



KM TORSO TEAM
Kinematics of Human Motion

KM Storm Engine™ v1.3

Public Beta Manual

Readability and Operating

For coaches, athletes, young athletes, and parents using the online simulator



Entry Summary: Read This Before Using the Engine

KM Storm Engine™ v1.3 is a practical physiology simulator for Pencak Silat tanding education. It helps a coach or athlete see how explosive actions, high-intensity exchanges, recovery, heart rate, fatigue, and technique quality interact during combat-style work.

The engine is not a laboratory test, medical tool, ranking system, or replacement for coaching judgement. It is a teaching and observation aid. Its best use is to turn what the athlete feels into a clearer coaching decision.

One-line purpose
Use the engine to answer one coaching question, run one short scenario, observe the key values, then decide what the athlete should do next.

Use the Engine in Five Steps

1. Choose the profile: Default Profile for general teaching, or Athlete Profile for a more individual explanation.
2. Choose the scenario: repeated explosive work, threshold control, recovery between exchanges, or technique under fatigue.
3. Press the relevant action buttons and adjust intensity only when needed.
4. Watch a small number of values: Lightning, Thunder, Rain, Storm, HR zone, fatigue, and technique efficiency.
5. Finish with one practical instruction: attack, stabilise, recover, simplify, or reset breathing.

Fast Route Through This Manual

Reader	Start here	Main outcome
Coach using the simulator today	Quick Start, Function Map, Coach Operating Method	A clear session question, scenario, and practical coaching cue
Athlete trying to understand the screen	Athlete Learning Guide	Simple meaning of the values and what to do when they change
Coach planning threshold work	Threshold Application Protocols	Zone timing, recovery checks, and next training direction
Parent or young athlete	Young Athlete and Parent Explanation	A simple view of fatigue, recovery, and why quality changes
Website/manual reviewer	Current v1.3 Function Checklist	Confirmation that the manual matches the public beta controls

What Changed in This Readability Edition

- The manual now begins with an entry summary before detailed guidance.
- Functions are listed in one place so users can find the buttons and outputs quickly.
- Coach and athlete sections are separated, but both use the same engine language.
- Repeated wording has been reduced; each section now has a clear purpose.
- Protocols are organised by practical use: before training, during training, after sparring, threshold checks, and recovery checks.
- The manual does not describe future features that are not active in the v1.3 public beta.

1. Quick Start: Operating KM Storm Engine™ v1.3

This section is for immediate use on the website. It gives the shortest route from opening the simulator to making a useful coaching decision.

1.0 Screen Navigation View

Read the simulator from top to bottom. The screen is not designed for random button pressing; it is designed to show a sequence: profile, live status, storm state, energy systems, action choice, and athlete data.

Screen area	What the user sees	How to use it
1. Live status display	Profile title, HR, threshold zone, AerT, AnT, Storm, Fatigue, Technique Efficiency, and VE.	Check this first. It tells the coach which profile is active and whether the athlete is below AerT, between AerT and AnT, or above AnT.
2. Storm capsule	Fight State / Storm percentage and colour-state change.	Use it as the main warning strip. Rising storm means pressure is accumulating and decisions should become simpler.
3. Energy system bars	ATP-PC / Lightning, Anaerobic / Thunder, and Aerobic / Rain percentages.	Use these three bars together. Lightning explains explosive readiness, Thunder explains high-intensity cost, and Rain explains recovery support.
4. Internal state label	Calm, Clearing Sky, Storm Weakening, Storm Building, Heavy Thunder, or Lightning Surge.	Use this as the quick verbal label for athletes and young users.
5. Action button grid	Technique buttons plus Low Intensity, High Intensity, and Reset Engine.	Build one short scenario at a time. Press only the buttons that match the coaching question.
6. Athlete profile panel	Profile fields, Create athlete profile, Default Profile, and Accuracy message.	Use Default Profile for teaching. Use Athlete Profile when individual athlete data is available.

Navigation rule

Do not start with the action buttons. First choose the profile, then choose the coaching question, then press only the buttons needed to show that question.

