



FUELLING & RECOVERY



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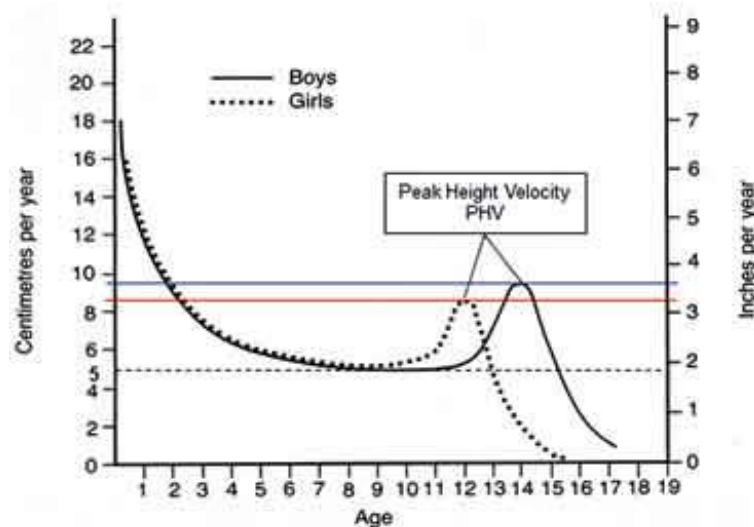
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Growth

Age / Height Graphs



For girls

- A major growth spurt occurs at the time of puberty, between 8-13 years
- The physique can change significantly over this time
- Growth usually complete by 15 years (or around 2 years after menstruation commences).

For boys

- A major growth spurt occurs at the time of puberty, between 10-15 years
- Associated with an increase in muscle mass
- Growth usually complete by 17 years but highly individualised.

Puberty has a huge impact on athletic performance.

Pushing athletes too hard at this stage can be detrimental both physically and psychologically, especially when they are already dealing with major changes in their lives.





Nutrition

Tips

- Eat to train, Eat to perform
- Eat enough food for growth and physical activity levels
- Eat plenty of fruit & vegetables; eat at least 5 or more servings a day
- Eat lots of different coloured fruits and vegetables
- Regular meals and snacks are important. Snacks are particularly important before and after exercise
- Eat a meal 3-4 hours before training or competing
- Eat a snack 45-75 minutes before training or competing
- Eat within 30 minutes after training or a game to re-fuel
- Recommended daily iron intake: Girls (14-8yrs) – 15mg/day, Boys (14-18yrs) – 11mg/day

Carbohydrates

- “Go food”
- Before, during and after training or competition fuel with **carbohydrates**.
- **Carbohydrates** are the main source of energy the body requires – at least 60% of your diet.
- Main source of fuel for the brain and muscles
- Wholegrain **carbohydrates** better choice
- Sources of **carbohydrates**:
 - ✓ Fruit
 - ✓ Rice
 - ✓ Pasta
 - ✓ Root vegetables – potatoes, kumara etc
 - ✓ Grains & cereals
 - ✓ Breads



Category	Description	Examples	Use for Athletes
Nutrient-dense carbohydrate	Foods & fluids that are rich sources of other nutrients including protein, vitamins, minerals, fibre & antioxidants in addition to carbohydrate	Breads & cereals, grains (eg past & rice), fruit, starchy vegetables (eg potato & corn), legumes & sweetened low-fat dairy products	Everyday food that should form the base of an athletes diet. Helps to meet other nutrient targets.
Nutrient-poor carbohydrate	Foods & fluids that contain carbohydrate but minimal or no other nutrients.	Soft drink, energy drinks, lollies, carbohydrate gels, sports drink and cordial.	Shouldn't be a major part of the everyday diet but may provide a compact carbohydrate source around training.
High-fat carbohydrate	Foods that contain carbohydrate but are high in fat	Pastries, cakes, chips (hot & crisps) and chocolate.	"Sometimes" goods best not consumed around training sessions.

