

Physical Health Reference

This document is not a program and it is not a prescription. It is a reference, a technical companion to Physical Health: Philosophy and Practice, designed to give you the information needed to make your own decisions about how you train, eat, recover, and live.

It begins with a standard. Not the average — the average is unhealthy. A standard worth building toward, grounded in what the research shows genuinely moves the needle on longevity, capability, and quality of life. That standard is expressed across the Triangle of Health, body composition, cardiovascular fitness, and strength, and the Training Pyramid that organises how physical development is structured beneath it.

From there the Reference moves through the practical layers: training, nutrition, sleep, and the extras that support but never replace the fundamentals. Each section provides the technical detail that the philosophy post intentionally leaves out: the numbers, the mechanisms, the markers, and the tools to assess where you are and where to go next.

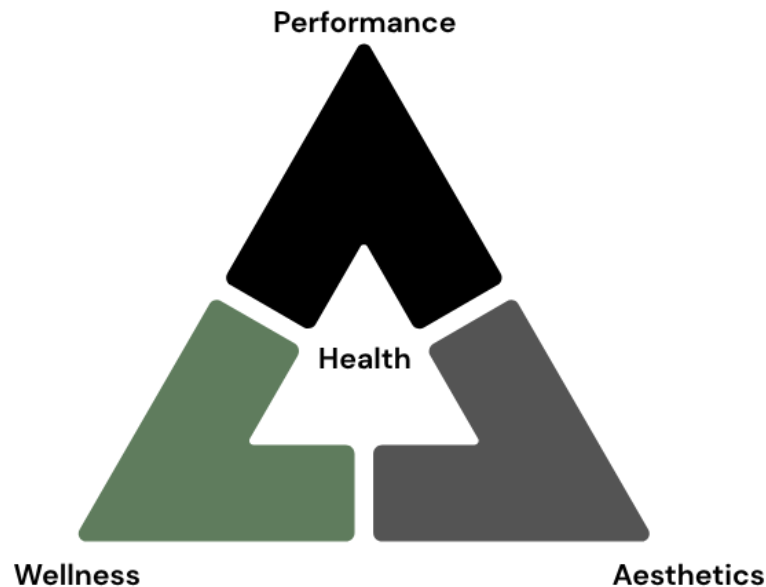
The goal is understanding. Not dependence on a plan, but the knowledge to build and adjust your own. That is what Always Ready actually looks like in practice. Not following a program indefinitely, but developing enough literacy across these domains that the decisions become yours.

The Foundation Beneath the Standard

Genetics set certain boundaries: bone structure, muscle insertions, fat distribution, and hormonal baselines. These are largely fixed within a lifetime. What is not fixed is how those genes are expressed. Epigenetics — the study of how behaviour and environment influence gene expression — shows that lifestyle choices actively shape which genes are switched on or off. Movement, nutrition, sleep, and stress management don't just affect how you feel today. They influence the genetic expressions passed to future generations. The Reference cannot change your genetics. It can give you the tools to make the most of them.

Movement

The Triangle of Health



The Triangle of Health represents the balance between three domains: Performance, Aesthetics, and Wellness. Health sits at the centre as the outcome of maintaining all three. Each domain maps loosely onto the Training Pyramid.

Wellness: mobility and moving freely without pain. It prioritises sustainable lifestyle practices and manageable physical activity, but often underpromotes intensity and genuine physical development.

Aesthetics: muscle development, body composition, and how the body looks. Training here builds a strong physique but without mobility or athletic development, the result is appearance without depth.

Performance: power, speed, agility, and maximal strength. This is where one rep maxes, explosive movements, and sport-specific training live. For most of the general population, time spent here is rare.

The standards table reflects performance and aesthetics markers, but meeting them is what actually drives longevity and health.

These standards are not population averages — they are health targets. The average Western adult is sedentary, metabolically compromised, and carrying excess body fat. Using that as a benchmark is not a standard worth aiming for. These numbers reflect what the research shows to be associated with meaningfully

reduced all-cause mortality, genuine physical capability, and long-term resilience. They are ambitious but achievable.

Most people starting from zero can expect to reach them within 5 years if they are committed and consistent in their training, nutrition and recovery. They cover body composition, cardiovascular fitness, and strength across four movement patterns that reflect real world capability. It is also worth noting that the research does not show a ceiling. A higher VO2 max and greater muscle mass continue to compound longevity and quality of life benefits beyond these numbers. Reach the standard, then keep going. Use it as a compass, not a destination.

Metric	Males	Females
FFMI	21+	18+
Body fat	sub 18%	sub 30%
Mile run	sub 7:00 Ideally 6:00	sub 8:30 Ideally 7:00
Pull-up	10 reps	5 reps
Trap bar deadlift	1.75x BW / 10 reps	0.8x BW / 10 reps
Barbell military press	0.5x BW / 10 reps	0.25x BW / 10 reps
Dumbbell lunge	0.3x BW per hand / 10 reps	0.2x BW per hand / 10 reps

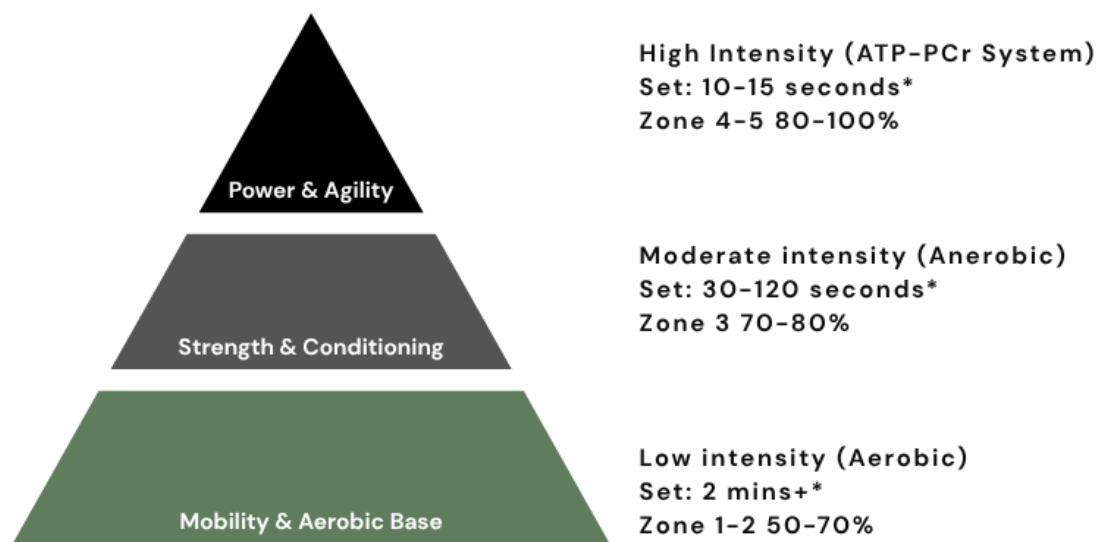
Mobility is not included in the table as it is joint specific and cannot be reduced to a single metric. The standard is the ability to move through a full range of motion with control across all movement patterns under load. Range of motion that disappears when resistance is added is flexibility, not mobility. The movement patterns referenced are those listed in the exercise section, not any specific exercise, but the joint actions themselves. For prehab and mobility work beyond the scope of this Reference, David Grey Rehab is a recommended resource.

The Training Pyramid

The Training Pyramid organises physical training into three levels based on intensity, energy system demand, and strain on the body. For the conceptual framework see Physical Health: Philosophy and Practice.

Heart rate is the more important indicator of intensity and strain. The energy system used is determined more by the duration of the effort than the zone itself. Being in zone 5 for two minutes or more is high level strain regardless of which energy system is dominant. The zones and systems below are generalisations to provide context, not a direct correlation. Use heart rate as the primary guide to intensity and the energy systems as background understanding of what is happening physiologically.

The levels are relative to the individual, not fixed to specific activities. The same activity can sit at different levels for different people depending on their fitness, skill, and capacity. The capacity to sustain high intensity for extended periods is a physiological adaptation built over years: increased mitochondrial density, improved lactate clearance, and a raised output threshold. The willingness to access it consistently is a developed mindset. Both are trained. Neither is innate. A half marathon can be Level 3 for one person and Level 1 for another running the same pace.



Maximum Heart Rate Calculation

All age-based formulas are estimates. A graded exercise test is the only way to determine your true maximum heart rate, however the Tanaka formula $208 - (0.7 \times \text{age})$ is more accurate than the commonly cited $220 - \text{age}$.

For a 30-year-old: $208 - (0.7 \times 30) = \sim 187$ bpm

Level 1 — Low Strain

Energy system: Oxidative (aerobic). Powered primarily by fat oxidation at lower intensities, shifting toward glucose at the upper end of the zone.

Heart rate zone: Zone 1–2. Approximately 50–70% of maximum heart rate.

Conversational pace. Nasal breathing sustainable throughout.

Recovery demand: Low. Can be performed daily without accumulating significant fatigue. Supports rather than competes with higher level training.

Examples: Walking, light jog, light mobility work, yoga, low-load bodyweight flows, isometric holds at submaximal intensity.

Training application: Warm-ups, cooldowns, active recovery sessions, daily movement. Zone 2 is the recommended approach for VO₂ max development. The low recovery cost is an added benefit for resistance training. Forms the base upon which all higher level qualities are expressed.