1.1 Start With the Correct Profile

Mode	Use when	What it means on screen
Default Profile	You are teaching a group, introducing the idea, working without athlete data, or showing the tool to parents.	The top display shows Default Profile. Accuracy stays low because the engine uses the standard teaching profile.
Athlete Profile Loaded	You are discussing one athlete and have the required data available.	The top display shows Athlete Profile Loaded. Accuracy changes to high and shows HRmax, AerT, AnT, and VO ₂ max.

Important: Reset Engine clears the live simulation values but keeps the active profile. Use the Default Profile button to return from an athlete profile to the standard teaching profile.

1.2 Create an Athlete Profile

Complete every required field before pressing Create athlete profile. If any required field is empty, Default Profile remains active and the accuracy message warns the user to complete the fields.

Field	Required?	Practical use
Age	Yes	Used to calculate HRmax if no override is entered.
Gender	Yes	Recorded as part of the profile context.
Body mass (kg)	Yes	Included in the athlete profile for coach reference.
Resting HR (bpm)	Yes	Sets the lower heart-rate baseline.
HRmax override	Optional	Use when the coach has a known tested or reliable HRmax. Otherwise the engine calculates it from age.
VO ₂ max	Yes	Influences recovery support and aerobic display behaviour.
Fitness tier	Yes	Changes recovery, fatigue gain, storm control, and efficiency.
Technique level	Yes	Changes movement cost and control under strain.

1.3 Choose the Starting Demand

Button	What it does	Use it when
Low Intensity	Sets the scenario demand lower. In the v1.3 build this uses a lower intensity multiplier.	You want controlled work, recovery, technical reset, or a calmer teaching scenario.
High Intensity	Sets the scenario demand higher. In the v1.3 build this uses a higher intensity multiplier.	You want to show pressure, fast fatigue build-up, or repeated attacking cost.
Reset Engine	Returns ATP-PC, anaerobic, aerobic, storm, fatigue, heart rate, ventilation, and technique efficiency to the starting condition for the active profile.	You want to start a new scenario without changing the selected profile.

1.4 Press Action Buttons to Build the Scenario

Use only the buttons needed for the coaching question. Avoid pressing many actions randomly. A useful scenario is usually short and clear.

Action group	Buttons	Main teaching use
Fast / alactic actions	Quick Strike, Punch, Front Kick, Side Kick, Edge Strike, Back Kick	Explosive timing, ATP-PC cost, and sharpness after repeated attacks.
Combination / repeated effort	Continuous Strike, Combination, Slide Kick, Sweep	Anaerobic strain, fatigue build-up, and technique quality under pressure.
Defensive / control actions	Block, Evasion, Transition	Lower-cost movement, tactical reset, and controlled movement under demand.
High-cost explosive or grappling actions	Scissor Kick, Slamming, Leverage	High strain, storm rise, and the need to protect structure before complex actions.

2. Function Map: What Every Screen Area Means

This is the main navigation page for the online simulator. Coaches can use it as a quick reference during a session.

2.1 Live Status Display

Display item	What it shows	Coach reads it as
Profile title	Default Profile or Athlete Profile Loaded.	Whether the engine is using general data or a completed athlete profile.
HR	Current simulated heart rate in beats per minute.	The internal demand created by the scenario.
Threshold state	Below AerT, AerT–AnT, or Above AnT.	Whether the athlete is in controlled, working, or high-strain intensity.
AerT	Aerobic threshold heart-rate estimate.	Below this, work should stay easier and recovery should be better.
AnT	Anaerobic threshold heart-rate estimate.	At or above this, strain and fatigue usually build faster.
Storm	Combined internal pressure: intensity, fatigue, heart-rate pressure, recovery stress, and technique strain.	How chaotic the athlete's state is becoming.
Fatigue	Accumulated fatigue from the scenario.	How much the athlete may need to simplify, recover, or reduce intensity.
Tech	Technique efficiency estimate.	How well skill quality is being protected under current pressure.
VE	Ventilation estimate in L/s.	Breathing demand and respiratory pressure.

