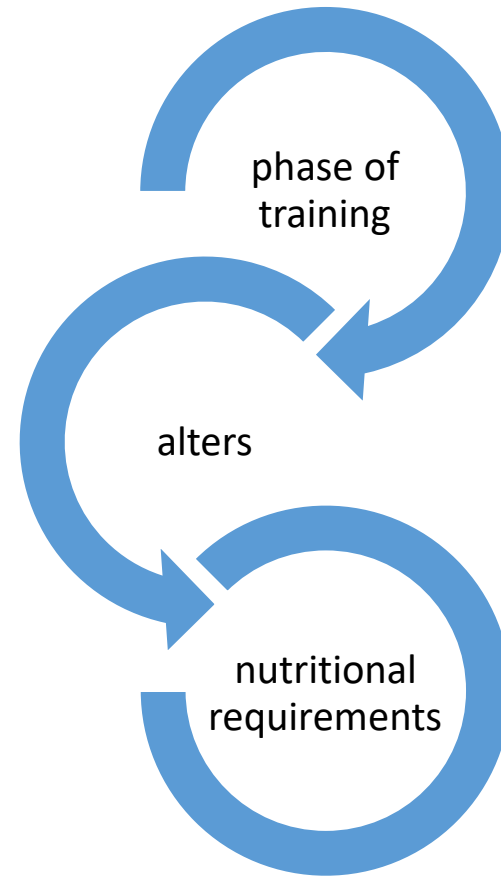


Performance and Recovery for Endurance Sports

To cover

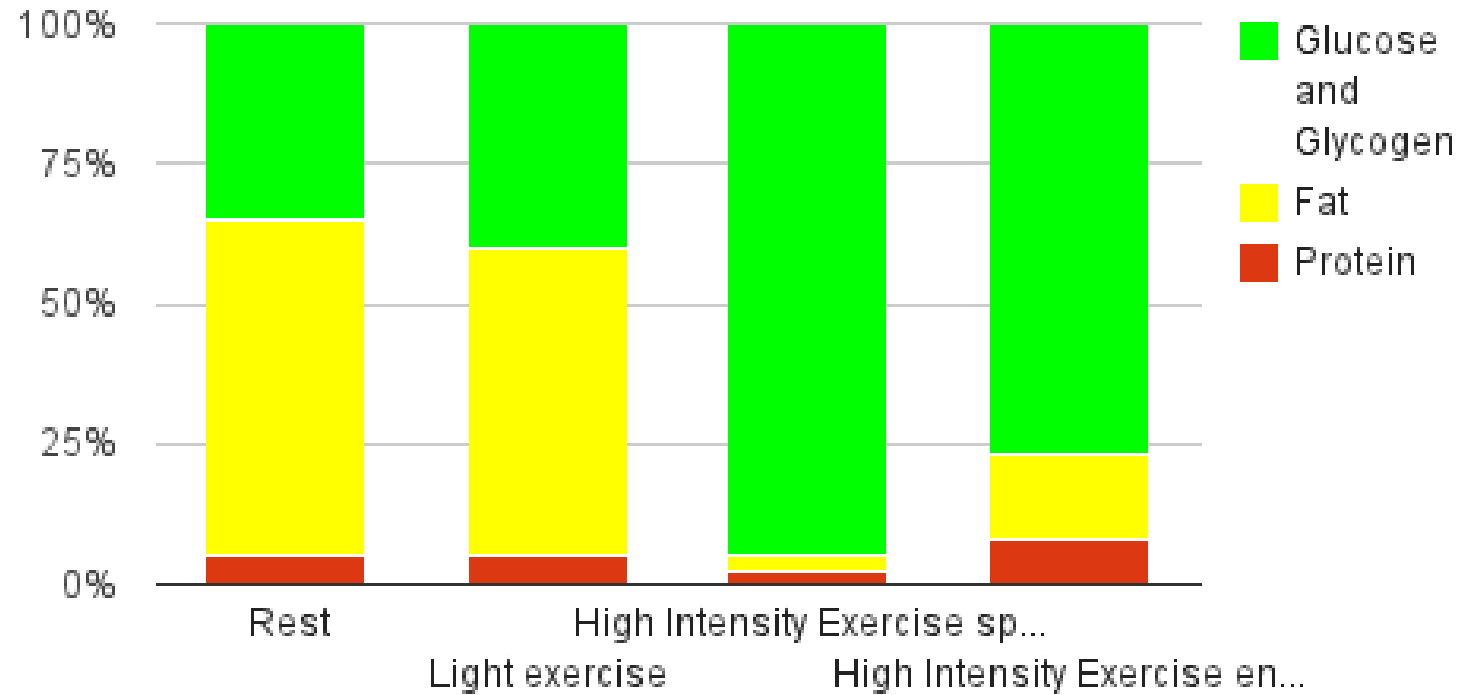
- Personalise your nutrition
- Building endurance
 - Energy for optimal performance
 - Strength in endurance
- Hydration
- Recovery

