



[www.BokSmart.com](http://www.BokSmart.com)  /BokSmart  @BokSmart

## Rugby Nutrition:

### Nutrition Fundamentals – Energy and Macronutrients

The key to optimal performance is to take in the right type and right amount of ENERGY. The longer and harder (more intense) the training, the greater your energy (kilojoule/calorie) needs.<sup>[1]</sup> You need to strike a balance: **too much energy** and you will gain weight and body fat, and **too little energy**, you will experience early fatigue, decreased performance and increase your chance of getting injured or ill.

**The energy** in food is provided by carbohydrate, protein and fat (Figure 1). Each of these macronutrients has unique features and functions (Figures 2, 3 and 4). Although alcohol also provides energy, it is not regarded as an essential macronutrient and can be detrimental to sports performance and recovery.

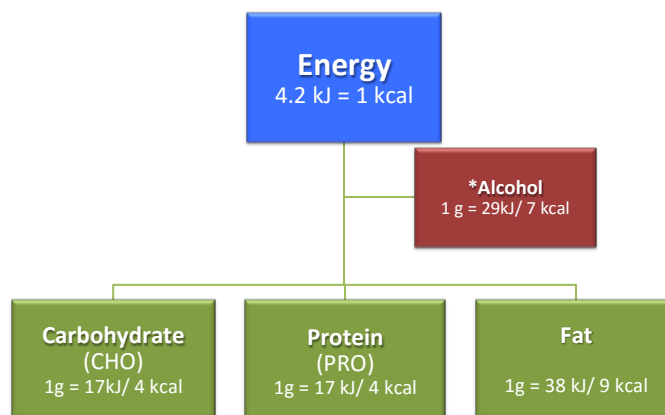
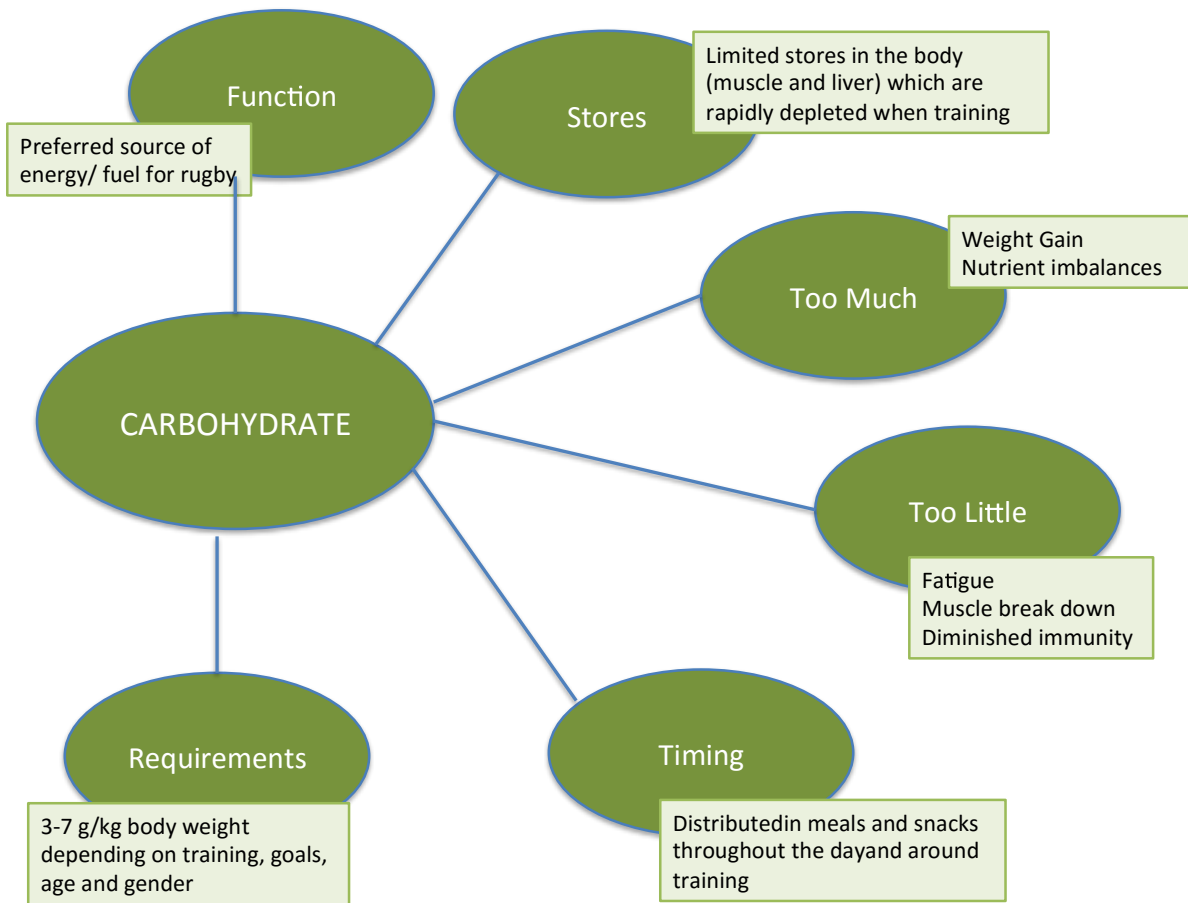
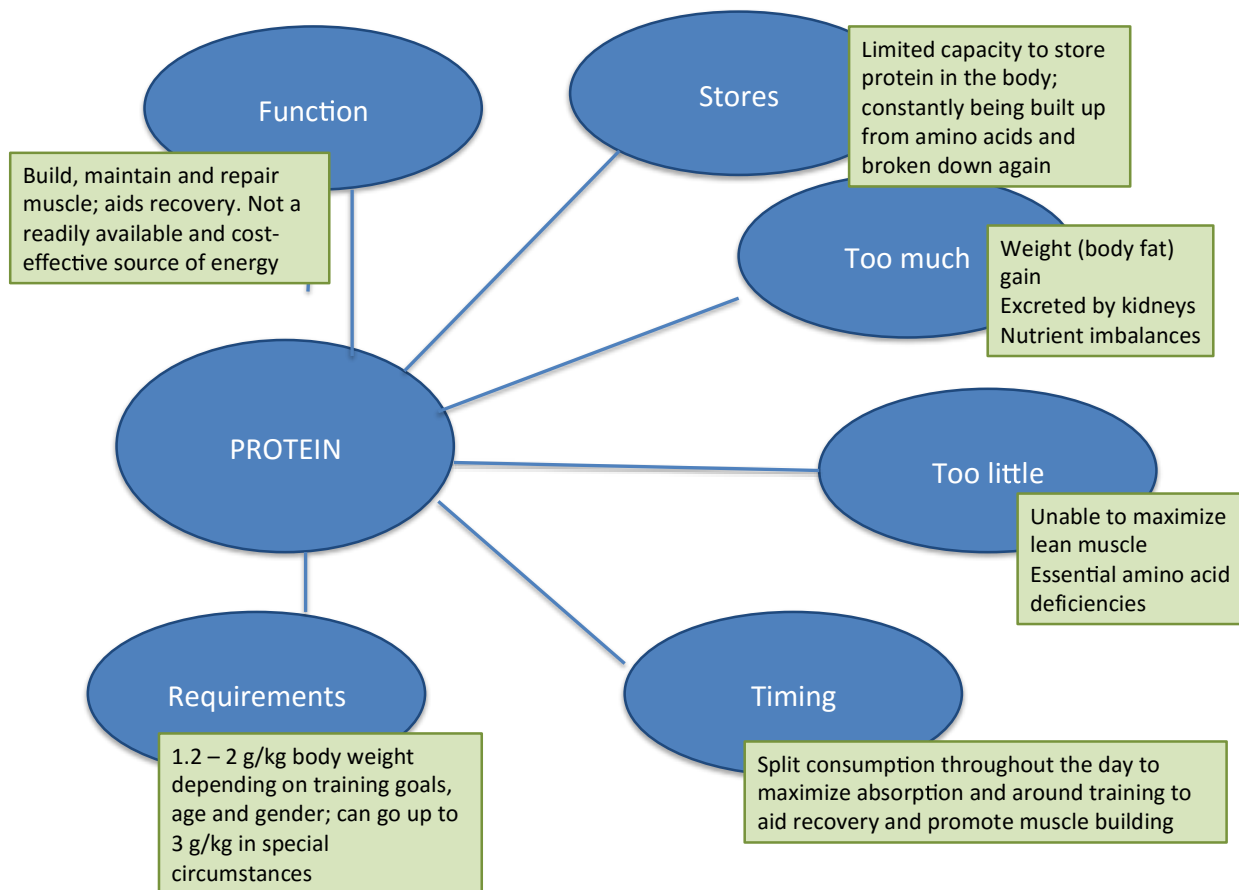