2.2 Energy Bars

Bar	Plain meaning	Watch for
ATP-PC / Lightning	Short explosive reserve for fast, high-power actions.	A quick drop after sharp actions; incomplete recovery before the next burst.
Anaerobic / Thunder	High-intensity repeated effort and metabolic cost.	A large drop during combinations, pressure phases, and repeated attacks.
Aerobic / Rain	Recovery support and ability to rebuild between exchanges.	Better recovery when Rain is strong; slower reset when fatigue and storm remain high.

2.3 Storm Labels

Storm range	Screen label	Practical message
0-9%	Calm	Start condition or well-controlled state.
10-29%	Clearing Sky	Mild demand; maintain rhythm and breathing.
30-49%	Storm Weakening	Pressure is present; keep shape and avoid waste.
50-69%	Storm Building	Control is becoming harder; simplify the task.
70-84%	Heavy Thunder	High pressure; protect posture, breathing, and decision quality.
85-100%	Lightning Surge	Critical chaos; stabilise before forcing complex actions.

2.4 What the Engine Calculates Automatically

- HRmax: calculated from age unless the coach enters an override.
- AerT: estimated at 75% of HRmax.
- AnT: estimated at 85% of HRmax.
- Recovery: changes continuously; it is slower when storm, fatigue, anaerobic strain, or heart-rate pressure are high.
- Technique efficiency: reduced by fatigue, high storm, and time above AnT; protected by better fitness and technique profiles.
- Aerobic display: normalised to the athlete's aerobic target so the bar begins sensibly for the selected profile.

3. Reading the Engine Without Overloading the Athlete

The engine gives several values, but a coach should not explain every number every time. Choose the two or three values that answer the current question.

3.1 The Simple Reading Rule

Read relationships, not isolated bars

A low Lightning bar alone is useful, but the better question is: did Lightning drop while Storm, fatigue, and HR rose? That relationship explains why the next explosive action may lose quality.

Pattern on screen	Likely meaning	Immediate coaching response
Lightning drops quickly	Explosive reserve is being spent faster than it can rebuild.	Reduce repeated maximal bursts; cue timing and recovery before the next explosive action.
Thunder remains low	Hard repeated work is becoming costly.	Manage the pace; avoid unnecessary exchanges; use tactical pauses.
Rain is high and storm is low	Recovery support is available.	Prepare the next action cleanly; use breathing and stance reset.
Storm rises above 70%	The athlete is entering a high-pressure internal state.	Stabilise, simplify the task, and avoid complex risky actions.
Fatigue crosses about 65%	The athlete is moving into a zone where quality can fall faster.	Cue breathing, guard discipline, posture, and cleaner movement.
Technique efficiency drops	The athlete may still try hard, but skill quality is less reliable.	Return to basic structure before increasing speed or complexity.
HR is above AnT	High strain is present; fatigue and storm recovery are slower.	Use short exposures, controlled recovery, or a simpler tactical job.

3.2 Do Not Turn the Screen Into a Scoreboard

The engine should not be used to shame an athlete or label them as weak. It works best when it opens a coaching conversation: what changed, why it may have changed, and what the athlete can do next.

- Say: "Your storm is high, so we reset breathing and protect shape."
- Say: "Lightning is low, so we stop forcing another burst and wait for timing."
- Say: "Technique is dropping, so we simplify before increasing speed again."
- Avoid: "Your numbers are bad." The purpose is learning, not judgement.

4. Coach Operating Method

The coach should use the engine to support one clear question at a time. This keeps the simulator practical and prevents the session from becoming a display of random buttons.

4.1 The Five-Part Coaching Cycle

1. Set the question.
2. Run the scenario.
3. Observe the response.
4. Explain the meaning.
5. Apply one training decision.

Cycle step	Coach action	Example
Set the question	Choose one learning target.	"Why do repeated entries become slower after several attempts?"
Run the scenario	Press only the buttons needed for that question.	Use repeated Quick Strike, Front Kick, or Combination actions.
Observe the response	Watch the main values.	Lightning, storm, fatigue, technique efficiency, HR zone.
Explain the meaning	Connect the screen to the athlete's feeling.	"You are still trying, but the explosive reserve is reduced."
Apply the decision	Give one instruction for practice.	"After two attacks, reset breathing before the third entry."

