PERFORMANCE NUTRITION COACH EDUCATION HANDBOOK

Department of Performance Nutrition

Table of Contents

Appendix

Tables of Tables

Table of Figures

Introduction

Today, youth athletes spend several hours a day conditioning or practicing for their sport. The demands of training expected of youth athletes needs to be accompanied by proper nutrition and hydration in order for them to reach their optimal level of performance. Without proper nutrition/hydration athletes are at an increased risk from many factors that will impair them from being the best they can be; heightened risk of injury, impaired performance for future sessions/games due to inadequate recovery and forfeited improvements in performance.

Who is this handbook for?

This handbook is for coaches who are looking to improve their knowledge of sports nutrition in order to help their athletes perform at their very best. Youth athletes especially, look up to their coaches and trust that they hold all the appropriate knowledge regarding sport.

Coaches in return expect their athletes to give 110% in effort. Therefore, it is important that coaches have adequate levels of knowledge around nutrition in order to set good examples and to correctly inform players about best practice. It is important for coaches to understand that even the best training program needs to be combined with nutrition in order for optimal enhancements in performance to occur.

The information presented in this handbook stems from the most current research in sports nutrition.

Basic Nutrients for Sports Performance

The way to consider nutrition for training or performance is to consider it to be like the icing on a cake! These are the finer details that add finesse and the finishing touches to something that is already special to begin with. The assumption here is that the basics of healthy eating are a given (this is the cake). The advice in the Food Pyramid below (figure 1) is something that all players should be familiar with. The information in this booklet is to advance coaches to the next level where they begin to understand the links between food, portions, nutrients and fueling and recovery in athletic performance (this is the icing).

Energy

A simple rule of thumb is to multiply a youth athlete's body weight in kilograms (kg) by 30-35 kcal.

Example:

70 kg athlete:

70 X 30 = 2,100

70 X 35 = 2,450

For a 70 kilogram athlete their estimated energy requirement to maintain weight is to consume 2,100-2,400 kcal per day.

More individualised energy requirements can be found in appendix 1.

If you are worried your athlete is not consuming the proper amount of energy refer them to a registered dietitian or performance nutritionist.

The basic currency for energy in food is the calorie (also referred to as kilocalorie, kcal or cal). This unit measures the amount of energy in foods.

Figure 1 Understanding the Food Pyramid

Portion Sizes

Portion sizes come in many different measuring units, such as grams, ounces, cups, liters to name a few. Measuring foods can become time consuming, especially when time is of the essence to an athlete. Therefore, educating the athlete to gauge portion sizes with their hands will reduce the time and stress of actually using a scale or measuring tools (figure 2).

Figure 2 Estimating Portion Sizes

Source: Dairy Council of California 2012

Nutrient Requirements

Appropriate fueling comes from foods that are broken down into three main nutrients; carbohydrate, protein and fat. General recommendations for youth athletes will be explained below in percentages. Grams for each nutrient can also be calculated per kilogram of body mass found in appendix 1.

In this section you will learn and come to understand the following:

- Basic understanding of how carbohydrate, protein and fat help sport performance.
- Requirements of carbohydrate, protein and fat to fuel athletes.
- Which foods are best to recommend to athletes and when.

If you believe that an athlete needs an individualised requirement for carbohydrate, protein or fat or all three, please refer them to a dietitian or a performance nutritionist.

Carbohydrate

How does carbohydrate benefit sport?

Carbohydrates benefit sport by supplying the energy to perform. Carbohydrates are the body's preferred choice of energy when exercising because it takes the least amount of oxygen to convert into energy. This makes carbohydrates the most efficient nutrient for the body. The body breaks down carbohydrates into sugars, which are then stored in the liver to maintain blood sugar levels and in the muscles to deliver quick source of energy for physical activity. Not only do carbohydrates supply energy for almost every type of physical activity, but it also helps delay the onset of fatigue.

What happens to performance if intakes of carbohydrate are insufficient?

If an athlete does not consume enough carbohydrate, overall quality of performance will suffer. An athlete will find the activity more difficult and will have a lack of concentration with the activity. The athlete will also reach fatigue quicker and have a longer recovery time. It is similar to the domino effect, because if there is insufficient carbohydrate during one training session, its effects will carry out to future sessions by increasing recovery time and forfeiting future gains.

What are the recommended intakes for youth athletes?

Carbohydrate should be 50-65% of a youth athlete's diet (refer to figure 1 and table 2). This makes carbohydrate the majority of an athlete's diet because as stated previously, it's the body's choice of energy.

Which Foods are Made of Mostly Carbohydrates?

The following figures show which foods are mostly made of carbohydrates. Serving sizes are suggestions per day to make sure athletes' carbohydrate stores are maintained to benefit sport performance.

Figure 3 Carbohydrates/Servings

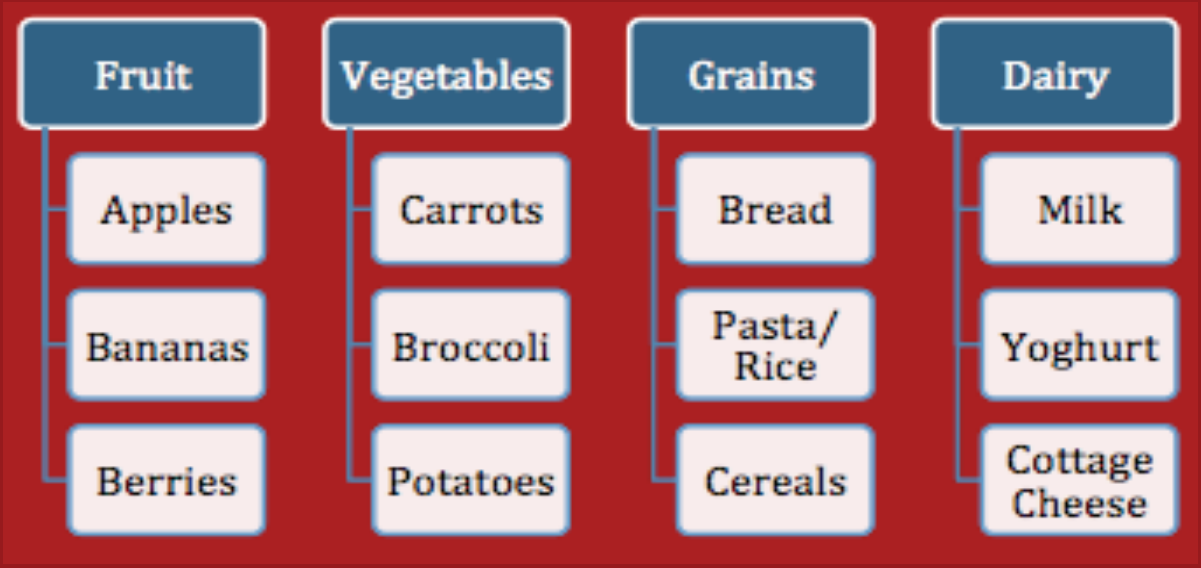


Figure 4 Examples of Carbohydrates

Types of Carbohydrates

Not all carbohydrates are created equal. The main classifications of carbohydrates are slow and fast release. Just like the name, slow release carbohydrates give a more slow and constant of release of energy into the blood stream. Slow release carbohydrates should be consumed during main meals and snacks while fast release carbohydrates should be consumed before, during, or after training/matches. More on when to consume the two types of carbohydrates will be discussed in the Nutrition to Compete section.

Figure 5 Examples of Slow Release Carbohydrates

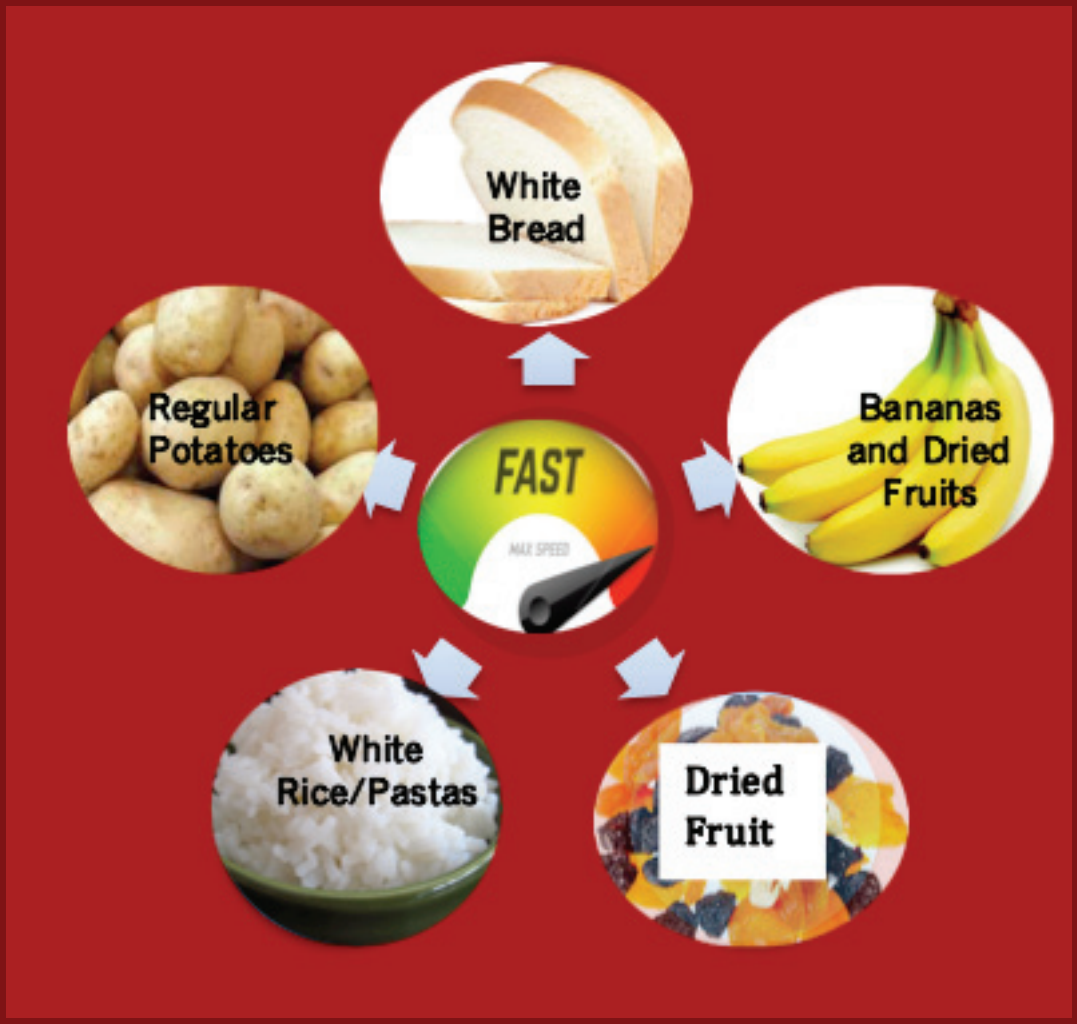


Figure 6 Examples of Fast Release Carbohydrates

Protein

How does protein benefit sport?

The body breaks down proteins into amino acids. Amino acids benefit sport by supporting, healing, rebuilding and growing muscles to new demands of training. Muscles are broken down during training or exercise; although this sounds like a scary thing it is beneficial and necessary to get those required adaptations from training. It is important to note that protein is barely used as a fuel source. Proteins are only used as an energy source in extreme cases when an athlete has depleted his carbohydrate and fat stores.

What are the recommended intakes for youth athletes?

Youth athletes require more protein, relative to their weight than adults because they are growing and developing and involved with physical activity. Therefore, youth athletes need 20-30% of their total energy intake from protein foods depending on their body type and weight management goals.

Is timing of protein important?

Timing of protein intake is critical to keep the body in a positive protein balance. Consuming an appropriate amount of protein at every meal, snack, before and immediately after training will help keep a constant release of protein to the muscles. For example, if an athlete recommended intake is 100 grams per day, he/she should spread it out into 6 meals, which consists of 3 main meals and 3 snacks (see appendix 1).

Is more protein better?

Excess protein is not recommended for anyone, especially individuals with kidney disorders. The body can only take in so much protein at one sitting and everyone's threshold is different. A good rule of thumb is to never consume more than 30 grams per sitting. Excess protein will not result in larger muscles or improve performance and will be excreted through urine or converted into fat.

Protein Foods

Some protein containing foods can tend to be quite high in fat. To avoid excess fat, choose low fat dairy and lean unprocessed meats, and products that do not have skins / crumbs / batters. Avoid frying and instead cook with healthier methods, such as grilling, boiling, baking or steaming.

Different Types of Protein

Just like carbohydrates, not all proteins are created equal. There are two main versions of protein, complete and incomplete. Complete contain all the essential amino acids to heal, rebuild and grow muscles (refer to figure 7). Incomplete proteins do not contain all the essential amino acids (refer to figure 8).