Phases of training



communication with
your coach is essential

ATP creation



Daily carbohydrate requirements for training

	g/cho/kg bm/day
Low intensity	3 -5 g
Moderate intensity	5 -7 g
Endurance 1-3 hrs	6 – 10g
Extreme >4 – 5 hrs	8 – 10g
Recovery	0.8g

Carbohydrate content of various foods

100g of food item	Carbohydrate content	Calories
Rice, 100g uncooked	81g	357 kcal
Pasta, 100g uncooked	74g	342 kcal
Quinoa, 100g uncooked	55g	309 kcal
New potatoes, 100g,	16g	70 kcal
Old potatoes, 100g	17g	75kcal
Sweet potatoes, 100g	21g	87 kcal
Bread, 1 slice	13g	65 kcal
Baked Beans, 100g tinned	15g	84 kcal
Chickpeas, 100g tinned	16g	115 kcal
Oats, 100g uncooked	58g	364 kcal
Honey, 1 tsp	6g	23 kcal
Jam, 1 tsp	5g	21 kcal
Sugar, 1tsp	4g	16 kcal

Training low

Optimal performance with sufficient glucose and glycogen availability

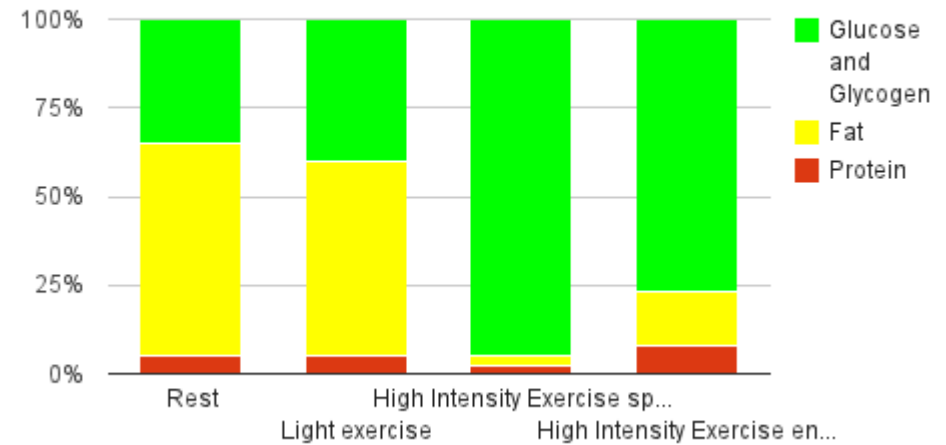
Training low increases fat oxidation

- fat loss
- benefits for endurance sports

Increases risk of injury

Reduces muscle build

Compromises immune system



plus

- B vitamins
- zinc
- magnesium
- iron
- chromium

Carbohydrate requirements for events (and whilst training)

- 1- 4 hours before start 1-4g/kg
- Events <60mins carb mouth rinse
- 1-2 hours 30g/hr
- 2-3 hours 60g/hr
- 3+ hours 90g/hr

- Mixed source carbohydrates
- Practice nutrition

Daily protein requirements for training

	g/kg bm/day
Endurance	
Recreational	0.8g
Moderate intensity	1.2g
Elite	1.6g
Strength	
Recreational	0.8g
Strength early stage	1.6g
Steady strength	1.1g
Recovery	Total 20g
<i>females</i>	10 – 20% lower

