Nutrition for Marathon Running
Sharon Rochester – Sports Dietitian

Individual dietary requirements

- Present & optimal body weight
- Present and optimal level of body fat/composition
- Dietary history – training days, race days, rest days
- Training - Types, Frequency, Timing
- Occupation
- Home situation and other lifestyle factors
- Any contributing medical factors – including nutrient deficiencies

Training nutrition goals in a nutshell

- Keep the athlete
  - well fuelled
  - in shape
  - healthy
  - hydrated
  - sane!

DISTANCE RUNNING

- Places significant demands on both aerobic and anaerobic power systems of the body.
- Places significant demands on the body's fuel stores.
- Nutrition has a key role in both the training and competition phases of the sport.

DISTANCE RUNNING

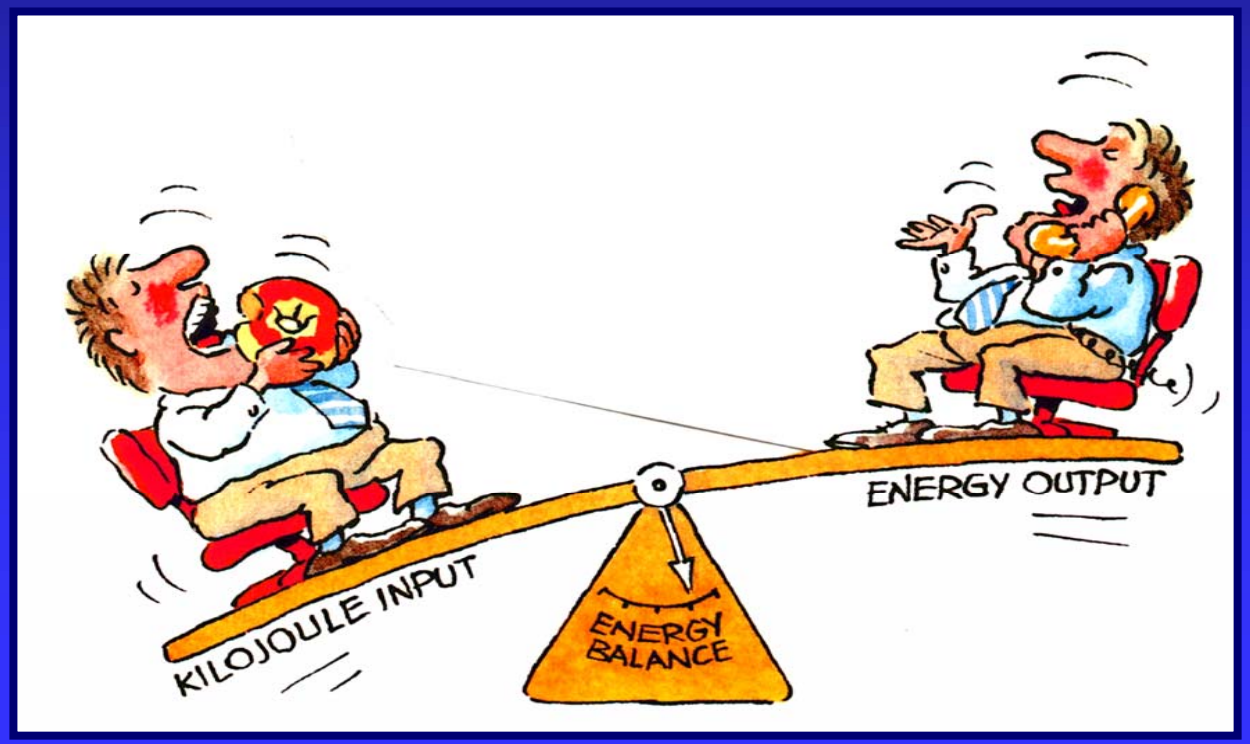
- Training includes:
  - Long runs
  - Speed work
  - Race-pace training
  - Time trials
  - Rest days

PHYSIQUE

- Successful runners are known for a high aerobic capacity
- Light build with low levels of body fat
  - Males <40mm
  - Females <60mm
- Body mass determines total energy cost of running – body fat is dead weight that has to be carried over the ground.

TRAINING DIET

Keeping the daily needs balanced



Training Diet

- Goal is to prepare the runner to perform at best during competition.
- Everyday eating patterns supply the runner with the fuel and nutrients needed to optimize performance and to recover quickly afterwards
- Eating properly before, during and after training can help reduce fatigue and increase performance.

Choose enough carbohydrates - primary energy source for running

- Enhance training performance by:
  - restoring muscle and liver glycogen
  - maintaining blood glucose levels
  - providing essential vitamins and minerals
  - providing fibre

Decide what you goals are – performance or weight loss????

