



**STATE
ACADEMY**
VICTORIA

Feeding Elite Athletes

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Why sports nutrition?

Optimum Nutrition
+
Optimum Training
=
**Optimum
Performance**



How?

- Overall health
 - Build health immune system
 - Prevent illness
- Body Composition
 - Increasing lean muscle
 - Controlling body fat levels
- Performance
 - Maintain endurance and speed
 - Stay mentally alert and prevent fatigue
 - Recover quicker from training and games
- Rehabilitation

Fuelling Footy – 3 phases

Phase	Goals
Pre Season (4-5 months)	• Gain strength & power • Gain speed & agility • Skill acquisition
In- Season (5-6 months)	• Maintain gains • Optimise game • Manage injuries
Transition (1-2 months)	• Rest • Rehab injuries • Build lean muscle • Reduce body fat

One size fits all?





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The Base Diet



Macronutrients

- Macro means nutrients we need in *large* amounts
 - Protein
 - Carbohydrate
 - Fat
- These nutrients provide **energy** in the form of **kilojoules** (or calories)
- To maintain weight we need to balance energy we eat with the energy we burn

Carbohydrates

- Best fuel for the body
- Carbohydrates are broken down to glucose (muscle and brain fuel)
- Stores are used quickly by the muscles, so they must be constantly replaced
- Low levels will cause fatigue / poor performance
- Important to match carbohydrate intake to training load
 - On a heavy training day, include plenty of carbohydrate rich snacks.
 - On rest/low energy output days ,reduce carbohydrate snacks or portion sizes



Nutritious Carbohydrate Foods

- Bread (wholegrain, fruit bread, white)
- Crumpets, English muffins
- Pasta, rice and noodles
- Breakfast cereals
- Fruit
- Potato and corn
- Legumes (beans, lentils)
- Cereal and breakfast bars
- Flavoured milk and yogurt



Refined Carbohydrate Foods

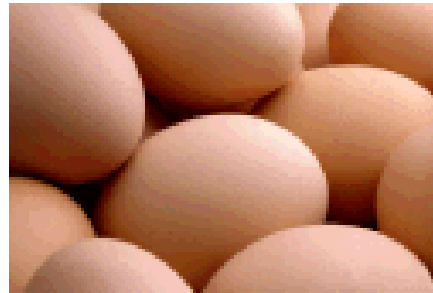
- Sugar
- Lollies
- Low-fat ice-cream
- Soft drinks
- Cordials
- Jelly
- Sports drinks
- Honey/jams
- Sports gels



Protein

- Protein is made up of amino acids - building blocks of muscles
- Important for healthy growth and development
- Helps repair damaged muscles and enhance recovery
- Requirements are increased with increased training intensity
- Most people eat plenty of protein - ***Timing*** of protein is more important than ***amount***
- Good quality protein snack after training can help recovery

Sources of high protein foods



Fat

- Body needs some fat for health
- Too much fat can displace energy needed from carbohydrate
- Not the body's preferred fuel source
- More difficult to control body fat levels with high fat diet
- Choose the "good" fats –found in fish, nuts, seeds, and avocado

What are some foods that are high in fat?



Tips for reducing fat

- Choose lean meats, skinless chicken, fish and seafood
- Limit butter and margarine
- Use spray oils and other lower fat cooking methods
- Limit addition of cream, high fat dressings and rich sauces
- Limit high fat snack foods such as chips, biscuits, cakes and pastries
- See '**Champion takeaway choices**' handout for healthier options

Micronutrients

"Micro" means nutrients that we need in *small* amounts.

- Vitamins
 - Water-soluble vitamins include vitamin C and the seven B- complex vitamins.
 - Fat-soluble vitamins include vitamins A, D, E and K.
- Minerals
 - Major minerals include calcium, phosphorus, chloride, magnesium, potassium and sodium
 - Trace minerals are chromium, copper, fluoride, iodine, iron, selenium and zinc.

Best to get these nutrients from food –more is not necessarily better!

