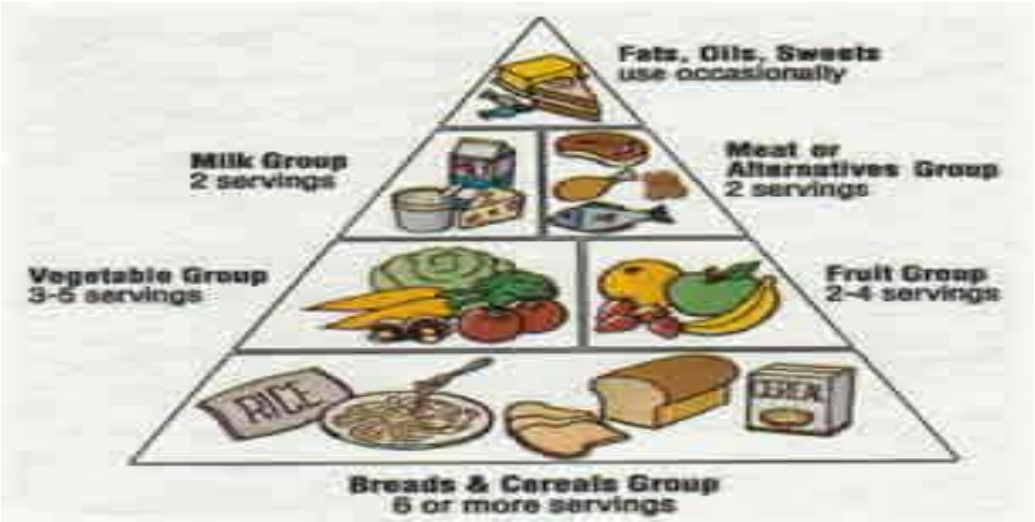
OPTIMUM NUTRITION FOR FEMALE ATHLETES

As athletes we place a lot of physical and mental demands on ourselves. Training and racing well require our bodies to continually respond and adapt to stress. This stress is an additional physiological phenomenon to the normal everyday stresses of daily living. So this extra demand we placing on our bodies has an energy and a nutrient cost. It is a well known fact that nutrition plays a key role in sports performance and that optimum nutritional strategies play a vital part in any training programme. However it is important that we do not loose sight of the fact that optimal sports nutritional strategies are an additional part of a healthy and balanced diet. There is simply no point in adapting a fancy high carbohydrate/low fat performance based sports nutrition plan if your daily diet is lacking in key nutrients needed for every day good health.

What is a healthy diet?

- One that provides essential nutrients – the substances needed in the diet for normal functioning of the human body. There are well established guidelines on how to achieve this and the food pyramid is the most simple.
- One that delays or prevents chronic degenerative disease by modifying what we usually eat. Eg Cancer, Diabetes & Cardiovascular disease – nutrition can have a causative or protective effect. Research is ongoing in this area but it is well accepted that eating a diet rich in fruit and vegetables and low in saturated fat reduces the risk of cancer and heart disease. Investing in a balanced healthy diet safeguards our health for the future, ensuring that we will all still be cycling well into our eighties ☺



How Many Servings per Day??

FOOD GROUP	SEDENTARY	ACTIVE	ATHLETES
Breads & Cereals– Carbohydrate rich	**6**	**9**	**11**
Vegetable group	**3**	**4**	**5**
Fruit Group	**2**	**3**	**4**
Dairy Group (low fat)	**2-3**	**2-3**	**2-3**
Meat & beans Protein rich	**2**	**2**	**3**

WHAT IS A SERVING??

- **Carbohydrates** - 1 bowl of breakfast cereal or 1 slice of bread or 3 dessertspoons of cooked pasta/rice or 1 medium potato - boiled or baked
- **Fruit and vegetables** - ½ a glass of fruit juice or 3 dessertspoons of cooked vegetables or salad or Small bowl of homemade vegetable soup or 1 medium sized fresh fruit or 3 dessertspoons cooked fruit or tinned fruit (preferably in its own juice)
- **Dairy** – 1 glass (small carton) milk, 1 yoghurt, 1 slice cheddar cheese, 1 babybel cheese,
- **Meat/Alternative Protein** – meat, poultry, fish - size of a deck of cards, Beans - small computer mouse.