Daily carbohydrate requirement

- General sport & training activities **4-7g/kg**
  - (< 60-90 min/day or low intensity)
- Heavy training programs **7-10g/kg**
  - (>90-120 min/day)
- Extreme **10-12g/kg**
  - (6-8 hrs/day)
    - **spread over 4-6 meals/day**
    - **80-90% nutritious choices**

Eating Before Training

- Always eat before a training session
- Choose a light snack such as fruit, toast, sports bars etc
- If you can't manage solids try liquid sources of CHO
- Ideally eat approx. 30 – 60 minutes prior to a training session or what is practical.
- Keep to low fibre choices

Glycaemic Index (GI)

- Glycaemic Index (GI) - refers to the rate at which carbohydrate containing foods are digested and absorbed.
- **FOR RECOVERY - *MODERATE TO HIGH*** GI FOODS RECOMMENDED
- **BEFORE EXERCISE - *LOWER*** GI FOODS MAY BE USEFUL FOR SOME ATHLETES - longer lasting/more filling – very individual

High GI foods

- Sports drinks/carbo gels
- Rice Cakes/crackers
- Pretzels
- Water crackers
- Short grain Rice (calrose)
- Potato
- Bagel/baguette
- Melon/ pineapple
- Glucose lollies
- Cornflakes/ Ricebubbles
- Dates/ Sultanas
- Some muesli bars

Medium GI foods

- Ryvita
- Crumpet
- Sustain/ Just Right
- Couscous
- Soft drink/ Cordial
- Banana/ Paw Paw
- Corn
- Weetbix/Vita Brits
- Muffins/scones
- Some cereal bars
- Rye bread
- Honey sandwich (white bread)
- Pancakes/pikelets

Low GI foods

- Raisin toast
- Pasta/ noodles
- Mixed grain/stone ground wholemeal bread
- Muffins (cake like) eg apple
- Legumes (eg baked beans)
- Most fruits eg. Apple, pear
- Milk & yoghurt
- Sweet potato
- Oats/All bran
- Baked Beans/ Lentils

Eating during training

- Any runs over 60 minutes of high intensity or 90 minutes steady will require CHO
  - Sports drinks
  - CHO gels
  - Confectionary
  - Milk based drinks
  - Low fibre sandwiches

Carbohydrate requirements for recovery

- Energy demands of quality sessions are high – nutritional recovery is essential
- Minimum of 1g/kg (50-150g) as soon as possible (within 30 minutes)
- Followed by a substantial meal and additional fluids
- Studies show that it can take up to 5 days to replace energy stores post race

Increased rate of glycogen synthesis immediately after training

- Due to
  - Low glycogen levels
  - Increased enzyme action
  - Decreased glucose levels
  - Increased insulin levels
  - Increased blood flow to muscles

50g Carbohydrate snack choices

- 50-60g jelly beans or jelly lollies
- 2 1/2 carbohydrate gels
- 1 round of thick jam/honey/banana sandwiches
- 3 pieces of fruit (melon and pineapple are good choices)
- 2-3 muesli bars or 1 “sports” bar
- 3 rice cakes/corn thins with jam/honey
- 1 large/2 small cake style muffins, buns, scones
- 60g pretzels/rice crackers
- 2 large pancakes with lots of syrup
- bowl of pasta/rice with low fat toppings or cup of creamed rice
- 2 large baked potatoes

50g Carbohydrate fluid choices

- 600-800ml sports drink
- 800ml cordial
- 500ml juice or non-cola soft drink
- 250ml “carbo-loader” drink
- 250-300ml liquid meal supplement
- 250-300ml fruit smoothie
- 1litre of milk
- 600ml flavoured milk

Recovery snacks providing 50 g carbohydrate plus 10g protein

- 250-400ml meal supplement e.g. Sustagen or reduced fat milkshake/smoothie
- bowl of cereal and milk
- 2 x 200g tubs of fruit yoghurt
- 250g tin of baked beans and 2 slices of toast
- 1 round of sandwiches with protein and fruit
- 1 large baked potato with cheese filling
- some sports bars

Exercise increases protein requirements

- Contributes to small amount of fuel requirements
- More required in early stages of a training program
- Repair/recovery needs

Protein requirements for athletes

TYPE OF TRAINING	*grams protein/kg*
General sports activity	1g/kg
Strength training	1.2-1.7g/kg
Endurance training	1.2-1.6g/kg
Extreme training/competition	2g/kg
(e.g. Tour de France, high intensity strength + endurance)	
Adolescent athletes	2g/kg
Sedentary individual	0.8g/kg

