

# Health Journal February 2011

We Train Trainers To Train Never Be The Same  
培訓專才 開拓不一樣的未來

## ANA Fitness Idol Contest 2010-2011

### Welcome to the February Issue!

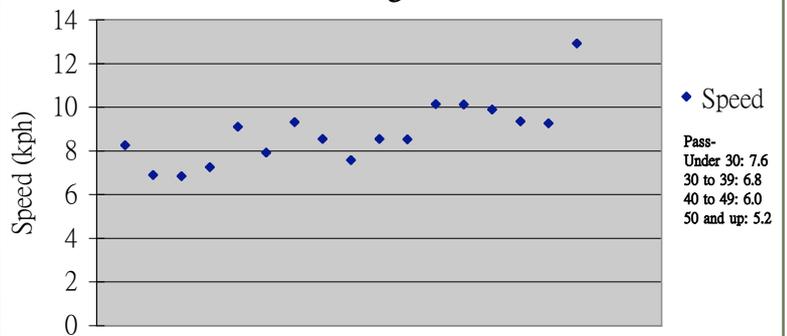
Hope everyone had a fabulous start of the Year of Rabbit! First of all, we would like to say a big 'WELL DONE' to all the participants that took part in the Third Challenge: Cardio. Although we had the Chinese New Year in the middle of the challenge, despite all the festive foods and long holiday, the results reflected that we all behaved well and as a whole, we all improved greatly!

Especially to our female and male champions, Judy Wong and Craig Shute, they had their wings on and got themselves at the very top speed with 12.92kph and 15.99kph, respectively. Furthermore, Brenden Leith (12.82), Horace Ma (12.62), Paul Calder (13.51) and Shane Sibraa (12.44) made into the 'Excellent' category. The ones that really pushed themselves hard and made excellent personal improvement were Angela Ho (89% increase) and Samantha Chan (33% increase). They have not only run faster, but also have covered more distance! Congratulation to all of them!

The Fourth Challenge is on Biceps, it starts on the 28<sup>th</sup> February and ends on 16<sup>th</sup> April. All you have to do is simply repeat as many standing biceps curl as possible! It might sounds easy, but it does take a lot of hard work, so let's torch those fats and build tight, toned muscles, get ready to look and feel amazing this summer!

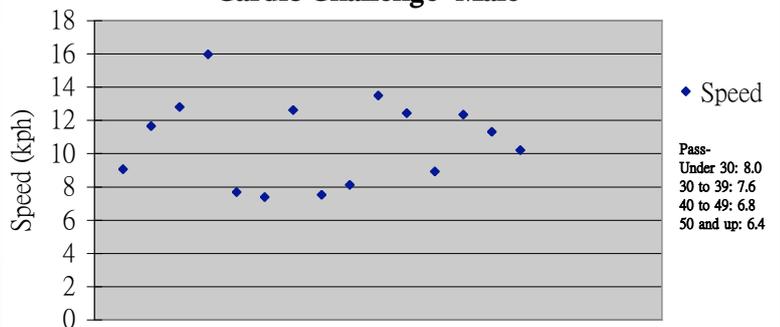


Cardio Challenge- Female



Participants

Cardio Challenge- Male



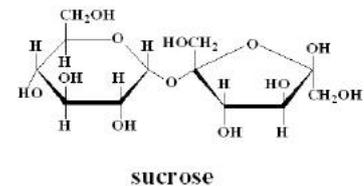
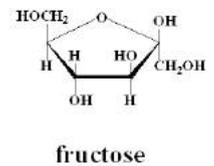
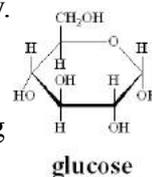
Participants

**In this month's health journal**, we will go deeper into each essential nutrient. Let's have a little recap here: there are three macronutrients (need grams of them and provide energy) – carbohydrates, lipids/fats and proteins; and two micronutrients (need milligrams or micrograms of them and provide no energy) – vitamins and minerals. While we need large amount of water, it is not referred as macronutrient because it provides no energy.

## Carbohydrates

Carbohydrates are an important source of energy (fuel) for the body. It is a substance mainly composed of carbon and hydrogen atoms. An energy called 'bond' exists between the carbon and hydrogen atoms. It acts like glue which holds the atoms together. By breaking down the bonds between the atoms with enzymes in our body, energy is released for our cells to use.

