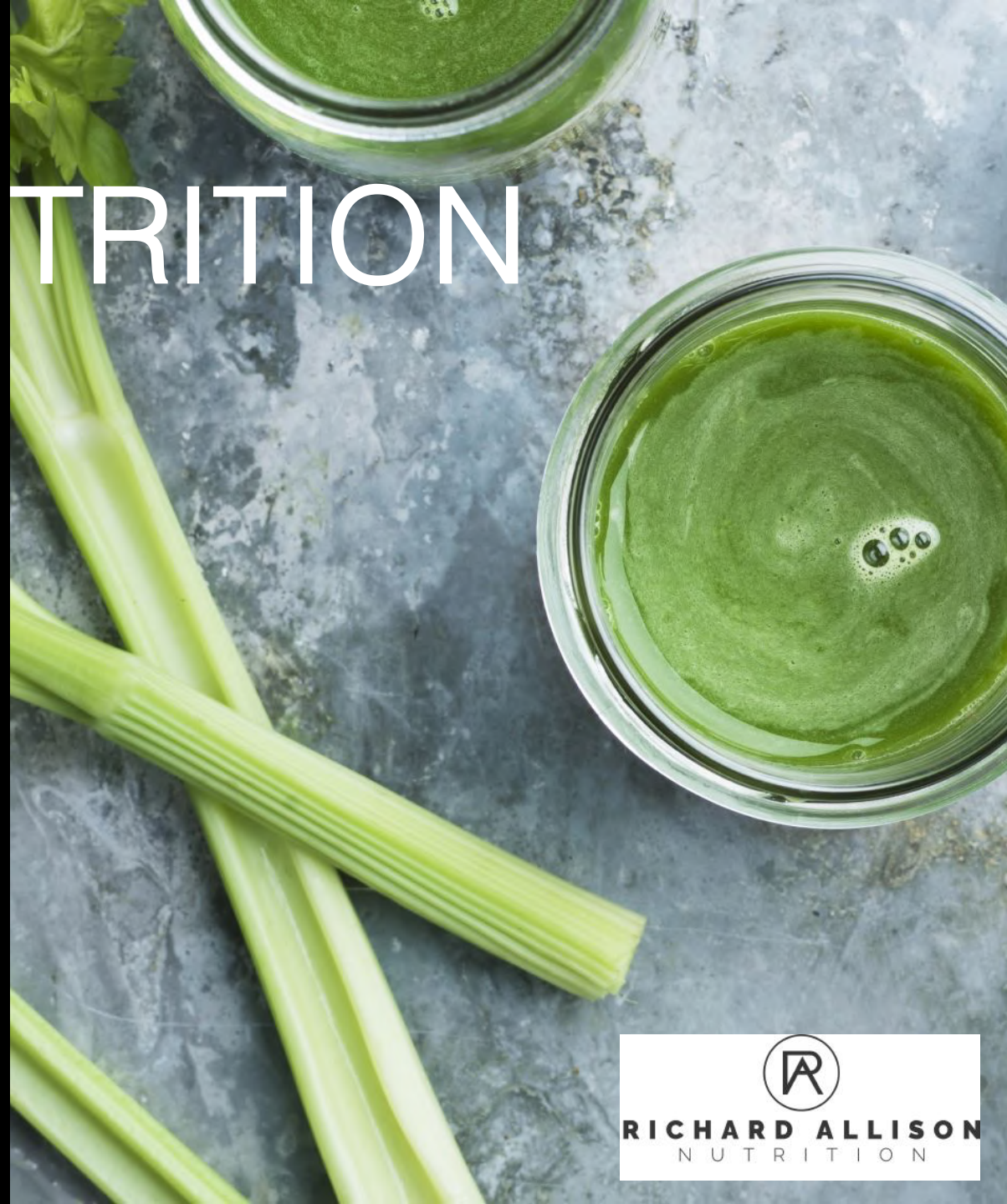
MATCH DAY NUTRITION & RECOVERY



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RICHARD ALLISON
NUTRITION

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Overview

INTRODUCTION

BASICS

HYDRATION

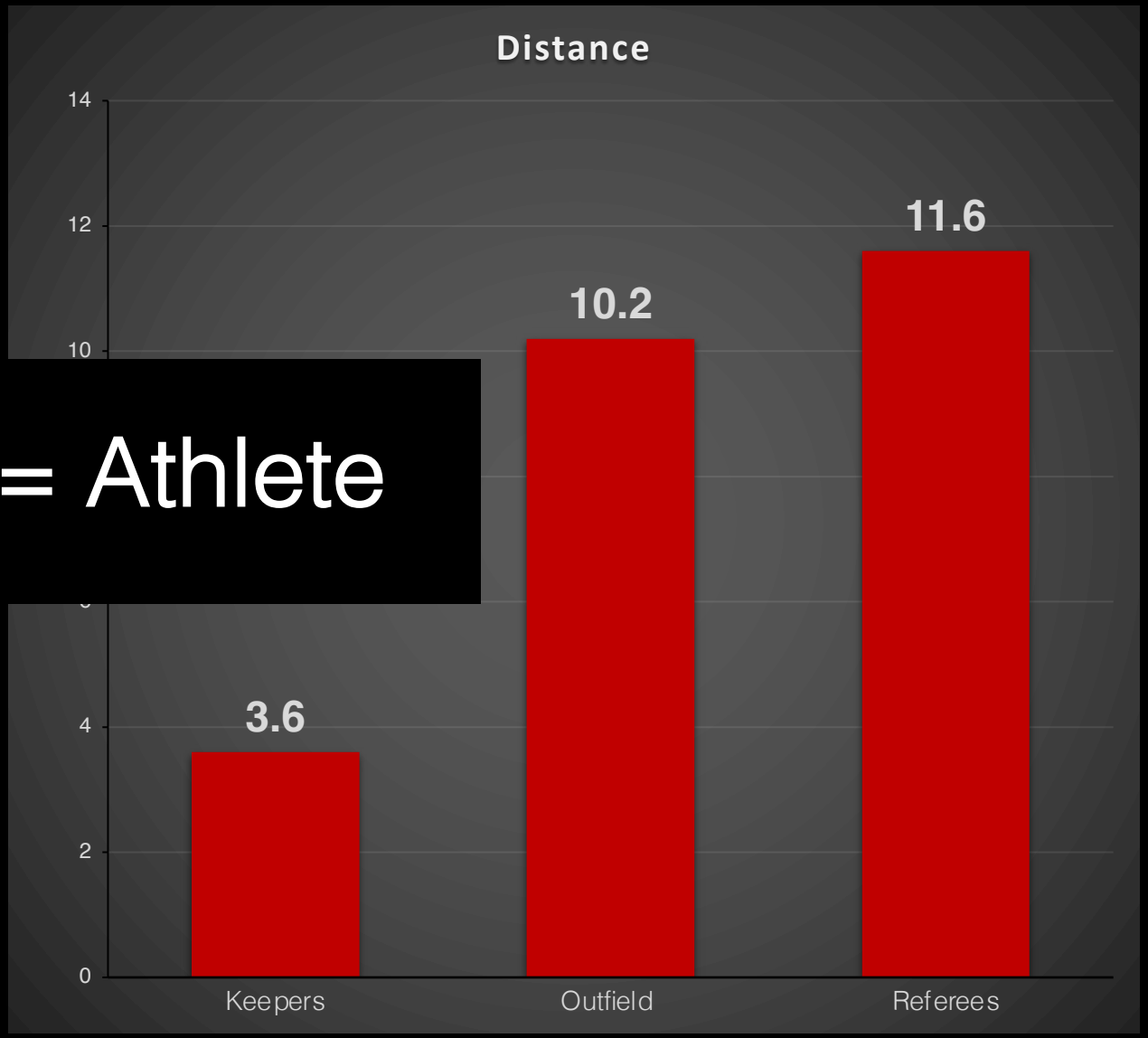
RECOVERY

MATCH DAY

TAKE HOME

A good diet alone won’t make an average athlete elite, but a poor diet will make an elite athlete average

Referee = Athlete



Why is Nutrition Important?

- Nutrition is an important part of performance for players
- Allows for recovery and development
  - Macronutrients
  - Micronutrients
  - Fluids
- Proper amounts are essential to provide energy for training, health and recovery

Good Nutrition Choices can Support the Health & Performance

- Type
- Quantity
- Timing of food, fluids and supplements
- Influence performance and recovery during and between matches
- Ensuring you have a well-planned nutrition strategy is key for top performance

