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GetPRO

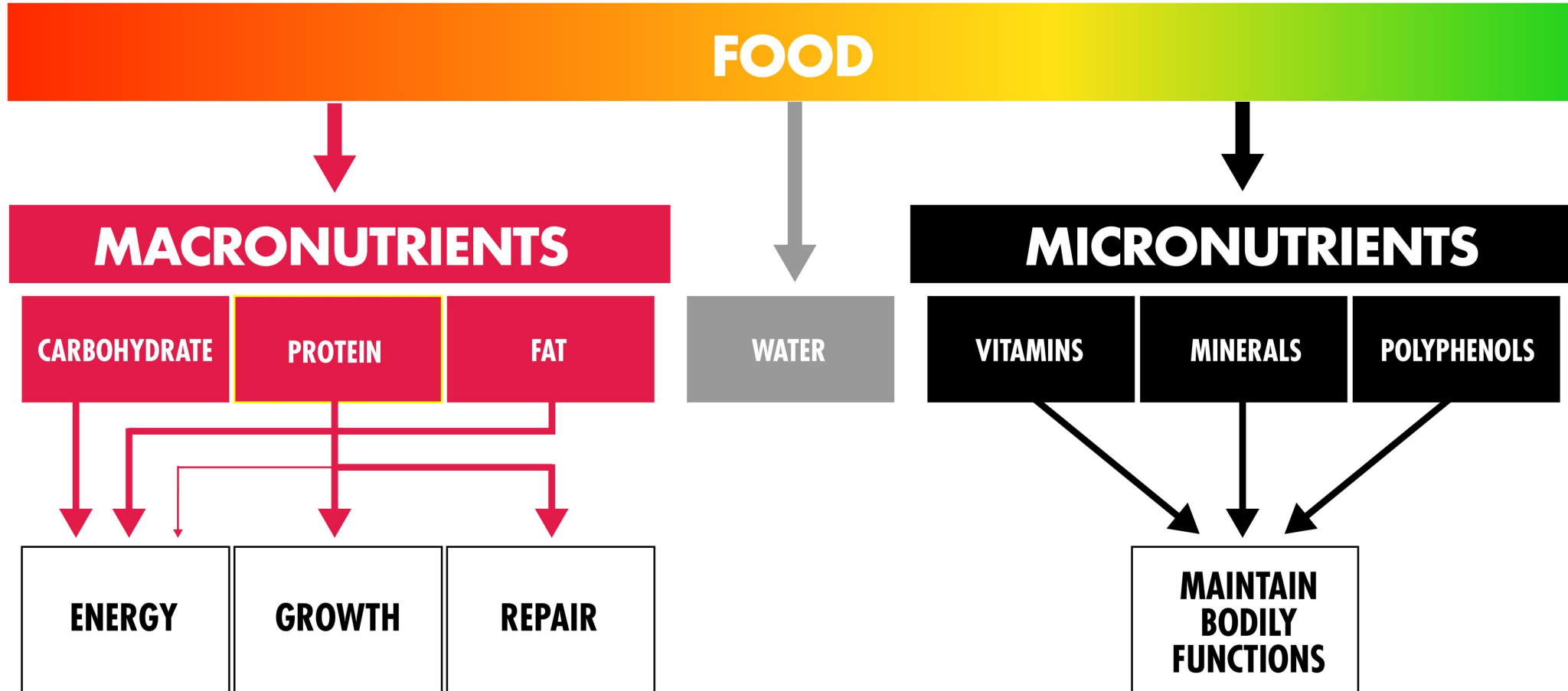
PROFESSIONAL

PROTEIN FUNDAMENTALS

This resource was created by Oliver Witard, Senior Lecturer in Exercise Metabolism and Nutrition, Kings College London in collaboration with the GetPRO Professional nutrition team

This resource is for use under professional supervision

WHAT IS DIETARY PROTEIN?



WHY DO RECREATIONAL ATHLETES NEED PROTEIN?