Level 2 — Moderate Strain

Energy system: Glycolytic (anaerobic). Primary system for efforts lasting roughly 30 seconds to 2 minutes. Transition from the phosphagen system begins around 10 seconds. The two overlap before glycolytic dominance takes over. In strength training, engagement depends on time under tension. Sets approaching 30–40 seconds taken to failure accumulate metabolic stress alongside mechanical tension. Produces lactate as a byproduct, felt as muscular burning and fatigue.

Heart rate zone: Zone 3–4. Approximately 70–85% of maximum heart rate.

Breathing elevated, conversation difficult to sustain.

Recovery demand: Moderate to high. Requires 24–72 hours depending on volume and intensity. The majority of resistance training sits here.

Examples: Hypertrophy and strength training, HIIT, moderate tempo runs

Training application: The backbone of most training programs. Where muscle is built, strength is developed, and conditioning is improved. Strength and hypertrophy are the same continuum. Muscle mass builds force production capacity, neural efficiency determines how much can be expressed. Someone small who lifts relatively heavy has developed efficient motor unit recruitment, not a superior strength capacity. Adding muscle increases that capacity, but the nervous system needs time to map new recruitment patterns across additional tissue. Fewer connections fire more easily, more connections take longer to coordinate. This is why, in my opinion, strength and hypertrophy are best developed together rather than in isolated phases.

Level 3 — High Strain

Energy system: ATP-PCr (phosphagen). Provides immediate energy for maximal efforts lasting up to approximately 10 seconds.

Heart rate zone: Zone 5. Above 85–90% of maximum heart rate. Maximal or near-maximal output. Heart rate at this level signals the overall strain on the system rather than the specific energy system being used. Sustained zone 5 shifts through all energy systems becoming aerobic, but the systemic cost remains high regardless.

Recovery demand: High. CNS fatigue is significant. Full recovery between efforts within a session requires 3–10 minutes. Session recovery 48–72 hours minimum depending on volume and individual capacity.

Examples: Maximal sprints, heavy singles and triples in compound lifts, Olympic lift derivatives, plyometrics, agility drills, advanced calisthenics.

Training application: Reserved for specific adaptations — power, speed, maximal strength. This is not appropriate for beginners without a well-developed Level 1 and 2 base as it has sort of a high reward but high cost to it. Volume should be managed carefully within the context of total training load. Heavy 1RM work in particular carries significant CNS fatigue that is easy to underestimate, as full systemic recovery can take up to 10 days when performed alongside other training.

Hypertrophy and Strength Exercises

The following section covers the practical application of the framework: the movement patterns, exercises and program structures that translate the principles above into actual training. Before the lists, three concepts are worth understanding clearly, as they determine whether any program produces results regardless of how well it is designed.

Mind muscle connection is the deliberate engagement of the target muscle during a movement — feeling it working rather than simply moving the weight from point A to point B. It develops with time and is one of the primary reasons beginners benefit from higher reps and slower tempos. It is also why one well-executed set can outperform three careless ones.

Technical failure is the point at which another rep cannot be completed without a meaningful breakdown in form. Not absolute muscular failure, but the last rep that can be performed with control and intent. Training to or near technical failure is what makes lower volumes effective. A set that stops well short of this point is largely wasted stimulus.

Progressive overload is the mechanism behind all adaptation — the body only develops in response to demands that exceed what it is currently capable of. This means consistently increasing load, reps, sets, tempo, or density over time. Without it, training produces maintenance at best.

The exercises are organised below by movement pattern. However, the tool matters less than the movement. Select based on available equipment, coordination level, and training goal.

Volume:

A combination of compounds and isolations of 4–8 working sets per muscle group per week is sufficient to build both muscle and strength, when performed to or near technical failure. Especially with a full range of motion, mind muscle connection and controlled and engaged tempos. Without those qualities the ranges become largely irrelevant.

Beginners often benefit from potentially exceeding the higher end because their ability to generate true intensity near failure is limited by skill and coordination. More sets at moderate effort provide beginners with the practice needed to improve movement quality and mind muscle connection, though this is also dependent on tempo and reps.

Advanced lifters achieve far greater motor unit recruitment per set, which can reduce the quality of subsequent sets and makes lower volumes more appropriate.

Volume and frequency are related. The same weekly total distributed across more sessions I believe produces better results than concentrating it in fewer. This is one of the primary arguments for full body training over body part splits at moderate volumes. The idea is that a set performed fresher produces more quality than one performed fatigued. It also tends to reduce rest times. Moving between non-competing movement patterns means not waiting for the same muscle to recover before the set.

Tempo:

Rep tempos between 2–8 seconds are all effective at building muscle if taken to technical failure above 5 reps. The key is controlled eccentrics (lengthened position) and engaged concentrics (shortened position), focusing on mind muscle connection. This may look like a 2-second eccentric and 1-second concentric, or any variation that maintains tension and control.

The lengthened position under load is where much of the stimulus is generated. Controlling the eccentric ensures you arrive there with tension rather than momentum, allowing the concentric to be driven with full engagement and force while also improving mobility. Advanced lifters with more skill should be able to efficiently achieve this with a faster tempo. This is why I recommend beginners go slower than most programs suggest, with lighter weight to help develop technique, coordination, and mind muscle connection.

Range of motion influences rep duration. A back squat covers far more range than a short isolation movement, meaning the same tempo guideline produces different time under tension across exercises. A fatiguing rep slowing down significantly is a natural signal that technical failure is approaching, regardless of the load.

Reps:

Any rep range from 5–30 can build muscle when taken close to failure. The 8–12 or 10–15 range is a reliable baseline that is heavy enough to create meaningful tension without requiring excessive warm-up. Beginners have two effective options: a slower controlled tempo in the 8–12 rep range, where the tempo generates sufficient time under tension; or a faster tempo in the 20–30 rep range, where the higher rep count achieves the same. Both develop technique, coordination, and mind muscle connection when taken to technical failure. Advanced lifters can work in lower rep ranges where each rep produces greater intensity. Once 12 or 15 clean reps can be completed without any breakdown in form, increase the load.

Reps are not equal. The quality of each rep matters more than the count. Range of motion, tempo, engagement all contribute and affect the number of reps.

Rest:

Rest times depend on both the movement and the individual, with 2–3 minutes for compounds and 1–2 minutes for isolations working well for most beginners and intermediates training in moderate rep ranges.

The distinction between compound and isolation rest times reflects the difference between neurological and metabolic recovery. Large compound lifts place significant demand on the central nervous system, as coordinating multiple joints and muscle groups under load requires more recovery time than the localised metabolic fatigue of a single joint isolation movement. For technically demanding or heavy compound lifts, squats, deadlifts, overhead press, rest periods may need to extend from 3 to 10 minutes to maintain performance and safety.

Beginners can often stay at the shorter end as their sets are less neurologically demanding, particularly those using machines, where the reduced coordination demand lowers the neural cost of each set. As exercise selection shifts toward free weights and barbells, rest requirements naturally increase. Advanced lifters recruiting greater motor unit activation may require longer rest to fully recover between sets. Shorter rest periods increase metabolic stress and cardiovascular demand, which is useful for conditioning but at the cost of performance in subsequent sets. Rest times should be adjusted based off of the goal of the session, not a fixed rule.

Rest requirements also vary depending on reps in reserve. A set finished short of failure requires less recovery than one taken to technical failure. As total sets accumulate across a session, fatigue compounds and rest between later sets may need to extend beyond the starting ranges to maintain quality.

Compound Movements:

Squat (Quadricep Dominant): A knee dominant pattern involving simultaneous hip and knee flexion and extension. Primary joint actions at the knee and hip.

- Barbell Squat (Back, Front, Zercher, Paused, Box)
- Smith Machine Squat (same as above)
- Belt Squat
- Pendulum Squat
- Hack Squat (Machine)
- Leg Press
- Goblet Squat (Dumbbell, Kettlebell)
- Bulgarian Split Squat (Barbell, Dumbbell)
- Lunges (Barbell, Dumbbell, Walking, Reverse, Lateral)
- Step Ups (Barbell, Dumbbell)
- Pistol Squat
- Sissy Squat
- Reverse Nordics

Hinge (Posterior Chain): A hip dominant pattern involving hip flexion and extension with minimal knee bend. Primary joint action at the hip.

- Deadlift — Barbell (Conventional, Sumo, Deficit, Paused, Snatch Grip)
- Deadlift — Stiff Leg (Barbell, Dumbbell, Belt squat)
- Deadlift — Trap Bar
- Romanian Deadlift (Barbell, Dumbbell, Single-Leg)
- Block Pull
- Good Mornings (Barbell, Banded)
- Hip Thrust (Barbell, Dumbbell, Machine, Single-Leg)
- Glute Bridge (Barbell, Banded, Single-Leg)
- Back Hyperextensions (Weighted, Bodyweight)
- Reverse Hyperextensions
- Kettlebell Swings (Single-Arm, Double)
- Cable Pull Through

- Nordic Hamstring Curl
- Jefferson Curl

Vertical Pull (Back): A pulling pattern involving shoulder adduction and elbow flexion in the vertical plane. Primary joint actions at the shoulder and elbow.

