ENERGY REQUIREMENTS

Energy Intake
Energy balance is an important concept for athletes to grasp in order to achieve the best body composition for their sport. At times in the year, for a given training load, athletes may need to increase the number of calories they consume to gain muscle mass or to support high energy needs. At other times, athletes may need to reduce the number of calories they consume to alter their body composition or to reflect reduced training load (e.g. when in competition or taper). In brief, you either gain or lose weight (whether from muscle or fat tissue) by being in a caloric surplus or caloric deficit. However, it is important to be mindful that calories and weight are not the only reasons why it’s important for athletes to eat food. Consumption of vitamins and minerals are important too!

Estimating energy requirements
As described above, calorie requirements will differ between sports, people and within a periodized training plan. It’s important that athletes realise that mathematical formulae to estimated calorie requirements provide an approximate guide and in some cases modifications may need to be made to allow for individual variation.

To estimate calorie requirements, the following equations can be used:
**Adult Male:** 662 – 9.53 (age in years) + PA [15.91(weight in kg) + 539.6(height in meters)]
**Adult Female:** 354 – 6.91(age in years) + PA [9.36 (weight in kg) + 726(height in meters)]


<table>
<thead>
<tr>
<th>PA (Physical Activity) Levels:</th>
<th>Description</th>
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<tbody>
<tr>
<td>1.0</td>
<td>Sedentary, typical daily living activities (e.g., household tasks, walking to bus)</td>
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<tr>
<td>1.11 – 1.12</td>
<td>Low active, typical daily living activities plus 30-60 min of daily moderate activity (e.g., walking at 5-7 km/h)</td>
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<tr>
<td>1.25 (M); 1.27 (F)</td>
<td>Active, typical daily living activities plus 60 min of daily moderate activity</td>
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<tr>
<td>1.48 (M) – 1.45 (F)</td>
<td>Very active, typical daily activities plus 90 - 120 minutes of moderate - vigorous activity</td>
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<tr>
<td>Possibly &gt; 1.45</td>
<td>Highly active, typical daily activities &gt; 120 min of vigorous activity</td>
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For example:
Adult Female:   
Age 19 years, weight = 65kgs, height = 1.72m, Activity = 60 minutes daily moderate training  
= 354 – 6.91(19) + 1.27 [(9.36 (65) + 726 (1.72))]  
= 354–131.29 + 1.27 (608.4 + 1248.72)  
= 222.71 + 1.27 (1857.12)  
= 222.71 + 2358.5  
= 2581kcs required on an active day

Note
- This calculation allows for energy balance, not weight loss or gain which will require further manipulation to increase or decrease calories consumed
- Not every day is highly active. On a rest day, an athlete’s activity level may be as low as 1.0, which would bring energy requirements down to 2079.81kcs.

**Please speak with your Sports Dietitian for further information**

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