STRENGTH & CONDITIONING COACHES CLINIC

THE PROGRAMMING PROCESS

From a blank page to a season-long plan — a practical framework for building programs that develop high school athletes.

MOST PROGRAMS FAIL ON PROCESS, NOT EFFORT

RANDOM WORKOUTS

Exercises chosen by feel or tradition, with no thread connecting day to day.

NO CLEAR TARGET

Training isn't aimed at anything measurable, so progress can't be seen.

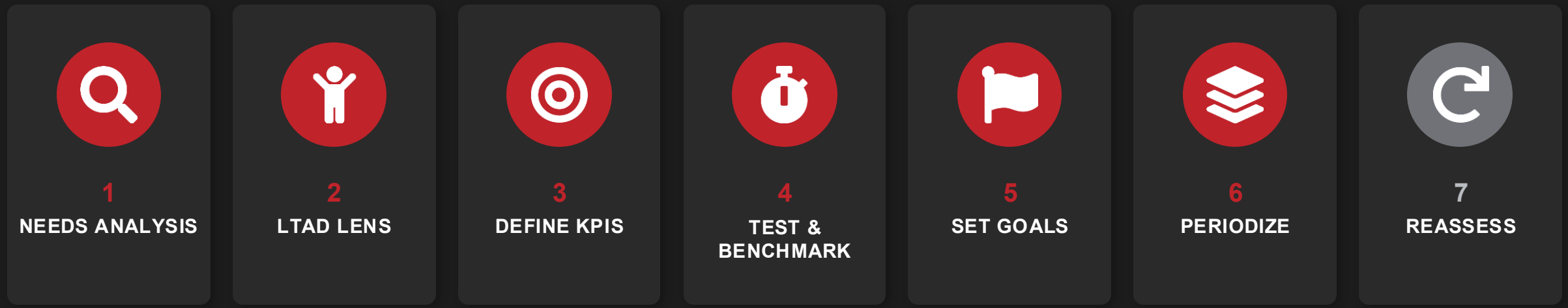
SAME THING YEAR-ROUND

No planned variation means stagnation, staleness, and avoidable injury.

THE FIX: a process you run every time — the same questions, asked in the same order.

THE ROADMAP

SEVEN STEPS, ONE REPEATABLE LOOP



Steps 1–6 build the plan. Step 7 feeds back to Step 1 — programming is a loop, not a line.

START WITH THE ATHLETE IN FRONT OF YOU

Before you write a single set, answer three grounding questions. Your whole program is the answer to these.

WHO AM I COACHING?

Age, training age, maturity, sport, group size, time of year.

WHAT DO I ACTUALLY HAVE?

Equipment, facility, contact time per week, staff-to-athlete ratio.

WHERE ARE WE GOING?

The outcome that defines success for this group, this season.

COACH'S REALITY CHECK

The best program on paper is worthless if it doesn't fit your gym, your schedule, and your kids. Constraints aren't obstacles — they're your starting data.

NEEDS ANALYSIS: THE DEMANDS VS. THE ATHLETE

Two columns. The gap between them is your program.

DEMANDS OF THE SPORT

- Movement patterns & positions
- Energy systems (alactic / lactic / aerobic)
- Common injury sites & mechanisms
- Competition density & season length

PROFILE OF THE ATHLETE

- Training history & technical skill
- Current strengths & weaknesses
- Maturity / growth stage
- Injury history & movement quality

STEP 2 · LONG-TERM ATHLETIC DEVELOPMENT

COACH THE LONG GAME, NOT JUST THIS SEASON

LTAD is a framework for developing athleticism over years — the right emphasis at the right stage of growth.

NOT MINI-ADULTS

Kids respond to training differently and at different rates — maturity matters more than birthday.

MATURITY > AGE

Two 14-year-olds can be years apart developmentally. Program for the body, not the grade.

