

Sports Performance 15

Nutrition

2006, W.P. Wagner

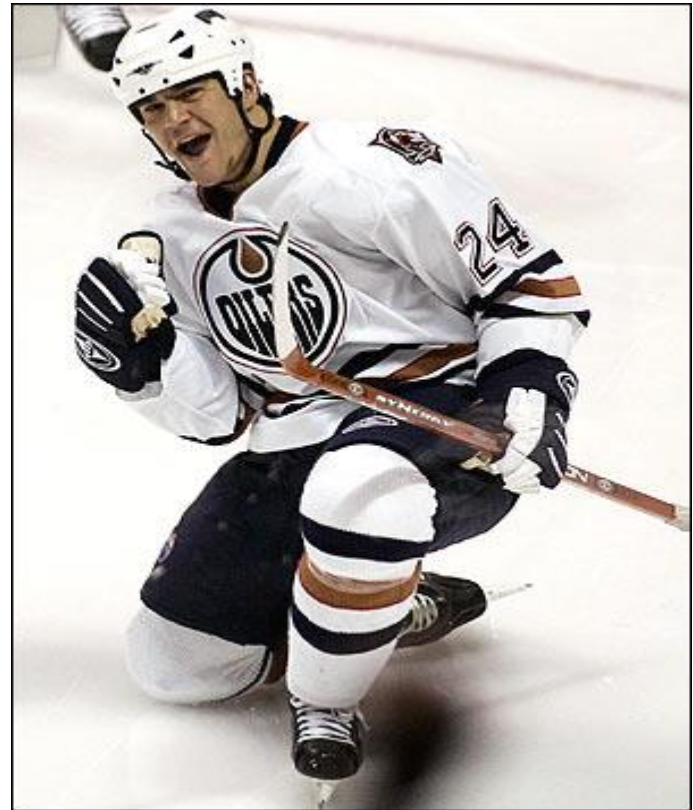
Nutrition

- Nutrition is one of several significant factors that can affect your performance as an athlete.



Nutrition

- Athletic performance and recovery are enhanced by optimal nutrition.



Nutrition - Nutrients

6 Classes Of Nutrients:

What makes up our food?

- Carbohydrates – provide the body with **energy**
- Protein – **builds, repairs and maintains** tissue
- Fat – **insulates** body, **cushions** and vital **protects** organs
- Vitamins & Minerals – **regulates** the release of energy and other aspects of metabolism
- Water – **temperature control, circulation** and **urine production**

Nutrition – Food Groups

Four food groups:

- **Grain Products** (5-12 servings a day): breads, cereals, pasta, rice
- **Vegetables and Fruit** (5-10 per day): fresh or frozen, juices, salads
- **Milk Products** (2-4 servings a day): milk, cheese, yogurt
- **Meat and Alternatives** (2-3 servings a day): chicken, eggs, beans

DAILY FOOD GUIDE PYRAMID



Need more information on serving sizes or the variety of foods in each food group? Ask for a copy of Dairy Council's GUIDE to GOOD EATING!

Nutrition - Healthy Eating

5 Components to healthy eating:

- **Adequacy:** Does your diet provide all the essential nutrients?
- **Balance:** Does your diet over-emphasize any food type or nutrient at the expense of another?
- **Calorie Control:** control over consumption of calories
- **Moderation:** Does your diet contain excess amounts of less healthy nutrients?
- **Variety:** Different foods are used for the same purposes on different occasions

Nutrition – Serving Size

What a Serving looks like.

- Based on energy and nutrient requirements.

**1 medium size
vegetable or fruit =**
tennis ball



**1 serving of meat,
poultry or fish =**
deck of cards



**1/2 cup of
vegetables, rice
or pasta =**
lightbulb



Nutrition

Pocket Serving Sizer and Food guide

(Dairy Bureau of Canada)



A **thumb** equals 25 g of most cheeses. So 2 thumbs equal a serving.

A **thumb-tip** equals a teaspoon. Three thumb-tips equal a tablespoon, about the amount of milk you'd put in coffee.