1 GROWTH of all organs

2 REPAIR of muscles and bones

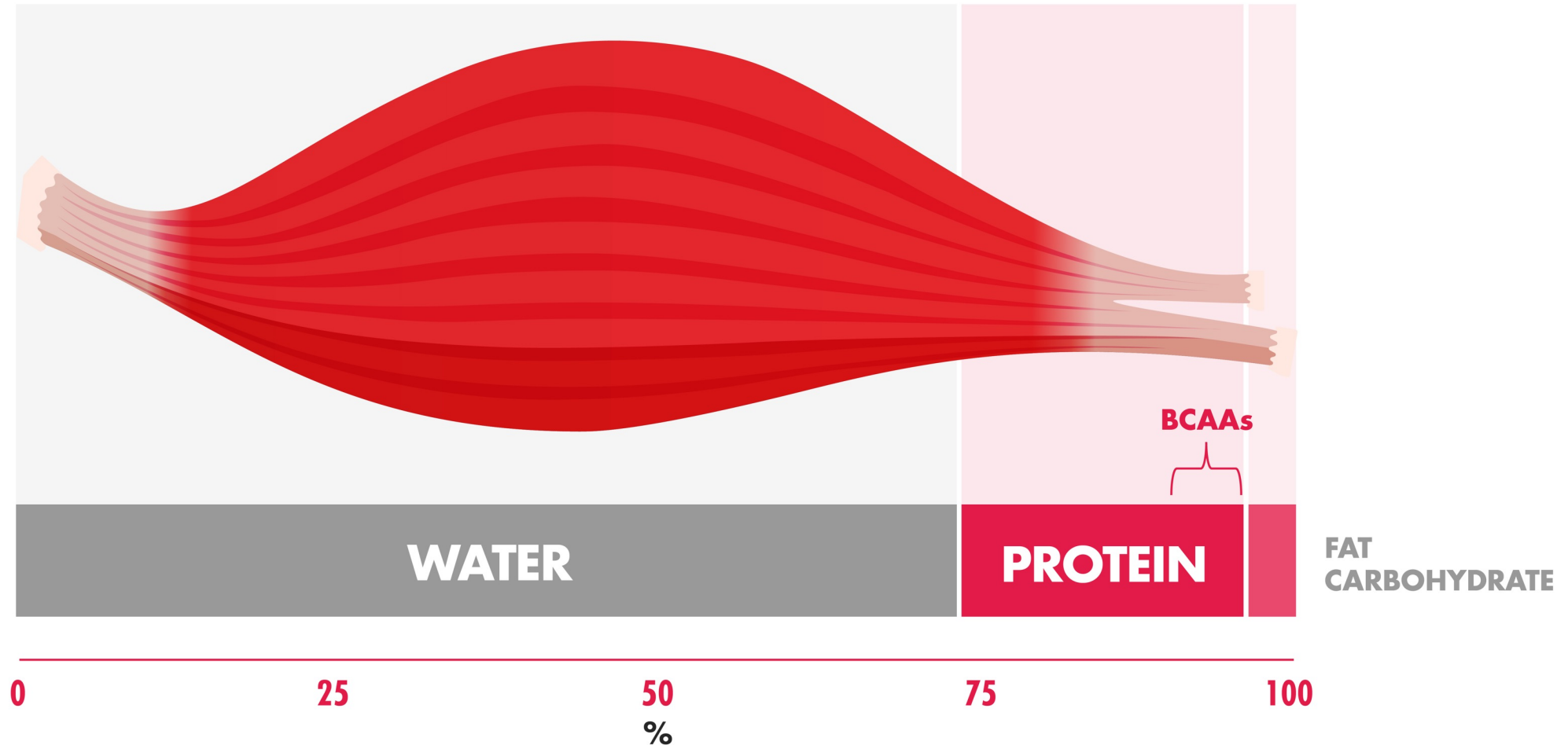
3 TRANSPORT of nutrients and oxygen

4 DEFENCE against infection

