



## WHY IS DIET IMPORTANT FOR SPORTS PERFORMANCE?



## **HEALTHY DIET**



Energy availability

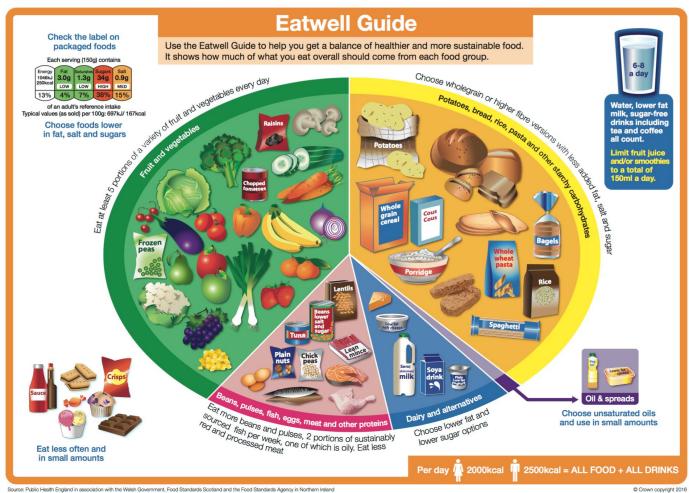
General level of health

Improved recovery from injuries

Stamina and athletic performance

Growth and development

## **GETTING THE BASICS RIGHT!**



Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland



## WHY SPORTS NUTRITION?

"Sports nutrition enhances athletic performance by decreasing fatigue and the risk of disease or injury."

"Sports nutrition enables athletes to optimise training and recover faster."

Purcell, Paediatr Child Health, 2013





## Estimated Calorie Requirements by Age and Activity Level

Gender	Age	Sedentary Activity	Moderate Activity	Active
Young child	2-3	1,000	1,000-1,400	1,000-1,400
Female	4-8	1,200	1,400-1,600	1,400-1,800
	9-13	1,600	1,600-2,000	1,800-2,200
	14-18	2,000	2,000	2,400
Male	4-8	1,400	1,400-1,600	1,600-2,000
	9-13	1,800	1,800-2,200	2,000-2,600
	14-18	2,200	2,400-2,800	2,800-3,200

Energy: prediction equation includes weight, height, extra energy for deposition, and physical activity (4 levels)

<sup>&</sup>lt;sup>b</sup> Sedentary means a lifestyle that includes only the light physical activity associated with typical day-to-day life.

<sup>&</sup>lt;sup>c</sup> Moderately active means a lifestyle that includes physical activity equivalent to walking about 1.5 to 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life

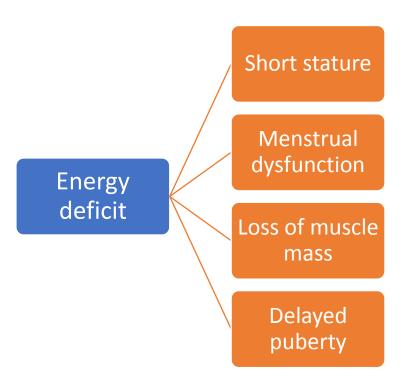
<sup>&</sup>lt;sup>d</sup> Active means a lifestyle that includes physical activity equivalent to walking more than 3 miles per day at 3 to 4 miles per hour, in addition to the light physical activity associated with typical day-to-day life.

<sup>&</sup>lt;sup>e</sup> The calorie ranges shown are to accommodate needs of different ages within the group. For children and adolescents, more calories are needed at older ages. For adults, fewer calories are needed at older ages.









- Youth and collegiate athletes consistently under-eat.
- •From 345 collegiate athletes both genders eat well under their recommended needs, with only 15% consuming enough CHO and 26% eating enough PRO. In the study, the majority of female athletes (62%) wanted to lose at least 5 pounds.

Int J Sport Nutr Exer Met. 2004;4:389-405



## **Consequences of chronic negative energy balance in athletes**

- Weight loss (muscle loss)
- Strength loss
- •Inability to adapt to training regimen
- Diminished performance
- Soreness, joint pain
- Chronic fatigue
- Vitamin and mineral deficiency
- Respiratory infections
- Decreased bone mineral density
- •Overtraining syndrome





## **NUTRIENTS & FOODS**





## **CARBOHYDRATES**

Readily available source of food energy for the exercising muscle

Primary fuel source for high intensity training

# **Carbohydrates**

Exclusive fuel source for the brain and the nervous system

Pre-exercise: delay in fatigue

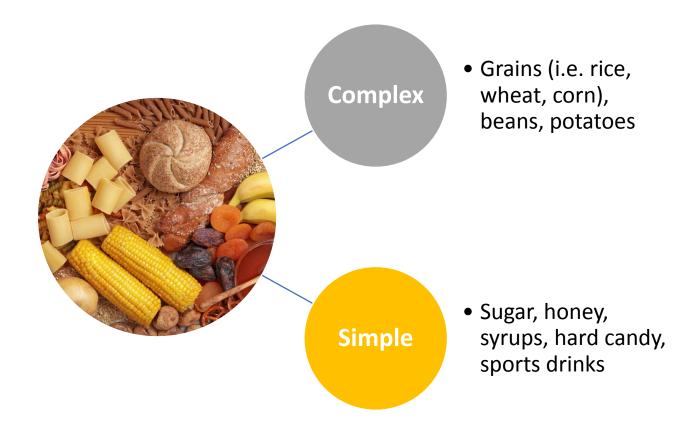
During exercise: maintain glucose

availability

Post-exercise: muscle fuel storage



## **CARBOHYDRATES: FOOD SOURCES**





## **CARBOHYDRATES: FOOD SOURCES**

## Table 2A: Best Carbohydrate Choices for Sustained Energy

Whole Wheat	Beans/Peas	Starchy Vegetables
Pasta Rice Bread Pita Tortillas English Muffins Bagels Cereals Oatmeal	Dried beans and peas Black beans Kidney beans Garbanzo beans Lentils	Squash and zucchini Eggplant Corn Carrots Green beans/peas Sweet potatoes
Vegetables		Fruit
Broccoli Spinach/collard greens Mushrooms Romaine lettuce Tomatoes Peppers		Apples Bananas Grapes Nectarines/peaches Oranges/grapefruit Peaches Plums

