The Complete Fitness Operating System (CFOS)

Ultimate Unified Playbook for Strength, Hypertrophy, Fat Loss, Performance and Health

Version: 2026-01-12

Built from source materials: - *The Complete Fitness Operating System* (uploaded PDF) - *The Complete Fitness Operating System – Upgrade Research Report* (provided in chat) - *In-Depth Research Integration Report: Filling the 20 Gaps in CFOS* (provided in chat) - Prior relevant context in this chat (for example recovery modalities such as heat and cold exposure)

Executive Summary

This document is a single, unified "fitness operating system" that turns evidence and best practice into decision rules.

The CFOS in one paragraph

You get results by matching **training dose** (volume, intensity, frequency) to your **level, goal and recovery capacity**, then running a **feedback loop** (measure, adjust, repeat). Beginners thrive on simple progression and modest volume. Intermediates need smarter programming (periodisation, volume cycling, autoregulation). Advanced lifters need high-quality volume, fatigue management, and longer-term structure.

Non-negotiables

- **Progressive overload** over time (more reps, more load, more sets, better technique, or better density).
- **Adequate recovery** (sleep, nutrition, stress management). Training stress plus life stress must fit your recovery budget.
- **Consistency** beats optimisation. A "good plan done for 12 weeks" beats a "perfect plan done for 2 weeks".

Training dose: unified ranges by level

These ranges deliberately **overlap** because individuals vary. You will calibrate using readiness, performance, soreness and sustainability.

Level	Weekly hard sets per muscle	Typical frequency per muscle	Typical intensity bands	Typical effort target
Beginner	~6–12 (commonly 8–12)	2–3x/week	Strength 70–85% 1RM, Hypertrophy 60–75%	~2–3 reps in reserve (RIR) most sets

Level	Weekly hard sets per muscle	Typical frequency per muscle	Typical intensity bands	Typical effort target
Intermediate	~10–18 (commonly 12–16)	2–3x/week	Strength 75–90% 1RM, Hypertrophy 65–80%	~1–2 RIR most sets
Advanced	~14–24 (commonly 16–24)	2–4x/week	Strength 80–95% 1RM (peaks), Hypertrophy 65–85%	0–2 RIR, failure used sparingly

Why overlaps exist: the PDF gives practical set ranges (Beg 8–12, Int 12–16, Adv up to 20–24). The research reports add a broader envelope (for example Int 12–18, Adv 16–24) and introduce MEV–MAV–MRV landmarks. CFOS treats these as compatible: use the overlap as your starting point, then adjust.

The 5 control loops

1. **Training plateau loop:** diagnose technique, recovery, dose, then deload or adjust variables.
2. **Fat loss loop:** every 2 weeks, adjust calories or activity based on trend rate.
3. **Bulk loop:** target slow gain (usually 0.25–0.5% bodyweight per week) and adjust if off target.
4. **Readiness loop:** daily readiness score modulates volume and intensity.
5. **Injury loop:** pain and function drive regressions and return-to-training progression.

Default recommendations that work for most people

- Train each muscle **2x per week**.
- Use **compound lifts** as the base, add isolation to fill gaps.
- Keep most sets **hard but not maximal** (around 1–3 RIR).
- Insert a **deload** when fatigue accumulates or every ~4–6 weeks if training hard and progressing.
- Track **only what you will actually use** to adjust decisions (logbook, bodyweight trend, waist, sleep).

Table of Contents

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1. How to Use CFOS

Step 1: Define your inputs

- **Goal:** strength, hypertrophy, fat loss, recomposition, performance, general health.
- **Training level:** beginner, intermediate, advanced.
- **Constraints:** days per week, equipment, injuries, job stress, sleep, travel.

Step 2: Select your programme skeleton

Pick a split that fits your schedule first. Then make it effective. - 2–3 days: full-body - 4 days: upper/lower - 5–6 days: push/pull/legs or specialised splits

Step 3: Set dose targets and progression rules

- Choose weekly sets and distribute them across your training days.
- Choose rep ranges aligned to the goal.
- Choose a progression model appropriate to your level.

Step 4: Run the feedback loop

Every week you review: training performance, bodyweight trend, waist or measurements, recovery and adherence. Then you adjust one variable at a time.