5 FUEL for exercise and the immune system

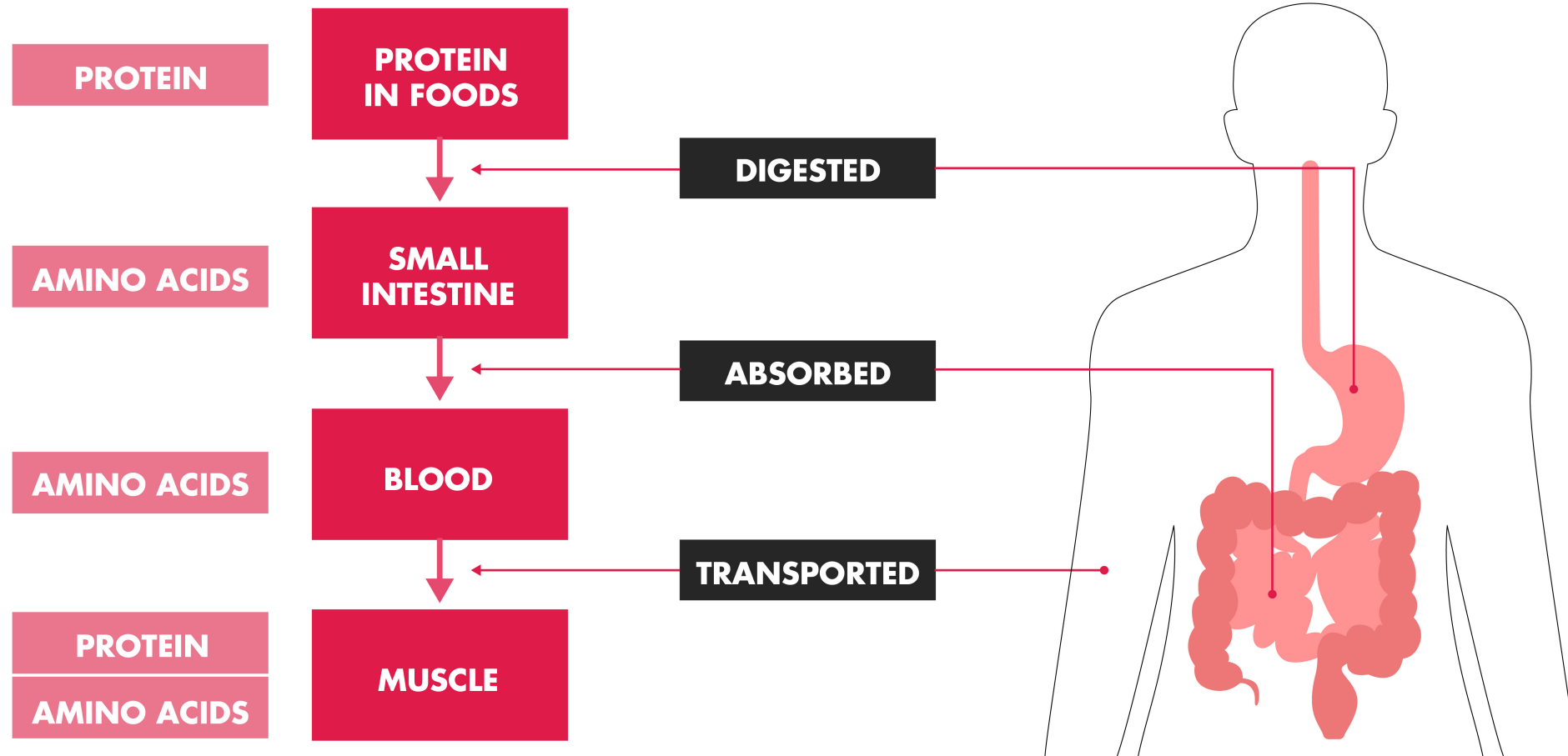
IMPORTANCE

WHAT MAKES UP OUR MUSCLES?



WHAT HAPPENS TO THE PROTEIN WE EAT?