4.2 Common Coaching Questions

- Can the athlete repeat explosive actions without losing sharpness?
- Does the athlete recover within one minute?
- Does technique drop before AnT, around AnT, or only above AnT?
- Does the athlete escalate too early and spend energy without tactical gain?
- Is the athlete's storm rising during work that should be controlled?
- Does the athlete need better aerobic support, pacing, breathing, or simpler decisions under strain?

4.3 Turn the Reading Into a Decision

Decision	Choose it when	Coach phrase
Attack	Lightning is available, storm is controlled, technique efficiency is protected, and timing is present.	"Now is the moment to explode."
Stabilise	Storm, HR, or fatigue are rising and the athlete is becoming rushed.	"Do not force the next action. Stabilise first."
Recover	Lightning is low, storm remains high, or the athlete needs to rebuild control.	"Recover now so the next action has quality."
Simplify	Technique efficiency is dropping or decisions are becoming messy.	"Use simple, clean actions until control returns."
Reset profile/scenario	The learning point is finished and a fresh comparison is needed.	"Reset the engine and test the next idea."

5. Coach Scenario Cards

Use these scenario cards as short teaching blocks. Each card should take only a few minutes unless it becomes part of a planned threshold check.

Scenario A — Repeated Explosive Entry

Purpose	Coach action	Watch	Coaching message
To show why explosive quality reduces after repeated high-power actions.	Use repeated Quick Strike, Front Kick, Side Kick, Back Kick, or Scissor Kick. Use High Intensity only if the athlete already understands the basic effect.	Lightning, fatigue, storm, technique efficiency.	Explosive actions are powerful, but not unlimited. Choose when to spend them.

Scenario B — High Pressure Without Recovery

Purpose	Coach action	Watch	Coaching message
To show the cost of forcing intensity for too long.	Use Continuous Strike, Combination, Slide Kick, Sweep, Slamming, or Leverage with little waiting between actions.	Thunder, HR, fatigue, storm.	You may still be moving, but the cost is rising. Stabilise before quality collapses.

Scenario C — Recovery Between Exchanges

Purpose	Coach action	Watch	Coaching message
To show why controlled recovery protects the next action.	Create a short high-intensity sequence, then wait or use Low Intensity with lower-cost actions such as Block, Evasion, or Transition.	Storm reduction, HR response, Rain, technique efficiency.	Recovery is preparation. It rebuilds the next useful action.

Scenario D — Technique Under Fatigue

Purpose	Coach action	Watch	Coaching message
To show why skill quality can change even when effort is high.	Build fatigue with repeated actions, then watch Tech as storm and HR rise.	Fatigue, storm, HR, technique efficiency.	When fatigue rises, technique must become simpler, cleaner, and more controlled.

Scenario E — Threshold Control

Purpose	Coach action	Watch	Coaching message
To teach the difference between controlled work, working strain, and high strain.	Use Low Intensity and controlled actions below AerT, then build toward AerT-AnT, then briefly above AnT.	HR zone, storm, fatigue, technique efficiency.	The athlete should know which zone they are in and how their choices must change.

6. Applying the Engine in Training

6.1 Before Training: Explain the Session Goal

Before training, keep the engine use short. The aim is to give athletes a reason for the session, not to deliver a lecture.

1. State the training focus.
2. Run one engine scenario.
3. Point to the main physiological cost.
4. Give one thing athletes must watch during training.

Example

“Today we train repeated explosive entries. Watch what happens when we repeat high-power actions without enough recovery. Lightning drops, storm rises, and technique can lose quality. In training I want sharp entries, controlled breathing, and no wasted attacks.”

6.2 During Training: Use It Briefly

During training, use the simulator only when it helps explain a visible problem. Do not stop the session for too long.

- Use it when breathing becomes rushed, posture drops, attacks become forced, combinations become messy, or recovery between actions is poor.
- Pause, show the relevant values, give one correction, then return to practice.
- The engine should support coaching timing, not replace movement practice.

6.3 After Sparring: Review the Key Moment

After sparring, the engine helps the athlete connect feeling, behaviour, and physiology.

1. Ask what changed: heavy legs, rushed breathing, late timing, weak posture, or panic.
2. Identify the key moment: early round, after repeated attacks, late round, after one-minute recovery.
3. Use the engine language to explain what likely happened.
4. Agree one change for the next round or next session.