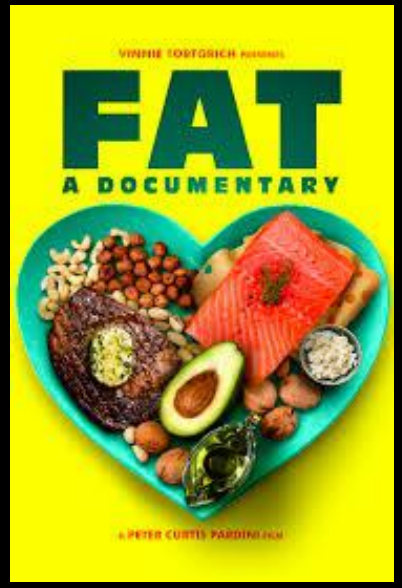
Diets


WHAT THE
HEALTH


THE MAGIC PILL

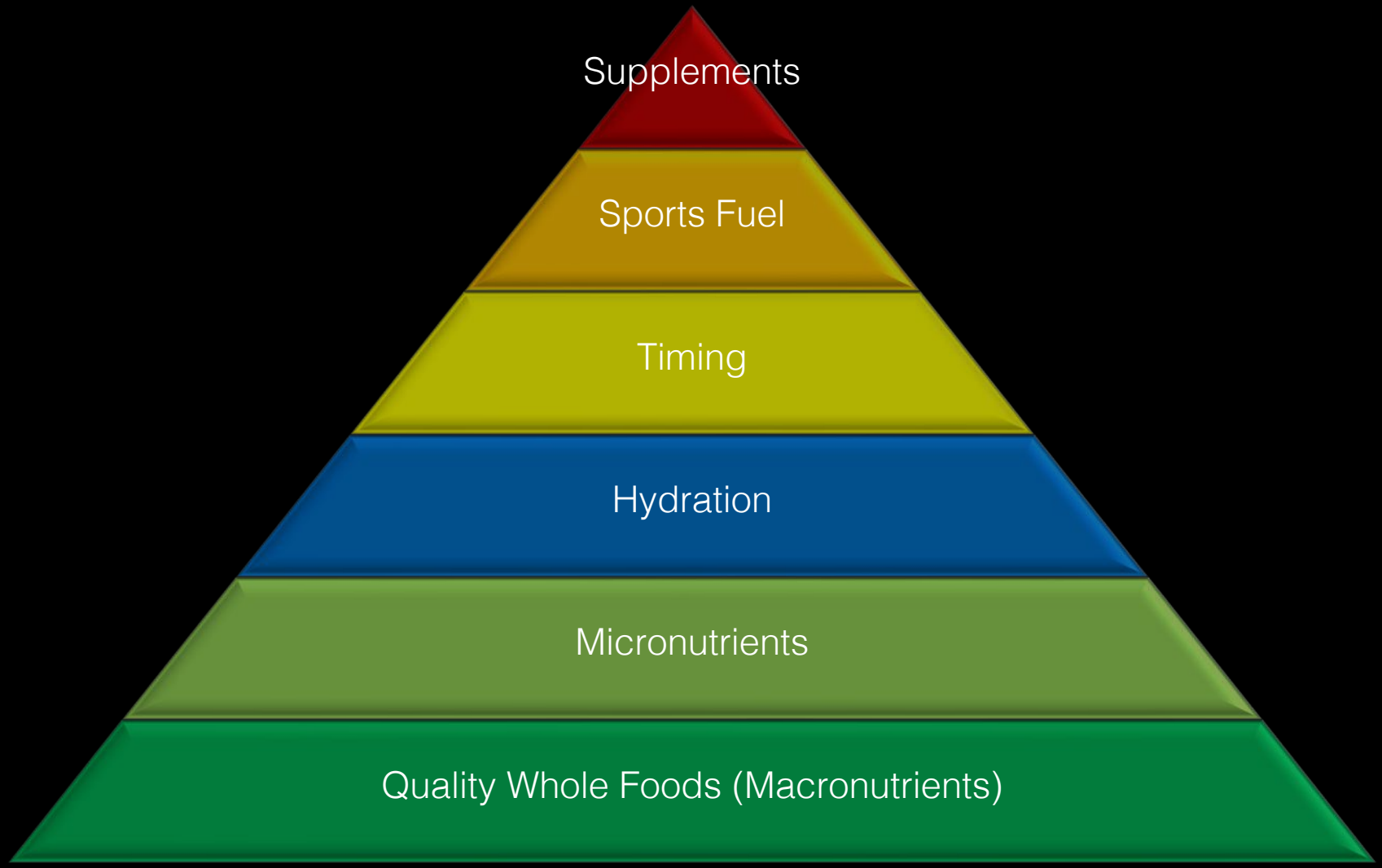

GLUTEN FREE


FUELLED BY THE TRUTH
THE GAME
CHANGERS

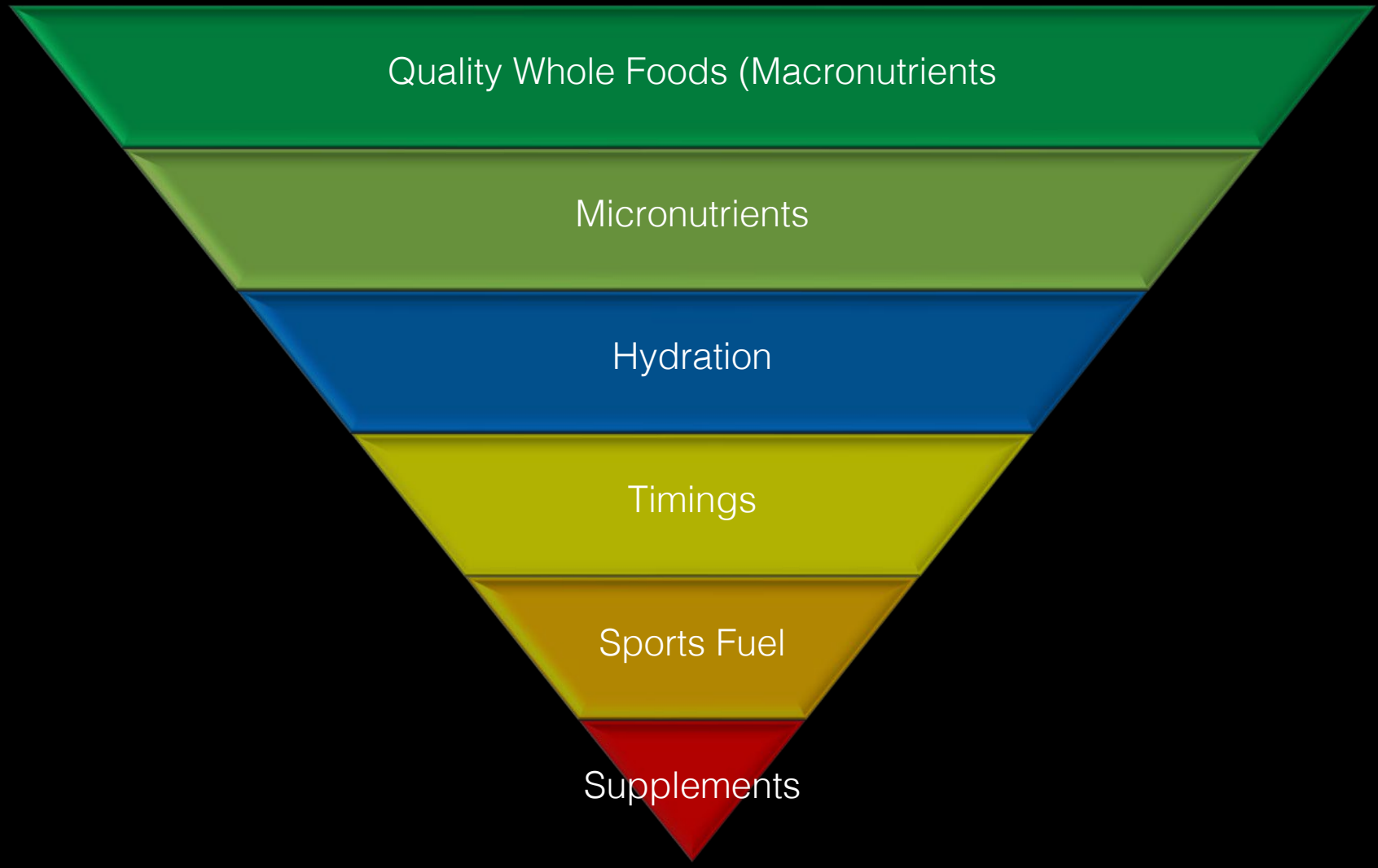

FAT
A DOCUMENTARY


DAIRY FREE

Performance Nutrition Pyramid

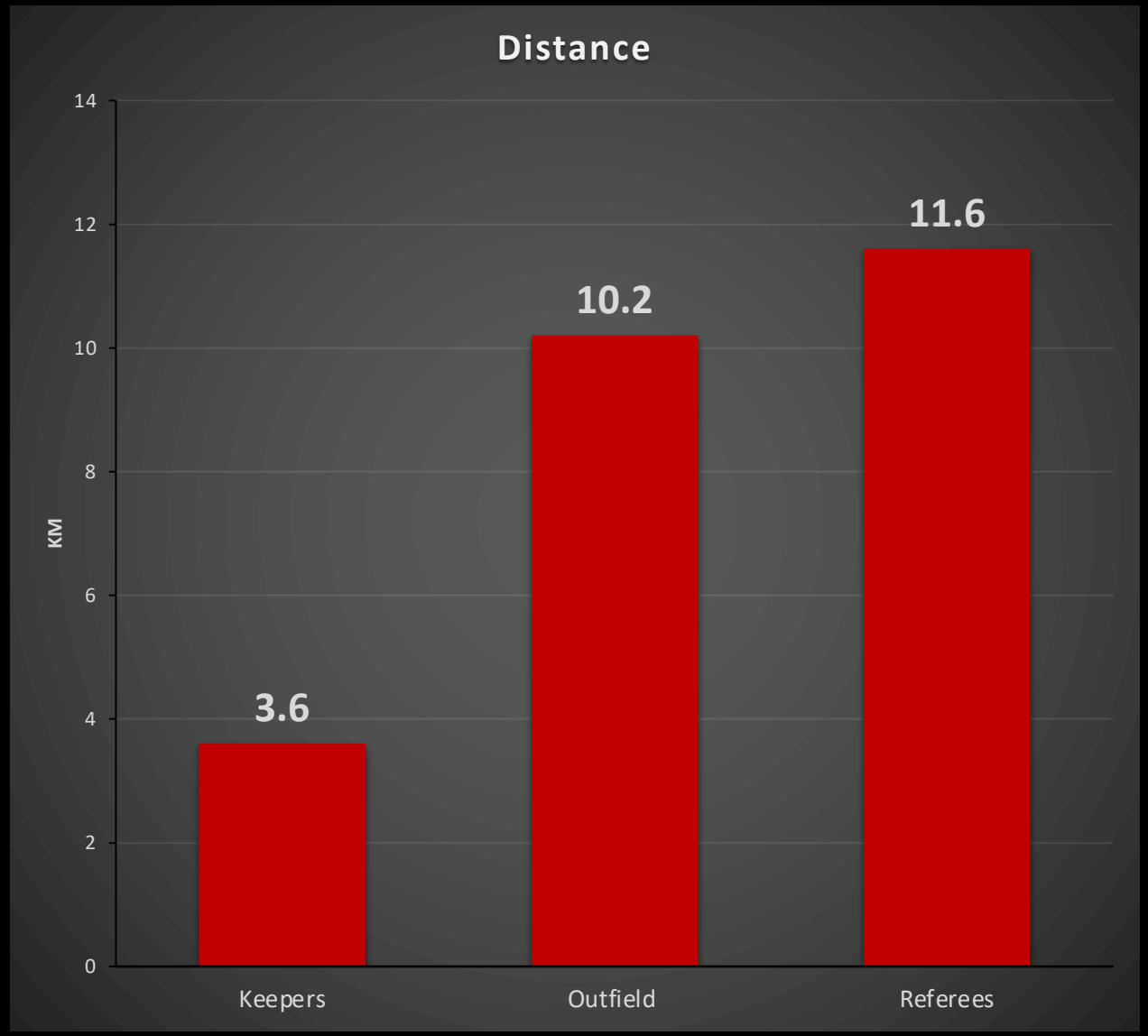


Performance Nutrition Pyramid



Energy Balance

Referee = Athlete

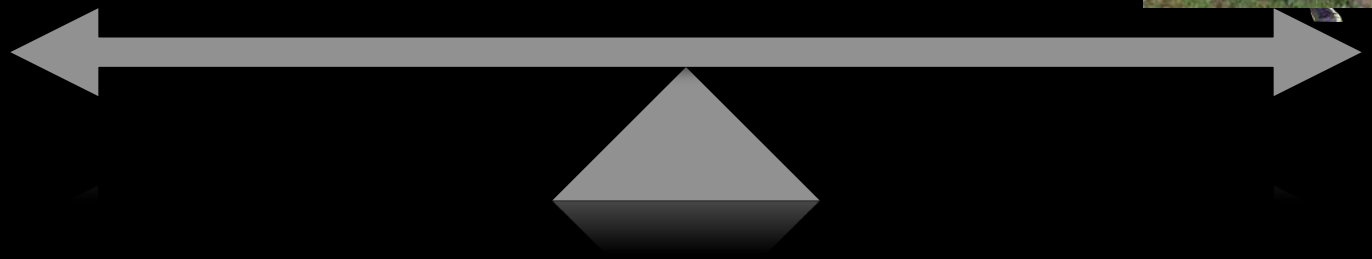


Energy

- What is energy?
  - Kilocalories (Kcal)
  - Kilojoules (kJ)
  - 1kcal =4.18kJ

Energy Balance

Vs.



Measuring EE

Method	Advantages	Limitations
Direct calorimetry	The most accurate method to estimate EE. Minimal error.	Very expensive. Not applicable to measurement in free-living conditions.
Indirect calorimetry	Accurate (error ≈ 5 %) Breath-by-breath analysis also possible. Portable devices are also available.	Expensive. Long-lasting measurements are not possible. Does not allow daily use.
Doubly labelled water	Accurate (<5%). Suited for long-term measurements (4-20 days)	Very expensive. No information on short bouts of activity. Only TEE
Heart rate	Inexpensive & easy to use. High accuracy, (error 7- 25%),no lab calibration. Provides second-by-second estimation of EE.	Larger error than in calorimetry or DLW-techniques. Requires beat–by-beat HR data collection with sufficient accuracy.
HR level with general equations	Inexpensive and easy. Does not require beat-by-beat data.	Large error (20-35%) in the HR-EE relationship,.
Motion detection based estimation	Inexpensive (or very inexpensive), very easy to measure. Provides reliably summary information on periods of physical activity (e.g. active time).	Large estimation error (20-35%). Uniaxial sensors are not sufficiently sensitive to quantify EE (error up to 60%). Is best suited for identifying periods (of physical activity.
Activity diary & questionnaires	Very inexpensive. Does not necessarily require hardware. Users may benefit from self-evaluation.	Large estimation error (20-60%). No information on instantaneous values of EE. Accurate measurement requires lots of time and learning from the person whose EE is estimated.


