

Rugby League

A game of short bursts of play

Physically challenging due to injuries, soft tissue damage and bruising, caused by heavy contact and tackling

Even higher carbohydrate intake needed if muscles are damaged

Fuel stores not expected to be depleted during a game, provided that muscle glycogen levels have been successfully restored since previous game

Eating carbohydrate following game or heavy training session promotes recovery

Forwards	Heavy, with large muscle mass Higher body-fat level
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Backs	10-20 kg lighter, lower body fat
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Rugby League Folklore/Tradition

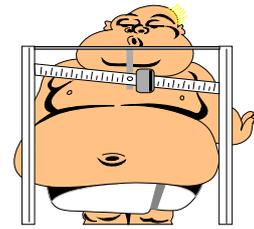


High protein Diet during Week

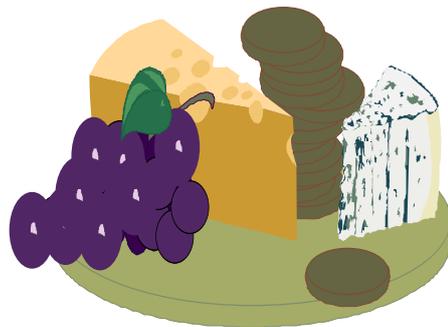
Pre Match Steak and Eggs

**Carbohydrate and Pre-game/night before
Concern**

Common Nutritional Issues For Rugby League Players



- **Recovery Nutrition**
- **Fluid Intake During Matches and Training**
- **Gaining Muscle Mass (bulking up)**
- **Body Fat Control (off-season)**
- **Alcohol Intake**
- **Pre-game Meal**
- **Food Knowledge and Cooking Skills**



Bulking Up

For muscle gain there are only 3 real requirements

1. Genetic Potential Did you choose the right parents with the correct body type?
2. Weight Training Muscles need stimulation to grow
3. High Energy Diet More of everything, including protein

Carbohydrate is still the most important, since the muscle must be fuelled to do the work to stimulate it to grow

Set Realistic Goals 0.5 kg per week is maximum expected

Seek Expert Advice Strength coach set program of progressive muscle overload

Dietitian to support this with a high energy diet

Measurements of Body fat levels
Muscle Circumferences

Fluid Intake During and After Training and Games

The extended Rugby League season results in matches and training sessions being held in the heat.

Rugby League players, with their large muscle mass and perhaps high body fat levels, often have poor heat tolerance compared with other athletes.

Special attention needs to be paid to improved drinking practices:-

- 1. During and after training**
- 2. During and after the game**

Drinks should be available at all times during training and at intervals in the game.

What is the best drink?

WATER

Carbohydrate is not needed during the time of a Rugby League Match, but may be required during a long and strenuous training session.

Cordial or a sports drink can supply fluid during a match without disadvantage, and is the best way to begin recovery nutrition after a heavy training session or exhausting game.

Training Diet Goals

- 1. To provide basic nutrient requirements, including meeting the additional needs arising from a strenuous exercise program.**
- 2. To incorporate nutritional practices that promotes long-term health and avoids the chronic disease patterns of affluent western countries.**
- 3. To achieve and maintain appropriate body mass and level of body fat.**
- 4. To promote optimal return from training by providing a nutritional environment that allows for recovery between training sessions and for physiological adaptation.**
- 5. To include experimentation with intended competition nutrition practices so that familiarisation and acclimatisation occur.**

**Recovery Nutrition is extremely
Important**

**EATING CARBOHYDRATE IMMEDIATELY
AFTER HEAVY TRAINING OR A GAME
IS ESSENTIAL FOR REPLENISHING
GLYCOGEN STORES**

How much carbohydrate should you eat?

1 gram per kilogram body weight within the first 10-15 minutes after exercise

and again every 2 hours until you get to your normal high carbohydrate meal routine.

This means 50-100 grams of carbohydrate at each snack, depending on your size.

- **Remember that muscle damage will delay glycogen synthesis**

Amount and timing of post-exercise carbohydrate is even more crucial for damaged muscles.

Muscles will respond more efficiently during the first 24 hours after exercise, so pay special attention to carbohydrate then.