- Pull-Ups (Pronated, Neutral, Supinated/Chin-Up, Weighted, Assisted, Band, Ring, Archer, Commando)
- Lat Pulldown (Wide Grip, Narrow Grip, Single-Arm, Rope)
- Lat Pulldown — Machine/Plate Loaded (Wide Grip, Narrow Grip, Single-Arm)
- Straight-Arm Pulldown
- Pull-Over (Machine, Dumbbell, Cable)

Vertical Push (Shoulders): A pressing pattern involving shoulder flexion and elbow extension in the vertical plane. Primary joint actions at the shoulder and elbow.

- Barbell Overhead Press (Standing, Seated, Paused)
- Dumbbell Overhead Press (Standing, Seated, Single-Arm)
- Smith Machine Overhead Press
- Machine Shoulder Press
- Kettlebell Overhead Press (Single-Arm, Double)
- Push Press (Barbell, Dumbbell)
- Arnold Press
- Landmine Press
- Handstand Push-Ups (Wall Assisted, Freestanding)

Horizontal Pull (Back): A pulling pattern involving shoulder extension and elbow flexion in the horizontal plane. Primary joint actions at the shoulder and elbow.

- Barbell Row (Bent-Over, Pendlay, Seal, Yates)
- Dumbbell Row (Bent-Over, Single-Arm, Chest-Supported)
- Cable Row (Seated, Standing, Single-Arm, Wide Grip, Narrow Grip)
- Machine Row (Plate Loaded, Cable)
- Inverted Row (Bodyweight, Weighted, TRX)
- T-Bar Row
- Meadows Row
- Face Pulls (Cable, Band)
- Banded Pull-Apart

Horizontal Push (Chest): A pressing pattern involving horizontal shoulder adduction and elbow extension. Primary joint actions at the shoulder and elbow.

- Barbell Bench Press (Flat, Incline, Decline, Paused, Close Grip)
- Dumbbell Bench Press (Flat, Incline, Decline, Single-Arm)
- Smith Machine Bench Press (Flat, Incline, Decline)
- Machine Chest Press (Flat, Incline)

- Cable Chest Press (Single-Arm, Both Arms)
- Push-Up (Bodyweight, Weighted, Archer, Wide, Narrow, Decline, Incline)
- Chest Dips (Weighted, Bodyweight)
- Landmine Press

Isolation movements:

Single joint movements that focus on one muscle are optional: **2-4 working sets per muscle per week**

Knee Flexion (Hamstrings): Bending the knee from an extended position.

- Leg Curl (Seated, Lying, Standing, Single-Leg)

Knee Extension (Quadriceps): Straightening the knee from a flexed position.

- Leg Extension (Machine, Single-Leg)

Hip Adduction (Adductors): Bringing the leg toward the midline of the body from the side.

- Adductor Machine (Seated)
- Cable Hip Adduction (Standing, Single-Leg)
- Banded Hip Adduction

Hip Abduction (Upper Glute/Glute Medius): Moving the leg laterally away from the midline of the body.

- Abductor Machine (Seated)
- Cable Hip Abduction (Standing, Single-Leg)
- Banded Lateral Walks

Elbow Flexion (Biceps): Bending the elbow from an extended position.

- Barbell Curl (Standard, EZ-Bar, Reverse, Preacher)
- Dumbbell Curl (Standing, Seated, Incline, Concentration, Spider)
- Cable Curl (Straight Bar, EZ-Bar, Rope, Single-Arm)
- Hammer Curl (Dumbbell, Cable, Cross-Body)
- Kettlebell Curl
- Machine Curl

Elbow Extension (Triceps): Straightening the elbow from a flexed position.

- Tricep Pushdown (Rope, V-Bar, Straight Bar, Single-Arm)
- Overhead Tricep Extension (Barbell, Dumbbell, Cable, Single-Arm)
- Skull Crushers (EZ-Bar, Barbell, Dumbbell)
- JM Press (Smith machine, machine)

- Reverse Tricep Extension (Cable, Barbell)
- Tricep Kickbacks (Dumbbell, Cable)
- Bench Dips (Bench, Chair, Assisted Dip Machine)
- Reverse Bench Dip / Platform Pressdown
- Close Grip Bench Press
- Diamond Push-Up

Shoulder Abduction (Lateral Deltoid): Raising the arm laterally away from the body.

- Lateral Raise (Dumbbell, Cable, Machine, Single-Arm)
- Leaning Lateral Raise (Dumbbell, Cable)
- Upright Row (Barbell, Dumbbell, Cable)

Shoulder Adduction (lats): Bringing the arm toward the body from an abducted position.

- Cable Shoulder Adduction / Kagan Flaps (Single-Arm)
- Band Shoulder Adduction
- Machine Shoulder Adduction

Shoulder Flexion (Anterior Deltoid): Raising the arm forward from a neutral position.

- Front Raise (Dumbbell, Barbell, Cable, Plate, Single-Arm)
- Incline Front Raise (Dumbbell, Cable)

Shoulder Extension (Lats/Posterior Deltoid): Moving the arm backward from a forward or neutral position.

- Cable Rear Delt Kickback (Single-Arm)
- Straight-Arm Kickback (Cable, Band, Dumbbell)
- Dumbbell Shoulder Extension (Incline Bench)

Horizontal Shoulder Abduction (Posterior Deltoid/Rhomboids): Moves the arms away from the midline in the horizontal plane.

- Reverse Pec Deck
- Reverse Fly (Dumbbell, Cable)
- Face Pulls (Cable, Band)
- Banded Pull-Apart
- Bent-Over Cable Reverse Fly

Horizontal Shoulder Adduction (Pectoralis Major): Brings the arms together in front of the body.

- Pec Fly (Dumbbell, Cable, Machine/Pec Deck)
- Cable Crossover (High, Low, Single-Arm)
- Incline Fly (Dumbbell, Cable)
- Decline Fly (Dumbbell, Cable)

Ankle Flexion (Calves): Plantarflexion of the foot, pushing the toes away from the shin.

- Calf Raise (Standing, Seated, Single-Leg)
- Leg Press Calf Raise
- Donkey Calf Raise
- Smith Machine Calf Raise

Ankle Extension (Tibialis Anterior): Dorsiflexion of the foot, pulling the toes toward the shin.

- Tibialis Raise (Seated, Standing)
- Banded Ankle Dorsiflexion
- Tibialis Machine

Wrist Flexion (Forearms): Bending the wrist toward the palm.

- Wrist Curl (Barbell, Dumbbell, Cable)
- Wrist Roller
- Dead Hang (Grip Endurance)
- Farmer Carry (Grip Endurance)

Wrist Extension (Forearms): Extending the wrist away from the palm.

- Reverse Wrist Curl (Barbell, Dumbbell, Cable)
- Wrist Roller
- Reverse Curl (Barbell, Dumbbell, Cable)

Spinal Extension (Lower Back/Erectors): Extending the spine from a flexed position.

- Back Extension (Machine, Bodyweight, Weighted)
- Reverse Hyperextension
- Superman Hold

Hip Extension (Glutes/Hamstrings): Driving the thigh backward from the hip.

- Cable Kickback
- Machine Kickback
- Banded Kickback
- Donkey Kickback

Hip Flexion (Hip Flexors): Bringing the thigh toward the torso.

- Hanging Knee Raise
- Hanging Leg Raise
- Lying Leg Raise
- Cable Hip Flexion
- Machine Hip Flexion

Spinal Flexion (Abs): Shortening the distance between the ribcage and pelvis.

- Crunch (Bodyweight, Weighted, Machine)
- Cable Crunch (Rope, Single-Arm)
- Ab Wheel Rollout
- Decline Sit-Up

Spinal Rotation (Obliques): Rotating the torso around the spinal axis.

- Russian Twist (Bodyweight, Weighted)
- Cable Woodchop (High to Low, Low to High)
- Landmine Rotation
- Pallof Press (Cable, Band)
- Seated Machine Rotation
- Band Rotation

Lateral Spinal Flexion (Obliques): Side bending of the spine.

- Side Bend (Dumbbell, Cable, Barbell, hyperextension)
- Cable Side Bend
- Lateral Trunk Flexion (Machine)

Programs:

The following splits represent the most commonly used training structures. Each is capable of producing results when applied consistently. The best structure is the one that fits your life and the other demands on your time and recovery.

