The study of Nutrition may be described as the science of substances found in food that are essential to life. This area of study involves examining nutrients in foods and nutritional supplements and investigating the body’s ability to process them through the process of ingestion, digestion, absorption, utilisation, storage and ultimately excretion.

First off, we need a change in thinking about the word ‘diet’.

The food we eat, wether to lose weight, gain muscle, be healthy generally or exercise to the best of your ability = your diet. Think of your diet as your personal eating plan, not just something we talk about for losing weight.

Maintaining a healthy food intake for everyday living, weight management or exercise requires a balanced nutritional intake. To achieve this we must pay particular attention to ensuring that the following is achieved from the foods we eat:

1. An adequate energy (kilojoule) intake.
2. An adequate carbohydrate intake.
3. An optimal protein intake.
4. A healthy fat intake.
5. Adequate hydration and fluid balance.
6. An adequate vitamin, mineral and antioxidant intake.
7. A sensible alcohol intake.
Everyone is different with their own goals and needs, so individual dietary requirements are determined by:

- Present & optimal body weight.
- Present & optimal level of body fat / composition.
- Dietary history – training days, competition & rest days.
- Exercise – type, frequency, scheduling, changes.
- Occupation and or travel.
- Domestic situation & lifestyle.
- Level of practical cooking skills.
- Any contributing medical factors including nutrient deficiencies.

Nutrients are substances obtained from food that promote growth, maintenance and/or repair in our body. The six classes of nutrients include:

- **Carbohydrate (CHO)**
- **Protein**
- **Fat**
- **Vitamins**
- **Minerals**
- **Water**

The energy released from the energy-yielding nutrients is measured in kilojoules (kJ) or Calories (kcal). When completely metabolised in the body, energy-yielding nutrients release the following:

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>kj</th>
<th>cal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbohydrate</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Protein</td>
<td>17</td>
<td>4</td>
</tr>
<tr>
<td>Fat</td>
<td>37</td>
<td>9</td>
</tr>
<tr>
<td>NB: Alcohol</td>
<td>29</td>
<td>7</td>
</tr>
</tbody>
</table>

Alcohol is not a nutrient because it does not support growth, maintenance or repair. In moderation however alcohol may provide cardiovascular health benefits including improving blood lipid profiles, reduced blood clotting, increased coronary blood flow, decreased blood pressure and lower insulin levels.

**DIETARY CARBOHYDRATE (CHO)**

- Primary role in human physiology = energy.
- Most efficient fuel to power muscle activity.
- Carbohydrate is stored in muscles and the liver as glycogen.
- Carbohydrate can be delivered directly from meal to muscle or to the liver for storage for use during exercise or general daily activities.
- High carbohydrate diet combined with exercise and training promotes glycogen stores which lead to endurance, increased performance and recovery during rest.
- Carbohydrate needs to be continually topped up daily.
GLYCAEMIC INDEX (GI)

- Ranking of the blood glucose and insulin response to CHO containing foods.
- Refers to the rate at which carbohydrate containing foods are digested and absorbed.
- Based on how fast and how high blood glucose (aka blood sugar) rises and how quickly the body’s insulin response occurs to bring blood glucose back to normal levels.
- FOR RECOVERY - MODERATE TO HIGH GI FOODS.
- BEFORE EXERCISE - LOWER GI FOODS MAY BE USEFUL FOR SOME ATHLETES.

Proposed uses of the GI:
- **Before exercise** - Low GI for sustained CHO availability.
- **During exercise** - Moderate and high GI for rapid availability.
- **Post exercise** - High GI to enhance glycogen storage.

PROTEIN

- **Functions of protein include:**
  1. Necessary for growth, tissue maintenance repair (Structural elements - collagen, elastin, keratin, cell membranes).
  2. Aid with hormone & enzyme production associated with regulation of metabolism and a range of other body functions - insulin, growth hormone.
  3. Illness prevention (anti-body and cellular immunity function).
  4. Fluid and electrolyte balance.
  5. Energy source in absence of CHO.

- **Incomplete Proteins**
  - nuts, pasta, fruit & vegetables, mushrooms, avocado.

- **complete Proteins**
  - meat, fish, dairy, poultry, protein powders.

DIETARY FAT / LIPIDS

Fat is water insoluble therefore provides the body’s major energy store. The basic unit of fat (lipid) in the body is stored as triglycerides (fats & oils) as well as related fatty compounds such as sterols & phospholipids. Lipids of greatest significance in nutrition are triglycerides, fatty acids, phospholipids and cholesterol.

**Fat serves many functions within the body:**
- Energy storage in adipose tissue.
- Insulation & protection of organs.
- Hormonal regulation.
- Carrier for fat-soluble vitamins (A,D,E,K).
- Supplies essential fatty acids linoleic acid (omega-6) & linoleic acid (omega-3).
- Necessary for formation of health cell membranes.
- Proper development and functioning of the brain & nervous system.
- Production of hormones.
- Responsible for characteristic flavour, aroma & texture of many foods.
- Promotes feeling of fullness.
Combinations of complete and incomplete proteins can be incorporated into a diet to provide a full range of amino acids:
- Cereal + milk.
- Pasta + cheese.
- Rice + beans.
- Bread + cheese.

General fitness program, protein needs can generally be met by ingesting 0.8 – 1.0 grams/kg/day of protein.

