

IMPLICATIONS OF RAPID WEIGHT LOSS

• Dehydration

Dehydration is often used as a quick way to 'make weight'. Rapid weight loss by fluid restriction leads to dehydration—not fat loss. Fluid loss of as little as 1% of body weight (0.7 kg in a 70 kg person) has shown to decrease endurance performance. Rehydration strategies may negate this effect where sufficient time is allowed. Small to moderate water losses (2% to 4% of body weight) result in reduced maximal aerobic capacity (VO₂max). A 2% decrease in body weight has been shown to impair endurance performance by 20% (Ivy et al 1988). Yet, in boxing, a 2% rapid weight loss strategy is relatively common without appropriate subsequent rehydration (Smith et al, 2000).

As the percentage of body weight lost as a result of fluid reduction increases, so too do the dangerous consequences of dehydration caused by the inability of the body to effectively regulate temperature. Dehydration increases the risk of heat injury, including muscle cramps, heat exhaustion, and heat stroke. Early signs of dehydration include nausea, dizziness, fatigue, and difficulty concentrating. Though you can largely rehydrate in 12 hours, it takes 24 - 48 hours for full rehydration.

It should be noted that if 1kg has been lost then rehydration of up to 1.5 litres of fluid is appropriate when also taking into consideration the production of urine. In these instances, isotonic drinks are the favoured option as the body absorbs them more readily than water and less of the fluid is lost in urine production (Refer to Fact Sheet 7).

Table 1: Physiological Effects of Dehydration

% Body Weight Lost as Sweat	Physiological Effects
2	Impaired Performance
4	Capacity for muscular work declines
5	Heat exhaustion
7	Hallucinations
10	Circulatory collapse and heat stroke
For a 70-kg person, a 2-3 percent fluid loss equates to 1.4 to 2-kg of body weight. (Greenleaf et al 1992)	

Note: Diuretics and Vomiting

As well as loss of fluid, diuretics also give rise to a loss of sodium and chloride from the blood, and potassium and magnesium from muscle cells. Losses of minerals and water increase the risk of muscle cramps and spasm. The use of diuretics is not recommended, and is banned by many sports federations, including the IOC. Similarly, athletes who use vomiting and diarrhoea to lose weight rapidly not only induce dehydration but also cause excessive mineral loss with accompanying muscle weakness and impaired neuromuscular function.

HEALTHY WEIGHT LOSS

The healthiest way to lose weight is slowly, which is planned and controlled over a prolonged period of time and allows proper hydration and good nutritional practices. The only way to safely and effectively lose fat and preserve muscle is through modest calorie restriction and exercise.

Crash dieting is unhealthy for your body and detrimental to your performance.

An athlete should not reduce their energy intake below 1200–1500 kcal/day (4–6 MJ per day) unless supervised by a sports dietician (American Heart Association, 1994)

Table 2: Calorie Content of Selected Foods

White bread	(1 slice)	78 Kcal
Butter	(average portion 10g)	74 Kcal
Low fat spread	(average portion 7g)	27 Kcal
Mayonnaise	(average portion 30g)	207 Kcal
Banana		95 Kcal
Apple		47 Kcal
Fig Rolls Bar	(34g)	130Kcal
Fig Rolls	(average portion 2 biscuits)	124 Kcal
Crisps	(30g bag)	159 Kcal
French fries/chips	(average portion)	308 Kcal
Cereal with whole milk	(average portion)	170 Kcal
Cereal with low fat milk		155 Kcal
Steak	(8oz lean, grilled sirloin)	239 Kcal
Potatoes	(3 average boiled)	126 Kcal
Potatoes	(mashed 3 scoops)	187 Kcal

WEIGHT CYCLING

Repeated cycles of weight loss and regain is referred to as 'weight cycling.' In addition to impaired athletic performance, other consequences of weight cycling include a decrease in resting metabolic rate (which makes it harder to lose weight the next time), altered body composition, with increased ratio of fat to lean tissue, altered fat deposition, with greater abdominal fat relative to femoral fat, altered hormone profiles and possible nutrient deficiencies.

