

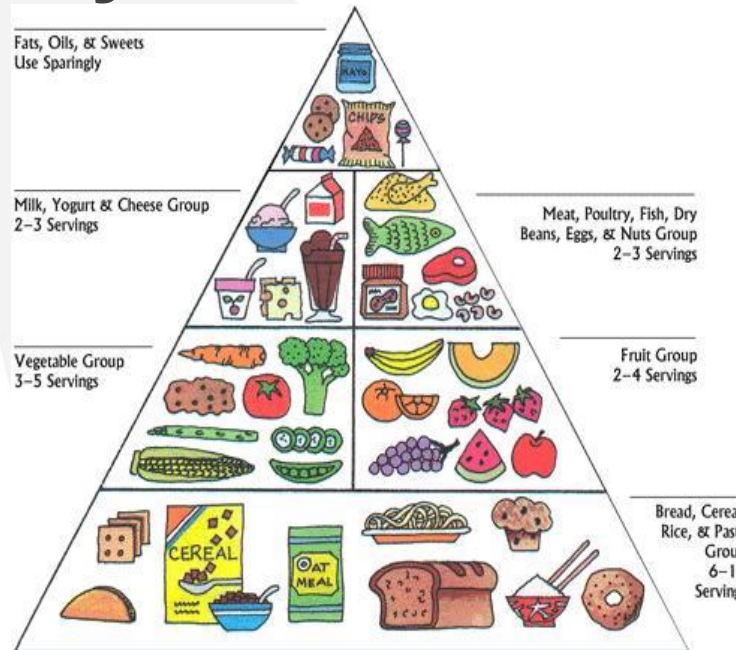


Sports Nutrition

Aims of the session.

- General diet needs of a junior basketball player
- Pre, during & post exercise nutritional strategies for basketball players

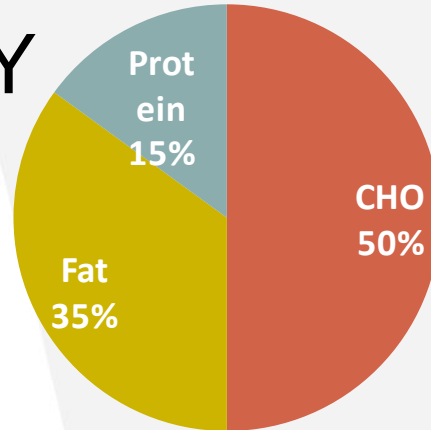
Dietary Goals for Athlete's



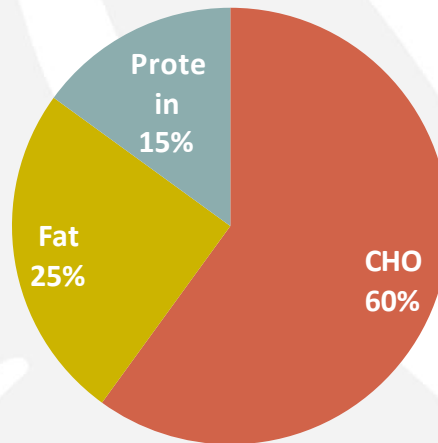
- Healthy, mixed balanced diet
- Wide variety of foods
 - Carbohydrates
 - Protein
 - Fat
 - Vitamins & minerals
 - Water
- Maintain Energy balance
 - Energy intake = energy expenditure
 - Sedentary female/male = 2000-3000kcal
 - Elite Athletes = 5000 – 11000kcal