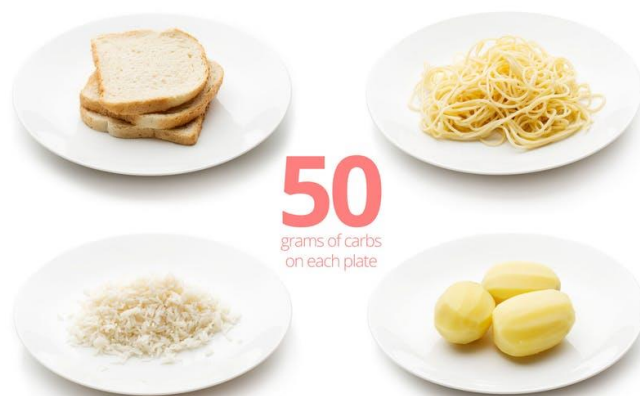
Estimated carbohydrate need for athletes based on activity level

Activity or timing	Recommended intake (per/kg body weight each day)
3-5 hours a week	4 – 5g
5-7 hours per week	5 – 6g
1-2 hours a day	6 – 8g
2 + hours a day	8 – 10g

Food Portions Providing 50g of Carbohydrate

CEREAL & BREAD	
Wheat biscuit cereal (eg Weet Bix)	5 biscuits
'Light' breakfast cereal (eg cornflakes)	2 cups
'Muesli' flake breakfast cereal	1-1.5 cups
Toasted Muesli	1 cup
Rolled oats	1 cup
Bread	4 slices white or 3 thick wholegrain
Bread rolls	1 large or 2 medium
Pita and Lebanese bread	2 pita
English muffin	2 full muffins
Crumpet	2.5
Muesli Bar	2.5
Rice Cakes	6 thick or 10 thin
Pancakes	2 medium
Rice, boiled	1 cup
Pasta or noodles, boiled	1.3 cups
Canned spaghetti	Large can

FRUIT	
Fruit stewed/canned in light syrup	1.3 cups
Fresh fruit salad	2.5 cups
Bananas	2 medium
Medium fruit (orange, apple etc)	3-4
Large fruit (mango, pear, grapefruit etc)	2-3
Grapes	2 cups
Melon	6 cups
Sultanas and raisins	4 Tbsp
VEGETABLES	
Potatoes	1 large
Sweet potato/Kumara	2.5 cups
Corn	1.2 cups creamed corn or 2 cobs
Baked beans	1 large can
Lentils	2 cups
Soy beans and kidney beans	2 cups
DAIRY PRODUCTS	
Milk	1 litre
Flavoured milk	560ml
Natural Yoghurt	4 tubs
Flavoured non-fat yoghurt	2 tubs
Creamed rice	1.5 cups
DRINKS	
Fruit juice – unsweetened	600ml
Fruit juice – sweetened	500ml
Fruit smoothie	250-300ml
Liquid meal supplement	250-300ml
SPORTS FOODS	
Sports drink	700ml
Sports bar	1-1.5 bars
Sports gel	2 sachets



Protein

- “Grow food”
- Needed for muscle growth and repair – aids in muscle recovery after exercise
- Eat quality **protein** foods for growing muscles eg beef, chicken, fish, eggs, legumes, nuts and seeds
- 1-2gm of **protein** /kg body weight/day eg 60kgs requires 60-120gms **protein** /day

Foods containing approx 10g of protein:

ANIMAL FOODS	PLANT FOODS
2 small eggs	4 slices (120g) wholemeal bread
30g (1.5 slices) low fat cheese	3 cups (90g) wholegrain cereal
70g cottage cheese	2 cups (330g) cooked pasta
1 cup (250ml) low fat milk	3 cups (400g) cooked rice
35g lean beef, lamb or pork (cooked weight)	3/4 cup (150g) lentils or kidney beans
40g lean chicken (cooked weight)	200g baked beans
50g grilled fish	120g tofu
50g canned tuna or salmon	60g nuts or seeds
200g low fat yoghurt	1 cup (250ml) soy milk

Reference: Sports Nutrition for New Zealand Athletes and Coaches, J. Pearce, I. Helleman & N. Rehner, Raupo Publishing, 2002.