SUMMARY POINTS FOR WEIGHT (FAT) LOSS OR MAKING WEIGHT

- Weight reduction/fat loss is best achieved by combining moderate food restriction with additional physical activity. This allows the athlete to train and compete optimally.
- Choose a body fat/weight that keeps you healthy in the long term and allows you to train and compete optimally.
- Choose a balanced diet, emphasising a high carbohydrate (60-70%) and a modest-low protein (10-15%) and fat (25-30%) intake.
- Eat a little less energy (kilojoules/calories) than you burn in training or competition to achieve a slight calorie deficit, and therefore a healthy weight (or body fat) loss. (Reducing food intake by 500 kilocalories/day should result in the loss of 1-2 lbs/week).
- Do not 'crash' diet.
- Be wary of times when weight (fat) levels may fluctuate more e.g. 'off season' or when injured. Monitor these changes and adjust your dietary intake and training to suit.
- Gradually reduce weight by setting realistic targets (not more than 0.5-1.0 kg [1-2 lb] per week) each week.
- Monitor your weight regularly, at the same time of day using accurate scales.
- Seek professional advice from a sports dietician and a sports scientist on dietary requirements for your sport, or whether a weight category or body fat level is realistic for your physique.

ATHLETES WHO MAY REQUIRE SPECIALIST WEIGHT CONTROL ADVICE

- Athletes returning from injury or a break from their sport where inactivity has led to body fat/weight gain.
- Athletes competing in a weight-controlled sport who wish to compete in a weight division that is below their current weight, e.g. Boxing, weight-lifting, light-weight rowing, wrestling.
- Athletes competing in an endurance sport or power sport where a low body fat level and an increased power to weight ratio, is a physical advantage to performance, e.g. Distance running, cycling, triathlons, gymnastics.
- Athletes competing in a sport where leanness and low body fat levels are of aesthetic advantage, e.g. Gymnastics, diving, ballet, body building.
- Athletes competing in a skill-based sport where training hours are lengthy but essentially low-energy expenditure (and therefore do not contribute to a high energy turnover). The athletes may desire to lose weight for health and aesthetic reasons, e.g. Golf, archery.
- Athletes who have been required by their sport to move away from a stable home environment. These athletes may have poor cooking/food preparation skills, lead an irregular and/or disorganised life-style, and be reliant on takeaway and restaurant meals, e.g. Rugby and other team sports, tennis and other sports requiring extensive travel.

Source:Burke, 1994

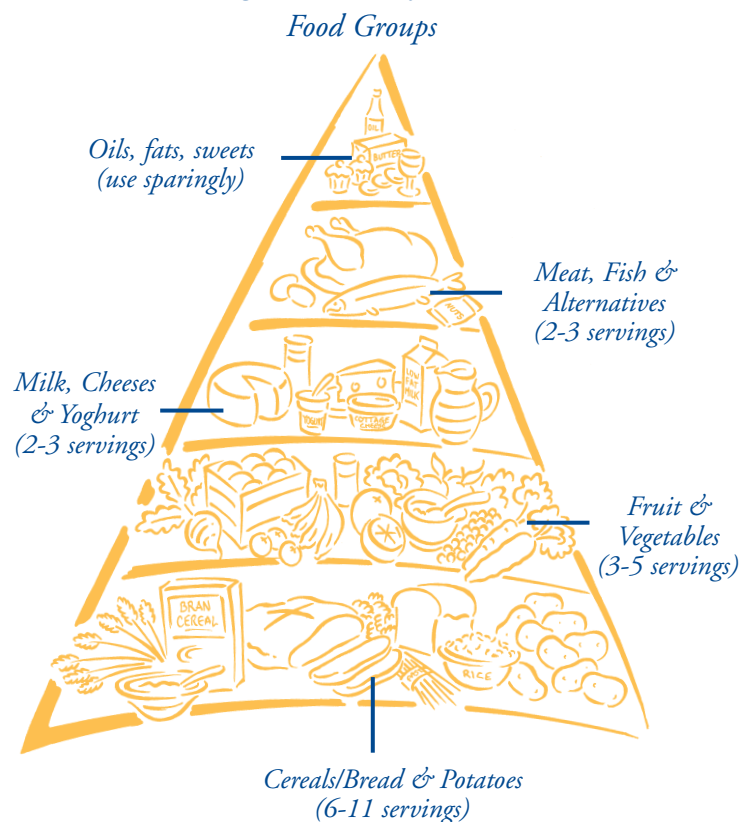
RECOMMENDATIONS

The daily caloric intake should be obtained from a balanced diet high in carbohydrates (60-70% of calories), low in fat (25-30% of calories) and adequate protein (10-15% of calories).