## Table 2B: Carbohydrate Choices to Minimize

Breads	Vegetables	Fruits
Muffins Biscuits Cinnamon rolls Coffee cake Croissants Danish pastries Doughnuts Pies	"Corn" chips Onion rings French fries Potato chips Vegetables cooked in butter Vegetables in creamy sauce	Fruit pastries Fruit canned in syrup High sugar "fruit" juices Fruit salad with creamy sauce



## **CARBOHYDRATES: HOW MUCH?**

Young athletes training 1-2 h/d = 5 - 7 g carbohydrate/kg BW/day training >2 h/d = 7 - 10g/kg BW/day

60kg athlete training 1-2 h/d = 360 - 420g carbohydrate daily

Young athletes should be able to meet their carbohydrate requirements by eating.
4 – 6 portions of grains/ potatoes,
5 portions of fruit/ vegetables and

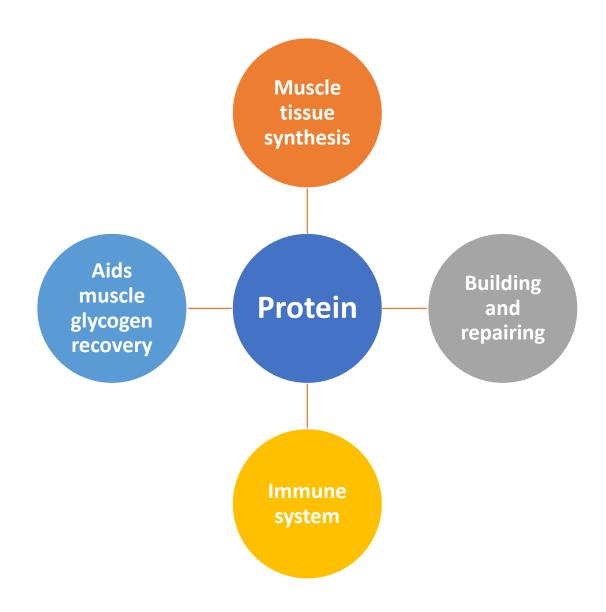
2 – 4 portions of dairy products

One portion of grains/potatoes is equivalent to two slices of bread or 150g potatoes; a portion of fruit is equivalent to a banana, and a portion of dairy is equivalent to a glass (200ml) of milk.





## **PROTEIN**





## PROTEIN: FOOD SOURCES



**Table 3A: High Quality Protein Choices** 

Meat choose baked, roasted, grilled, broiled, poached	Dairy and Eggs	Vegetarian
Chicken (white best) Turkey (white best) Lean roast beef >85% lean meats Trimmed pork chops Fish Lean baked ham Canned tuna - in water	Milk Dried milk Greek yogurt Yogurt (regular or low-fat) Cheese Eggs or egg whites	Dried beans and peas Lentils Black beans Kidney beans Chick peas Peanut butter Nuts/seeds Soy products

Table 3B: Protein Choices to Choose Less Frequently

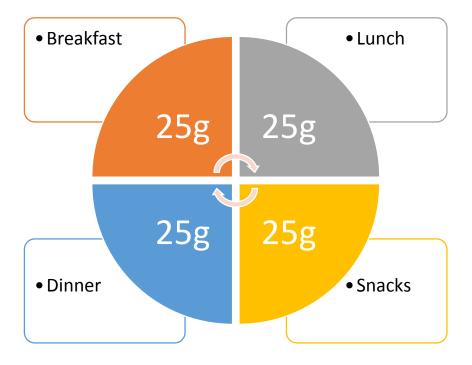
Meat	Dairy
Poultry with skin Hot dogs Bacon Sausage Pepperoni Fried meat/fish Processed or cured meats (bologna, salami)	Whole milk Cream Non-fat yogurt (higher sugar) Higher fat cheeses Butter



## **PROTEIN: HOW MUCH?**

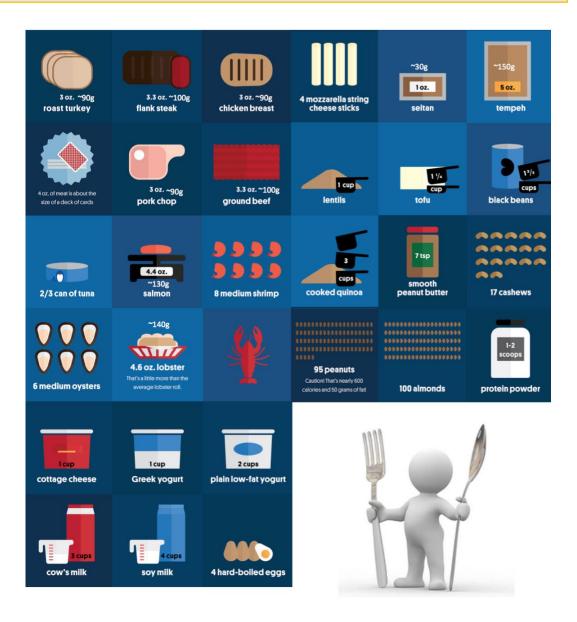
Young athletes may require anywhere from 1.0 to 1.6 grams of protein per kilogram body weight per day.

