



IT'S GYM TIME

You Supply the Time & Perspiration
facilis We supply the Knowledge & Inspiration

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HOW TO APPLY YOUR

SPORTS &
EXERCISE
NUTRITION



BE STRONGER DOING HARD WORK

Inspiring you to live a healthier lifestyle.
fitness prescriptions to keep you on track to reach your goals

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HOW TO APPLY YOUR KNOWLEDGE

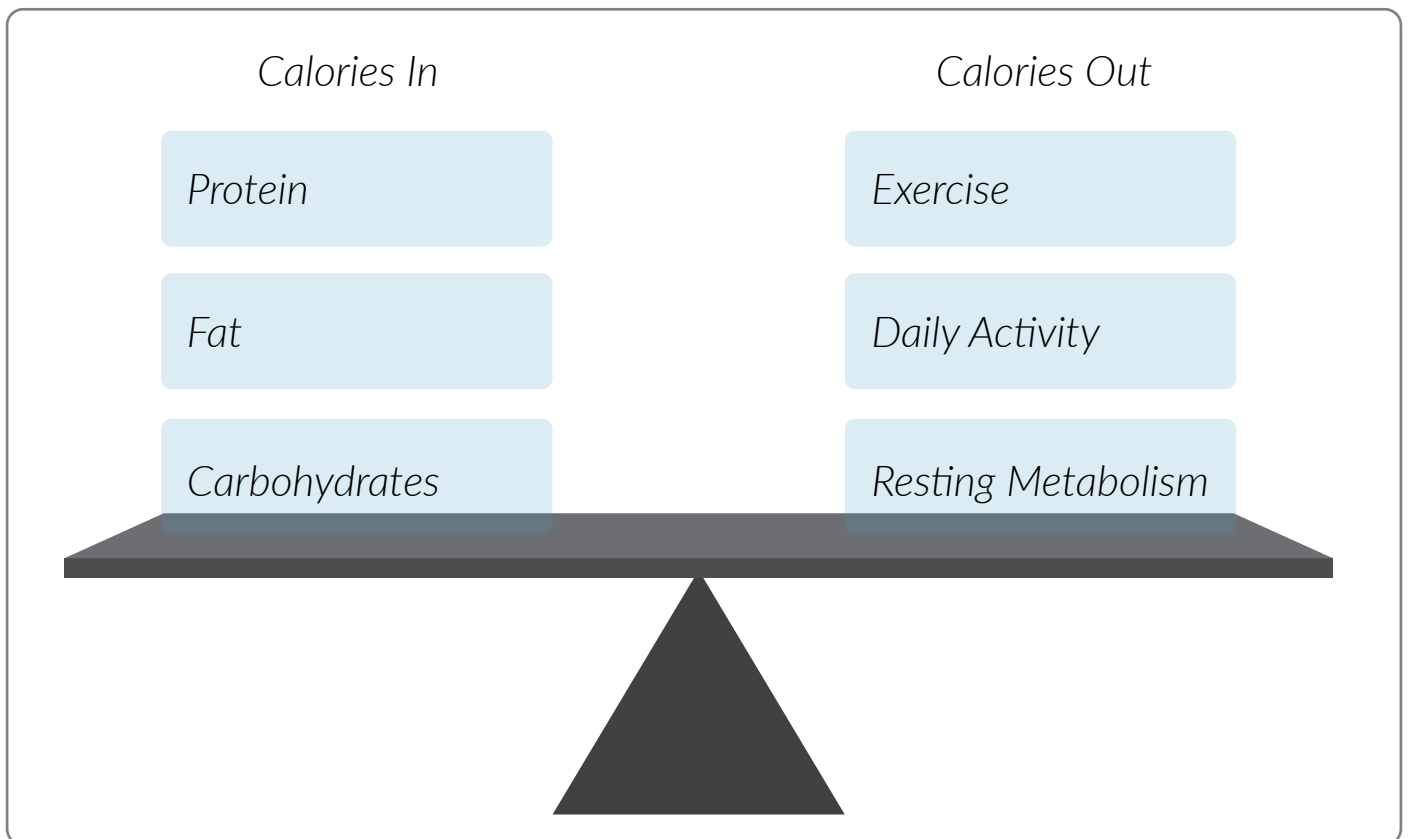
IMPACT OF NUTRITION

- Athlete Wellness
- Athlete performance
- Athlete rehabilitation
- Less time lost to illness
- Optimal physical adaptations
- Faster return time
- Many athletes and exercise enthusiasts lack knowledge
- Have to take the responsibility to learn about nutrition
- This can prove difficult
- Access to sports nutritionists and correct information can be a limiting factor
- Despite this individuals need to attain the information achieve their goals
- Nutrition is individualised
- You need to tailor what you learn to suit your personal needs
- Needs will depend on
 - Age
 - Gender
 - Personal goals
 - Metabolism
 - General health



WHAT IS A CALORIE?

- Calorie = unit of energy
- Calories are the energy we acquire from food
- Number of calories in a food = the amount of energy in it
- 1g CHO = 4 kcal
- 1g PRO = 4 kcal
- 1g Fat = 9 kcal
- 1g Alcohol = 7 kcal



RESTING METABOLIC RATE (RMR)

- 60-70% of daily energy expenditure
- Synthesis, secretion and metabolism of enzymes and hormones
- Maintenance of body temperature
- Brain function
- Work of cardiac and respiratory muscles
- Cell function and replacement



ESTIMATING CALORIES - SCHOFIELD EQUATION

- Most commonly used for estimating energy requirements