Bro Split

- **Structure:** One muscle group per day (e.g., Chest, Back, Shoulders, Arms, Legs core added throughout the week)
- **Frequency:** Each muscle once per week, up to 5 days

CHEST	LEGS	BACK	SHOULDERS	ARMS
2 X Horizontal Push	2 X Squat	2 X Horizontal Pull	2 X Vertical Push	2 X Elbow Flexion
2 X Horizontal Push	2 X Hinge	2 X Vertical Pull	2 X Vertical Push	2 X Elbow Extension
2 X Horizontal Shoulder Adduction	2 X Squat	2 X Horizontal Pull	2 X Shoulder Flexion	2 × Wrist Flexion*
2 × Lateral Spinal Flexion	2 X Hinge	2 X Vertical Pull	2 X Shoulder Abduction	2 × Wrist Extension*
2 × Hip Flexion	2 X Knee Flexion	2 X Shoulder Adduction	2 X Horizontal Shoulder Abduction	2 × Spinal Flexion
	2 X Knee Extension	2 X Shoulder Extension		2 × Spinal Rotation
	2 X Hip Abduction*	2 × Spinal Extension*		
	2 X Hip Adduction*			
	2 X Hip Extension*			
	2 × Ankle Flexion*			

	2 × Ankle Extension*			
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Push / Pull / Legs (PPL)

- **Structure:**
 - **Push:** Chest, Shoulders, Triceps
 - **Pull:** Back, Biceps
 - **Legs:** Quads, Hamstrings, Glutes, Calves
 - **Core:** Spinal movements added to push/pull
- **Frequency:** 3–6* days/week (reduce volume per day if 6)

Push	Pull	LEGS
2 X Horizontal Push	2 X Horizontal Pull	2 X Squat
2 X Vertical Push	2 X Vertical Pull	2 X Hinge
2 X Horizontal Push	2 X Horizontal Pull	2 X Squat
2 X Vertical Push	2 X Vertical Pull	2 X Hinge
2 X Horizontal Shoulder Adduction	2 X Horizontal Shoulder Abduction	2 X Knee Flexion
2 X Elbow Extension	2 X Elbow Flexion	2 X Knee Extension
2 X Shoulder Abduction	2 X Shoulder Adduction*	2 X Hip Abduction*
2 X Shoulder Flexion	2 X Shoulder Extension	2 X Hip Adduction*
2 × Wrist Extension*	2 × Wrist Flexion*	2 X Hip Extension*
2 × Spinal Flexion	2 × Lateral Spinal Flexion	2 × Ankle Flexion*

2 × Spinal Rotation	2 × Hip Flexion	2 × Ankle Extension*
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Upper / Lower

- **Structure:**
 - **Upper Body:** All upper body muscles
 - **Lower Body:** All lower body muscles (**core/lower back** added to lower)
- **Frequency:** 2–4 days/week

Upper A	Lower A	Upper B	Lower B
2 X Horizontal Pull	2 X Squat	2 X Horizontal Push	2 X Hinge
2 X Horizontal Push	2 X Hinge	2 X Horizontal Pull	2 X Squat
2 X Vertical Pull	2 X Knee Extension	2 X Vertical Push	2 X Knee Flexion
2 X Vertical Push	2 X Hip Adduction	2 X Vertical Pull	2 X Hip Abduction
2 X Horizontal Shoulder Adduction	2 × Spinal Flexion	2 X Horizontal Shoulder Abduction	2 × Lateral Spinal Flexion
2 X Elbow Extension	2 × Spinal Rotation	2 X Elbow Flexion	2 × Hip Flexion
2 X Shoulder Abduction	2 X Ankle Flexion	2 X Shoulder Adduction	2 X Ankle Extension
2 X Shoulder Extension	1 X Spinal Extension*	2 X Shoulder Flexion	1 X Spinal Extension*
2 × Wrist Extension*		2 × Wrist Flexion*	

Anterior / Posterior

- **Structure:**
 - **Anterior:** Quads, chest, front delts, biceps
 - **Posterior:** Glutes, hamstrings, back, rear delts, triceps
- **Frequency:** 2–4 days/week

Anterior A	Posterior A	Anterior B	Posterior B
2 X Squat	2 X Hinge	2 X Vertical Push	2 X Vertical Pull
2 X Horizontal Push	2 X Horizontal Pull	2 X Squat	2 X Hinge
2 X Knee Extension	2 X Knee Flexion	2 X Horizontal Push	2 X Horizontal Pull
2 X Vertical Push	2 X Vertical Pull	2 X Hip Adduction*	2 X Hip Abduction*
2 X Elbow Flexion	2 X Elbow Extension	2 X Shoulder Abduction	2 X Shoulder Adduction
2 X Horizontal Shoulder Adduction	2 X Horizontal Shoulder Abduction	2 × Spinal Flexion	2 × Spinal Extension*
2 × Spinal Rotation	2 × Lateral Spinal Flexion	2 × Hip Flexion	2 × Hip Extension*
2 X Shoulder Flexion	2 X Shoulder Extension	2 × Ankle Flexion*	2 × Ankle Extension*
2 × Wrist Flexion*	2 × Wrist Extension*		

Full Body

- **Structure:** Each session targets the full body
- **Frequency:** 2–4 days/week

FULL BODY 1	FULL BODY 2
2 X Squat	2 X Hinge
2 X Horizontal Pull	2 X Vertical Push
2 X Horizontal Push	2 X Vertical Pull
2 X Hinge	2 X Squat
2 X Vertical Pull	2 X Horizontal Push
2 X Vertical Push	2 X Horizontal Pull
2 X Knee Extension	2 X Knee Flexion
2 X Horizontal Shoulder Abduction	2 X Horizontal Shoulder Adduction
2 X Elbow Extension	2 X Elbow Flexion
2 × Spinal Rotation	2 × Lateral Spinal Flexion
2 × Hip Flexion	2 × Spinal Flexion
2 X Shoulder Abduction	2 X Shoulder Adduction*

2 X Shoulder Extension*	2 X Shoulder Flexion*
2 × Ankle Extension*	2 × Ankle Flexion*

* 6 days can be done but currently don't advise unless lifestyle allows and 2 is missing a few for beginner purposes.

FULL BODY 1	FULL BODY 2	FULL BODY 3	FULL BODY 4
1 X Squat	1 X Hinge	1 X Vertical Push	1 X Horizontal Push
1 X Vertical Pull	1 X Horizontal Pull	1 X Vertical Pull	1 X Horizontal Pull
1 X Vertical Push	1 X Horizontal Push	1 X Squat	1 X Hinge
1 X Hinge	1 X Squat	1 X Horizontal Push	1 X Vertical Push
1 X Horizontal Pull	1 X Vertical Pull	1 X Horizontal Pull	1 X Vertical Pull
1 X Horizontal Push	1 X Vertical Push	1 X Hinge	1 X Squat
1 X Knee Extension	1 X Knee Flexion	1 X Knee Extension	1 X Knee Flexion
1 X Horizontal Shoulder Abduction	1 X Horizontal Shoulder Adduction	1 X Horizontal Shoulder Abduction	1 X Horizontal Shoulder Adduction
1 X Elbow Extension	1 X Elbow Flexion	1 X Elbow Extension	1 X Elbow Flexion
1 X Shoulder Extension*	1 X Shoulder Flexion*	1 X Shoulder Extension*	1 X Shoulder Flexion*
1 X Hip Abduction*	1 X Hip Adduction*	1 X Hip Abduction*	1 X Hip Adduction*
1 X Shoulder Abduction*	1 X Shoulder Adduction*	1 X Shoulder Abduction*	1 X Shoulder Adduction*
1 × Spinal Rotation	1 × Lateral Spinal Flexion	1 × Hip Flexion	1 × Spinal Flexion

1 × Hip Flexion	1 × Spinal Flexion	1 × Spinal Rotation	1 × Lateral Spinal Flexion
1 × Ankle Extension*	1 × Ankle Flexion*	1 × Ankle Extension*	1 × Ankle Flexion*
1 × Wrist Flexion*	1 × Wrist Extension*	1 × Wrist Flexion*	1 × Wrist Extension*
1 × Hip Extension*	1 × Spinal Extension*	1 × Hip Extension*	1 × Spinal Extension*

If running or cycling alongside resistance training, adjust lower body volume accordingly — the legs are already under significant demand from cardio and recovery should be managed across both.

FULL BODY 1	FULL BODY 2	FULL BODY 3	FULL BODY 4	FULL BODY 5	FULL BODY 6
1 X Horizontal Push	1 X Squat	1 X Horizontal pull	1 X Vertical Push	1 X Hinge	1 X Vertical Pull
1 X Horizontal Pull	1 X Horizontal Push	1 X Hinge	1 X Vertical Pull	1 X Horizontal Push	1 X Squat
1 X Vertical Push	1 X Hinge	1 X Vertical Pull	1 X Horizontal Push	1 X Squat	1 X Horizontal pull
1 X Vertical Pull	1 X Vertical Push	1 X Squat	1 X Horizontal Pull	1 X Vertical Push	1 X Hinge
1 X Knee Flexion	1 X Horizontal Shoulder Abduction	1 X Horizontal Shoulder Adduction	1 X Hip Adduction	1 X Horizontal Shoulder Abduction	1 X Horizontal Shoulder Adduction
1 X Knee Extension	1 X Elbow Flexion	1 X Shoulder Flexion	1 X Hip Abduction	1 X Elbow Flexion	1 X Shoulder Flexion
1 X Hip Abduction	1 X Shoulder Extension	1 X Shoulder Abduction	1 X Knee Extension	1 X Shoulder Extension	1 X Shoulder Abduction
1 X Hip Adduction	1 X Shoulder Adduction	1 X Elbow Extension	1 X Knee Flexion	1 X Shoulder Adduction	1 X Elbow Extension

1 X Hip Extension	1 X Spinal Flexion	1 X Hip Flexion	1 X Hip Extension	1 X Spinal Flexion	1 X Hip Flexion
1 X Spinal Extension	1 X Spinal Rotation	1 X Spinal Lateral Flexion	1 X Spinal Extension	1 X Spinal Rotation	1 X Spinal Lateral Flexion
1 X Ankle Flexion	1 X Wrist Flexion	1 X Wrist Extension	1 X Ankle Flexion	1 X Wrist Flexion	1 X Wrist Extension
1 X Ankle Extension			1 X Ankle Extension		

Nutrition

The following section covers the biology of nutrition: macronutrients, micronutrients, digestibility, and gut health. For the principles, philosophy, and personal recommendations behind these see Physical Health: Philosophy and Practice. Most people will not need to read any of this reference material. Use it to find what is relevant to where you are.