Figure 1. The Supply of Energy: Macronutrients.

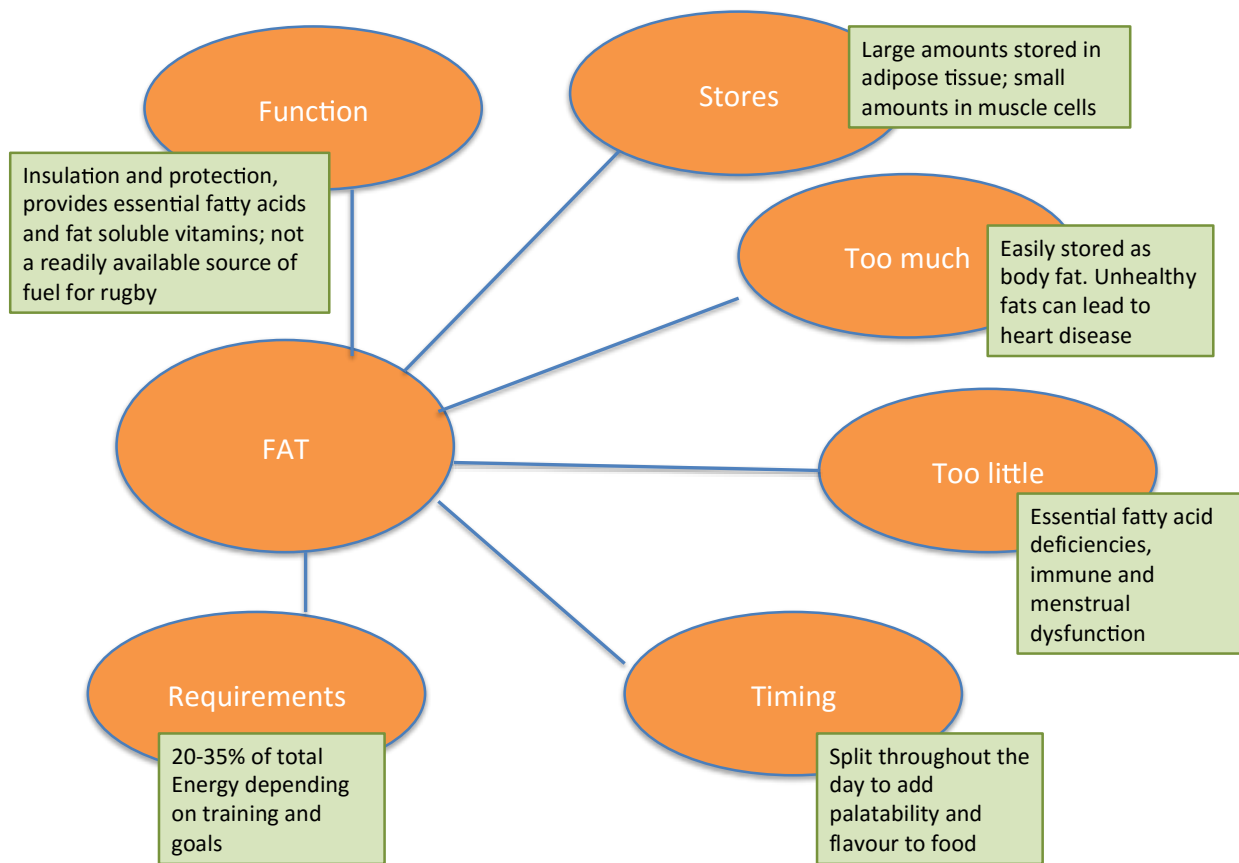




**Figure 2.** Carbohydrate



**Figure 3.** Protein



**Figure 4. Fat**

In real life we eat food and not individual nutrients. Most food contains a mixture of carbohydrate, protein and fat as well as vitamins and minerals (which are required by the body in smaller amounts), and water.