60kg athlete = 60 - 100g carbohydrate daily



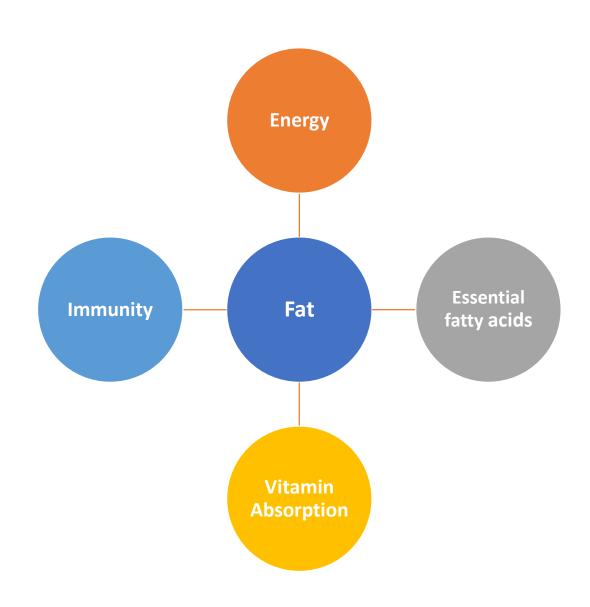


## PROTEIN: WHAT 25g OF PROTEIN LOOKS LIKE











## **FAT: FOOD SOURCES**

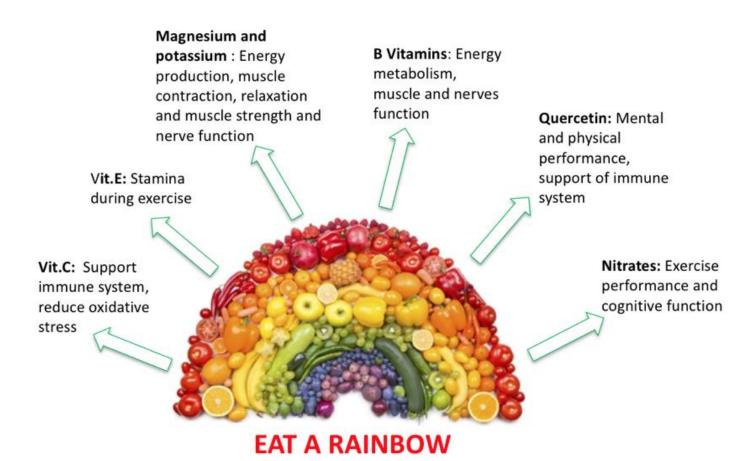


Table 4: Examples of Healthy and Unhealthy Fat Sources

Healthy Fat Sources	Unhealthy Fat Sources
Nuts and nut butters Olives Avocados Almonds Walnuts Tuna Salmon Foods cooked with olive or vegetable oils	French fries Chips Doughnuts Commercial/packaged baked goods Foods cooked in coconut or palm oil Cream Butter Fried foods Fatty meats (bacon, sausage, pepperoni, bologna, salami)



## **EAT A RAINBOW**





## **KEY NUTRIENTS FOR YOUNG ATHLETES**



**IRON** 



CALCIUM



**VITAMIN D** 



ZINC



## **SPORTS NUTRITION – BEFORE TRAINING**

# WHEN TO EAT BEFORE TRAINING?



Optimal Timing: 2-4 hours before exercise

Meal: 3-4 before

Top-Up Snack: 30' - 1 h before



WHAT TO EAT BEFORE TRAINING?



Foods with high carbohydrate content Include some protein and vegetables



## SPORTS NUTRITION – BEFORE TRAINING

## **Pre-training meals**

- Jacket potato with cheese, tuna or baked beans plus salad.
- Pasta with tomato-based sauce or pesto, a little cheese, and some vegetables.
- Rice, pasta or noodles with chicken, fish or beans; and vegetables.
- Bowl of wholegrain breakfast cereal with milk and banana.
- Porridge with milk, honey and raisins.
- Lentil/vegetable or chicken soup with wholemeal bread.
- Wholemeal sandwich/roll/ wrap filled with tuna/ cheese/ chicken/ peanut butter, and salad.

## **Pre-training snacks**

- One or two bananas (or other fresh fruit).
- Handful of dried fruit and nuts.
- One or two oat-based cereal bars.
- Pot of fruit yoghurt and some fresh fruit.





