



## Nutrition Absorption Chart

Vitamins/Minerals	Synergistic 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.



## 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
<b>Standard Balanced Diet</b>	50%	20%	30%	$(\text{Total Calories} \times 0.50) \div 4$	$(\text{Total Calories} \times 0.20) \div 4$	$(\text{Total Calories} \times 0.30) \div 9$
<b>Low-Carb Diet (e.g., Ketogenic)</b>	10%	25%	65%	$(\text{Total Calories} \times 0.10) \div 4$	$(\text{Total Calories} \times 0.25) \div 4$	$(\text{Total Calories} \times 0.65) \div 9$
<b>High-Protein Diet (e.g., Bodybuilding)</b>	40%	30%	30%	$(\text{Total Calories} \times 0.40) \div 4$	$(\text{Total Calories} \times 0.30) \div 4$	$(\text{Total Calories} \times 0.30) \div 9$
<b>Moderate-Carb, Moderate-Protein (e.g., Maintenance)</b>	45%	30%	25%	$(\text{Total Calories} \times 0.45) \div 4$	$(\text{Total Calories} \times 0.30) \div 4$	$(\text{Total Calories} \times 0.25) \div 9$
<b>Low-Fat Diet (e.g., Heart Health)</b>	60%	20%	20%	$(\text{Total Calories} \times 0.60) \div 4$	$(\text{Total Calories} \times 0.20) \div 4$	$(\text{Total Calories} \times 0.20) \div 9$
<b>High-Fat, Low-Carb (e.g., Paleo)</b>	30%	25%	45%	$(\text{Total Calories} \times 0.30) \div 4$	$(\text{Total Calories} \times 0.25) \div 4$	$(\text{Total Calories} \times 0.45) \div 9$



# Nutrition Coaching Tables and Formulas

## Basal Metabolic Rate (BMR) – Harris-Benedict Equation

Sex	Formula	Notes
Men	$BMR = 88.36 + (13.40 \times \text{weight [kg]}) + (4.80 \times \text{height [cm]}) - (5.68 \times \text{age [years]})$	Calculates calories burned at complete rest
Women	$BMR = 447.59 + (9.25 \times \text{weight [kg]}) + (3.10 \times \text{height [cm]}) - (4.33 \times \text{age [years]})$	Adjusts 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	$TDEE = BMR \times 1.20$	Desk-based job, minimal movement
Lightly active (1–3 days of light exercise/week)	1.375	$TDEE = BMR \times 1.375$	Light walks, occasional sports
Moderately active (3–5 days of moderate exercise/week)	1.55	$TDEE = BMR \times 1.55$	Brisk walking, moderate gym sessions
Very active (6–7 days of hard exercise/week)	1.725	$TDEE = BMR \times 1.725$	Intense training most days
Extra active (very hard exercise + physical job)	1.90	$TDEE = BMR \times 1.90$	Construction work + daily athletic training

## Macronutrient Intake – Grams Calculations

Macronutrient	Calories per Gram	General Formula	Example (Total Calories = 2,000)
Carbohydrates	4 kcal/g	$\text{Carbs [grams]} = (\text{Total Calories} \times \% \text{Carbs}) \div 4$	If 50% Carbs: $(2,000 \times 0.50) \div 4 = 250 \text{ g}$
Protein	4 kcal/g	$\text{Protein [grams]} = (\text{Total Calories} \times \% \text{Protein}) \div 4$	If 20% Protein: $(2,000 \times 0.20) \div 4 = 100 \text{ g}$
Fat	9 kcal/g	$\text{Fat [grams]} = (\text{Total Calories} \times \% \text{Fat}) \div 9$	If 30% Fat: $(2,000 \times 0.30) \div 9 \approx 67 \text{ g}$

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

## Body Mass Index (BMI) and Body Fat Percentage

Metric	Formula	Interpretation / Notes
BMI	$BMI = \text{weight [kg]} \div (\text{height [m]})^2$	Underweight, Normal, Overweight, Obese categories based on standard BMI chart
Body Fat % (Men)	$\text{Body Fat \%} = (1.20 \times BMI) + (0.23 \times \text{age}) - 16.2$	Uses BMI and age to estimate body fat percentage in males
Body Fat % (Women)	$\text{Body Fat \%} = (1.20 \times BMI) + (0.23 \times \text{age}) - 5.4$	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.



## Enhanced Behaviour-Change Playbook: Quick Reference

Technique	What It Is	Why It Works	When to Use	Key Steps (How to Use)	Coach Tip
OARS	Framework of Open questions, Affirmations, Reflections, Summaries (motivational interviewing)	Elicits client's own "change talk," validates their experience, and builds self-efficacy	<ul style="list-style-type: none"> <li>Start of session</li> <li>When ambivalence/barriers arise</li> <li>To reinforce progress</li> </ul>	<p><b>1. Open questions:</b> invite elaboration ("Walk me through yesterday's dinner.")</p> <p><b>2. Affirmations:</b> highlight strengths ("You stuck with tracking all week!")</p> <p><b>3. Reflections:</b> paraphrase/empathize ("It sounds like stress made meal-prep tough.")</p> <p><b>4. Summaries:</b> tie it together ("So evenings are your challenge, and you're motivated to try a short recipe...")</p>	Aim for <b>2 reflections</b> for every question to keep client talking and feeling heard.
Readiness/Importance & Confidence Ruler	0–10 scales to rate how important a change feels and how confident they are to do it	Quantifies ambivalence, pinpoints whether to focus on motivation or skill-building	<ul style="list-style-type: none"> <li>Client expresses doubt or hesitation</li> <li>Introducing a new goal</li> </ul>	<p>1. "On a scale of 0–10, how important is eating 3 servings of vegetables?"</p> <p>2. Ask "Why that number?" to uncover motivation.</p> <p>3. "What would move you from X to X+2?" to generate strategy.</p> <p>4. Repeat for confidence; if &lt;7, explore barriers and</p>	If importance high/confidence low → build skills; if confidence high/importance low → explore ambivalence.