Gorissen SHM et al. Meat Sci. 2015; 109: 96-100

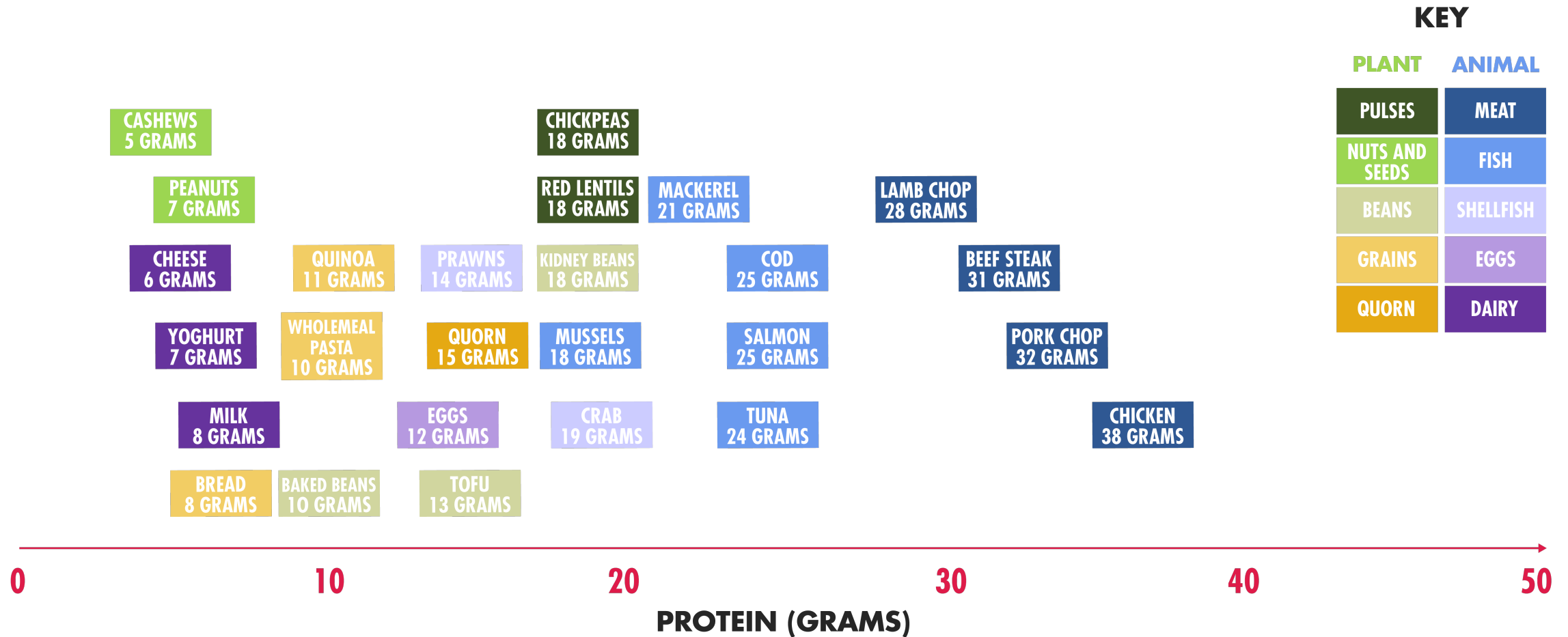


WHAT ARE AMINO ACIDS?