- Failure to regulate body temp can be detrimental
- Use age, gender and weight to predict RMR
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METHOD

- Estimate RMR using appropriate equation
- Multiply by a PAL factor for exercise

1 kg = 2.2 pounds
Your weight in pounds \div 2.2 = Your weight in kg
e.g 180 pounds $180 \div 2.2 = 82\text{kg}$



ESTIMATING RMR

- Reference table to calculate RMR by age and gender

Age			RMR (Kcal/24 hours)	
Years	Male		Female	
10-18	$(17.5 \times \text{kg body wt}) + 651$		$(12.2 \times \text{kg body wt}) + 749$	
19-30	$(15.3 \times \text{kg body wt}) + 679$		$(14.7 \times \text{kg body wt}) + 496$	
31-60	$(11.6 \times \text{kg body wt}) + 879$		$(8.7 \times \text{kg body wt}) + 829$	
>60	$(13.5 \times \text{kg body wt}) + 487$		$(10.5 \times \text{kg body wt}) + 596$	

PHYSICAL ACTIVITY LEVEL

Activity level	Male		Female	
	Average	Range	Average	Range
Bed Rest	1.2	1.1-1.3	1.2	1.1-1.3
Very Sedentary	1.3	1.2-1.4	1.3	1.2-1.4
Sedentary/ maintenance	1.4	1.3-1.5	1.4	1.3-1.5
Light	1.5	1.4-1.6	1.5	1.4-1.6
Light moderate	1.7	1.6-1.8	1.6	1.5-1.7
Moderate	1.8	1.7-1.9	1.7	1.6-1.8
Heavy	2.1	1.9-2.3	1.8	1.7-1.9
Very Heavy	2.3	2.0-2.6	2.0	1.8-2.2

SEDENTARY OR LIGHT ACTIVITIES:

Sedentary occupation and lifestyle-Eating, Sleeping, Working, Cooking, Sitting

LIGHT OR MODERATELY ACTIVE:

Sedentary occupations but do regular physical activity 1 hour

HEAVY/VERY HEAVY LIFESTYLES:

Regular strenuous work, or leisure activity for several hours

- training regime change



EXAMPLE 1: DAVE

- Firefighter
- 46
- Workout 3-5 times a week
- 86kg/189 lbs
- Strength trains
- Moderate-high intensity
- 1-2 hour sessions