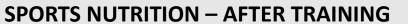
## **SPORTS NUTRITION – DURING TRAINING**

Training or competition lasting less than 60 minutes – **NOT NEEDED** 

Training or competition lasting longer than 60 minutes – **fruit snacks** (orange slices, melon and cantaloupe slices, dried fruit, sports drink

## **MAINTAIN HYDRATION!!!!**















## **SPORTS NUTRITION – AFTER TRAINING**

## **Refuelling snacks and drinks**

Each of the following provides 50-60g carbohydrate and 10 – 20 g protein Consume ASAP after training

#### •500 ml flavoured milk

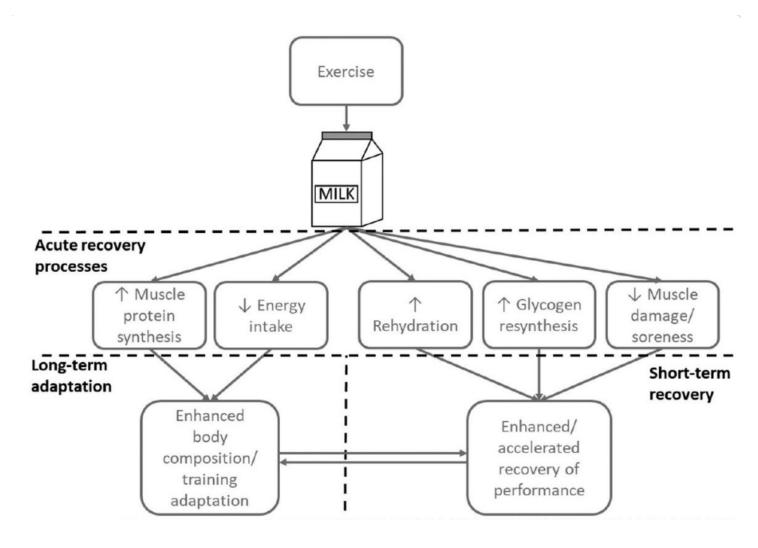
- •One banana plus 500ml of milk
- •2 pots (2 x 150g) of fruit yoghurt
- •One cereal bar plus 500 ml semi skimmed milk
- •A smoothie whizz 150g yoghurt, 1 banana and 150ml fruit juice in a blender
- •A cheese sandwich (2 slices bread; 40g cheese)
- •60g raisins fruit and 50g nuts
- •4 rice cakes with 20g peanut butter plus 200ml orange juice

## **Refuelling Meals**

- Pasta with tomato pasta sauce with grated cheese and vegetables
- •Jacket potato, chicken breast, broccoli and carrots
- •Bean and vegetable hot pot with wholegrain rice
- Rice with grilled fish and steamed vegetables
- Lasagne or vegetable lasagne with salad
- •Fish pie with vegetables
- Chilli or vegetarian chilli with rice and vegetables
- •Dahl (lentils) with rice and vegetables
- Chicken curry with rice and vegetables
- Mashed or baked potatoes with grilled salmon and salad



## **SPORTS NUTRITION – AFTER TRAINING**





## **SPORTS NUTRITION – AFTER TRAINING**

## **Chocolate milk**

Carbohydrate: Protein = 4:1 CHO to replenish (lactose) Protein to repair (whey)

90% water for hydration and replace fluids lost

Sodium: fluid/mineral balance – retention of fluids

Potassium: fluid/mineral balance muscle contraction

B Vitamins: convert food to energy to fuel working muscles

Calcium, phosphorus and vitamin D to promote, maintain and build strong bones





HOW MUCH SHOULD YOUNG ATHLETES DRINK EACH DAY?



European Food Safety Authority

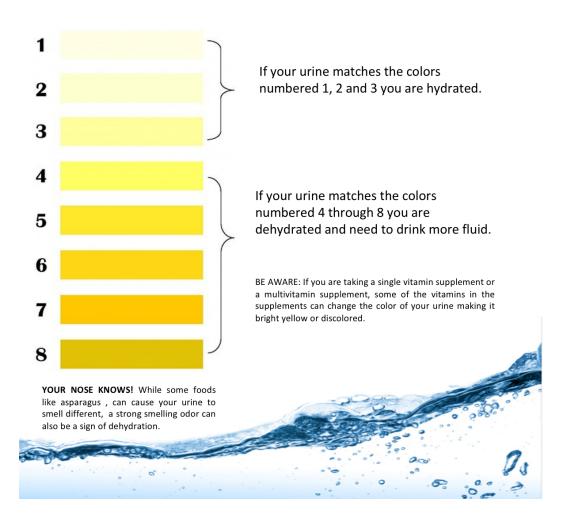
9 – 13 years : 1.3 - 1.5 Lt/d

Over 14 years: 1.4 – 1.8 Lt/d



#### **Urine Color Chart**

This urine color chart is only a tool you can use to assess if you are drinking enough fluids throughout the day to stay hydrated.





## **SPORTS NUTRITION – SPORTS DRINKS**

- Uniquely designed to meet both energy and fluid needs of athletes
- Composition influences gastric emptying
- Carbohydrate solutions empty more slowly
- Most sports drinks contain:
  - 6-8% CHO in the form of glucose and glucose polymers
  - 20-60 mmol/L sodium
- Adding glucose stimulates sodium and water absorption
- Sodium increases thirst



Who needs sports drinks?

## **American Academy of Pediatrics:**

"If children are participating in prolonged vigorous physical activity in hot, humid conditions for more than one hour, small amounts of sports drinks may be appropriate"



#### **Practical Recommendations**

#### **BEFORE EXERCISE**

5-7 ml/kg (300-420 ml for a 60 kg athlete) at least 4h before exercise.

GENERAL RULE: 2 cups of fluids 2h before exercise to promote adequate hydration and allow time for excretion.

