

NUTRITION FOR SPORT

FUELING YOURSELF FOR SUCCESS



WHAT IS ENERGY BALANCE?



PUT SIMPLY ENERGY BALANCE IS THE AMOUNT OF ENERGY YOU PUT INTO YOUR BODY VS THE AMOUNT OF ENERGY YOU USE

ENERGY IN

- PROTEIN
- CARBOHYDRATES
- FATS
- ALCOHOL



ENERGY OUT

- BASAL METABOLISM (60-75%)
- NEAT (10%)
- PHYSICAL ACTIVITY (15-30%)

HOW MANY CALORIES DO WE ACTUALLY NEED?

RMR: RESTING METABOLIC RATE

“THE AMOUNT OF ENERGY YOU USE AT REST”

INCLUDING:

- BREATHING;
- HEART BEATING;
- CIRCULATING BLOOD;
- BASIC BRAIN FUNCTIONS;
- FOOD DIGESTION; AND
- SUSTAINING THE FUNCTION OF VITAL ORGANS.

RMR

	Regression formula for RMR (Kcal/day)
Men	$(10 \times \text{weight}) + (6.25 \times \text{height}) - (5 \times \text{age}) + 5$
Women	$(10 \times \text{weight}) + (6.25 \times \text{height}) - (5 \times \text{age}) - 161$

(1 kcal = 4.18 kJ)

Mifflin-St Joer et al. (1990) *American Journal of Clinical Nutrition* **51**(2): 241-247

HOW DOES THIS WORK IN PRCATICE?

EXAMPLE 1:

NAME: X

FEMALE

AGE: 12

WEIGHT: 45.7 KG

HEIGHT: 156.75 CM

RMR= 1216 KCAL

EXAMPLE 2:

NAME: ME

MALE

AGE: 24

WEIGHT: 98.2 KG

HEIGHT: 186.5 CM

RMR= 2036 KCAL

THIS IS HOW MANY CALORIES YOU NEED BEFORE NEAT AND BEFORE EXERCISE....

SO... WHAT ABOUT ATHLETES...

THERE ARE TWO APPROCHES

USE AN ESTIMATE

	PAL (x RMR)
Bedbound	1.2
Sedentary	1.4
Hard Physical Labour	1.7
Athlete in Training	2.2

ME: 4479.2

X: 2675.2

TRY AND CALCULATE HOW MANY
CALORIES YOU BURN DURING YOUR
SPORT

	50 kg body weight	71 kg body weight
Swimming, slow crawl	6.4 kcal·min ⁻¹	9.1 kcal·min ⁻¹
Cycling, leisure (9.4 mph)	5.0 kcal·min ⁻¹	7.1 kcal·min ⁻¹
Running (8 min mile)	10.8 kcal·min ⁻¹	14.8 kcal·min ⁻¹

BUT IS EITHER METHOD ACCURATE?

TRAINING WEEK

<i>Day</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>	<i>Sun</i>
<i>AM</i>				1 Swim			2 Swim
<i>MID</i>	Net ball	Running (mid)	Running	Athletics	Athletics	recovery	
<i>PM</i>	1.5 Swim	2 Swim	1 Swim	1 Strength			1.5 - 2 Swim

WHAT ABOUT SCHOOL P.E?
DOES YOUR KID WALK TO SCHOOL?
RIDE A BIKE?
WHAT ABOUT COMPETITONS?

Kcal	2505	2812	2266	2666	1600	1216+ ?	3751
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SO IF ITS ALL ESTIMATES...WHAT'S THE POINT?

THE CALCULATIONS ARE A GUIDE!

LISTEN TO YOURSELF/ YOUR SWIMMER

IF YOU'VE HAD A HARD TRAINING SESSION EAT A LITTLE MORE

MAKE SURE YOU REFUEL BETWEEN SESSIONS

FOOD SHOULD BE SOMETHING YOU ENJOY!

SIGNS TO BE AWARE OF

UNINTENTIONAL WEIGHT LOSS

FALTERING GROWTH

LOSS OF APPETITE: A DECREASE IN INTEREST IN FOOD AND DRINKS CAN BE A SIGN.

FATIGUE AND WEAKNESS

FREQUENT ILLNESS AND SLOW RECOVERY

CHANGES IN MOOD

PHYSICAL SIGNS: DRY SKIN, BRITTLE NAILS, THIN OR BRITTLE HAIR, AND A SWOLLEN ABDOMEN.

OTHER SYMPTOMS: SORE MOUTH AND TONGUE, PALLOR (PALE SKIN), AND UNEXPLAINED BRUISING CAN ALSO BE INDICATORS.

AMENORRHEA IN WOMEN AND GIRLS

SO WHAT SHOULD I BE EATING?