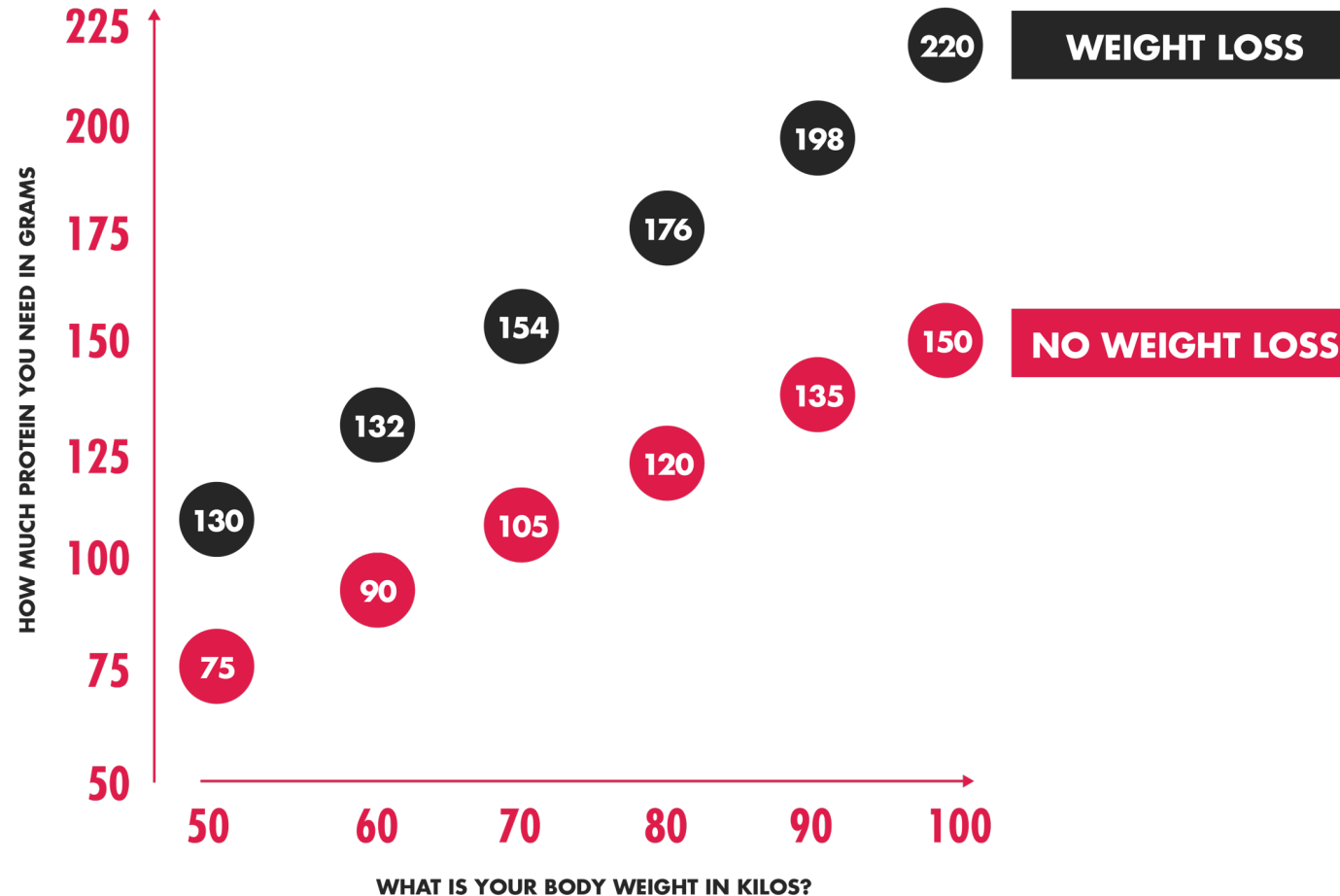


OBTAINED IN DIET			NOT OBTAINED IN DIET			
Leucine	Phenylalanine	Histidine	Alanine	Aspartic acid	Glutamine	Serine
Isoleucine	Threonine	Methionine	Arginine	Cysteine	Glycine	Tyrosine
Valine	Tryptophan	Lysine	Asparagine	Glutamic acid	Proline	

HOW MUCH PROTEIN IS CONTAINED IN A SINGLE STANDARD SERVING?










HOW MUCH PROTEIN SHOULD YOU CONSUME EACH DAY?