WHAT TO DRINK? water, sugar-free cordial, fluids with sodium

#### **DURING EXERCISE**

Avoid >2% dehydration (INDIVIDUALISED NEEDS BASED ON SWEAT LOSS RATE)

Every 15 min: 150-300 ml

WHAT DO DRINK? water, sports drinks, water with electrolytes

#### **AFTER EXERCISE**

Replace 1.2 - 1.5 of sweat losses

WHAT TO DRINK? recovery drinks, chocolate milk, milk, sports drinks, water with electrolytes, water, water with electrolytes







## **Sample High-Nutrient Intake**

•Breakfast: 1 egg + 2 whites, scrambled with 1 slice cheese in 1 whole wheat tortilla + 8 ounces calcium-fortified OJ + water (520 calories + 32 grams protein)

•Lunch: 1 ham/cheese sub + 1 apple + 1 biscuit + water (550 calories + 35 grams protein)

•Snack: 1 banana + 2 T. peanut butter + water (300 calories + 10 grams protein)

•Post-workout Smoothie: 1 cup GREEK yogurt + 1/2 cup OJ + 1/2 cup frozen berries + ice (250 calories + 15 grams protein)

•Dinner: 4 oz. grilled chicken breast + 1 cup whole wheat pasta/sauce + 1 big salad/light dressing + 1 cup skim milk (600 calories + 50 grams protein)

•Snack: 1/4 cup nuts+ 1 apple (250 calories + 10 grams protein)