Calories, Macros & Micronutrients

A calorie is a unit of energy measured by the heat released when food is burned in a controlled environment. Macronutrients provide this energy in varying amounts: protein and carbohydrates at 4 calories per gram, fats at 9 calories per gram. Micronutrients provide no energy but are essential for the biological processes that determine how well that energy is used.

Macronutrients

Macronutrients are nutrients that the body requires in larger amounts to provide energy and support various bodily functions. The three main macronutrients are proteins, fats, and carbohydrates:

Proteins

Proteins are crucial for building and repairing tissues, enzymes, and hormones. They also provide energy when carbohydrates are scarce. Proteins are broken down into essential and non-essential amino acids.

Essential Amino Acids (Must be obtained from diet)

1. Histidine – Important for growth, tissue repair, and the production of histamine (involved in immune response, digestion, and sleep regulation).
2. Isoleucine – A branched-chain amino acid (BCAA) involved in muscle repair, hemoglobin production, and energy regulation.

3. Leucine – A key BCAA that stimulates muscle protein synthesis, supports tissue repair, and regulates energy metabolism.
4. Lysine – Essential for immune function, collagen formation, and calcium absorption.
5. Methionine – Crucial for metabolism, detoxification, and the production of other amino acids (such as cysteine).
6. Phenylalanine – A precursor to neurotransmitters (dopamine, norepinephrine, epinephrine) that influence mood and cognitive function.
7. Threonine – Supports collagen and elastin production for skin and connective tissue health.
8. Tryptophan – A precursor to serotonin (which affects mood and sleep) and melatonin (which regulates sleep cycles).
9. Valine – A BCAA involved in muscle growth, tissue repair, and energy production.

Non-Essential Amino Acids (Can be synthesized by the body)

10. Alanine – Plays a role in glucose metabolism and nitrogen transport.
11. Asparagine – Supports nervous system function and the synthesis of amino acids and neurotransmitters.
12. Aspartic Acid – Involved in energy production and supports the urea cycle (which removes ammonia from the body).
13. Glutamic Acid – A precursor to glutamate, an important excitatory neurotransmitter involved in brain function.

Conditionally Essential Amino Acids (Needed in higher amounts during stress, illness, or rapid growth)

14. Arginine – Plays a role in nitric oxide production, which regulates blood flow, immune function, and hormone secretion.
15. Cysteine – Crucial for antioxidant production (glutathione) and supports skin, hair, and immune health.
16. Glutamine – Important for gut health, immune function, and muscle recovery.
17. Glycine – Supports collagen production, digestion, and neurotransmitter balance.
18. Proline – Essential for collagen formation and wound healing.

19. Serine – Involved in metabolism, neurotransmitter function, and immune response.
20. Tyrosine – A precursor to dopamine, norepinephrine, epinephrine, and thyroid hormones; it is synthesized from phenylalanine but may become essential under certain conditions.

Sources

- Animal proteins (meat, fish, eggs, dairy) provide all 9 essential amino acids in balanced ratios.
- Plant sources (soy, quinoa, pumpkin seeds) can be complete but often require combining (e.g., beans + rice).
- Conditionally essential aminos are abundant in collagen-rich foods (bone broth, organ meats).

Fats

Fats are essential for energy storage, hormone production, cell membrane integrity, and the absorption of fat-soluble vitamins (A, D, E, and K). Fats are composed of fatty acids, which are classified based on their carbon chain length (short, medium, and long-chain) and their chemical structure (saturated, monounsaturated, polyunsaturated, and trans fats). Each type plays a different role in metabolism, energy production, and overall health. It's important to note that different fatty acids have varying effects on health, depending on their structure, source, and how they are processed by the body.

Classification by Carbon Chain Length:

1. Short-Chain Fatty Acids (SCFAs) (Fewer than 6 Carbon Atoms)

- Primarily produced in the gut through fermentation of fiber by gut bacteria.
- Serve as a primary energy source for colon cells, supporting gut health and inflammation regulation.
- Influence insulin sensitivity and energy balance.
- Example: Butyrate, found in butter and produced in the gut, is a major SCFA.

2. Medium-Chain Fatty Acids (MCFAs) (6–12 Carbon Atoms)

- Rapidly absorbed and do not require bile acids for digestion.
- Directly transported to the liver, where they are converted into ketones (an efficient energy source, especially during low-carb intake).
- Beneficial for brain function, metabolism, and endurance performance.

- Examples: Caprylic acid and lauric acid, found in coconut oil, palm oil, and dairy products.

3. Long-Chain Fatty Acids (LCFAs) (13+ Carbon Atoms)

- The most common type of fatty acid in food.
- Require enzymes and bile acids for digestion and are transported through the lymphatic system before being used for energy or stored as fat.
- Essential for brain function, hormone production, and cell membrane integrity.
- Examples: Palmitic acid, stearic acid, and oleic acid, found in meats, fish, nuts, seeds, and vegetable oils.

Classification by Chemical Structure:

1. Saturated Fatty Acids (SFAs) (no double bonds)

Saturated fats are highly stable and resistant to oxidation, making them a reliable energy source. They play a role in hormone production, immune function, and cell membrane stability. While some studies link excessive intake to cardiovascular concerns, recent research suggests their health impact depends on the overall diet and fat sources. Found in animal fats, dairy, coconut oil, and palm oil.

2. Monounsaturated Fatty Acids (MUFAs) (one double bond)

MUFAs are less stable than saturated fats but still resistant to oxidation. They are well-known for supporting heart health by reducing LDL ("bad" cholesterol) and increasing HDL ("good" cholesterol). They also improve insulin sensitivity and reduce inflammation. Found in olive oil, avocados, nuts, and seeds, with oleic acid being the most abundant.

3. Polyunsaturated Fatty Acids (PUFAs) (multiple double bonds)

PUFAs are the most reactive type of fat, essential for brain function, cell signaling, and inflammation regulation. They are divided into:

- Omega-3 fatty acids (EPA, DHA, ALA): Found in fatty fish, flaxseeds, and walnuts, they reduce inflammation and support heart and brain health.
- Omega-6 fatty acids (linoleic acid): Found in vegetable oils, nuts, and seeds, they support immune function but can promote inflammation if consumed in excess without enough omega-3s.

The ratio of omega-6 to omega-3 matters as much as total intake. Modern diets tend to be heavily skewed toward omega-6 due to the prevalence of seed oils and processed food. Estimates suggest current Western ratios sit somewhere between 15:1 and 20:1. Closer to 1:1 or 4:1 is considered more optimal for inflammation regulation and metabolic health. Prioritising omega-3 rich foods, fatty fish, grass-fed meats, pasture-raised eggs, while minimising refined seed oils is the most practical way to improve the balance.

4. Trans Fats (artificially altered structure)

Artificial trans fats are produced through hydrogenation, making liquid oils solid and shelf-stable. While small amounts occur naturally in dairy and meat, industrial trans fats are harmful, linked to increased heart disease risk, systemic inflammation, and higher LDL cholesterol. Many countries have banned or restricted artificial trans fats in processed foods, margarine, and fried products.

Carbohydrates

Carbohydrates are a quick and accessible energy source, particularly useful for high-intensity activity, and enhance performance and recovery when included strategically. They are not essential in the way proteins and fats are, but depending on their complexity and digestion rate, they serve different physiological roles.

Types of Carbohydrates:

1. Monosaccharides (Single Sugar Molecules)

- Glucose – The body's preferred energy source, stored as glycogen in muscles and the liver.
- Fructose – Found in fruits and honey, metabolized in the liver, and can be converted into glucose or fat when consumed in excess.
- Galactose – Found in dairy, converted into glucose in the liver.

2. Disaccharides (Two Sugar Molecules)

- Sucrose (Glucose + Fructose) – Found in table sugar, fruits, and processed foods.
- Lactose (Glucose + Galactose) – Found in milk and dairy, requiring the enzyme lactase for digestion.
- Maltose (Glucose + Glucose) – Found in malted grains and formed during starch breakdown.

3. Oligosaccharides (Short Chains of Sugars)

- Found in legumes, onions, and garlic.

- Not fully digested in the small intestine but serve as prebiotics, feeding beneficial gut bacteria.

4. Polysaccharides (Complex Carbohydrates)

- Starch – Found in grains, potatoes, and legumes, broken down into glucose for energy.
- Glycogen – The body's stored glucose, primarily in muscles and the liver, used during activity.
- Fiber – Indigestible but crucial for digestion, classified into:
 - Soluble Fiber (e.g., oats, beans, fruits) – Slows glucose absorption, regulates cholesterol.
 - Insoluble Fiber (e.g., whole grains, vegetables) – Promotes digestion and bowel regularity.