BUILD, THEN SPECIALIZE

Broad athletic base first; sport-specific intensity later. It lowers injury risk and raises ceilings.

Source: NSCA Position Statement on Long-Term Athletic Development

WHAT THE RESEARCH ACTUALLY SUPPORTS

STRONG SUPPORT

- Resistance training is safe & effective for youth when well-coached
- Builds strength, power, motor skill, and bone health
- Reduces sport-related injury risk
- Develop strength & technique before chasing max intensity
- All fitness qualities are trainable throughout childhood

HOLD LOOSELY

- Rigid "windows of opportunity" are weakly supported
- No single LTAD model is the proven gold standard
- The "10,000-hour" rule is oversimplified
- Early single-sport specialization carries real risk
- Use the stages as a guide, individualize the dose

THE NSC ATHLETE DEVELOPMENT PATHWAY

One dual-track model for ages 12–18 — the LTAD lens applied to every athlete we coach.

STAGE 01 · LEARN
AGES 12–14 · LEARN TO TRAIN

- Movement quality & mechanics
- Speed & agility development
- Strength foundations (neural)
- Multi-sport participation

"Build the physical foundation for all sport demands"

STAGE 02 · BUILD
AGES 14–16 · TRAIN TO TRAIN

- Strength & power development
- Sport-specific conditioning
- Technical skill refinement
- Tactical awareness

"Develop the capacity to handle high training loads"

STAGE 03 · COMPETE
AGES 16–18 · TRAIN TO COMPETE

- Periodized competition prep
- Individual performance optimization
- Recovery & injury prevention
- Mental performance & leadership

"Peak physically and mentally when it matters most"

PILLAR 1 · PHYSICAL LITERACY — Fundamental movement competency across all sports and environments

PILLAR 2 · TECHNICAL & TACTICAL — Progressive sport-specific skill and game intelligence development

Built on evidence-based Long-Term Athlete Development principles (Balyi, Lloyd & Oliver)

FROM MODEL TO WEIGHT ROOM, STAGE BY STAGE

Sample exercises and training doses for each stage — adapt them to your facility and your athletes.

LEARN
AGES 12–14

- **Goblet squat** — bodyweight → loaded
- **Hip hinge / RDL** — bodyweight, DB
- **Lateral ladder & sprint mechanics**
- **Broad jump, med ball slam**

2–3 / WK · 30–40 MIN · LOW–MOD

BUILD
AGES 14–16

- **Trap bar deadlift, barbell squat, DB RDL**
- **Box jump, hang clean, plyometrics**
- **5-10-5 agility, sprinting, resisted sprints**
- **Circuit complexes** — strength / conditioning blend

3–4 / WK · 45–60 MIN · MOD–HIGH

COMPETE
AGES 16–18

- **Barbell squat, power clean, RDL**
- **Hang clean, high level plyometrics, depth jump**
- **Sprinting & sprint loading**
- **Higher intensity loading**
- **Mobility & soft tissue work**

4–5 / WK · 60–75 MIN · HIGH, PERIODIZED

TAKE THE ONE-PAGER. This whole pathway — stages, priorities, sample exercises, and training doses — fits on one page. Grab the handout and share it with your staff.

KPIS TURN 'GET BETTER' INTO SOMETHING YOU CAN SEE

A Key Performance Indicator is a measurable quality that, if it improves, means your athlete is moving toward the demands of the sport.

RELEVANT

Tied directly to a sport demand from your needs analysis — not a vanity number.

MEASURABLE

You can put a number on it with the equipment you actually have.

REPEATABLE

Same test, same setup, every time — so the change is real, not noise.

TRAINABLE

It responds to your program within a season; otherwise it's just monitoring.

PICK FEW. 3–5 KPIs per group beats 15 you'll never track consistently.

