

What Is Indirect Calorimetry?

Indirect Calorimetry - GLP-1s - Metabolic Adaption - BioImpedance Analysis



Hormesis Health & Fitness
Evolutionary Vitality



Hormetic Code™

Metabolic Archetypes™



What Is Indirect Calorimetry?

Indirect calorimetry is the gold standard method for measuring a person's resting energy expenditure (REE)—the amount of energy (calories) your body burns at rest to maintain essential functions like breathing, circulation, and cellular repair.

It also measures the respiratory quotient (RQ)—a value that reflects which fuel your body is primarily using for energy:

- An RQ near 1.0 means you're burning mostly carbohydrates
- An RQ near 0.7 means you're burning mostly fats
- Values in between suggest a mix of both

This is done by having a person rest quietly while breathing into a device that measures oxygen consumption (VO_2) and carbon dioxide production (VCO_2). From these gas exchanges, both REE and RQ can be calculated with high accuracy.

Relevance to People on GLP-1s and Metabolic Adaptation

For individuals using GLP-1 receptor agonists (like semaglutide or tirzepatide), there is increasing recognition that metabolic adaptation can occur—where weight loss leads to a suppressed metabolic rate that persists beyond the weight change.

Indirect calorimetry allows us to:

- Measure actual REE post-weight loss rather than rely on prediction equations
- Identify if someone has experienced a disproportionate drop in metabolism (i.e., burning fewer calories than expected for their body size)
- Guide nutrition and training strategies to reverse metabolic adaptation and restore a healthier metabolic rate
- Assess fuel utilization via RQ to ensure fat metabolism is efficient and in line with metabolic health goals

Why Indirect Calorimetry Outperforms Bioimpedance (BIA) for REE

Bioelectrical impedance analysis (BIA) estimates BMR (basal metabolic rate) based on predicted values derived from body composition, age, sex, and population-based formulas. However, studies show:

- BIA can deviate from true BMR by 10% to 25%
- It tends to overestimate BMR in lean individuals and underestimate it in those with higher body fat
- Only 50%-60% of people fall within a $\pm 10\%$ range of their actual REE as measured by indirect calorimetry

This variability means BIA is not reliable for determining true metabolic rate—especially when tailoring interventions for weight loss, metabolic repair, or performance.

Each Tool Has a Role

Indirect Calorimetry:

- Best for measuring resting energy expenditure and identifying fuel utilization
- Crucial for defining metabolic status in individuals across the Metabolic Archetypes™
- Helps personalize nutrition and training based on whether someone is primarily burning carbs or fats
- Essential for tracking metabolic adaptation and recovery post-GLP-1 therapy or weight loss

Bioimpedance Analysis (BIA):

- Valuable for assessing body composition, including lean mass, fat mass, and hydration status
- Helps track changes in muscle gain or fat loss over time
- Useful for shaping fitness goals, especially when paired with metabolic insights from indirect calorimetry

Conclusion: Precision Over Prediction

When understanding metabolic health, precision matters.

Indirect calorimetry provides an objective snapshot of how your body is actually functioning at rest—how many calories it needs, and whether it's running on carbs or fats. BIA complements this by helping us see the structure of the body—how much lean mass you're working with, and how that may be influencing metabolism.

Together, these tools allow for deeply personalized, data-driven coaching that aligns with your metabolic archetype, supports recovery from metabolic damage, and ensures you're progressing toward your biological fitness goals with clarity and confidence.



Disclosure & Disclaimer

The information provided by Hormesis Health and Fitness is for educational and informational purposes only and is not intended as medical advice, diagnosis, or treatment. Always consult your healthcare provider before making changes to your nutrition, physical activity, or lifestyle—especially if you have a medical condition or take prescription medications.

Hormesis Health and Fitness promotes strategies aligned with our evolutionary biology—what the human body fundamentally needs to thrive. These principles support general vitality and biological fitness, and while they benefit those with chronic conditions, they are not disease-specific protocols. Rather, they are rooted in what promotes health for all.

Our approach leverages the Metabolic Archetypes™ and the Hormetic Code™ to guide personalized strategies that support the body's natural capacity for resilience and vitality. When we honor our biological design—giving the body what it needs and avoiding what degrades it—health is not just possible, it's expected.