SPECIAL CONCERNS FOR WOMEN – IRON AND CALCIUM

IRON

In a recent survey (North South Ireland Food Consumption Survey) conducted by the Irish Universities Nutrition Alliance 48% of Irish women aged between 18 and 50 had inadequate iron intakes putting them at risk of developing iron deficiency anaemia or depleted iron stores. It has been reported that 1 in 3 Irish women have depleted iron stores and 1 in 30 have Iron deficiency anaemia. In the portion of women who used supplements the incidence of deficiency was half that if women who did not use supplements indicating that supplements containing iron made an important contribution to the diets of menstruating women. It is important for female athletes to ensure that they are consuming at least 14mg of Iron per day. It is important to consume some vitamin C rich foods at the same time as Iron rich foods, as vitamin C is necessary for optimum absorption of Iron. Certain compounds such as the tannins

in tea and coffee, therefore it is advisable to wash your breakfast cereal down with orange juice rather than tea or coffee.

Iron is lost through blood & sweat resulting in

- Fatigue/Lethargy
- Anaemia
- Headaches
- Light-headedness
- Breathlessness in training (above normal)
- Poor training/racing performance

Symptoms are similar to low CHO stores/Overtraining/Under-eating so a blood test is necessary before Iron supplements should be considered.

Iron rich foods

- Low bioavailability(poorly absorbed – vitamin c will increase absorption)
    - Rice, oatmeal, brown flour
    - Bananas apples, pears, grapes, plums, strawberries, rhubarb,
    - Legumes, aubergines
    - Nuts
    - Cheese, eggs, milk

- Medium bioavailability
    - White flour, corn flour
    - Mango, pineapple,
    - Carrot, potatoes,

- High bioavailability(easily absorbed)
    - Lemon, orange, tomatoes,
    - Beetroot, broccoli, cabbage
    - Fish, meat, poultry.

CALCIUM

In the IUNA survey it was shown that 23% of Irish women had inadequate calcium intake, putting them at risk for developing osteoporosis in later life. According to the World Health Organisation (WHO) 1 in 4 women in Europe over the age of 50 has osteoporosis. In Ireland, at least one in every four women will be affected by osteoporosis. Furthermore, 50% of all Irish women can expect an osteoporotic related fracture at some stage in their lives. This is preventable and is a prime example of how investing in a healthy and balanced diet now can safeguard our health for the future. 1000mg of calcium per day and 30 mins of weight bearing exercise every day will protect your bones from developing this debilitating disorder. PLEASE NOTE THAT CYCLING IS A NON WEIGHT BEARING ACTIVITY AND DOES NOT PROTECT YOUR BONE HEALTH – WALKING, JOGGING, AEROBICS OR DANCING ARE GOOD WEIGH BEARING ACTIVITIES.

FEMALE ATHLETES NEED 1000MG OF CALCIUM PER DAY

- 250ml milk 300mg
- 250ml soya milk 255mg
- 150g yoghurt 180mg
- 1 slice cheddar cheese 150mg
- 50g canned sardines 270mg
- 150g brocolli/leeks 100mg
- 70g dried apricots 65mg

If you are not achieving this consider taking a supplement. There are plenty of commercial supplements available in pharmacies and there are plenty of foods in the supermarkets supplemented with extra calcium – eg squeeze/Tropicana orange juice, nutrigrain bars, breakfast cereals, petit filous with extra calcium – keep an eye on the supermarket shelves!

REMEMBER TO CHECK THE FOOD LABELS FOR CALCIUM CONTENT PER SERVING AND TAKE A NOTE OF HOW MANY SERVINGS YOU ARE CONSUMING!