Figure 7 Examples of Complete Proteins

Figure 8 Examples of Incomplete Proteins

Making Incomplete Proteins Complete Proteins

There are many combinations to make sure that a meal contains all the essential amino acids to heal, rebuild and grow muscles (refer to figure 9).

Figure 9 Examples of Combinations to Make Incomplete Proteins Complete

Fat

Why does the body need fat?

The body needs fat in order to survive. It cushions organs and is required for normal hormone production. The body will use fat to fuel low intensity aerobic activities, such as walking, standing, sitting or sleeping or when carbohydrate stores are depleted. Unlike carbohydrate, fat is not an efficient source of energy because it requires a lot of oxygen to convert into energy. For this reason, we focus on carbohydrate to fuel energy for sport.

Why is excess fat a disadvantage in sport?

Excess body fat is a disadvantage in almost every sport because it is non-functional weight. It is like carrying around extra baggage on a holiday as it only slows you down. In sport, excess fat impacts strength, speed, endurance and power.

How much fat do athletes need?

The focus of athletes' diet should be centred around carbohydrate and protein intakes, with the remaining difference coming from fat. Again, because it is needed for survival is should never be completely ruled out of a diet and daily intakes should never drop below 15%. However, because it disrupts sport performance, it should be limited. Daily intakes should be 15-30% depending on what an athlete is trying to achieve with wieght management, which will be discussed later.

Different Types of Fat

Similar to carbohydrate and protein, there are different types of fat. There are many different classifications but the three main ones consist of saturated, unsaturated and omegas (refer to figure 10).

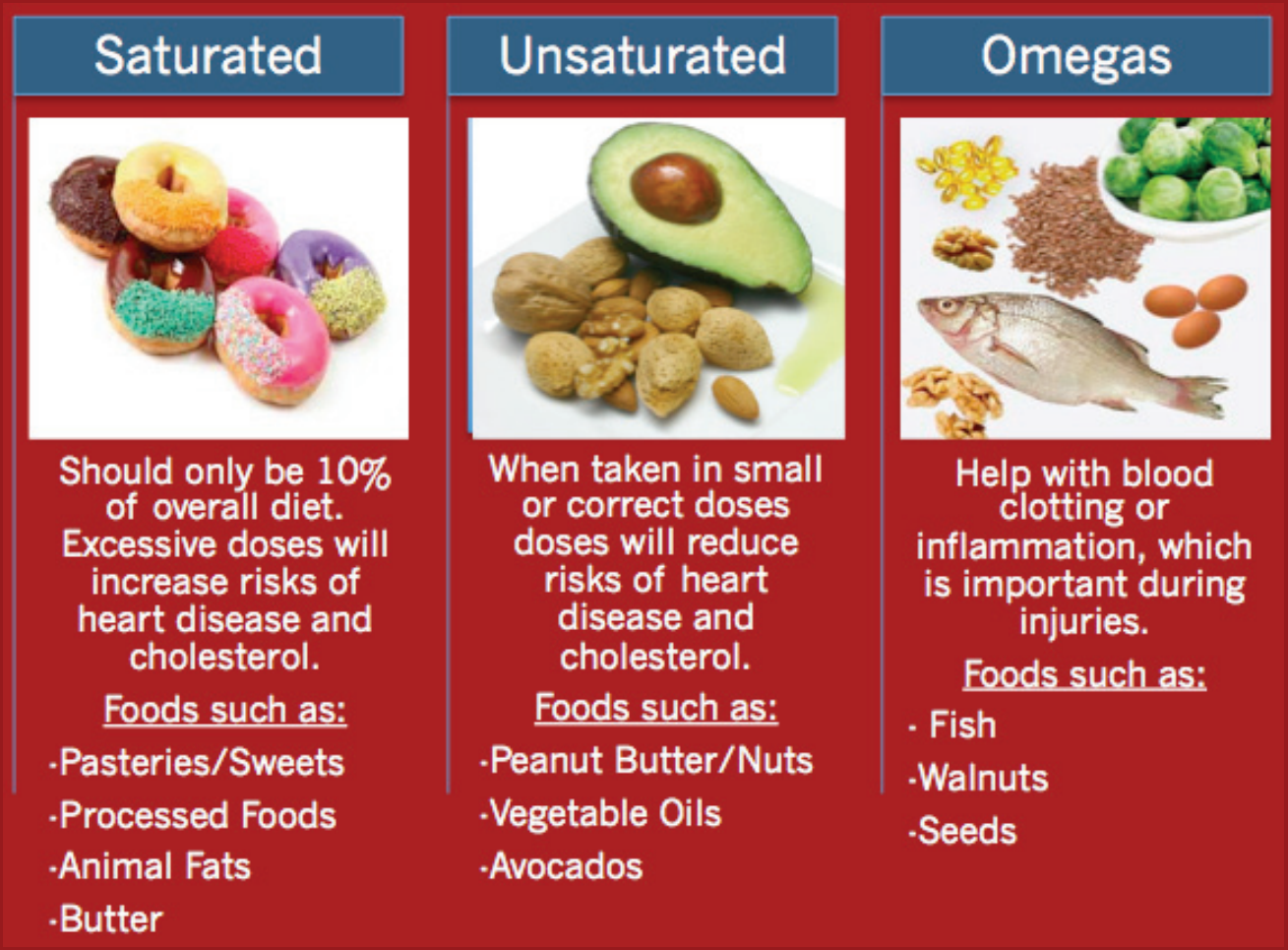


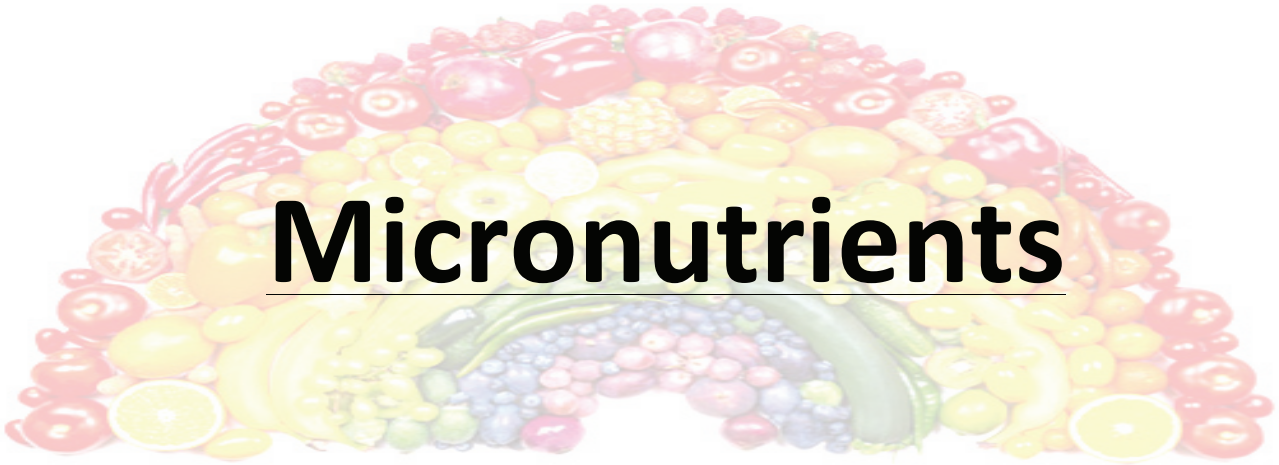
Figure 10 Examples of Fats

Strategies to Reduce Fat Intakes

Substitutions can make reducing fat intake easy and sometimes unnoticeable. The following gives recommendations on how to reduce fat intake.

- Switch from whole milk to skimmed milk
- Switch from regular cheese to skimmed or reduced fat cheese
- Switch from regular yogurt to low or non fat
- Switch from cooking oils to cooking sprays
- Switch from red meats to lean unprocessed meats, such as turkey, chicken or tuna
- Avoid foods with batter, crumbs or coatings
- Avoid processed foods
- Avoid confectionary, savoury snacks, convenience meals and take away foods

Figure 11 Switching from Whole Milk to Skimmed



Micronutrients

Why does the body need micronutrients?

The body needs micronutrients; also know as vitamins and minerals to help release energy from carbohydrate, fat and protein.

What are the most important micronutrients for sport?

The two more important micronutrients for sport are iron and calcium. Not only are these required to support growth and development in adolescents, they also have additional roles in sport:

- Iron helps put oxygen into the blood so that the blood can deliver nutrients to working muscles.
- Calcium is needed in order for muscles to contract or for the body to perform physical activity.

How much micronutrients does an athlete need?

An athlete needs small amounts of micronutrients. Many athletes will take a multivitamin/mineral supplement daily. It is a myth that the more micronutrients, the better one can perform. However, excess micronutrients can do more harm than good. An athlete can get all the micronutrients needed by consuming a colourful diet or a rainbow. Simply eating 5 servings of vegetables and 5 servings of fruit per day can complete an athlete's micronutrient requirement.

Refer to appendix 2 for more information on micronutrients.

If you or an athlete is concerned about their micronutrient requirements, have them consult a doctor or dietitian.

In Which Foods Can We Find Iron and Calcium?

The following figures (12,13,14) show examples of foods that are good sources of iron and calcium. For figure 13, it is important to choose skimmed or non-fat dairy sources to avoid excess fat.