CARBOHYDRATE : DEPENDS ON WEIGHT AND TRAINING INTENSITY
3-8G/KG/DAY



PROTEIN : DEPENDS ON WEIGHT AND STRENGTH TRAINING
1.5-2.0G/KG/DAY



FATS : SECONDARY FUEL SOURCE IMPORTANT FOR METABOLIC PROCESSES
1 TSP. - 2 TBSP. ~ 25G

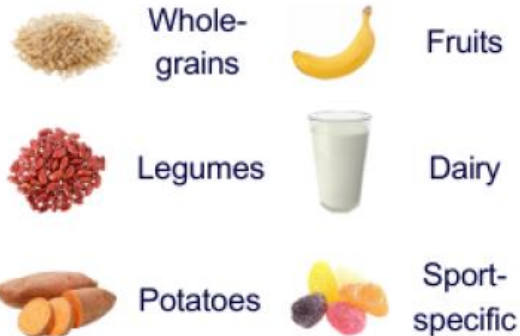
PERFORMANCE FOODS

Different training days require different foods. See below for an outline of the different performance foods...



CARBOHYDRATES 'FUEL'

Carbohydrates are the bodies high intensity fuel



PROTEIN 'REPAIR'

Proteins provide the building blocks to repair and rebuild, optimising adaptations



FATS 'PROTECT'

Fats store vitamins which help protect the body, optimising immunity



FRUITS & VEG 'GLOW'

Vegetables contain nutrients which optimise many functions in the body

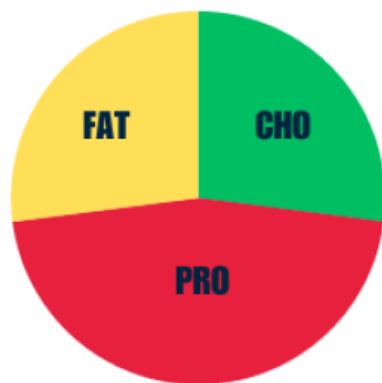


PERFORMANCE PLATES

Different training days require different performance plates. See below for an outline of the different performance plates...