Key Nutrients

- Iron to restore red blood cells and the iron that's depleted from sweat
 - Good sources are meat, chicken and fish
 - Cereals, vegies and legumes have smaller amounts
- Calcium for protection against stress fractures and bone strength
 - Teenagers need 1300mg calcium per day (adults 1000mg)
 - 3-4 serves dairy each day
 - Serve = 1 cup milk or 1 tub yogurt or 2 slices cheese

Putting it all together

- Carbohydrate is for fuel
 - Should make up most of the food
 - Choose “nutrient rich” sources
- Protein for power
 - Supports muscle growth and recovery
 - Choose lean sources
- Fat for flavour
 - Athletes need to limit fat
 - Look for low-fat and low-saturated fat options
- Add nutrients for health
 - Fruit and vegetables for vitamins, minerals and antioxidants
 - Supports immune system



Make a meal of it!

Include something from each group at every main meal

Protein

- Chicken
- Beef
- Lamb
- Fish
- Lentils
- Legumes
- Milk
- Cheese
- Yogurt

Carbohydrate

- Noodles
- Bread
- Pasta
- Rice
- Cous Cous
- Pita bread
- Cereal
- Potatoes

Add nutrients

- Vegetables
- Salad
- Fruit
- Milk
- Cheese
- Yogurt
- Nuts

Lunch ideas

- Bagel with vegemite & cheese
- Pita bread with tuna & salad
- Turkish bread with chicken & avocado
- Cold pasta spirals with salad vegetables and ham
- Mini pizza with cheese & pineapple
- Sandwiches:
 - Tuna/Chicken/Ham with salad
 - Chicken & avocado
 - Jam or light peanut butter
 - Ricotta, banana & honey



Snacks on the go

- Fresh, dried or canned fruit
- Plain popcorn
- Crackers with spread
- Low-fat yoghurt or fruche
- Creamed rice
- Scones and fruit buns
- Pre-cooked pikelets
- Cereal bars (look for 97% fat free)
- Baked beans or canned spaghetti
- Jellied Fruit Packs
- Milk shakes, smoothies or Up-and-Go



Dinner options

- Beef and vegetable stir-fry with rice or noodles
- Pasta with chicken or lean meat tomato sauce, add vegetables or serve with salad
- Chicken and vegetable risotto
- Grilled chicken and gravy rolls, with salad
- Home-made pizza (low-fat cheese, lean ham, vegies)
- Soup with pasta/noodles/rice and meat/chicken/legumes
- Baked potato with reduced fat cheese and sour cream
- Roast meat with vegies and bread roll
- Mild curry with vegetables and rice

What about supplements?



What is a sport supplement?

Supplements can be divided into two main categories:

- **Sports foods**

- Play a role in providing a practical alternative to food.
- E.g. sports drinks, sports gels, sports bars, liquid meal supplements

- **Nutritional ergogenic aids**

- Often contain unusual amounts of nutrients or other components of foods.
- Many of these chemicals are involved in exercise metabolism or recovery pathways.
- E.g. creatine, carnitine, or coenzyme Q10.

Supplement regulation in Australia

- **Sports foods**

- Fall under the Food Standards Australia New Zealand (FSANZ).
- FSANZ provides regulations about the ingredients and labeling of sports foods, and permits a limited number of claims to be made on the product package.

- **Supplements**

- Pill, potion or powder form fall under Therapeutic Goods Administration (TGA).
- Products only required to provide proof they don't contain ingredients that are banned
- The TGA does not require that a product has proof of its benefits.

Risks of using supplements

- Money being wasted on products that don't work
- Potential health risks and unwanted side effects
- Distractions away from factors that are proven to enhance health, recovery and performance
- A small but real risk of a positive 'doping' outcome



ASADA

- The Australian Sports Anti-Doping Authority is the organisation with responsibility for implementation of the World Anti-Doping Code in Australia.
- ASADA's position on supplements is that taking a poorly labeled dietary supplement is not an adequate defense in a doping hearing.
- Athletes should be aware of the dangers of potential contamination of supplements and of the principle of strict liability:
 - *athletes are ultimately responsible for any substance found in their body, regardless of how it got there.*

VFL player banned 2 years



Frankston's Matthew Clark was banned for two years after the banned substance dimethylamylamine was detected in his system after a match.