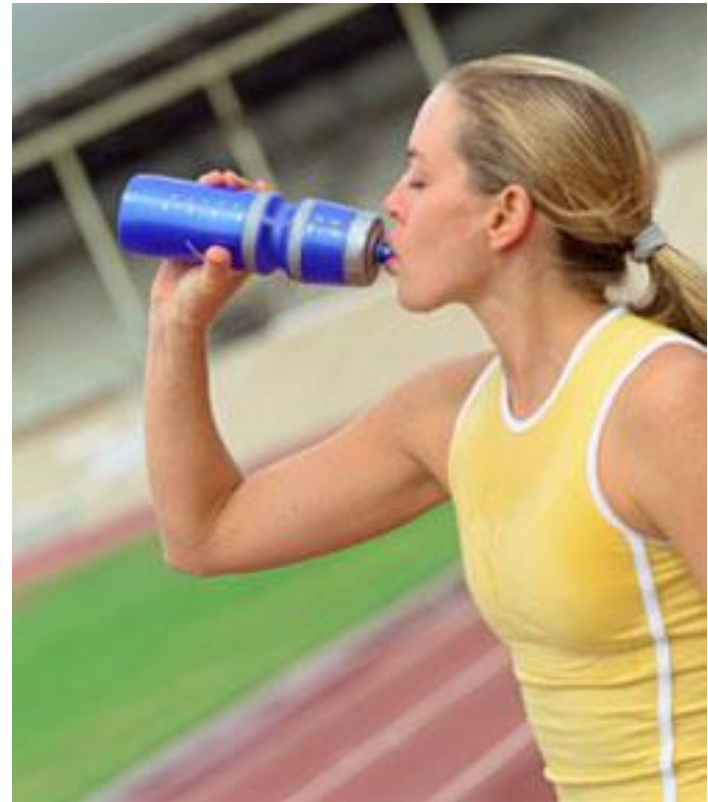
A **palm** equals a serving of meat, fish or poultry. That's without fingers and thumb!



A **fist** equals a cup. A fist would be 1 1/3 servings of yogourt. A fist size of raw leafy greens would be a serving of lettuce.

Nutrition

- **Essential nutrients:**
The body needs them but can't produce them. They must be acquired through food.
- **Non Essential nutrients:** Nutrients manufactured in the body. (le. cholesterol)



Nutrition - Carbohydrates

- The **primary** role of carbohydrates (**CHO's**) is to provide the body with **energy**.
- CHO's are the ideal fuel for the body.



Nutrition - Carbohydrates

- Why are carbohydrates so important to athletes?
- Most accessible form of energy.
- CHO foods are needed to refill muscle glycogen stores.



Nutrition - Carbohydrates

Two types:

Complex:

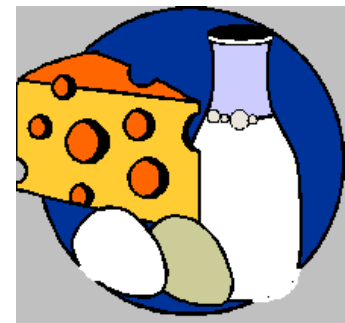
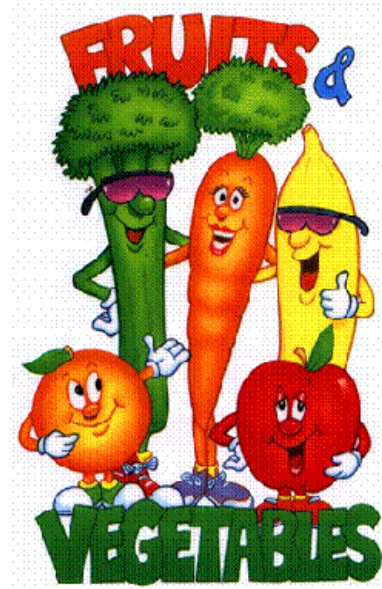
- pastas, cereals
- Provide steady supply of energy,
- Takes longer to absorb into the system.



Nutrition - Carbohydrates

Simple:

- fruit, vegetables, sugars, milk
- Provides quick energy.
- Does not last as long as complex CHO.



Nutrition – Protein

Functions of proteins:

- **Growth and Maintenance** – provide growth and repair of body tissue.
- **Hormones** – regulating body's processes
- **Energy** – Proteins can be used after (fat and cho) to provide calories to help meet the body's energy needs.



Nutrition - Protein

Functions of proteins:

- **Body structures** – Proteins form vital parts of most body structures such as: skin, nails, hair, muscles, teeth, bones,
- **Antibodies** – Proteins help manufacture antibodies to fight infection and disease.



Nutrition - Protein

Complete proteins:

- supply enough essential amino acids
- i.e. meat, eggs and dairy products

Incomplete proteins:

- lack adequate essential amino acids
- i.e. vegetables, beans and other plant products
- They must be eaten in combination to get complete proteins. i.e. rice and beans, peanut butter and jelly

Nutrition - Protein

- **Vegetarians.** Where do they get their protein from?
- **Plants –incomplete** protein ie: soya bean has a lot of protein.
- **Vegan – does not** consume **any** animal food products.