SCAN FOR
REPAIR PLATE
RECIPES



The 'REPAIR' plate



To support low intensity training
or reduce non functional mass



Kcals
320-580



CHO
0-50 g



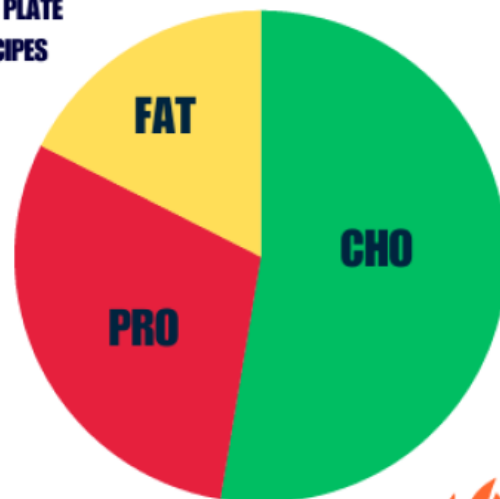
PRO
35-50 g



FATS
~25 g



SCAN FOR
FUEL PLATE
RECIPES



The 'FUEL' plate



To support daily fuelling
demands and composition



Kcals
520-780



CHO
50-100 g



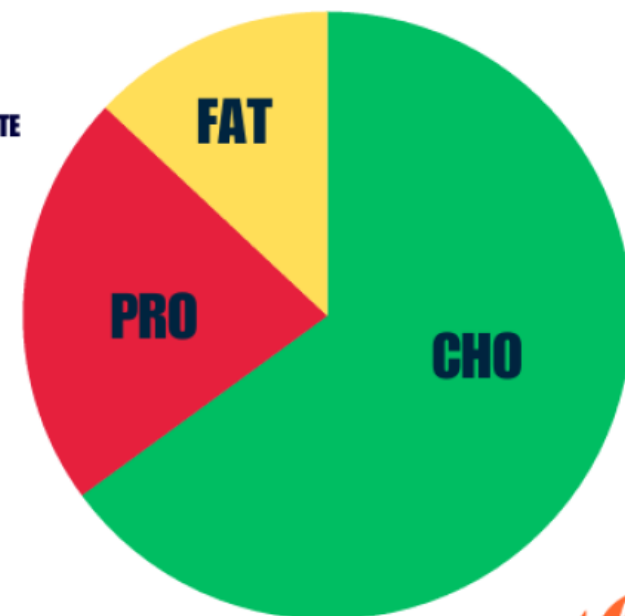
PRO
35-50 g



FATS
~25 g



SCAN FOR
PERFORM PLATE
RECIPES



The 'PERFORM' plate



To support high intensity training
and increases in functional mass



Kcals
720-980



CHO
100-150 g



PRO
35-50 g



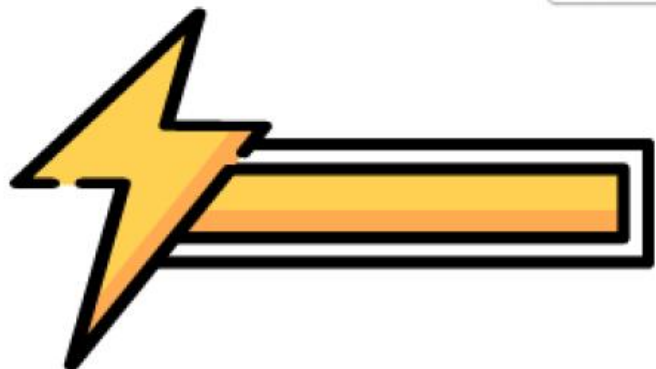
FATS
~25 g

PERFORMANCE SNACKS

Utilise performance snacks to top up your energy levels...



SCAN FOR
SUSTAIN SNACK IDEAS



'SUSTAIN' snacks



To support low intensity training
or reduce non functional mass



Kcals
80-370



CHO
20-60 g



PRO
0-10 g



FATS
0-10 g



SCAN FOR
REPAIR SNACK IDEAS



'REPAIR' snacks



To support daily fuelling
demands and composition



Kcals
80-275



CHO
0-15 g



PRO
~20 g



FATS
0-15 g

THE REPAIR PLATE



320-580 Kcals

To support low intensity training or reduce non functional mass...

FATS



NUTS

25-30g



NUT BUTTER

~25g (1 tbsp)



OLIVE OIL

~13g (1 tbsp)



SEEDS

25-30g



AVOCADO

~80g



OILY FISH

130-180g

PROTEINS



CHICKEN BREAST

130-180g



BEEF STEAK

130-180g



BEEF MINCE

140-190g



SALMON FILLET

130-180g



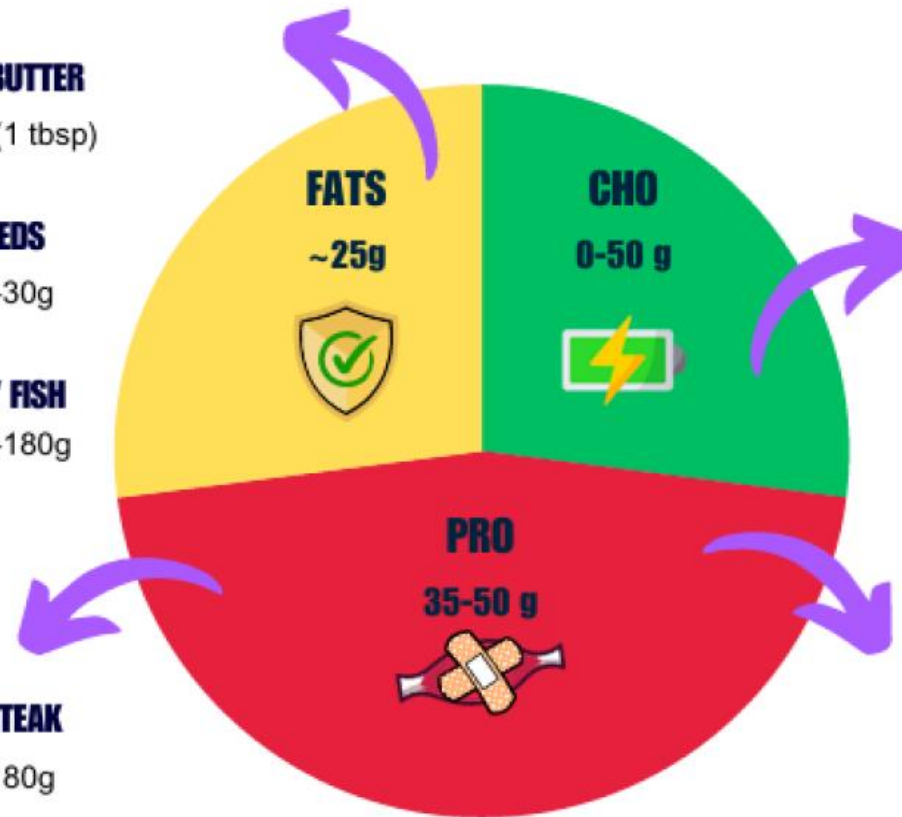
TEMPEH

140-190g



EGGS

220-240g (~4 eggs)



CARBOHYDRATES



RICE

25-50g



OATS

30-55g



PASTA

25-50g



BREAD

40-60g



POTATO

125-200g



NOODLES

25-50g



FRUITS & VEG

Aim for at least x2 types of fruits or vegetables per serving



Greens



Bulbs



Fungi



Legumes



Tropical



Stems



Citrus



Berries



Roots



SCAN BARCODE
FOR RECIPES

THE FUEL PLATE



520-780 Kcals

To support daily fuelling demands and composition...