**TOTAL: 2,470 calories + 152 grams protein** 

## **SPORTS NUTRITION – THE ATHLETE'S PLATE**

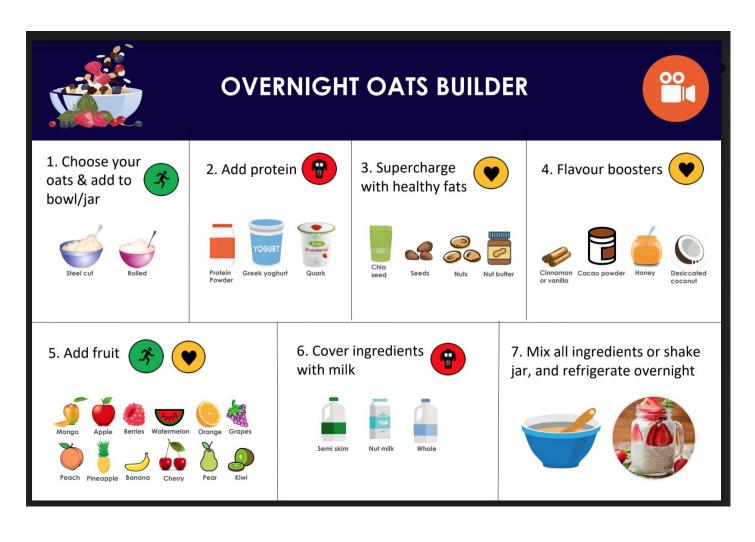




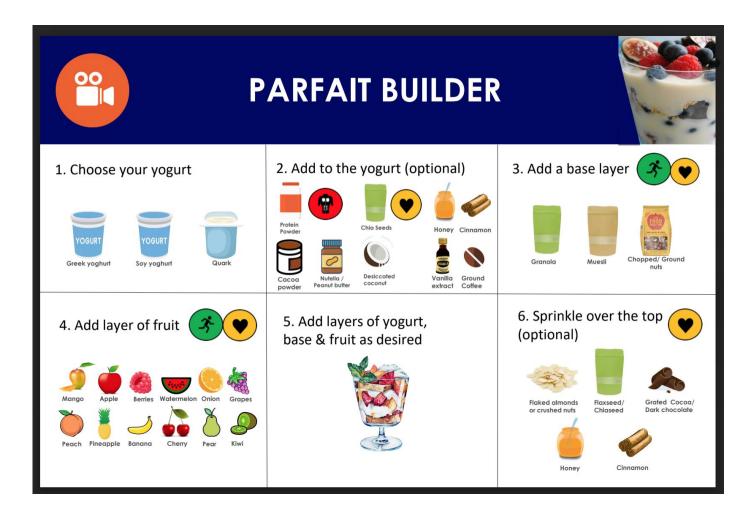




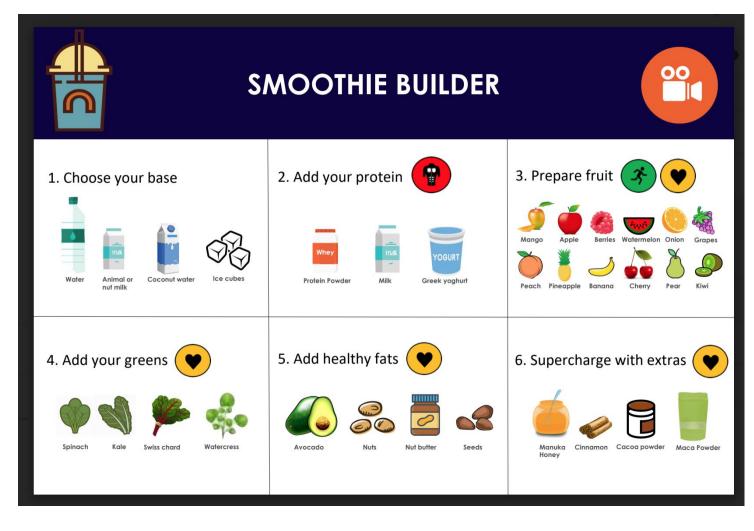
## **MEAL BUILDERS**



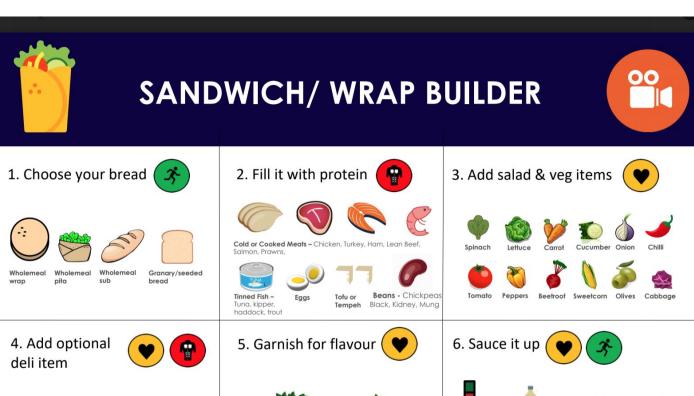














Basil, Parsley

Feta/mozzarella



Chives



Curried yoghurl

1 tbsp lemon

2 tbsp yoghurt

1/2 tsp curry

iuice

Pre made

Hot sauce

Sweet chilli

Light Mayo

Mango & chilli

Honey & mustard

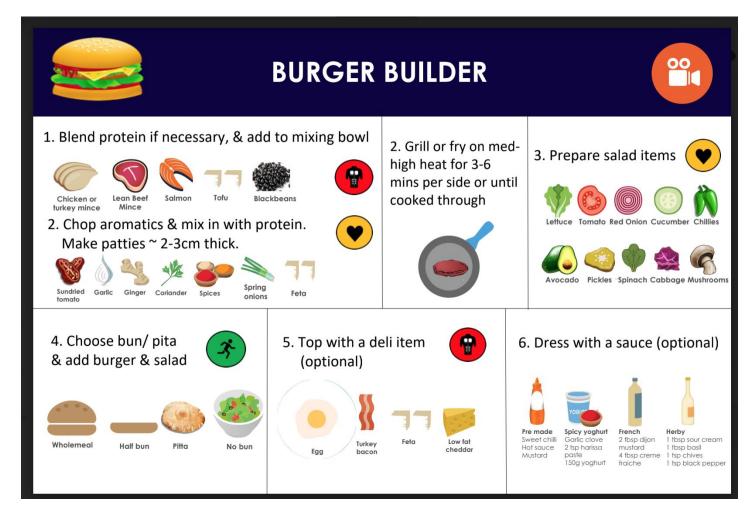


Guacamole 1 avocado flakes

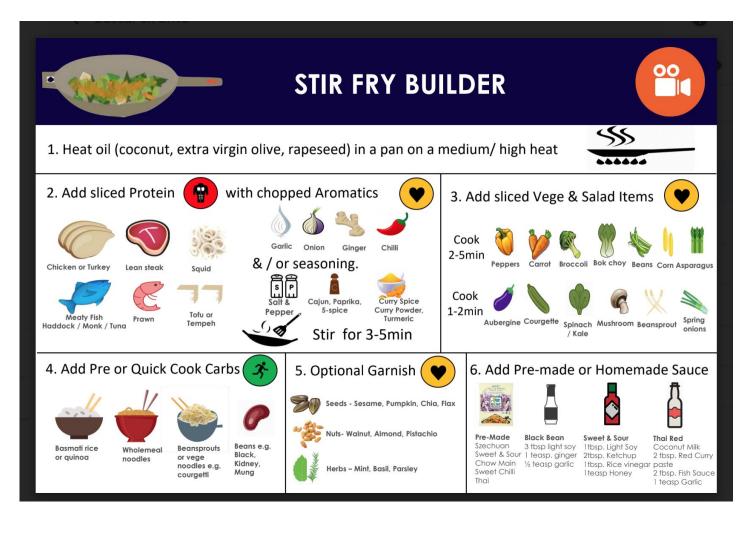
2 tomatoes 1/4 small onion 1 chilli (all diced) 1 tbsp lime juice