Checklist for a Well-Stocked Pantry and Fridge

Handy foods for long-life storage

- Skim milk powder
- Wholegrain breakfast cereals
- Rolled oats
- Canned beans - baked beans, bean mix, kidney beans etc
- Packet of beans and lentils
- Two-minute noodles
- Wholemeal rice
- Pasta and noodle varieties
- Canned seafood – crab meat, mixed seafood etc
- Pasta sauces
- Canned soups – especially low salt and main meal varieties
- Canned tomatoes, tomato puree, tomato paste
- Canned corn and champignons
- Rice cakes
- Sustagen or Exceed Sports Nutrition Supplement
- Herbs and spices

Medium-term freezer storage

- Frozen vegetables – single varieties and mixed vegetable combinations
- Bread
- Skim and low fat milk
- Low-fat ice cream
- Meat, fish, poultry

Perishable food items for short storage

- Fruit juice
- Skim and low fat milk
- Bread
- Fresh Fruit
- Fresh vegetables
- Meat, fish, poultry
- Eggs
- Low fat yoghurt
- Cottage cheese
- Reduced-fat cheese
- Margarine or butter (shouldn't need to be replaced often)

Protein

Essential for building and maintaining body tissues

Basic units of protein - Amino Acids

**21 amino acids - 9 essential
 - 11 non essential**

Animal Proteins contain all essential amino acids

Meat, fish, poultry, eggs, dairy products

Vegetable Proteins lack one or more essential amino acids

Dried beans, peas, legumes, cereals, grains

Vegetarians must combine vegetable proteins to obtain complete range of essential amino acids

Recommended Daily Protein Intake

For non-exerciser	1g/kg body weight
Endurance athlete	1-1.2g/kg body weight
Strength/Power athlete	1.3-1.6/kg body weight

Growing children

Adolescents

Up to 2g/kg body weight

Pregnancy/lactation

**Prolonged heavy
Endurance exercise**

WHY?

**TRAINING AND COMPETITION BOTH DEMAND
GREATER AMINO ACID RETENTION DUE TO
MUSCLE DEVELOPMENT AND INCREASED
BLOOD VOLUME REQUIRED.**

EXERCISE - **Protein Synthesis**
 - **Protein Catabolism**

Protein only provided 5-15% energy for exercise.

**High carbohydrate diet spares protein from being
used as fuel for exercise.**

Protein Content of Dietary Components

Servings of Food	Protein (grams)
5 slices of bread	15
2 weet bix	3.6
1/2 cup muesli	7
1 cup pasta, cooked	8
1 banana	2.3
1 orange	1.3
3 slices cheese	13.5
2 scoops ice cream	1.9
3 cups reduced fat milk	31.5
1 tub low fat fruit yoghurt	10.1
4 teaspoons peanut butter	6.8
1 spear broccoli	2.4
1/2 cup corn	2.8
1/2 cup mashed potato	3.1
1/2 cup coleslaw	3
1/2 cup baked beans	6.4
1 boiled egg	6.3
1/2 cup tuna//salmon	24
SUB TOTAL	149
Blade steak, grilled 120 g	33
2 chicken drumsticks	24
GRAND TOTAL	206

For a 75 kg male, 149 grams of protein is well above the 1.2-1.7 grams per kg body weight recommended for weight training athletes.

This can obviously be achieved without large quantities of high protein foods or supplements.

Dietary Fats

Obvious

Oil
Margarine
Butter
Dripping
Lard
Copha
Cream
Sour Cream

Hidden

Fatty Meats
Chicken Skin
Fried Foods
Pastries
Biscuits
Cakes
Chocolate
Crisps and Snack Foods
Nuts

- **Cheese**
- **Ice Cream**
- **Yoghurt**
- **Full Cream Milk**

Salad Dressings
Creamy Sauces

- **Low fat alternatives available.**

Quick, Low-Fat and Nutritious:

- **250-350 ml of liquid meal supplement (Exceed Sports Nutrition Supplement or Sustagen) or a home-made low-fat milk shake or fruit smoothie**
- **Cup of thick vegetable soup with a wholemeal roll**
- **Salad sandwich and a piece of fruit**
- **Carton of low fat fruit yoghurt and a muesli bar (not chocolate)**
- **Large baked potato (250-300 mg) with low-fat filling and a glass of skim milk**
- **Bowl of cereal with skim milk**
- **Bowl of fruit salad with 1/2 carton of low-fat fruit yoghurt**



Fat Meter

The foods listed are the main sources of fat in the diet.

To determine your approximate daily fat intake:

1. In Column B, note the serves of each food you eat daily
2. Multiply Column A by Column B to give you the amount of fat eaten (Column C)
3. Add up all the figures in Column C. This is your total daily fat intake.

