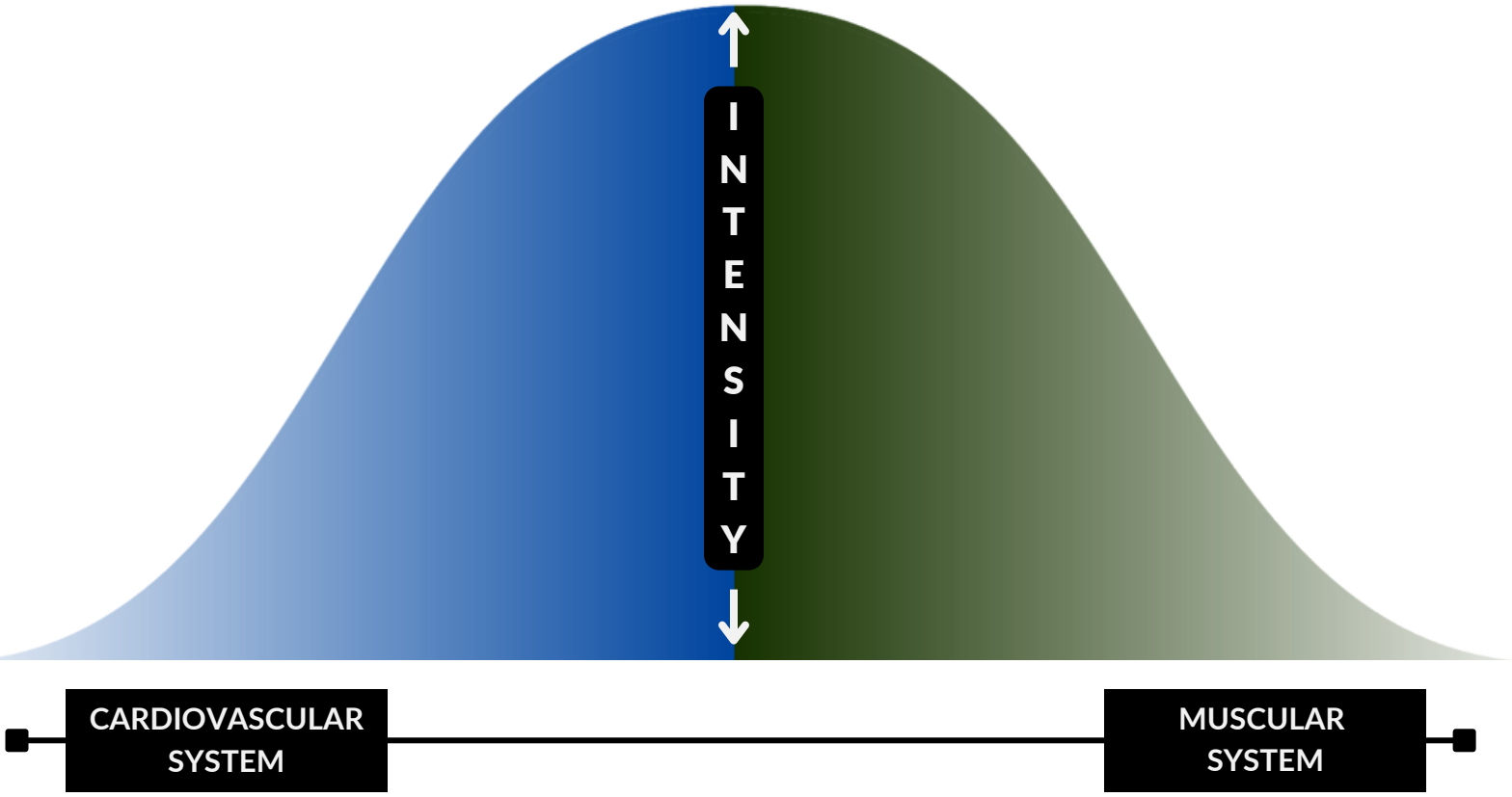
COMPTRAIN GYM TRAINING

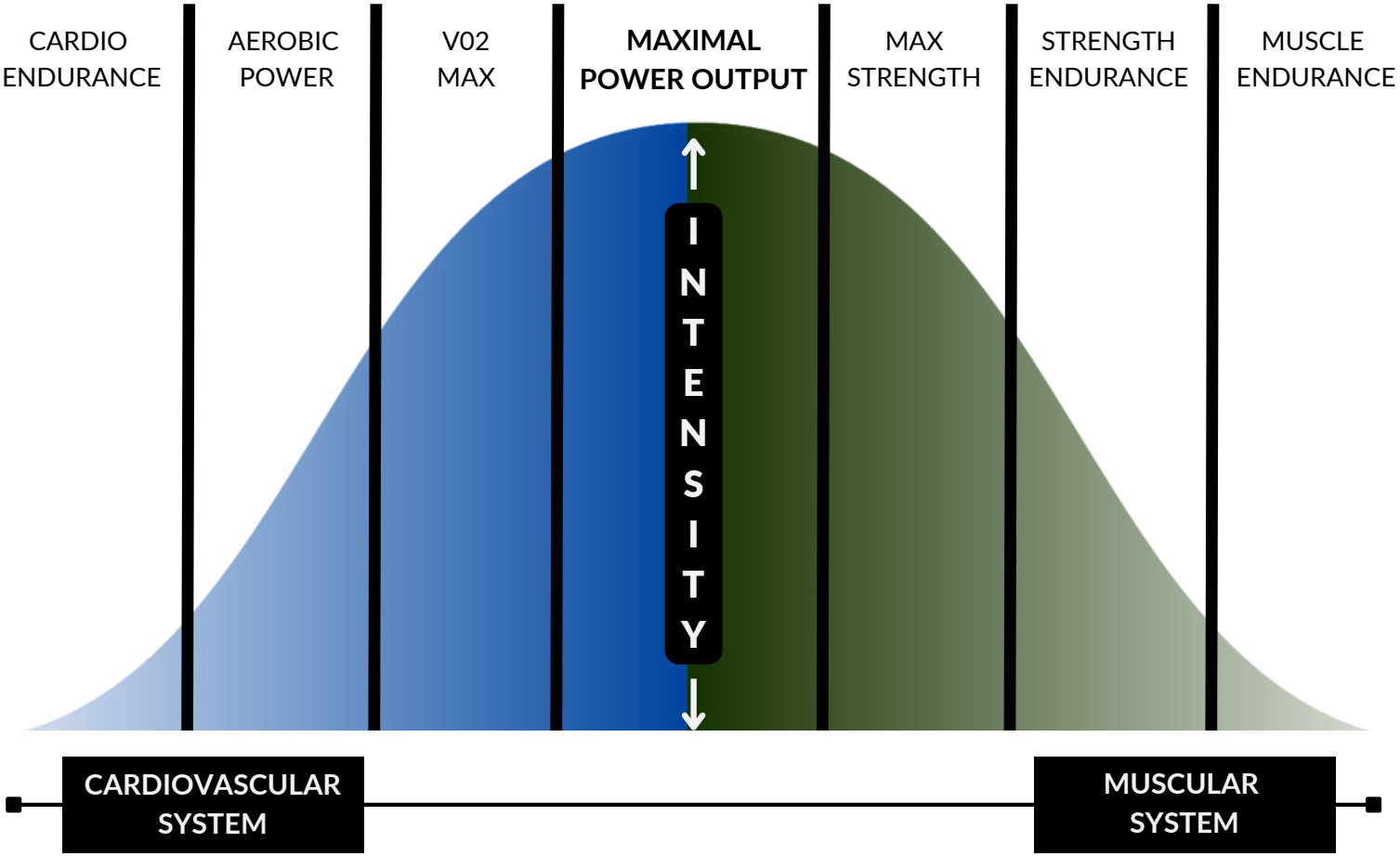
The Framework of Training

The primary drivers of our training are the cardiovascular and the muscular system (there are many others, but these are the primary drivers). These can be trained at low to high intensity, as represented in the graph below. It is vital to understand that intensity is the main driver of adaptation/results, regardless of the pursuit. Meaning if you are learning to type, play guitar, or speak a foreign language - the harder you work, the faster you will see results.