FATS



NUTS

25-30g



NUT BUTTER

~25g (1 tbsp)



OLIVE OIL

~13g (1 tbsp)



SEEDS

25-30g



AVOCADO

~80g



OILY FISH

130-180g

PROTEINS



CHICKEN BREAST

130-180g



BEEF STEAK

130-180g



BEEF MINCE

140-190g



SALMON FILLET

130-180g



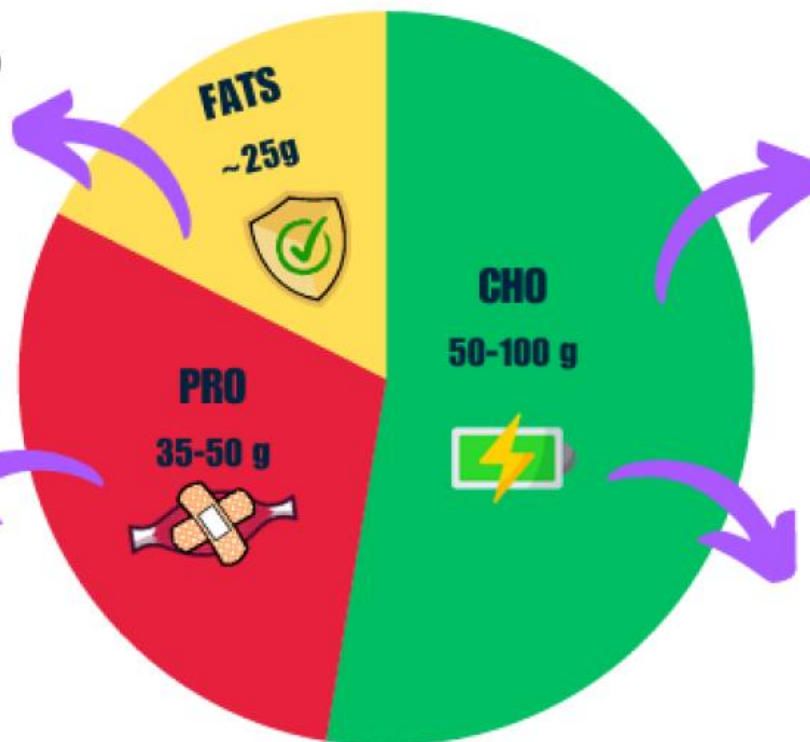
TEMPEH

140-190g



EGGS

220-240g (~4 eggs)



CARBOHYDRATES



RICE

75-100g



OATS

85-110g



PASTA

75-100g



BREAD

100-150g



POTATO

350-400g



NOODLES

75-100g



FRUITS & VEG

Aim for at least x2 types of fruits or vegetables per serving



Greens



Bulbs



Fungi



Legumes



Tropical



Stems



Citrus



Berries



Roots



SCAN BARCODE
FOR RECIPES

THE PERFORM PLATE



720-980 Kcals

To support high intensity training and increases in functional mass...

FATS



NUTS

25-30g



NUT BUTTER

~25g (1 tbsp)



OLIVE OIL

~13g (1 tbsp)