Macronutrient Composition

SEDENTARY

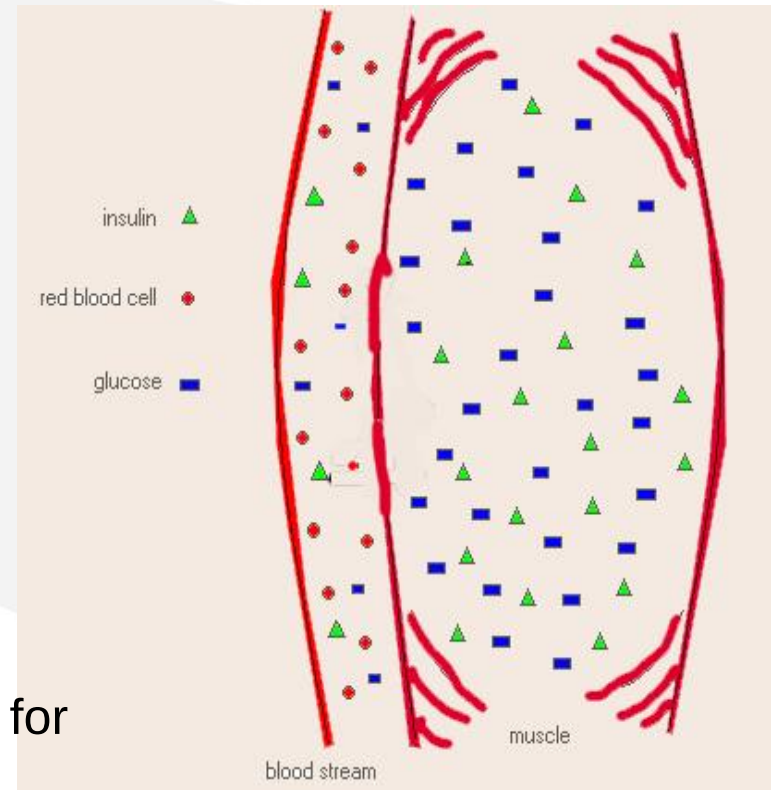


ATHLETIC



Carbohydrates

- Energy Stores
 - Stored in the body as glycogen in muscle and liver
 - Present in the blood as glucose
 - Enough stores for 80-90min continuous aerobic exercise
 - Theoretically – 5min of anaerobic exercise
- Why do we need carbohydrates?
 - Glycogen is the most important fuel for exercise
 - Body has limited capacity for storage
 - Exclusive fuel for nervous system
 - Releases 4kcal/g



Carbohydrate Intake Goals

Minimal physical activity	2-3g CHO per kg BM
Light physical activity (3-5 hr/week)	4-5g CHO per kg BM
Medium physical activity (10 hr/week)	6-7g CHO per kg BM
Professional/elite athletes (20+ hr/week)	7+g CHO per kg BM
Carbohydrate loading for endurance events	7-12g CHO per kg BM



Starch
35%



Fibre

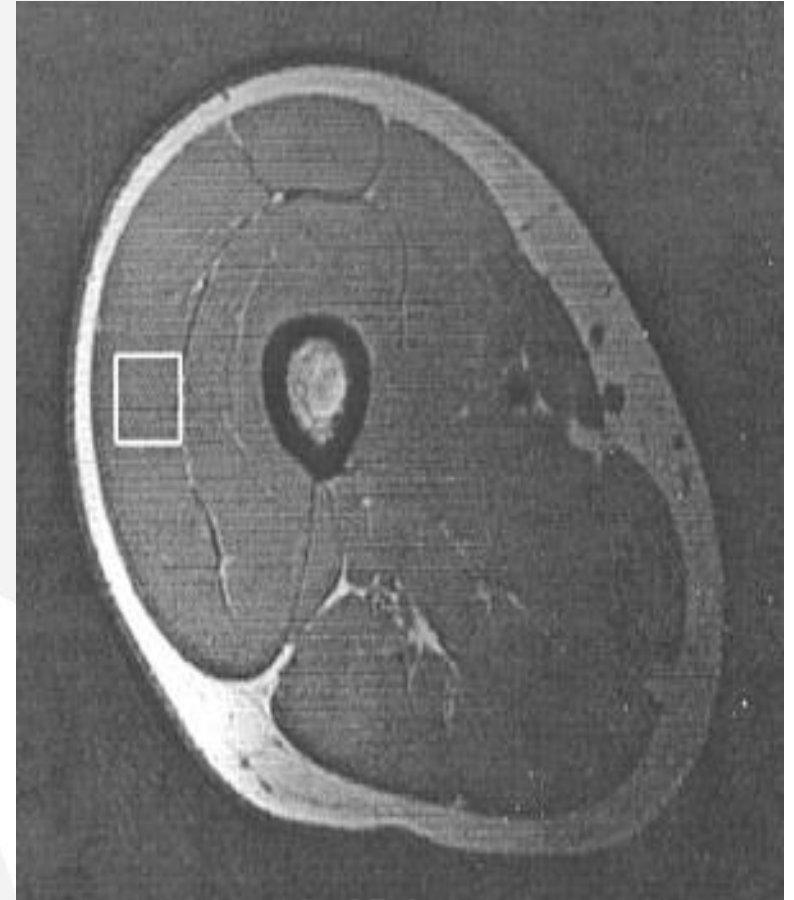


Sugar
15%



Fats

- Energy Stores
 - Predominantly stored in adipose tissue
 - Approximately 300g of fat stored in muscle as intramuscular triacylglycerol
 - Enough stores for >4000min of continuous aerobic exercise
- Why do we need fat?
 - Low intensity exercise – can't sustain high intensity
 - Important fuel source when CHO runs out
 - Protects vital organs
 - Facilitates absorption of fat soluble vitamins and minerals
 - 9kcal/g fat