"I took it anyway. I thought it was all sweet. It was bought from a shop," Clark said.

18 month ban for fat-burner



- Wade Lees received an 18-month ban for importing a fat-burning supplement
- He did not know it contained traces of steroids
- He didn't even take the product

Jack3d linked to deaths

- Marathon runner Claire Squires collapsed less than a mile from the marathon's finish line
- The experienced runner had bought Jack3D online and used it during the race
- The product has since been banned in Australia and UK after being linked to several deaths



Who's responsibility is it?

AFL lays down law as players plead lack of drugs education

Mark Stevens | Herald Sun | August 15, 2012 12:00AM

A+ A- Print Email





Supplement Facts		
Nutrex Research Hemo Rage Black Ultra Concentrate	Per Serve	Per Container
	9.80g	30

It's *the players* responsibility

- Ultimate responsibility for use of any product lies with the athlete
- Each player is responsible for checking with a Sports Dietitian or Sports Physician before consuming **any** supplement or sports food not provided by the academy.



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AFL Academies Position



Nutritious Food First

- Sports foods and supplements are only provided if 'real food' options cannot be used to meet specific nutrient or energy needs at specific times.
- Players will only be offered sports foods and supplements if they have shown diligence in following a nutritious meal plan



Approved sports foods and supps

- The following slides list products which *may* be of benefit to academy athletes.
- The products should only be used as per the ***“Situation for Use”***
- This does not mean they are essential

Sports drink

- Sports drinks are ideal for higher intensity or longer duration training session or games
 - The carbohydrate provides fuel source for muscles.
 - The sodium helps drive thirst & retain fluid.
- They provide a convenient option for addressing fuel, fluid and electrolyte needs before, during and after exercise



Sports Gel

- Provides easily consumed carbohydrates to help meet fuel targets during long training sessions and games.
- Carbohydrate gels may cause *upset stomach* for some athletes.
- Practice using them in training first



Liquid Meal Supplement

- Carbohydrate-rich, moderate protein, low-fat product. Typically, fortified with a range of vitamins and minerals.
- Useful following key training sessions or games, to provide targeted amounts of protein and carbohydrate to promote repair/adaptation and refuelling.
- Portable, non-perishable and easily prepared



Sports bar

- Compact source of carbohydrate with variable amounts of protein and micronutrients
- Can be used to provide a practical form of energy following key training sessions or games to contribute to carbohydrate needs for refuelling.
- Some bars contain adequate protein content to contribute to muscle repair and synthesis



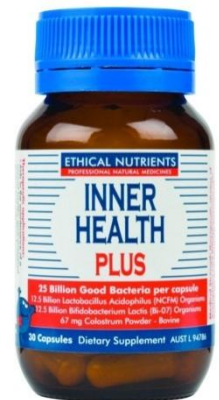
Electrolyte replacement

- Powders, tablets or ready to drink products containing (in particular), sodium and potassium
- Situations where replacement of electrolytes is warranted include:
 - Rapid rehydration following moderate-large fluid deficits
 - Replacement of large electrolyte losses during exercise in certain individuals with high rates of sweat loss and/or high sweat content of electrolytes
 - Prevention and treatment of dehydration during diarrhoea and gastro-enteritis (sports physician advice required).



Probiotics

- Live microbial food supplements “good bacteria”
- Athletes with a prior history of gastrointestinal problems during periods of heavy training may benefit from a course of probiotics
- Can be useful prior to and during travel periods to aid in reducing likelihood of gastrointestinal infection.



Vitamins and Minerals

- Supplementation vitamin and minerals may be justified when there is an unavoidable reduction in food/energy intake or the nutrient density of dietary intake is restricted:
 - A prolonged period of travel, particularly to countries with an inadequate or otherwise limited food supply
 - Sports physicians have diagnosed low levels



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Are supplements essential?