DAILY CALORIE REQUIREMENTS

Age	RMR (Kcal/24 hours)	
Years	Male	Female
10-18	$(17.5 \times \text{kg body wt}) + 651$	$(12.2 \times \text{kg body wt}) + 749$
19-30	$(15.3 \times \text{kg body wt}) + 679$	$(14.7 \times \text{kg body wt}) + 496$
31-60	$(11.6 \times \text{kg body wt}) + 879$	$(8.7 \times \text{kg body wt}) + 829$
>60	$(13.5 \times \text{kg body wt}) + 487$	$(10.5 \times \text{kg body wt}) + 596$



Activity level	Male		Female	
	Average	Range	Average	Range
Bed Rest	1.2	1.1-1.3	1.2	1.1-1.3
Very Sedentary	1.3	1.2-1.4	1.3	1.2-1.4
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Heavy	2.1	1.9-2.3	1.8	1.7-1.9
Very Heavy	2.3	2.0-2.6	2.0	1.8-2.2


- 31-60 age bracket
- $(11.6 \times \text{kg body wt}) + 879$
- $(11.6 \times 86) + 879 = 1877 \text{ kcal}$
- PAL factor = 2.1
- $1876.6 \times 2.1 = 3941 \text{ kcal}$
- Total daily energy needs = 3941 kcal



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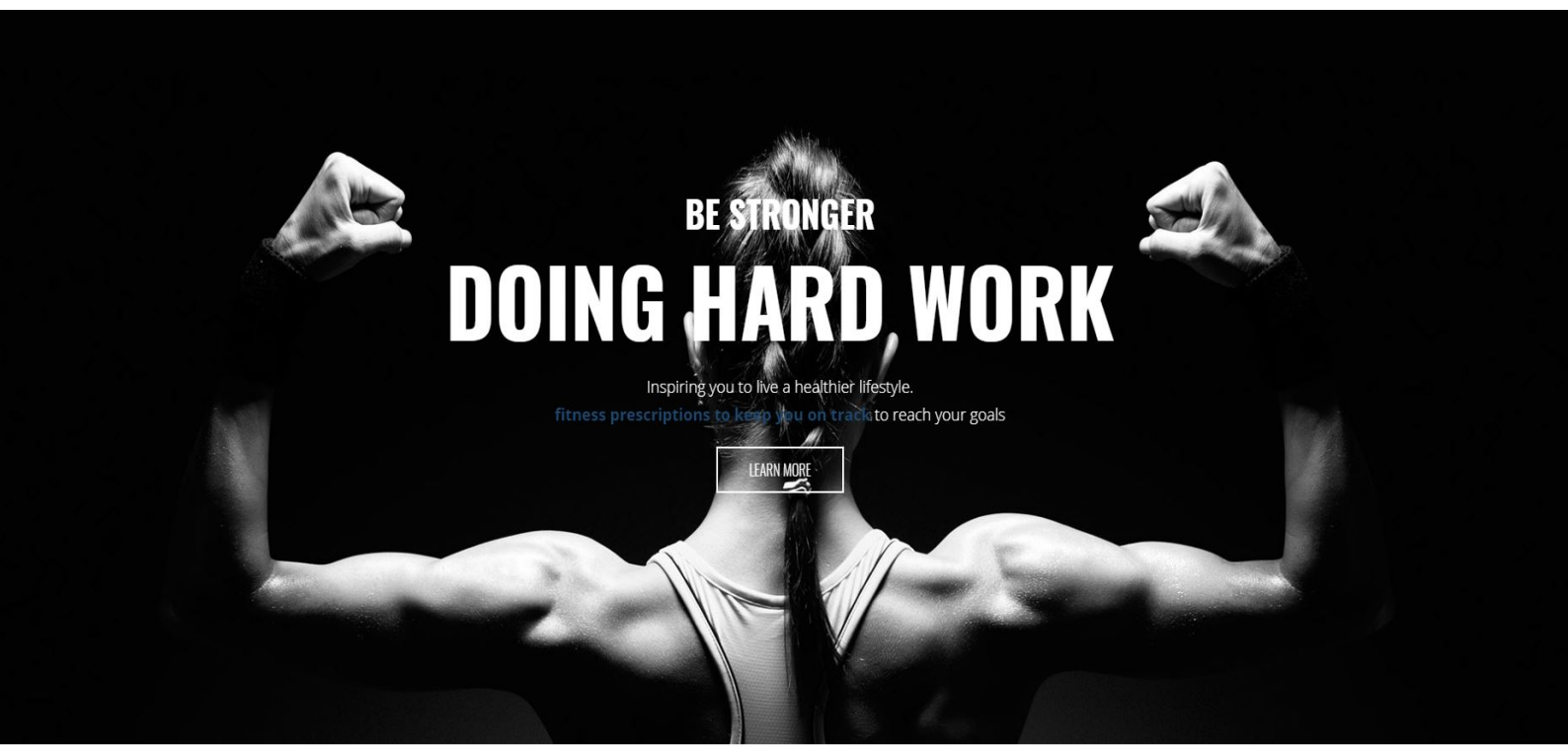
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TOTAL MACRO NEEDS:

- Calorie needs = 3941 kcal
- CHO = ??
- CHO = 5-7g/kg
- CHO = 430-602g

Situation		Carbohydrate Targets	
Light	Low-intensity or skill-based	3-5 g per kg BW	1.36-2.27g per lb BW
Moderate	Moderate exercise programme (~1 hr / day)	5-7 g per kg BW	2.27-3.18g per lb BW
High	$(11.6 \times \text{kg body wt}) + 879$	7-12 g per kg BW	3.18-5.45g per lb BW
Very High	$(13.5 \times \text{kg body wt}) + 487$	10-12 g per kg BW	4.54-5.45g per lb BW

- Calorie needs = 3941 kcal
- PRO = ??
- PRO = 1.5-2.0g/kg
- PRO = 129-172g



BE STRONGER

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Group	Protein intake (g/kg/day)	Protein intake (g/lb/day)
Sedentary Individual	0.75	0.34
Elite endurance athletes	1.2-2.0	0.54 – 0.90
Moderate-intensity endurance athletes (a)	1.2	0.54
Recreational endurance athletes (b)	0.8-1.0	0.36-0.45
Team sports/power sports	1.4-1.7	0.63-0.77
Strength/resistance athlete	1.5-2.0	0.68-0.90
Athlete on fat-loss programme	1.6-2.0	0.72-0.90
Athlete on weight-gain programme	1.8-2.0	0.81-0.90

- Calorie requirement = 3941 kcal
- CHO = 430-602g
- CHO calories = 1720 – 2408 kcal
- PRO = 129-172g
- PRO calories = 516 – 688 kcal

FAT??

Upper Range

- $1720 + 516 = 2236\text{kcal}$
- $3941 - 2236 = 1705\text{kcal}$
- $1705/9 = 189\text{g fat}$

Lower Range

- $2408 + 688 = 3096\text{kcal}$
- $3941 - 3096 = 845\text{ kcal}$
- $845/9 = 93.8$
- $93.8 - 189\text{g Fat}$

DAVE'S DAILY NUTRIENTS REQUIREMENTS

- Calorie requirement = 3941 kcal
- CHO = 430-602g
- CHO calories = 1720 - 2408 kcal
- PRO = 129-172g
- PRO calories = 516 - 688 kcal
- Fat = 98 189g
- Fat calories = 845 - 1705 kcal



EXAMPLE 2: CLAIRE

- Teacher
- 26
- Workout 6-7 times a week for 1 hour
- 57kg/125 lbs
- Endurance trains
- Moderate-high intensity
- 2-3 hours per training session