Glycemic Index (GI) & Glycemic Load (GL)

The Glycemic Index (GI) ranks carbohydrates based on how quickly they raise blood sugar:

- High GI (70+) – Rapid spikes in blood sugar (e.g., white bread, rice, potatoes, sugary cereals). Frequent intake may contribute to insulin resistance and energy crashes.
- Medium GI (56–69) – Moderate effect (e.g., whole wheat products, basmati rice, sweet potatoes, pineapples).
- Low GI (≤ 55) – Slow, steady glucose release (e.g., vegetables, legumes, whole grains, berries). Promotes stable energy and better metabolic health.

However, GI alone isn't always accurate, as factors like fiber, fat, protein, and food preparation influence digestion.

- Adding fats/proteins to a high-GI meal slows glucose absorption.
- Individual factors (insulin sensitivity, physical activity, gut microbiome) also affect glucose response.

The Glycemic Load (GL) is a more precise measure, factoring in both GI and portion size, giving a better real-world impact on blood sugar.

For a comprehensive glycemic index and glycemic load reference, search "Harvard Health glycemic index food list. [Glycemic index and glycemic load for 100+ foods - Harvard Health](#)

Micronutrients

Micronutrients (vitamins and minerals) are required in small amounts but play essential roles in immune function, energy metabolism, bone health, and cellular processes. Unlike macronutrients they provide no direct energy but determine how effectively the body uses what it gets.

Vitamins

Vitamins are categorized into water-soluble (B-complex and C) and fat-soluble (A, D, E, K). Since the body cannot synthesize most vitamins in sufficient amounts, they must be obtained through diet or supplements.

Fat-Soluble Vitamins (Stored in Fat Tissues)

- Vitamin A – Supports vision, immune function, and skin health.
 - Sources: Carrots, sweet potatoes, spinach, kale, liver, eggs.
- Vitamin D – Regulates calcium absorption, bone health, and immunity.
 - D2 (Plant-based) – Found in fortified foods, mushrooms exposed to UV light.

- D3 (Animal-based) – Synthesized via sunlight and found in fatty fish (salmon, mackerel).
- Vitamin E – A powerful antioxidant that protects cells and supports skin health.
 - Sources: Nuts (almonds, sunflower seeds), spinach, olive oil.
- Vitamin K – Essential for blood clotting and bone health.
 - K1 (Plant-based) – Found in leafy greens, broccoli, Brussels sprouts.
 - K2 (Animal-based) – Found in fermented foods, cheese, liver, natto (fermented soy).

Water-Soluble Vitamins (Not Stored, Must Be Regularly Consumed)

- Vitamin C (Ascorbic Acid) – Acts as an antioxidant, boosts immunity, supports collagen synthesis.
 - Sources: Citrus fruits, strawberries, bell peppers, broccoli.

Vitamin B-Complex – Plays a role in energy metabolism, brain function, and cell health:

- B1 (Thiamine) – Supports nerve function, energy metabolism.
 - Sources: Whole grains, legumes, pork, sunflower seeds.
- B2 (Riboflavin) – Essential for energy production and skin health.
 - Sources: Dairy, lean meats, eggs, leafy greens.
- B3 (Niacin) – Aids metabolism and skin health.
 - Sources: Meat, poultry, fish, legumes, whole grains.
- B5 (Pantothenic Acid) – Supports cell repair and metabolism.
 - Sources: Chicken, whole grains, avocados, mushrooms.
- B6 (Pyridoxine) – Important for amino acid metabolism and brain health.
 - Sources: Poultry, fish, whole grains, bananas.
- B7 (Biotin) – Vital for healthy hair, skin, and nails.
 - Sources: Nuts, eggs, sweet potatoes, broccoli.
- B9 (Folate/Folic Acid) – Supports DNA synthesis and cell division.
 - Sources: Leafy greens, legumes, fortified cereals, oranges.
- B12 (Cobalamin) – Essential for nerve function and red blood cell formation.

- Sources: Animal products: meat, fish, poultry, dairy.

Minerals

Minerals are inorganic elements required for various physiological functions, such as bone formation, nerve transmission, fluid balance, and enzyme activity. They are divided into two categories:

1. **Macrominerals** – Needed in larger amounts
2. **Microminerals (Trace Minerals)** – Needed in smaller amounts

Macrominerals (Major Minerals)

- **Calcium** – Supports bone and teeth health, muscle function, nerve transmission, and blood clotting.
 - Sources: Dairy products, fortified plant-based milk, leafy greens, tofu.
- **Magnesium** – Essential for muscle and nerve function, energy production, and bone health.
 - Sources: Nuts, seeds, whole grains, leafy greens, beans.
- **Phosphorus** – Works with calcium for bone health, energy metabolism, and DNA formation.
 - Sources: Dairy, meat, poultry, fish, whole grains.
- **Potassium** – Regulates fluid balance, nerve signaling, muscle contractions, and heart rhythm.
 - Sources: Bananas, oranges, potatoes, tomatoes, spinach.
- **Sodium** – Important for fluid balance, nerve function, and muscle contractions.
 - Sources: Table salt, processed foods.
- **Sulfur** – Crucial for protein structure and function, including amino acids and vitamins.
 - Sources: Meat, fish, eggs, legumes.
- **Chloride** – Helps maintain fluid balance, nerve function, and pH levels.
 - Sources: Table salt (sodium chloride), certain vegetables.

Microminerals (Trace Minerals)

- **Iron** – Essential for oxygen transport, energy production, and immune function.
 - Sources: Red meat, poultry, fish, legumes, spinach.

- **Zinc** – Supports immune function, wound healing, and DNA synthesis.
 - Sources: Meat, poultry, beans, nuts, whole grains, dairy.
- **Copper** – Aids in iron absorption, collagen synthesis, and antioxidant defense.
 - Sources: Nuts, seeds, organ meats, seafood, whole grains.
- **Selenium** – Functions as an antioxidant, supports thyroid function and immune health.
 - Sources: Brazil nuts, seafood, meat, poultry, dairy.
- **Iodine** – Essential for thyroid hormone production, regulating metabolism.
 - Sources: Iodized salt, seafood, seaweed.
- **Manganese** – Supports bone health, metabolism, and antioxidant defense.
 - Sources: Shellfish, nuts, whole grains, black tea, leafy greens.
- **Chromium** – Enhances insulin action and glucose metabolism.
 - Sources: Whole grains, meat, nuts.
- **Molybdenum** – Aids sulfur metabolism and enzyme function.
 - Sources: Legumes, grains, nuts, liver, milk, leafy greens.
- **Boron** – Supports bone health, brain function, and hormone regulation.
 - Sources: Fruits, vegetables, nuts, legumes.
- **Cobalt** – Helps in the formation of vitamin B12 in the body.
 - Sources: Animal products.
- **Nickel** – Plays a role in enzyme function and metabolism.
 - Sources: Found in small amounts in various foods.
- **Silicon** – Important for bone health and connective tissues.
 - Sources: Whole grains, fruits, vegetables.
- **Vanadium** – Supports glucose metabolism and bone health.
 - Sources: Mushrooms, shellfish, parsley.

Gut & Health issues

Certain food groups that appear throughout the micronutrient section can also trigger digestive distress, sensitivity, or inflammation in some individuals. Food quality, cooking methods, and individual gut bacteria all influence how well a given food is tolerated. The symptoms below are common but not normal. Identifying and removing problematic foods often resolves issues that have been accepted as inevitable.

Symptoms of Food Sensitivities & Poor Digestion

Food intolerances can lead to various symptoms, including:

- Gastrointestinal Issues – Bloating, gas, abdominal pain, cramping, diarrhea, constipation, or general digestive discomfort.
- Nausea or Vomiting – Feeling unwell or experiencing nausea after eating certain foods.
- Fatigue – A sluggish feeling or post-meal tiredness, often linked to poor digestion.

- Headaches or Migraines – Some foods can trigger headaches or migraines in sensitive individuals.
- Skin Reactions – Rashes, hives, eczema, or other skin issues.
- Joint Pain – Some foods may contribute to inflammation and joint discomfort.
- Brain Fog or Cognitive Issues – Difficulty concentrating, memory problems, or a sense of mental sluggishness.
- Mood Changes – Some individuals experience mood swings, irritability, or anxiety after consuming trigger foods.

Common Food Groups That Can Cause Gut Issues

The following food groups are more likely to trigger digestive issues, sensitivities, or inflammation in some individuals:

1. Dairy Products

- Issue: Contains lactose, which requires the enzyme lactase for digestion. Some people lack sufficient lactase, leading to lactose intolerance (bloating, gas, diarrhea).
- Common Sources: Milk, cheese, yogurt, butter, whey protein.

2. Gluten-Containing Grains

- Issue: Gluten, a protein found in wheat, barley, and rye, can trigger gluten sensitivity or celiac disease in some individuals.
- Common Sources: Bread, pasta, cereals, beer, processed foods.

3. Lectins

- Issue: Proteins found in legumes, nightshades, grains, and seeds may interact with the gut lining and cause irritation or inflammation.
- Common Sources: Beans, lentils, peanuts, cashews, tomatoes, eggplants, peppers, unripe fruits.

4. Legumes (Beans & Lentils)

- Issue: Contain oligosaccharides, which are hard to digest and may cause gas, bloating, and discomfort.
- Common Sources: Beans, lentils, chickpeas, soybeans.

5. Cruciferous Vegetables

- Issue: Contain compounds that produce gas, leading to bloating in some individuals.

- Common Sources: Broccoli, cauliflower, cabbage, Brussels sprouts.

