



# Energy Systems and Conditioning

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Summary Guide

# Why Energy Systems Matter in Combat Sports

Combat sports are chaotic, fast, tactical, and unforgiving. Every strike, scramble, counter, and recovery depends on the body's ability to produce energy — instantly, repeatedly, and sustainably.

Science describes this through three energy systems:

- ATP-PC (alactic)
- Anaerobic glycolytic (lactic)
- Aerobic oxidative

But athletes don't think in biochemical pathways. They think in **speed, power, fatigue, breathing, pace, survival.**

So, KM TORSO TEAM translates physiology into something every coach and athlete can *feel*:

- **Lightning** — ATP-PC
- **Thunder** — Anaerobic Lactic
- **Rain** — Aerobic
- **Storm** — Fight Mode (All Energy Systems Combined depending on the athlete's fitness level)

This is your new language. Simple. Visual. Memorable. And grounded in research.

## Lightning — The ATP-PC System

*Instant. Explosive. Short.*

Lightning is the strike you don't see coming. It is the knockout punch, the sudden takedown, the **explosive entry**, the first step of a sprint.

**Duration:** 0–6 seconds

**Fuel:** Stored ATP + phosphocreatine

**Recovery:** Slow (needs long rest)

**Training:** Short maximal bursts with long recovery

Lightning is the system Morrison (2017) described when he noted:

“Activities such as Olympic Weightlifting and the 100m sprint utilize ATP at a very high rate... however, there is a finite supply of intramuscular ATP and PCr stores.”

Lightning is your athlete's **instant power**. But it burns out fast.

## Thunder — The Anaerobic Lactic System

*Loud. Powerful. Fatiguing.*

Thunder is the flurry, the scramble, the wall-work exchange, the 20-second burst where everything burns.

**Duration:** 10–60 seconds

**Fuel:** Glycolysis (produces lactate + H<sup>+</sup>)

**Recovery:** Moderate

**Training:** 15–30 s efforts with incomplete rest

Thunder is what Lan (2025) described when he stated that:

“Shorter rest intervals induce quicker physiological responses... enhancing the phosphagen system and increasing glycolytic contribution.”

Thunder is the system that makes athletes feel “the burn”. It is powerful — but costly.

## Rain — The Aerobic System

*Constant. Sustaining. Recovering.*

Rain is the engine. It is the ability to keep moving, keep breathing, keep thinking, keep fighting.

**Duration:** Minutes to hours

**Fuel:** Oxygen + carbohydrates + fats

**Recovery:** Fast

**Training:** Steady work or long intervals

Rain is expressed through the athlete’s aerobic capacity, which is commonly measured using  $VO_2\text{max}$ .  $VO_2\text{max}$  is the maximum amount of oxygen an athlete can use during intense exercise. It is one of the most reliable scientific indicators of cardiorespiratory fitness and overall physical performance. A higher  $VO_2\text{max}$  allows athletes to sustain pace longer and recover faster between high-intensity bursts.

Rain is what Morrison (2017) highlighted when he explained:

“Longer duration activities rely on oxidative phosphorylation pathways... sustaining ATP production over extended duration.”

Rain is the system that clears fatigue, restores Lightning, and calms Thunder. It is the foundation of combat conditioning.

## **The Storm — Fight Mode (All Energy Systems Combined)**

*A storm is not a fourth energy system. It is the fight mode — the real-world expression of Lightning, Thunder, and Rain working together, in proportions that depend on the athlete's fitness level and style.*

A storm is not one element — it is all of them interacting.

### **Combat sports demand:**

- Lightning for explosive actions
- Thunder for sustained bursts
- Rain for recovery between exchanges
- And the ability to switch between them instantly.

This is why conditioning is not “running” or “circuits” only. It is the art of **teaching the body to use the right system at the right time, not by training harder — but by training smarter.**

## The Car Analogy — Your Simple Teaching Tool

KM TORSO TEAM created a brilliant analogy:

- **Gear 1 = Lightning** Fastest response, shortest duration
- **Gear 2–3 = Thunder** Hard acceleration, high cost
- **Gear 4–5 = Rain** Sustainable, efficient, long-distance
- **The whole engine = Storm (Fight Mode)** working together

This is how we explain thresholds:

- The better the engine, the higher the thresholds
- The better the conditioning, the smoother the gear changes
- The better the training, the more powerful the storm

This is how you make physiology **simple**.

## Why Conditioning Is the Athlete's Second Leg

The founder of KM TORSO TEAM said it perfectly:

“The first leg is skill. The second leg is fitness.”

Skill without conditioning collapses under pressure. Conditioning without skill is wasted potential.

Together, they create the complete fighter.

This is why KM TORSO TEAM teaches coaches:

- How to build Lightning
- How to strengthen Thunder
- How to expand Rain
- How to express the Storm in competition (Fight Mode).