Make healthy protein choices



Fat

- Fats are found in animals and plants
- Source of energy - fat stores are utilised in exercise once carbohydrate stores are depleted
 - Occurs in long duration aerobic exercise
- Not needed in recovery meal
- Good fats should be included in a healthy balanced diet
- Aids in satiety
- Saturated Fat
 - Mainly animal foods
 - Fat on meat, takeaways, potato chips
- Unsaturated Fat
 - Mainly plant products
 - Vegetable oils, nuts, seeds, avocado, oily fish
- Research has shown that Omega-3 fatty acids can aid in the reduction of muscle soreness. Omega-3 fatty acids are found in foods such as fish and flaxseed
 - Tuna, salmon, anchovie
 - Walnuts, chia seeds, soybeans, oats, flaxseed



Nutrients

Iron

- Helps carry oxygen from the lungs to the muscles
- Low iron may make you feel tired/fatigued
- You may also have more frequent colds and flus

Best sources of iron are mussels and lean red meat. You can also get iron from vegetables, nuts and seeds but this type of iron isn't as well absorbed as the iron in lean meat.



Calcium

- Calcium is one of the most important nutrients for developing bone mass
- 90% of bone mass is achieved by the age of 17

Best sources of calcium are dairy products & sardines



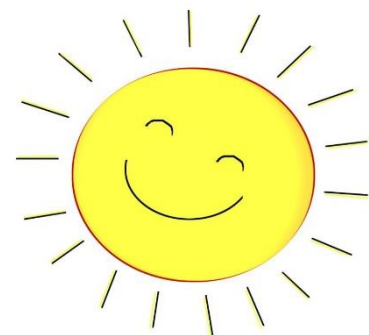
Vitamin D

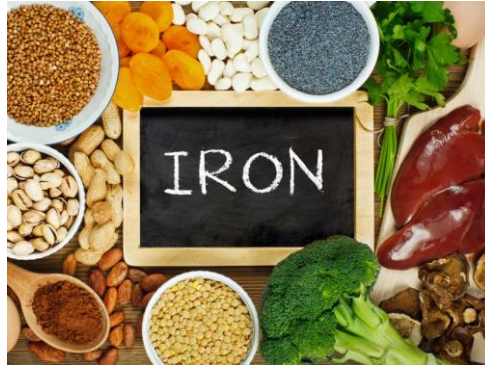
Vitamin D is needed for:

- Calcium absorption
- Immunity
- Muscle function

The body can get Vitamin D two ways:

1. Through direct sunlight. Approx 15mins of sun per day (before 11am or after 4pm)
2. Diet: oily fish, liver, kidneys, fortified foods.





Recommended daily intake of iron:

Girls (14-19yr) – 15mg/day

Boys (14-18yr) – 11mg/day

Women (19-50yr) – 18mg/day

Men (19-70yr+) – 8mg/day

Food	Portion Size	Iron (mg)	1 Point = 1mg iron
Haem iron foods			
Grilled lean beef fillet steak	173g	5.8	6
Green muscles marinated	½ cup	7.5	8
Grilled lean lamb steak	116g	4.0	4
Lamb liver fried	1 slice	4.0	4
Canned salmon	90g	2.1	2
Grilled Chicken breast	107g	2.0	2
Grilled lean pork	74g	1.2	1
Baked Tarakihi fillet	80g	0.8	1
Non-haem iron foods			
Tofu	100g	5.4	5
Porridge	1 cup	1.3	1
Wheat biscuits	1.5 biscuits	1.5	2
Red Kidney beans	½ cup	2.0	2
Cooked boiled lentils	½ cup	1.2	1
Fruity muesli	½ cup	1.9	2
Cooked chickpeas	½ cup	1.6	2
Boiled broccoli	1 cup	0.9	1
Baked Beans	½ cup	1.6	2
Dates	10	1.3	1
Boiled Spinach	1 cup	2.5	3
Boiled egg	1	0.9	1
Multigrain bread	1 slice	0.7	1



Recommended daily intake of calcium:

Girls & Boy 12-18yrs – 1300mg/day

Women 19-50yrs – 1000mg/day

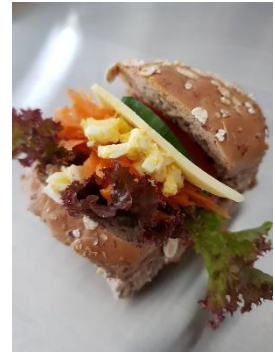
Men 19-70yrs – 1000mg/day

	FOOD	Portion Size	Points	Calcium (mg)
300+	Milk – calcium fortified, trim	1 cup	10	510
	Yoghurt – Greek style	1 cup	9	460
	Liquid breakfast eg Up & Go	1 cup	9	450
	Sardines – canned, drained	100g	11	550
	Milk – reduced fat	1 cup	7	330
	Milk – standard	1 cup	6	310
100+	Soy milk – regular	1 cup	6	290
	Milk – flavoured	1 cup	5	251
	Yoghurt – low fat, flavoured	1 pottle	3	130
	Baked beans in tomato sauce	1 cup	2	100
	Cheese – cheddar, edam, Colby	1 slice	3	160
	Silverbeet – boiled	1 cup	2	110
	Tofu – firm	100g	2	110
	Ice-cream – vanilla, standard	1 cup	4	196
50+	Dried figs	3 figs	1 ½	80
	Chickpeas	1 cup	2	90
	Red salmon, canned in water	100g	2	93
	Bread - multigrain	2 slices	2	82
	Natural muesli	1 cup	1 ½	72
	Bok Choy	1 cup	1	59
	Boiled egg	2 eggs	1	56
	Broccoli	1 cup	1	52
30+	Dried apricots	6 apricots	1/2	32
	Almonds – skin on	10 almonds	1/2	30
	Orange	1 orange	1	37
	Muesli bar	1 bar	1/2	24
	Carrot	1 carrot	1/2	24
	Kumara - boiled	1 medium	1	33
	Cheese – cottage cheese	5 Tbsp	1	45

Nutrition before Exercise - Fuel

Meal ideas: 3-4 hours before

- Crumpets with jam or honey and flavoured milk
- Small bowl of pasta/rice
- Roast vegetable salad
- Baked potato with filling (eg baked beans, corn)
- Bread roll - fillings (chicken or tuna or beef, salad)
- Toasted sandwich - fillings ham, cheese, sweetcorn, baked beans
- Corn thins – toppings peanut butter, cheese, avocado
- Breakfast cereal with milk



Snack ideas: 1-2 hours before

- Liquid meal supplement eg Up n Go
- Fruit and yoghurt
- Fruit smoothie or milk shake
- Banana
- Creamed rice with fruit
- Small bowl of cereal with fruit and milk
- Nuts and dried fruit
- Cereal bar with nuts



Nutrition during Exercise

Carbohydrate is mainly used during exercise. Depend on the duration and intensity of training/game.

- Less than 60 minutes – generally no nutrition required
- More than 60 minutes and moderate to high intensity – 30-60gm per hour
- Options – sports drink, sports gel, sports bar, fruit

Nutrition after Exercise - Recovery

Best within 30 minutes after training or a game – include a good protein source to aid muscle recovery

- Yoghurt and a banana
- Flavoured milk and fruit
- Homemade smoothie with fruit, milk and yoghurt
- Wholegrain breakfast cereal with milk
- Chicken and salad sandwich
- Peanut butter on wholegrain toast bread
- Bread roll with meat/tuna, salad.
- Poached eggs on wholegrain toast
- Replace fluid losses



Homemade Smoothie Recipe

18g protein
44g carbs

- 2 Tbsp of yoghurt
- 1 large banana
- 200ml low fat milk
- 2 Tbsp milk powder

Blend and serve cold



Homemade Shake Recipe

17g protein
31g carbs

- 2 Tbsp skim milk powder
- 2 Tbsp milo or Nesquik
- 200ml low fat milk

Blend/shake and serve cold



Example of a Typical Day – Athlete

Time	Event	Advice
6am	Pre early morning training	Bread with jam and/or honey OR a banana AND water
6.45am	Early morning training 60mins	
8am	Post train meal BREAKFAST (within 30 minutes of training)	Natural muesli with low sugar yoghurt, fruit and milk OR Poached eggs on wholegrain toast OR Cooked oats with low sugar yoghurt, fruit and a <u>hard boiled egg</u>
10am	Morning tea	Natural yoghurt and fruit OR Wholegrain crackers and cheese and tomato OR Homemade fruit muffin/loaf
12pm	Lunch	Wholegrain bread rolls/sandwiches with meat/tuna and salad OR Pasta/rice with meat and <u>veges</u> OR Roast vegetables and chicken salad
3pm	Pre train snack	Toast with banana or hummus OR Small bowl of cereal and milk OR Banana and yoghurt Water
4pm	Training 90minutes	750mls sports drink
5.30pm	Post training	Finish sports drink Yoghurt and fruit
6pm/6.30pm	Dinner	Lean meat and <u>vege</u> stir fry with rice or noodles OR Spaghetti Bolognese with salad OR chicken wraps