6. FODMAP Foods

- Issue: FODMAPs (Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols) are poorly absorbed carbohydrates that can cause digestive distress.
- Common Sources: Onions, garlic, certain fruits (apples, pears, watermelon), artificial sweeteners (sorbitol, xylitol).

7. Processed & Spicy Foods

- Issue: Highly processed foods may contain preservatives, additives, or artificial ingredients that disrupt digestion. Spicy foods can irritate the gut lining.
- Common Sources: Fast food, chips, packaged snacks, heavily spiced meals.

8. Caffeine & Alcohol

- Issue: Can irritate the stomach lining, contribute to acid reflux, and disrupt gut bacteria balance.
- Common Sources: Coffee, tea, soda, energy drinks, beer, wine, liquor.

9. Artificial Sweeteners

- Issue: Some artificial sweeteners can cause bloating, gas, and diarrhea in sensitive individuals.
- Common Sources: Aspartame, sucralose, sorbitol, xylitol (found in sugar-free gum, diet sodas, protein bars).

10. Nightshades

- Issue: Contain solanine and alkaloids, which may trigger inflammation in sensitive individuals.
- Common Sources: Tomatoes, eggplants, peppers, potatoes.

11. Soy Products

- Issue: Contains phytoestrogens, which may affect hormone balance in some people.
- Common Sources: Soy milk, tofu, tempeh, soy protein isolate, edamame.

Individual Tolerance

Not everyone reacts negatively to these food groups. Individual differences in digestion, gut bacteria, and enzyme production play a major role in how food is tolerated. Gut health is also shaped by food quality, cooking methods, overall diet balance, and movement. Fermentation, soaking, and sprouting can significantly reduce the inflammatory or digestive burden of foods that might otherwise cause issues, and consistent exercise supports gut motility and reduces systemic inflammation.

An elimination protocol is the most reliable way to identify food sensitivities. The process involves gradually removing food groups until only the least inflammatory foods remain: pasture-raised and finished meat, wild-caught fish, organs, and roe tend to cause the least digestive distress in most people. Food groups are then reintroduced one at a time, with symptoms monitored at each stage. The full protocol is outlined below. If symptoms are severe or persistent, consult a licensed physician before proceeding.

For a structured elimination protocol, Dr. Will Cole's guidelines are a recommended starting point [Elimination Diet Meal Plan For Health & Healing | Dr. Will Cole](https://drive.google.com/file/d/1s56ZbDs6JeCE7HjfUfLzvJiXigcCgAgL/view?usp=sharing) or <https://drive.google.com/file/d/1s56ZbDs6JeCE7HjfUfLzvJiXigcCgAgL/view?usp=sharing>

There is also a guide by Precision nutrition:

https://drive.google.com/file/d/1TG38Jm5HdO4uYNcvt3cR_M3-0QCUef/view?usp=sharing

Sleep & Recovery

Recovery is the process by which the body adapts, repairs, and prepares for future demand. Sleep is the primary driver. Wellness practices influence the nervous system state that determines how deeply and effectively that recovery occurs, and supplementation addresses specific deficiencies that diet and lifestyle alone may not resolve. For the principles and practical habits around recovery see Physical Health: Philosophy and Practice. The following covers the biological mechanisms of sleep, practices that support the parasympathetic state, and supplements worth considering.

Sleep

Sleep consists of various stages that serve distinct purposes in recovering both the mind and body. Broadly, sleep can be categorised into two main types: Rapid Eye Movement (REM) sleep and Non-Rapid Eye Movement (NREM) sleep.

NREM Sleep

NREM sleep comprises about 75-80% of the sleep cycle and is further divided into three stages:

- **NREM Stage 1:** The light, transitional phase from wakefulness to sleep, lasting only a few minutes. The body starts to relax, and brain activity slows.
- **NREM Stage 2:** Eye movement stops, and brainwaves slow down with brief bursts of rapid activity. Body temperature drops, and heart rate becomes more regular.
- **NREM Stage 3 (Deep Sleep):** Also known as slow-wave sleep, this is the most restorative stage. The body repairs tissues, boosts the immune system, and consolidates memories. It's hard to wake someone during this phase, and they may feel groggy if disturbed.

REM Sleep

REM sleep accounts for about 20-25% of the night. This stage involves high brain activity, most dreaming, and plays a key role in cognitive function, emotional regulation, and memory. Muscles are temporarily paralyzed to prevent acting out dreams.

Sleep Cycles

A sleep cycle is the recurring pattern of NREM and REM sleep stages that repeats multiple times throughout the night. On average, a complete sleep cycle lasts about 90 to 120 minutes. As the night progresses, the proportion of REM sleep within each cycle tends to increase.

A typical sleep cycle follows this pattern:

NREM Stage 1 → NREM Stage 2 → NREM Stage 3 (Deep Sleep) → NREM Stage 2 → REM Sleep

Throughout the night, deep sleep stages tend to decrease, while the duration of REM sleep and lighter NREM stages increases.

Recovery practices

Wellness Practices

Recovery is not passive. Beyond sleep, the body and nervous system benefit from deliberate practices that signal safety, reduce systemic load, and support the shift from sympathetic to parasympathetic. The practices below are not prescriptions — they are tools. Some are physical, some neurological, some psychological. None are essential, but each addresses a specific aspect of recovery that diet, training, and sleep alone may not fully resolve. The value of any practice depends on consistency, context, and whether it genuinely reduces stress rather than adding another obligation to manage.

1. Thermal / Contrast Therapy (*Sauna, cold plunge, ice bath, cryotherapy, infrared, contrast baths, hot/cold showers*)

Heat exposure promotes vasodilation, reduces cortisol, and stimulates heat shock protein production that support cellular repair and stress resilience. Heat does not trigger acute sympathetic arousal, making it genuinely compatible with the parasympathetic state recovery requires. A common mistake is pushing temperature too high under the assumption that more is better. Extreme heat spikes cortisol and places the body under stress — the opposite of the intended effect. A comfortable, elevated temperature that induces a mild sweat and promotes relaxation is the goal.

Ideal timing and use: Post-training or in the evening to support the transition into rest and sleep. Cold exposure and contrast therapy have their place for athletes managing high training loads and acute inflammation but for general population the sympathetic arousal they produce is counterproductive to the recovery state being sought.

2. Meditation / Breathing Practices (*Mindfulness meditation, breathwork, box breathing, physiological sigh, diaphragmatic breathing*)

Deliberate breathing and meditation directly activate the parasympathetic nervous system through the vagus nerve. Slow, controlled breathing reduces cortisol, lowers heart rate, and shifts the body out of sympathetic activation. Consistent practice builds resilience to stress and improves the speed at which the nervous system returns to baseline after activation, making it one of the most transferable recovery tools available. It requires no equipment, no dedicated time block, and no recovery from itself.

Ideal timing and use: Almost always. Between sets to manage arousal and maintain mind muscle connection. After training to accelerate the shift from sympathetic to parasympathetic. After periods of sustained mental or emotional demand. Before sleep to support the transition into deep rest.

3. Clinical Manual Therapies (*Deep tissue massage, dry needling, cupping, scraping, gua sha, trigger point therapy.*)

Manual therapies address soft tissue restriction, muscle tension, and fascial adhesions that accumulate through training, poor posture, or prolonged periods of unaddressed tightness. None of these are gentle practices. They all cause acute discomfort and a temporary tissue stress response. The evidence behind the more aggressive surface trauma modalities, cupping, scraping, gua sha, is largely anecdotal. Repeatedly traumatising tissue without addressing the underlying cause is unlikely to produce lasting results.

Ideal timing and use: Most useful as a targeted intervention for postural correction or injury rehabilitation, not as routine recovery. Anything requiring 24–48 hours to recover from before training again competes with training rather than supporting it.

Most valuable when working with a skilled practitioner toward a specific and measurable goal.

4. Stretching, Mobility and Self Administered Tools (*Static and dynamic stretching, yoga, mobility flows, foam rolling, massage guns, self myofascial release*)

Self administered tools, foam rolling, massage guns, and myofascial release, are among the most practical daily recovery habits available. They carry no significant recovery cost when used appropriately, require no practitioner, and can be incorporated into warm-ups, cooldowns, or rest days without competing with training. Used consistently they address localised tension and support movement quality over time. Dynamic stretching and low impact walking apply here too.

Stretching and mobility work develop genuine range of motion and tissue adaptability, but only when held long enough to produce real tissue change. A 20-second stretch provides temporary relief and works well as a warm-up, but the tissue returns to where it was within hours. Adaptation requires duration, typically 90 seconds to several minutes, or load, and consistency over time.

Ideal timing and use: Dynamic stretching, low impact movement, and self administered tools before training as preparation or on rest days as light recovery work. Static stretching and loaded mobility work for genuine adaptation, treated as a standalone session, not rushed or added as an afterthought to the end of a training session. The more consistently these are applied over time the more lasting the change.

5. Grounding / Nature Exposure (*Earthing, forest bathing, barefoot walking, time in natural environments*)

The human body evolved in natural environments, exposed to natural light cycles, varied terrain, fresh air, and the colours and sounds of the living world. Modern life replaces most of this with artificial light, synthetic materials, and indoor environments. Grounding and nature exposure bring the body back into contact with what it is biologically accustomed to. Whether through barefoot walking, time in forests, or simply being outdoors in natural light, the effect on the nervous system is measurable: reduced cortisol, lower heart rate, improved mood, and a shift toward parasympathetic activation. The mechanisms are less important than the outcome.