Nutrition - Protein

- **Semi-vegetarian** – will consume fish, poultry and dairy products.
- **Lacto-vegetarian** – Will consume dairy products but not eggs.



Nutrition - Protein

- **Ovo –Lacto vegetarian** - Will consume dairy products and eggs
- **Ovo-vegetarian** – Will consume eggs.



Nutrition - Fat

Why do we need fat?

- **Insulates** body
- **Cushions and protects** vital organs
- Carries and helps **absorb** fat soluble vitamins
- **Synthesizes** hormones and cell membranes for healthy skin
- Makes food **taste** and **smell** good



Nutrition - Fat

Saturated fats

- Solid at room temp.
- All animal foods such as meat, butter, and whole milk. Coconut and tropical oils.
- Raises cholesterol levels



Nutrition - Fat

- **Unsaturated fats**
- **Polyunsaturated fats**



- Liquid at room temp
- Found in vegetable oils, sunflower, corn, and soybean oils.
- Can help lower cholesterol levels

- **Monounsaturated fats**
- Liquid at room temp
- Found in olive and canola oil.
- Can help decrease LDL (bad) cholesterol levels

Nutrition - Fat

Dietary cholesterol

- Comes only from **animal sources**: saturated fat in dairy products, egg yolks, meats, poultry and seafood.
- **Vegetables, fruit and grains do not contain cholesterol.**



Nutrition - Fat

- Types of cholesterol
- HDL – good helps remove cholesterol from the blood
- LDL (low-density lipoprotein) – bad, deposits cholesterol in the arteries. Risk of heart disease.



Nutrition - Fat

Trans Fats

- Formed by the partial **hydrogenation of vegetable oil**.
- Increases the shelf life and flavor of foods.
- Found in vegetable shortenings, some margarines, crackers, cookies, snack foods, and other foods fried in hydrogenated oils.
- ***Raises the LDL*** cholesterol that increases your risk for heart disease.



Nutrition - Fat

Tips for healthy eating:

- Lean cut meats. Fat removed.
- Chicken (skin removed), turkey and fish.
- Lower-fat versions of dairy products: skimmed milk
- Low-fat or no-fat salad dressings, yogurt and sour cream.
- Use herbs and spices in place of high fat flavorings or sauces.



Nutrition – Vitamins & Minerals

- Vitamins and Minerals regulate the body's metabolic functions.
- They are found naturally in the foods we eat.
- They do not supply energy, instead they regulate the release of energy.



Nutrition - Vitamins

Vitamins come in **two** varieties:

Fat soluble (A,D,E,K)

- Can be **stored** in the body for long periods of time

Water-soluble.

- Excess amounts of water-soluble vitamins are **excreted** in the urine

Nutrition – Vitamins

Water Soluble Vitamins	Best Sources	Chief Roles
Vitamin C	Citrus fruits, tomatoes, potatoes, dark green veg. Butter ,cheese	Maintains bones and teeth, resistance to infection
B Vitamins	Meats, soya bean, fish, seeds, yogurt etc.	Energy metabolism, build red blood cells, build proteins

Nutrition - Vitamins

Fat soluble vitamins	Best sources	Chief Roles
Vitamin A	Milk, cheese, spinach, deep orange fruits	Growth, repair of body tissues, immunity
Vitamin D	Self-synthesis with sunlight, milk, fish, liver	Bone and tooth formation, aids absorption of calcium
Vitamin E	Vegetable oil, green leafy vegetables	Protects red blood cells
Vitamin K	Spinach, cereals, eggs, lettuce	Blood clotting,

Nutrition - Minerals

- Minerals play a vital role in maintaining fluid balance and the formation of structure in the body.
- Major role in healthy functioning of nervous system



Nutrition - Minerals

Minerals	Best Sources	Chief Roles
Calcium	Dairy products, certain green veggies	Healthy bones and teeth, nervous system
Magnesium	Dairy products, green vegetables	Healthy bone, teeth, energy metabolism
Potassium	Meats, fruit (bananas), grains, legumes, veggies	Fluid balance, nerve transmission and muscle function
Iron	Meats, eggs, dark leafy vegetables	Carries oxygen from lungs to body, formation of hemoglobin

Nutrition - Water

- Provides the medium for **life processes**.
- **The most vital nutrient.**
- Makes up **55 - 75%** of the body.
- Without water we could only live a few days.



Nutrition - Water

Functions:

- Temperature control
- Urine production
- Circulation
- Water is lost to sweat and urine and must be replaced.