EXAMPLE KPIS BY QUALITY

Quality	Field-friendly test	What it tells you
Lower-body strength	Trap-bar / back squat (rep max or rel. strength)	Force production base for nearly every sport
Power / explosiveness	Vertical jump, broad jump	Rate of force — sprinting, jumping, change of direction
Speed	10–20 yard sprint (timed)	Acceleration, the most game-relevant speed quality
Change of direction	5-10-5 pro agility	Deceleration & re-acceleration under control
Conditioning	Yo-Yo / sport-specific repeat efforts	Capacity to repeat high-intensity work
Movement quality	Overhead squat / hop-and-hold screen	Readiness to load & injury-risk flags

TESTING ONLY COUNTS IF IT'S CONSISTENT

A test you run differently each time isn't data — it's a guess with a number on it.

STANDARDIZE THE PROTOCOL

Same warm-up, order, rest, cues, and equipment every test day.

TEST AT LOGICAL POINTS

Pre-season, end of a block, and post-season — not randomly.

RECORD EVERYTHING

A simple shared sheet beats memory. Date, conditions, numbers.

BENCHMARK FAIRLY

Compare to the athlete's past self first, norms second.

BENCHMARK AGAINST…

1. Their own previous test
2. Team / squad standards
3. Age & sex norms
4. Position / sport demands

GOALS CONNECT TODAY'S SESSION TO THE TEST

OUTCOME GOALS

The destination — a KPI target. e.g. "Add 3 inches to vertical by April." Motivating, but not fully in the athlete's control.

PROCESS GOALS

The daily behaviors that get you there. e.g. "Hit every jump-training session and log it." Fully controllable — coach these hardest.

MAKE GOALS SMART

Specific · Measurable · Achievable · Relevant · Time-bound — anchored to the KPIs you defined and the dates you test.

STEP 6 · PERIODIZATION

PLAN THE YEAR, THEN WORK BACKWARD

Periodization is the organized variation of training over time — so athletes peak when it counts and don't burn out before they get there.

MACROCYCLE

The full year / season

Where are the competitions? Work back from there.

MESOCYCLE

A block of 3–6 weeks

One focus: e.g. hypertrophy, strength, power.

MICROCYCLE

A single week

The day-to-day split your athletes actually see.

The big idea: you can't be strong, fast, and conditioned to your max all at once. Sequence the emphasis.

A SAMPLE HIGH SCHOOL TRAINING YEAR

OFF-SEASON	PRE-SEASON	IN-SEASON	POST-SEASON
BUILD THE BASE	**CONVERT TO POWER**	**MAINTAIN & PEAK**	**RECOVER & RESET**
Work capacity, hypertrophy, technique	Max strength → speed & power	Lower volume, keep intensity, stay fresh	Active rest, address weak links, retest

Volume and intensity trade off across the year. *High volume early, high intensity & freshness when competition arrives.*

THE OTHER HALF OF THE PROGRAM

YOU CAN'T OUT-TRAIN POOR RECOVERY

The best program is only as good as the recovery around it. Two levers move the needle most for high school athletes: nutrition and sleep.

NUTRITION: FUEL THE WORK AND THE GROWTH

Keep it simple and habit-based — teenagers don't need macros, they need consistent basics.

PROTEIN EVERY MEAL

Supports the muscle your training is trying to build. Spread it across the day.

CARBS AROUND TRAINING

The main fuel for hard sessions and games — don't fear them, time them.

HYDRATE ALL DAY

Even mild dehydration drops performance. Start before practice, not during.

EAT ENOUGH, EAT REAL

Growing athletes under-fuel constantly. Whole foods first, supplements last.

Your role isn't to be a dietitian — it's to set the standard and make the easy choice the default.

PROTEIN: THE BUILDING SIGNAL

Training is the stimulus — protein is both the raw material and the switch that turns building on.

20–40g

PER MEAL, 3–4× A DAY

the dose range that maximally stimulates muscle protein synthesis in young athletes

01 THE MECHANISM

Lifting elevates muscle protein synthesis for 24–48 hours. Each protein feeding — driven by ~2–3 g of the amino acid leucine — switches building on again.