Protein content of various foods

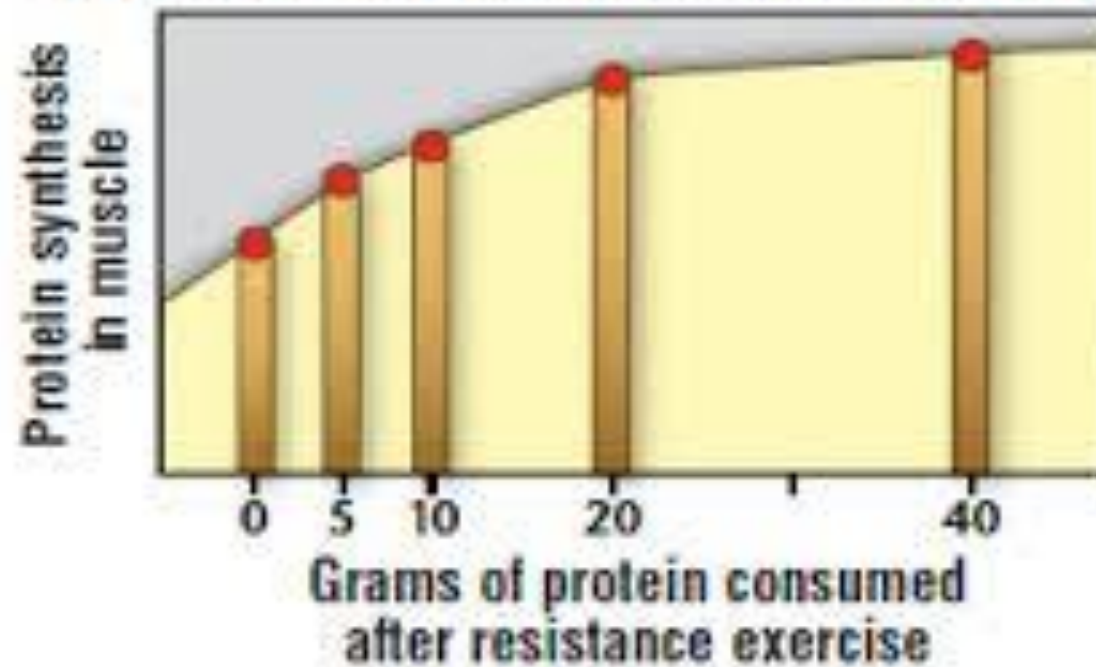
Per 100g	Protein	Calories
Chicken breast	32g	148
Fillet steak	21g	140
Mince	20g	225
Venison	22g	103
Lamb	22g	153
Sausages	10g	269
Burger	18g	247
Salmon	20g	180
Cod	18g	80
Prawns	18g	76
Eggs	12g	151
Almonds	21g	612
Red Lentils	24g	318
Kidney Beans (tinned)	7g	100
Chickpeas (tinned)	7g	115
Milk	3g	46

Muscle hypertrophy

- Muscle usage + protein
- Timing of protein intake is important
- 5 x 20g protein
- Post training 20g

Post training protein dosage

Consuming 20g of protein produced maximum protein synthesis (muscle building)



Recovery

- Replacements of muscle energy store + muscle synthesis
- Injury risk reduction and to support immune system
- Within 2 hours, ideally immediately
- 0.8/kg carbohydrate
- Fast release carbohydrate if training within 24 hours
- 20g protein
- Fluids

Hydration

- Dehydration impairs physical and cognitive function
 - at 2% significant underperformance in high intensity endurance activity
 - 5% dehydration = 30% underperformance
 - 2% dehydration for someone weighing 70g is 840ml
- Weather, intensity and duration dependent
- General guidance 1- 2 litres per hour
- Sodium >2hrs exercise
- Fluid requirements still high in winter
- Urine should be pale yellow/clear

Summary

- Importance of base diet
- Sufficient energy, carbohydrate and protein intake to support phase of training
- Carbs are king
- Importance of recovery