SEEDS

25-30g



AVOCADO

~80g



OILY FISH

130-180g

PROTEINS



CHICKEN BREAST

130-180g



BEEF STEAK

130-180g



BEEF MINCE

140-190g



SALMON FILLET

130-180g



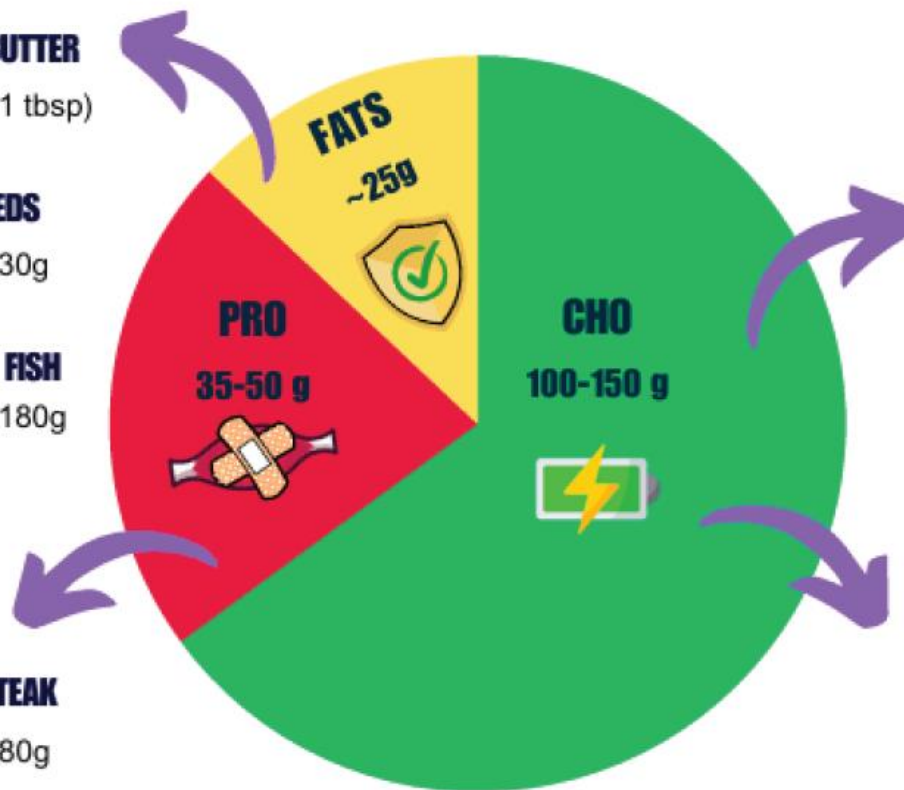
TEMPEH

140-190g



EGGS

220-240g (~4 eggs)



CARBOHYDRATES



RICE

140-180g



OATS

150-200g



PASTA

140-170g



BREAD

200-250g



POTATO

600-700g



NOODLES

130-160g



FRUITS & VEG

Aim for at least x2 types of fruits or vegetables per serving



Greens



Bulbs



Fungi



Legumes



Tropical



Stems



Citrus



Berries



Roots



SCAN BARCODE
FOR RECIPES

SUSTAIN SNACKS



80-370 Kcals



CHO
20-60 g



PRO
0-10 g



FATS
0-10 g



BARCODE
PROVIDES RECIPE

Sustain snacks can act as a 'top up' of fuel to 'sustain' your high intensity energy levels...

PRE TRAINING

Consume roughly 90-60 minutes pre training to fuel high intensity training sessions....



x1 BAGEL OR x2 TOAST
WITH JAM

60g CHO



60g CHILDRENS CEREAL
WITH 200ml MILK

60g CHO



150g YOGURT, 1 BANANA, 80g
BERRIES & HONEY (1 tbsp)

50g CHO



x3 WEETABIX, 200ml MILK,
HONEY (1 tbsp)

60g CHO



BERRY & BANANA
SMOOTHIE

60g CHO



50g GRANOLA, 200ml
MILK, HONEY (1 tbsp)

60g CHO

DURING TRAINING

Consumed during training to sustain energy levels



ENERGY GEL
20g CHO



YOYO BEARS
20g CHO



DRIED FRUIT
20g CHO



SQUARES BAR
30g CHO



SUGAR DRINK
30g CHO



SWEETS (per 4)
~20g CHO



GET BUZZING BAR
40g CHO



ENERGY BALL
20-30g CHO

TOP UP SNACKS

Consume during the day to top up energy levels



GET BUZZING BAR
40g CHO



QUAKER OATS POT
40g CHO



FRUIT
~20g CHO



LOVE CORN
30g CHO



ENERGY BALL
20-30g CHO



QUAKER OATS BAR
40g CHO



SOREEN BAR
20g CHO



STUFFED DATE
20g CHO

REPAIR SNACKS



80-275 Kcals



CHO
0-15 g



PRO
~20 g



FATS
0-15 g



BARCODE
PROVIDES RECIPE

Repair snacks can increase your protein intake optimising your recovery and adaptations...



NUT & BERRY YOGURT BOWL

150g natural yogurt, 80g berries & 15g mixed nuts



BERRY SMOOTHIE

150g natural yogurt, 150g frozen berries & 150g almond milk



HEALTHSPAN ELITE ULTIMATE WHEY PROTEIN BLEND

x1 scoop of protein powder



TOMATO & SPINACH OMELETTE

x2 eggs, x4 cherry tomatoes, handful of spinach & salt & pepper



LENTIL SCOTCH EGG

Scan the barcode for the recipe card



HEALTHSPAN ELITE PLANT BASED HI-LO PROTEIN BAR

x1 protein bar



SKYR YOGURT POUCH OR POT

x1 yogurt pouch or pot



BEEF JERKY

25g beef jerky



CHICKEN SKEWERS

150g chicken breast or thigh seasoned



EGG MUFFINS

Scan the barcode for the recipe card



TUNA POT

Small tuna tin drained



TEMPEH SKEWERS

150g tempeh seasoned



COTTAGE CHEESE WITH CARROT STICKS

200g cottage cheese with 60g carrots



GET PRO YOGURT DRINK OR POUCH

x1 yogurt pouch or pot



PRAWN SKEWERS

150g prawns seasoned

GOOD
MORNING



WHAT ABOUT EATING BEFORE MORNING SESSIONS?