Age	RMR (Kcal/24 hours)	
Years	Male	Female
10-18	$(17.5 \times \text{kg body wt}) + 651$	$(12.2 \times \text{kg body wt}) + 749$
19-30	$(15.3 \times \text{kg body wt}) + 679$	$(14.7 \times \text{kg body wt}) + 496$
31-60	$(11.6 \times \text{kg body wt}) + 879$	$(8.7 \times \text{kg body wt}) + 829$
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Activity level	Male		Female	
	Average	Range	Average	Range
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Moderate	1.8	1.7-1.9	1.7	1.6-1.8
Heavy	2.1	1.9-2.3	1.8	1.7-1.9
Very Heavy	2.3	2.0-2.6	2.0	1.8-2.2

- 19-30 age bracket
- $(14.7 \times \text{kg body wt}) + 496$
- $(14.7 \times 57) + 496 = 1334 \text{ kcal}$
- PAL factor = 2
- $1334 \times 1.6 = 2668 \text{ kcal}$
- Total Daily Energy Needs = 2668 kcal



TOTAL MACRO NEEDS:

- Calorie needs = 2668 kcal
- CHO = ??
- CHO = 8-10g/kg
- CHO = 456-570g

Type of Athlete	Training Frequency (days/week)	Training Intensity	Training Duration (hours/day)	Daily CHO Intake Range (g/kg)	Daily CHO Intake Range (g/lb)
Recreational	3-4	Light - Moderate	<1.0	3-5	1.36 - 2.27
Competitive	5-6	Moderate	1.0-2.0	6-8	2.72-3.63
Competitive	6-7	Moderate - High	2.0-4.0	6-8	2.72-3.63
Ultra Endurance	6-7	Moderate - High	>4.0	10-12	4.54-5.45

- Calorie needs = 3941 kcal
- PRO = ??
- PRO = 1.2g/kg
- PRO = 68g



<i>Group</i>	<i>Protein intake (g/kg/day)</i>	<i>Protein intake (g/lb/day)</i>
Sedentary Individual	0.75	0.34
Elite endurance athletes	1.2-2.0	0.54 – 0.90
Moderate-intensity endurance athletes (a)	1.2	0.54
Recreational endurance athletes (b)	0.8-1.0	0.36-0.45
Team sports/power sports	1.4-1.7	0.63-0.77
Strength/resistance athlete	1.5-2.0	0.68-0.90
Athlete on fat-loss programme	1.6-2.0	0.72-0.90
Athlete on weight-gain programme	1.8-2.0	0.81-0.90

- Calorie requirement = 2668 kcal
- CHO = 456-570g
- CHO calories = 1824 – 2280 kcal
- PRO = 68g
- PRO calories = 272 kcal

FAT??

Upper Range

- $1824 + 272 = 2096\text{kcal}$
- $2668 - 2096 = 572 \text{ kcal}$
- $572/9 = 63.5\text{g fat}$

Lower Range

- $2280 + 272 = 2552\text{kcal}$
- $2668 - 2552 = 116$
- 13g
- 13 - 63.5g fat

CLAIRE'S DAILY NUTRIENT REQUIREMENTS:

- Calorie requirement = 2668 kcal
- CHO = 456-570g
- CHO calories = 1824 - 2280 kcal
- PRO = 68g
- PRO calories = 272 kcal
- Fat = 13- 63.5g
- Fat calories = 116 - 572kcal

YOUR OWN SPORTS NUTRITION PLAN

- Work out your RMR
- Multiply it by your PAL
- This gives you're your calorie requirements for 24 hours
- Work out your CHO needs
- Work out your protein needs
- Multiply your CHO & protein needs by 4 to give calorie ranges for both
- Use these ranges to calculate your fat range requirement
- Use your macronutrient ranges to then plan your meals and snacks for the day

