

Combining Resistance Training with Cardiovascular Training (Concurrent Training)

Introduction

Anybody who has tried to combine resistance training with cardiovascular activities such as running, cycling and swimming will testify as to how difficult it is. Performing any endurance activity with DOMS (Delayed Onset Muscle Soreness) is uncomfortable at best, and potentially de-motivating! Resistance training cannot replace lots of cardiovascular activity and have all of the same physiological benefits. However, resistance training can compliment cardiovascular training and could also potentially be a better mode of training for some individuals.

As ever with programme design, there is not a 'one size fits all'. However, below are some pointers in how to go about combining resistance and cardiovascular training successfully throughout your season, so that you (or your client) can benefit from a multi-faceted approach to training.

So why strength train if you are an endurance athlete?

In short, strength train because:

- It will develop your neuromuscular system, meaning you can develop more power at no additional body weight
- You will develop core strength, meaning you are more efficient at the cardiovascular activity as no energy is wasted moving your body in the wrong direction
- It will reduce your risk of injury
- It will likely increase your range of motion through joints (if done correctly)
- It will benefit every other aspect of your life away from your main sport
- It is time-effective for those hard pressed to find free training time!

Concurrent Training Programming

I have split the programming into 4 tasks:

Task 1

Break your CARDIOVASCULAR training down into its' various phases (often called 'mesocycles'). Typically this will include:

Base Phase

A period of time spent amassing hours and hours at your chosen sport. The hours are completed at a generally low intensity. Generally this mesocycle is completed during the 'off-season'. This period could last 3-5 months depending upon the sport.

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Preparation/Pre-Competition Phase

A period of time where specific elements of CV fitness are worked on. This phase will include interval training in all of its' forms and will include high intensity levels. However, volume of training will be reduced to compensate for the increased demand placed upon the body. This period could typically last 2 months.

Competition Phase

This is the time when performance is all that counts. Therefore, training volume will be reduced, however the quality and intensity of training will remain high to keep the athlete at their 'peak'. This period could last 4-6 months depending upon the sport, although you should bear in mind that top-level fitness (peak) can probably not be held all season – instead, 2-3 multiple 'peaks' may be planned for.

Task 2

Accept that it's ok to not be the fastest runner/cyclist/swimmer etc all year round! I say this, because it is highly likely that certainly in the short term, strength training will have a negative impact upon your cardiovascular performance. You will be sore, probably feel like you have no power in your limbs and will possibly be feeling lethargic! Accepting this mentally can be tough if you are used to making people 'eat your dust'!

Task 3

Plan your resistance training macrocycle to fit in with your sport's periodised training plan. (ie, the Base, Pre-competition and Competition phases). A 'Linear' mesocycle approach is probably the most organised and logical way to go about this initially. Shorter periods of time are focused on gaining specific muscular fitness attributes. A standard progression route through the various training mesocycles is below:

- Endurance – a mesocycle of training designed to condition the body to strength exercises. This period allows you to gain some strength in the muscles and joints as well as learning exercise techniques. Resistance is relatively light during this phase so there is little injury risk other than the usual microtearing and consequent DOMS next morning! Don't be tempted to rush through this mesocycle. It's important that you do it thoroughly so that you are building on firm foundations.
- Hypertrophy – a mesocycle designed to increase the size of muscles. We will skip this phase, as we don't want to get too much heavier, ruining our power:weight ratio!
- Strength – a mesocycle that focuses on developing neurological connections increasing muscle contraction timings and motor unit recruitment. This is a huge benefit to endurance athletes – more strength equals greater muscle endurance also!
- Power – a mesocycle that helps us to turn the acquired strength, into an ability to exert a force quickly. This is the end goal of virtually all sports conditioning.

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Later on in the macrocycle – especially during Competition Phase, you may opt for an ‘Undulating’ periodisation style, to make things a little more adaptable and easy to combine with increased cardiovascular training. Undulating periodisation allows you to mix and match training styles in line with competition requirements.

Throughout all of these mesocycles, you must keep in mind your fitness focus at any given time and must also consider recovery periods.

An Example

It is likely that a planned macrocycle (long term training plan) will look something like this:

Base Phase

Endurance Mesocycle

- Adaptation to new exercise will take time – meanwhile, expect heavy DOMS!
- It’s ok to perform low intensity CV exercise with DOMS, If anything, it will help you recover quicker! However, if possible, always plan in the maximum recovery time possible between resistance and CV sessions – even to the point of late night / early morning sessions to maximise the day and night hours.
- Use your CV sessions purely as 'active recovery' - don't be tempted into racing!
- Volume of resistance training can be high throughout the Base Phase as there are no races to win! You will feel drained and tired throughout this period – it’s normal and ok!

Strength Mesocycle

- Neurological fatigue factors mean that you should consider making this mesocycle relatively short (2-4 weeks).
- Strength training will not mean that you all of a sudden turn into ‘The Hulk’. Keep the resistance at the upper end of your range and this will focus on neurological adaptation rather than hypertrophy of muscles - this will keep power:bodyweight ratio as favourable as possible.

Power Mesocycle

- Speed is your friend when developing power. The concentric action of each rep should be quick, with an element of explosion. Therefore, try not to use exercises that naturally limit ‘explosion’ due to requiring a ‘decelerating phase’, such as a deadlift, where the lifter must slow down in an effort to control the bar at full extension. Instead, use Olympic weightlifting variations, jumps, hops skips and throws.

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- Resistance during power mesocycles can be varied depending upon what you wish to work on – consider the ‘force – velocity’ curve and the movement patterns your chosen CV activity needs.

Pre Competition Phase

- Firstly, don’t use new exercises in this mesocycle, as they may cause DOMS and impact upon CV training more than necessary.
- Consider a switch to an ‘undulating’ style of periodisation here to fit in with CV training requirements and constraints. Not sticking to any one rep range will minimise any potential losses of muscular fitness due to lower overall resistance training volume.
- At this point, CV training should likely take a higher priority than resistance training, therefore training load of resistance training may well drop – though quality should remain high.

Competition Phase

- During competition, resistance training may well only bodyweight exercises along with carefully planned power sessions.
- Power sessions should generally be at the faster / less force end of the force-velocity curve – Plyometrics and Power-based Olympic Lifts for example.
- Ideally, any strength session should be done well before a competition day
- Some muscular fitness regression may occur during the season. Effort should be made that some continuity of training remains so that all pre-season gains are not lost.

Obviously, much of the above information is dependent upon individual requirements. Therefore you must spend adequate time each day / week reviewing training and adapting. Remember, just because the theory of resistance training sounds great and the periodised table of training blocks looks pretty, doesn’t mean that in reality, it’s right for every person! Some elite endurance athletes will not respond as expected to resistance training. However, the majority of people will see significant endurance performance increases.

Task 4

Reap the rewards of your hard-earned increased levels of endurance sport ability!