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2. Foundations of Adaptation and Training Variables

2.1 Principles

- **Overload:** the body adapts to repeated stress. Increase the stimulus gradually.
- **Specificity:** you adapt to what you train. Train the quality you want.
- **Individualisation:** the right dose depends on your history, recovery and constraints.

2.2 The stimulus–recovery–adaptation cycle

Training is only effective if recovery is sufficient. - Stimulus without recovery equals stagnation. - Recovery without stimulus equals maintenance or decline.

2.3 Training variables

From the uploaded PDF, CFOS treats the training stimulus as the interaction of: - **Volume:** hard working sets (and the reps within them) per muscle per week. - **Intensity:** load relative to 1RM or effort rating. - **Frequency:** how often a muscle is trained each week.

Interaction rule: raising one usually requires lowering another.

2.4 Effort targets: RIR and RPE

- **RIR (reps in reserve):** how many more good reps you could do.
- **RPE:** a 1–10 effort rating where 10 is maximal effort.

Practical mapping: - RPE 7 ≈ 3 RIR - RPE 8 ≈ 2 RIR - RPE 9 ≈ 1 RIR - RPE 10 ≈ 0 RIR (true failure)

Unified rule: most productive work happens **near failure**, not necessarily at failure. Most sets should be 1–3 RIR.

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3. Training Level Classification and Decision Tree

3.1 Beginner

Typical signs - 0–12 months of structured training. - Rapid progress session to session. - Technique still developing.

Best focus - Learn movement patterns and consistency. - Simple linear progression.

3.2 Intermediate

Typical signs - 1–4 years training. - Progress slows and stalls appear. - Needs planned variation and fatigue management.

Best focus - Periodisation, volume management, split optimisation.

3.3 Advanced

Typical signs - 4+ years structured training and close to ceiling. - Small gains require precision and recovery.

Best focus - High-quality volume, specialised blocks, autoregulation, planned deloads.

3.4 Decision tree

If you add weight or reps almost every session for 4–8 weeks: you are in beginner territory.

If you need multi-week cycles, deloads, or rep range progression to move: you are intermediate.

If small progress requires planned blocks and you are limited by recovery and fatigue: you are advanced.

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4. Goal Modules

4.1 Strength

Training prescription (from the PDF, unified)

- Base lifts: squats, presses, deadlifts, rows, pull-ups.
- **Sets and reps:** often 3–6 sets of 1–5 reps.
- **Rest:** 2–3 minutes for heavy work.
- **Intensity:** typically 70–90% of 1RM, heavier for peaking.

Progression by level

- **Beginner:** linear progression (add small load or reps each session).
- **Intermediate:** undulating periodisation (rotate rep ranges) or linear waves.
- **Advanced:** block periodisation (hypertrophy block then strength block then peak).

Strength accessory rules

- Accessories exist to address weak links and add hypertrophy with lower systemic cost.
- Keep accessories in higher rep ranges (6–15), push close to failure, manage joint stress.

4.2 Hypertrophy

Dose targets

Evidence summaries and the PDF agree that **weekly sets** are a major driver of hypertrophy. Practical targets: - Beginners: often ~8–12 sets per muscle per week. - Intermediates: often ~12–16 (some sources 12–18). - Advanced: often ~16–24, calibrated by recoverability.

Proximity to failure

- Most sets: **1–3 RIR**.
- Failure sets: optional, used sparingly, usually on isolation or last sets.

Exercise selection and variation

Rules for variation (from the research upgrade): - Keep key exercises stable for a cycle (6–12 weeks) to allow progressive overload. - Rotate 1 variable at a time when progress stalls (exercise, rep range, volume distribution). - Use variation to cover regions of a muscle, but avoid random "muscle confusion".

Frequency and splits

- Train each muscle **at least 2x per week** for most lifters.
- Higher frequency is mainly a tool to distribute volume and improve set quality.

4.3 Fat Loss and Strength Retention

Primary rule

Fat loss requires a calorie deficit. Training preserves strength and muscle.

Rate targets

  • Typical target: **0.5–1.0% bodyweight loss per week**.
  • Leaner or highly trained people often do better with the slower end.