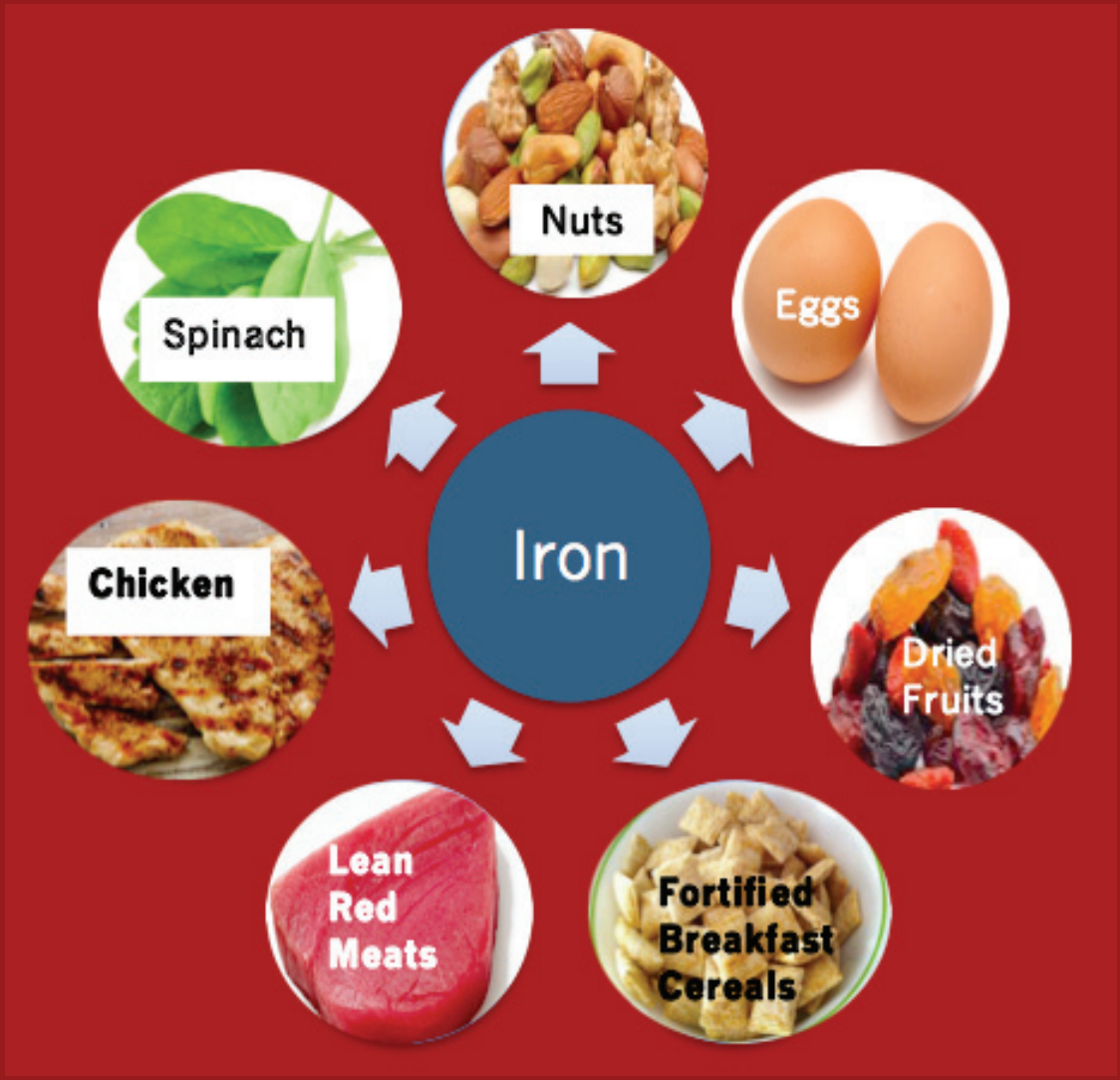


Figure 12 Sources of Iron

Figure 13 Calcium Dairy Sources

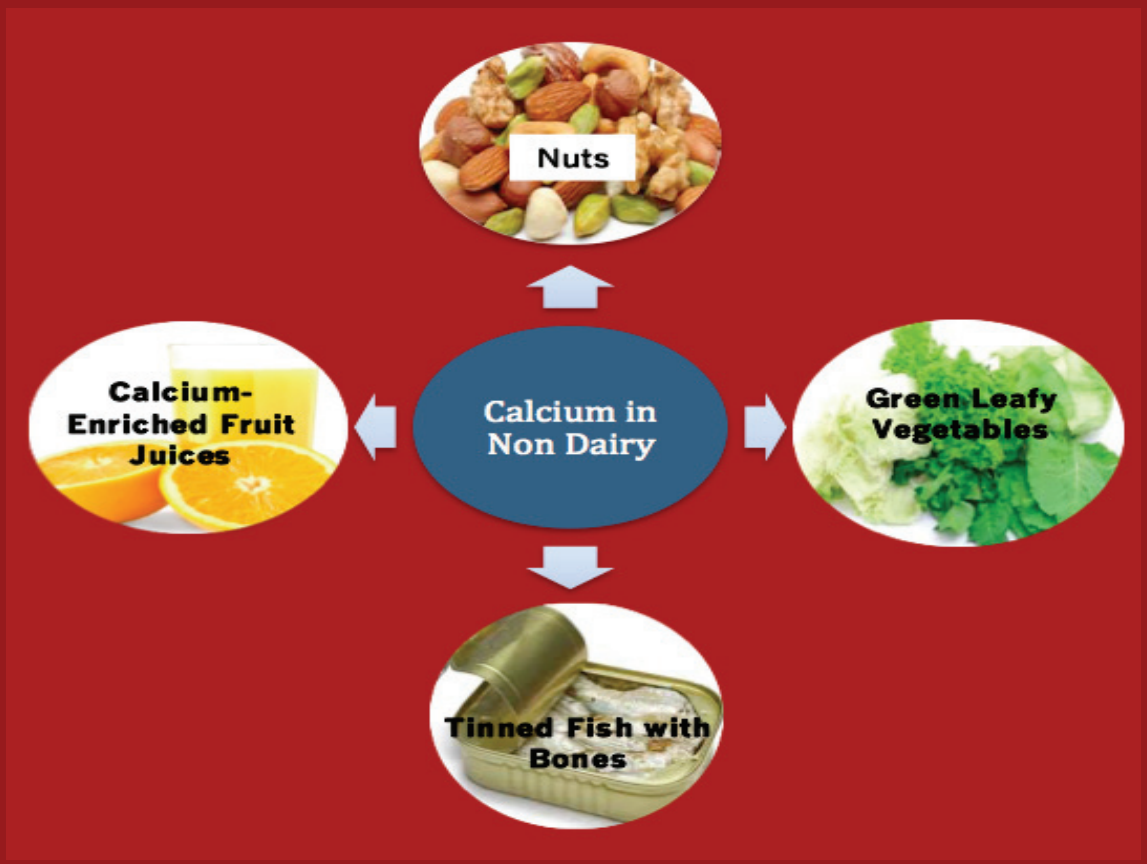


Figure 14 Calcium Non Dairy Sources

Fluids

How much fluids do youth athletes lose during matches and training?

Youth athletes are more susceptible to dehydration and overheating than adults because they sweat less. Sweating helps keep the body at a stable temperature during physical activity. On average youth athletes lose between 350-700 milliliters of body fluid per hour of physical activity.

How does being dehydrated effect sport?

Dehydration can cause the following:

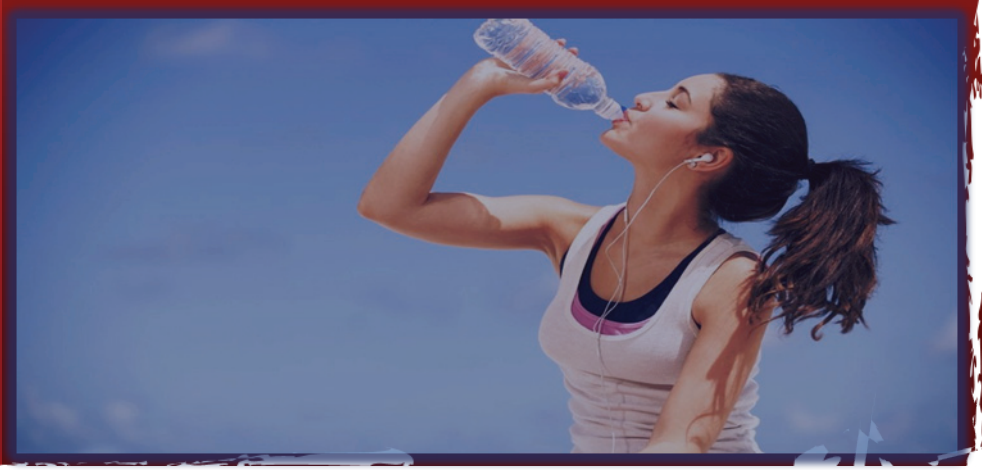
- Training/Match to feel more difficult
- Reduced skill level/concentration
- Fatigue quicker
- Increased heart rate
- Muscle cramps

Severe dehydration can cause:

- Headaches
- Nausea

Quick Tip:

Small sips are better than consuming water in large doses.



Fluid Before, During and After Match/Training

Athletes sometimes report feeling uncomfortable if they drink too much around training times, but the effect of being poorly hydrated on performance is too great not to try to consume the right amounts. Players should begin training or competitions well hydrated. From approximately 45 minutes out, they may prefer to have sips of fluids and as a rough guide this should total approximately 200 ml or 2 yogurt cartons. Every break in play is an opportunity to rehydrate, and approximately 100 ml or just less that one yogurt carton should be consumed at each opportunity. It is good practice to weight in before a session and weight out afterwards. Each 1 kg change in weight should be replaced by 1 - 1.5 L of fluid.

Figure 15 Hydration Guidelines: Before, During and After Match/Training

What if an Athlete Will Not Drink Water?

It is sometimes difficult for young athletes to drink water; a flavoured drink may be beneficial. Instead of commercial sports drinks however, diluted pure fruit juice should be used. Sports drinks add empty calories (no nutritional value). In a diet already high in salt, they also could be harmful because they too contain a large amount of salt. Sport drinks often contain citric acid and this along with the high sugar content may erode tooth enamel and cause tooth decay. Young athletes can replenish fluid losses by drinking diluted fruit juice or using some of the homemade recipes can be found in the supplement section.

Methods to Maintain or Determine Hydration Status

Athletes can determine their own hydration status by simply looking at their own urine and comparing the colour to that in the chart below (figure 16). A bigger version can be found in appendix 3 where you can make copies and place them in locker rooms or places where it is easily accessible to athletes.

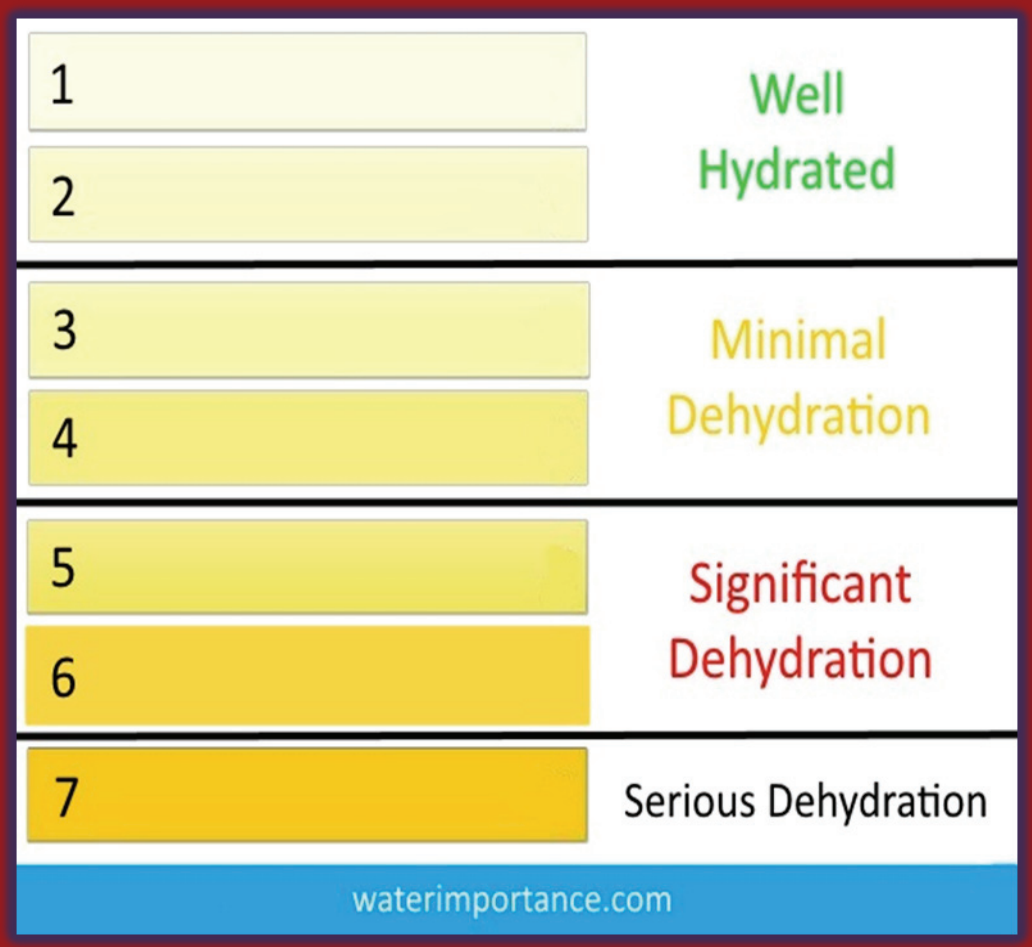
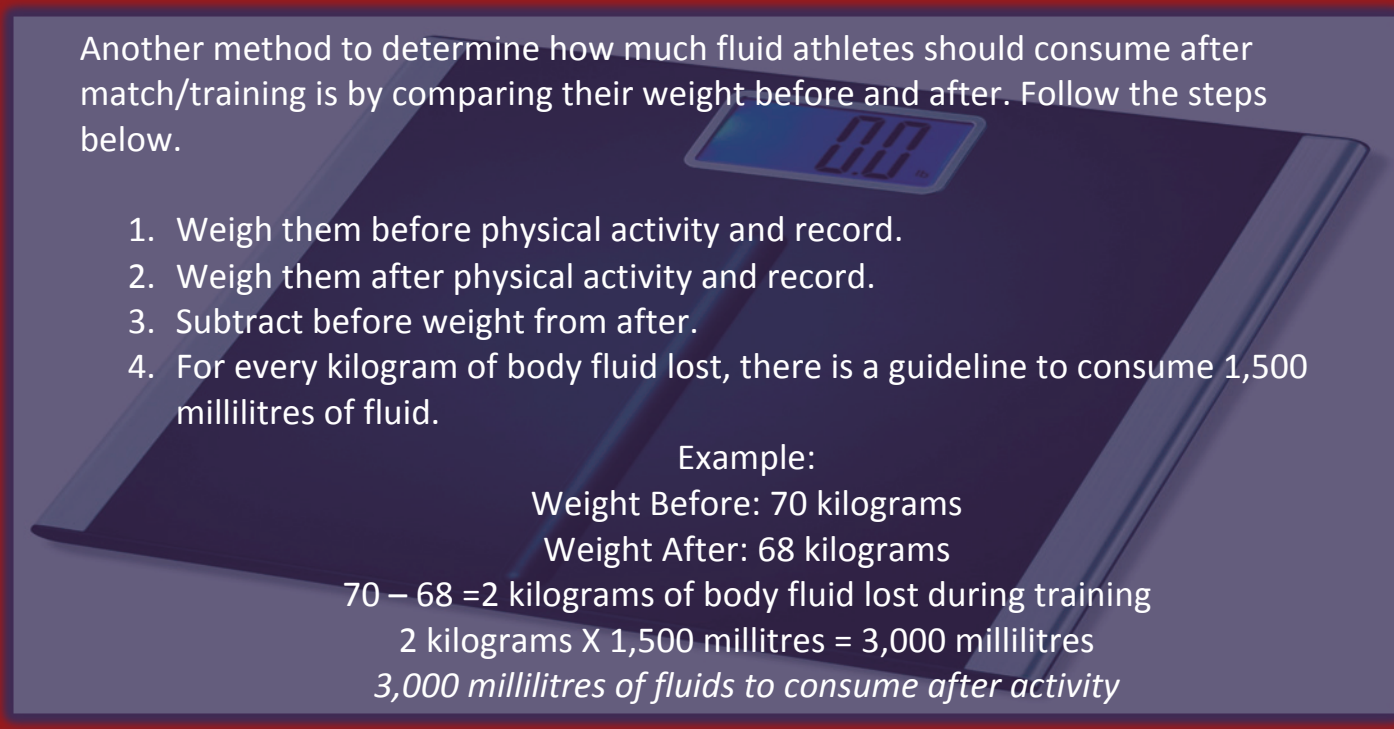


Figure 16 Hydration Assessment Chart



Another method to determine how much fluid athletes should consume after match/training is by comparing their weight before and after. Follow the steps below.