Generally recommended that athletes involved in moderate amounts of intense training.
- 1 – 1.5 grams/kg/day of protein (50 – 225 grams/day for a 50 – 150 kg athlete)

Athletes involved in high volume intense training consume.
- 1.5 – 2.0 grams/kg/day of protein (75 – 300 grams/day for a 50 – 150 kg athlete).

Equivalent to ingesting 3 – 11 servings of chicken or fish per day for a 50 – 150 kg athlete.

Smaller athletes typically can ingest this amount of protein in their normal diet, larger athletes often have difficulty consuming this much dietary protein.

**People at risk of inadequate intake of Protein**
- High needs: children & adolescents / pregnant women.
- Poorly planned vegetarian / vegan diets.
- Low energy diets / eating disorders.
- Very high CHO diets.
- Fussy eaters.
- Fad diets.
- People with extensive food allergies / intolerances.
- People travelling to areas with poor food supply.
VITAMINS

- Vitamins are organic substances that cannot be synthesized by the body.
- Vitamins and minerals play a critical role in many body functions such as energy transfer pathways, repair processes.
- Many processed foods are either high in fat or sugar or low in vitamins and minerals.
- Eating a variety of foods from all 5 food groups will ensure adequate vitamin and mineral intake.

Vitamins serve as regulators in many body processes:

**Fat soluble**
- **Vitamin A** – Essential for healthy eyes, vision, growth, repair, cell differentiation, protection against infection.
- **Vitamin C** – Essential for manufacture of collagen, wound healing, healthy immune and nervous system, adrenal hormone production, as an antioxidant.
- **Vitamin D** – Essential for absorption/use of calcium and phosphorus, healthy immune and nervous system, regulation of some hormones, normal cell growth and maturation.
- **Vitamin E** – Essential for action as an antioxidant to provide protection for cells against free radical damage which may lead to disorders such as heart disease and cancer. It is particularly important in protecting fats, cell membranes, DNA and enzymes against damage.
- **Vitamin K** – Essential for blood clotting, bone metabolism, kidney function.

**Water soluble**

| - Vitamin C, B-complex vitamins | - Riboflavin (B2) | - Pantothenic acid |
| - Help to regulate metabolism but cannot be stored | - Niacin (B3) | - Biotin |
| - Each serves a series of roles | - Pyridoxine (B6) | - Folate or Folic Acid |
| - Thiamine (B1) | - Cobalamin (B12) | - Ascorbic acid (C) |
**Vitamin B Complex**

Vitamin B is a complex of eight water soluble vitamins, Thiamin (B1), Riboflavin (B2), Niacin (B3), B6, Pantothenic Acid (B5), Folic acid, Biotin and B12.

Essential for releasing/producing energy from food, carbohydrate and fatty acid metabolism, healthy growth, healthy skin, blood, hair, muscles, healthy brain and nervous system, alcohol metabolism, hormone function, repair/manufacture of genetic material, protein metabolism, healthy cardiovascular system, healthy pregnancy, amino acid metabolism, cholesterol metabolism and healthy adrenal gland system.

**Antioxidants**

- May prevent premature aging, cancers, heart disease and other health problems.
- Help protect cells from free radicals.
- Include vitamins A, C, E.
- Found in a number of dark green, deep yellow and orange fruits and vegetables.
- Supplements.

**FOOD SOURCES OF VITAMINS**

- **Vit A**
  - Full cream dairy foods.
  - Dark green and orange fruit and veges.

- **Vit B**
  - B1: breads, cereals, veges and meat.
  - Niacin: meat, breads & cereals.
  - Folate: green veges, wholegrain breads, cereals & nuts.
  - B12: animal products.

- **Vit C**
  - Citrus, berry and tropical fruits, capsicum & raw vegetables.

- **Vit E**
  - Nuts, seeds and their oils.

- **Vit K**
  - Most vegetables and vegetable oils.
Absolutely essential for life.
50 – 75% body weight.
Muscle tissue approx. 75% water.
Fat tissue approx. 20% water.
Fluid balance achieved through regulation of fluid intake through changes in thirst sensations and regulation of loss by the kidneys.
Average fluid requirements for adults: 1.9 - 2.6L/day.
Average fluid loss approx. 2.0 - 2.5L/day through urination, insensible loss through skin, respiration & faeces.

The important health functions of water are:
- Acting as a solvent to transport nutrients, waste products and oxygen around the body.
- Regulating body temperature.
- Providing a medium for chemical reactions to occur.
- Helping to form the structure of macromolecules.
- Acting as a lubricant around joints.
- To serve as shock absorbers inside the eyes, spinal cord, and amniotic sac in pregnancy.

Water requirements depend on a number of factors such as:
- Climate
- Body size
- Exercise (sweat losses)
- Diet
- Caffeine intake
- Water intake from food

WATER SHOULD BE CONSUMED BEFORE THE ONSET OF THIRST.

Signs of Dehydration:
- Muscle cramps
- Fatigue
- Concentrated urine
- Feeling hot & thirsty
- Headache
- Nausea
RECOMMENDED PRODUCTS

MULTI VITAMIN
One a day tablet or via superfoods these products are packed with Vitamins & Minerals to support health and performance. Find my multi.

BUY NOW

HYDRATION
We need to drink more water. You can increase your water without the extra calories. Check out our drink mixes.

BUY NOW

PROTEIN POWDER
Protein supplements make getting daily protein for size, weight loss or food preparation simple. See our range

BUY NOW