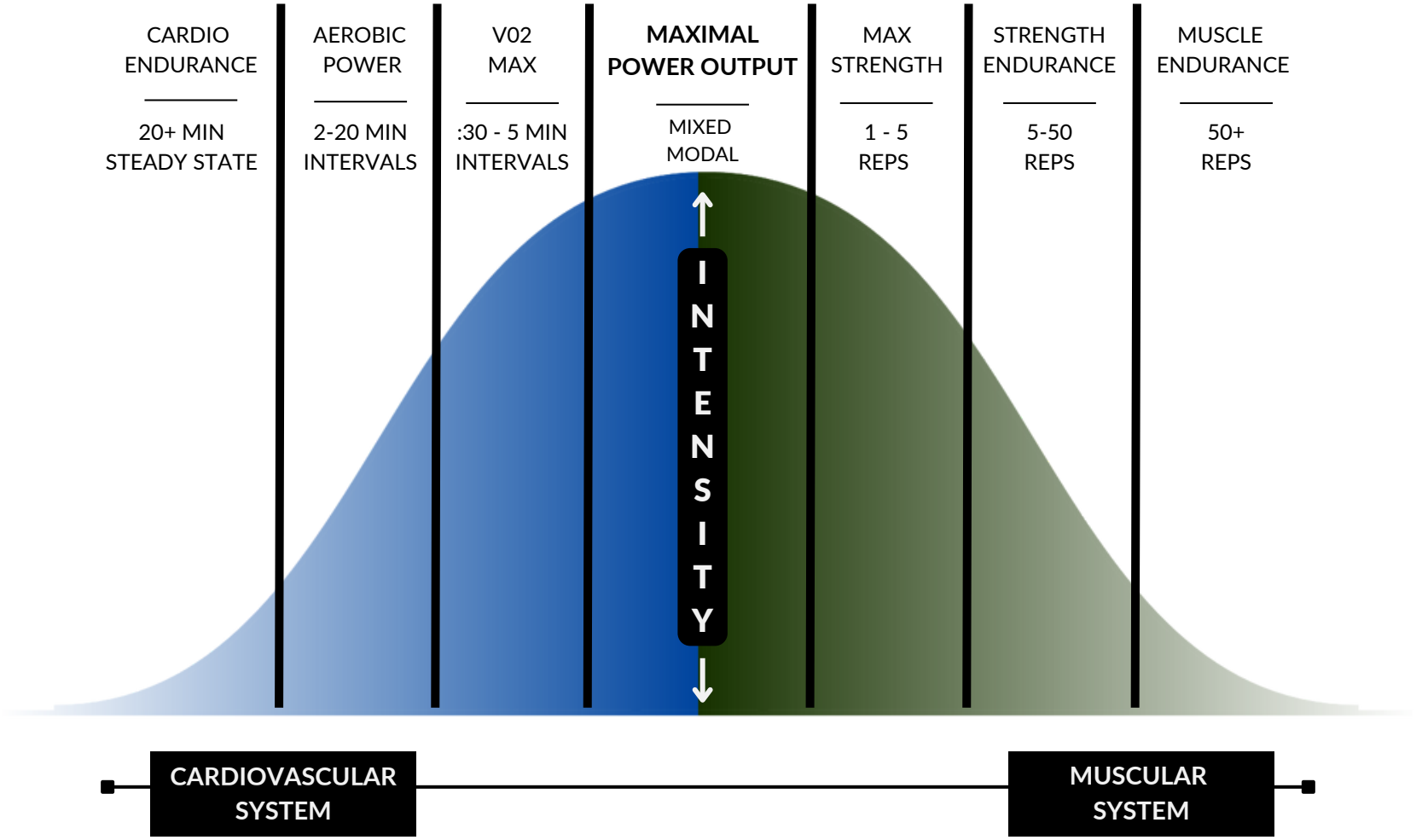
The Framework of Training

We can then break this framework into training domains that will have the greatest carryover to performance outside the gym.



The Framework of Training

The volume on the cardio side is referenced by time, while the muscular system side is determined by reps. Note that “Maximal Power Output” is the blend of both cardio and muscular training, and can vary widely in time and reps.