Technique	What It Is	Why It Works	When to Use	Key Steps (How to Use)	Coach Tip
<b>Implementation Intentions (If-Then)</b>	"If [trigger], then I will [specific action]" plan	Turns vague goals into concrete plans, doubles follow-through by automating responses	<ul style="list-style-type: none"> <li>• Recurrent problem scenarios (e.g., late-night snacking)</li> <li>• High-risk situations</li> </ul>	<p>supports.</p> <ol style="list-style-type: none"> <li>1. Identify trigger: "What cues you to snack?"</li> <li>2. Craft plan: "If I finish dinner and crave snacks, then I will brew herbal tea."</li> <li>3. Rate confidence; revise if &lt;7.</li> <li>4. Role-play the scenario to mentally rehearse.</li> </ol>	Keep the "then" action simple (one step) and very doable.
<b>Habit Stacking</b>	Attaching a new micro-habit to an existing routine: "After/Before [anchor], I will [new habit]."	<ul style="list-style-type: none"> <li>Leverages established neural pathways,</li> <li>reduces reliance on willpower</li> </ul>	<ul style="list-style-type: none"> <li>• Client struggles to insert new behaviors into daily life</li> <li>• Building small foundational routines</li> </ul>	<ol style="list-style-type: none"> <li>1. Identify anchor: "What do you do every day without fail?"</li> <li>2. Choose micro-habit: "drink a glass of water."</li> <li>3. Craft statement: "After I brush my teeth, I will drink water."</li> <li>4. Test immediately; tweak timing or anchor if missed.</li> </ol>	Start extremely small; once automatic, gradually expand the habit.
<b>Self-Monitoring</b>	Tracking system (food logs, photo-logging, macro apps, hunger/fullness scales, wearables)	"What gets measured gets managed" — provides data to reveal patterns, triggers, and wins	<ul style="list-style-type: none"> <li>• From Day 1 of a program</li> <li>• Plateaus or unclear progress</li> <li>• When client "doesn't know what's happening"</li> </ul>	<ol style="list-style-type: none"> <li>1. Choose method: photo-log, app, or paper diary.</li> <li>2. Track consistently (meals, hunger scores, steps, sleep).</li> <li>3. Review weekly to identify trends.</li> <li>4. Celebrate consistency before deep analysis.</li> </ol>	Match the method to the client's tech comfort and lifestyle; praise tracking effort first.



## Sample 45-Minute Nutrition Counselling Session

Time (min)	Segment	Goals & Actions
5	<b>Pre-Session Review</b>	<ul style="list-style-type: none"> <li>• Review self-monitoring logs (food diary, scale, wearables)</li> <li>• Identify one success to celebrate</li> </ul>
5	<b>Warm-Up &amp; Rapport</b>	<ul style="list-style-type: none"> <li>• OARS Open Question: “How was this week’s eating?”</li> <li>• Affirmation: “I love how you prepared lunches despite being busy.”</li> </ul>
8	<b>Data Review</b>	<ul style="list-style-type: none"> <li>• Discuss logs</li> <li>• Reflection: “I notice evening snacks spiked—what triggered that?”</li> <li>• Identify patterns (e.g., stress snacking)</li> </ul>
2	<b>Set Session Focus</b>	<ul style="list-style-type: none"> <li>• Open Question: “Which of these patterns feels most urgent to tackle?”</li> <li>• Agree on 1–2 focus items (e.g., reduce late-night snacks)</li> </ul>
15	<b>Coaching Deep Dive</b>	<ul style="list-style-type: none"> <li>• If ambivalence: use Rulers (“Importance?” “Confidence?”)</li> <li>• Build an If–Then plan if confidence &lt; 7</li> <li>• Use OARS throughout to maintain engagement and elicit change talk.</li> </ul>
5	<b>Action Planning</b>	<ul style="list-style-type: none"> <li>• Introduce Habit Stacking (“After brushing teeth, I’ll brew herbal tea.”)</li> <li>• Confirm self-monitoring method for next week (photo log or app)</li> </ul>
3	<b>Summary &amp; Commitment</b>	<ul style="list-style-type: none"> <li>• Summarize with OARS (“We noted the evening snacking pattern, rated its importance, and set a plan.”)</li> <li>• Ask client to verbalize their action steps in their own words to reinforce ownership.</li> </ul>
2	<b>Close &amp; Support</b>	<ul style="list-style-type: none"> <li>• Confirm next appointment</li> <li>• Send follow-up materials (e.g., craving-busting recipes, hunger-scale template)</li> </ul>