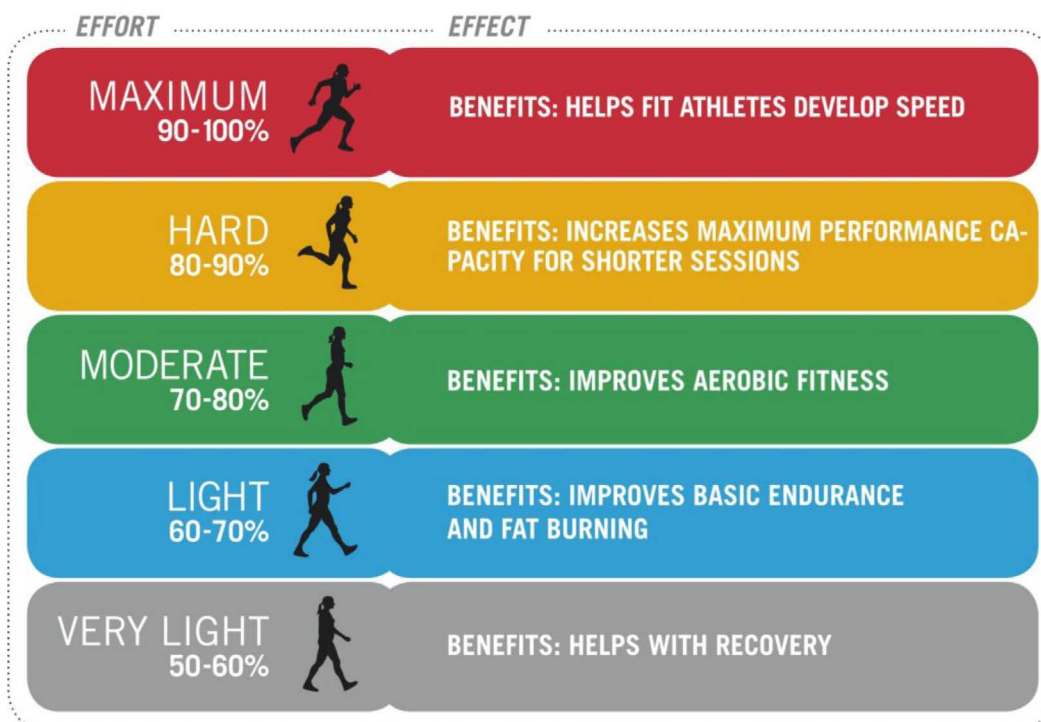
Using this alongside the RPE Scale is a good way to add more of an indication of their perceived and assessed intensity.

### Heart Rate Training Zones

Initially it is important to understand how to calculate the theoretical maximum HR. To achieve this, you can use the following equation...

220 Minus Age – So for example, if you are 30 years old then your theoretical maximum HR is 190bpm. You can then assign exercise intensities based on the percentage of 190bpm that you want to work – this is generally between 60-90% based on client fitness and goals. Remember that this is only theoretical and that the actual number may be higher or lower by around 11-12bpm.

The table below shows some of the training zones and the benefits to training in each if your client is fit and healthy enough to do it...



## Metabolic Equivalent (METs)

We can link the exercise intensity to the amount of energy expended in performance. METs are generally not used often in an exercise setting, more often in a medical setting but they still have value in the fitness industry. They estimate the energy expenditure of a task relative to body mass.

When you exercise you expend energy and it can be measured either in calories or VO<sub>2</sub>.

At rest we expend around **1kcal/kg/hour** or **3.5mlO<sub>2</sub>/min/kg**. This increases through activity with the example of an exercise that uses three times our resting energy being said to use 3METs.

## Physical Signs of Exertion

To assess a client's effort and intensity level we can observe the signs of physical exertion that are displaying. This isn't very scientific but can offer some insight. Consider the following...

- Technique diminishing.
- Redness and sweating.
- Breathlessness.
- Facial expressions showing difficulty.