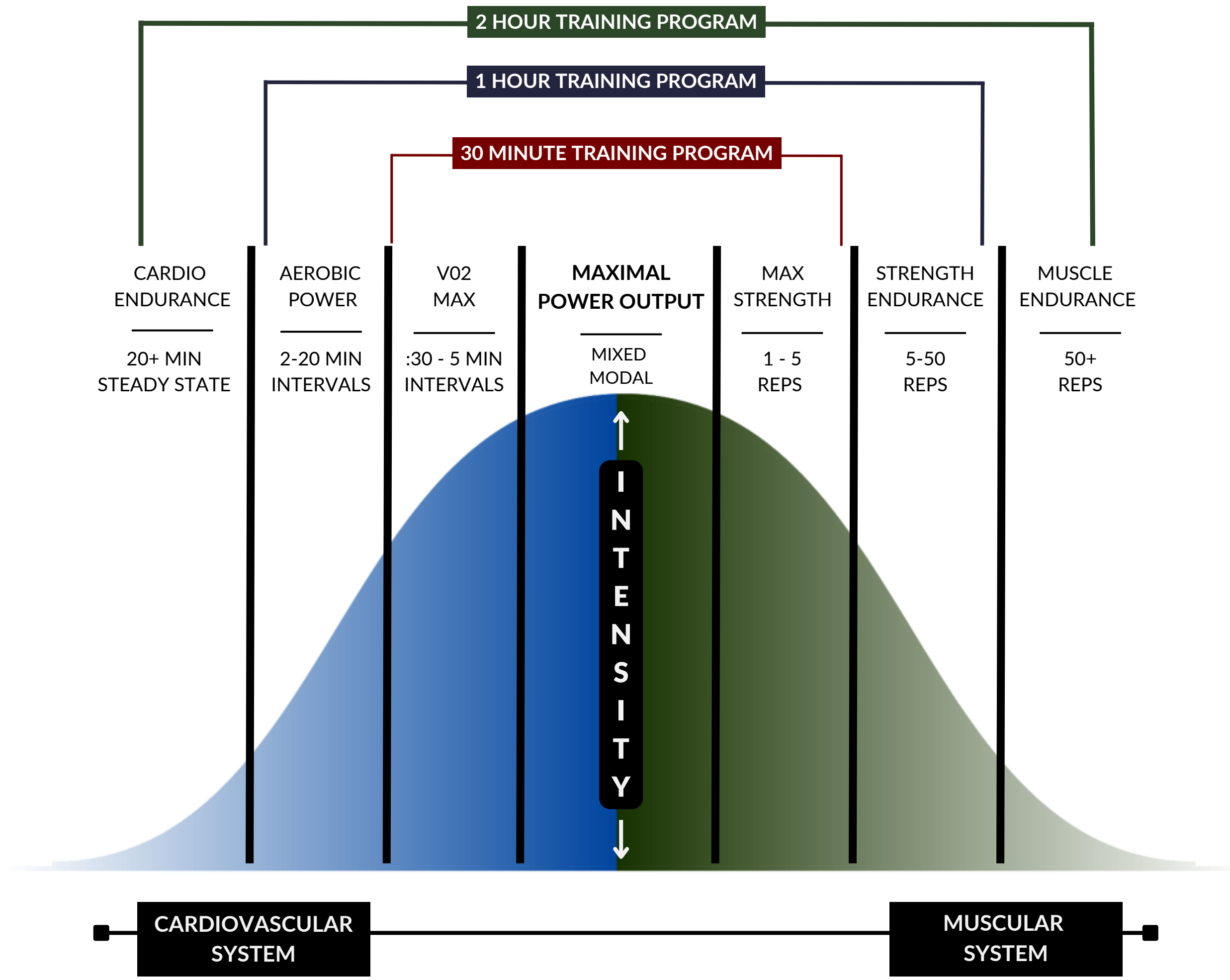


The Framework of Training

Because intensity is the main driver of adaptation/results, our 30 min programming focuses on the most powerful levers for you to train to ensure you are maximizing your time in the gym; Power Output, Max Strength and VO2max Training.

If you have 60 minutes to train on a given day, you have the opportunity to add in some Aerobic Power and/or Strength Endurance work.

If training for 2 hours a day, it obviously doesn't make sense to go "all-out" for that entire time, and that is where Cardio Endurance/Zone 2 and Muscular Endurance can make sense in your training program.



Breaking Down Training Principles

Maximal Power Output

While there are many areas of fitness to address — maximal strength, endurance, strength endurance, relative strength, etc. — your ability to produce power is the most important factor to develop. Having a higher power output means you can complete a greater amount of work in any set period of time.

Maximal power output is the sweet spot of training and maximizes the greatest number of training adaptations. This is done by mixing body weight, cardio, and weightlifting (loads between 30-60% of 1RM) in a single workout with rep schemes that are challenging to accomplish with minimal rest (threshold). When the optimal rep schemes and loading are combined it enables you to operate at threshold (the most number of reps you can do with little or no rest) in a cyclical fashion, allowing you to do more work, effectively generating more power output.

To adapt to this stimulus, your body is forced to improve its strength, endurance (both muscular and cardiovascular), and increase its threshold. Thus, it is the most potent and effective form of training to improve EPP.

Example Training

5 Rounds for time of:

400m Run

21 Wall Balls

12 Pull ups

Breaking Down Training Principles

Maximal Strength % Explosiveness

Top end strength is determined by the amount of external loads you can move through the primary movement patterns (squat, press and pull) and are best developed when performed above 80%.
Power is determined by the speed at which you can move a load, either your own body or external loads, and is best developed through the “fast lifts” (Clean, Jerk and Snatch) performed above 80%.