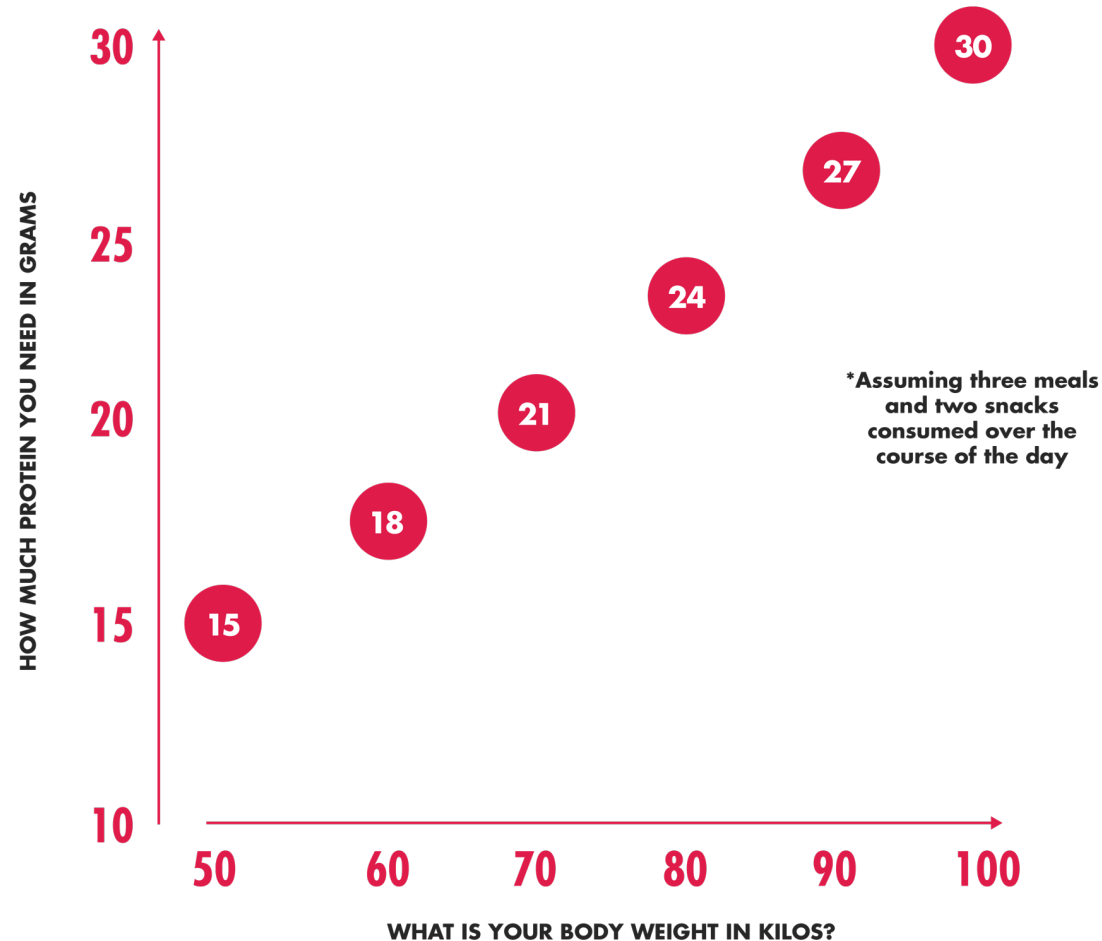




EXAMPLE MEAL PLAN FOR 80KG TEAM SPORT AND EXERCISE ENTHUSIAST

	Time	Meal	Foods providing ~30g protein in highlighted meals during the day
	8:00	Breakfast	250g oatmeal porridge and 200ml of low-fat milk
	11:00	Snack	300g Greek yogurt with granola
	12:30	Lunch	Omelette of 2 eggs and toast/salad
	16:00	Dinner	120g chicken with rice and vegetables
	17:00-19:30	Team sport training	Water and/or sports drink
	19:30	Recovery snack	200 g high protein yoghurt. '
	22:00	Pre sleep snack	3 slices of wholewheat bread with ham, cheese, peanut butter and 200ml low fat milk

HOW MUCH PROTEIN SHOULD YOU CONSUME IN EACH MEAL?



EXAMPLE PROTEIN FOODS FOR 80-100KG EXERCISER QUALITY?

WHAT DOES ~30G OF PROTEIN LOOK LIKE?