- NB. Adequate energy intake is essential

Examples of 10 gram protein serves

Food	Serve Size
Milk -full cream	300mls
Yoghurt (fruit)	1 Tub
Cheese (hard)	30g
Cottage Cheese	70g
Lean meat	35g
Lean chicken	40g
Fish	50g
Eggs	2 small
Liquid meal supplement	150ml

Protein for recovery and immune function

- Protein in recovery meal - combined protein + carbohydrate stimulates muscle to take up amino acids
  - liquid/snack sources may be useful
    - meal supplement drinks/sports bars
- +ve protein balance may also help preserve immune function in athletes susceptible to overtraining

FATS

Choose a healthy fat intake

- To help meet adequate consumption of carbohydrate rich foods
- To assist in weight and body fat control
- Some mono- and poly-unsaturated fats provide essential fatty acids, vitamins and antioxidants (e.g. omega 3 for immunity)
- Aim for < 25% of energy intake

FLUID
&
HYDRATION

Dehydration

- Distance runners have large fluid requirements
- Water is the fluid of choice during the day and recovery runs
- Longer runs – Sports drinks are preferred fluid choice to help meet energy and electrolyte demands
- 2-3% weight loss affects aerobic capacity

Signs of dehydration

- Muscle cramps
- Fatigue
- Headache
- Nausea
- Concentrated urine

Sweat rates dependent on:

- Size of athlete
- Genetics
- Intensity of exercise
- Environment conditions

Pre-exercise fluid guidelines

- Don’t rely on thirst - plan drinking strategies
- Monitor morning body mass/urine colour
- Consider pre-exercise hyper-hydration if high levels of fluid loss likely (?sodium)
- Use high electrolyte sports drinks for athletes who struggle with hydration
- Drink 300-500ml before training/racing

During exercise fluid guidelines

- Assess fluid losses 1kg = 1litre
- Don’t drink more than expected losses
- Keep losses less than 2% body weight
- Practice drinking during training and learn the skills and tolerance for drinking on the run.

Gastrointestinal Symptoms during running

- Reflux – avoid fatty, spicy foods, alcohol, caffeine and chocolate especially on the day of training/racing
- Diarrhoea – caffeine, high-fibre foods, lactose rich foods, fructose rich foods and excessive protein or fat intake. Avoid eating for 3 hours prior to exercise
- A low residue diet may be needed on the evening before important events

RACE DAY

Fine tuning for the big day

Carbohydrate loading

- Marathon – 3 days high CHO diet with minimal activity
- ½ marathon – 1 day high CHO diet with minimal activity
- Aim 10g CHO/kg/day
- Aim is to super-compensate muscle glycogen stores that will likely be depleted during the event

CHO loading example – 65kg

- Breakfast: 2 cups cereal, 1 cup milk, 1 banana and 1 cup fruit juice
- Snack: 500ml cordial, 2 slices of toast with jam
- Lunch: 2 large rolls with fillings, 200g yoghurt
- Snack: low fat muffin, 1 cup fruit juice
- Dinner: 3 cups cooked pasta and sauce, 2 cups fruit salad with ice cream
- Snack: 2 crumpets with honey, 1 cup sports drink

Pre-event meal strategies

- Plan a good carbohydrate-rich meal and fluid intake for the night before (perhaps a late snack also if it will be an early start)
- Eat the breakfast ~2- 4 hours prior to the race
- Choose a comfortable meal size
- Meal selection may be very individual
- Carbohydrate snacks/drinks may be used to “top up” closer to the race

Pre-event meal - nutritional composition

- High carbohydrate (1-4g/kg)
- Low fat
- Low-mod GI choices (individual)
- Moderate/low protein
- Avoid excess fibre
- Liberal fluid
  - pre-event bolus 300-500ml in warm-up

Suggestions for pre-event meal

- breakfast cereal + reduced fat milk + fruit
- pancakes with syrup
- muffins/ crumpets/ toast with honey/jam
- raisin toast or vegemite toast
- fruit salad and yoghurt
- liquid meal e.g. a supplement or “smoothie”
- roll or sandwich with low fat filling or banana and honey

During the race

- Aim for 0.5-1g CHO/kg/hour or minimal 50g/hour
- Sports drinks
- Gels
- Lollies
- Sports bars/bread
- Likely to be much more that what you expect

Practice what you plan to eat on race day during your training sessions!!!!!!

Recovery goals post race

- **REHYDRATE**
- **REFUEL**
- **REPAIR**

Further Information

- Sports Dietitians Australia
  - www.sportsdietitians.com
- AIS sports nutrition department
  - www.ais.org.au/nutrition
- Sharon Rochester
  - srnrochester@optusnet.com.au
  - 0410 573 624