Type of Food	Average Serve	Column A	Column B	Column C
		Fat per serve (gm)	No. of serves	
Butter, margarine, cream	1 teaspoon	4		
Lite spread"	1 teaspoon	2		
Oil	1 teaspoon	5		
Cakes	1 slice	5		
Puddings, cheesecake	1 serve	10		
Fruit Pies	1 slice	23		
Biscuits - plain sweet	1	2		
- cream	1	5		
Eggs - boiled	1	5		
- fried	1	8		
Fish - steamed	1 fillet	1		
- fried	1 fillet	12-22		
Meat - steak	100 g	6-15		
- hamburger	1	17		
- sausage roll, pie	1	26		
- chops (midloin)	2	11-30		
- bacon	1 rasher	5-9		
- devon	2 slices	13		
- frankfurt	1	15		
- chicken	100 g	4-15		
Cheese - cottage	1 tblspn	1		
- hard	20 g slice	7		
Icecream	2 scoops	5		
Milk and Yoghurt - skim	1 cup	0.2-2		
- whole	1 cup	10		
Nuts, peanut butter, seeds	20 g	10		
Avacado	1/02	27		
Chocolate	25g	7		
Snack Bar	1	10		
Total Fat Intake				

Fat should not contribute more than 35% of your total daily energy intake. For a diet of 8000 KJ (2000 cal). This means no more than about 75 g fat daily.

Fibre

Non digestible plant material

SOLUBLE **oats, fruits, vegetables,
legumes**

INSOLUBLE **wheat**

**BOTH PLAY DIFFERENT ROLES IN
REGULATION OF BODY PROCESSES**

SOLUBLE FIBRE **lowers cholesterol**

INSOLUBLE FIBRE **increases bowel regularity**

**FIBRE ALSO SLOWS DOWN SUGAR RELEASE
FROM CARBOHYDRATES INTO THE BLOOD
RESULTING IN MORE SUSTAINED ENERGY
RELEASE.**

High Energy Diet – Paradise ?????

Or an Impossible Chore?????

Hurdles:

- 1. Time - lack of time to buy and prepare food**

Subtract work, sleep, training etc. and all you have left is about 3 hours to consume about 25000 KJ (6000 cal)

- 2. Bulk of food**

High carbohydrate, high fibre diet means lots to chew and digest

- 3. Fatigue and loss of appetite after training**

- 4. Lack of access to suitable food at possible eating times**

- 5. Need to limit food intake prior to training to avoid gastrointestinal discomfort during exercise**

Examples of 50 gram Carbohydrate Snacks

Light and Easy to eat:

- **250 ml of carbo-loader supplement (Gatorlode, exceed High Carbonate Source)**
- **250-350 ml of Liquid Meal Supplement (Exceed Sports Nutrition Supplement or Sustagen) or a home made low fat milk shake or fruit smoothie**
- **800-1000 ml of sports drink**
- **800 ml of cordial**
- **500 ml of fruit juice, soft drink or flavoured mineral water**
- **50 g packet of jelly beans or jelly lollies**
- **1 round of jam sandwiches (thick sliced bread and lots of jam!)**
- **3 medium pieces of fruit (eg. Apple, orange and banana)**
- **Large Mars Bar (70g) – note that this is a high fat choice**
- **3 Muesli bars – also high in fat if chocolate coated**

Athletes at Risk of Developing
Vitamin Deficiencies

Pregnant Women

Growing Teenagers doing heavy training

Those on weight reduction or low energy diets

Vegetarians – especially vegan vegetarians

Those consuming a high proportion of take-aways



Those with a high alcohol intake

Maximising Iron Absorption

There are two different types of iron:-

HAEM IRON **in red meat, fish and poultry**

NON HAEM IRON **in bread, cereals, vegetables,
legumes, nuts and eggs**

**HAEM IRON FOODS are an ideal source of iron
because:-**

- **they are rich in iron**
- **haem iron is much more easily absorbed**

NON HAEM IRON is not well absorbed.

VITAMIN C increases its absorption.

**Red meat boosts the absorption of non-haem iron
from foods like vegetables by up to 4 times when they
are eaten together.**

Coffee and tea inhibit iron absorption.

Vitamins

Water Soluble

B

Thiamine **B1**

Riboflavin **B2**

Niacin

Pyridoxine **B6**

Cobalamin **B12**

Folate

Pantothenate

Biotin

C **Ascorbic Acid**

Fat Soluble

A

D

E

K

Minerals

Iron

Iron deficiency (with and without associated anaemia) is being observed with increasing frequency in athletes involved in intensive training programs.

Symptoms include:

- lethargy**
- tiredness**
- poor stamina**
- frequent infections**
- drop in performance**

Test for serum ferritin – indicates the level of stored iron in the body.

Calcium

Calcium is involved in bone formation and maintenance, nerve impulse transmission and muscle contraction. Therefore is very much involved in physical performance.

Most at risk is the female athlete who is amenorrhoeic and has reduced bone mass.

Caffeine and salt intake should be minimised, as both increase the excretion of calcium from the body.