Nutrition - Dehydration

Signs of Dehydration

- Monitor how you feel (chronically fatigued, headache, lethargic)
- Monitor amount and color of urine
- Weigh yourself before and after.
- For every pound (lb) you lose, you should drink at least 2 cups of water



Nutrition – Dehydration

Effects: From mild to severe symptoms

- Increased body temperature
- Impaired performance
- Gastrointestinal problems, heat exhaustion, dizziness, dry mouth, headache, fatigue
- Heat cramps, chills, nausea, rapid pulse, 20-30% decrease in endurance capacity
- Heat stroke, hallucinations, no sweat or urine, swollen tongue, unsteady walk, high body temperature

Nutrition – Recommended Fluid Intake before exercise

- 600ml (20oz) 2 hrs before
- 250-500ml (8-16 oz) – 15-30 minutes prior to
- 90 – 150ml (3-5oz) every 15 minutes during
- For exercise lasting less than 1hr, water is the best replacement
- >1hr – dilute glucose and electrolyte solutions

Nutrition – The Nutrition label

- **Helps consumers to choose foods for healthy living**
- Label is standardized for nutrient content
- Consists of value for energy, protein, fat and carbs.
- Popular claims and what they mean: **‘low’** – very small amount
- **‘Less’** used to compare one product to another.
- **‘Light or lite’** – what part is light. Not always light in fat.

Nutrition Facts			
Per 125 mL (87 g)*			
Amount	% Daily Value**		
Calories 80			
Fat 0.5 g	1 %		
Saturated 0 g + Trans 0 g	0 %		
Cholesterol 0 mg			
Sodium 0 mg	0 %		
Carbohydrate 18 g	6 %		
Fibre 2 g	8 %		
Sugars 2 g			
Protein 3 g			
Vitamin A	2 %	Vitamin C	10 %
Calcium	0 %	Iron	2 %

Nutrition

The importance of teen nutrition

- Adolescence is a time of change (12-20 boys, 10-18 in girls)
- Time of life where body needs the most calories.
- The individual's energy need is influenced by body size, activity levels and biological factors affecting growth.

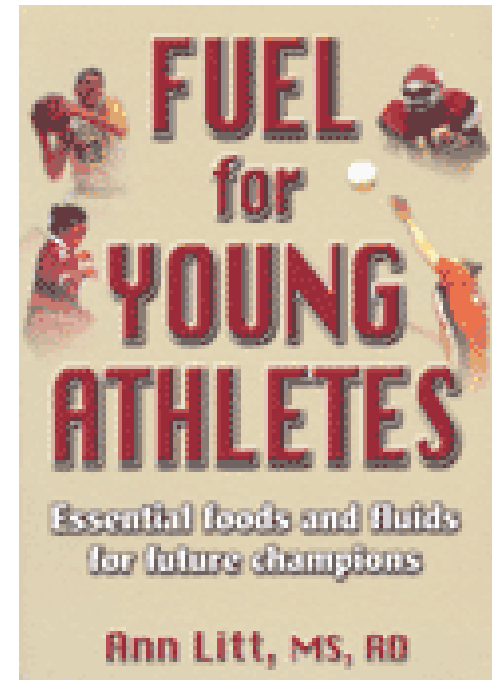


Nutrition – Related Problems of Adolescents

- **Under-nutrition** – irregular meal patterns, substance abuse
- **Obesity** – increased in U.S by 39% among 12 to 17 year olds in last 15 years
- **Iron-deficiency anemia** – below average iron intake
- **Low calcium intake** – compromise peak bone mass development and increase risk of **osteoporosis** later in life
- **High Blood cholesterol levels**
- **Eating Disorders**

Nutrition – RNI (Recommended Nutritional Intake)

- **Calories:** dependant on age, gender and activity level – amount of protein, carbs and fat are also dependant on this.
- **Fiber:** 25-35g
- **Calcium:** 1200-1500 mg
- **Iron:** men – 10mg, women – 15mg
- **Cholesterol:** 300mg/day
- **% calories from:** fat 30% (<10% from Sat. fat), protein 15%, carbs 55%



Nutrition – Energy: Males

- Estimated energy requirements of males.

Age	Sedentary	Low Active	Active
14-18	2200	2400 - 2800	2800 - 3200
20-30	2400	2600 –2800	3000

Nutrition – Energy: Females

- Estimated energy requirements of females

Age	Sedentary	Low Active	Active
14-18	1800	2000	2400
20-30	2000	2000 –2200	2400

Nutrition

Fad diets

- Often low calorie
- Avoid food groups = deficient in major nutrients
- Loss of water.
- Atkins, Zone, South Beach
- Exercise not often part of diet.