Training during a deficit

  • Keep heavy strength work in the programme.
  • Reduce volume first if recovery is compromised.
  • Add cardio carefully so it does not erase recovery capacity.

4.4 Body Recomposition

When recomp works best

  • Beginners.
  • Detrained returners.
  • Higher body fat individuals.

Recomp rules

  • Calories: maintenance or small deficit.
  • Protein: high end of the target range.
  • Training: progressive overload, usually 2–3x per muscle per week.
  • Tracking: use waist and performance metrics, not only scale weight.

4.5 Conditioning: Zone 2 and Intervals

Zone 2 (from the PDF)

  • Roughly 60–75% of threshold effort.
  • "Can hold a conversation" pace.
  • Improves aerobic base, mitochondrial density and recovery capacity.

Intervals

  • High-intensity intervals improve peak fitness efficiently but cost more recovery.

Interference management

  • If strength or hypertrophy is priority, keep cardio volume modest.
  • Separate hard cardio and hard lifting by several hours where possible.
  • In a deficit, prefer more Zone 2 and steps before adding excessive HIIT.

4.6 Power and Athleticism

Power prescription (from the PDF)

- Olympic lift derivatives and plyometrics.
- Low reps (1–3), longer rest (2–4 minutes).
- Prioritise quality and speed.

When to include

- Athletes.
- Anyone who wants "pop", coordination, and athletic carryover.

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5. Programming Architecture

5.1 Selecting your split

Days per week	Best default	Why
2	Full-body	Minimum effective approach, high consistency
3	Full-body	High frequency per muscle, simple recovery
4	Upper/lower	Easy 2x frequency, strong balance
5–6	PPL or specialised	Best for higher volume distribution

5.2 Volume landmarks: MEV–MAV–MRV

(From the research integration report) - **MEV:** minimum effective volume. - **MAV:** maximum adaptive volume. - **MRV:** maximum recoverable volume.

Practical interpretation: - Start near MEV if you are busy, stressed, older, injured, or inconsistent. - Move toward MAV when stable and progressing. - Approach MRV only in short, planned blocks with excellent recovery.

5.3 Progression models

Linear progression

Best for beginners. - Add load or reps each session. - When stalls occur, reduce load slightly and build back up.

Daily undulating periodisation (DUP)

Best for intermediates. - Example week for a lift: heavy (3–5 reps), medium (6–8), light (10–12).

Block periodisation

Best for advanced and some athletes. - 4–6 weeks hypertrophy emphasis. - 3–4 weeks strength emphasis. - 1–2 weeks peaking or testing.

5.4 Deloading

Unified best practice (PDF plus research reports): - Often every **4–6 weeks** when training hard. - Reduce volume **30–50%**. - Optionally reduce load **10–15%**. - Keep movement patterns.

Deload triggers: - Persistent soreness and fatigue beyond 72 hours. - Performance dropping across multiple sessions. - Effort rising for the same loads.

5.5 Testing and tracking

- Beginners: use rep performance and technique as indicators. Formal 1RM tests are optional.
- Intermediates: test periodically (every 6–12 weeks) or use rep PRs.
- Advanced: plan tests around blocks and deloads.

5.6 Autoregulation

Methods you can use: - **RPE or RIR targets** for main lifts. - **Readiness score** to adjust today's work. - **Velocity loss or bar speed** if you have tools.

Simple rule: adjust volume by up to **±20%** based on readiness and week quality.

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6. Nutrition, Hydration and Body Composition

6.1 Protein

Evidence-based target ranges commonly used in the sources: - Muscle gain or recomposition: **~1.6–2.2 g per kg bodyweight per day**. - Cutting with strength training: consider the higher end.

6.2 Energy balance

- **Lean bulk:** typically +5–10% calories above maintenance.
- **Cut:** typically -10–20% below maintenance.

6.3 Rate targets

- Lean bulk: **+0.25–0.5% bodyweight per week**.
- Aggressive bulk: up to +0.75–1% per week for underweight beginners only.
- Cut: **-0.5–1% per week**.

6.4 Nutrient timing

- Total intake matters most.
- Practical default: get a protein feeding within 1–2 hours after training, especially if you trained fasted.