### **Macronutrient Groups**

Foods are classified according to the macronutrient that is present in the greatest amount. Bread, fruit and starchy vegetables, for example, have more carbohydrate than protein or fat and are referred to as “carbohydrate” or a “carbohydrate-rich food”. Similarly, meat or fish contains more protein than any other macronutrient, and is called a “protein” or “protein-rich food”, and butter, oil and avocado pear contains mainly fat, and so fits into the “fat group”. Sometimes, the classification is not that obvious. Pulses (dried beans, chickpeas and lentils) and dairy are both carbohydrate- and protein-rich, whereas chocolate is high in sugar (carbohydrate) and fat. [2]

## **NUTRITIOUS ENERGY – Choosing the best team**

To get the most nutritional ‘bang for your buck’, focus on both the quantity and the quality, as the choice of foods you make, are also essential for optimizing health and performance. This is illustrated in the tables below.

**Table 1.** Carbohydrate-rich foods.

Type of carbohydrate	Examples	Uses
Nutrient-rich carbohydrate	Wholegrain bread, cereals, grains, fruit, starchy vegetables (e.g. beetroot), legumes (dried beans, peas, lentils) and low fat or fat-free dairy	Should form part of daily diet. Lower fibre options may be a better choice right before training or competition to ensure gastrointestinal comfort.
Nutrient-poor carbohydrate	Sports drinks, cool drinks, cordials, sweets and gels	Should only be used as a carbohydrate ‘top up’ in and around training sessions if needed
High fat, carbohydrate-rich foods	Cakes, pastries, pies, hot chips, crisps, chocolate, some biscuits, desserts and ice cream	Should be limited to occasional treats and not around training

**Table 2.** Protein-rich foods.

Type of protein	Examples	Uses
Animal Protein	Eggs, dairy products, lean meat, chicken, fish and tinned fish	High biological source of protein as these foods contain all the essential amino acids
	Full cream dairy products	Should be limited to occasional treats and not around training
	Fatty and processed meats (e.g. sausage and Polony)	
Plant Protein	Legumes (dried beans, split peas, lentils), soy products, quinoa	These foods lack some of these essential amino acids and need to be eaten in special combinations to optimize protein intake
	*Nuts, seeds, and nut butters	*Can be included as part of your daily fat intake

**Table 3.** Fat-rich foods. Fat is hidden in many protein- and carbohydrate-rich foods and snacks

Type of fat	Examples	Uses
Nutrient-rich fat	Olive oil, avocado pear, olives, nuts, nut butters and seeds	Provides essential fatty acids and fat-soluble vitamins, taste and flavour
Nutrient-poor fat	Processed foods (e.g. pies) and snacks and deep fried foods	Should be limited

To ensure an optimal energy and nutrient intake, a variety of carbohydrate-rich foods (cereals; grains; fruit and starchy vegetables) should form part of all meals and snacks, accompanied by lean protein-rich foods (fish; lean meat; chicken; eggs; low fat dairy products) and minimal added fat (oil, butter, margarine, and fat hidden in proteins and snack foods like pastries, pies, biscuits).

For more information on *Rugby Nutrition*, go to the BokSmart website [www.BokSmart.com](http://www.BokSmart.com) or go to the following link: <http://boksmart.sarugby.co.za/content/eating-and-drinking-right>

## REFERENCES

1. Potgieter S. Sport nutrition: A review of the latest guidelines for exercise and sport nutrition from the American College of Sport Nutrition, the International Olympic Committee and the International Society for Sports Nutrition. *S Afr J Clin Nutr* 2013;26(1):6-16.
2. Meltzer & Associates: 2013, SISSA Nutrition Short Course. Module 4.

*Document Compiled by S Meltzer & Cecily Fuller RD (SA), Shelly Meltzer & Associates*