There are three types of dietary carbohydrates: monosaccharides (mono = one; saccharide = sugar), disaccharides (di = two) and polysaccharides (comprised of two or more monosaccharides). Please note that all dietary carbohydrates can provide energy except dietary fiber (a polysaccharide) from plants.



## Fats and lipids

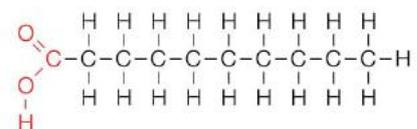
Fats and lipids are with similar structures but fat is in solid form while lipids are in liquid form (due to different melting points).

There are three types of lipids – triglycerides, phospholipids and sterols. Among three of them, triglycerides comprise most of the lipid content of your food and body.

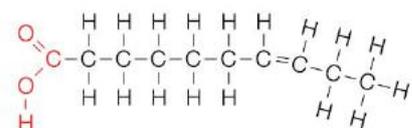
Body lipids are for energy, proper growth and development, nerve functioning, maintenance of healthy skin and hair, and the production of bile and several hormones, while body fats are for body contours, insulates the body against cold temperatures, and protect against damaging impacts.

Lipids in food help us absorb fat-soluble vitamins and phytochemicals. They also enhance the flavor, texture, and aroma of foods. This is also why fatty foods are always so appealing to most of us. However, although obtaining lipids is essential for health, over-consuming will increase risk of serious health problem such as obesity, certain cancers, and cardiovascular disease (CVD).

### Saturated



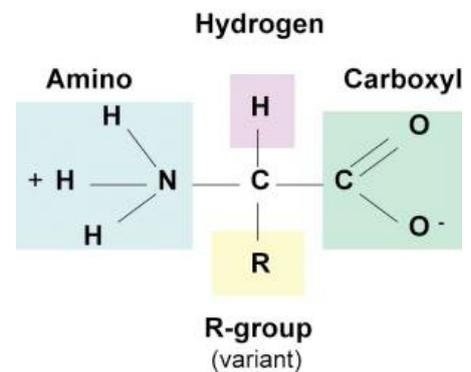
### Unsaturated



# Proteins

Amino acid is the building block of protein. Human proteins are comprised of 20 different amino acids arranged in various combinations. Cells produce protein by linking amino acids together in specific sequences that are dictated by instructions coded in DNA. Faulty DNA results in the wrong amino acids being inserted into peptide chains (a chain comprised of amino acids), causing DNA defects. A healthy adult needs only about 0.5 g of proteins/kg of body weight daily. The protein requirement increases during pregnancy, breastfeeding, periods of growth, and recovery from serious illness, blood losses, and burns. The adult RDA for protein is 0.8 g/kg of body weight daily.

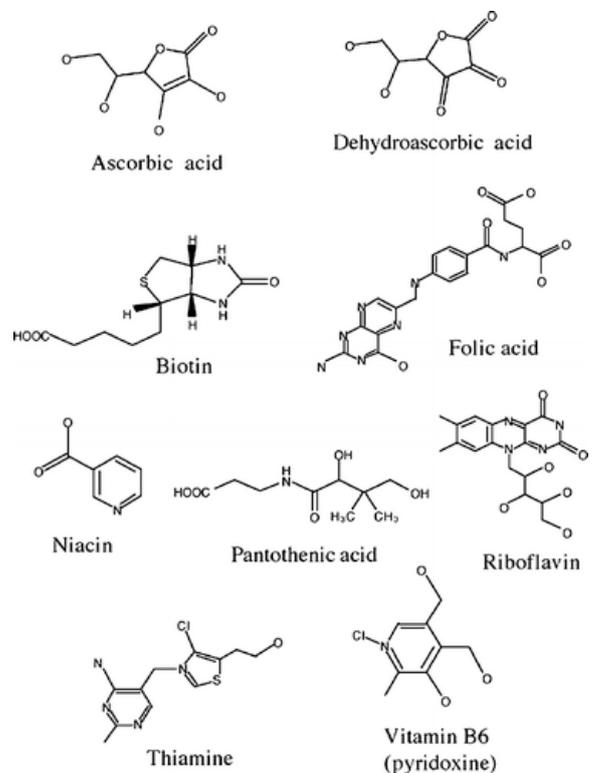
## Amino Acid Structure



# Vitamins

There are fat-soluble vitamins and water-soluble vitamins. The former includes vitamin A, D, E and K; while the latter includes thiamin, riboflavin, niacin, vitamin B6, pantothenic acid, folate, biotin, vitamin B12, choline, and vitamin C.