1. Weigh them before physical activity and record.
2. Weigh them after physical activity and record.
3. Subtract before weight from after.
4. For every kilogram of body fluid lost, there is a guideline to consume 1,500 millilitres of fluid.

Example:
Weight Before: 70 kilograms
Weight After: 68 kilograms
70 – 68 =2 kilograms of body fluid lost during training
2 kilograms X 1,500 millitres = 3,000 millilitres
3,000 millilitres of fluids to consume after activity

It is important to understand that it is not just water lost during physical activity but also electrolytes (i.e., salt) and carbohydrates. These can be easily replaced through recovery meals that will be discussed later in the Nutrition to Compete section.

Is it Possible to be Over-Hydrated?

Even though it is rare, drinking too much fluid at once can result in hyponatraemia. Hyponatraemia results when too much fluid causes a drop in sodium found within the blood. Hyponatraemia has occurred mostly in endurance events, such as marathons or triathlons. When the blood sodium level drops below normal it disrupts the body's ability to function normally. Symptoms include, headaches, fatigue, confusion, and in extremely serious cases coma or death. For most youth athletes this is very unlikely to occur, but coaches should be aware of this phenomenon and the symptoms nonetheless.

Weight Management

The following recommendations regarding weight management are for junior and senior cup athletes ages 14-18 only!

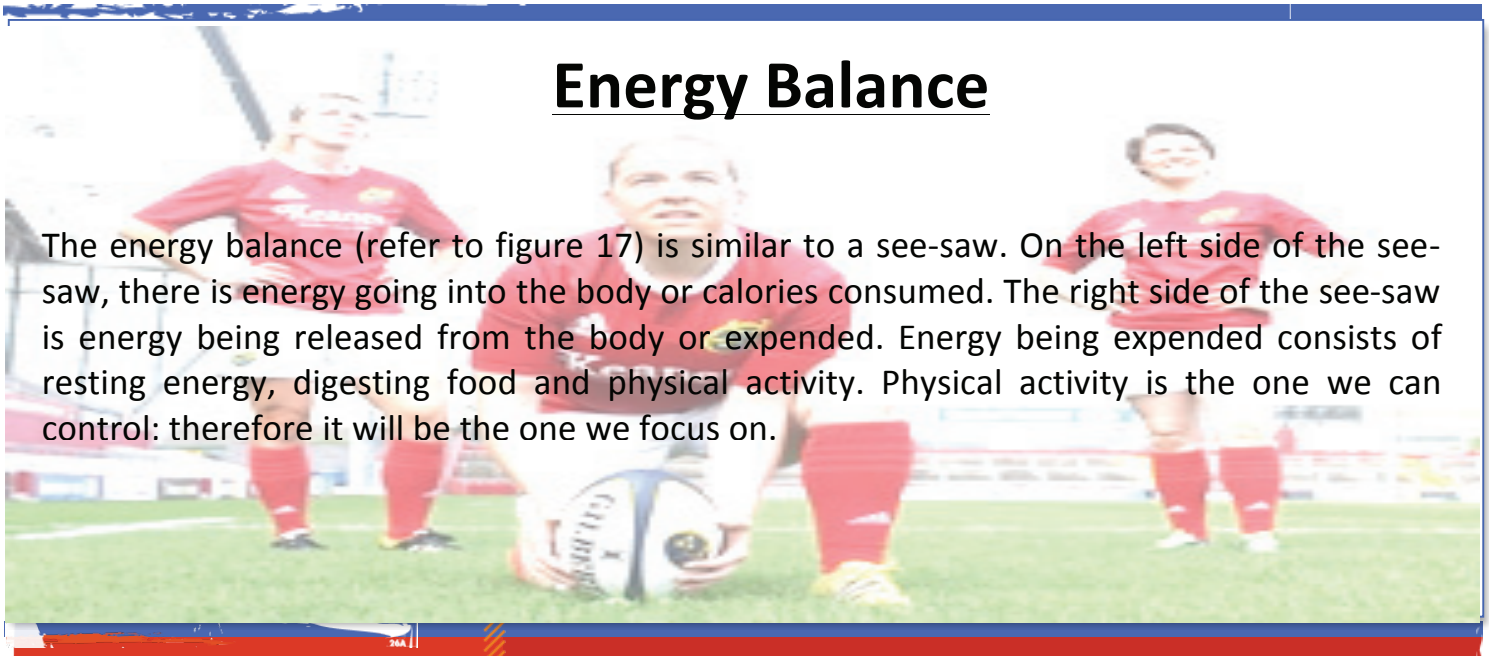
The game of rugby is quite physical and requires significant strength and power. Achieving and maintaining ideal body weight and body composition (i.e., body fat and lean body mass) will help benefit performance by allowing the body to move quicker, more efficiently and powerfully. However, it is important to acknowledge that there is a difference between putting on lean body mass and putting on body fat. When a player wants to bulk, this process needs to be done properly by eating the correct amount of foods from the right food groups as discussed above. The only difference is the player will need to eat more of the correct foods, which will be discussed later.

In this section you will learn and come to understand the following:

- Basic understanding of energy balance.
- Basic understanding of increasing lean body mass, reducing body fat and maintaining body weight.
- Common myths regarding weight management and sport.
- Strategies to reach weight management goals.

If you believe that an athlete needs an individualised weight management program refer them to a dietitian or a performance nutritionist.

Energy Balance



The energy balance (refer to figure 17) is similar to a see-saw. On the left side of the see-saw, there is energy going into the body or calories consumed. The right side of the see-saw is energy being released from the body or expended. Energy being expended consists of resting energy, digesting food and physical activity. Physical activity is the one we can control: therefore it will be the one we focus on.

Goals

Increase Lean Body Mass:
The see-saw or energy balance must lean to the left, causing more energy to be consumed than released.

Reduce Body Fat:
The see-saw or energy balance must lean to the right, causing more energy to be released than consumed.

Maintaining Weight:
The see-saw or energy balance must stay level, causing energy being released to be the same amount of energy being

Weight Management Goals in a Nut Shell

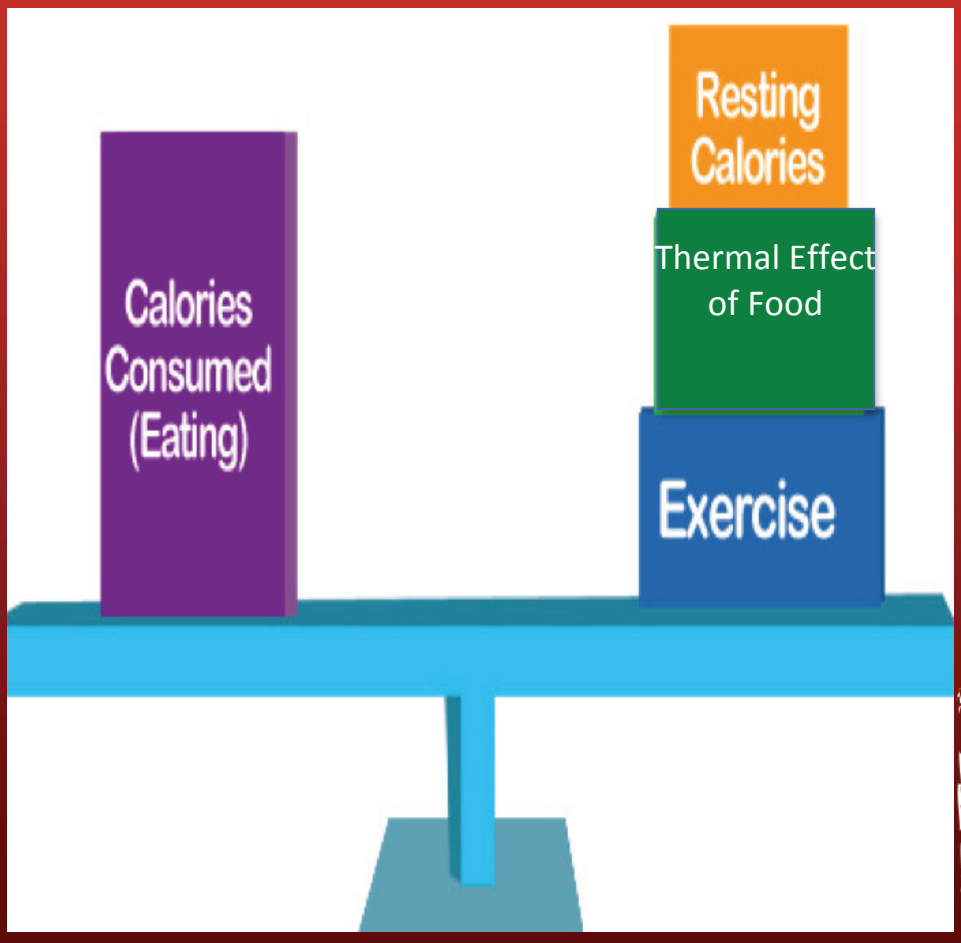
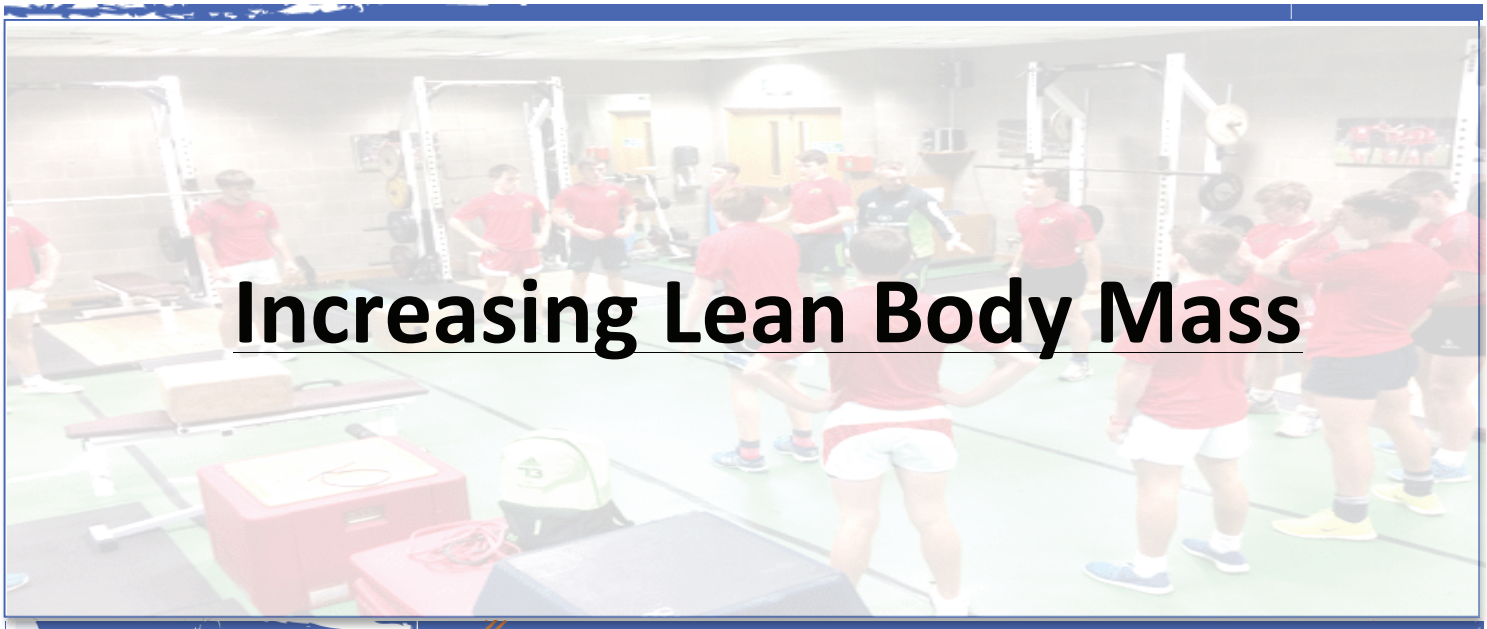


Figure 17 Energy Balance



Increasing Lean Body Mass

How much muscle can an athlete put on per month?

Increasing lean body mass takes time and it is important to give an athlete an obtainable goal so that he/she believes that the goal set is reachable. Also to ensure that the weight gained is indeed muscle and not fat, aims in muscle gain should be no more than 0.5-1 kilogram per month.

It is important to remember that young athletes are still growing and will mature at different rates. Some may put on lean body mass easier than others. Besides physical activity and nutrition, hereditary traits will determine how the young athlete will respond to different training exercises. Therefore, it should not be expected that youth athletes show size and mass like adult athletes.

