

Fitness Australia Exercise Guidelines

Resistance exercise prescriptions for healthy adults

Resistance or strength training produces physiological effects and health benefits that are independent of aerobic training. Therefore strength training is an important component of physical activity that needs to be performed **in addition** to aerobic training. The following recommendations apply to resistance training for general health as well as more specific goals:

Frequency

- When training for general health or initiating a resistance training program it is recommended the entire body be trained 2-3 times per week on non consecutive days.
- Alternatively *training splits* can be used for more specific goals such as maximising muscle mass development or by more advanced trainees. This involves splitting the body into different muscle groups and focusing on particular muscle groups in each session.

Intensity

- When training for general health, use a resistance or weight that allows no more than 8-12 repetitions to be completed before reaching the point of volitional fatigue.
- For trained individuals who aim to maximize strength, heavier loads and lower repetitions (1-6) may be required.
- Individuals aiming to maximise lean muscle mass should complete the majority of their training using 8-12 repetitions. High intensity techniques such as *training to failure* are not necessary for general health but may be applicable when training for specific goals such as maximising muscle mass.

PRACTICAL APPLICATION

The Rate of Perceived Exertion (RPE) scale can be used to monitor intensity during a resistance training set. When training for general health the final repetition of the set should be between 15 and 18 or 'hard' to 'very hard' to complete with good technique. Training to failure would represent a 20 on the scale.

RATE OF PERCEIVED EXERTION SCALE

6	
7	Very, Very, Light
8	
9	Very Light
10	
11	Fairly Light
12	
13	Somewhat hard
14	
15	Hard
16	
17	Very Hard
18	
19	Very, very hard
20	

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Exercises

- The program should involve all major muscle groups of your body including legs, hips, back, chest, abdomen, shoulders, and arms.
- In *functional training* based prescriptions, exercises are generally based on movement patterns as opposed to muscle groups.
- A mixture of multiple joint and single joint strength training exercises can be used for general health. An emphasis on multi joint exercises should be made for those wishing to maximise strength.
- Application of unstable surface training with stability balls, wobble boards and similar aides has become increasingly popular. This form of training, although increasing activation of stabilising muscles, may reduce the activation of agonist muscles due to the lower loading that is used.
- Both free weights and machines can be used in strength training programs. The guided movement provided through the use of machines require less skill and therefore may be a more suitable mode for beginners or those with coordination problems. In contrast, free weights produce neural adaptations that more closely replicate sporting situations and are therefore a better choice for athletes.

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Volume

- When undertaking strength training for general health, at least one set per muscle group is recommended. However 2-3 sets of 8-12 reps may be associated with greater health benefits especially as fitness improves.
- In novice individuals aiming to maximise strength or hypertrophy, 1-3 sets per exercise is effective in the early stages of training. In trained individuals aiming to maximise strength or hypertrophy, multiple sets with systematic variation or *periodisation* of training volume and intensity is recommended.

Rest between sets

- For general health, 1-2 minutes of rest between strength training sets is generally sufficient.
- When training to maximise strength, it is recommended that rest periods of at least 2–3 min be used for large muscle mass multi joint movements using heavier loads. For single joint small muscle mass exercises, a shorter rest period of 1–2 min may suffice. Shorter inter-set recoveries (1-2 minutes) can produce superior anabolic hormone profiles and therefore be suitable if the prime objective is to maximise the development of muscle mass.

Exercise Sequencing

- Generally, strength training *exercise order* is based on maximising training intensity or minimising fatigue. This includes prescribing exercise using large muscle mass before small muscle mass, multi-joint before single joint and/or rotation of upper and lower or agonist and antagonist muscle groups.

PRACTICAL APPLICATION

Large muscle mass before small muscle mass

Chin ups before bicep curls.

Multi-joint before single joint

Squat before leg extensions.

Agonist and antagonist

Alternating between bicep curls and triceps pushdowns.

Progression

- *Progressive resistance training* requires that the muscles be overloaded across time. Often this is done in the form of increasing load, but numerous other options exist for overloading the muscles.

PRACTICAL APPLICATION

Frequency Progression

When beginning a resistance training program, two days per week is sufficient. Over time, as fitness improves you can increase the frequency to three times per week.

Volume Progression

When beginning a resistance training program, 1 set per exercise may be sufficient. Over time, increasing the volume to 3 sets places greater overload on the muscles. Similarly, increasing the number of repetitions over time (eg increasing the repetitions from 8 to 10) is also a way to increase the volume.

Intensity Progression

Begin with a resistance that can only be lifted 8-12 times with good form. As strength increases and more than 12 repetitions can be performed with good form, increase the resistance by 2-10% in order to continually overload the muscles and remain within the recommended 8-12 repetition range.

References:

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