Types of Fats

- Saturated Fats

- Fats from animals/animal products
- Increase total cholesterol and bad (LDL) cholesterol
- Limit intake in diet (max 10% of total energy intake)

- Poly-unsaturated Fats

- Omega-3: oily fish; do not directly effect total cholesterol
- Omega-6: sunflower margarine; reduce total cholesterol with good (HDL) cholesterol
- 6% total energy intake

- Mono-unsaturated

- Olive oil
- Reduce total & bad cholesterol; do not decrease good cholesterol
- 12% total energy intake

Protein and Intake Goals

Little contribution to energy supply

- Protein intake important for growth and repair
 - Heavy training causes small increase in requirements
 - Increased needs during early stages of new exercise programme or new level of exercise stress
- Limited current knowledge (practice $\neq$ research)
- Protein Intake Goals

Sedentary	0.8 g per kg BM
General training program	1.0 g per kg BM
Endurance athlete undertaking heavy training	1.2–1.6 g per kg BM
Endurance athlete undertaking extreme training	2.0 g per kg BM
Strength athlete undertaking heavy training	1.2–1.7 g per kg BM
Adolescent athlete	2.0 g per kg BM

Foods that provide - 10g of protein

- 2 small eggs
- 30 g reduced fat cheese
- 70 g cottage cheese
- 1 cup (250 ml) reduced fat milk or soy milk
- 35g cooked lean beef, lamb, pork
- 40 g cooked lean chicken
- 50 g grilled fish
- 50 g canned tuna or salmon
- 200 g reduced fat yoghurt
- 4 slices wholemeal bread
- 3 cups of wholegrain cereal
- 2 cups of cooked pasta or 3 cups cooked rice
- 3/4 cup of lentils or kidney beans
- 200 g baked beans
- 120 g tofu
- 60 g nuts and seed

Nutritional Information		
Typical Values (cooked as per instructions)		
	Per Serving	Per 100g
Energy	1462 kJ	975kJ
	351 kcal	234 kcal
Protein	9.0g	6.0g
Carbohydrate	28.2g	18.8g
of which sugars	3.0g	2.0g
of which starch	25.2g	16.8g
Fat	22.3g	14.0g
of which saturates	7.6g	5.1g
of which monounsaturates	10.9g	7.3g
of which polyunsaturates	2.7g	1.8g
Fibre	1.6g	1.1g
Sodium	0.6g	0.4g
Per Serving	351 kcal	22.3 g fat

As a general rule, food labels normally report the above values per 100g or 100ml. The following are large amounts per 100g / 100ml:

1. **30g of sugar.**
2. **20g of fat.**
5g of saturated fat.
3. **6g salt, 2.5g sodium (SACN).**