Recovery Plan

Rehydrate		• Work out fluid deficit • Replace 1500ml fluid for every 1kg weight lost
		• If sweat rate is high – include electrolytes (sodium & potassium)
Refuel		• Consume 1g carbohydrate per kg body weight within 30 minutes to start refuelling • E.g. A 70kg athlete would require 70-84g carbohydrate.
Repair		• Include 20-25g protein to repair and rebuild muscles

Electrolytes

If sweat losses are high include electrolytes:

- Vegemite
- Pretzels
- Hydralyte
- Soup
- Sports drink
- Milk



Recovery Plan

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Refuelling foods - Carbohydrate

Foods or Fluids containing 50g carbohydrate

Sports drink	700-800ml
Cereal bars	2 bars
Bananas	2 medium
Liquid meal supplement	250-300ml
Flavoured yogurt	2 x 200g tubs
Flavoured milk	600ml
Cordial	800ml
Dried fruit	4tbs or 80g
Sports gel	2 x 40g sachets
Jelly beans	60g

Recovery Plan

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Repair foods - High quality protein

Food containing 10g protein

Eggs	2 small
Cheese	30g
Cottage cheese	70g
Milk/flavoured milk	250ml
Skim milk powder	4tbs
Lean beef, lamb or pork	35g
Chicken	40g
Grilled fish	50g
Canned tuna/salmon	50g
Yogurt	200g
Custard	250ml

Supplements containing 10g protein

Sustagen Sport	120-150ml
PowerBar Protein	120-150ml
High protein sports bar	20-30g
High protein powder	15-20g

Nutrition Resources on Dartfish



'Drink up': Hydration

Hydration and performance

Staying hydrated is essential for proper hydration. Fluid deficits can have negative effects on performance. Athletes will become dehydrated if:

- Increased heart rate
- Impaired heart regulation
- Increased perceived exertion
- reduced mental function
- reduced skill level

Monitoring hydration status

The right amount of fluid to drink, intensity of exercise, weather conditions, simple methods of estimating dehydration.

Basic Sweat Rate Testing

You can easily estimate your fluid losses. Each kilogram (kg) of weight loss represents 1 litre of fluid lost.

1. Weigh yourself before exercise.
2. Weigh yourself after exercise.
3. Subtract final weight from initial weight.
4. The difference plus sweat rate for the duration of the exercise.
5. Divide this by the duration of the exercise.

Sweat rate (litres/hour) = (Weight loss (kg) / Time (hours))

Example Calculations:

Weight before training: 70kg

Fluid consumed: 1.5L

Fluid loss = Weight before (70kg) - Weight after (68.5kg) = 1.5kg

Sweat rate = Fluid lost (1.5L) / Time (1 hour) = 1.5L/hour

Sweat rate = 2.5 litres divided by 1.5 = 1.67 litres per hour

This athlete should aim to drink at least 1.67 litres per hour during the intensity of the activity and to replace the fluid lost.

Monitoring urine

Urine colour and quantity is an indicator of hydration status. Light coloured urine probably means you are hydrated.



Champion Takeaway Choices

Fast food and/or takeaway foods are often high in fat and calories, and low in fibre, vitamins and minerals. Whilst you can't beat a fresh meal, there are some healthier choices available. Here are some healthier choices.

Takeaway	Deliver C
	Low fat
	Low fat
	Low fat
	Low fat
	Low fat
	Low fat



Nutrition: Interest

Interstate travel is common for elite footballers. Some players may find it difficult to meet their nutritional goals while travelling which could impact performance. The following tips will help you achieve your nutritional goals, wherever you go.