Example

“You felt strong at the start but lost timing later. The engine helps us discuss rising fatigue and storm. Next round we manage the first minute better, reset breathing after two attacks, and protect quality for the final phase.”

7. Coach Threshold Application Protocols

This section gives coaches a practical method for observing athlete limits in v1.3. It does not replace lactate testing, gas analysis, or professional sport-science assessment. Its role is to guide observation and training direction.

Coach focus

Ask: how long can the athlete stay useful in each zone, and what must improve when quality begins to drop?

7.1 Three-Zone Coach Map

Zone	Engine area	Suggested observation time	Coach watches	Coaching meaning
Zone 1	Below AerT	2-4 min	HR, storm, fatigue, technique efficiency, breathing rhythm	Movement economy and recovery control.
Zone 2	AerT-AnT	Start with 2 x 2 min, 1 min recovery. Progress to 3 x 2 min.	HR drift, storm rise, technique drop, recovery after each block	Working control under demand.
Zone 3	Around or above AnT	4-6 x 15-30 sec with 45-90 sec recovery. Advanced: 60-120 sec with 2-3 min recovery.	Storm, fatigue, Lightning drop, Thunder strain, technique efficiency	High-strain tolerance and decision discipline.

7.2 Basic v1.3 Threshold Check

1. Record baseline: athlete name, date, profile used, HRmax, AerT, AnT, starting HR, storm, fatigue, and technique efficiency.
2. Controlled zone check: 2-4 minutes below AerT using light footwork, shadow movement, defensive movement, stance reset, or active recovery.
3. Working control check: 2 x 2 minutes between AerT and AnT with 1 minute recovery. Record storm, fatigue, technique efficiency, and recovery change.
4. High-strain check: choose repeated explosive actions, short above-AnT exposure, or round-finishing pressure.
5. One-minute recovery check: after the hardest block, allow one minute and record HR, storm, Lightning, fatigue, technique efficiency, and readiness for the next block.

7.3 High-Strain Options

Option	Use	Best question	Watch
Repeated explosive actions	6-10 explosive actions with 20-45 sec recovery.	Can the athlete repeat sharp actions?	Lightning drop and recovery, storm after each repeat, technique efficiency late in the sequence.
Short above-AnT exposure	4-6 x 15-30 sec with 45-90 sec recovery.	Can the athlete handle short high-strain exchanges?	AnT crossing, Thunder drop, storm increase, technique efficiency, recovery before next effort.
Round-finishing pressure	60-120 sec near or slightly above AnT; 2-3 min recovery.	Can the athlete finish a demanding phase without losing structure?	Final 30 sec storm, technique efficiency, rushed decisions, recovery after the block.

7.4 Training Direction From the Check

Engine pattern	Likely coaching meaning	Training direction
Storm rises below AerT	Poor relaxation, unnecessary tension, or inefficient movement.	Breathing rhythm, footwork economy, low-pressure technical rhythm.
Technique drops before AnT	Weak pacing or structure under working demand.	Controlled rounds, posture discipline, attack-and-reset rhythm.
Lightning falls after few actions	Repeated explosive ability needs development.	Burst-recovery drills and sharper action selection.
Thunder stays low for too long	High-intensity cost is excessive and recovery is slow.	Pacing, tactical pauses, cleaner attacks, more controlled pressure.
Storm stays high after 1 min	Recovery support is weak for later rounds.	Aerobic support, between-round breathing, and round pacing.
Shape collapses above AnT	High-strain discipline is not protected.	Short pressure rounds with simple decisions and clear defensive reset.

8. Practical Training Prescriptions From v1.3

These examples translate the screen response into a next-step training direction. They are starting points, not rigid rules.

