

LECTURE 9

Programme Design

- **Designing a programme**
 - specificity
 - individualisation
 - overload
 - rest and recovery
 - overtraining
 - progression
 - variation
- **Periodisation**
 - Mesocycle examples

Designing a programme

In order to design a programme, there are a number of basic training principles that you have to get under your belt. And as we've said earlier there are certain "jargon" words that you have to learn. The first one is:

Specificity

In connection with specificity there is also an acronym, **SAID**, which means **Specific Adaptation to Imposed Demands**.

Let's take two examples to unpick this. In the first example, a weight-lifter wants to increase their upper body strength and in the second, a kick boxer wants to increase the flexibility in their hip-joints so that they can kick higher and in more directions. Those are the **imposed demands**. And you have to adapt your training regime to meet those demands. So, as a trainer you have to be **specific** about which areas of their body and which muscles and joints you are targeting when you train them. You also have to be aware of **carryover** which means, what effect will training that part of the body have on other areas? If you concentrate on the weight-lifter's upper body strength and ignore their legs how will that influence their weight-lifting ability? And if we concentrate on hip-opening exercises to increase flexibility for the kick boxer, what will happen to the stability of the joint, an essential requirement of the sport.

Individualisation

"One size does NOT fit all"

We've all come across people who really struggle to keep their weight in check, while others seem to be able to eat what they like and never put on an ounce. Well, a similar principle applies when it comes to exercise. Whether it's because of their genetics, their metabolism, their hormones or a whole host of other factors, people respond differently to exercise. Some respond well and improve quickly while others really struggle to achieve the same results. Do you remember "standardised normative data" when we were discussing the bleep test? Well, you'll be able to find standardised normative data for particular types of exercise to get certain results (the amount of weights, sets and repetitions for example) but those standardised data only represent an **average**. Your client may be very different which is why getting to know them is so important. The more you know about them, the more likely it is that you will be successful with them and the longer you'll be likely to keep them!

Overload

This is a word that doesn't mean what it sounds like. When you train someone, you need to take them out of their comfort zone and put their body under stress through exercise – “overload” them. What happens to the body in overloading is that it goes into what is known as a **shock phase**. The result is fatigue, muscle soreness and a possible short-term drop in performance. But then if there is a period of **rest**, the body will repair itself, acclimatise to the stress and thereby grow stronger.

If it's done properly, with the correct amount of stress and the correct amount of rest afterwards, it is known as **positive adaptation**. However, if the body is not stressed enough, it won't have to acclimatise, with the result that there will be no improvement. But if you do the opposite, put the body under too much stress, overtrain the client and not allow sufficient time for recovery, they are likely to become ill or sustain an injury, which is the last thing you want. This is called **negative adaptation** and is a real danger, especially if you work in an environment which believes in the philosophy of “no pain, no gain”.

What you should aim for, is **optimal overload**, which is putting the body under just the right amount of stress to achieve your aims: not too little and not too much. Plus allowing time for rest and recovery. And that's where your skill and professionalism as a personal trainer comes in.

Rest and Recovery

Someone with no specialist knowledge but just using their common sense might think that the harder you train, the fitter you'll get. And someone who is training for a specific athletic event such as a marathon might well be tempted to think that. **But it is simply not true.**

As we've said above, the body needs time to recover from the stress that it's put under and during that time it gets stronger. So, as a professional you **MUST** be aware of that and take it into account when planning a programme. Of course, if a client comes to you once a week and does nothing in between, then their body is going to have plenty of time to rest but with a serious athlete, things are going to be very different.

Overtraining

There is a danger of overtraining – and in fact even a medical condition called “Overtraining Syndrome”. Other words to describe this condition are “burnout”, “staleness” or “chronic fatigue” In reality however, this rarely applies to the ordinary client training two or three times a week. It's more likely to happen to a serious athlete who is pushing their body to an absolute limit on a daily basis.

Progression

Once again, someone without any knowledge or experience of exercise might think the whole thing is very simple: do some exercise and get fitter - and the longer you do it, even taking into account time for rest and recovery, the fitter you'll get. But yet again, things are more complicated than that.