What is the energy requirement to build muscle?

In order for athletes to build muscle, they must consume more energy or kilocalories (kcal) than energy expended (refer back to figure 17). With a safe and obtainable goal of 0.5-1 kilogram per month, the recommendation is to add a daily surplus of 500 kilocalories to their overall energy requirement (refer back to Basic Nutrients for Sports Performance).

Example:
70 kg athlete with a goal of 72 kg
Current Energy Requirement: 2,100 kcal
2,100 kcal + 500 = 2,600
Estimated Time to Reach Goal 2 months
(Remember: Every athlete is different and will put on muscle at different rates!)

Nutrient Break Down in Grams:

-Refer to Appendix 1

Sample Meal Plans:

-Refer to Appendix 4 for back positions
-Refer to Appendix 5 for Forward Positions

Common Myths in Rugby

Forwards need to have a heavier body that is physically strong for rucking, scrummaging and tackling. There is a myth in rugby that because forwards need to be bigger than other players that putting on excess weight or body fat is beneficial. It is actually the opposite and will disturb performance because the athlete is carrying non-functional weight. Excess body fat will reduce performance by reducing speed and power along with increasing energy expenditure causing fatigue to set in quicker. Sometimes excess fat can increase the risks of injuries. It is lean muscle mass that will allow a player to be quicker and more powerful without sacrificing as much energy.

Backs are usually lighter than forwards, but need to be able to accelerate quickly and powerfully to control possession of the ball. By increasing lean body mass and maintaining low body fat percentage, this can be achieved. Speed and endurance are extremely important for the back positions as well as having a high power to mass ratio (i.e., power divided by body mass). There are also misconceptions that putting on more and more muscle mass will always benefit performance. Sometimes this is not the case and may harm performance because of the decline in power to mass ratio.

Foods to Consume to Increase Lean Body Mass

Like stated above, if an athlete wants to gain muscle, food choices must be nutritious. Nutritious foods are ones that have high amounts of nutrients, such as fruit, vegetable, grains and dairy. Limit consuming excess calories from empty calories or high fat foods, such as pizza, biscuits, sweets, deep-fried and crumbed foods because they will increase fat mass if consumed in excess amounts. Increasing fat mass is the complete opposite of increasing lean body mass and will not help in sport performance.

Strategies to Increase Lean Body Mass

- Consume more frequent meals and snacks, eating 6-7 times a day.
- Consume larger portions; especially slow releasing pasta, potatoes, rice, cereals, low fat dairy products and protein-rich foods.
- Consume 3-4 nutritious snacks between meals (refer to appendixes 4 & 5)
- Try to consume protein containing foods at every eating occasion
- Consume nutritious drinks, low fat milk or smoothies
- Add dried fruit to cereals, porridge and yogurt
- Spread peanut butter on bread or toast
- Add cheese to vegetables or pasta

Decreasing Fat Mass

How much body fat can an athlete lose in one month?

Just like increasing lean body mass takes time, so does reducing fat mass. Each athlete will reduce body fat at their own rate and it is vital that their goal is reachable. To ensure that weight being lost is not muscle and is indeed fat, aims in reducing fat mass should be no more than 1-2 kilograms per month.

What strategy can be use to reduce fat mass?

If an athlete wishes to reduce fat mass, they must expend more calories or energy than they consume. Therefore their energy balance or see-saw (figure 17) must lean to the right. With a safe and obtainable goal of losing 1-2 kilograms of fat mass per month, it is recommended to decrease daily energy intake by 500 kilocalories. (Refer back to Basic Nutrients for Sports Performance).

Example:
80 kg athlete with a goal of 75 kg
Current Energy Requirement: 2,800 kcal
2,800 kcal - 500 = 2,300

Estimated Time to Reach Goal 2.5 months
(Remember: Every athlete is different and will reduce fat mass at different rates!)

Nutrient Break Down in Grams:

-Refer to Appendix 1

Sample Meal Plans:

-Refer to Appendix 4 for Back Positions

-Refer to Appendix 5 for Forward Positions

Strategies to Decrease Fat Mass

- Do not skip meals
- Consume a serving of vegetables at every meal
- Consume 5 servings of fruit per day
- Limit use of butter, oils and nut spreads
- Switch from white breads, pasta, and rice to brown or whole meal
- Eat a source of protein with each meal and snack
- Spend less time with screens, such as television, video games and computers
- At least 60 minutes of moderate-intensity physical activity, such as fast walking per day

Only athletes that can benefit from losing fat mass should follow the recommendations above. Youth athletes should be discouraged from risky weight loss approaches, such as strict diets, diuretics and excessive exercise.

Maintaining a Healthy Weight

How can athletes maintain current weight?

If an athlete is already at or has reached a healthy weight, a neutral energy balance must be preserved. In order to preserve a healthy weight, one must consume the same amount of energy as expending or releasing energy.

What strategies will help athletes maintain their weight?

- Try to consume five portions of fruit and vegetables per day
- To aid in satisfying hunger and providing nutrients, follow the Plate Model (figure 19)
- Try not to eat in front of screens, such as the television, computer, tablets or phones
- Switch to low fat or skim dairy products, such as milk, cheese or yogurt
- Switch from white to whole meal or brown bread, rice, cereals and pastas
- Do not restrict or over consume sweets, such as chocolate, cakes and biscuits
- Include fruits for desserts and snacks
- Consume at least 6 glasses of fluid a day, as thirst can be mistaken for hunger.

Nutrient Break Down in Grams:

-Refer to appendix 1

Sample Meal Plans:

-Refer to appendix 6

Methods to Measure Weight Management

It is a good idea to assess athletes' progress whether their goals are to increase lean body mass or decrease fat mass. This will allow them to see results even if they do not yet see it in sport performance. Weighing scales should be used with caution as they do not distinguish between body fat and lean body mass. If scales are to be used, refrain from using them more than once per week.

Methods

Food Diary-

Food Diaries are beneficial for both decreasing fat mass and increasing muscle. It will help athletes see if they are consuming too many or too little kilocalories. It may also make them aware of eating excess empty calories or fat.

Circumference Measurements-

For both goals, increasing lean body mass or reducing fat mass, circumference measurements are a good tool to ensure that fat is not being gained. Every 4-6 weeks the chest, waist, hip, upper arm, thigh and calf should be assessed (refer to figure 18). Goals should be reevaluated if circumferences measurements reveal fat is being increased.

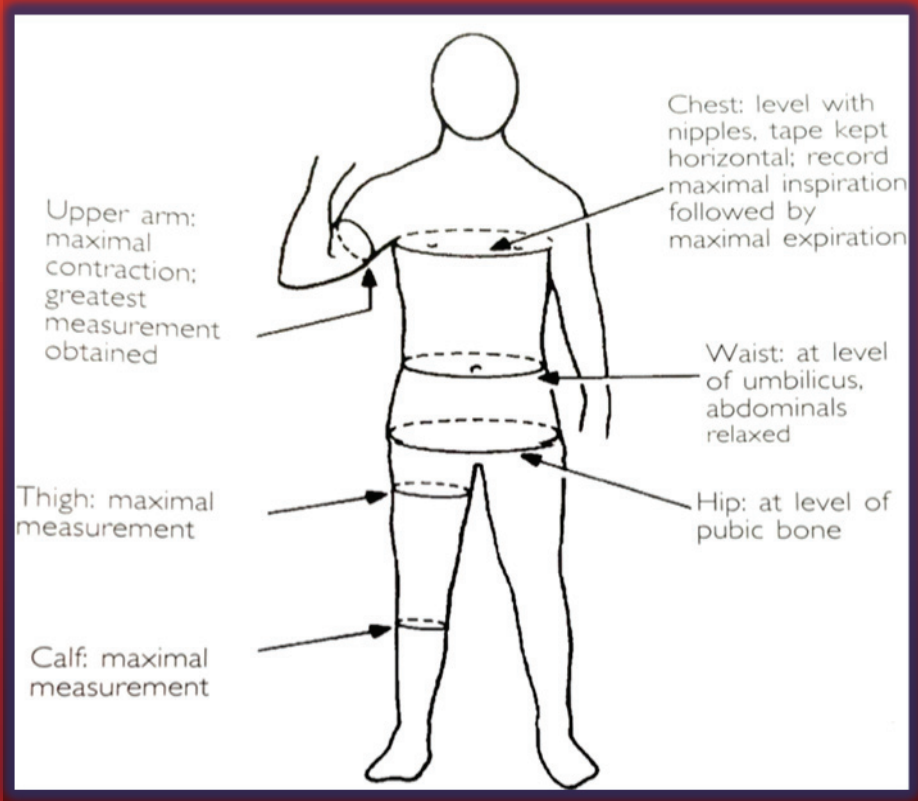


Figure 18 Circumference Measurements

Plate Method

A good tool to increase muscle, reduce fat or maintain weight is to have athletes aim to make their meals into the peace sign. Simply add vegetables/fruits to the plate first, add grains second and add protein last. This is a healthy habit to adopt as it not only will help athletes reach their goals, but will make sure they are consuming the correct amount of nutrients per meal.

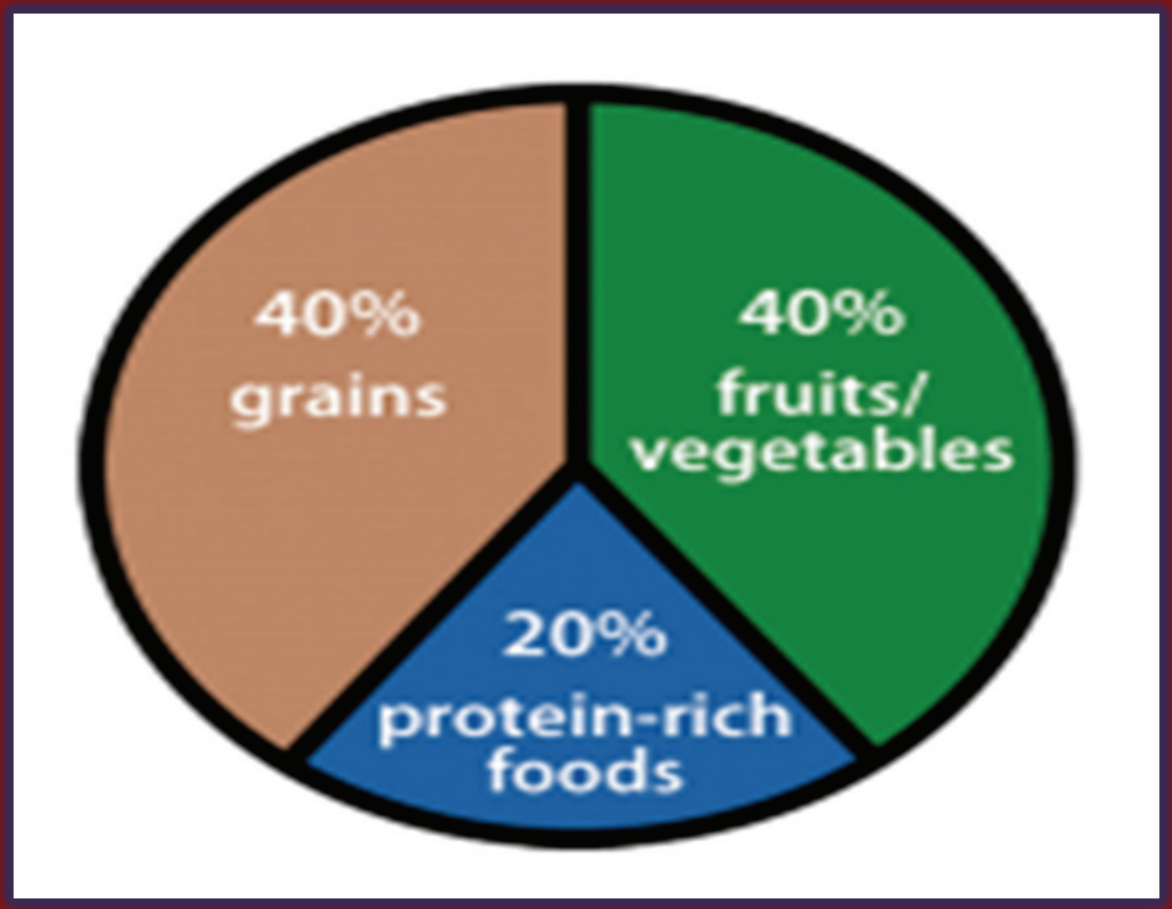


Figure 19 Peace Plate Model

Nutrition to Compete

The following recommendations regarding nutrition to compete are for junior and Senior cup athletes ages 14-18 only!

On match day it is important that athletes are well fuelled and hydrated. Fuel and fluids are needed at all stages of competition- before, during and after.

In this section you will learn and come to understand the following:

How to prepare for competition by eating the right foods.

How to keep energized throughout the game.