02 THE DAILY TARGET

1.4–2.0 g per kg bodyweight per day for training athletes. For a 150 lb athlete, that's roughly 95–135 g spread across the day.

03 DISTRIBUTION BEATS TOTALS

Four even doses out-build one giant dinner. Most teens eat almost no protein at breakfast and most of it at night — backwards for growth.

04 THE OVERNIGHT WINDOW

30–40 g of slow-digesting protein before bed — milk, Greek yogurt, cottage cheese — feeds 8+ hours of overnight repair.

Sources: ISSN Position Stand on protein & exercise; Moore et al.; Res & van Loon pre-sleep protein research

CARBOHYDRATE: THE PERFORMANCE FUEL

Muscle glycogen is the tank for sprints, reps, and fourth quarters. Low tank = slow legs, sloppy technique, late-game injuries.

3–4 H BEFORE
THE MEAL

The main fill of the tank: 1–4 g/kg of carbs from rice, pasta, potatoes, or oats, plus protein and fluids.

0–60 MIN BEFORE
THE TOP-UP

Small, familiar, fast-digesting: banana, granola bar, sports drink. Nothing new on game day — ever.

DURING
LONG EVENTS

When games or tournaments run past ~60–90 minutes: 30–60 g of carbs per hour from drinks or fruit.

0–60 MIN AFTER
THE REFILL

Glycogen restocks fastest right after: ~1–1.2 g/kg per hour, paired with protein. Chocolate milk earns its reputation.

Daily range: 3–8 g/kg, scaled to training load — a two-a-day week sits at the top, a rest day near the bottom.

Sources: ISSN and ACSM / Academy of Nutrition & Dietetics joint position stands on nutrition and athletic performance

HYDRATION: SMALL DEFICITS, REAL COSTS

Performance drops before thirst gets loud — make fluid a protocol, not a feeling.

–2%

BODYWEIGHT IN SWEAT

the loss at which speed, skill, and decision-making measurably decline

01 SWEAT RATES VARY WILDLY

0.5–2.0 L per hour between athletes in the same practice. Pre/post weigh-ins beat guessing: 1 lb lost ≈ 16 oz of sweat.

02 THE BRAIN GOES FIRST

Mild dehydration impairs reaction time, focus, and skill execution before endurance ever suffers — the QB misreads before the lineman tires.

03 ELECTROLYTES EARN THEIR PLACE

Salty sweaters, August heat, and two-a-days need sodium — roughly 300–600 mg per hour — not just water.

04 MONITOR THE EASY WAY

Morning urine should be pale straw. Bottle at every session, drink to a schedule in heat, and replace 16–24 oz per pound lost.

Sources: ACSM Position Stand on Exercise & Fluid Replacement; NATA fluid replacement guidelines

EAT ENOUGH: THE FOUNDATION UNDER IT ALL

A growing athlete pays two energy bills — growth and training. Underpay either, and performance collapses quietly.

RED-S

RELATIVE ENERGY DEFICIENCY IN SPORT

what chronic under-fueling becomes — in boys and girls alike

01

THE DOUBLE ENERGY BILL

A growth spurt plus a sport can push needs past 3,000–4,000 kcal per day. Appetite alone often won't get a busy teen there.

02

WHAT UNDER-FUELING BREAKS

Bone density, hormones, immunity, mood — and every adaptation you're training for. Stalled lifts are usually the first visible sign.

03

THE INJURY CONNECTION

Low energy availability is linked to stress fractures and recurring soft-tissue injury. The weight room cannot out-lift an energy hole.

04

FOOD FIRST, ALWAYS

No powder fixes an under-fueled athlete. Whole foods, bigger portions, planned snacks — supplements only on top of full plates.