1/2 tomato (finely diced) tbsp chilli 2 tbsp lime juice

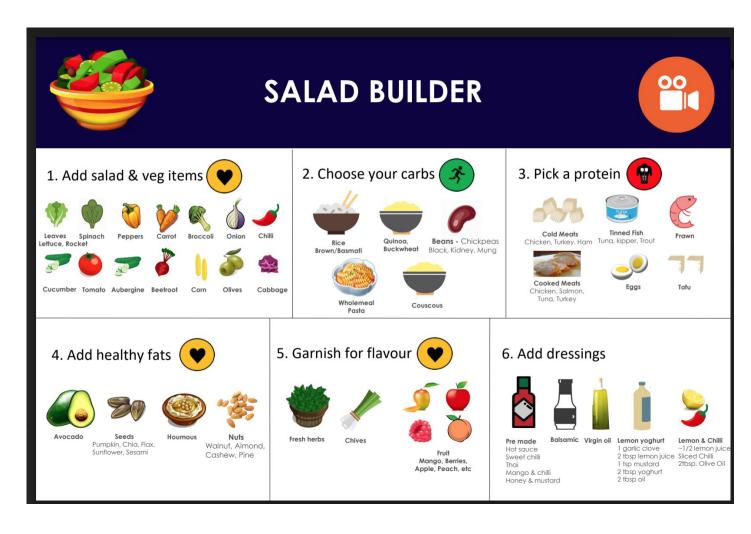




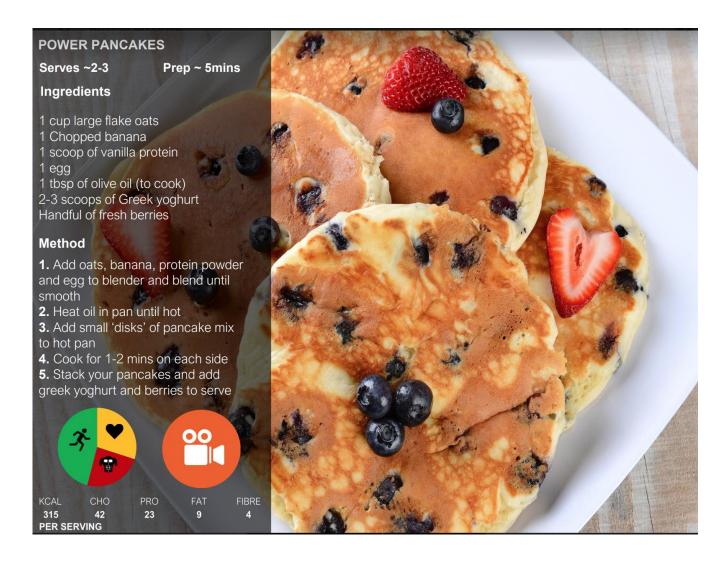
















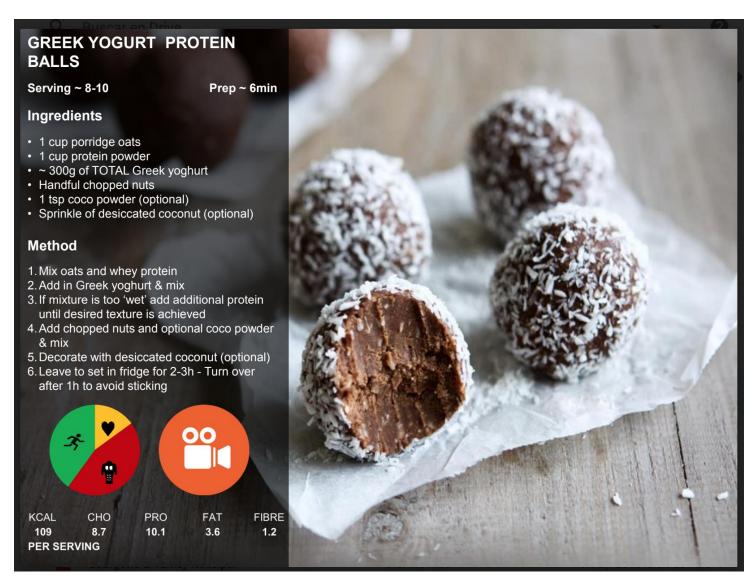








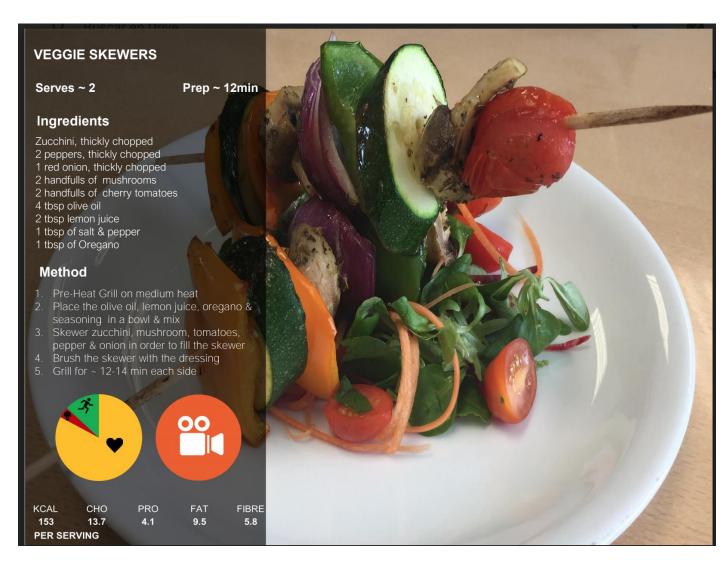




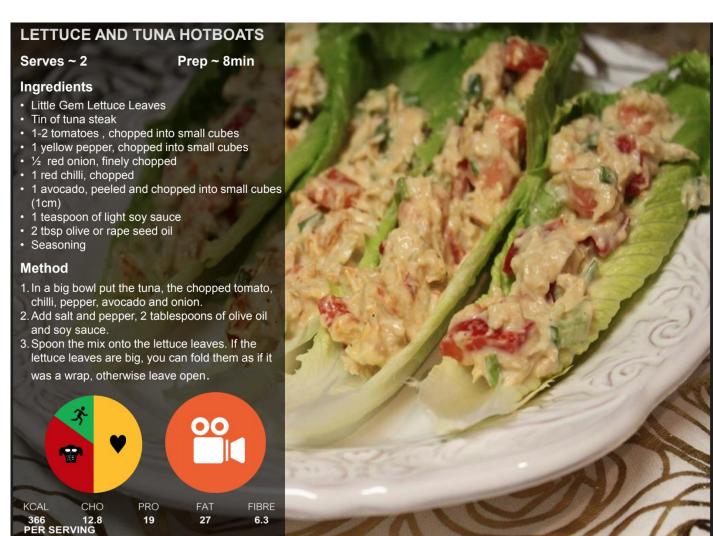


















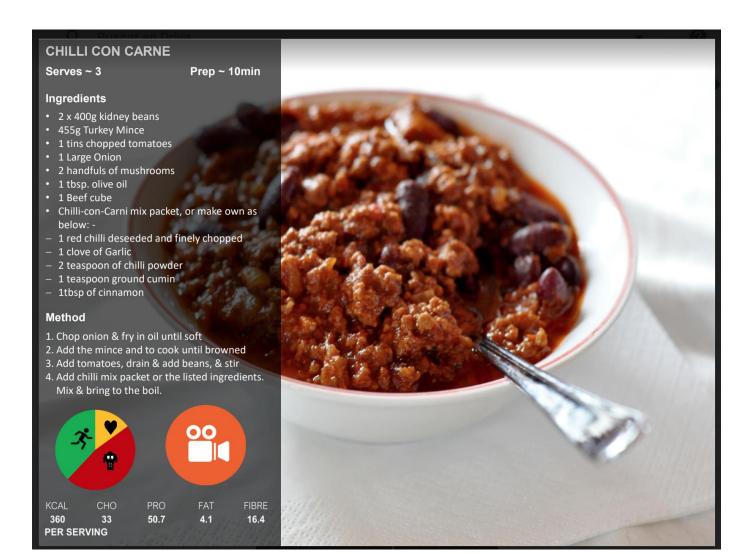
















# CHICKEN, PRAWN AND CHORIZO PAELLA

Serves ~ 4

Prep ~ 25min

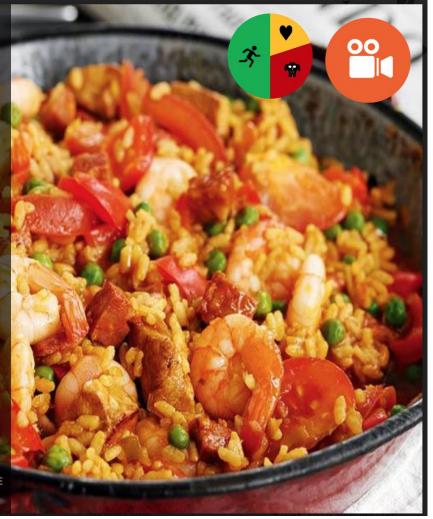
#### Ingredients

- · 4 Chicken Breasts, diced
- 100g Chorizo, sliced
- 100g Prawns
- 1 Large Onion, chopped
- 1 Red Pepper, chopped
- 1 Can chopped Tomatoes
- 200g Frozen Peas
- · 2 Garlic Cloves or teaspoon garlic paste
- · 1 tbsp. Paprika
- 1 teaspoon Turmeric
- Salt + pepper
- 700ml Chicken Stock
- 280g Paella rice

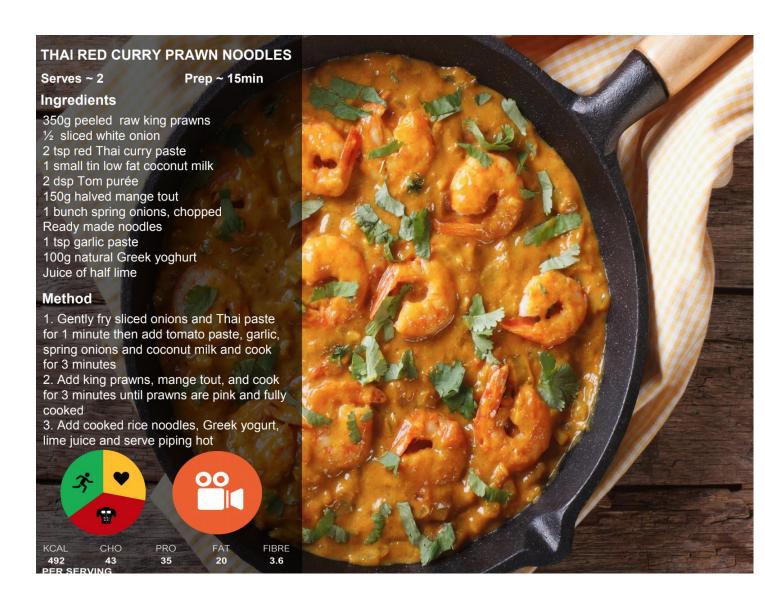
#### Method

- Heat olive oil in a pan. Add the chicken, onion & garlic & cook till chicken is white through
- 2. Add chorizo, peppers, paprika & turmeric & fry for 2 minutes
- 3. Add the chicken stock and the tinned tomatoes
- 4. Bring to the boil, add the rice and stir well
- 5. Drop the heat to a simmer, and leave for ~ 20 min
- 6. Add the peas & prawns & cook for ~ 5min
- 7. The paella is done when it has absorbed all the water, keep stirring so the rice doesn't burn to bottom of pan

	PER SEI	RVING			
KCAL CHO PRO FAT FIBE	554	72.5	45	12.6	6.4