Problem seen in the engine	Prescription	Progress when
Lightning drops quickly after repeated actions.	4-6 explosive actions, 30-45 sec recovery, 2-3 sets, 2-3 min between sets.	Later actions remain sharp and storm does not climb too fast.
Technique drops between AerT and AnT.	2-3 x 2 min between AerT and AnT, 1 min recovery. Task: stance, guard, breathing, distance, attack-and-reset rhythm.	The athlete holds structure deeper into the block.
Breakdown appears around or above AnT.	4-6 x 15-30 sec near/above AnT, 45-90 sec recovery. Stop or reduce intensity if technique collapses.	The athlete tolerates short strain without panic or messy actions.
Storm remains high after recovery.	3 x 2 min controlled work with 1 min recovery. During each recovery: breathe, reset posture, lower tension, choose one tactical plan.	Storm and HR begin to fall during the one-minute break.
Athlete is fit but lacks sharp attacks.	Use low-volume explosive timing: fewer attacks, longer recovery, clear entry trigger.	The athlete attacks later but sharper, not earlier and weaker.
Athlete works hard but becomes messy.	Use controlled pressure tasks with simple actions only. Increase speed after shape returns.	Clean structure survives higher pace.

8.1 Final Coach Rule

Every use of the engine should finish with one practical action. Do not stop at naming the value.

Do not stop at	Convert it into
"Storm is high."	"Storm is high, so we stabilise, breathe, simplify, and then attack again."
"Lightning is low."	"Lightning is low, so we stop forcing repeated explosive entries and prepare the next one properly."
"Technique efficiency is dropping."	"Technique efficiency is dropping, so we return to clean structure before increasing speed again."
"HR is above AnT."	"HR is above AnT, so this is high strain. Keep the exposure short or give more recovery."

9. Athlete Learning Guide

During combat training, your body can change quickly. At the start you may feel light, sharp, and confident. After repeated explosive actions, the same movement can feel heavy, rushed, or harder to organise. This does not always mean poor attitude. Often it shows the cost of effort, intensity, and recovery.

The engine helps you connect what you feel with what is happening inside the body. The goal is not to make you think like a scientist. The goal is to help you become calmer, more aware, and more useful under strain.

9.1 Start With What You Feel

- Do I feel sharp or heavy?
- Is my breathing calm or rushed?
- Am I attacking with purpose or chasing?
- Do my legs still react quickly?
- Is my stance stable?
- Is my timing clear?
- Am I choosing the moment, or am I forcing it?

9.2 Four Athlete Questions

Question	Look at	Simple meaning
Can I still explode?	ATP-PC / Lightning	Your short explosive reserve for fast actions.
Am I working too hard for too long?	Anaerobic / Thunder	The cost of hard repeated effort.
Am I recovering well?	Aerobic / Rain, HR, breathing, storm	How well your body is rebuilding between exchanges.
Am I losing shape or calm decisions?	Storm, fatigue, technique efficiency	Whether pressure is making skill and decisions less reliable.

9.3 What To Do When the Signals Change

Signal	Do not	Better choice
Lightning is low	Force repeated explosive attacks.	Recover, use footwork, wait for timing, and prepare the next burst.
Thunder is under heavy strain	Stay in unnecessary exchanges.	Manage pace, reduce wasted effort, stop chasing, choose cleaner attacks.
Rain needs support	Ignore breathing and tension.	Breathe with control, reset posture, relax unnecessary tension.
Storm is high	Add more chaos.	Stabilise, simplify, protect guard, control distance, make one clear decision.
Fatigue is high	Rely only on willpower.	Return to basics, reduce complexity, keep balance, protect timing.
Technique efficiency drops	Panic or force complex actions.	Clean the shape, rebuild stance, control breathing, increase speed only after movement is stable.

9.4 Simple Athlete Rules

- Do not spend explosive power without purpose.
- Hard effort is useful only when it creates an advantage.
- Recovery is part of fighting, not a break from fighting.
- When fatigue rises, movement must become cleaner, not messier.
- When storm is high, stabilise before forcing another action.
- Breathing helps rebuild the next movement.
- A smart athlete knows when to attack, when to reset, and when to wait.

10. Young Athlete and Parent Explanation

For young athletes, keep the explanation simple. The aim is not to overload them with physiology. The aim is to help them understand that effort must be controlled and directed.

10.1 Messages for Young Athletes

Simple message	Meaning
Energy is limited.	You cannot explode at maximum power forever.
Breathing helps you recover.	A good reset helps the next action.
Smart fighters do not rush every moment.	Timing matters as much as effort.
Good technique needs control.	When tired, make the movement cleaner.
Recovery prepares the next attack.	A calm reset can make the next attack sharper.
When storm is high, calm decisions matter.	Do not add panic to pressure.