SPORTS SPECIFIC NUTRITION

A FOCUS ON CARBOHYDRATES (CHO)

Carbohydrate is an essential fuel for athletes; it is stored in the muscle and liver as glycogen. The body has limited storage capacity for CHO, and therefore when we use up our stores we need to replace them. Exercise depletes the glycogen stores and carbohydrate rich foods must be consumed to replenish liver and muscle glycogen.. Carbohydrate is the primary fuel for mid- high intensity exercise, fat is the predominant fuel choice at rest or during very low intensity exercise.

Why are carbohydrates so important?

- Prevents fatigue during training/increases endurance/power/training capacity
- Low CHO diets associate with lethargy, weakness, loss of power, decreased training capacity, low mood,
- It is important to note that during injury/training induced muscle damage – damaged muscle takes longer to replenish glycogen stores
- Under-eating/Low CHO diets increases Cortisol Levels (stress hormone) associated with decreased immune function, in addition exercise also increases stress hormones.

TRAINING TIME	**DAILY CARBOHYDRATE NEEDS g/kg**
3-5 hours per week	4-5 g/kg
60-90min per day	5-7g/kg
90-180 min per day	7-10 g/kg
180 mins +	11-13g/kg

Before, during and after training/racing	**Carbohydrate needs**
Before training/racing to increase carbohydrate availability	1-4g/kg 1-4 hours before event
During moderate intensity/intermittent training	0.5-1.0g/kg/hr or 30-60g/hr
Recovery after training	1g/kg immediately after training
How much do I need????	**Do the maths :)**

Example—athlete training 90 mins per day needs 7X60g of CHO per day = 420g CHO per day. 1 to 4 hours before a training session she needs between 60 & 240g CHO, during training she needs between 30-60g per hour and after training she needs a snack containing 60g CHO

CARBOHYDRATE RICH FOODS

1 large baked potato = 70g
1/3 plate pasta = 64g
1/3 plate rice = 69g
1 bowl cereal = 40g
1 glass orange juice = 13g
1 carton yoghurt = 27g
500m energy drink = 44g
2 slices toast = 34g
1 cereal bar = 20g
2 bananas = 46g
1 bowl porridge = 73g
4 shredded wheat = 68g
1 bowl muesli = 40g
2 handfuls figs/dates/apricots = 41g
2 weetabix with skimmed milk = 37g
2 tablespoons raisons = 42g
1 bagel = 43g

1-2 HOURS BEFORE TRAINING/RACING

Porridge with low-fat milk, honey and fruit.
Breakfast cereal with low-fat milk and fruit juice
Toast with low-fat spread and jam/honey/syrup
Yogurt drink and a scone with low-fat spread
Pasta with tomato based sauce
Baked potato with tinned spaghetti or ratatouille
Vegetable soup and bread roll
Sandwich with lean meat/turkey and salad
Pita bread filled with chopped banana and honey
Low-fat creamed rice with dried fruit
Low-fat yogurt and fruit
Smoothie made with low-fat milk, yoghurt and banana/mango/berries

EATEN WITHIN 20 MINS OF FINISHING TRAINING (50G CHO & 10G PROTEIN)

Pot low-fat yoghurt + banana
Breakfast bar + flavoured milk
Ham/turkey/tuna sandwich
Protein containing sports drink
Fig rolls/Jaffa cakes + yogurt drink

2-4 HOURS POST TRAINING

Dinner based on a starchy carbohydrate food, e.g. spaghetti bolognaise, tuna pasta or a chicken and rice dish

REMEMBER TO CHECK THE FOOD LABELS FOR CARBOHYDRATE CONTENT PER SERVING AND TAKE A NOTE OF HOW MANY SERVINGS YOU ARE CONSUMING!