INTAKE

Intake

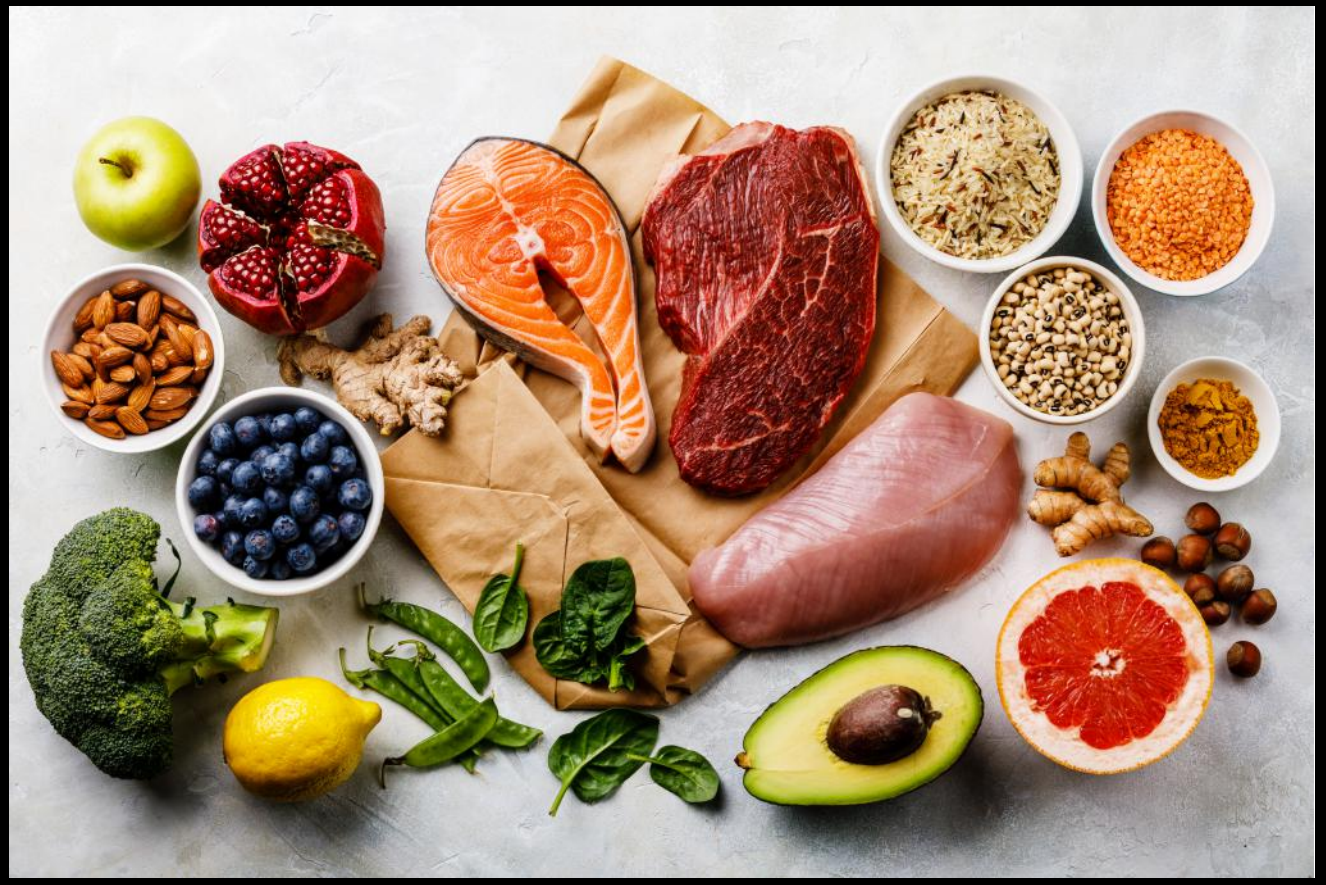
- Basics right first
- Ensure you eat good amounts of all food groups
- Energy for living and exercising
- A right amount of calories
- Right foods

Healthy Plate

- What does a healthy plate look like?
- Structuring your plate to include all food groups
- A source of hydration is essential
- Your diet should consist of:

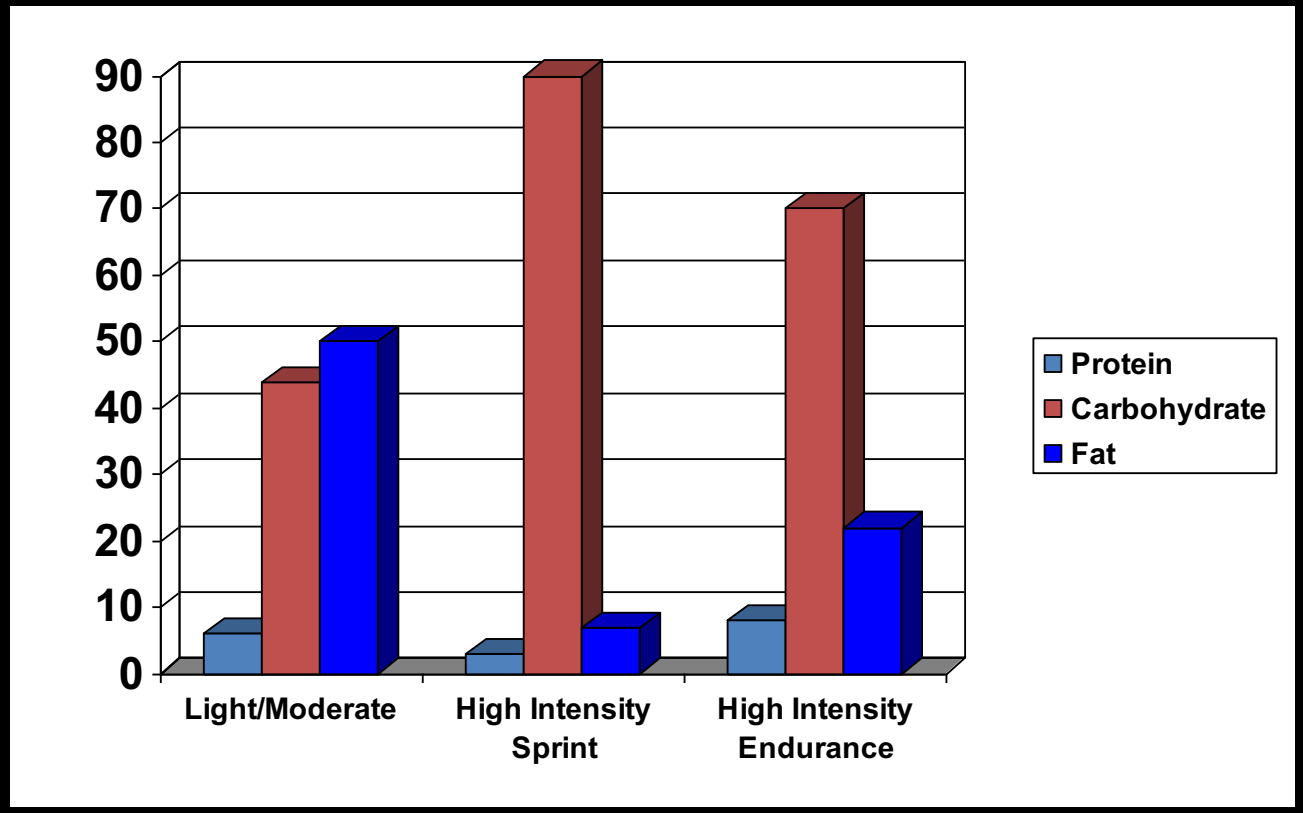
Macronutrients

- Carbohydrate 4 kcal/g
- Protein 4 kcal/g
- Alcohol 7 kcal/g
- Fat 9 kcal/g



Macronutrients

- When VO_2max is over 85%, main source of energy subtract: muscle glycogen



Carbohydrates

- Main source of energy?
- What are carbohydrates
  - Simple
  - Complex
- How much do I need?
- Complex carbohydrates at every meal?

Simple	Complex
    	   

Carbohydrates

Depletion of carbohydrate stores major cause of fatigue during exercise

Optimising carbohydrate status in muscle & liver primary goal of pre-exercise feeding

Key ingredients for glycogen storage is dietary carbohydrate intake (+ tapering for muscles)

Fuelling

- CHO availability is fundamental for high-intensity endurance performance
- Finite CHO stores (~500 g) for ~90 min
  - 1g/min
- Periodise CHO intake
- Low energy availability on menstrual function

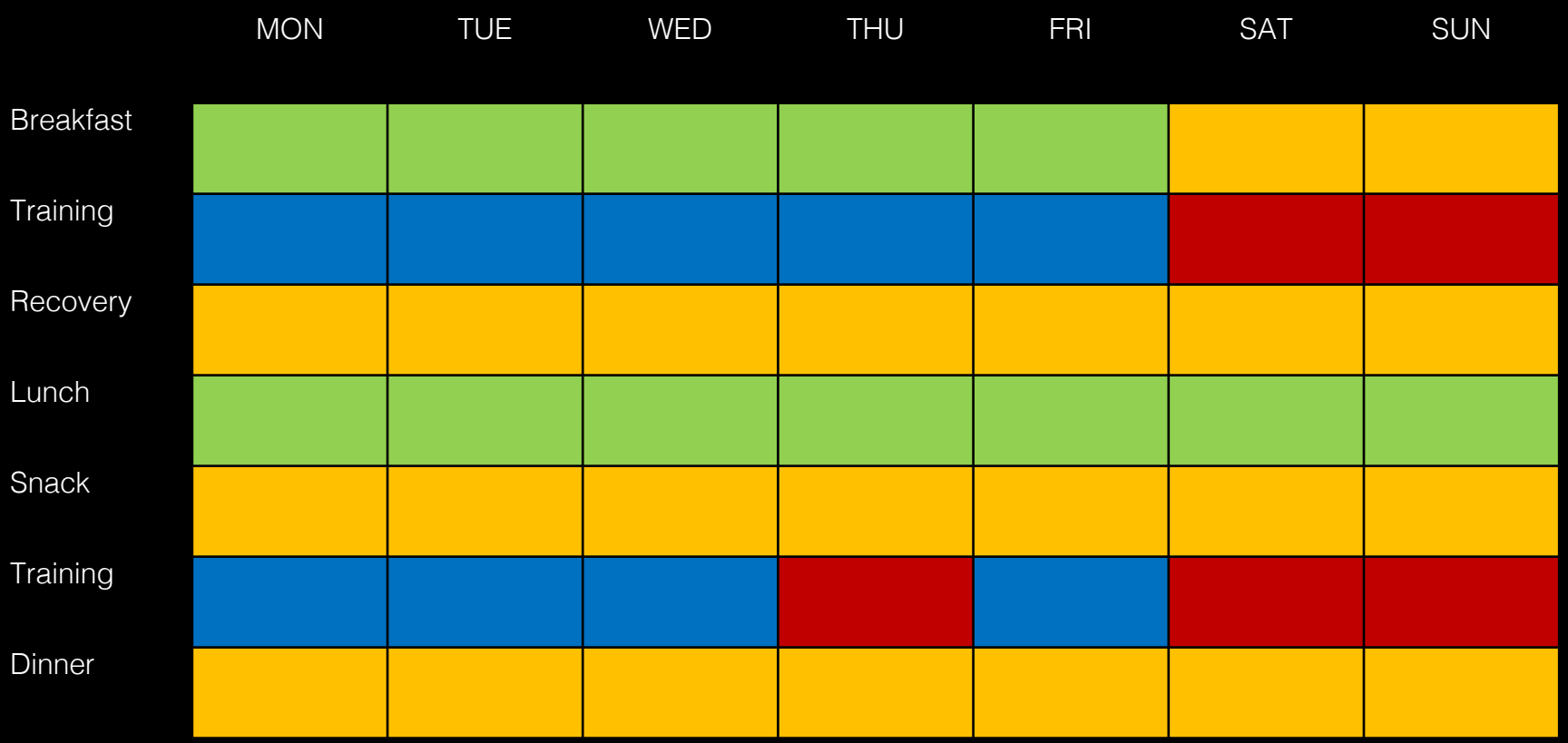
Timing

High Carb meal

Low carb/High Protein

Training

Rest/recovery



Timing

Rate of muscle glycogen storage is 30% faster with early recovery feeding (<1h) compared to delayed feeding (>2h)