If you do the same exercises over and over again, the body gets used to them and stops adapting because the comfort zone shifts. The exercises get easier to do and therefore there's no overload. Because of this, the trainer has to keep finding exercises that continually shift the body out of its comfort zone (but of course, as we have discussed, not too much and not too little).

Again, the rate at which you can progress a client will vary with each individual. Not only will age and genetic factors influence this but other things such as whether the client is fit to start with or not. Generally speaking, people who are fit and/or have experience of exercise, will progress better than people who are not. Other factors such as whether the client eats healthily or gets sufficient sleep will also affect the rate of progression. Even simple things like how hot or cold it is when they train will have an effect. Therefore, it's important for the trainer to monitor the client closely during every session in order to decide when and how they are ready to progress.

Variation

So how do you shift the body out of its comfort zone? Like with progression, the answer to the non-professional seems simple: if they can lift 5kg, move them on to lifting 6kg; if they can walk at 3 miles an hour on a treadmill, move it up to 4 miles an hour and so on. And yet again, we find that it doesn't work like that. Or rather, it WILL work for a short time, say a few weeks, but after that, the overload becomes too much and you're likely to have an injured client on your hands. So you have to vary the exercises in order to put stress on the body in different ways and once you do that with a different training stress, it responds in a way that's known as General Adaptation Syndrome or GAS.

What happens with GAS is that the body goes through a number of different phases: a shock phase where there is muscle soreness, fatigue, and a possible drop in the level of performance. The body then goes into a resistance phase where the body repairs itself and returns to where it was before. But then, if sufficient time is given for rest and recovery (anywhere between 24 and 72 hours), it goes into a super-compensation phase where it becomes stronger.

When we talk about "rest" or "recovery" days, it doesn't mean simply lying on the sofa, doing nothing. It all depends on the level of intensity the client is working at. If someone is working three days a week at an intense level, a rest day might involve doing a gentle walk or a light yoga session.

So - variation is essential - and in order to achieve this, we have to look at exercise variables .

There are a number of variables you can use, either by themselves or in combination but your aim in using all of them is to increase the intensity of the exercise.

Let's start with the most common exercise variables: reps, sets and weight (or load).

Reps are the number of times you ask a client to repeat the exercise (the number of repetitions). So - to take a simple squat as an example - one squat (up and down) is a **rep**. But most clients won't get a lot out of just doing 1 rep - you might decide that to start with you'll ask them to do 10 reps and then pause for a rest. Those 10 reps are a **set**. You might observe that they find those easy so you decide they should do 3 sets of 10 reps with a rest in between. They still breeze through those so for the next session you decide to add another variable - **weight**. They'll do 3 **sets** of 10 **reps** but this time they will hold two 3kg dumbbells, one in each hand, while they are performing the exercise. You can keep on increasing these basic three variables, reps, sets and weights until you reach optimal

overload – where the client is feeling the stress but not so much that they are completely exhausted at the end. (A good way of checking on this is by asking the client to rate how hard they found an exercise on a scale of 1-10).

Two more variables are **time** and **speed**.

Time is often equated with the amount of rest you allow between each set. The shorter the time you give them to recover, the more stress you will be putting them under and the harder they will find it. **Speed** is also important because generally speaking, the **slower** you do an exercise, the longer the muscles have to work and the more strain it puts on them. This is called the **time under tension**.

However, it's important to note, as we've already said, that the body DOES need sufficient time to recover, - so simply shortening the time you allow between sets, might be counter-productive.

Periodisation

Periodisation means a progressive change in the type of training that is being performed to gain maximum fitness benefits and is another jargon word (with some other words associated with it) that you need to learn.

It basically means structure: setting a progressive exercise plan for a client over a **period** of time. And you divide it into three **cycles**: a **microcycle**, a **mesocycle** and a **macrocycle**.