PROTEIN

Protein – building blocks for body, repair of damaged tissues, essential for training adaptation & immune function. Our bodies are constantly remodelling and replacing all the structures and tissues with new ones. This is called protein turnover and the average healthy adult turns over 0.6g/kg of body weight per day. In order to meet this requirement the recommended dietary intake is set at 0.8g/kg per day. However athletes have a slightly higher protein turnover than sedentary people as they are constantly placing stressful physical demands on their bodies in order to bring about a training adaptation making stronger, fitter or faster than previously. It is now widely accepted that athletes such as require 1.2-1.8g/kg body weight per day. However as athletes are generally consuming more calories than their sedentary counterparts they are usually able to meet their increased protein needs through their daily diet. The average diet contains 12-15% protein and the 2 examples below show that both these athletes can meet their daily requirements through their normal diet. There is no benefit from excess protein in the diet as this will only place additional stress on the kidneys and may reduce essential carbohydrate in the diet.

- 70 kg Athlete (12-15% protein)
  3000 kcal = 90-112 g protein = 1.3 -1.6 g/kg body mass
  5000 kcal = 150-188 g protein = 2.1-2.7 g/kg body mass

- 60 kg Athlete (12-15% protein)
  2000 kcal = 60-75 g protein = 1.0-1.3 g/kg body mass
  3000 kcal = 90-112 g protein = 1.5-1.9 g/kg body mass

Low protein diets

- Reduced adaptation to training – increased catabolic stress.
- Underperformance/Overtraining/Under-recovery.
- Decreased immune function.
- Loss of lean tissue – reduced power/strength/performance
- Adequate intake is absolutely vital for optimum performance!

Female athletes need 3 Protein Servings Daily
1 serving = Meat, poultry, fish, quorn, tofu (size of a deck of cards), 2 medium eggs, pulses (size of palm of hand).

- 1 chicken fillet – 39g protein
- 1 lean fillet beef – 31 g protein
- 1 cod fillet – 25g protein
- I small tin tuna – 24g protein
- 1 thick slice cheese – 10g
- 1 handful peanuts – 12g
- 1 small tin baked beans – 10g
- 3 tablespoons chickpeas – 12g
- Half pack tofu – 8g
- 2 tablespoons Soya Mince – 8g
- 4 tablespoons Quorn – 12g
- 2 slices wholemeal bread – 7g
- 1 bowl pasta – 7g
- 1 bowl rice – 5g
- I protein recovery bar – 20g

REMEMBER TO CHECK THE FOOD LABELS FOR PROTEIN CONTENT PER SERVING AND TAKE A NOTE OF HOW MANY SERVINGS YOU ARE CONSUMING!

FATS

Healthy fats are essential for many key bodily functions – blood clotting, inflammatory response, hormone production, immune system & circularatory system. Healthy fats such as Omega 3 & 6 fatty acids have been shown to help prevent heart disease, reduce cholesterol and reduce risk of cancer – found in oily fish, nuts, seeds, olive oil, omega 3 fortified eggs/juices. Trans Fats (hydrogenated fats/oils) linked with heart disease & cancer – found in processed foods – biscuits, cakes, pastry's, and ready meals. These fats have **NO POSITIVE HEALTH BENEFIT – AVOID AT ALL COSTS!**

Athletes – 20-25% of energy from fats.

An athlete on a 2500kcal diet should consume between 55g and 70g of fat per day, with no more than 27g saturated fat and 5g Trans fat.

REMEMBER TO CHECK THE FOOD LABELS FOR FAT CONTENT PER SERVING AND TAKE A NOTE OF HOW MANY SERVINGS YOU ARE CONSUMING! TAKE A NOTE OF THE DIFFERENT TYPES OF FATS, AND CHECK IF HYDROGENATED FATS/OILS ARE USED IN THE INGREDIENTS.

EAT SMART

Eat a variety of different types and colours vegetables and fruits :

- Rich source of vitamins, minerals, complex carbohydrates.
- Rich source of phytochemicals – important for anti cancer effect, cardio protective effect
- Good source of soluble fibre
-

Eat plenty of wholegrain food

- Reduces the risk of colon, ovarian & breast cancer
- Reduces risk of cardiovascular disease

THE OLD SAYING REALLY IS TRUE – 'YOU ARE WHAT YOU EAT' AND IF YOU WANT TO BE A LEAN MEAN RACING MACHINE YOU NEED TO ENSURE YOU HAVE A DIET TO MATCH.