	KCAL	CHO	PRO	FAT	FIBR









#### **FOOD FIRST**

Always opt for fresh, quality produce which provide essential nutrients for health & performance



# 2

#### FREQUENT FEEDS

To promote growth and repair of muscles, eat every 3-4 hours and do not skip meals



# 3

#### **GO FRESH**

Choose freshly sourced ingredients and avoid processed foods



#### **PROTEIN POWER**

A quality source of protein should be consumed at every meal to promote growth



#### **EAT A RAINBOW**

Eat a range of different coloured fruit and vegetables. Each colour contains different micronutrients which support the body in different ways





#### **QUALITY SNACKS**

Avoid snacking on high sugar foods as this will not satisfy hunger. Protein rich snacks will aid recovery and keep hunger at bay.



# 9

#### **BE FLEXIBLE**

Do not cut out whole food groups or specific nutrients as this will increase the risk of deficiencies which will compromise performance



10

# SUPPLEMENT SAFELY

Ensure supplements
have scientific evidence
to support their use and
meet your specific
needs. Only consume
Informed Sport approved
products



7

#### **DRINK MORE**

Dehydration can impair performance and focus. Monitor urine colour to avoid dehydration 8

#### **EDUCATE**

Speak with a qualified nutritionist in order to understand your specific nutritional goals

