



What is 'metabolism'?

'**Metabolism**' describes the complex physical and chemical reactions that occur in our body. These reactions are necessary for our body to function as well as for the maintenance of life as they:

- provide us with energy which, occurs through the breaking down of foods and drinks
- assist our body with creating heat
- use up energy in everyday reactions in order to keep us alive

Think of your metabolism or basal metabolic rate (BMR) as being similar to a campfire. You have to be putting on the right amount of wood, at the right time in order to have a great campfire. If you don't put on enough wood or go too long without throwing some wood on the fire, it will die down – our basal metabolic rate (see below for more

details) is not dissimilar, it relies on us to provide it with the right fuel at the right time to keep us alive.

Our 'total metabolic rate' on the other hand, is the total amount of food that our body needs in order to **function** each day. If we revisit the campfire analogy, it's the amount of wood that would be required to be put on the fire to keep it burning steadily. So, if we do not eat enough food, or eat too infrequently, our total metabolic rate will slow down and our energy levels will also lower.

The amount of energy your body needs depends on a number of factors. Working with an Accredited Practising Dietitian will help you to work out the right amount of energy you need.

What determines our total metabolic rate?

BASAL METABOLIC RATE (BMR)

The total amount of energy that is needed when our body is at rest.

- BMR on average uses up between 60-80% of our total energy each day.
- This energy is used at rest to; regulate our heartbeat, breathing and circulation, maintain and regulate our body temperature, central nervous system and to make various hormones and enzymes.

PHYSICAL ACTIVITY

Physical activity includes any sort of movement including running, shopping, cleaning or weightlifting.

- Physical activity on average uses up between 10-20% of our total energy each day.
- Our muscles (internal and external muscles) need energy (fuel) too, especially when exercising.
- If there is not enough fuel, then the muscle won't work at its best.

THERMIC EFFECT OF FOOD (DIT)

The energy used up when we eat to breakdown, process and store the nutrients from the foods that we eat. Typically, the thermic effect of food is approximately 10-15% of our total energy each day.

- Restricting food intake can decrease the thermic effect of food and in turn reduce our total metabolic rate.
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What causes changes to our metabolic rate?**The amount of muscle you have:**

- Muscle costs our body a lot of energy to maintain, even at rest.
- The more muscle you have, the higher your basal metabolic rate and therefore total metabolic rate.

So, what happens when there is not enough energy around, such as when dieting/ restrictive eating:

Your body will recognise that there is not enough energy around and will begin to;

- Conserve energy by slowing the heart rate and by lowering your core body temperature.
- If there is a constant decrease in energy and weight loss, your body will begin to breakdown muscle (usually a last resort

strategy). This leads to a decrease in the percentage of muscle and consequently lowers your basal metabolic rate.

Did you know?... In times of starvation our body has in-built strategies to assist with energy conservation when there's a lack of energy intake.

Our skeletal muscle (e.g. in your arms and legs) are broken down first to provide the body with the energy it needs. If starvation continues, the body then starts to decrease the size of important muscles such as your heart and gut muscles. Even if you are exercising in a hope to preserve or even gain muscle, if there is an energy/ food deficit, muscle loss cannot be prevented. Muscle breakdown will occur to provide an energy source that the body can utilise for necessary functions (e.g. brain, heart, lungs, and vital organs).

Other factors that may affect your metabolism include:

Gender	Men* may require more food/ energy than woman* due to their greater percentage of muscle.
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Age	Younger people require more food/ energy for growth and development.
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Body size	A taller person requires more energy than a shorter person.
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Body growth	Growth requires lots of energy, therefore a person (e.g. adolescent) growing will require much more fuel than an adult to support their growth and to keep their body functioning optimally.
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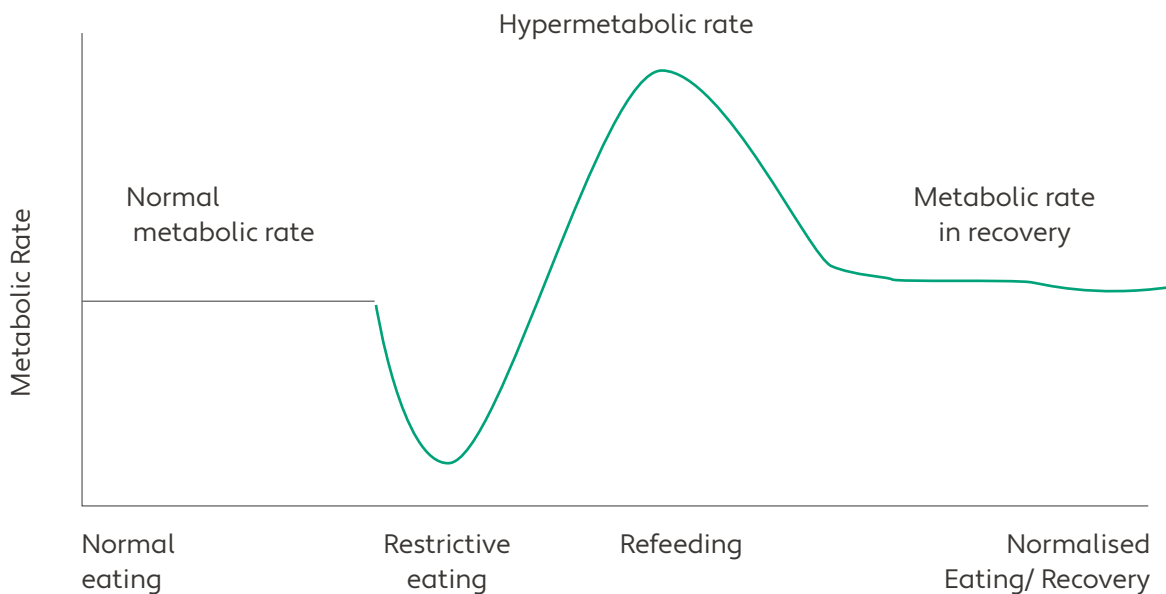
Infection or illness	The body requires more energy to fight against an illness and stimulate an immune response.
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Men refers to individuals assigned male at birth and
Woman* refers to individuals assigned female at birth.*

Metabolism and eating disorders

Studies have shown that individuals with eating disorders require increasingly more energy/ food to maintain the same rate of weight gain as those people without an eating disorder. Once regular nutrition is re-introduced during the early stages of refeeding, the basal metabolic rate is stimulated to normalise and the amount of energy burnt off each day will

begin to increase. Following this, there is a period of 'hyper-metabolism' where the body will 'burn off' more energy than normal to repair as their body goes through a process of regeneration. During this time, people healing themselves with nutrition, may experience more fatigue than experienced previously. Try to be kind to yourself during this time and have more rest!



Studies also show increased 'diet induced thermogenesis' (DIT) (this is when a lot of energy is released from the body as heat). This basically means that the thermic effect of food is high, representing up to 30% of energy expenditure (instead of the 10-15% discussed above) and this may cause night sweats, a common symptom of a patient with an eating disorder undergoing refeeding.

These patients also tend to require more energy than individuals without an eating disorder history to maintain their weight once they are weight restored/ in recovery with normalised eating. Therefore, this provides rationale as to why individuals who have an eating disorder require higher energy/ food requirements during recovery compared to others.