

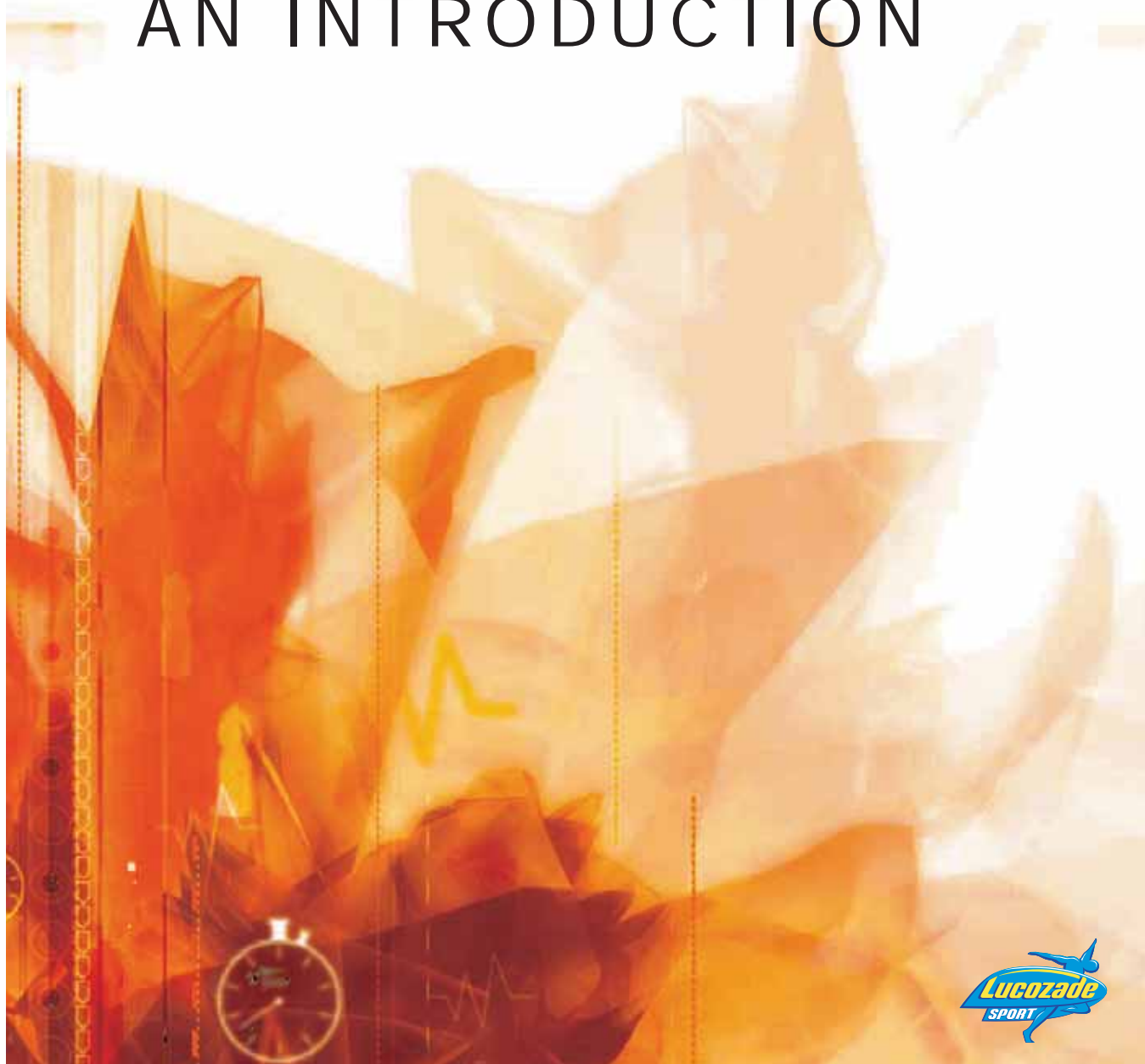
EMPOWERING IRISH SPORT



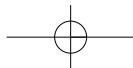
COACHING IRELAND  
OILIÚINT ÉIREANN

# NUTRITION

## AN INTRODUCTION



COACHING IRELAND THE LUCOZADE SPORT EDUCATION PROGRAMME



# NUTRITION

## AN INTRODUCTION

*“Aside from the limits imposed by heredity and the physical improvements associated with training, no factor plays a bigger role in exercise performance than does nutrition.”*

*Costill, 1998*

Athletes and coaches are more aware today than ever before of the importance and benefits of good nutrition, in relation to health and athletic performance. It is well established that what an athlete eats can affect his/her ability to train, recover and compete as well as their general health.

Improving your daily diet is the initial step to good health, supporting regular exercise and enhancing athletic performance. It is an essential ingredient in maximising your ability to train and perform. It may make the difference between winning and losing.

Food can be divided into three main nutrient groups - carbohydrate, fat and protein. To achieve a healthy diet we must have a balance of these nutrients, along with our daily requirements of vitamins, minerals and water.