PRE TRAINING

Consume roughly 90-60 minutes pre training to fuel high intensity training sessions...



x1 BAGEL OR x2 TOAST
WITH JAM

60g CHO



60g CHILDRENS CEREAL
WITH 200ml MILK

60g CHO



150g YOGURT, 1 BANANA, 80g
BERRIES & HONEY (1 tbsp)

50g CHO



x3 WEETABIX, 200ml MILK,
HONEY (1 tbsp)

60g CHO



BERRY & BANANA
SMOOTHIE

60g CHO



50g GRANOLA, 200ml
MILK, HONEY (1 tbsp)

60g CHO

TOP UP SNACKS

Consume during the day to top up energy levels



GET BUZZING BAR

40g CHO



QUAKER OATS POT

40g CHO



FRUIT

~20g CHO



LOVE CORN

30g CHO



ENERGY BALL

20-30g CHO



QUAKER OATS BAR

40g CHO



SOREEN BAR

20g CHO



STUFFED DATE

20g CHO

AIM TO EAT SOMETHING LIGHT: BANANAS, DRIED FRUIT, TOAST AND JAM, CRUMPETS
IF YOU CAN'T EAT, USE FRUIT JUICE, SQUASH, SMOOTHIES ETC

THE NIGHT BEFORE IS MORE IMPORTANT BEFORE AN EARLY MORNING...

DURING TRAINING

Consumed during training to sustain energy levels



ENERGY GEL

20g CHO



SUGAR DRINK

30g CHO



YOYO BEARS

20g CHO



SWEETS (per 4)

~20g CHO



DRIED FRUIT

20g CHO



GET BUZZING BAR

40g CHO



SQUARES BAR

30g CHO

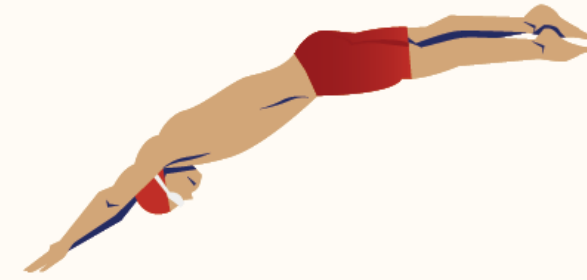


ENERGY BALL

20-30g CHO



EATING DURING TRAINING?



**2 HOUR SWIM SESSIONS ESPECIALLY
OR GOING FROM LAND TRAINING INTO SWIMMING**

**HAVE FOOD IN YOUR KIT BAG
DRIED FRUIT, JELLY SWEETS, JAFFA CAKES, SPORTS DRINKS, SQUASH ETC**

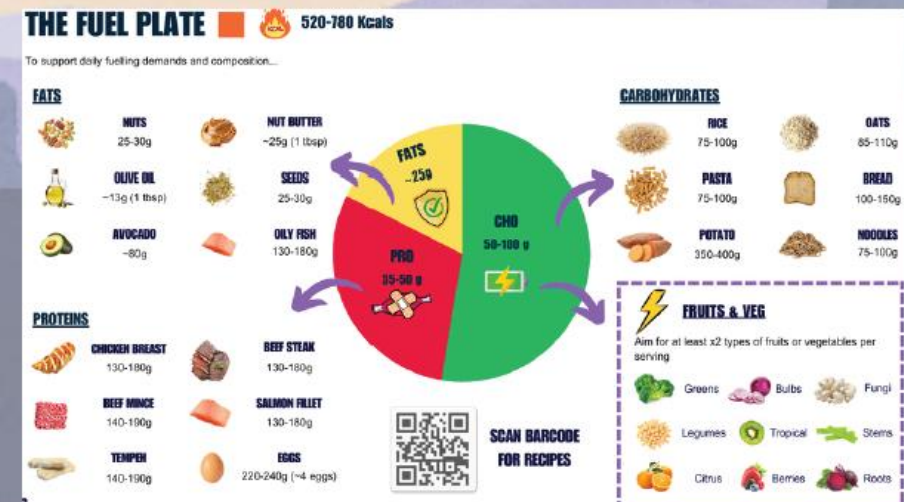
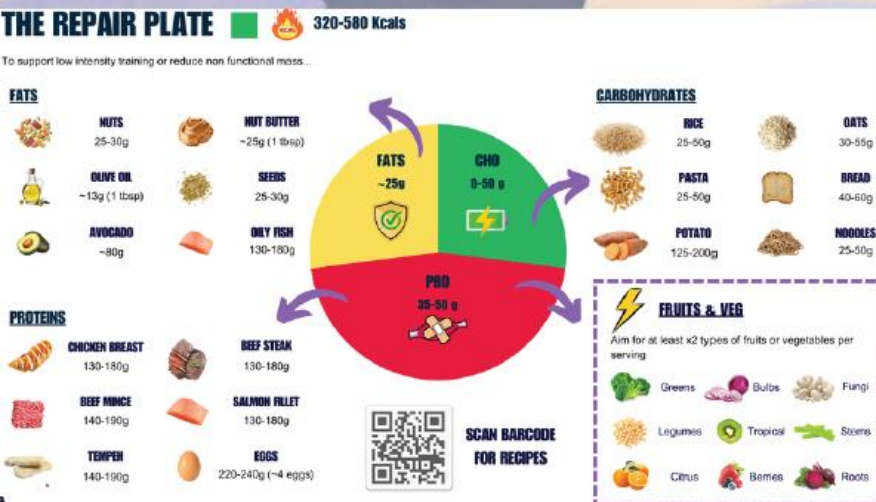
EATING AFTER TRAINING?