6.5 Intermittent fasting (IF)

Unified position across sources: - IF is a tool for adherence. - IF is not inherently superior for fat loss when calories and protein are matched.

Best practices for lifters using IF: - Aim for **3–4 protein feedings** in your eating window. - Plan training so performance is not compromised. - If training fasted, prioritise a protein feeding soon after.

6.6 Supplements (evidence-based shortlist)

- Protein powder: a convenience tool.
- Creatine monohydrate: commonly supported for strength and lean mass in resistance training.

6.7 Hydration and electrolytes

From the PDF and integration: - Use urine colour as a quick hydration check. - In heat, long sessions or heavy sweaters, include electrolytes.

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7. Recovery, Fatigue and Lifestyle Integration

7.1 Sleep and circadian rhythm

From the PDF: exercise is a time cue that supports circadian rhythm. Practical sleep rules: - Keep a consistent sleep and wake schedule. - Get morning daylight. - Cool, dark room. - Reduce late caffeine and screens.

7.2 Stress as training load

Training stress plus life stress must fit your recovery capacity. - High stress weeks: reduce volume or intensity. - Use maintenance training during peak life load.

7.3 Active recovery toolbox

- Low intensity movement (walks, easy cycling).
- Mobility work.
- Massage or self-massage as optional support.

7.4 Heat, cold and altitude

From the PDF and prior research context:

Heat - Hydrate with water and electrolytes. - Avoid training at peak heat. - Watch for heat exhaustion signs (dizziness, headache, nausea).

Cold - Warm up thoroughly. - Layer clothing and keep extremities covered.

Cold water immersion and recovery - May reduce soreness and perceived fatigue after hard sessions. - Potential trade-off: frequent cold immersion immediately after hypertrophy work may blunt some growth signalling for some people. If muscle gain is your top priority, use cold exposure strategically rather than after every hypertrophy session.

Sauna and heat therapy - Often used for recovery and wellbeing. - Evidence in the provided research context suggests potential recovery and vascular benefits, but exact protocols vary.

Altitude - Expect reduced performance early. - Reduce intensity and volume initially.

7.5 Minimum recovery standards

- • At least 1–2 rest days per week for most people.
- • Prioritise sleep quantity and quality.
- • Meet protein targets.

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8. Injury Prevention and Return-to-Training

8.1 Injury prevention rules

- • Progress gradually. Avoid sudden spikes in load.
- • Use dynamic warm-ups.
- • Prioritise technique.
- • Balance push and pull and include joint stabilisers.

8.2 Pain decision tree

- • Muscle burn and soreness are normal.
- • Sharp, stabbing, joint pain, instability, numbness, or pain that alters movement is not.
- • Stop and modify if pain is concerning.

8.3 Red flags

Seek medical evaluation if there is: - Sudden severe pain. - Joint locking or giving way. - Numbness or tingling. - Rapid swelling. - Inability to bear weight.

8.4 Return-to-training phases

1. Restore pain-free range of motion.
2. Rebuild baseline strength with light loads.
3. Progressively reload toward previous loads.
4. Return to normal training while keeping preventative work.

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9. Special Populations and Individual Differences

9.1 Women

- • Principles are the same, but cycle symptoms can affect readiness.
- • Auto-regulate based on energy and symptoms.
- • Watch for low energy availability and RED-S signs.

9.2 Older trainees

From the PDF: resistance training is key against sarcopenia. - Start lower volume, add recovery. - Include balance and power safely.

9.3 Youth

 • Resistance training is safe with appropriate supervision, technique and progression.

9.4 High-fatigue jobs and shift workers

 • Treat work fatigue as part of your total load.
 • Use flexible scheduling and minimum effective programmes.

9.5 Time-poor and equipment-limited

 • Full-body 2–3x per week can work well.
 • Prioritise compound movements.

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10. Behaviour, Habits and Adherence

10.1 Habit formation

 • Habits typically take months, not weeks, to stabilise.

10.2 Behavioural tools

 • Habit stacking.
 • Implementation intentions (if-then plans).
 • Self-monitoring with a simple tracker.

