

Maximize Energy: Beyond Carbs, Proteins and Fats

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Maximizing & Sustaining Energy Output



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Conventional wisdom in sports, fitness and human nutrition addresses maximizing and sustaining energy output via carbs, proteins and fats (energy dense, caloric foods).

If you are the car, the grade of “gasoline” (carbs, proteins, and fats) you use impacts your energy performance.

The engine that turns oxygen and gasoline (carbs, proteins, fats) into energy, in every cell in your body, is called the mitochondria. The mitochondria is the cellular power station that produces the energy molecule (ATP) which proliferates within the cell for energy.

Tissues critical for physiological performance (brain, eyes, lungs, heart, muscles, etc.) have more mitochondria per cell. These tissues simply demand more energy and thus demand more mitochondria to produce and sustain energy output. For example, athletes train hard and grow mitochondrial density in red muscle cells. If your cell is the Ferrari, mitochondrial density simply equals more engines per cell. Do you want one engine or twenty engines in your Ferraris (cells)?

Mitochondrial density (more engines) maximizes and sustains energy output in eyes, heart, brain, lungs, muscles, etc. Here's the Ferrari's (cell) challenge. Its engine (mitochondria) is extraordinarily complex both biologically and biochemically. This complexity makes it very fragile to (engine) damage. The engine's fragility comes from leakage in the “combustion” process known as oxidative stress.

The mitochondria are the front-line foot soldiers experiencing the brunt of free radical cross-fire from revving up the engine for higher combustion (i.e. oxidative stress). Oxidative stress is both good and bad for athletes. The human performance conundrum is: how can you get the upside of hard core training (oxidative stress) without the negative aspects of oxidative stress? As an example, oxidizing cellular proteins degrades tissue performance, as described in a previous blog post, [Eating protein vs. protecting proteins](#).

What does the bad side of oxidative stress look like regarding preserving mitochondrial density? Oxidative stress damages mitochondrial DNA, decays inner membrane permeability, declines ATP (energy) production, increases free radical production, declines enzyme activity (Complex I & IV) and accelerates cellular aging & death. Translated, oxidative stress causes mitochondrial dysfunction which equals lower energy output.

Preservation of energy output comes from consuming nutrient dense foods. This is the “oil” in your car (cells). You need both high grade gas and oil to perform. The most nutrient dense foods on the planet are fruits and vegetables. These superfoods preserve (lubricate) both mitochondrial integrity and density (energy output). Thus, if you are interested in physiological performance (brains, eyes, lungs, heart, lungs, muscles, etc.) and you are not consuming 9+ servings a day of fruits and vegetables everyday, you have an execution gap.

Nutrition is only as good as your execution. This small, daily execution error (i.e. not eating 9+ servings of fruit and vegetables everyday) has profound cellular effects and makes all the difference in finishing strong. You cannot solve this food execution gap with a multi-vitamin. Food concentrates are a tried and proven (both scientifically and real-world) to help bridge the gap everyday. Get the Research on www.LynnesHealth.com.