Nutrition Absorption Chart

Vitamins/Minerals	Synergestic Partners	Competing Partners
Vitamin D	Calcium, Magnesium, Vitamin K2	Iron
Calcium*	Vitamin D. Magnesium, Phosphorous	Zinc, Iron, Magnesium
Vitamin C	Iron, Vitamin E	Copper
Magnesium*	Vitamin D, Calcium, B Vitamins	Calcium, Iron
Vitamin K2	Vitamin D, Calcium	N/A
Iron	Vitamin C	Calcium, Zinc, Manganese, Copper
Zinc	Vitamin A	Calcium, Iron, Copper
Copper**	Iron, Zinc	Zinc
Vitamin E	Vitamin C, Selenium	N/A
Selenium	Vitamin E	N/A
Vitamin B6	Magnesium, Vitamin B12	N/A
Folate (B9)	Vitamin B12	Zinc
Vitamin B12	Folate, Vitamin B6	N/A

Synergistic and Competitive Nutrient Relationships

Nutrient 1	Nutrient 2	Relationship Type	Explanation
Vitamin D	Calcium	Synergistic	Vitamin D enhances calcium absorption in the intestines, promoting bone health.
Vitamin C	Iron (non-heme)	Synergistic	Vitamin C increases the absorption of non-heme iron (from plant sources).
Magnesium	B Vitamins	Synergistic	Magnesium and B vitamins work together to support energy production and neurological functions.
Iron	Calcium	Competitive	High levels of calcium can inhibit iron absorption; avoid consuming large amounts together.
Zinc	Copper	Competitive	Zinc supplementation can lead to copper deficiency because they compete for the same absorption pathways.
Iron	Zinc	Competitive	Iron and zinc compete for absorption, especially when taken together in high doses.

DEFY
ELITE ATHLETICS

Micronutrient Recommendations

Recommendation Category	Details
Timing	Separate intake of competing nutrients (e.g., iron vs. calcium, zinc vs. copper) by at least 2–3 hours.
Balanced Diet	Consume a varied diet to mitigate nutrient competition and maximize synergistic effects among vitamins and minerals.
Calcium : Magnesium Ratio	Optimal ratio is generally recommended around 2 : 1.
Zinc : Copper Ratio	Ideal ratio is typically suggested around 10 : 1.

Macronutrient Intake Guide

Diet Type	Carbohydrates (%)	Protein (%)	Fat (%)	Carbohydrate Calculation	Protein Calculation	Fat Calculation
Standard Balanced Diet	50%	20%	30%	(Total Calories × 0.50) ÷ 4	(Total Calories × 0.20) ÷ 4	(Total Calories × 0.30) ÷ 9
Low-Carb Diet (e.g., Ketogenic)	10%	25%	65%	(Total Calories × 0.10) ÷ 4	(Total Calories × 0.25) ÷ 4	(Total Calories × 0.65) ÷ 9
High-Protein Diet (e.g., Bodybuilding)	40%	30%	30%	(Total Calories × 0.40) ÷ 4	(Total Calories × 0.30) ÷ 4	(Total Calories × 0.30) ÷ 9
Moderate-Carb, Moderate-Protein (e.g., Maintenance)	45%	30%	25%	(Total Calories × 0.45) ÷ 4	(Total Calories × 0.30) ÷ 4	(Total Calories × 0.25) ÷ 9
Low-Fat Diet (e.g., Heart Health)	60%	20%	20%	(Total Calories × 0.60) ÷ 4	(Total Calories × 0.20) ÷ 4	(Total Calories × 0.20) ÷ 9
High-Fat, Low-Carb (e.g., Paleo)	30%	25%	45%	(Total Calories × 0.30) ÷ 4	(Total Calories × 0.25) ÷ 4	(Total Calories × 0.45) ÷ 9

DEFY
ELITE ATHLETICS

Nutrition Coaching Tables and Formulas

Basal Metabolic Rate (BMR) – Harris-Benedict Equation

Sex	Formula	Notes
Men	BMR = 88.36 + (13.40 × weight [kg]) + (4.80 × height [cm]) − (5.68 × age [years])	Calculates calories burned at complete rest
Women	BMR = 447.59 + (9.25 × weight [kg]) + (3.10 × height [cm]) − (4.33 × age [years])	Rails against individual's basal caloric needs

Total Daily Energy Expenditure (TDEE) – Activity Multipliers

Activity Level	Multiplier	TDEE = BMR × Multiplier	Example Use
Sedentary (little or no exercise)	1.20	TDEE = BMR × 1.20	Desk-based job, minimal movement
Lightly active (1–3 days of light exercise/week)	1.375	TDEE = BMR × 1.375	Light walks, occasional sports
Moderately active (3–5 days of moderate exercise/week)	1.55	TDEE = BMR × 1.55	Brisk walking, moderate gym sessions
Very active (6–7 days of hard exercise/week)	1.725	TDEE = BMR × 1.725	Intense training most days
Extra active (very hard exercise + physical job)	1.90	TDEE = BMR × 1.90	Construction work + daily athletic training

Macronutrient Intake – Grams Calculations

Macronutrient	Calories per Gram	General Formula	Example (Total Calories = 2,000)
Carbohydrates	4 kcal/g	Carbs [grams] = (Total Calories × %Carbs) ÷ 4	If 50% Carbs: (2,000 × 0.50) ÷ 4 = 250 g
Protein	4 kcal/g	Protein [grams] = (Total Calories × %Protein) ÷ 4	If 20% Protein: (2,000 × 0.20) ÷ 4 = 100 g
Fat	9 kcal/g	Fat [grams] = (Total Calories × %Fat) ÷ 9	If 30% Fat: (2,000 × 0.30) ÷ 9 ≈ 67 g

Caloric deficit/surplus adjust by 200-500 calories a week

Body Mass Index (BMI) and Body Fat Percentage

Metric	Formula	Interpretation / Notes
BMI	BMI = weight [kg] ÷ (height [m])²	Underweight, Normal, Overweight, Obese categories based on standard BMI chart
Body Fat % (Men)	Body Fat % = (1.20 × BMI) + (0.23 × age) − 16.2	Uses BMI and age to estimate body fat percentage in males
Body Fat % (Women)	Body Fat % = (1.20 × BMI) + (0.23 × age) − 5.4	Uses BMI and age to estimate body fat percentage in females

- BMI is a screening tool; does not distinguish muscle vs. fat mass.
- Body Fat % formulas are approximate—more precise methods include skinfold calipers or bioelectrical impedance.