Let's take a client starting a training programme with you. You will have discussed with them their long-term goal. For example, is it aerobic, strength, weight loss or combination? That will influence the sort of exercises you decide upon. When you know the long-term goal and time-frame, you can plan a **microcycle** of exercises which will typically last a week or 2 to 3 sessions. You'll make sure that the client can actually DO these exercises. But as we have seen they will gradually get easier for the client, so you plan a series of progressively harder microcycles over 30-40 sessions or several weeks (these make up a mesocycle). Again the exercises have to be achievable so you need to be flexible and adjust your plan if the client struggles. All the time, you are keeping in mind the long-term goal.

The **macrocycle** is a series of mesocycles lasting several months or 100+ sessions. All the time, you are progressing the client and adjusting the exercises, or if necessary, the goals themselves.

Periodisation is good from a number of points of view. It keeps the goal clearly in the minds of both the trainer and the client. It means that the trainer can show just how much the client has improved over a period of time. It gives the client motivation as they see themselves getting nearer and nearer their goal and it gives them that all-important accountability. They get to feel that they and the trainer are in this together.

BUT...

And this is a big "but". It is all too easy to devise a series a mesocycles, that yes, contain some variation but are actually repetitive and boring. Simply overloading the client week after week is very likely not only to result in boredom but also the risk of injury greatly increases. So the key to success is: in your planning, constantly look for new ways to achieve the goals that you've both agreed on. If you can get the client to wonder what different thing you are going to give them to do in the next session, you are more than halfway there.

Mesocycle Examples

To show you the way that mesocycles can work, I am going to take an example of a client, Emma who wants to get better at running, in preparation for a 10K fun run that she plans to do for charity. She's fairly fit and reasonably active so not in the "Couch to 5K" category but she's 43 and therefore her risk of injury is greater than if she were 23.

In the examples below, to make it as simple as possible, we've assumed she will be training once a week. However, in reality she would want to train more than once a week: say, three times a week running and twice a week weight training. You would have to factor all these things into your programme, also including rest days, which as we have said already are a vital part of any training programme.

Remember in all these examples you would have to judge whether she is finding the things you ask her to do too easy or too hard and adjust accordingly.

The reason why we are showing you the different types of mesocycles (Developmental, Shock, Tapering etc) is to demonstrate that there is no one right way. You might use one more than another, or one in conjunction with another one, or the whole lot in sequence.. It all depends on how the client is progressing and your judgement of the client's ability and rate of progress.

Mesocycle 1 (STARTER model) (6 weeks)

In this cycle you start off at medium intensity. On Week 4, you increase the intensity a little but then return to the original intensity in Weeks 5 and 6.

- Week 1. **A medium intensity run. (5 minute warm up - then a cycle of 3 x 5 minutes running and 3 x 2 minutes walking followed by a 5 minute cool down period).** Remember to adjust if she finds it too hard or too easy
- Week 2. **Same as Week 1.** Remember to adjust if she finds it too hard or too easy
- Week 3. **Same as Week 1.** Remember to adjust if she finds it too hard or too easy
- Week 4. **Increase the intensity. (5 minute warm-up - then a cycle of 4 x 5 minutes running and 4 x 1 minute 30 seconds walking followed by a 5 minute cool down period).** Remember to adjust if she finds it too hard or too easy
- Week 5. **Same as Week 1.** Remember to adjust if she finds it too hard or too easy
- Week 6. **Same as Week 1.** Remember to adjust if she finds it too hard or too easy

Mesocycle 2 (DEVELOPMENTAL model) (6 weeks)

In this cycle you start off at medium intensity, gradually increasing it each week until the final week when you drop the intensity down.

- Week 1. **A medium intensity run. (5 minute warm up - then a cycle of 3 x 5 minutes running and 3 x 2 minutes walking followed by a 5 minute cool down period).** Remember to adjust if she finds it too hard or too easy
- Week 2. **Increase the intensity a little. (5 minute warm up - then a cycle of 4 x 5 minutes running and 4 x 2 minutes walking followed by a 5 minute cool down period).** Remember to adjust if they find it too hard or too easy
- Week 3. **Increase the intensity a little. (5 minute warm up - then a cycle of 4 x 5 minutes running and 4 x 1 minute 30 seconds walking followed by a 5 minute cool down period).** Remember to adjust if they find it too hard or too easy