30 MINUTES? 2 HOURS?

EAT WHEN YOU CAN... BUT BE PRACTICAL

REFUEL- HIGH CARB, HIGH PROTEIN

TRAGET A FUEL OR REPAIR PLATE DEPENDING ON THE NEXT DAY





COMPETITION

WHEN IS WARM UP?
WHEN IS YOUR FIRST EVENT?
WHAT IS YOUR FIRST EVENT?

2 HOURS HAVE A MEAL
1 HOUR HAVE A PRE TRAINING SNACK
1> HAVE A HIGH CARB SNACK

1:1 RULE- FOR EVERY MINUTE BETWEEN EVENTS AIM TO HAVE 1G OF CARBS

PRE TRAINING

Consume roughly 90-60 minutes pre training to fuel high intensity training sessions....



x1 BAGEL OR x2 TOAST
WITH JAM

60g CHO



60g CHILDRENS CEREAL
WITH 200ml MILK

60g CHO



150g YOGURT, 1 BANANA, 80g
BERRIES & HONEY (1 tbsp)

50g CHO



x3 WEETABIX, 200ml MILK,
HONEY (1 tbsp)

60g CHO



BERRY & BANANA
SMOOTHIE

60g CHO



50g GRANOLA, 200ml
MILK, HONEY (1 tbsp)

60g CHO



COMPETITION

DAY BEFORE/ 2 DAYS BEFORE

HIGH CARB MEALS

RACE DAY SHOULD BE ABOUT TOPPING UP FUEL STORES

THE PERFORM PLATE 720-980 Kcals

To support high intensity training and increases in functional mass...

FATS



NUTS

25-30g



NUT BUTTER

~25g (1 tbsp)



OLIVE OIL

~13g (1 tbsp)



SEEDS

25-30g



AVOCADO

~80g



OILY FISH

130-180g

PROTEINS



CHICKEN BREAST

130-180g



BEEF STEAK

130-180g



BEEF MINCE

140-190g



SALMON FILLET

130-180g



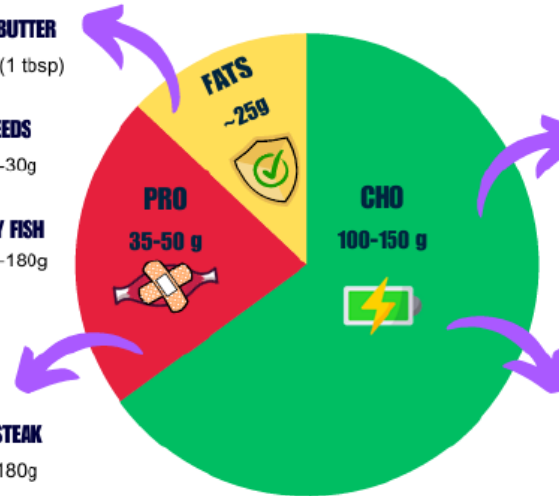
TEMPEH

140-190g



EGGS

220-240g (~4 eggs)



CARBOHYDRATES



RICE

140-180g



OATS

150-200g



PASTA

140-170g



BREAD

200-250g



POTATO

600-700g



NOODLES

130-160g



FRUITS & VEG

Aim for at least x2 types of fruits or vegetables per serving



Greens



Bulbs



Fungi



Legumes



Tropical



Stems



Citrus



Berries



Roots



SCAN BARCODE
FOR RECIPES

COMPETITION DAY OF



HOW LONG DO YOU HAVE BETWEEN RACES?