The sportsperson's diet should be high in carbohydrate, low in fat and moderate in protein. These guidelines are consistent with healthy eating guidelines. Energy should be derived in the following proportions in an athlete's diet:

- Energy from carbohydrate 60-70% of total calories
- Energy from protein 10-15% of total calories
- Energy from fat should make up the remainder of the total calories ( $\leq 25\%$ )

### FUEL FOR SPORT

Carbohydrate and fat are the key sources of energy for exercising muscles. Carbohydrates are the main energy source for all exercise but in particular fuel the body for high intensity work such as sprinting and multi sprints. Fat is primarily the fuel burned for low - moderate intensity exercise such as long steady state running or swimming. Carbohydrates are the body's fuel for high intensity work such as sprinting and multiple sprints. The proportions of these fuels used during exercise depend on the exercise intensity, duration of the event, and the training and nutritional status of the individual.

### WHY A DIET HIGH IN CARBOHYDRATE?

Carbohydrate is stored as glycogen in the muscle and liver. During exercise, glycogen is broken down into glucose to supply the muscle with energy. Carbohydrate stored as glycogen in the muscle and liver is limited, and unlike fat, must be replenished on a daily basis. In contrast, fat stores in the body are virtually unlimited. Replenishment of glycogen stores in the body can be achieved by consuming a diet rich in carbohydrate (see sample daily eating plan).

Inadequate glycogen repletion may lead to:

- heavy tired muscles
- poor performance
- general fatigue
- negative effect on training and performance

### HOW TO START HEALTHY EATING FOR SPORT

Choose foods from the three main nutrient groups. Use the sample daily diet for your guide to achieving a healthy diet.

### CARBOHYDRATES

Carbohydrates are divided into two main groups - sugars (simple carbohydrate) and starches (complex carbohydrate). It is important to include generous amounts of a variety of carbohydrate containing foods at all meals and snacks. The athletes' diet should contain 60-70% of total calories as carbohydrate during the training season, mostly in the form of starchy foods, including those high in fibre. Sugary foods may be useful in maintaining a sufficiently high carbohydrate intake for athletes with high energy requirements.

### STARCHY FOODS

Eat larger amounts of these.

- Breakfast cereals / porridge

- Bread - all types
- Potatoes, pasta, rice, noodles and couscous
- Crackers, crispbread, rice cakes, oatcakes, pitta bread
- Pulses - peas, lentils, beans (baked, kidney, butter)
- Fruits - fresh, dried, tinned juices
- Root Vegetables (parsnip, beetroot, carrots, sweet potatoes)
- Thick crusty pizza bases (low fat topping)
- Low fat yoghurt and milk based drinks
- Plain popcorn
- Cereal bars, not sugar coated

### SUGARY FOODS

Eat smaller amounts of these.

- Sugar
- Jam, marmalade, honey, fruit spread
- Boiled sweets, jellies, glucose sweets
- Sweetened drinks, minerals
- Dessert - fruit crumbles, meringues, jellies
- Cakes - fruit cake, brack, fruit scones, fruit muffins
- Sugared cereal bars, biscuits, sugared - sweetened

cereal

- Popcorn - sugared not salted

Word of caution: Watch the fat content of desserts, cakes, bars and biscuits.

### FAT

Foods high in fat include butter, margarine, cooking fats and oils, cream, fried food, fat on meat, full fat dairy products, salad dressings, mayonnaise, nuts, crisps, chocolate, certain biscuits and cakes. Reduce the fat content of your diet to allow for a high carbohydrate intake. During the training season, your carbohydrate intake should be very high and your fat intake low, the latter comprising of  $\leq 25$  of total energy intake. It is important to meet these dietary recommendations, as fat in the diet provides essential fatty acids necessary for normal body function. Choose olive or sunflower based oils and spreads rather than butter or lard and try to include some "good" fats in your diet, eg those from oil rich fish like salmon, trout, herring, mackerel, sardines or



fresh tuna (not tinned).

## PROTEIN

Sources of protein in the diet are meat, poultry, fish, cheese, eggs, milk, nuts and pulses (peas, beans, lentils). In general, an individual consuming a varied diet will meet their requirements for protein that is 10-15% of total energy intake. Care must be taken with the fat content of protein foods by choosing low fat products, trim visible fat off meat and by grilling, oven baking, stewing, casseroles or microwaving instead of frying.

## RECOVERY FROM EXERCISE

Depletion of carbohydrate (glycogen) stores is one of the main factors which lead to muscle fatigue. It is necessary to replenish glycogen stores immediately after exercise to ensure adequate energy stores for your next training session or event. This will be achieved by eating foods high in carbohydrate.

Glycogen replacement is most effective in the first 2 hours after exercise. A 50g snack high in carbohydrate should be taken immediately after exercise. This can be in either liquid and/or solid form. Examples of suitable carbohydrate snacks include: 2 large bananas, or 3 slices of bread with jam/honey, or 1 large banana and 1 bottle (500mls) of isotonic sports drink. This snack should be followed within two hours by a meal high in carbohydrate.