Source: IOC Consensus Statement on Relative Energy Deficiency in Sport (RED-S)

PUT NUMBERS BEHIND THE BASICS

Rules of thumb, not prescriptions — enough to set standards without becoming the team dietitian.

THE NUMBERS

- **Protein:** 20–40 g per meal — a palm-sized portion, 3–4× a day
- **Carbs:** refuel within ~60 min of hard sessions and games
- **Fluids:** half your bodyweight (lb) in oz daily, plus 16–24 oz per lb lost at practice

TEAM STANDARDS YOU CAN SET

- **Post-lift snack within 30 min** — chocolate milk or a PB sandwich works
- **Breakfast is non-negotiable** on training and game days
- **Travel rule:** every athlete packs real food — sandwich, fruit, fluids

RED FLAGS

- **In-season weight loss, stalled lifts, constant fatigue** — classic under-fueling
- **Energy drinks as “pre-workout”**
- **Rapid weight cutting or skipped meals** — refer out; don’t coach it alone

SEND IT HOME

- **Give parents a grocery staples list** — eggs, milk, yogurt, rice, fruit
- **Food first, supplements last** — nothing in a tub replaces meals
- **Frame it as performance fuel,** never as dieting

SLEEP: THE MOST UNDERRATED TRAINING TOOL

8–10

HOURS PER NIGHT

recommended for teen athletes

WHERE ADAPTATION HAPPENS

Growth hormone peaks in deep sleep — the gains are built overnight.

SKILL & DECISION-MAKING

Sleep consolidates motor learning and sharpens reaction time.

INJURY & ILLNESS DEFENSE

Under 8 hours is linked to markedly higher injury rates in youth athletes.

PROTECT THE ROUTINE

Consistent bed/wake times, screens down early, dark and cool room.

WHAT A NIGHT OF SLEEP ACTUALLY DOES

Sleep isn’t downtime — it’s scheduled construction, and every stage has a different job.

~90-MIN CYCLES
THE STRUCTURE

The night runs in 4–6 cycles through light, deep, and REM sleep. Architecture matters as much as total hours.

DEEP SLEEP
THE BODY SHOP

Growth hormone pulses peak here — muscle repair, bone growth, immune function. Concentrated early in the night.

REM SLEEP
THE SKILL LAB

Consolidates motor learning and sharpens decision-making — the plays you drilled get written to memory. Concentrated in the morning cycles.

THE SHORT-NIGHT TAX
WHY 6 ≠ 8

Cutting the last hour doesn’t trim evenly — it amputates REM, the exact stage skill athletes need most.

A 6-hour night isn’t 75% of an 8-hour night — the hours you lose are the most skill-dense ones.

Sleep stage physiology per American Academy of Sleep Medicine reference standards

WHAT THE DATA SAYS ABOUT SLEEP AND SPORT

Three numbers worth repeating to your athletes — all from peer-reviewed research.

+9%

SHOOTING ACCURACY

Stanford basketball players who extended sleep toward 10 h improved free-throw and 3-point accuracy ~9% — and sprinted faster.

1.7×

INJURY RISK

Adolescent athletes sleeping under 8 hours were ~1.7× more likely to get injured than teammates sleeping more.

4.2×

ILLNESS RISK

Adults sleeping under 6 hours were 4.2× more likely to catch a cold after controlled virus exposure.

And after ~17–19 hours awake, reaction time resembles a ~0.05 blood-alcohol level. Nobody would let an athlete compete like that.

Sources: Mah et al. 2011; Milewski et al. 2014; Prather et al. 2015; Williamson & Feyer 2000

YOUR ATHLETES ARE FIGHTING THEIR BIOLOGY

Teens aren’t lazy at 6:45 am — their clock is shifted. Coach around the biology instead of against it.

~2h

CIRCADIAN PHASE DELAY

puberty pushes melatonin release — and natural sleep time — later

01 THE BIOLOGY

Adolescent melatonin onset drifts toward 10–11 pm while school still starts early. The squeeze is structural, not a character flaw.