Vitamins play numerous roles in the body, and each vitamin generally has more than one function. In general, vitamins regulate a variety of body processes, including those involved in cell division and development as well as the growth and maintenance of tissues.



## Summary of Fat-soluble Vitamins

Vitamin	Major Functions in the Body	Adult RDA/AI	Major Dietary Sources	Major Deficiency Signs & Symptoms	Major Toxicity Signs & Symptoms
Vitamin A (preformed & provitamin A)	Normal vision and reproduction, cellular growth, and immune system function	700-900 mcg RAE	Preformed: liver; milk, fortified cereals Provitamin: yellow-orange and dark green fruits and vegetables	Night blindness, xerophthalmia, poor growth, dry skin, reduced immune system functioning	Nausea and vomiting, headaches, bone pain and fractures, hair loss, liver damage
Vitamin D	Absorption of calcium and phosphorus, maintenance of normal blood calcium, calcification of bone, maintenance of immune function	5-15 mcg	Vitamin D-fortified cereals, fish oils, fatty fish	Rickets in children, osteomalacia in adults: soft bones, depressed growth, and reduced immune system functioning	Poor growth, calcium deposits in soft tissues
Vitamin E	Antioxidant	15 mg (alpha-tocopherol)	Vegetables oils and products made from these oils, certain fruits and vegetables, nuts and seeds, fortified cereals	Hemolysis of red blood cells resulting in anemia	Excessive bleeding as a result of interfering with vitamin K metabolism
Vitamin K	Production of active blood-clotting factors	90-120 mcg	Green leafy vegetables, canola and soybean oils, and products made from these oils	Excessive bleeding	Unknown

## Summary of Water-soluble Vitamins

Vitamin	Major Functions in the body	Adult RDA/AI	Major Dietary Sources	Major Deficiency Signs and Symptoms	Major Toxicity Signs and Symptoms
Thiamin B1	Part of coenzyme needed for carbohydrate metabolism of certain amino acids; may help produce neurotransmitters	1.1-1.2mg	Pork, wheat germ, enriched breads and cereals, brewer's yeast	Beriberi and Wernicke-Korsakoff syndrome: Weakness, abnormal nervous system functioning	None
Riboflavin B2	Part of coenzymes needed for carbohydrate, amino acid, and lipid metabolism	1.1-1.3mg	Milk, yogurt, and other milk products; enriches breads and cereals; liver	Inflammation of the mouth and tongue, eye disorders	None
Niacin B3	Part of coenzymes needed for energy metabolism	14-16mg	Enriched breads and cereals, beef, liver, tuna, salmon, poultry, pork, mushrooms	Pellagra: Diarrhea, Dermatitis, Dementia, Death	Flushing of facial skin, itchy skin, nausea and vomiting, liver damage
Pantothenic acid B5	Part of the coenzymes needed for synthesizing fat and releasing energy from macronutrients	5mg	Cereals that have been fortified with the vitamin, beef and chicken liver, sunflower seeds, mushrooms, peas, soy milk	Rarely occurs	Unknown
Biotin	Cofactor needed for synthesizing glucose and fatty acids	30mcg	Liver, eggs, peanuts, salmon, pork, mushrooms, sunflower seeds	Rarely occurs: Skin rash, hair loss, convulsions, and other neurological disorders; developmental delays in infants	Unknown

Vitamin B-6	Part of coenzyme needed for amino acid metabolism, involved in neurotransmitter and hemoglobin synthesis	1.3-1.7mg	Meat, fish, and poultry; potatoes, bananas, spinach, sweet red peppers, broccoli	Dermatitis, anemia, depression, confusion, and neurological disorders such as convulsions	Nerve destruction
Folate	Part of coenzyme needed for DNA synthesis and conversion of cysteine to methionine, preventing homocysteine accumulation	400mcg DFE	Dark green, leafy vegetables, liver, legumes, asparagus, broccoli, orange juice, enriched breads and cereals	Megaloblastic anemia, diarrhea, neural tube defects in embryos	Unknown
Vitamin B-12	Part of coenzyme needed for various cellular processes, including folate metabolism; maintenance of myelin sheaths	2.4mcg	Animal foods, fortified cereals, fortified soy milk	Pernicious anemia: megaloblastic anemia and nerve damage resulting in paralysis and death	None
Ascorbic Acid (Vitamin C)	Connective tissue synthesis and maintenance; antioxidant; synthesis of neurotransmitters and certain hormones; immune system functioning	75-90mg (non-smokers)	Peppers, citrus fruits, papaya, broccoli, cabbage, berries	Scurvy: Poor wound healing, pinpoint hemorrhages, bleeding gums, bruises, depression	Diarrhea and GI tract discomfort
Choline	Neurotransmitter and phospholipids synthesis; methionine metabolism	425-550mg	Widely distributed in foods and human biosynthesis	Liver damage	Fishy body odor and reduced blood pressure