## ALCOHOL

Alcohol has a high-energy content. It is however broken down very slowly by the liver and is not an effective energy source for the working muscles. A high weekly consumption of alcohol may provide energy above an individual's requirements. In this case the energy will be stored as fat. This may lead to an unnecessary gain in body weight and body fat. Alcohol is low in carbohydrate - 1 pint of beer contains approximately 10g of carbohydrate. Alcohol is a potent diuretic which means it will promote dehydration which may inhibit performance. These are the main reasons why most athletes avoid the consumption of alcohol as it negates athletic performance.

## HYDRATION

Adequate hydration before, during and after exercise is essential for optimal sports performance. This is a factor

often overlooked and it does not just apply to the elite athlete, but to all people involved in sport and physical activity.

## SUITABLE FLUIDS INCLUDE

- Water
- Commercial isotonic sport drinks (containing 6-8% carbohydrate)
- Homemade glucose solution (containing 6-8% carbohydrate)

## COMPETITION

Never try anything new prior to or on a competition day. In general, 3 days prior to a competition increase your intake of carbohydrate foods, taper your training and ensure adequate hydration.

## TIPS FOR A HEALTHY DIET

- Graze - eat little and often
- Never skip main meals especially breakfast
- Eat a snack high in carbohydrate immediately after exercise
- Watch the fat content of your food - start reading the labels
- Ensure you are well hydrated - always carry a fluid bottle
- Hygiene of your fluid bottles is vital (having your own bottle will also help you monitor how much fluid you are drinking) - don't pass bottle around the team
- Dental hygiene is very important if you eat refined carbohydrates and/or sip sports drinks, brush your teeth using a fluoride toothpaste and visit your dentist on a regular basis
- Organisation and planning are essential if you are to eat and cook healthy! Freeze any leftovers from dinner for days when you are pressed for time, but remember only to reheat once.

## SAMPLE DAILY EATING PLAN

### BREAKFAST

- Fresh fruit or fruit juice (which will also count as one of your five a day)
- Large bowl of wholegrain cereal/lowfat/skimmed milk, fresh fruits. White or wholemeal bread and low fat spread, jam/honey or marmalade
- Tea or coffee/low fat milk and sugar (if desired)
- Porridge with honey or golden syrup
- Pancakes with maple syrup

- Warm rolls or muffins with sliced banana, honey, marmite, jam, peanut butter
- Poached egg on thick sliced toast
- Grilled Tomatoes with thick sliced wholemeal toast
- Try making your own fruit smoothie with fresh fruit of your choice, milk and low fat yoghurt
- Baked beans on toast with mushrooms

#### MID-MORNING

- Tea, coffee, water or sports drink or fruit juice
- Banana or cereal bar
- Fresh fruit or scone or bread/rolls with low fat spread and jam/honey or marmalade or biscuits/cereal bar (low in fat)

#### LUNCH

- Pasta dishes with sauce are great, but try to avoid creamy sauces and mayonnaise as this will only increase the fat content of your diet
- Sandwiches are quick, easy and nutritious when you are on the go. Always choose thickly sliced bread as opposed to thin slices as they will contain more carbohydrate
- Baked potatoes with low fat fillings (beans/chicken/tuna). Try adding some cheese, which is high in calcium which is essential for bone health.
- Beans on toast
- Toast with banana and honey
- Couscous (quick and easy just add hot water) try adding some herbs/spices and some roasted vegetables adding to your 5 a day.
- Quick cooking noodles/rice/pasta
- Risotto made with tuna, lean ham or chicken
- Leek and potato soup
- Instant soups: which you just add water to, are handy on the go and are great with sandwiches. Check the labels first and chose options which are low in salt.

#### MAIN MEALS

- Deep pan pizza (thick crust will contain more carbohydrate), just remember to go for healthy toppings rather than meat and cheese options
- Rice/pasta with low fat meat and vegetable sauce
- Stir fry with your choice of meat and lots of vegetables – add your favourite herbs and spices
- Baked/poached fish with jacket potatoes and vegetables
- Roast chicken with jacket potato and steamed

vegetables

- Grilled chicken breast with mashed potato/sweet potato or boiled rice
- Macaroni cheese

#### SUPPER

- Tea, coffee, water or sports drink or fruit juice
- Sandwich with lean meat and salad filling or scone or biscuits/cereal bar (low in fat)
- Toast with yeast extract spread/jam/honey
- Try cereal such as weetabix, shredded wheat, cornflakes or muesli with low fat milk add dried fruits, nuts, honey or sugar for an extra carbohydrate boost.

## FURTHER READING

SPORTS AND EXERCISE NUTRITION (3RD EDITION), 2008

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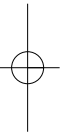
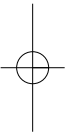
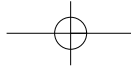
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LIPPINCOTT, WILLIAMS & WILLIAMS

FOOD FOR FITNESS, (3RD EDITION), 2007

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