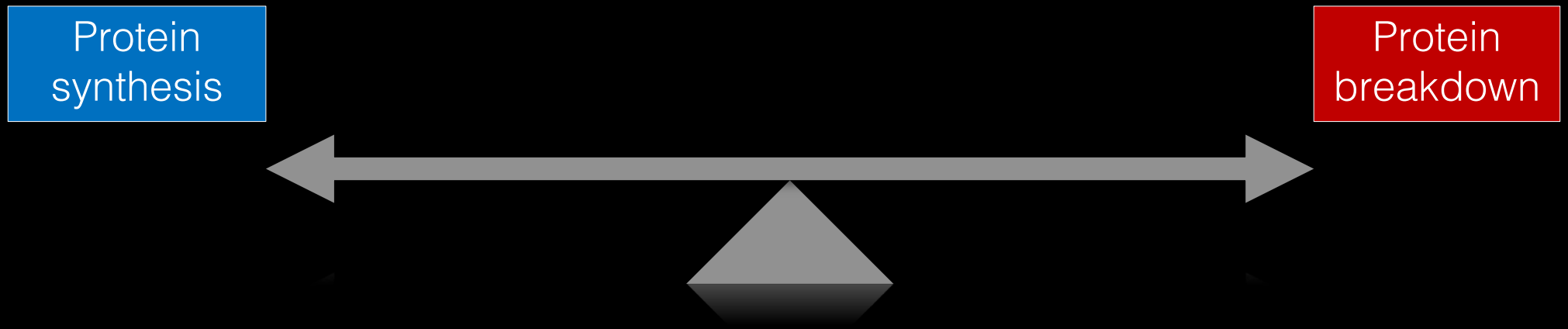
Carbohydrate needs

- Optimal window 1h with 1-1.2 g/kg/h
- Moderate to high GI (50-60g)
- 5- 7g/kg BW d low to moderate
- 7- 10g/kg BW d moderate to heavy (rare!)

Protein

- Protein plays an important role in building muscle and aiding recovery after sessions
- Athletes should consume a good portion at each meal
- A practical way of measuring this is to consume 30 g protein 5-6 x day

Protein



- Protein intake to maximise skeletal muscle reconditioning
- Need: 1.2 - 2.7g/kg/BM/d
- To build new muscle and repair damaged muscle
- Increase and strength gains alongside recovery

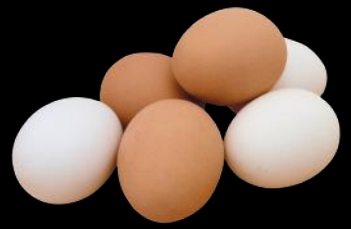
Protein

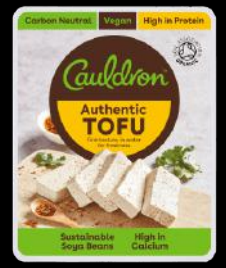
- Dose response of protein synthesis after exercise:
  - 10-20g* = worthwhile-optimum intake
- Should provide all essential amino acids
- Co-ingestion with carbohydrates for effective muscle growth

Protein

- Builds and repairs muscle
- After training?
- Sources
  - Lean meat
  - Eggs
  - Fish
  - Nuts & seeds
  - Diary products
  - Supplements

Animal	Plant





Fats

- Are fats important?
- Energy rich
- Fuel for games and training?
- Protect vital organs
- Vitamins
- Types of fat
  - Saturated fats
  - Unsaturated

Unsaturated	Saturated
   	   

Micronutrients

Vitamins

- Not a macronutrient, but essential…..
- Many vitamins & minerals
  - Important for body function
- Anti-oxidants
  - Prevent illness
- Good sources:
  - Carrots, broccoli, bright coloured vegetables, nuts, seeds, fish, red meats

Vitamin D

- Deficiency is associated with many health conditions:
  - cardiovascular disease, diabetes mellitus, cancer, autoimmune disease, poor musculoskeletal health and depression
- Many athletes are vitamin D deficient*
- Correcting vitamin D may improve athletic performance

Fibre

- Dietary fibre is the edible parts of plants resistant to digestion and absorption
- Soluble fibre found in foods like fruit and oats
- Insoluble fibre found in wheat bran and nuts
  - Healthy digestive tract
  - Satiety and blood sugar regulation
  - Cholesterol control
  - Digestive health, the microbiome and colon cancer
  - Longevity

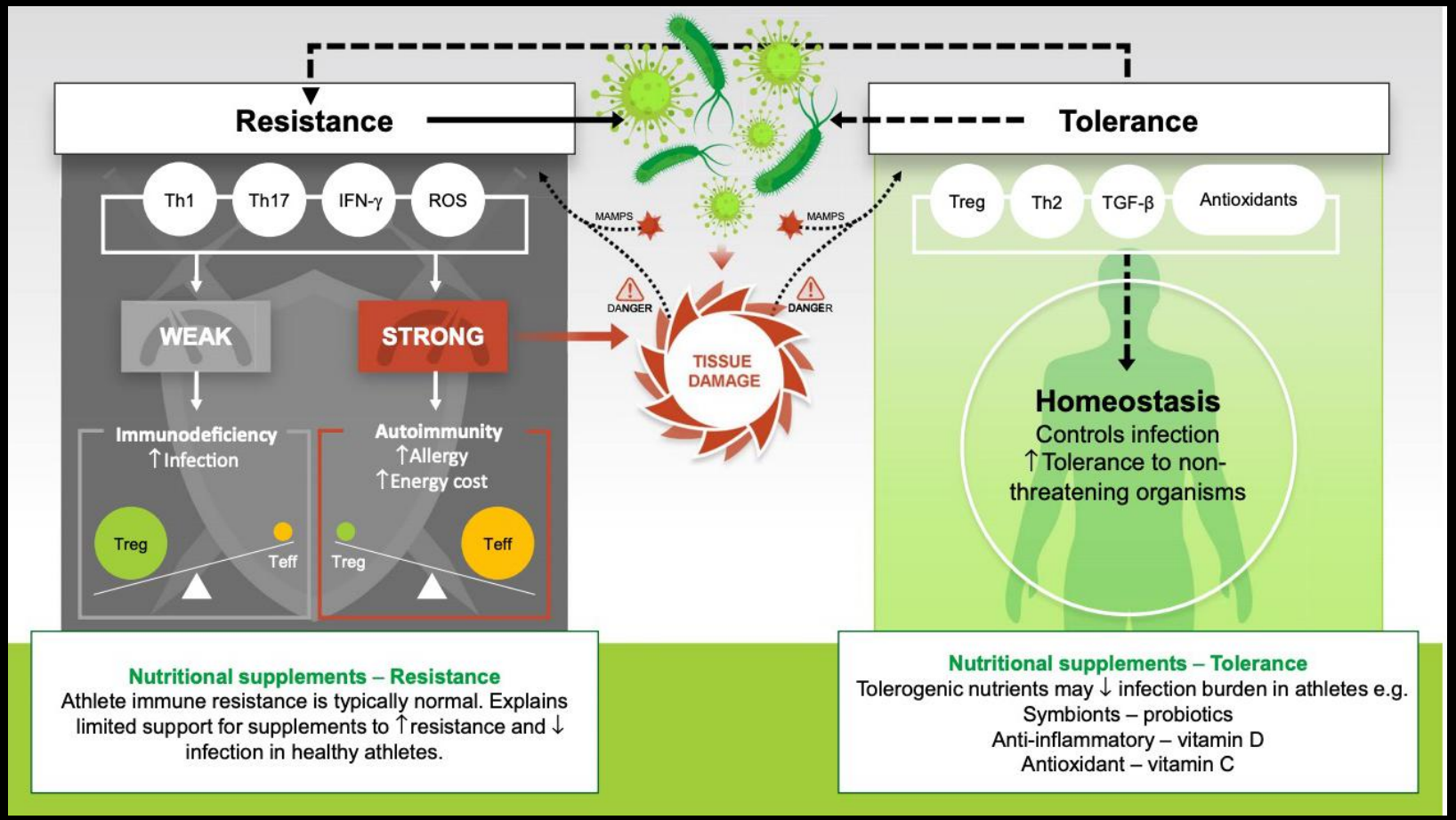
Fibre

- Target 30g/d

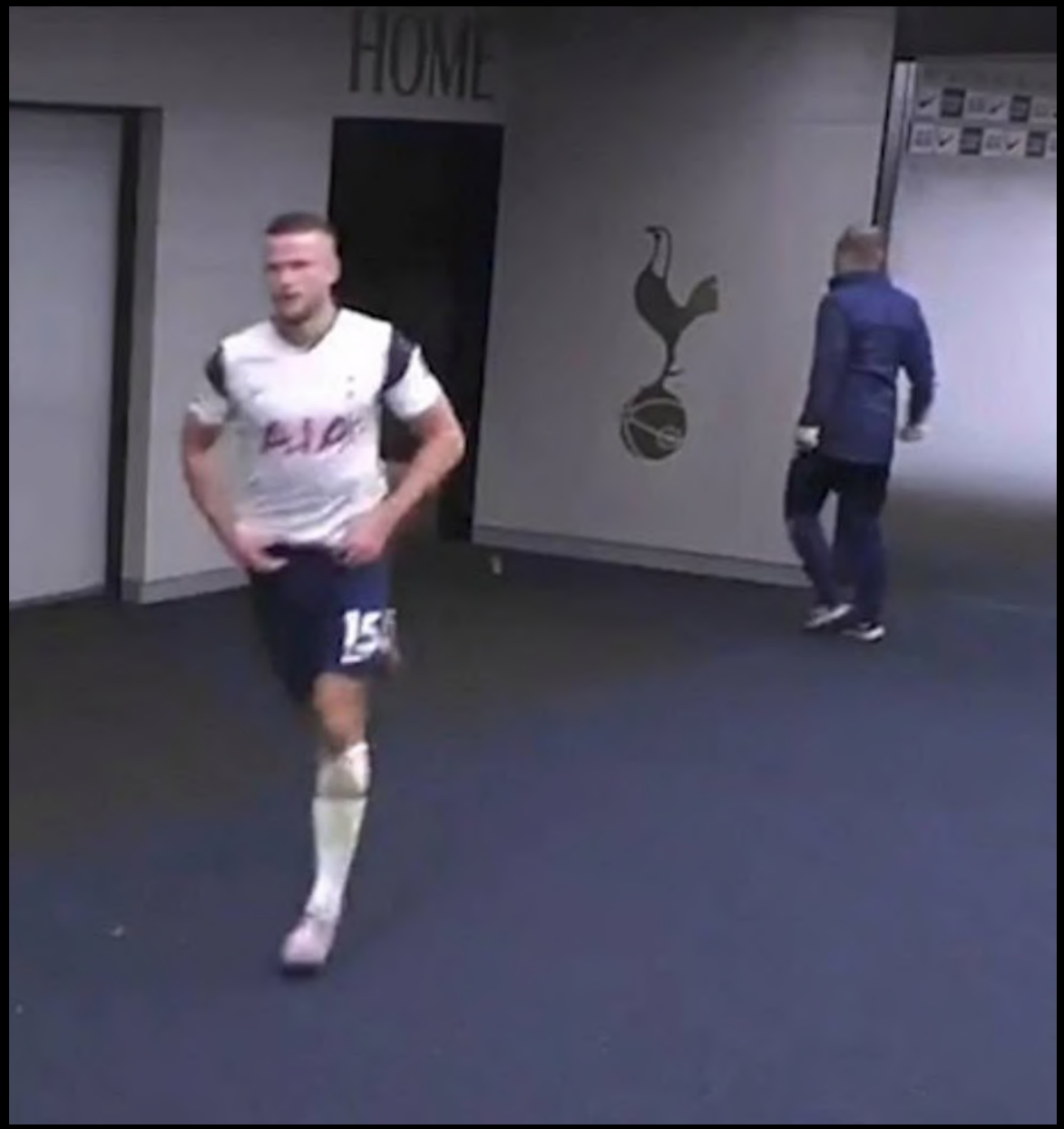
	Portion size	Fibre per portion (g)
Breakfast		
Porridge	50g	5g
with raspberries	80g	2.5g
Snack		
1 banana or apple	1 medium sized	2g
Lunch		
Baked Potato	180g - medium cooked	5g
Baked Beans	80g	3g
Sweetcorn (tinned)	80g	2g
Dinner		
Wholemeal Spaghetti	150g	5g
Suggestion: add a tomato based sauce and vegetables		
Snack		
Wholemeal Bread	2 slices	6g
Peanut Butter	1 Tablespoon	1g
TOTAL		31.5g