RAW SALMON

1 medium fillet (150g)
= 31g protein



LEAN BEEF STEAK

1 medium fillet (150g
raw) = 35g protein



PORK TENDERLOIN

2 thin slices (150g) =
31g protein



CANNED IN WATER TUNA (DRAINED)

1 can (130g) = 31g
protein



COOKED BEANS (LENTILS/CHICKPEAS)

2 cups (360g) = 26g
protein



LARGE EGGS

3 pieces = 25g
protein



EMMENTAL CHEESE

5 slices (110g) = 33g
protein



WHEY PROTEIN

1 average serving/scoop
(30g) = 27g protein



COOKED CHICKEN BREAST

1 small fillet (100g) =
31g protein



GREEK YOGURT 0% FAT OR COTTAGE CHEESE

1 cup (250g) = 26g protein



LOW FAT CHOCOLATE MILK

500ml = 17.3g protein



PEANUT BUTTER

7 heaped teaspoons
(98g) = 26g protein

WHAT DOES A HIGH PROTEIN PLANT-BASED MEAL LOOK LIKE?

QUINOA, RED KIDNEY BEAN AND GREEN BEAN BOWL

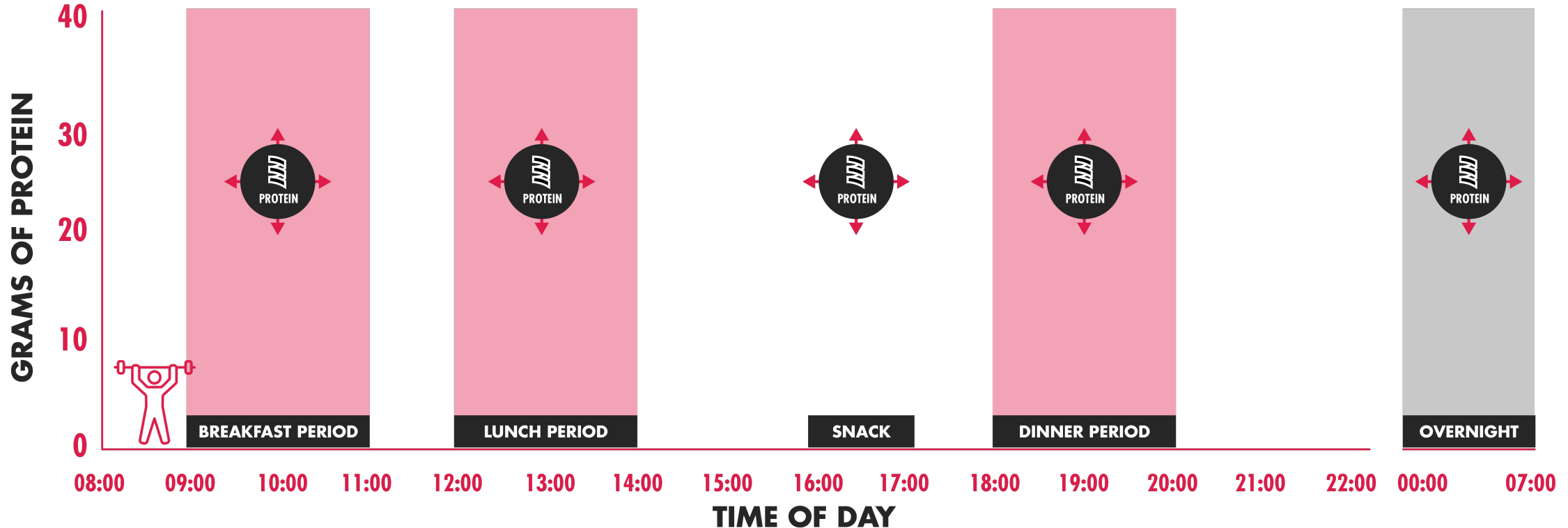
- Red kidney beans, cooked (150g / 1 cup)
- White and red quinoa, cooked (100 g / ½ cup)
- Spinach, sautéed (100 g / ¼ cup)
- Peas, boiled (80 g / 1 tablespoon)
- Watercress (20 g / ½ cup)

Energy = 414 kcal
Carbohydrate = 52 g
Fat = 5 g
Protein = 25 g
Leucine = 3 g
All 9 essential amino acids
Fibre = 26 g



WHEN IN THE DAY SHOULD WE EAT PROTEIN AND HOW MUCH?