Ideal timing and use: Daily where possible. Morning sunlight exposure supports circadian rhythm alignment. Rest days spent outdoors rather than indoors serve both physical and psychological recovery. The dose is low and the cost is nothing.

6. Acupuncture

Acupuncture involves the insertion of fine needles at specific points on the body to influence the flow of energy through meridian pathways — the traditional Chinese medicine framework. From a western physiology perspective, acupuncture stimulates the nervous system, promotes endorphin release, reduces inflammation,

and activates the parasympathetic state. It is less physically intense than dry needling and tends to produce a deeply relaxed response. There are multiple other Chinese and eastern medicines that focus on meridian lines and the body outside of muscle and bone for healing.

Ideal timing and use: As a standalone session, not immediately before or after intense training. Regular sessions every 2–4 weeks for maintenance, or more frequently during periods of high stress or injury.

7. Float Tank / Epsom Salt (*Sensory deprivation, epsom salt baths*)

Epsom salt baths use magnesium sulphate solution to provide transdermal magnesium absorption alongside the relaxation benefits of warm water immersion, supporting muscle recovery, nervous system regulation, and pre-sleep relaxation. Float tanks take this further by removing all external sensory input: sound, light, and gravity. This induces a deep parasympathetic state, allowing the nervous system to fully downregulate in a way that few other practices can replicate.

Ideal timing and use: Epsom salt baths in the evening as a practical daily recovery habit. Float tanks as a standalone session, not immediately post-training when the body is still highly activated.

8. Red Light Therapy / Morning Sun Exposure (*Red light panels, near-infrared therapy, early morning sunlight*)

Red and near-infrared light at specific wavelengths penetrate the skin and stimulate mitochondrial energy production, supporting cellular repair and reducing inflammation. Early morning sunlight naturally delivers these wavelengths, particularly in the first hour after sunrise when the sun is low and blue light is minimal. Dedicated red light therapy panels replicate this effect and allow for more controlled exposure, but for most people deliberate morning sun exposure achieves the same outcome at no cost.

Ideal timing and use: Morning exposure, natural sunlight or red light panels, to support circadian rhythm alignment, mitochondrial function, and mood regulation. Consistency matters more than duration. 10–20 minutes of direct morning sun is a practical daily habit that requires nothing beyond stepping outside.

9. Compression Therapy / Lymphatic Drainage (*Pneumatic compression boots, manual lymphatic drainage*)

Compression therapy uses sequential pneumatic pressure to move fluid through the lymphatic system, reducing swelling, improving circulation, and accelerating the removal of metabolic waste from muscle tissue. Manual lymphatic drainage achieves the same through gentle, rhythmic massage along lymphatic pathways to support the body's natural waste clearance system.

Ideal timing and use: Post-training for acute recovery, particularly useful after high volume training or prolonged standing or sitting. Compression boots work well during rest periods: reading, watching film, or in the evening. Making them one of the more passive and time efficient recovery tools available. Manual lymphatic drainage as a standalone session or alongside other recovery work.

10. Journalling / Psychological Work (*Journalling, therapy, coaching, self reflection*)

Unresolved psychological stress keeps the nervous system in sympathetic activation regardless of how well every other recovery practice is executed. Journalling externalises internal experience, reducing cognitive load, processing emotion, and clarifying thinking. Therapy and coaching provide structured support for identifying and resolving the patterns that generate chronic stress. Of all the recovery practices listed, this is the one most likely to produce the greatest return for most people. Most stress originates in the psychological domain, not the physical.

Ideal timing and use: Journalling in the morning to set intention or in the evening to process the day and reduce pre-sleep cognitive activity. Therapy and coaching at regular intervals depending on individual need. The frequency matters less than the honesty brought to it.

Supplements

Supplements are the final layer, not the foundation. The practices above, alongside consistent training, nutrition, and sleep, address the majority of what the body needs to recover, adapt, and perform. Where gaps remain due to modern food quality, environmental factors, or individual deficiencies that lifestyle alone cannot fully resolve, targeted supplementation provides support. None of the supplements listed are strictly necessary. A full blood panel is the most reliable way to identify where your personal gaps actually are. What follows are the supplements most people in

modern environments are likely to benefit from, alongside the reasoning and dosing behind each.

Supplement	Dose	Notes
Whey Protein Isolate	20–40g per serve	Complete protein, high bioavailability. Convenience tool — whole food first.
Creatine Monohydrate	5g daily	Supports strength, power, recovery. Timing irrelevant.
Magnesium Glycinate	300–400mg daily	Most people deficient. Best taken before bed.
Zinc Glycinate	15–30mg daily	Immune function, hormone production, wound healing.
Vitamin D3	3,000–5,000 IU daily	Take with K2 for optimal calcium metabolism.
Vitamin K2 MK7	180mcg daily	Works alongside D3. MK7 form preferred.
Boron	6–10mg daily	Hormone metabolism, bone health, vitamin D utilisation.
Omega 3	2,000–3,000mg EPA/DHA daily	Prioritise EPA/DHA content over total oil volume.
Beef Liver Capsules	Per manufacturer	Adjust based on dietary organ meat intake. Only food-based supplement listed.
Electrolytes	Situational	Needs vary by sweat rate and environment.

Whey Protein Isolate — A complete protein source with high bioavailability, meaning the body absorbs and utilises a high proportion of what is consumed. Useful when whole food intake is insufficient to meet daily protein targets. Isolate is preferred over concentrate for those with dairy sensitivity as the lactose content is largely removed during processing. A convenience tool rather than a necessity. Whole food protein sources should always take priority.

Creatine Monohydrate — One of the most researched supplements available. Creatine replenishes phosphocreatine stores in muscle tissue, supporting the ATP-PCr energy system and directly relevant to strength, power output, and recovery between high intensity efforts. Timing is largely irrelevant. Consistent daily

intake matters more than when it is taken. Benefits apply equally to men and women despite its common association with male training. Higher doses up to 20g have been explored for cognitive benefits when sleep deprived but 5g is the well-supported dose for training performance.

Magnesium Glycinate — Magnesium is involved in over 300 enzymatic processes including muscle contraction, nerve transmission, energy production, and sleep regulation. Deficiency is common in modern populations due to soil depletion and low dietary intake. Glycinate form is preferred for its superior absorption and minimal gastrointestinal impact compared to other forms. Best taken before bed to support sleep quality and overnight recovery.

Zinc Glycinate — Zinc supports immune function, hormone production, wound healing, and DNA synthesis. Deficiency is associated with reduced testosterone, impaired immune response, and slower recovery. Glycinate form improves absorption and reduces the nausea commonly associated with zinc sulphate and oxide forms. Women toward the lower end of the range, men toward the higher.

Vitamin D3 — Essential for immune function, hormonal health, bone density, and mood regulation. Synthesised through sun exposure but modern indoor lifestyles make deficiency extremely common, particularly in higher latitudes and during winter months. D3 is the more bioavailable form compared to D2. Always taken alongside K2 to ensure calcium is directed to bones rather than soft tissue.

Vitamin K2 MK7 — Works in conjunction with D3 to regulate calcium metabolism, directing calcium to bone and teeth rather than arterial walls and soft tissue. MK7 form has a significantly longer half-life than MK4, providing more sustained activity with a single daily dose. Superior bioavailability makes it the preferred form for supplementation.

Boron — Supports hormone metabolism in both men and women, bone health, and vitamin D utilisation. Increasingly relevant given the decline in soil quality and the reduced boron content of modern food systems. Often overlooked in standard supplementation protocols despite its role in optimising the hormonal and bone benefits of other supplements, particularly D3 and magnesium. Women toward the lower end of the range, men toward the higher.

Omega 3 (EPA and DHA) — EPA and DHA are the active forms of omega-3, found primarily in fatty fish and marine sources. They support cardiovascular health, inflammation regulation, brain function, and joint health. The ratio of omega-6 to omega-3 in modern diets is heavily skewed toward omega-6 due to seed oil prevalence. Supplementing EPA and DHA helps rebalance this. When selecting fish

oil, prioritise EPA and DHA content over total oil volume. Labels often display total fish oil rather than the active fractions, so read carefully.

Electrolytes (Sodium and Potassium) — Relevant primarily for those training at high volumes, in hot environments, or during extended cardio sessions where sweat loss is significant. Most people eating whole foods will meet their electrolyte needs through diet alone and do not require supplementation. Where additional sodium is needed, a small amount of quality salt around training is sufficient. Potassium is rarely a concern for those eating vegetables and whole foods regularly.

Beef Liver Capsules — Desiccated beef liver provides B12, iron, vitamin A, zinc, copper, folate, and CoQ10 in highly bioavailable forms, covering a broad range of micronutrients that isolated supplements address individually. It is the only food-based supplement recommended here. Organ meats, liver in particular, were a dietary staple for most of human history and remain one of the most nutrient dense foods available. The cultural shift away from them in modern diets has contributed significantly to the prevalence of iron deficiency. For those not eating liver regularly, capsules are a practical and accessible alternative. Dose varies by brand and concentration. Follow the manufacturer's recommendation and adjust based on dietary organ meat intake.