How to optimally recover from competition.

Proper nutrition can improve both physical and mental performance both on and off the field.

Nutrition Before Competition &Training

Why is it important for athletes to be fuelled before competition or training?

Before any exercise athletes need to be fully fuelled so they have the energy to train as best as they can. If athletes are not properly fuelled they will under preform on the pitch and will not benefit from the training they do on the field or in the gym.

How long before exercise should athletes eat?

When preparing for competition or training the aim is to be properly fuelled. Eating a balanced meal, containing fast release carbohydrates, 3-4 hours before kick-off, does this. Then followed by a snack, containing fast release carbohydrates, 1-2 hours before kick-off will top up the carbohydrate stores.

What Should Athletes Eat Before Competition or Training?

When fuelling for exercise, focus on carbohydrate rich foods as they the easiest for the body to convert into energy. Foods should be high in energy and familiar to the athlete. Meals should also be low in fat and fibre as they can cause digestive discomfort.

Breakfast

Meal Example	Calories (Kcal)	Protein (g)	Carbohydrates (g)	Fat (g)
Fruit Salad with 1 pot Yogurt	183	8.1	30.8	3.9
2 boiled eggs with 2 slice whole meal toast	300	19.2	30	12.5
Total	483	27.3	60.8	16.4
2 boiled eggs with 2 slice whole meal toast	300	19.2	30	12.5
80g porridge with low fat milk	180	11	29	6.4
Total	480	30.2	59	18.9

Table 1 Breakfast Before Competition or Training

What Should Athletes Eat Before Competition or Training?

Lunch: 3-4 hours before

Meal Example	Calories (Kcal)	Protein (g)	Carbohydrates (g)	Fat (g)
75g Pasta, 1 chicken breast, Tomato sauce	451	39	61	7.4
1 Grilled chicken breast with 75g brown rice	287	31	23	3
Vegetable soup, whole meal turkey salad sandwich	239	24	44	3.7
Baked potato and beans/tuna	370	14.5	80	1.3

Table 2 Lunch Before Competition or Training

Snacks: 1-2 hours before

Snack Example	Calories (Kcal)	Protein (g)	Carbohydrates (g)	Fat (g)
1 Apple	47	0.4	11.8	0.1
125g Pot Yogurt	99	7.1	9.8	3.8
Total	146	7.5	21.6	3.9
125g Cereal Bar	90	1.8	16.8	2
Smoothie Banana, Orange, Yogurt	159	5.8	29	3.2
Total	249	7.6	45.8	5.2

Table 3 Snacks Before Competition or Training

Nutrition During Competition &Training

Why do athletes need to re-fuel during exercise?

The carbohydrates you get from pre-match meals are stored in the liver and muscles as glycogen. These stores can fuel exercise for up to 60 minutes. During exercise that is longer than 60 minutes it is important to top-up or boost energy levels. This can easily be done at half time during a game to avoid any slumps in the 2nd half.

What should athletes eat to re-fuel?

Foods taken at half time to provide energy need to be fast absorbing, fast release carbohydrates. These will provide the body with energy quickly. Liquids should also be taken throughout exercise, as they help maintain hydration and along with certain snacks, replace electrolytes lost through sweat.

- **Cereal Bars**
- **Fresh fruit**
- **Yogurt Drinks**
- **Jaffa Cakes**
- **Jelly beans**

Nutrition After Competition &Training

Why do athletes need to eat after competition or training?

After a competition or training athletes' bodies needs to recover. During exercise energy stores are used and muscles are broken down and damaged. A recovery meal containing both carbohydrates and protein will refill energy levels and repair and rebuild muscle tissue. If athletes do not recover after exercise it can result in a domino effect. You will not be ready to perform optimally at your next training session and therefore will not be able to achieve the improvements you want, leaving you unprepared for your next challenge.

When should athletes begin to re-fuel?

Athletes should begin recovery immediately after exercise to take advantage of the 'window of opportunity', the time in which the body can maximise recovery. Within 30 minutes of ending exercise, have a snack that contains both carbohydrates and protein. This should be followed with a fully nutritious meal within 2 hours.

What Should Athletes Eat After Competition & Training?

Snack: 30 minutes after

Snack Example	Calories (Kcal)	Protein (g)	Carbohydrates (g)	Fat (g)
Chocolate milk, 250ml	158	9	24	3.8
White bread Ham sandwich	300	14.8	45	8.1
125g Pot Yogurt, 1 Banana	235	6.3	47	4.1

Table 4 Snack 30 Minutes After Competition or Training

Meal: Within 2 hours after

Snack Example	Calories (Kcal)	Protein (g)	Carbohydrates (g)	Fat (g)
Roast Turkey. Potato, Carrot, Broccoli	483	41	77	3.4
Chicken curry with Vegetables and Rice	580	35	53	14.3
Large baked Potato with 1 can Tuna	640	40	130	1.6

Table 5 Meal within 2 Hours After Training Competition or Training

Nutrition for Travel

Travelling away for training or competition is a regular event for many athletes. Adequate nutrition is needed when travelling so athletes can achieve the proper carbohydrate and protein intakes needed to perform. It is also needed to keep up energy levels and avoid dehydration. Therefore it is important that athletes are prepared for all the distractions, changes and delays that accompany travelling.

In this section you will learn and come to understand the following:

How to be prepared when travelling.

What foods to eat when travelling and what to avoid.

Kitbag essential for your athletes.

Just like you wouldn't send a child to school without a packed lunch to fuel them for learning, they should be equally prepared when travelling for sport.

Before you leave:

Know the destination and what foods are available

Know timing of games and plan meals and snacks around them

Know if food will be provided or if you will have to rely on restaurants

Know the dinner and breakfast options available if staying overnight

When staying over night, how can my team be prepared?

Avoid sugary, fried and fast foods

Choose lean meats, vegetables, and rice/pasta/potatoes

Bring extra snacks and water incase of upsets or delays

What kinds of snacks should my athletes bring with them?

Fresh fruit
Nuts, seeds, dried fruit
Cereal bars
Boiled eggs
Yogurt
Sandwich, wholegrain
Jelly sweets
Yogurt drinks
Flavoured milk

Eating Out: Breakfast

Arrive early or staying over and faced with a buffet breakfast in hotel/hostel?

Follow guidelines below to provide you team with a healthy and performance fuelling breakfast.

DO EAT

Whole Cereals
- Porridge
- Shredded wheat

Fresh fruit

Yogurt

Granola

Eggs
- Omelette
- Poached
- Boiled
- Scrambled

DON'T EAT

Sugary Cereals
- Coco Pops
- Frosties

Pastries
- Croissants
- Danish

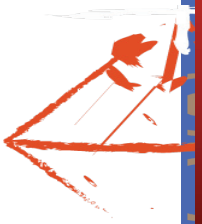
Fried foods
- Sausages
- Rasher
- Fried Eggs

Eating Out: Dinner

Leaving late or staying over and eating out in a restaurant?

Follow guidelines below to provide you team with a healthy meal that promotes recovery.

DO EAT



Salads
Vegetables - Lots
Lean Meats
- Fresh Beef
- Fresh Chicken
- Fresh Turkey
- Fresh Pork
- Fresh Fish

Pasta/Rice
Sweet Potato
Boiled Potato

DON'T EAT

Fried Foods
- Chips
- Onion Rings

Fatty Foods
- Creamy Mash Potatoes
- Garlic Potatoes

Processed/Frozen Meat
Desserts
Extra Sauces
Extra Sides

Tournament Tip:
Keep a supply of fresh fruit, cereal bars, and water available in a '**Team Room'** for away tournaments. This ensures your athletes won't resort to unhealthy snacks from shops.

Kitbag Essentials

Ask athletes to carry a variety of healthy snacks in kitbags to ensure they are prepared.

Cereal Bar
Drinking Yogurt
Fresh/Dried fruit
Flavoured milk
Fruit Juice cartons
Tub of Yogurt
Nuts/Seeds
Sandwich
Bottles of Water

Key Points when travelling

Plan ahead
Know what's available at destination
Carry easily portable foods
Choose best foods on offer
Don't over eat at buffet selections
Carry extra water bottles to avoid dehydration

Supplements

"You cannot supplement for a poor diet"

What are supplements and do my athletes need them?

Supplements are dietary or nutritional ergogenic aids, such as protein, creatine, and sports drinks. Youth athletes do not need to take supplements as all gains in performance, thought to come from supplements, can come from food.

Athletes can improve their performance from proper nutrition, hydration, sleep and exercise.

Why are supplements not recommended by Munster Rugby and the IRFU for youth?

Supplements are not recommended for youth, as they are not designed for youth athletes. There is an absence of safety data for those under eighteen and it is unknown if there could be long term harmful effects for growing youths.

Supplements are also not regulated; this means there may be varying amounts in each serving and ingredients present that are not listed, that may be harmful.

The IRFU and Irish Sports Council have now implemented testing for the Under 18 level. Any athlete tested positive for a banned substance, whether or not they were aware of it, will be held accountable.

What are the most common supplements and where can they be found naturally in food?

The supplements most often requested by young athletes are protein powders and creatine. They are often requested in the belief that taking them will bring about gains in body weight and composition that cannot be achieved from food alone. This is untrue!

Protein Supplement Substitution

Skim milk powder, found in the same aisle as tea and coffee in any grocery shop, contains mostly just protein. It is regulated, safe, and cost effective way to get extra protein in athletes' diet.

Skim milk powder can be added to porridge, shakes, soups, smoothies and more.

Tip: Instead of buying Chocolate milk, which can be expensive, use chocolate milk powder and just add it to your ordinary milk carton. It is just as effective and will save you money!

Creative Supplement Substitution

Creatine is found naturally in animal products. Mainly in beef, salmon, and tuna.
By including these meats in your diet you will naturally increase the amount of creatine in your system.

Sports Drinks Substitution

Sports drinks add empty calories, giving no nutritional value to your athlete. There are also high amounts of salt, which added to the amounts of salt in foods, could be harmful. The high amounts of sugar and citric acid also present in commercial sports drinks can erode tooth enamel and cause tooth decay.

However it can sometimes be difficult for young athletes to drink water, so a flavoured drink can be beneficial. Young athletes can replenish fluid loss by drinking diluted fruit juice or using some of the homemade recipes outlined below.

Homemade Drinks

1.
40g – 80g sugar or glucose powder
1 liter of water (previously boiled and cooled)
1g of salt
2.
500ml fruit juice
500ml water (previously boiled and cooled)
1g salt
3.
200ml fruit squash/cordial
800ml water (previously boiled and cooled)
1g salt

Other organisations such as Irish Rugby Football Union and the World Anti-Doping Agency have the same policies on supplements. Information regarding supplements and youth, and anti-doping polices can be found at the following sites:

http://www.irishrugby.ie/downloads/IRFU_supplements_the_young__FINAL.pdf

http://www.irishsportscouncil.ie/Anti-Doping/2015-Anti-Doping-Rules/2015-Anti-Doping-Rules.pdf

https://www.wada-ama.org/en/resources/the-code/world-anti-doping-code

A Word on Alcohol

Alcohol and sport are closely linked through sponsorship, advertising and the social aspect of sporting occasions. However research has shown that alcohol slows down activity in the central nervous system, including the brain. Alcohol also contributes to dehydration. A large amount of fluid is excreted by the kidneys when they are trying to remove alcohol from the body. This means that alcohol will compromise exercise performance. Alcohol is not an essential component of diet. Though it is the personal choice of an athlete whether or not to include alcohol in their diet, **it is illegal for anyone under 18 to consume alcohol**.

Shopping list

There is a common myth that eating healthy is expensive. The sample-shopping lists below are prices from a large, multinational supermarket. From these we can see that healthy eating is not expensive and can be achieved.

All prices correct at time of print (November, 2015) from a leading global discount supermarket.

Sample 1:

Meat:
Chicken Fillets, 500g, €4.85
Beef, minced, 600g, €3.59
Tuna, canned x 2, €1.18

Vegetables:
Tomato, 6pk, €0.99
Peppers, 3pk, €1.59
Onions, €0.69
Broccoli, €0.49
Sweet Potato, €0.49
Carrots, 1kg, €0.99

Fruit:
Bananas, 7pk, €1.37
Kiwi, 6pk, €1.19
Frozen Berries, €1.79

Fridge:
Milk, €0.75
Eggs, 10pk, €1.99
Yogurt, 125g, 4pk, €1.05
Cheese, €1.70
Salad, mixed, €0.89

Cupboard:
Bread, Whole meal, €0.89
Pitta Bread, €0.49
Porridge, €1.98
White Pasta, €0.99
Brown Rice, €1.84
Sauces (Tomato, Curry, etc.), €0.79
Beans, €0.29
Nuts, €2.19
Dried Fruit, €2.19
Peanut Butter, €1.09
Cordial, €1.99
Popcorn, €1.69

Total: €42.01

Sample 2:

Meat:
Turkey, 350g, €3
Pork chops, 650g, €3
Fresh Salmon, €3.75

Vegetables:
Spinach, €0.99
Onions, €0.69
Mushrooms, €0.95
Potato, 1kg, €0.99
Garlic, €0.79
Carrots, 1kg, €0.99

Fruit:
Apple, 8pk, €1.89
Pears, €0.49
Clementine's, €1.19

Fridge:
Milk, €0.75
Eggs, 10pk, €1.99
Yogurt, 500g, €0.99
Ham, €1.09
Fruit Juice, €0.99

Cupboard:
Bread, Whole meal, €0.89
Bread, White, €0.89
Shredded Wheat, €3.50
Brown Pasta, €0.99
White Rice, 1.39
Sauces (Tomato, Curry, etc.), €0.79
Beans, €0.29
Seeds, €1.00
Peanut Butter, €1.09
Cereal Bars, €1.35
Chocolate drink mix, €3.00
Popcorn, €1.69

Total: €41.40

Appendix 1: Individual Macronutrient Requirements

Carbohydrate

An athlete should be consuming between 5-8g of carbohydrate per Kg of body weight.