Illness

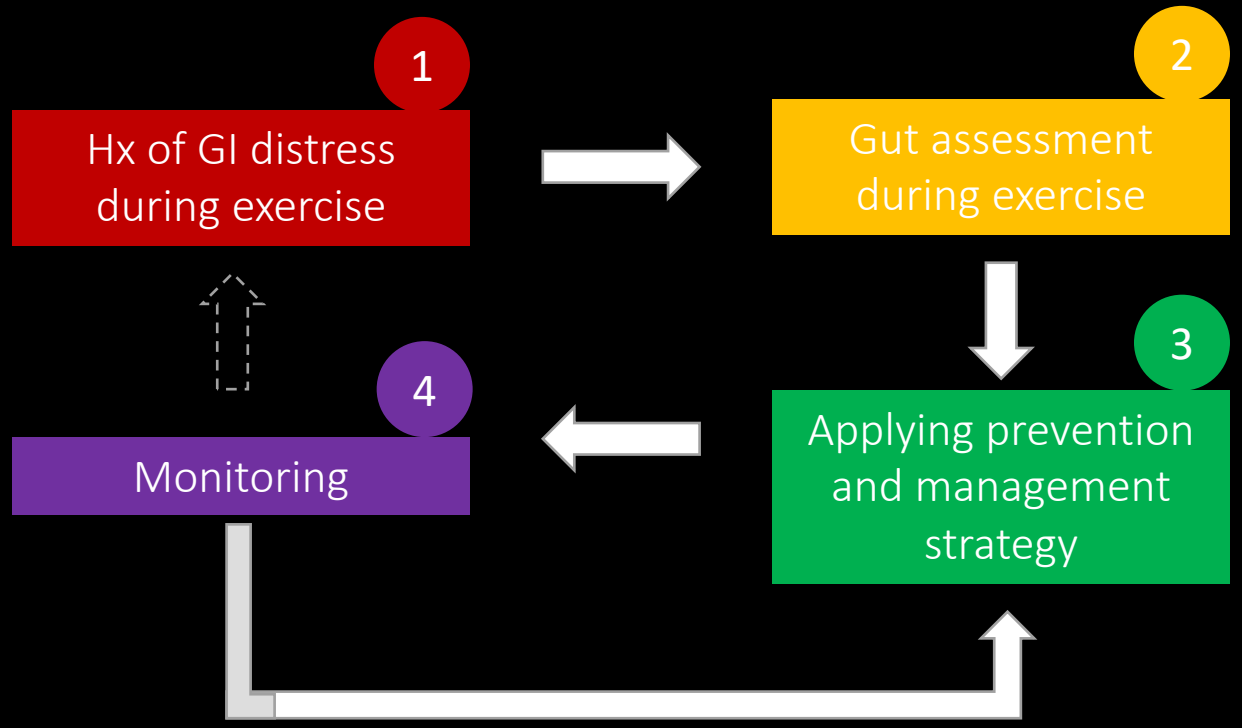
- Zinc
- Vitamin C & D
- Probiotics
- Carbohydrates
- Hand hygiene



Gut Health



Gut Health



- Carbohydrate consumption before and during exercise
- Training the gut
- FODMAP
  - Low residue diets

LOW ENERGY AVAILABILITY (LEA)

- A condition of low energy availability (LEA) affecting male and female athletes of all levels and ages
- As the result of insufficient caloric intake and/or excessive energy expenditure

Causes:

- Unintentional
  - Lack of awareness
  - Difficulties meeting high energy requirements
- Intentional behaviors clinical eating disorders

LEA RISK FACTORS

LEA Risk Factors

Unintentional
e.g. high volume of exercise

Misguided but intentional
e.g. control body mass

Compulsive
e.g. control body mass

Major risk factor
a drive to reduce body mass/body fat
(Louck et al., 2021

Exercise

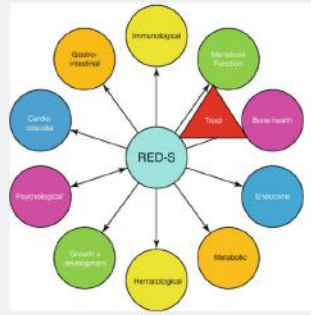
Health functions, daily living

Dietary Intake

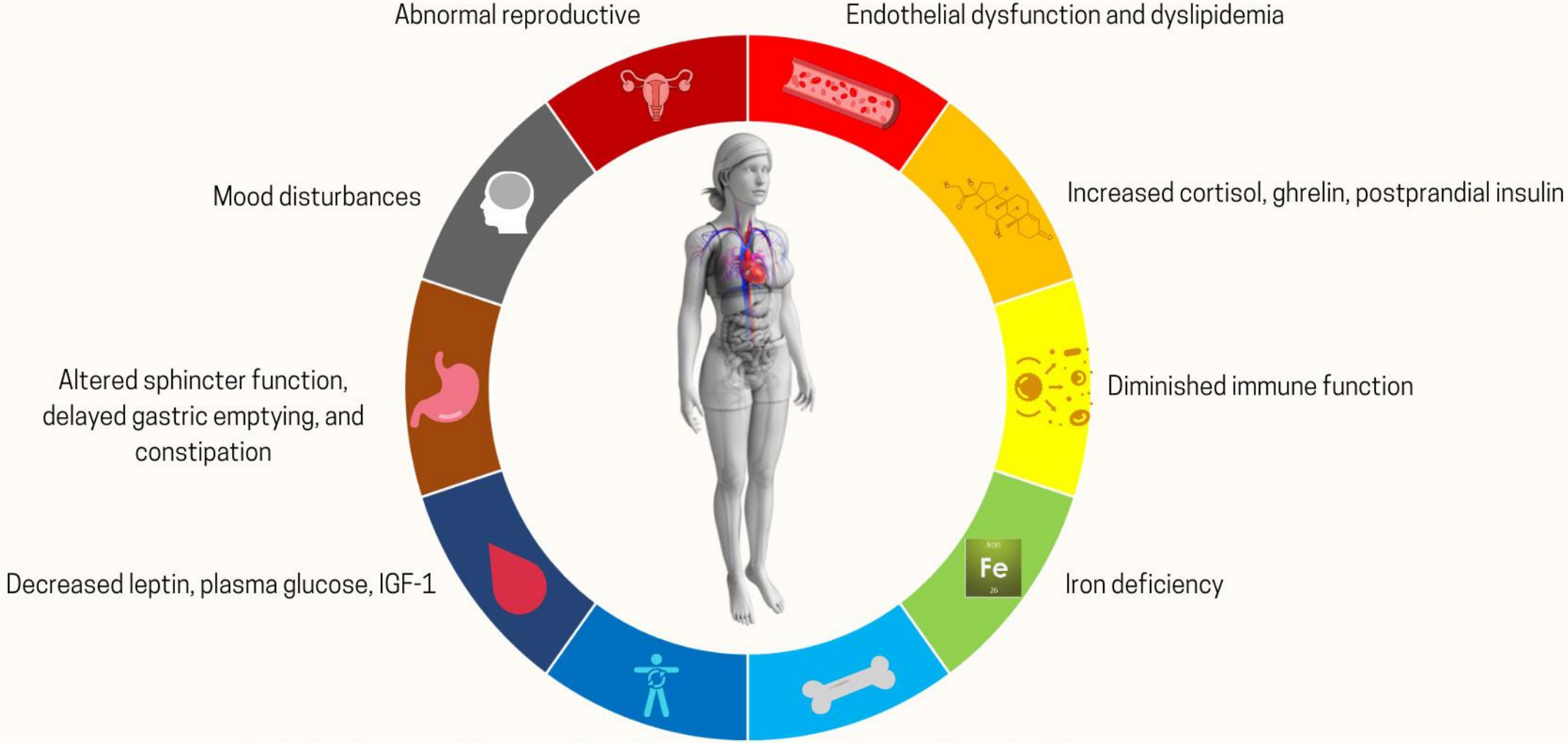
Insufficient dietary intake to support energy expenditure required for health, function and daily living. After deducting the cost of exercise

RED-S

Impairs health & performance



Adverse Effects of Low EA



BREAK - QUESTIONS

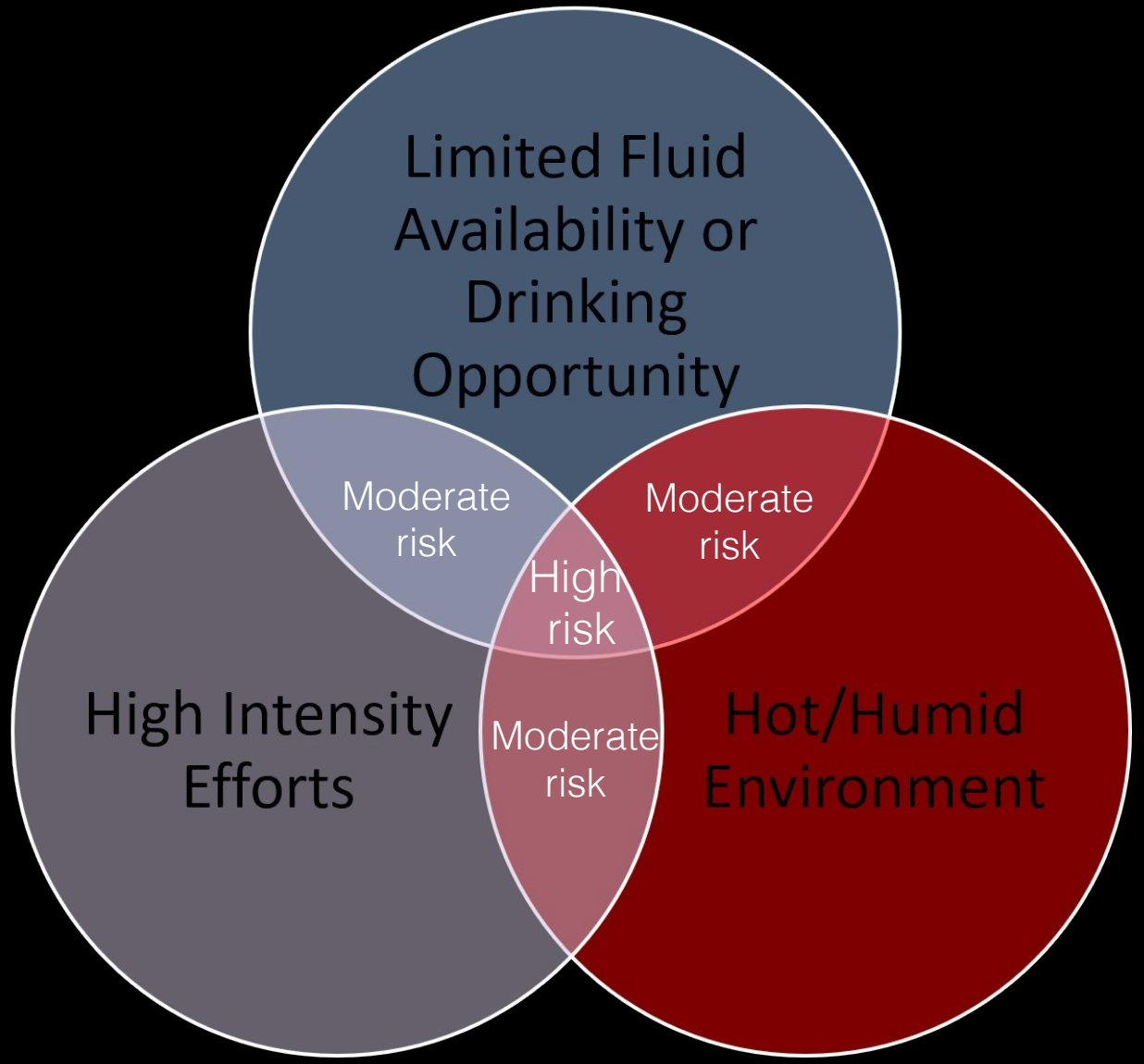
Hydration


ARE YOU HYDRATED?
PERFORMANCE & HYDRATION
Dehydration makes the blood thicker, slowing the delivery to muscles and the brain
DEHYDRATION CAUSES
Reduced concentration and reactions times
ACTIONS
WELL HYDRATED 200 - 700
MID-HYDRATION 700 - 900
SEVERE DEHYDRATION 900+
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15