Know your nutrition goals

The main nutrition goals when travelling are:

- Maintain energy levels
- Maintain your body composition & strength
- Avoid dehydration

Be prepared

When travelling you can't always rely on venues to provide the nutrition you need. Depending on the destination you may want to pack:

- Favourite foods which are unlikely to be available at the destination
- Snacks to supplement poor catering
- Special sports foods or supplements which are a regular part of your nutritional regime

Eat and drink well in transit

Flying increases fluid losses from the skin and lungs, so it is important to drink plenty of fluids such as water, sports drink, flavoured milk, juice or soft drink. Remember to:

- Pack your own drink bottle
- Aim for 300ml fluid per hour
- Don't be afraid to ask for extra water

The meals offered on a flight may not be appropriate for athletes. You may want to take a supply of suitable snack foods to supplement the meals provided. Good snack choices include cereal bars, sports bars, liquid meal supplements, fruit, and dried fruit & nut mixes.

Athletes with reduced energy needs may not need all the meals and snacks provided during flights. Drinking fluid, such as diet soft drinks and chewing sugar free gum can decrease the temptation to snack excessively during flights.

Long hours of travel can upset your digestive system. To minimise constipation, drink plenty of fluids and eat fibre-rich foods such as fresh fruit, wholemeal bread, breakfast cereals and vegetables.

Remember re

Good recovery is essential for athletes, especially multiple games. Recovery, quality within 30 minutes.

Refuel:

muscle fuel (glycogen).

Rehydrate:

Replenish sweat with a sports drink.

Repair:

muscle damage.

50g

- 600ml H₂O
- Fruit 50g
- Two cups
- Bread 50g
- Baked 50g
- 2 pieces
- 2 crumpets

Make good mi

When it comes to your nutrition gi

screened by a te

to think about

Snack or dining

- Include carb
- Avoid high f
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- Don't conce
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- Remove you
- Once you ha
- Yourself exp

Take-away

Sometimes take

travelling, for in

takeaway choice

Choices that she



Performance Nutrition Assessment

Name:

Date:

Nutrition related goal:

Nutrition Goals	Always	Most of the time	Not enough
Goal 1			
Eat breakfast as soon as possible after I wake up			
Start drinking water or other fluids when I wake up to pre-hydrate for the day's workouts			
Plan meals and snacks so I eat every 3-4 hours during the day to properly fuel my body			
Balance my plate at meals with 1/2 protein (meat, fish, beans, cheese, milk, yogurt,) and 1/2 carbohydrates (grains and cereals, bread, pasta, rice, noodles, fruits, potatoes)			
Eat 3-4 hours before practice to fuel my muscles, ahead of time (mostly high-carbohydrate foods; no fried foods before workouts)			
Include "good fats" in my diet that may help with recovery, including nuts, seeds, fish, olive oil			
Maximize recovery nutrition after intense workouts by eating or drinking recovery fuel (fluids, carbs, & protein) within 30 minutes of completing exercise			
Eat at least 2 pieces of fruit and 2 cups of vegetables a day to boost natural nutrients and antioxidants			
Eat or drink at least 3 high-calcium sources (milk, cheese, yogurt)			
Drink fluids throughout the day and sports drinks during hard workouts			
Bring snacks with me during the day so I can stay fueled with energy			
Recognize that my nutritional needs are different than friends and family members who are not athletes			
Consider my diet as a key part of my training regimen to help reach my athletic potential			



Performance Nutrition

MY

3 Day Food & Activity Diary Instructions

ful tool to analyze your dietary intake and ensure up. To ensure feedback and advice given to you is tely record your food intake, personal information on goals. Please fill in as much details as you can.

ins questions about your contact details and you can fill out, the better the interpretation will

over three consecutive days, including one weekend et up for each day.

time of the day you eat or drink. Make sure you s specific as you can about the food type and ks in the drink category. Include any supplements ements you are taking. Incomplete forms cannot be

training or competition, including workout length,

Description of food or meal / Training

Just Right Cereal

Low-fat milk

60 minutes skills training, 3km run

Sports drink

Banana

eted diaries to sports dietitian Glenys Zucco at

mmentations will be given according to diet and



Want More Information

- Sports Dietitians Association
www.sportsdietitians.com.au



- AIS
<http://www.ais.org.au/nutrition/index.asp>
<http://www.ausport.gov.au/ais/nutrition/recipes>