- Week 4. **Increase** the intensity a little. (5 minute warm up - then a cycle of 4 x 7 minutes running and 4 x 1 minute 30 seconds very slow jogging followed by a 5 minute cool down period). Remember to adjust if they find it too hard or too easy
- Week 5. **Increase** the intensity a little. (5 minute warm up - then a cycle of 2 x 15 minutes running and 2 x 2 minutes very slow jogging followed by a 5 minute cool down period). Remember to adjust if they find it too hard or too easy
- Week 6. **Drop** the intensity down. 5 minute warm up - then a cycle of 3 x 5 minutes running and 3 x 2 minutes walking followed by a 5 minute cool down period)

Mesocycle 3 (SHOCK model) (6 weeks)

In this cycle you start off at a fairly high intensity in Week 1, increasing it in Week 2 and 3 and 4, dropping it a little in Week 5, and then dropping it right down in Week 6.

- Week 1. **Fairly high intensity** run. (5 minute warm up - then a cycle of 4 x 7 minutes running and 4 x 1 minute 30 seconds very slow jogging followed by a 5 minute cool down period)
- Week 2. **Increase** the intensity a little. (5 minute warm up - then a cycle of 4 x 9 minutes running and 4 x 1 minute slow jogging followed by a 5 minute cool down period)
- Week 3. **Increase** the intensity a little. (5 minute warm up - then a cycle of 5 x 10 minutes running and 5 x 45 seconds slow jogging followed by a 5 minute cool down period)
- Week 4. **Increase** the intensity to maximum. (5 minute warm up - then a cycle of 3 x 15 minutes running and 3 x 3 minutes slow jogging followed by a 5 minute cool down period)
- Week 5. **Decrease** the intensity a little. (5 minute warm up - then a cycle of 4 x 9 minutes running and 4 x 1 minute slow jogging followed by a 5 minute cool down period)
- Week 6. **Drop the intensity** right down. (5 minute warm up - then a cycle of 4 x 7 minutes running and 4 x 1 minute 30 seconds very slow jogging followed by a 5 minute cool down period)

Mesocycle 4 (TAPERING model) (6 Weeks)

This is the most popular cycle for a runner in the final stages of preparing for a race. Normally for the last two to four weeks before the race, you would taper off the training so the runner is fresh going into the competition itself.

In this cycle you would start off in Week 1 at fairly high intensity, increase to maximum intensity in Week 2 and then gradually decrease the intensity over the next 4 weeks.

- Week 1. **Fairly high intensity** run. (5 minute warm up - then a cycle of 5 x 10 minutes running and 5 x 45 seconds slow jogging followed by a 5 minute cool down period)
- Week 2. **Increase** the intensity to maximum. (5 minute warm up - then a cycle of 4 x 15 minutes running and 3 x 3 minutes slow jogging followed by a 5 minute cool down period)
- Week 3. **Decrease** the intensity a little. (5 minute warm up - then a cycle of 4 x 10 minutes running and 4 x 1 minute slow jogging followed by a 5 minute cool down period)
- Week 4. **Decrease** the intensity a little. (5 minute warm up - then a cycle of 4 x 9 minutes running and 4 x 1 minute slow jogging followed by a 5 minute cool down period)
- Week 5. **Decrease** the intensity a little. (5 minute warm up - then a cycle of 4 x 7 minutes running and 4 x 1 minute 30 seconds very slow jogging followed by a 5 minute cool down period)

Week 6. **Drop** the intensity right down. (**5 minute warm up** - then a cycle of **3 x 5 minutes running** and **3 x 1 minute 30 seconds very slow jogging** followed by a **5 minute cool down** period)

It has been shown time and time again by studies far too numerous to mention that leading a healthy, active lifestyle is a huge benefit in achieving a high level of fitness. So the young man (often a man) who pumps weights three times a week, but then lives off a diet of burgers, chips and lager is going to be far less healthy in the long term than the person who exercises, eats healthily, gets enough sleep, doesn't smoke - and drinks alcohol in moderation.

All this is leading to one conclusion: the job of a professional personal trainer encompasses far more than simply telling people to do exercises. The PT has to take all these things into account when planning a programme for a client.