## Minerals

About 15 mineral elements are proven to have known functions in the body. They are essential and necessary for maintain human health. These essential minerals are classified into two groups – major minerals and trace minerals. If we require 100mg or more of a mineral per day, the mineral is classified as a major mineral, otherwise, it is a trace mineral.

Minerals	Major Functions in the body	Adult RDA/AI	Major Dietary Sources	Major Deficiency Signs and Symptoms	Major Toxicity Signs and Symptoms
Potassium <b>K<sup>+</sup></b>	A systemic electrolyte and is essential in coregulating ATP with sodium.	4700mg	Legumes, potato skin, tomatoes, and bananas.	Hypokalemia	Hyperkalemia
Chlorine <b>Cl<sup>-</sup></b>	Production of hydrochloric acid in the stomach and in cellular pump functions	2300mg	Table salt (sodium chloride) is the main dietary source	Hypochloremia	Hyperchloremia
Sodium <b>Na<sup>+</sup></b>	A systemic electrolyte and is essential in coregulating ATP with potassium	1500mg	Table salt (sodium chloride, the main source), sea vegetables, milk, and spinach.	Hyponatremia	Hypernatremia
Calcium <b>Ca<sup>2+</sup></b>	Needed for muscle, heart and digestive system health, builds bone, supports synthesis and function of blood cells	1000mg	Dairy products, canned fish with bones (salmon, sardines), green leafy vegetables, nuts and seeds.	Hypocalcaemia	Hypercalcaemia
Phosphorus <b>P<sup>2+</sup></b>	A component of bones, cells, in energy processing and many other functions	700mg	Seafoods (tuna, salmon), meats (liver, turkey, chicken), nuts, seeds, legumes, cheese, grains (wheat bran and germs, wild rice, oats, oatmeal, brown rice)	Hypophosphatemia	Hyperphosphatemia

<b>Magnesium Mg<sup>2+</sup></b>	Required for processing ATP and for bones	420mg	Nuts, soy beans, and cocoa mass	Hypomagnesemia, magnesium deficiency	Hypermagnesemia
<b>Zinc Zn<sup>2+</sup></b>	Pervasive; Required for several enzymes such as carboxypeptidase, liver alcohol dehydrogenase, and carbonic anhydrase.	11mg	Beans, nuts, certain types of seafood (such as crab and lobster), whole grains, fortified breakfast cereals, and dairy products	Zinc deficiency	Zinc toxicity
<b>Iron Fe<sup>2+</sup></b>	Required for many proteins and enzymes, notably hemoglobin to prevent anemia	8mg	Red meat, leafy green vegetables, fish (tuna, salmon), eggs, dried fruits, beans, whole grains, and enriched grains.	Anaemia	Iron overload disorder
<b>Manganese Mn<sup>2+</sup></b>	A cofactor in enzyme functions	2.3mg	Whole grains, nuts, and seeds	Manganese deficiency	Manganism
<b>Copper Cu<sup>2+</sup></b>	Required component of many redox enzymes, including cytochrome c oxidase.	900µg	Dark leafy greens, dried fruits such as prunes, cocoa, black pepper, and yeast	Copper deficiency	Copper toxicity

## Water H<sub>2</sub>O

Approximately 60% of the adult human body is composed of water. Water is a simple compound that does not undergo digestion. In the body, water is a major solvent that often participates directly in chemical reactions because nearly all of the life-sustaining chemical reactions require an aqueous (watery) environment. Water also functions as the environment in which water-soluble foodstuff is absorbed in the intestines and the waste products are eliminated in urine. Water's other physiological roles include transporting substances, lubricating tissues, and regulating body temperature and acid-base balance. Severe dehydration will result in cardiovascular collapse and death. On the other hand, water toxicity (too much water) is also possible, resulting in dilution of important electrolytes (mineral salts) that may lead to erratic heart rhythm and death. The estimated water requirement of an average adult is two liters per day.