- Drink fluids to keep hydrated.
- Being hydrated before training and during competition ensures better quality performance.
- Water is the optimal choice and is important for rehydration
- Rehydrating is an essential part of recovery
- Suitable drinks for training, competition and recovery include:
 - Water
 - Mix of water and flavoured drink: 50% juice and 50% water
- Guide for fluid requirements:
 - 200-500mls prior to training or competing
 - 150-300mls during training or competing
 - 200-500mls directly after training or competing
 - 800mls to 1 litre in the hours following training or competing
- Sports drinks – only necessary when exercise is of a high intensity and long duration (over 60min)
 - Provides carbohydrate
 - 4-8% carbohydrate
 - 30-60gm per hour
 - Provides electrolytes.
 - Important for longer duration
 - 10-20mmol/L sodium

NUTRITIONAL INFORMATION

Average Composition	per 200ml serving	per 100ml
Energy	245kJ (59cal)	123kJ (29cal)
Protein	0g	0g
Total Fat	0g	0g
Saturated Fat	0g	0g
Total Carbohydrate	14.4g	7.2g
Glucose	5.3g	2.7g
Fructose	3.4g	1.7g
Total Sugars	8.8g	4.4g
Glucose Polymers	5.2g	2.6g
Sodium	111mg (4.8mmol)	55mg (2.4mmol)
Potassium	45mg (1.2mmol)	23mg (0.6mmol)
Magnesium	10mg (0.4mmol)	5mg (0.2mmol)
Calcium	15mg (0.4mmol)	8mg (0.2mmol)

*Orange Mango flavour





For athletes

- Aim for a minimum of 8-9 hours per night to maximize muscle growth, repair and recovery. This will also help improve cognitive skills and concentration. All of these factors together can contribute to a lower rate of athletic injuries
- Lack of sleep impacts reaction times and performance, causes fatigue and weakens the immune system.
- *Athletes who sleep at least 8 hours per night are 68% less likely to sustain an injury compared to those who get less sleep.*
- **Sleep Hygiene**
 - Regular sleep & wake times
 - Protein and carbs at dinner
 - “de power” hour
 - Clear mind
 - Cool room and body
 - Lights out – block light and sound
 - Taper fluid post dinner
- **Rest**
 - Body heals during rest
 - Rest and activity balance
 - Physical repair between 11pm – 1am
 - Regular sleep and wake times key to optimising healing

REST.
(it's part of the program!)

Nutrition & Hydration Apps

Easy Diet Diary

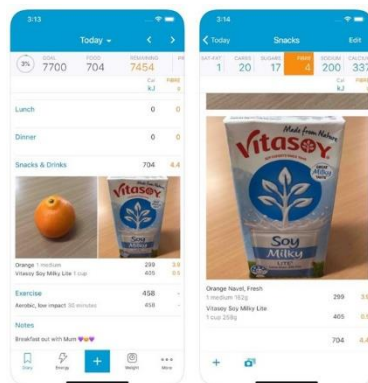
Features

- Food diary
- Diet tracker
- Barcode scanning
- Exercise tracker
- Free mobile app – android and iphone



What does the app do?

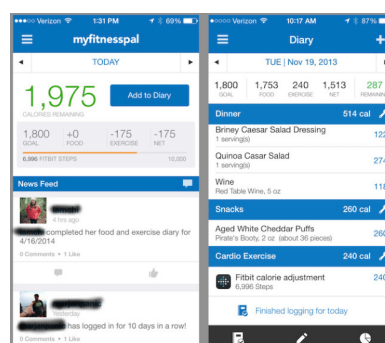
Easy Diet Diary is an app that records food consumed by the user and links to food composition software. The primary aim of the app is to monitor energy, protein, fat, carbohydrates and a limited number of micronutrients. Additional features of the app allow weight and exercise monitoring.