10.3 Relapse protocol

 • Do not punish yourself.
 • Restart with reduced volume.
 • Aim for "never miss twice".

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11. Metrics and Feedback Loops

11.1 Weekly review (10 minutes)

 • Bodyweight trend and waist.
 • Training log performance.
 • Sleep and stress notes.
 • Adherence score.

11.2 Diet adjustment algorithm

Every 2 weeks: - If cutting and loss is too slow, reduce calories 5–10% or add activity. - If cutting and loss is too fast, increase calories slightly. - If bulking and gain is too fast, reduce surplus. - If bulking and gain is too slow, increase calories slightly.

11.3 Plateau decision tree

1. Verify adherence and technique.
2. Check recovery.
3. Deload if fatigue is high.
4. Adjust volume or intensity.
5. Swap an exercise or rep scheme if needed.

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12. Myth-Busting FAQ

• Spot reduction is not reliable. Fat loss is systemic.
• Fasted cardio is a preference tool, not a fat loss cheat code.
• The anabolic window is not a 30 minute cliff. Total protein matters most.
• High reps do not "tone" by magic. Toning is muscle plus less fat.
• Sweat is not fat loss.

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13. Templates, Checklists and Example Plans

13.1 Daily readiness score (0–5)

Rate each 0–1: - Sleep quality - Stress level - Muscle soreness - Motivation - Pain or joint niggles

If total ≤2: reduce volume 20% or reduce load 5–10%.

13.2 Habit tracker (weekly)

Day	Training	Protein target	Sleep 7+ hours	Steps or cardio	Notes
Mon					
Tue					
Wed					
Thu					
Fri					
Sat					
Sun					

13.3 Minimum effective 2-day full-body template

Day A - Squat pattern 3x5–8 - Press pattern 3x5–8 - Row or pull-up 3x6–12 - Optional: hinge or core 2–3 sets

Day B - Hinge pattern 3x5–8 - Overhead press 3x5–10 - Vertical pull 3x6–12 - Optional: single-leg or arms 2–3 sets

13.4 Deload template

- Keep the same exercises.
- Cut sets by ~40%.
- Reduce load by ~10–15% if needed.
- Leave 3+ reps in reserve.

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14. References and Appendix

14.1 Source attribution

This playbook merges the following materials into one document: - Uploaded PDF: *The Complete Fitness Operating System* - Chat-provided reports: - *The Complete Fitness Operating System – Upgrade Research Report - In-Depth Research Integration Report: Filling the 20 Gaps in CFOS* (labelled "Scholar AI", updated through 2025) - Prior relevant chat context used for recovery modalities (heat and cold exposure references).

14.2 Named research and consensus sources referenced in the provided materials

(As listed in the source materials. Full bibliographic detail may vary by source.) - Ralston et al. meta-analysis on single vs multiple sets and strength outcomes. - Schoenfeld et al. 2016 and 2017 meta-analyses on training frequency and volume for hypertrophy. - Vieira et al. 2021 meta-analysis on training to failure vs non-failure. - Harries et al. 2015 meta-analysis on linear vs undulating periodisation. - Delphi consensus on deloading practices (2023). - Bartholomew et al. 2008 study on life stress and strength gains. - Jofré-Saldía et al. 2025 (block periodisation outcomes in older women). - Murphy et al. 2025 (DUP in clinical context). - Grammenou and Nulty 2022 (autoregulation and deloading evidence summary). - Bettariga et al. 2025 (dose-response and autoregulated mesocycles). - Craig et al. 2025 meta-analysis on intermittent fasting. - Helms et al. 2019 (protein and dieting practices in resistance training). - Kunutsor et al. 2025 (cold water immersion and health outcomes). - Naseri et al. 2025 (ice bath vs heat vs massage on fatigue). - Wiriawan et al. 2024 (infrared sauna vs traditional sauna vs warm water immersion).

14.3 Glossary

- **Volume:** hard sets per muscle per week.
- **Intensity:** load relative to 1RM or effort.
- **Frequency:** how often a muscle is trained.
- **RIR:** reps in reserve.
- **RPE:** rate of perceived exertion.
- **MEV/MAV/MRV:** minimum effective, maximum adaptive, maximum recoverable volume.

End of document