02 SCREENS MAKE IT WORSE

Bright evening light suppresses melatonin and delays the clock further — the last hour of scrolling costs more than an hour of sleep.

03 CAFFEINE’S LONG TAIL

Half-life of 5–6 hours: half of a 3 pm energy drink is still circulating at bedtime, cutting into deep sleep even if they nod off.

04 WHAT ACTUALLY HELPS

Morning light, a consistent wake time (weekends too), 20–30 min naps before 3 pm, and scheduling the hardest sessions earlier.

Sources: Carskadon et al., adolescent circadian research; AAP policy statement on school start times

MAKE 8–10 HOURS ACTUALLY HAPPEN

Teenagers won’t choose sleep — routines and defaults choose it for them.

THE NUMBERS

- **8–10 hours per night** for ages 13–18
- **Under 8 hours ≈ 1.7× higher injury risk** in adolescent athletes
- **Bed & wake within ~1 hour** — weekends included
- **Naps: 20–30 minutes,** before 3 pm

TEAM STANDARDS YOU CAN SET

- **Caffeine cutoff 6+ hours before bed** — no energy drinks after school
- **Screens down 30–60 minutes** before lights-out
- **Ask about sleep in check-ins** the way you ask about soreness

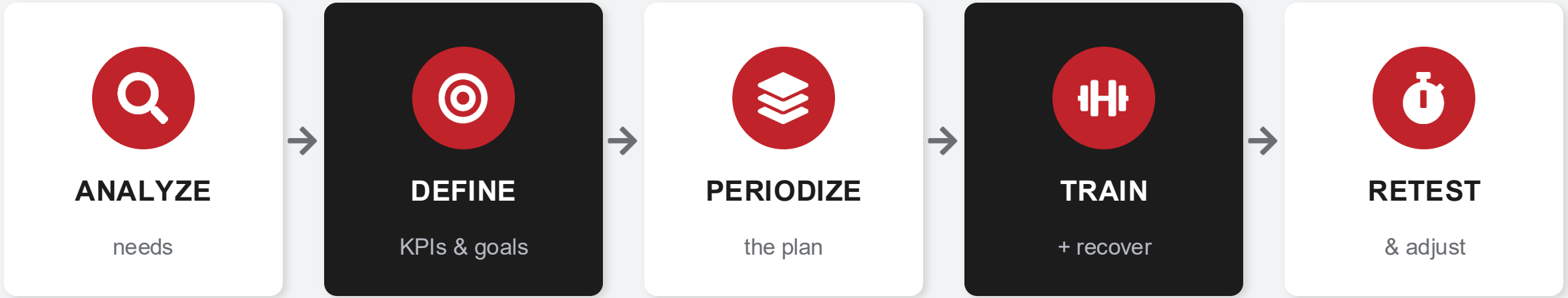
RED FLAGS

- **Weekend binge sleeping** — 2+ hour shifts are social jet lag
- **Nodding off in film sessions or class**
- **Needing caffeine to get through practice**

SEND IT HOME

- **Dark, cool room (65–68 °F)** — beats any recovery gadget
- **Phones charge outside the bedroom** overnight
- **Consistent household lights-out** — parents back the standard

IT ALL CONNECTS IN ONE LOOP



...and back to the start.

WALK AWAY WITH THIS

FIVE THINGS TO DO MONDAY

1. Run a needs analysis for your main sport — demands vs. athlete.
2. Pick 3–5 KPIs you can measure with what you already own.
3. Lock a standardized testing protocol and a place to record it.
4. Sketch your training year backward from competition dates.
5. Set one team nutrition standard and one sleep standard.

THANK YOU

Questions — and let's talk programming.

WANT A PROGRAM BUILT FOR YOUR SCHOOL?

We'll have a straight-up conversation about fit — no pressure, no canned pitch.

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