MyFitnessPal

Features

- Food diary - track what you eat.
- A searchable food database of over 300,000,000 items.
- Personal food database - add your own foods and recipes
- Exercise tracker
- Free mobile app - iPhone and Android



Smartwatches & Fitness Trackers

Apple Watch Series 5

- 1.78 inch display
- 50m water resistant
- LTPO OLED capacitive touchscreen
- 3D touch display
- 32GB memory
- Loudspeaker
- Wifi / Bluetooth
- Notifications – calls, texts
- Accelerometer
- Gyro
- Heart rate
- Barometer
- Compass
- Natural language commands and dictation
- Wireless charging



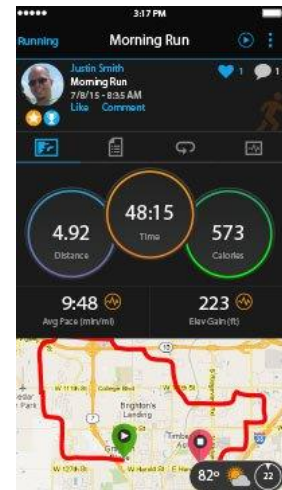
Fitbit Ionic

- 1.4 inch display
- Waterproof
- Fitness tracking
- Up to 4 days battery life
- Features – alarm clock, goal setting, reminders, real time coaching, stopwatch
- Music player – MP3
- Notifications – calls, texts
- GPS
- Accelerometer
- Gyro
- Activity tracker – calories burned, activity/inactivity, distance, sleep quality, active minutes, heart rate, steps
- hours slept
- Receive calls and texts



Garmin Forerunner 235

- 1.23 inch display
- Up to 9 days battery life
- GPS
- Accelerometer
- Recovery Advisor
- Activity tracker – calories burned, activity/inactivity, distance, steps, Heart rate monitor
- Calorie counter
- Receive calls, texts, calendar reminders and email alerts



Polar Ignite

- Water resistant
- Bluetooth
- Notifications – calls, texts
- Alarm clock
- Serene breathing exercise
- Heart rate
- Sleep tracking
- 24/8 activity tracking
- Steps and distance
- Inactivity alert
- FitSpark training guide
- Traing Load Pro
- Running program
- Speed, distance, pace, cadence
- Altitude – ascent/descent
- Interval timer
- Laps
- Swimming metrics
- Stopwatch
- Countdown timer



Recovery Scoring Guide

Athletes can fill out this guide over the course of a week to assess their own recovery behaviours. Once they have scored a full day, the total reveals whether they are paying adequate attention to their physical and mental recovery needs. **17-20** daily points is optimal; **15-16** points is good but shows room for improvement; **14 or fewer** points means the athlete needs a serious individual evaluation of recovery behaviours.

	Possible Points	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	SCORING GUIDE ADJUSTMENTS
Nutrition	8								
Breakfast	1								Give ½ a point for a less than full breakfast
Lunch	2								Give one point for a less than full lunch
Dinner	2								Give one point for a less than full dinner
Pre-workout snack	1								
Post-exercise carb refuelling within 60 minutes. (recommended: 1.0 to 1.5 g per kilogram of body weight)	2								Give one point for refuelling below the recommended amount or for delaying more than 60 minutes.
Hydration	2								
Pre-exercise urine: clear or light colour	1								
Post-exercise urine: clear or light colour	1								
Sleep and Rest	4								Give two points for 7 to <8 hours
8 hours of restful sleep	3								Give one point for 6-7 hours
Nap during the day	1								
Relaxation and Emotional Status	3								
Fully relaxed 60 minutes post-workout or 30 minutes of feet-up relaxation post workout	1								
No daily psycho-social stress	2								Give one point for mild stress
Stretching/Cooldown	3								
Adequate cooldown after exercise	2								Give one point for partial cooldown
Stretching for at least 10 minutes	1								
TOTALS	20								

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Other resources available:

- Team Managers Resource
- Parents Resource
- Athlete Development & Well being
- 7 Tips for when your Child doesn't make a Team