LIGHT HIGH CARB SNACKS

SPORTS DRINKS SQUASH

“GRAZING” THROUGHOUT RACE SESSIONS

TRY IT OUT BEFORE TRAINING

EAT A SNACK 30-60 MINUTES BEFORE TRAINING THEN SEE HOW YOU FEEL DURING THE SESSION

DO NOT LEAVE IT TO RACE DAY TO TRY SOMETHING NEW

PRACTICE A PROFESSIONAL MIND SET

TOP UP SNACKS

Consume during the day to top up energy levels



GET BUZZING BAR

40g CHO



QUAKER OATS POT

40g CHO



FRUIT

~20g CHO



LOVE CORN

30g CHO



ENERGY BALL

20-30g CHO



QUAKER OATS BAR

40g CHO



SOREEN BAR

20g CHO



STUFFED DATE

20g CHO

COMPETITION

DAY AFTER/ AFTER COMPETITION IS OVER

IF A MULTI DAY COMPETITION START THE CYCLE OF PREPERATION AGAIN

REFUEL, REPAIR, REST

THE REPAIR PLATE 320-580 Kcals

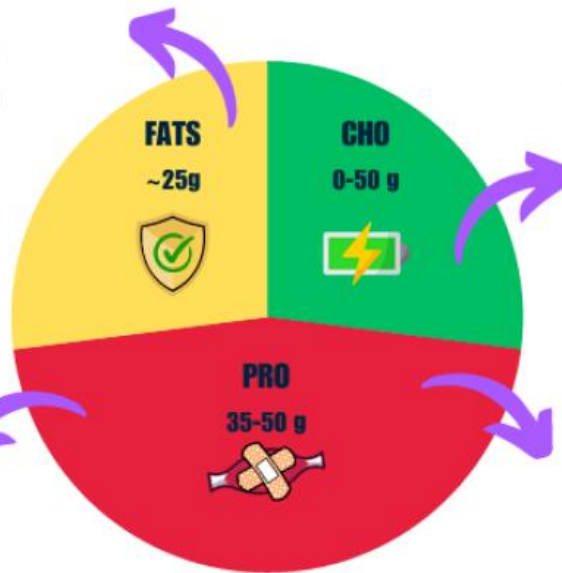
To support low intensity training or reduce non functional mass...

FATS

	NUTS 25-30g		NUT BUTTER ~25g (1 tbsp)
	OLIVE OIL ~13g (1 tbsp)		SEEDS 25-30g
	AVOCADO ~80g		OILY FISH 130-180g

PROTEINS

	CHICKEN BREAST 130-180g		BEEF STEAK 130-180g
	BEEF MINCE 140-190g		SALMON FILLET 130-180g
	TEMPEH 140-190g		EGGS 220-240g (~4 eggs)



SCAN BARCODE
FOR RECIPES

CARBOHYDRATES

	RICE 25-50g		OATS 30-55g
	PASTA 25-50g		BREAD 40-60g
	POTATO 125-200g		NOODLES 25-50g

FRUITS & VEG

Aim for at least x2 types of fruits or vegetables per serving

	Greens		Bulbs		Fungi
	Legumes		Tropical		Stems
	Citrus		Berries		Roots

IF MULTIPLE RACES OR LONG
DURATION RACE = $\frac{1}{2}$ PLATE
STARCHES/GRAINS

IF MODERATE DAY = $\frac{1}{3}$ PLATE

IF EASY = $\frac{1}{4}$ PLATE



SUPPLIMENTS

ITS IN THE NAME "SUPPLIMENT" YOUR PRIMARY FOCUS SHOULD BE ON YOUR DIET, YOUR TRAINING AND YOUR RECOVERY

COMMON SUPPLIMENTS

PROTEIN POWDER- AIDS MUSCLE RECOVERY, CONVENIENT, CONSUME ESPECIALLY AFTER TRAINING.

CREATINE- HELPS RECOVERY, IMPROVES STRENGTH- 3-5G/DAY

CAFFINE- MAX 400MG/DAY FOR ADULTS, INCREASES ALERTNESS AND FOCUS, CONSUME 60 MINUTES BEFORE EXERCISE.

CHECK YOUR INGREDIENTS ON THE WADA LIST THIS IS YOUR RESPONSIBILITY

Joel Green- Performance coach- Athlete first performance

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Phone: 07414822053

References, resources and links

- Nutritional needs of competitive swimmers:
<https://cehsp.d.umn.edu/sites/cehsp.d.umn.edu/files/nutritionalneedsofcompetitiveswimmers.pdf>
- Fuelling gold medals: developing a 'periodised nutrition system' for elite athletes and applying it in practice: <https://performancenutrition.biomedcentral.com/articles/10.1186/s44410-025-00001-x>
- NHS eat well guide: <https://www.nhs.uk/live-well/eat-well/food-guidelines-and-food-labels/the-eatwell-guide/>
- Common questions and misconceptions about creatine supplementation: what does the scientific evidence really show?: <https://link.springer.com/article/10.1186/s12970-021-00412-w>
- USA swimming nutrition guide: <https://www.usaswimming.org/docs/default-source/camps/national-select-camp/sports-nutrition-for-swimmers.pdf>

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