Metabolic syndrome and exercise

What is metabolic syndrome?
Metabolism refers to all the biochemical processes that occur in the body. Metabolic syndrome (MetSyn) is a group of related metabolic abnormalities and risk factors that considerably increase the risk of developing type 2 diabetes and cardiovascular problems. About 19–29% of Australian adults have MetSyn (1).

The main characteristics of the syndrome are:
- excess belly fat (abdominal obesity);
- poor insulin use by the body’s cells;
- high blood glucose (sugar) levels;
- high blood lipids and ‘bad’ cholesterol; and
- high blood pressure.

How does exercise help people with metabolic syndrome?
MetSyn needs managing to reduce the long-term risk of type 2 diabetes and cardiovascular disease.

Fortunately, the syndrome can usually be reversed by lifestyle changes, with the combination of weight loss and exercise producing the best effect (2). Major improvements are seen in:
- the action of insulin;
- blood lipid, and cholesterol levels; and
- blood pressure.

The risk of progressing to type 2 diabetes is also reduced by 29–68% (2–4); with this improvement possibly exceeding the benefits of current diabetes medications (2).

Weight loss remains fundamental to the management of MetSyn. However, regular exercise can:
- reduce abdominal obesity;
- improve insulin action and ‘good’ cholesterol levels; and
- reduce the risk of type 2 diabetes.

......even without weight loss (2, 4, 5, 6).
Focus on ‘fitness’ rather than ‘fatness’. This is an important message for both healthcare professionals and people with MetSyn.

What types and intensities of exercise are recommended?

People with MetSyn can exercise safely if the exercise program begins slowly and progresses appropriately. A combination of both aerobic and resistance exercise is recommended, and can reduce the risk of progressing to type 2 diabetes (2, 3).

Aerobic exercises including brisk walking, jogging, cycling, swimming, dancing, playing ball games or other sporting activities are appropriate and effective (2–4).

Resistance exercise such as weight training should be used to complement, but not replace, aerobic exercise. Exercise recommendations are summarised below. An accredited exercise physiologist can create a suitable exercise program for you.

<table>
<thead>
<tr>
<th>Type of exercise</th>
<th>Intensity</th>
<th>Duration</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>Aerobic exercise (e.g. walking, running, cycling)</td>
<td>Moderate (RPE* 13-15; HRmax** 70-85%, VO2max*** 50-70%)</td>
<td>20-60 minutes</td>
<td>Most days of the week with no more than 1 consecutive day without exercise</td>
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<tr>
<td>Resistance training (e.g. lifting weights)</td>
<td>Moderate to Vigorous</td>
<td>30 minutes per session</td>
<td>2-3 times per week (2–4 sets of 8–10 repetitions, using 8-10 exercises)</td>
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* RPE = Rate of perceived exhaustion scale; ** HRmax = Maximum heart rate; *** VO2max = Maximal oxygen uptake

**TIP:** Moderate intensity aerobic exercise is probably best for overall improvement in MetSyn (7) and is more likely to be sustained than a program of vigorous exercise.

A rule of thumb is to exercise at a level that increases your breathing and heart rate but still allows you to maintain a conversation. Do 5–10 minutes of warm-up exercises (light aerobic activities) before your exercise sessions.

Reference and related information