



RESISTANCE v AEROBIC TRAINING. BEFORE OR AFTER?

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Most of us are aware that there are varying benefits to both aerobic and resistance training...

AEROBIC TRAINING IS BENEFICIAL IN IMPROVING CARDIORESPIRATORY FITNESS, PROMOTING ENERGY EXPENDITURE AND FAT UTILISATION. RESISTANCE TRAINING IS BENEFICIAL IN MAINTAINING AND BUILDING MUSCLE MASS, STRENGTH, ENDURANCE AND POWER. A comprehensive training routine should therefore include both aerobic and resistance exercise as the benefits of each training modality are essential in improving performance, managing health and disease and in performing activities of daily living.

The research suggests that there may be an interference effect, meaning that we do not receive the optimal benefits when both training modalities are performed in the same session. Due to the busy schedules and time constraints most people are faced with today, it is more convenient to perform aerobic and resistance training in one session. But what order do you perform aerobic and resistance exercises to optimise their benefits?

The research isn't clear on which order is most effective, although it does show that the order is important and impacts the benefits received. Ultimately, your program should be tailored according to your priorities.

Aerobic Training Before Resistance Training?

If your goal is to improve running performance, endurance performance or your aerobic capacity (VO₂max), research suggests improvements are significantly greater when you perform aerobic training before resistance training compared with the reverse order. ⁽¹⁾ Studies suggest that performing your aerobic training first may also help reduce delayed-onset muscle soreness (DOMS). ⁽²⁾ It's believed that the elevated heart rate during aerobic training may increase blood flow to the working muscles during the following resistance exercises and therefore reduce DOMS. ⁽³⁾

Studies have shown however that resistance exercise performance is significantly compromised following

aerobic training. This includes different types, intensity and durations. The biggest impact on performance was seen following high intensity interval training. ⁽⁴⁾ High intensity aerobic exercise prior to resistance training has been found to compromise the strength and in particular the power developments achieved. ^(5,6,7)

This reduced performance is seen as the muscle fatigues following the initial aerobic training leading to a reduced tension established during the strength exercises. Especially if the same muscle groups are being used for both aerobic and resistance exercises. ⁽⁸⁾ After aerobic exercise it has been noted that the total repetitions of resistance training executed are reduced significantly. Evidence suggests that on average full recovery is only achieved 8 hours post aerobic training. ⁽⁹⁾

Resistance Training Before Aerobic Training?

If your goal is to build muscle, improve muscular strength or power it is most beneficial to complete resistance exercise prior to aerobic training. Particularly for athletes where strength and power is specific to their sport. ⁽¹⁰⁾ A study on highly trained kayakers who completed resistance training before aerobic training demonstrated significant improvements in muscle strength and power as well as aerobic capacity, compared with the reverse order. ⁽¹¹⁾

Another study which focused on the elderly, found that resistance training before or after aerobic training achieved similar results for muscular strength but demonstrated greater improvements in aerobic capacity when resistance training was performed first. This could be attributed to the age related muscle loss experienced as we age. ⁽¹²⁾

It has also been demonstrated that fat oxidation and energy expenditure is greater when resistance training is performed first, which could be a result of the increased lipolysis that is brought on when resistance training is performed prior to aerobic. ^(13,14)

In summary, performing aerobic exercise first may be most beneficial for developing maximal aerobic capacity and endurance performance. Resistance exercise first is more favourable for developing strength, power and muscle growth. Resistance exercise first may also be more beneficial for those focusing on fat loss and improving their metabolic state. Both resistance and aerobic exercise are essential components in an exercise program, as they each will provide you with unique benefits. To optimise your training outcomes, ensure your program is centred around your goals. The effectiveness of your training program will depend on the frequency, sequencing, intensity, duration and exercise selection in your program. Your Exercise physiologist or other exercise professional will consider all these components when designing your program based on your goals and experience, to help you find what is ideal for you!

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