Ex, 80Kg body weight X 5g = 400g
80Kg body weight X 8g = 640g

The 80Kg athlete should be consuming between 400g and 640g of carbohydrates throughout the day. Where on this range the athlete falls depends on what their aim is, to decrease fat mass, increase muscle mass or maintain current body mass.

Protein

An athlete should be consuming between 1.2-1.4g of protein per Kg of body weight.

Ex, 80Kg body weight X 1.2g = 96g
80Kg body weight X 1.4g = 112g

The 80Kg athlete should be consuming between 96g and 112g of protein spread evenly throughout the day. Where on this range the athlete falls depends on what their aim is, to decrease fat mass, increase muscle mass or maintain current body mass.

Appendix 2: Individual Micronutrient Requirements

Fat Soluble Vitamins

Fat-soluble vitamins are usually ingested with fats and consist of A, D, E and K. While Vitamin D and K can be taken in through the diet, vitamin D is also produced from sunlight and absorbed through the skin, and vitamin K can be produced from bacteria in the intestine. Different from water-soluble, fat-soluble vitamins can be stored in the tissues of the body and usually remain there when over consumed.

Fat-Soluble Vitamins	RDA (14 – 18 y/o)	Source	Function	Deficiency
A	Females 700µg Males 900µg	Oily fish, Eggs, Carrots, Peppers, Green Vegetables	Growth, Healthy eyes, Healthy skin, Immune system	Growth Deficiencies, Night Blindness
D	Females 5µg Males 5µg	Sunshine, Eggs, Fish liver oils, Cheese, Salmon	Calcium absorption, Healthy bones and teeth, Immune system,	Bone disease (e.g. rickets, osteoporosis)
E	Females 15mg Males 15mg	Sunflower oil, Egg yolk, Nuts	Healthy red blood cells act as Antioxidant	Nerve problems, Damage to red blood cells
K	Females 75µg Males 75µg	Broccoli, Dark green vegetables, cereals	Aids in blood clotting	Clotting deficiencies

Water Soluble Vitamins

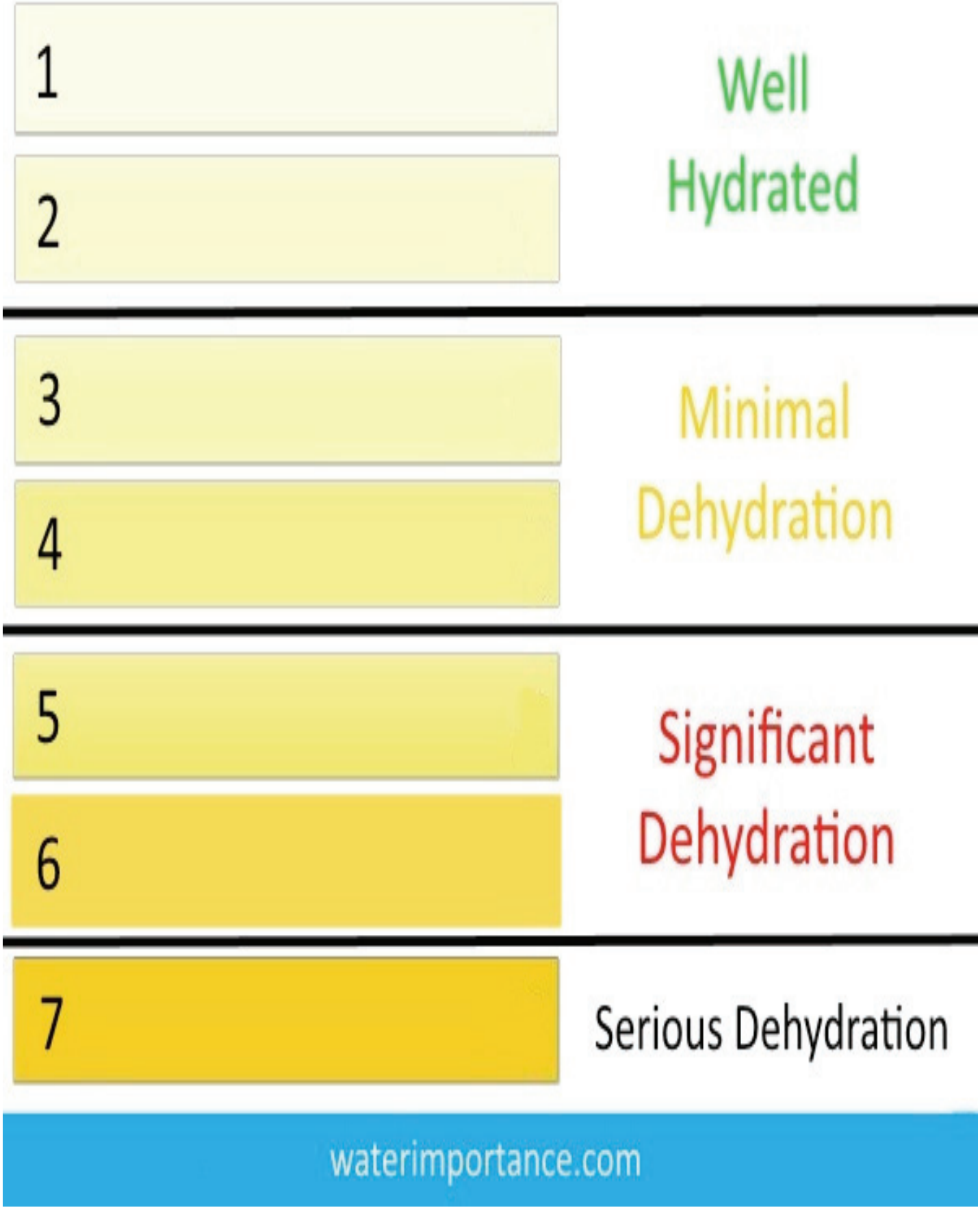
Water-soluble dissolve in water and consist of the B vitamins, folate, thiamine, riboflavin, niacin, pantothenic acid, biotin, vitamin B6 and vitamin B12. These are easily found in many different foods. B vitamins are often advertised as directly providing energy, when in reality their role is indirect and need help from other compounds. It is very rare for an athlete to be fatigued from a clinical vitamin deficiency. Rather athletes who are fatigued are more than likely related to nutrients, such as not consuming enough kilocalories or carbohydrates. The body cannot store water-soluble vitamins and if over consumed are usually excreted through the urine.

Water Soluble Vitamins	RDA (14 – 18 y/o)	Source	Function	Deficiency
B Group	**B1** Female 1mg Male 1.2mg **B2** Female 1mg Male 1.3mg **B3** Female 14mg Male 16 mg **B5** 5mg **B6** Female 1.2mg Male 1.3 mg **B7** 25 µg **B9** 400 µg **B12** 2.4µg	Meat, Fish, Eggs, Cheese, Nuts, cereals	Energy release, Healthy Nerves, Growth	Tiredness, Anaemia, Confusion
C	Females 65mg Males 75mg	Citrus fruits, Peppers, Green Vegetables	General Health, Skin and Gums, Iron absorption	Slow Healing, Feeling "run down", Anaemia

Minerals

Minerals	RDA (14 – 18 y/o)	Source	Function	Deficiency
Calcium	Females 1300mg Males 1300mg	Milk, Cheese, Yogurt, Green Vegetables	Healthy bones and teeth	Dental decay, Bone Diseases
Iron	Females 15mg Males 11mg	Liver, Kidney Red meat, Dark green vegetables	Form haemoglobin in the blood	Anaemia
Sodium	Females 1500mg Males 1500mg	Bacon, Cheese, Added table salt, Snack foods	Controls water balance in body	Muscle cramps, Headaches, Nausea, Fatigue

Appendix 3: Hydration Chart



Appendix 4: Weight Management Meal Plans For Backs

Sample Meal Plan for Backs to Increase Mass

3500 Calories per Day 20% Protein, 65% Carbohydrate and 15% Fat

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Breakfast					
3 Egg Omelet	351	19.6	0	30	 X 3
Cherry tomatoes	10.8	0.5	1.8	0.2	 X1
Spinach	5	0.6	0.3	0.2	 X1
Peppers	6.1	0.3	1.2	0.1	 X1
Mushrooms	10.4	1.4	0.3	0.4	 X1
Feta Cheese	75	4.7	0.5	6.1	 X1
Low-fat milk	23	1.7	2.4	0.9	 X1
Apple	47	0.4	11.8	0.1	 X1
Whole meal toast	153	6.7	30	1.7	 X2
Totals for breakfast meal	680 calories	36g protein	48 g carbohydrate	38 g fat	

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Mid-Morning Snack					
Cereal Bars	97	1.7	14.7	3.8	 X1
Strawberries	35	1	7.8	0.1	 X1
Blueberries	7.2	0.1	1.7	0	 X1
Chia seeds	42	1.8	0.8	3.1	 X1
Plain Yoghurt	158	11.4	15.6	6	 X1
Orange Juice	94	1.6	20	0.2	 X1
Totals for mid-morning snack	463 calories	17.7g protein	61g carbohydrate	13.3g fat	
Lunch					
Whole meal Bread	321	13.9	62	3.7	 X4
Chicken	121	25	1.1	2	 X1
Salad	19	1.4	2.7	0.3	 X2
Low-fat Milk	115	8.5	11.8	4.3	 X1
Vegetable Soup	63	2.3	12.5	0.8	 X2
Totals for lunch	639 calories	51g protein	90 g carbohydrate	11g fat	

Sample Meal Plan for Backs to Decrease Fat Mass

2500 Calories per Day 20% Protein, 60% Carbohydrate and 20% Fat

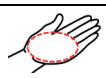
Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Breakfast					
Shredded Wheat Original (50g)	170	6	34	1	 X1
Non Fat Milk (500ml)	191	15	25	0	 X2
Mixed Berries (150g)	86	1	18	0	 X1
Roasted Soy Nuts (30g)	137	10	9	7	 X1
Totals for breakfast meal	584 Calories	32g Protein	86g Carbohydrate	8g Fat	
Mid-Morning Snack					
Peanut Butter (32g)	188	8	6	16	 X 2
2 Slices Whole Grain Bread	174	7	34	2	 X2
Totals for mid-morning snack	362 Calories	15g Protein	40g Carbohydrate	18g Fat	
Lunch					
2 Whole Grain Pita Bread (160g)	348	14	68	4	 X2
Olive Oil Spread (2 tsp. or 14 g)	80	0	0	8	 X2
Turkey (Grilled) (50g)	68	15	0	0	 X0.75
Salad (250g)	30	2	4	0	 X2.5
Totals for lunch	526 Calories	31g Protein	72 g Carbohydrate	12g Fat	

Appendix 5: Weight Management Meal Plans For Forwards

Sample Meal Plan for Forwards to Increase Mass

4000 Calories per Day 20% Protein, 65% Carbohydrate and 15% Fat

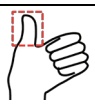
Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Breakfast					
Porridge made with whole milk	226	9.6	25	10.2	 X2
Granola	178	4.4	21	8.2	 X1
Raspberries	10	0.6	1.8	0.1	 X1
Blackberries	7.5	0.3	1.5	0.1	 X1
Boiled eggs	147	12.5	0	10.8	 X2
Orange Juice	58	0.8	14.1	0.2	 X1
Butter, spread	104	0.1	0	11.6	 X0.5
Whole meal toast	153	6.7	30	1.7	 X2
Totals for breakfast meal	883 Calories	35g Protein	93g Carbohydrate	43 g Fat	
Mid-Morning Snack					
Nutri-Grain Bars	133	1.5	26	3.1	 X1
Banana	114	1.4	28	0.4	 X1
Fruit Yogurt	218	8	35	6	 X1
Totals for mid-morning snack	465 Calories	11g Protein	90g Carbohydrate	9.5g Fat	