HANDY HINTS FOR WEIGHT LOSS

- The healthiest method of weight loss is to reduce weight gradually and to be as close as possible (ideally, no more than 1-2%) to the competition weight.
- It is very important to have a well balanced diet, which includes all nutrients in order to avoid any lack in particular nutrients.
- Refer to the food pyramid for the numbers of servings needed (Fig 1) for each food group per day.
- Athletes should at least consume the minimum number of recommended servings from each food group on the pyramid.
- In addition, consultation with a sports nutritionist/dietician may be important in order to individualise weight loss strategies.

Fig. 1: Food Pyramid



WHAT IS A SERVING?

- **Bread, cereal, rice and pasta group**
 - 1 slice of bread • cup of cooked rice or pasta (125g)
 - cup of cooked cereal • Medium bowl of breakfast cereal
- **Vegetable group**
 - cup of cooked or raw vegetables • 1 cup of leafy raw vegetables • cup of tomato or vegetable juice (about 1 glass)
 - Medium bowl of vegetable or tomato soup
- **Fruit group**
 - 1 piece of fruit (i.e. 1 banana, 1 apple etc.) • or 1 piece of melon wedge • 1 glass of juice (about 200ml)
 - cup of canned fruit • cup of dried fruit
- **Milk, Yoghurt and Cheese group**
 - 250ml milk or yoghurt (average glass is 200ml) • 35g natural cheese (medium chunk) • 60g processed cheese (3 slices)
- **Meat, fish, poultry, eggs, dry beans and nuts group**
 - 60-85g (2-3 oz) of cooked lean meat, poultry or fish (Examples: small portion of mince beef = 100g, average portion of roast beef = 100g, average chicken breast = 100g, slice of ham = 25g)
 - cup of cooked dry beans • 1 egg • 3 tablespoons of nuts

WEIGHT GAIN

Gaining weight can be quite difficult. In addition, to the calories needed to meet the demands of training and competition extra calories are required to increase body mass. Similar guidelines to those found in the recommendations for athletes are advised, i.e. high in carbohydrate and moderate to low in fat and protein respectively (Burke and Inge, 1994).

It is important to eat 6-8 times per day in order to gain weight. This should consist of 3 main meals and 3-4 snacks during the day. It should be noted, that although carbohydrate provides only 4 calories per gram compared to fat, which provides 9 calories per gram. Athletes should still look to carbohydrate rather than fat to achieve weight gain. Fat is not the desirable or recommended energy source for athletes. Carbohydrate is the only fuel that can power intense exercise for prolonged periods. An additional 500 Kcal per day will result in weight gain of about 1-2 lbs per week. However, where increased amounts of carbohydrate is being consumed in the absence of activity, it should be noted that carbohydrate may be converted to fat which subsequently would result in increased levels of body fat.

Resistance training is essential for athletes looking to gain muscle mass rather than fat. Weight training stimulates muscle growth when adequate energy is available. It is of importance to note, when engaging in weight training programmes, that adequate rest and sleep is imperative for muscle growth and regeneration.

Protein requirement is slightly increased when resistance training is increased. However, a diet containing meat, poultry, fish and dairy products more than meets this slight increase in demand. Athletes consuming a well balanced diet do not need protein supplements to increase muscle mass. In fact such supplements often result in fat deposition rather than increased muscle mass.

Endurance athletes require about 1.3-1.4g of protein per kg of body weight (for a 100 kg athlete this is about 135g of protein per day). Strength athletes require between 1.4-1.8g of protein per kg of body weight (for a 100kg athlete this is about 160g protein per day).

HANDY HINTS FOR WEIGHT GAIN

- Athletes should plan in advance and have snacks on hand in gear bags, cars etc. eg. bananas, sandwiches or Fig Rolls bars.
- Athletes should consume a certain amount of their calories from liquid, to contribute to the increase in calorie intake and consequently weight gain, e.g. Squashes or cordials (non-sugar free), sports drinks (up to a litre a day), fruit juices, banana/fruit smoothies, yoghurt based drinks.
- In order to gain weight this increased food intake should be carried out consistently. If weight gain practice is only carried out 3 days per week and then forgotten about, it will negate the weight gain process. Consistency is important to gain weight effectively.

- Keep a diary of daily food intake along with a record of rest taken. This helps to monitor the additional calorie intake.
- Athletes need to eat, drink, rest and carry out relevant training, i.e. NOT additional or other activities, in order to allow the process to occur.
- Use of legal supplements should only be considered after consultation with a sports doctor or nutritionist.
- A specific hypertrophy (muscle building) weight-training programme should be incorporated. For specific information you should consult a strength and conditioning specialist.
- Seek advice from a nutritionist or a sports dietician for individualised diet plans.

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