Impact on Performance

Weight loss in %	Level of dehydration	Consequences
< 2%	Mild dehydration	Up to 20% decrease in physical capacities Slower reaction and vision
2 – 5%	Moderate dehydration	20 - 30% decrease in physical capacities

Risks Factors



Nuccio et al. 2017

Exercise Associated Muscle Cramps

- Involuntary spasms and contractions of skeletal muscle
- Association with exercise in the heat and/or intensity of exercise
  - Twitching/tightening
  - Pain
  - ↓ performance
- Contributing factors
  - Muscle fatigue
  - Electrolytes losses*

Hydration Status

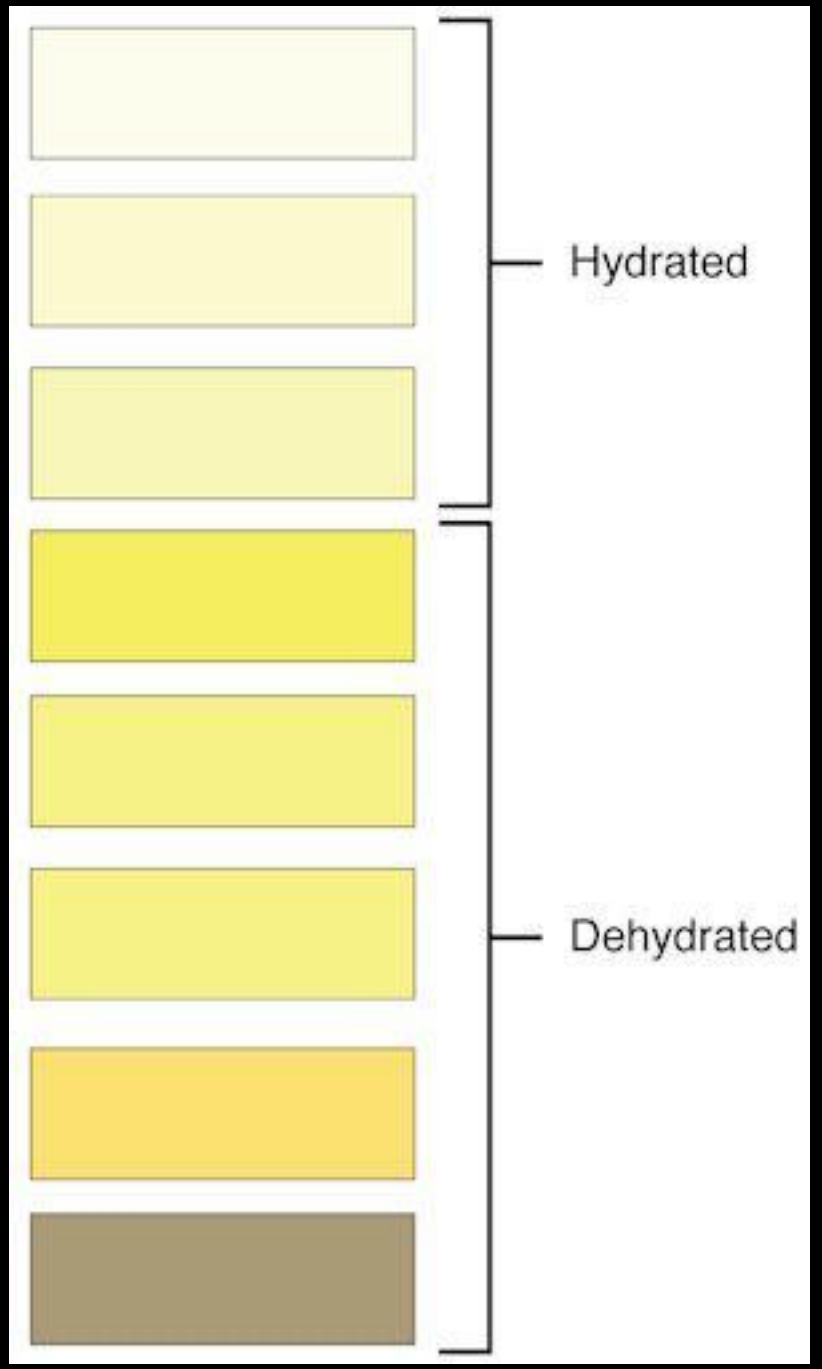
- Changes body mass% before and after games or training
- Blood osmolality and sodium
- Urine-specific gravity (USG), osmolality (UOsm)

Osmolality reading	Interpretation
200 - 700	Well hydrated
701-899	Moderate to severe dehydration
900+	Severe dehydration

Hydration Status

- Urine colour
  - B vitamins and certain foods
- Thirst

- Physical signs
  - Dry mouth
  - Dry eyes
  - Salt streaks



Guidelines

- Individuality
- Replacement should be 150% of its deficit
- Electrolyte replacement: Na (50-80 mmol/L)
- Keep body weight loss to under 2%
  - 2L per day plus 1L for every hr of training
  - 500ml before competing
  - 150-250ml fluid every 15-20 minutes
  - 500ml immediately after exercise

Alcohol

- Avoid excessive alcohol intake
- Impairs MPS and wound healing
- Tempting to indulge in alcohol to drown sorrows or diminish

Alcohol

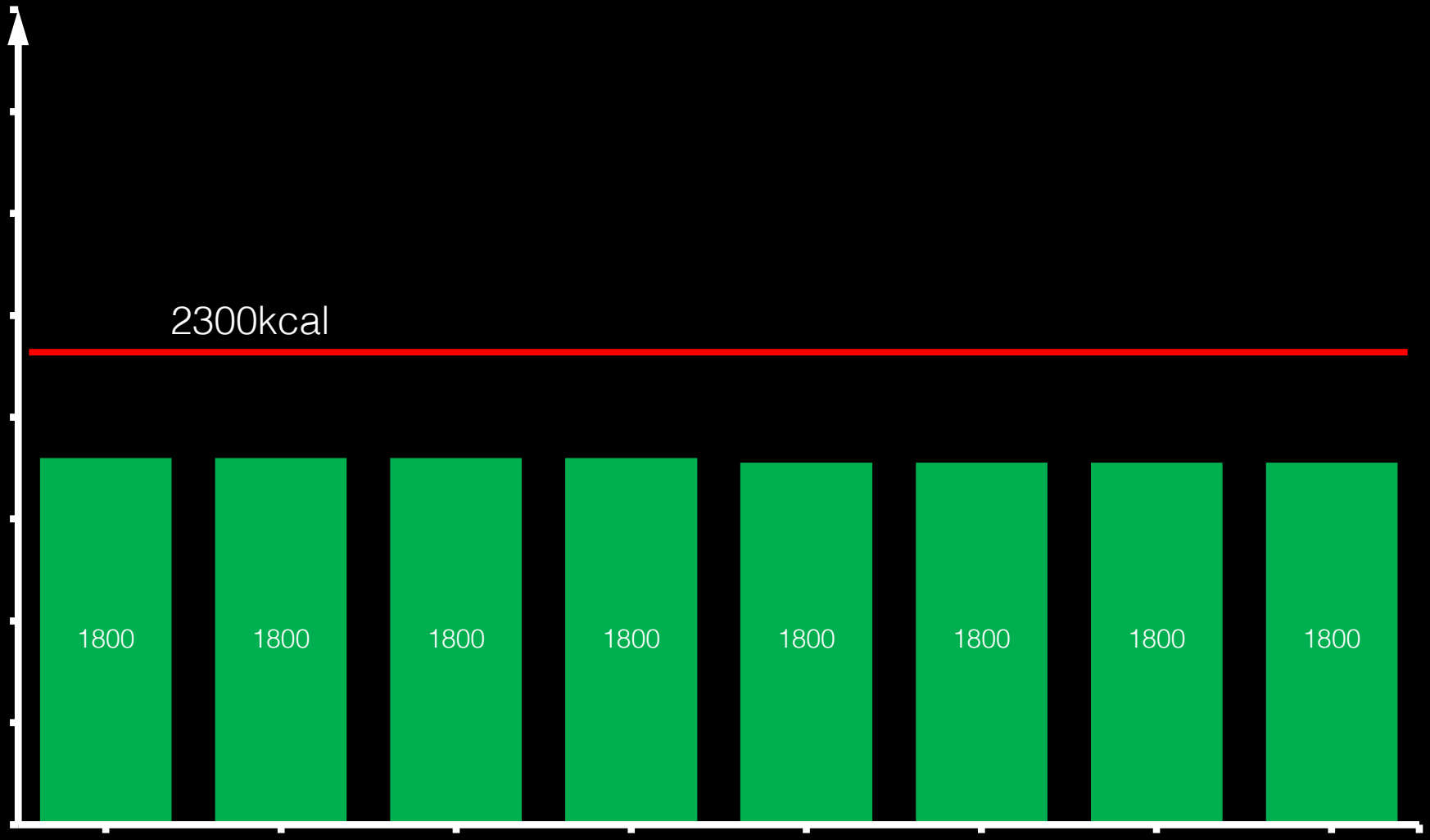
180kcal

210kcal

160kcal

90kcal

61kcal


2300kcal
1800
1800
1800
1800
1800
1800
1800
1800


HIGH CARBOHYDRATE
HIGH PROTEIN
FUELLING
LOW CARBOHYDRATE
HIGH PROTEIN
SNACK
CARBOHYDRATE GEL
QUICK ENERGY
CARBOHYDRATE GEL
+ CAFFEINE
ELECTROLYTES
ELECTROLYTES
FUELLING
STATION
PERFORMANCE
NUTRITION

Sports Food

Sports Food

Sports foods are specifically formulated for and marketed to athletes, helping them to ensure an appropriate supply of fluids and nutrients which help the body prepare for, maintain and recover from intense physical performance.