Fluid Requirements

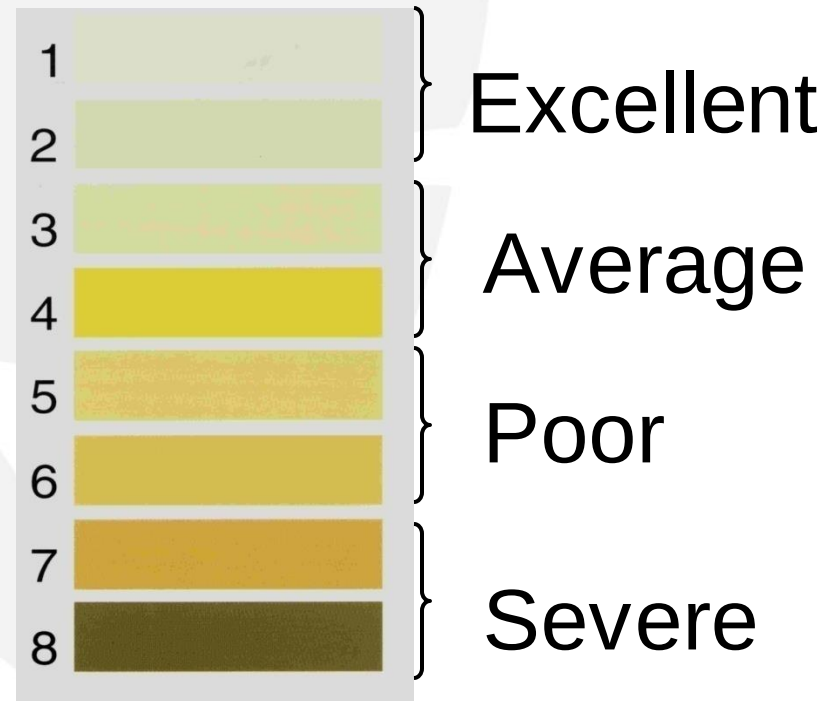
- Likely that many athletes do not consume sufficient fluid to meet demands of training
- Dehydration can severely effect performance
- Athletes are recommended to drink 4-6 litres per day
- Younger athletes will require less than this (2-4 litres)
- In hot conditions requirements increase



Monitoring Fluid Losses

- Changes in body mass
 - Weigh yourself (nude) before and after training/match
 - Each kg of weight lost equates to 1.5 litres of fluid

- Pee Chart



Pre-Game Strategies

- **Goals**
 - Continue to fuel muscle glycogen stores
 - Restore liver glycogen content
 - Prevent hunger, yet avoid gastrointestinal upset
 - Ensure good hydration
- **Timing**
 - General guidelines of 2-4hrs pre
 - Account for individual tolerance and match schedule
- **Amount and type**
 - Low-fat, low-fibre, low-moderate protein
 - CHO rich (1-4kg/kg BM; 140-330g)
 - Low GI
 - 300-600ml water

Pre-Game Meals

- Muesli with semi-skimmed milk and fruit
- Beans on wholegrain toast and fruit juice
- Pasta with tomato based sauce
- Tortilla wrap filled with lean chicken or ham and salad
- Fruit salad and yoghurt
- Wholemeal pitta bread with filling
- Oatcakes with low fat cottage cheese
- Fruit smoothie (low fat milk, fruit, yoghurt)

Immediate Pre-Game Strategies

- Goals
 - Increase CHO deliver to muscles
 - Hydration
- Amount and type
 - High GI
 - 150-300ml every 15-20min up to 45min pre
 - Use of sports drinks to meet CHO and fluid needs
- Sports Drinks
 - Increase water uptake and retention
 - Replace lost electrolytes
 - Increase palatability
 - Promote drinking

During the game.

Goals

- Maintain hydration/Prevent dehydration

- Maintain use of CHO

Guidelines

- Replace fluid when practically possible
- CHO intake is desirable when exercise >1hr
- Use of sports drinks



Post Game National Strategies

- Probably most underrated aspect of athletes preparation for optimal performance
- Goals
 - Maximise rate of glycogen re-synthesis to restore depleted liver and muscle glycogen stores
 - Replacement of fluid and electrolytes lost through sweat
 - Limit damage to the muscles and aid the repair of muscles
 - Boost the immune system
- Guidelines
 - Eat 50-100g of high GI CHO within first 20min
 - Consume protein along with CHO (50g CHO, 10g protein)
 - Water/sports drinks
 - Eat CHO rich foods 2h post (complex and simple CHO, moderate protein, low fat)

Post Game Practical Ideas

- 250-350ml milk shake/fruit smoothie
- 500ml flavoured low fat milk
- Sport bar + 200ml sport drink
- 60g breakfast cereal with $\frac{1}{2}$ cup of milk
- Sandwich with cheese, meat or chicken filling + 1 large piece of fruit
- 200g fruit flavoured yoghurt
- 300ml flavoured milk and 30-35g cereal bar
- 2 crumpets/muffins with thick spread of peanut butter
- 250g baked beans
 - on 2 slices of toast
- 250g baked potato
 - with cottage cheese
 - or grated cheese
- 850ml Lucozade
- 2 banana's
- 6 jaffa cakes
- 3 medium pieces of fruit
- 4 weetabix
- 2 cereal bars
- 2 slices of toast
- 2 wholemeal pitta bread
- 80g dried fruit
- 120g trail mix





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