10.2 Messages for Parents

Parents may see a child lose quality and think the child is lazy, weak, or not trying. The engine helps explain that a young athlete may be under high internal pressure even while trying hard.

- A child may lose quality because fatigue and storm are rising.
- Technique under pressure is not always a simple technical fault.
- Recovery is part of development, not a sign of weakness.
- Conditioning and calm decision-making take time to build.
- Young athletes need structure, not only more intensity.

11. Coach Recording Sheet

Print or copy this sheet when using the engine for athlete review. Keep notes short and practical.

Item	Record
Athlete	
Date	
Profile used	Default Profile / Athlete Profile Loaded
Main coaching question	
HRmax / AerT / AnT	
Starting HR / Storm / Fatigue / Tech	
Protocol used	
Time below AerT with control	
Time between AerT and AnT before quality changed	
Time above AnT before quality dropped	
Number of explosive repeats before drop-off	
Highest storm	
Lowest technique efficiency	
One-minute recovery response	
Main coach interpretation	
Next training target	
Next session prescription	

12. Current v1.3 Public Beta Function Checklist

This checklist is included so coaches and website users can match the manual to the active public beta. It covers the current v1.3 simulator functions and avoids future features that are not yet part of this build.

12.1 Profile Functions

Function	Current behaviour
Default Profile	Loads standard teaching values: age 25, male, mass 70 kg, resting HR 60 bpm, HRmax 191, AerT 143, AnT 162, VO ₂ max 55, intermediate fitness, intermediate technique. Accuracy shows low because default values are in use.
Create athlete profile	Requires age, gender, mass, resting HR, VO ₂ max, fitness tier, and technique level. HRmax override is optional. When valid, it calculates HRmax, AerT, AnT, and recovery modifiers.
Incomplete profile attempt	If required fields are missing, the engine keeps Default Profile active and asks the user to complete all required fields.
Reset Engine	Resets live values for the active profile. It does not switch from Athlete Profile back to Default Profile.

12.2 Action Buttons

Button	Practical category
Quick Strike	Fast / alactic action
Continuous Strike	Repeated high-intensity action
Transition	Mixed control movement
Combination	Repeated high-demand attacking pattern
Punch	Fast strike
Slide Kick	Mixed kick under demand
Block	Defensive action
Front Kick	Fast kick
Side Kick	Fast kick
Scissor Kick	High-cost explosive action
Evasion	Defensive / tactical movement
Slamming	High-cost explosive grappling action
Leverage	Grappling / mixed strain action
Edge Strike	Fast strike
Sweep	Mixed action with fatigue cost
Back Kick	Explosive kick

12.3 Control Buttons and Live Outputs

Item	Current behaviour
High Intensity	Raises scenario demand. Use it to show high-pressure work, not as the default for every scenario.
Low Intensity	Lowers scenario demand. Use it for controlled work, recovery explanation, and technical reset.
Automatic recovery loop	Continues in the background. Recovery is affected by aerobic support, fatigue, storm, anaerobic strain, and HR zone.
Storm % and label	Shows combined internal pressure and changes label from Calm to Lightning Surge as demand rises.
HR zone display	Shows Below AerT, AerT-AnT, or Above AnT.
Energy bars	Show Lightning, Thunder, and Rain percentages.
Technique efficiency	Shows how well technique quality is being protected under the current strain.
Ventilation	Shows breathing demand as VE in L/s.

12.4 Features Not Covered as Active v1.3 Buttons

The v1.3 public beta manual does not describe export, save/transfer, or automated match-report features as active controls. It also does not rely on Start Match, Pause, or Resume buttons unless those are added to a separate match-engine version. For a 3 x 2-minute Pencak Silat tanding simulation, coaches can use an external timer while applying the v1.3 action and recovery scenarios.

13. Closing Principle

The engine becomes useful when the coach turns visual information into a practical decision and when the athlete learns how to connect body feeling with action choice.

Main lesson

Do not train harder only. Learn how to use energy, timing, breathing, recovery, and technique with intelligence.