Sports Foods

Carbohydrate

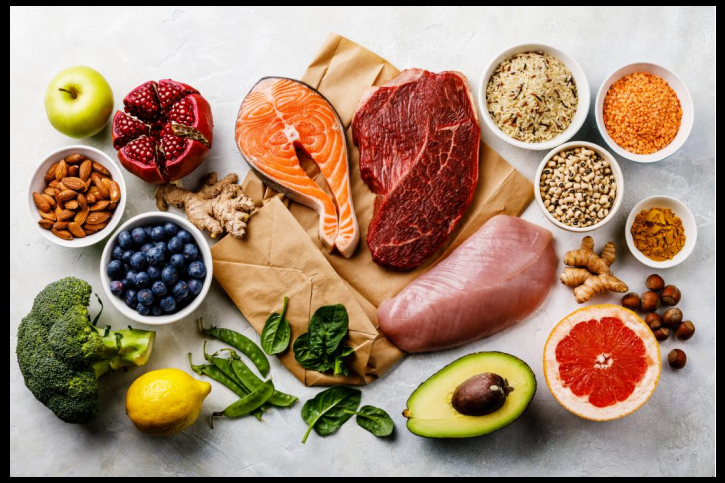
- Replenishing liver glycogen stores, pre-match
- Carb intake at 30-60g/hr or 60g per half
- Carb ingestion may improve:
    - shooting, dribbling speed and passing accuracy

Fluids

- Proper hydration will support health and performance
    - Consume 5-7mL/kg/BM of fluid 2-4hrs prior to kick off
    - Aim for urine to be pale yellow in colour
    - Electrolytes

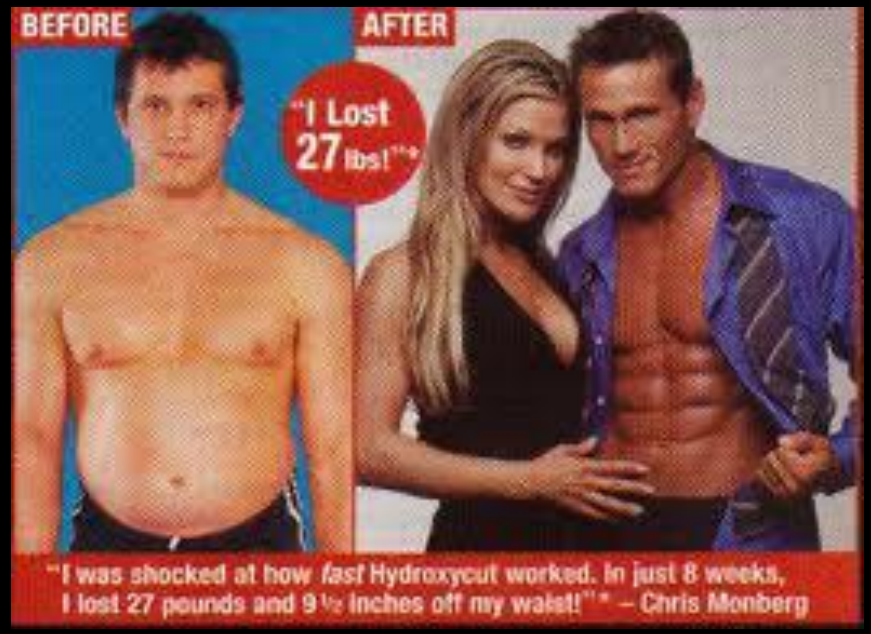

Sport
Supplements

Supplements



VS.

- Convenient and Appealing
- Evidence
- Excess/replacing real food
- Dubious claims
- WADA (Safety and Contamination)



Ergogenic aids

ORIGINAL ARTICLE

Effect of an acute dose of omega-3 fish oil following exercise-induced muscle damage

J. R. Jakeman[1] · D. M. Lambrick[2] · B. Wooley[3] · J. A. Babraj[4] · J. A. Faulkner[5]

Oral creatine monohydrate supplementation improves brain performance: a double-blind, placebo-controlled, cross-over trial

Caroline Rae[1*], Alison L. Digney[1], Sally R. McEwan[1] and Timothy C. Bates[2]

[1]*Discipline of Biochemistry, School of Molecular and Microbial Biosciences G08, The University of Sydney, Sydney, NSW 2006, Australia*

[2]*Macquarie Centre for Cognitive Science, Macquarie University, NSW 2109, Australia*

OPEN ACCESS Freely available online

PLOS | ONE

A Double-Blind, Placebo-Controlled Study on the Effects of Lutein and Zeaxanthin on Neural Processing Speed and Efficiency

Emily R. Bovier[1], Lisa M. Renzi[1,2], Billy R. Hammond[1]*

Int J Sport Nutr Exerc Metab. 2016 Oct;26(5):445-453. Epub 2016 Aug 24.

Dose-Response of Sodium Bicarbonate Ingestion Highlights I… rse of Blood Analyte Responses.

Jones RL, Stellingwerff T, Artioli GG, Saunders B, Cooper S, Sale C.

Influence of dietary nitrate supplementation on physiological and muscle metab… adaptations to sprint interval training

Christopher Thompson, Lee J. Wylie, Jamie R. Blackwell, Jonathan Fulford, Matthew I. Black, James Kelly, Sinead T.J. McDonagh, James Carter, Stephen J. Bailey, Anni Vanhatalo, Andrew M. Jones

Journal of Applied Physiology Published 1 December 2016 **Vol. no.** , **DOI:** 10.1152/japplphysiol.00909.2016

INFORMED WE TEST · YOU TRUST SPORT

Nutritional Recommendation	Benefits	Intake/other
B - alanine	Act as pH buffer increased training intensity	~3.2–6.4 g (~65 mg/kg BM) per day, consumed for a minimum of 2–4 weeks, and up to 12 weeks, Itchy or tingling sensation (paraesthesia)
Nitrate	Reduces O_2 cost of submaximal exercise. Performance benefits may manifest acutely (i.e., within 2–3 hr)	NO – bolus of 5–9 mmol (310–560 mg)
Caffeine	Improve endurance capacity	Low to moderate doses of caffeine (~3–6 mg/kg BM), consumed 60 min pre-exercise
Collagen	Variety of benefits, from relieving joint pain to increasing muscle mass	15-20g/d (pre-training)
Creatine	Reduce protein degradation, promote MPS	2-5g per day
Omega 3	Anti-inflammatory and immunomodulatory properties	1-6g/d
Vitamin D	Muscle, cardiac, immune function and skeletal health	1000-4000iu/d
Multivitamin	Avoid micronutrient deficiencies	Once per day

It’s essential to get the base diet right first!

BREAK - QUESTIONS

Match Day

Kit Bag Essentials

Keep these in your match day/training bag

Water	Essential for proper hydration. Have a bottle to hand – drink to thirst	
Sports drink	Replaces water, electrolytes, and energy before, during and after training or competition	 
Protein/recovery powder	Take post -raining to ensure recovery and repair. Carbohydrates to replenish glycogen Protein to help rebuild muscle damage	
Gels	Great source of simple sugars, your body's preferred source of fuel during exercise. Ensure they contain different carbohydrate sources, such as glucose, maltodextrin and fructose.	 
Jelly babies/fruit	Alterative sources of simple sugars	 
Caffeine gels/shots	Use before or during exercise. To maintain focus and concentration and reduce tiredness and fatigue. Aim for 3-6mg/kg Trial before a training session or match	 

RICHARD ALLISON NUTRITION

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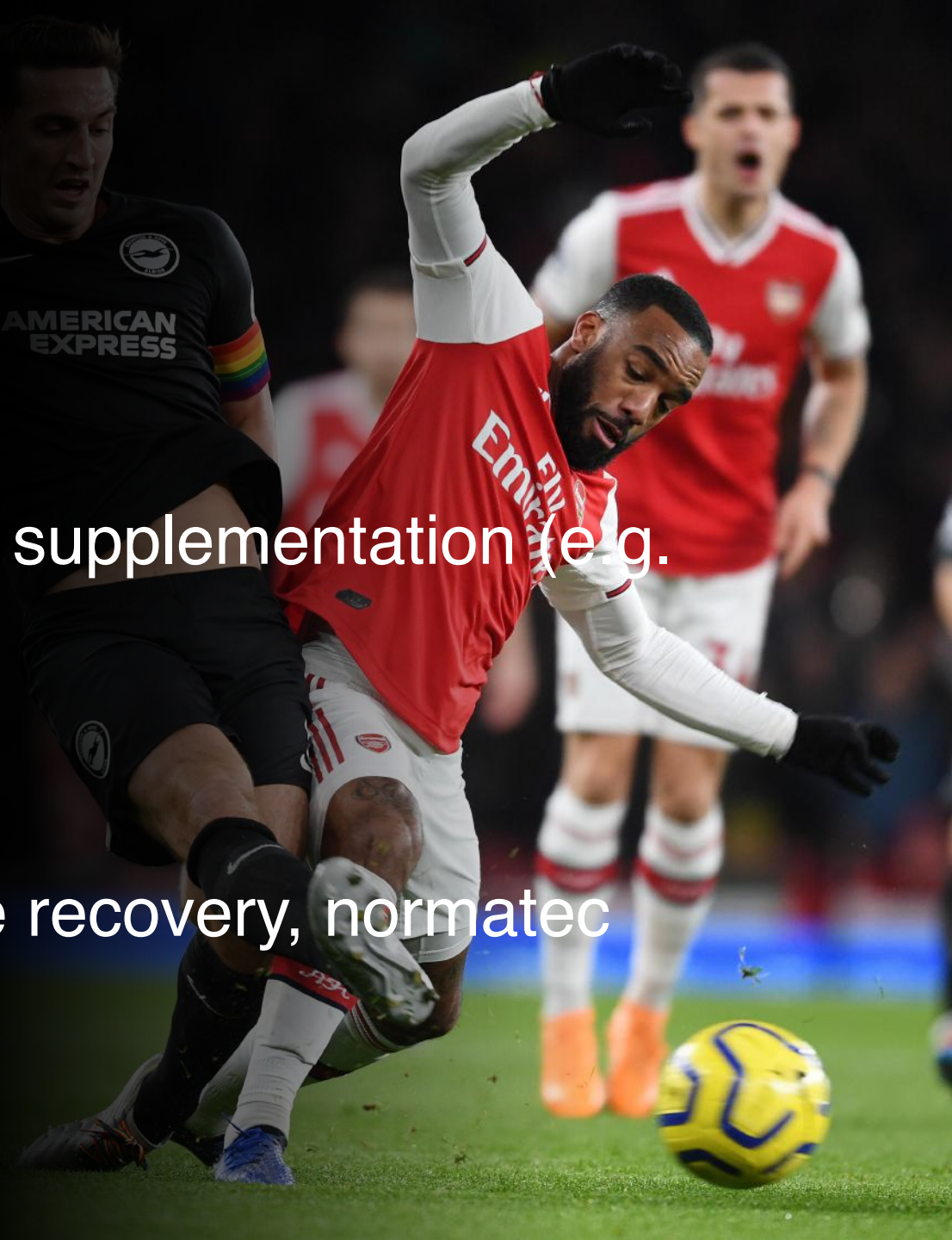
Recovery

Recovery

- Nutrition MD+1/MD+2
- Recovery shakes, macro/micronutrient supplementation (e.g. Omega 3)
- Recovery modalities
- Cryotherapy, contrast, massage, active recovery, normatec



Nutritional Recommendations

Nutritional Recommendation	Daily intake	Goal/purpose
Protein from chicken/lean meat/eggs or protein shake	Every 3-4 hours	Attenuate lean tissue loss/maintain high rates of protein synthesis
Vegetables at each meal	Over 5 portions	Maintain intake of vitamins, minerals and fibre
Complex Carbohydrates	At each meal	Manage overall energy intake
Collagen protein shot 20g	Twice (1x AM, 1x PM)	Reduce protein degradation, promote MPS
Creatine 2.5g	Once (AM)	Reduce protein degradation, promote MPS
Omega 3 6g	Once (AM)	Balance inflammation

Recovery

Avoid

- Energy deficits
- Inadequate protein
- Vitamin D deficiency
- Poor hydration status

Consider

- Leucine
- Creatine
- Omega-3 fatty acids*
- Collagen*

Recovery Shakes

THE **'HAYMAKER'**

Nutrition Info

- 784 kcal
- Carbs 152g
- Protein 18g
- Fat 15.7g
- Good source of potassium, vitamin A, vitamin C, calcium and iron