HOW MUCH PROTEIN YOU NEED IN GRAMS



WHAT ARE THE 3 **GOLD**, **SILVER** AND **BRONZE** RULES OF PROTEIN NUTRITION APPLIED TO AMATEUR ATHLETES?



1 TOTAL

Focus on how much protein you consume on a meal-by-meal rather than daily basis. Aim to consume 20-25 grams of protein on each feeding occasion, whether from a meal or snack. If you weigh closer to 100 kg, aim for 30 grams in each feed



2 TYPE

Protein from animal and plant sources are both effective in promoting the reconditioning of our muscles after exercise, as long as a variety of plant sources are included in the diet.



3 TIMING

Timing protein intake within 3 hours of training will promote muscle reconditioning during recovery.

QUICK-FIRE QUIZ – QUESTIONS

Protein is one of the:

A) MACRONUTRIENTS

B) MICRONUTRIENTS

C) BOTH

The building blocks of protein are:

A) GLUCOSE

B) FATTY ACIDS

C) AMINO ACIDS

Protein serves as a fuel for muscles when exercise is:

A) SHORT DURATION AND INTENSE

B) MODERATE DURATION AND MODERATELY INTENSE

C) PROLONGED DURATION AND CARBOHYDRATE AND FAT STORES HAVE RUN OUT

Protein is contained in:

A) ANIMAL SOURCES ONLY

B) PLANT SOURCES ONLY

C) BOTH PLANT AND ANIMAL SOURCES

The highest quality protein recorded to date is derived from:

A) MEAT

B) DAIRY

C) PULSES

QUICK-FIRE QUIZ – ANSWERS

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QUICK-FIRE QUIZ – QUESTIONS

The most important factor when determining protein recommendations relates to the:

A) TOTAL PROTEIN INTAKE

B) TYPE OF PROTEIN INTAKE

C) TIMING OF PROTEIN INTAKE
POST WORKOUT

Protein recommendations during a period of weight loss (compared with no weight loss) are:

A) INCREASED

B) DECREASED

C) STAY THE SAME

The importance of consuming protein as soon as possible post workout is most relevant to:

A) ELITE ATHLETES

B) AMATEUR ATHLETES

C) NEW EXERCISERS

Regarding protein recommendations during a period of weight loss (compared with no weight loss), the optimal dose of protein to consume on a per meal basis is typically somewhere between:

A) 20-30 GRAMS

B) 40-50 GRAMS

C) 50-60 GRAMS

QUICK-FIRE QUIZ – ANSWERS

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REFERENCES

1. Gorissen SHM *et al.* The muscle protein synthetic response to food ingestion. *Meat Sci.* 2015; 109: 96-100
2. Morton RW *et al.* A systematic review, meta-analysis and meta-regression of the effect of protein supplementation on resistance training-induced gains in muscle mass and strength in healthy adults. *Br J sports Med.* 2018; 52(6): 376-384
3. Witard OC *et al.* Dietary protein for training adaptation and body composition manipulation in track and field athletes. *Int J Sport Nutr Exerc Metab.* 2019; 29(2): 165-174
4. Moore DR *et al.* Protein ingestion to stimulate myofibrillar protein synthesis requires greater relative protein intakes in health older versus younger men. *J Gerontol A Biol Sci Med Sci.* 2015; 70(1): 57-62
5. Witard OC *et al.* Protein considerations for optimising skeletal muscle mass in healthy young and older adults. *Nutrients.* 2016; 23(4): 181

About the author: Dr Oliver Witard worked in collaboration with the GetPRO Professional team to produce this presentation. He is a Senior Lecturer in Nutrition and Exercise Metabolism at King's College London. His academic research interests are in the response of muscle protein metabolism to exercise and nutrition with application to athletic and clinical populations.



THANK YOU