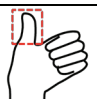
Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Lunch					
Whole meal Pasta	393	15.9	80	3.3	 X3
Chicken breast	237	51	0	3.5	 X1
Onion	10.8	0.4	2.4	0.1	 X1
Garlic	2.9	0.2	0.5	0	 X0.5
Spinach	5	0.6	0.3	0.2	 X1
Mushrooms	10.4	1.4	0.3	0.4	 X1
Side Salad	18	1.1	2.7	0.5	 X1
Tomato pasta sauce	107	2.6	10.3	6.6	 X1
Totals for lunch	784 Calories	73g Protein	97g Carbohydrate	15g Fat	
Mid-Afternoon Snack					
Kiwi	34	0.8	7.4	0.4	 X1
Semi-Skimmed Milk	115	8.5	11.8	4.3	 X1
Popcorn	116	3.9	23	1.4	 X1
Ham Sandwich, whole meal	200	9.8	30	5.4	 X1
Totals for mid-afternoon snack	466 Calories	23g Protein	73g Carbohydrate	11g Fat	

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Dinner					
Potatoes	490	14	114	0.7	 X2
Broccoli	26	3.5	1.4	0.7	 X1.5
Curley Kale	7.9	0.8	0.3	0.4	 X1
Carrots	67	1.7	13.7	1.1	 X1.5
Gravy	17	0.2	1.5	1.2	 X0.5
Beef Steak, lean, 8oz	344	49	0	16.3	 X1
Totals for Dinner	952 Calories	70g Protein	131g Carbohydrate	20g Fat	
Evening Snack					
Grapes	45	0.3	11.6	0.1	 X1
Cottage Cheese	101	12.6	3.1	4.3	 X2
Whole meal crackers	348	8.5	60	9.7	 X4
Totals for evening snack	494 Calories	21g Protein	75g Carbohydrate	14g Fat	
Total for Day	**4044 Calories**	**233g Protein**	**559g Carbohydrate**	**113g Fat**	

Sample Meal Plan for Forwards to Decrease Fat Mass

3000 Calories per Day 30% Protein, 55% Carbohydrate and 15% Fat

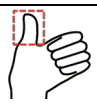
Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Breakfast					
Oat (50g)	199	8	33	3	 X1
Non Fat Milk (250 ml)	96	9	13	0	 X1
Low Fat Cottage Cheese (200 g)	196	22	26	8	 X2
Apple	95	0	25	0	 X1
Totals for breakfast meal	586 Calories	39g Protein	97g Carbohydrate	11g Fat	
Mid-Morning Snack					
2 Oranges	122	2	30	0	 X 2
Non Fat Plain Yogurt	168	17	23	0	 X1.25
Roasted Soy Nuts (30g)	137	10	9	7	 X1
Totals for mid-morning snack	427 Calories	29g Protein	62g Carbohydrate	7 g Fat	
Lunch					
Turkey Breast (100g)	135	30	0	0	 X1.25
Quinoa (100g)	368	14	64	6	 X1
Gravy (50g)	40	0	2	3	 X2
Kale (100g)	49	30	0	0	 X1
Carrots (50g)	21	0	5	0	 X0.5
Grapes (100 g)	67	0	17	0	 X1
Totals for lunch	613 Calories	48g Protein	80 g Carbohydrate	9g Fat	

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Mid-Afternoon Snack/Pre-Workout					
Banana (Large)	121	3	31	0	 X2
Non Fat Milk (500ml)	191	19	25	1	 X1
Boiled Egg (Large)	73	6	0	4	 X1
Totals for mid-afternoon snack	385 Calories	28g Protein	56g Carbohydrate	5g Fat	
Dinner					
Chicken, (Grilled skinless) (100g)	110	23	0	1	 X1.25
Brown Pasta (200g)	248	10	53	1	 X 1.5
2 Whole Grain Bread	174	7	34	2	 X2
Courgettes (200g)	34	2	6	0	 X1
Olive Oil Spread (1 tsp. or 7 g)	40	0	0	4	 X1
Totals for Dinner	606 Calories	42g Protein	93g Carbohydrate	8g Fat	
Evening Snack					
2 Low Fat String Cheese	100	12	2	4	 X2
Grapes (200g)	191	19	25	1	 X2
Non Fat Plain Yogurt (300g)	168	17	23	0	 X2
Totals for evening snack	402 Calories	30g Protein	50g Carbohydrate	5g Fat	
Entire Day Total	**3019 Calories**	**216g Protein**	**438g Carbohydrate**	**45g Fat**	

Appendix 6: Meal Plans For Athletes Maintaining Weight

Sample Meal Plan Players to Maintain Current Weight

3000 Calories per Day 20% Protein, 60% Carbohydrate and 20% Fat

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Breakfast					
2 slices of whole grain toast	174	7	34	2	 X2
Olive Oil Spread (1 tsp. or 7 g)	40	0	0	4	 X1
Low Fat Yogurt (150g)	135	6	27	1	 X1
Honey (21 g or 1 tbsp.)	64	0	17	0	 X1
Apple (Medium)	95	0	25	0	 X1
2 Boiled Eggs (Large)	148	12	0	8	 X2
Totals for breakfast meal	656 Calories	25g Protein	103g Carbohydrate	15g Fat	
Mid-Morning Snack					
Peanut Butter	95	4	3	8	 X 0.5
Banana (Large)	78	1	21	0	 X1.5
Non Fat Milk (500ml)	191	19	25	1	 X2
Totals for mid-morning snack	364 Calories	24g Protein	49g Carbohydrate	9 g Fat	

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Lunch					
Sweet Potato (Large) (Baked)	112	2	26	0	 X2
Olive Oil Spread (2 tsp. or 14 g)	80	0	0	8	 X2
Brown Rice (195g)	216	5	45	2	 X2
Chicken (Skinless, Baked) (60g)	66	14	0	0	 X1
Broccoli (Stemmed) (100g)	34	3	7	0	 X1
Grapes (100 g)	67	0	17	0	 X1
Totals for lunch	575 Calories	24g Protein	95g Carbohydrate	10g Fat	
Mid-Afternoon Snack/Pre-Workout					
2 Apples (Medium)	190	0	50	0	 X2
Low Fat Cottage Cheese (200 g)	196	22	6	8	 X2
Totals for mid-afternoon snack	386 Calories	22g Protein	56g Carbohydrate	8g Fat	

Meal	Calories	Protein (g)	Carbohydrate (g)	Fat (g)	Portion Sizes
Dinner					
Lean Beef, (Boiled) (60g)	110	18	0	3	 X1
Brown Pasta (250g)	310	13	66	1	 X 2
Spaghetti Sauce (100g)	80	3	16	0	 X1
Cauliflower (Stemmed) (100g)	50	4	10	0	 X1
Salad (125g)	15	1	2	0	 X1
Olive Oil Spread (1 tsp. or 7 grams)	40	0	0	4	 X1
Totals for Dinner	605 Calories	39g Protein	95g Carbohydrate	8g Fat	
Evening Snack					
Weetabix (4 biscuits)	272	10	52	0	 X1
Non Fat Milk (500ml)	191	19	25	1	 X2
Totals for evening snack	463 Calories	29g Protein	77g Carbohydrate	1g Fat	
Entire Day Total	**3087 Calories**	**163g Protein**	**475g Carbohydrate**	**51g Fat**	

References

Alberta Health Services (2015). *Sports Nutrition for Youth: A Handbook for Coaches*. Canada: Alberta Health Services. 3-128.

Ausport.gov.au,(2015) 'Nutrition For Travelling Athletes: AIS: Australian Sports Commission'.N.p.,Last accessed 16 Sept. 2015.

Barr, Susan I. (1999)"Effects of dehydration on exercise performance." *Canadian Journal of Applied Physiology* 24.2 164-172.

Bean, A. (2013). Vitamins and The Young Athlete. In: Cole, S *Sports Nutrition*. 7th ed. London, UK: Bloomsbury. 65-72 & 187-208.

Committee on Nutrition and the Council on Sports Medicine and Fitness.Sports drinks and energy drinks for children and adolescents: Are they appropriate? *Pediatrics*. 2011;127(6): 1182–1189.

Cotugna, N., Vickery, C. E., & McBee, S. (2005). Sports nutrition for young athletes. *The Journal of School Nursing*, *21*(6), 323-328.

Dairy Council of California. (2012). *Correct Portion Sizes: How to Keep Portion Distortion in Check.* Available: http://www.healthyeating.org/Healthy-Eating/Healthy-Living/Weight Management/Article- Viewer/Article/348/correct-portion-sizes-how-to-keep-portion-distortion-in-check.aspx. Last accessed 27 Aug 2015.

Department of Health. (2012). *Your Guide to Healthy Eating Using the Food Pyramid.* Available: https://www.healthpromotion.ie/hp-files/docs/HPM00796.pdf. Last accessed 27 Aug 2015.

Dietitians of Canada (2014) Nutrition A-Z: Vitamins. Available: http://www.dietitians.ca/Your-Health/Nutrition-A-Z/Vitamins.aspx Last accessed 16 Oct 2015

Dunford, M.; Doyle, A. (2015). Vitamins. In: *Nutrition for Sport and Exercise*. 3rd ed. CT, USA: Cengage Learning. 295.

IRFU. (2013). *Sport Supplements and the Young Rugby Player.* Available:http://www.irishrugby.ie/downloads/IRFU_supplements_the_young__FINAL.pdf. Last accessed 31 Aug 2015.

IRFU. (2015). Nutrition Strategies for Speedy Recovery. Available: http://www.irishrugby.ie/downloads/Nutrition_Recovery.pdf Last accessed: 16 Sept. 2015

IRFU. (2015). Nutritional Guidelines for Match Day. Available: http://www.irishrugby.ie/downloads/IRFU_Nutritional_Guidelines_for_Match_Day.pdf Last accessed: 16 Sept. 2015

IRFU. (2015). Eating and Drinking for Action. Available: http://www.irishrugby.ie/downloads/Nutrition_Eating.pdf Last accessed: 16 Sept. 2015

Jeukendrup, A., & Gleeson, M. (2010). Nutrients. In: *Sport nutrition: an introduction to energy production and performance* (No. Ed. 2). Human Kinetics. 19-20.

Johnson, S. R., Wojnar, P. J., Price, W. J., Foley, T. J., Moon, J. R., Esposito, E. N., & Cromartie, F.J. (2011). A Coach's Responsibility: Learning How to Prepare Athletes for Peak Performance. *The Sport Journal*, *14*(1), 1.

Madigan, S. (2005). Hydration You Are What You Drink. *Coaching Ireland*. 1-7.

Meyer, F., O'Connor, H., & Shirreffs, S. M. (2007). Nutrition for the young athlete. *Journal of sports sciences*, *25*(S1), S73-S82.

National Association for Sport and Physical Education. (2006). Parents' Complete Guide to Youth Sports. USA Swimming and the U.S. Ski and Snowboard Association *Successful Sport Parenting*. Reston,VA, USA.

Nisevich,P. (2008). Sports Nutrition for Young Athletes: Vital to Victory. Today's Dietitian. 10 (3), 44.

Noble WH, Donovan TE, Geissberger M. Sports drinks and dental erosion. *J Calif Dent Assoc*. 2011;39(4):233–238.

Purcell, Laura K., and Exercise Medicine Section. (2013)"Sport nutrition for young athletes." *Paediatrics & child health* 18.4, 200.

Rodriguez, Nancy R., Nancy M. DiMarco, and Susie Langley.(2009)"Nutrition and athletic performance." *Medicine and science in sports and exercise* 41.3, 709-731.

Sawka, M. N., Burke, L. M., Eichner, E. R., Maughan, R. J., Montain, S. J., & Stachenfeld, N. S. (2007). American College of Sports Medicine position stand. Exercise and fluid replacement. *Medicine and science in sports and exercise*, *39*(2), 377-390.

Sirimaharaj V, Messer LB, Morgan M. Acidic diet and dental erosion among athletes. *Aust Dent J*. 2002;47(3):228–236.

Speedy, D. B., Noakes, T. D., Rogers, I. R., Thompson, J. M., Campbell, R. G.,Kuttner, J. A., & Hamlin, M. A. R. K. (1999). Hyponatremia in ultradistance triathletes. *Medicine and Science in Sports and Exercise*, *31*(6), 809-815.

Story, Mary, and Jamie Stang. "Nutrition needs of adolescents." *Guidelines for adolescent nutrition services. Minneapolis, MN: Centre for Leadership, Education and Training in Maternal and Child Nutrition Division of Epidemiology and Community Health, School of Public Health, University of Minnesota*(2005): 21-34.

U.S. Department of Agriculture, Agricultural Research Service, Beltsville Human Nutrition Research Center, Food Surveys Research Group. Sodium intake of the U.S. population: *What we eat in America*, NHANES 2007–2008. Food Surveys Research Group Dietary Data Brief No. 8. 2011. Available from: *http://www.ars.usda.gov/SP2UserFiles/Place/12355000/pdf/DBrief/8_ sodium_intakes_0708.pdf*. Last accessed 27 Aug 2015.

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