MD +1 RECOVERY SHAKE

Cherry & Banana

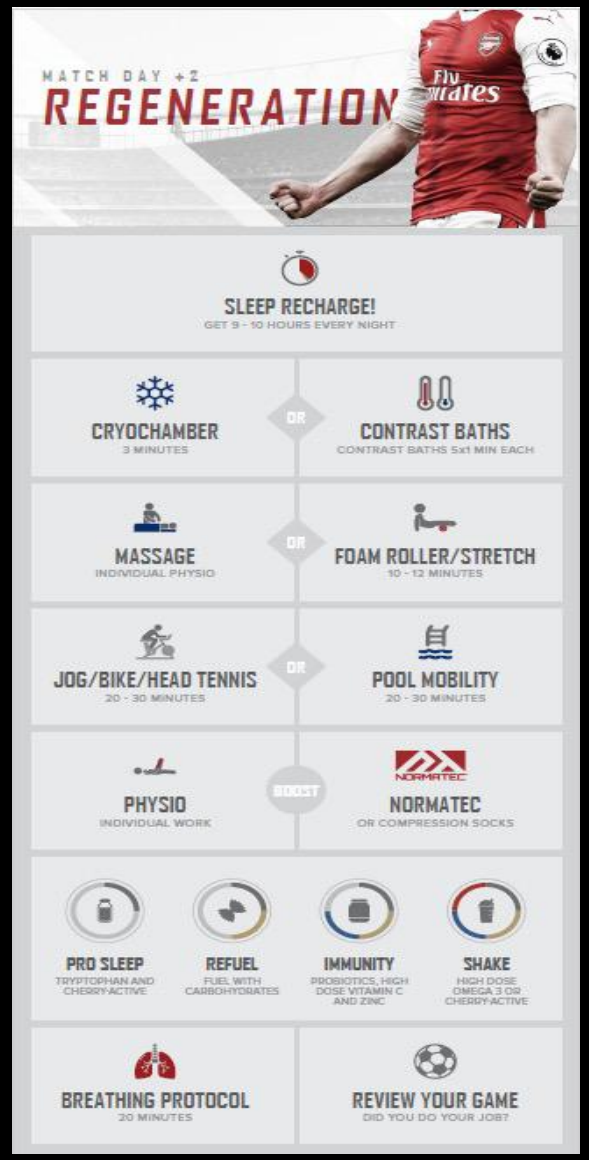
- Reduces Muscle Soreness
- Reduces Inflammation
- Improves Sleep
- Enhances Muscle Recovery

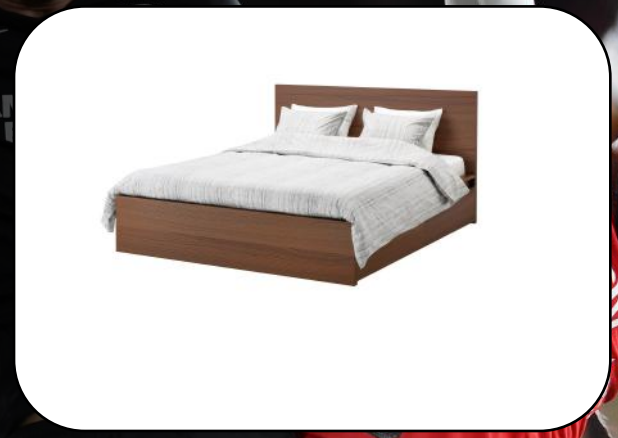
IMMUNE BOOSTER+ CARROT GINGER TURMERIC

Nutrition Info

- Boost Immune Function
- Anti-inflammatory
- Aids Digestion 50 kcal
- Good source of potassium, vitamin C and Antioxidants

Recovery Modalities





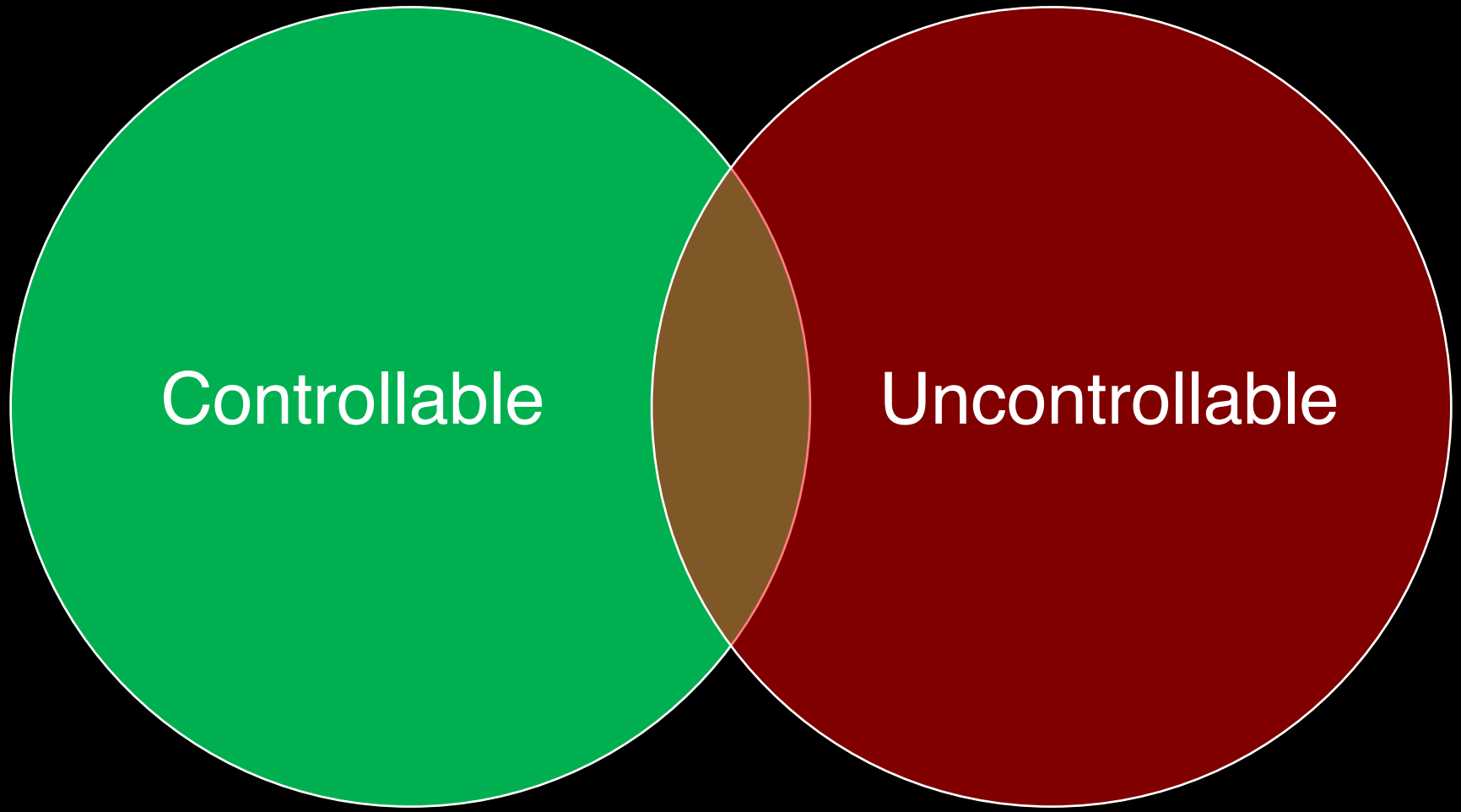
Sleep

Sleep

- Sleep is generally recognised as a critical factor in performance and mood
- Insufficient sleep = detrimental effects on performance
  - Cognition
  - Pain perception
  - Immunity and inflammation
  - Changes in CHO metabolism, protein synthesis and food intake

Factors

- Lighting
- Phones, gaming etc…
- Temperature
- Caffeine (energy drinks)


Controllable
Uncontrollable

Coffee

Coffee

- Caffeine latches on to adenosine receptors, blocking the sleep signal
- While the caffeine is working its magic, the brain is still building up adenosine
- By the time the caffeine has worn off, you'll have additional sleep pressure

"If you're drinking caffeine before mid day, you're probably just self medicating your state of sleep deprivation"

Match Day & Training

Pre-Training/Matches

- Prepare you for the activity
- Low in fat and fibre to minimise gastrointestinal distress
- Moderate in protein
- High in carbohydrate to maintain blood glucose
- Consume meals that you are used to
- Smaller meals can be consumed nearer to the time of tra
  (1 - 2 hrs)
- Aim to drink 500ml - 2 hours before training begins

During Training/Matches

- There is little need to consume any food if your nutrition has been sufficient leading into the training session
- Drink water to support hydration, between 250ml -1 litre per hour depending on the environment
- During intense training sessions it may be beneficial to consume carbohydrate

Post Training/Matches

- The goal of post-training nutrition
- Refuel – to fuel the muscles for training and matches, maximise energy levels – Carbohydrates
- Recovery – to enhance the recovery , leave the muscles feeling less sore– Proteins
- Rehydration – prevent reduction in decision making and physical performance - Fluids
- Immunity – to boost the immune systems– Fruits, Vegetables & Good Fats

Periodised Diet Plan

Example Diet Plan

Goals

- Lean protein at each meal
- Complex carbohydrates around training and matches
- Healthy fats

Limit

- Simple sugars
- Refined foods
- Alcohol

	Breakfast	Snack	Lunch	Snack	Evening Meal	Pre-bed
Monday	Recovery Day – Low Carb					
	Omelette x3 eggs Spinach Peppers Probiotic (e.g. actimel)	Protein shake	Chicken & pineapple skewers (2x chicken breast) Mixed vegetables (broccoli, cauliflower, carrot and asparagus	All-Day Egg Muffins x2 	Grilled salmon (110g) Rice (1 x ladles) Steamed veg (broccoli, cauliflower, carrot and asparagus)	Protein shake
Tuesday	Immunity	@Training ground		Moderate to high carb day		
	Scrambled egg x3 Spinach Toast x2 Probiotic (e.g. actimel)	Ginger shot 	2x portion lean protein (chicken/fish) 2x ladles rice Vegetables (Choose freely)	Protein shake	Korean-style chicken With rice and steamed green veg	Protein shake
Wednesday		@training ground		Moderate to high carb day		
	Scrambled egg x3 Spinach Toast x2 Probiotic (e.g. actimel)	Ginger shot	2x portion lean protein (chicken/fish) 3x ladles rice Vegetables (Choose freely)	Carb up for Thursday Protein shake	Salmon with tray-baked veg	Protein shake
Thursday	@Hotel		Pre-match		Match	Recovery
	Wholegrain toast x2 Scrambled eggs Low Fat Fruit Yoghurt Sliced Fresh Fruit Probiotic (e.g. actimel)	Ginger shot	Dover Sole or chicken Spaghetti with tomato sauce Green beans and carrots	Gels/sports drink as per normal pre match		Protein shake

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Kit Bag Essentials

Keep these in your match day/training bag

Water	Essential for proper hydration. Have a bottle to hand –drink to thirst	
Sports drink	Replaces water, electrolytes, and energy before, during and after training or competition	 
Protein/recovery powder	Take post -raining to ensure recovery and repair. Carbohydrates to replenish glycogen Protein to help rebuild muscle damage	
Gels	Great source of simple sugars, your body's preferred source of fuel during exercise. Ensure they contain different carbohydrate sources, such as glucose, maltodextrin and fructose.	 
Jelly babies/fruit	Alterative sources of simple sugars	 
Caffeine gels/shots	Use before or during exercise. To maintain focus and concentration and reduce tiredness and fatigue. Aim for 3-6mg/kg Trial before a training session or match	 

Take Home

Quality whole foods
Protein, carbs and fats

Micronutrients
Avoid deficiencies supplement vitamin D

Hydration –
Drink to thirst

Timing –
Pre-match carbs and hydration v. Important

Supplements –
If evidenced based/need. Safety

Thank you

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