Example Training
5x3 Back Squats
at 85% of 1RM

Our strength and explosive work is performed in cycles, focusing on 3 lifts; squats, presses, and a pulls. Each cycle is performed for 4 weeks, which is enough time to allow athletes to experience the appropriate lifting frequency and volume to become proficient and see meaningful adaptations. While taking into account the law of accommodation, which says that we need to use a different stimulus on a regular basis to achieve results.

Next is an example of a strength cycle:

All sets are to be performed as “across”, meaning the same weight is used for all five sets. The objective with this linear progression is to increase loads over the four weeks of the cycle, and each time the cycle comes around.

STRENGTH MACRO CYCLE

Micro Cycle 1 | Squat = Front Squat | **Press** = Jerk | **Pull** = Deadlift
Micro Cycle 2 | Squat = Back Squat | **Press** = Strict Press | **Pull** = Snatch
Micro Cycle 3 | Squat = Overhead Squat | **Press** = Bench Press | **Pull** = Clean

WEEK	SETS | REPS	FORMAT	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	3x5	• Begin at 78% • Build each set	SQUAT		PRESS		PULL	
2	3x3	• Begin at 80% • Build each set		SQUAT		PRESS		PULL
3	3x2	• Begin at 82% • Build each set	SQUAT		PRESS		PULL	
4	3x1	• Begin at 85% • Build each set		SQUAT		PRESS		PULL

*Days of the week that the lift falls will vary based on a number of different factors.
Typically the lifting days with alternate M/W/F and T/Th/Sat

STRENGTH CYCLES

Why do we change lifts every month?

The human body is an amazing machine. If we regularly expose ourselves to the same stress daily, the body adapts to be able to handle it. The body can then accommodate the stress we put on ourselves. This is called the Law of Accommodation.

So in order to avoid this, but still spend time learning the skills of each movement, we switch up our big movements monthly. This allows our body to be exposed to a slightly different, but similar, training stress where we can continually see strength gains throughout the year.

The Snatch, Clean, and Clean & Jerk

There is some autonomy when implementing the snatch, the clean, and the clean & jerk cycles into your class programming.

- These movements can be completed as full (squat) variations or as power (receiving above parallel) variations. Athletes that are proficient enough to complete the squat variation at a higher load than the power variation should choose to do so. If athletes face significant barriers of technique and mobility they will likely benefit from choosing the power variation in order to maximize strength training for the cycle. Keep in mind, we want to develop these athlete's deficiencies in technique and mobility as well.
- These sets are also intended to be completed as singles, not touch and go repetitions. The time between repetitions should be no more than 3 breaths or about 5 seconds. Choosing singles over touch and go reps allows us to focus on the mechanics of the lift and keeps the athlete from training poor movement patterns in their first and second pulls. This also allows for maximal power output per set as most athletes will be able to complete these singles at a heavier load than touch and go reps.

Breaking Down Training Principles

Strength Endurance

Strength endurance is the ability to move submaximal loads (50-85% of 1RM) for higher repetitions. This has also been termed “barbell cycling”, but isn’t exclusive to barbell work. This can be programmed as single movements such as 15-12-9-6-3 unbroken Power Snatches at 65% for time, or as multiple movements like the workout “DT”, or even in couplets like 3 rounds for time of: 500m Row + 15 Clean and Jerks at 135/95

Example Training
30 Clean and Jerks for time

Breaking Down Training Principles

Muscular Endurance

While muscular strength is about how *strong* a movement pattern is, muscular endurance is about how *long* your muscles can perform. Your ability to do 200 push ups isn't limited by how strong a muscle is (max strength), how quickly it can contract (explosiveness), or by the cardio respiratory systems ability, but by the stamina of the muscle groups to perform the repetitive movement pattern.

Example Training
200 push ups for time

Breaking Down Training Principles

Aerobic Power

Aerobic Power is the body's ability to utilize oxygen, received from the heart and lungs, to meet the demands of energy (ATP) from working muscles. The more efficient this process becomes, the higher our Aerobic Power.
VO2 max is a common measurement of Aerobic Power, which is defined as the **max**imum amount (**V**olume) of oxygen (**02**) your body can take in and utilize during maximal fitness efforts.
Aerobic Power training incorporates intervals from 1-5 minutes, with 50-100% recovery time, which allows athletes to adapt to faster paces, greater volume, and/or larger loads.
It is important to understand that contrary to popular belief, Aerobic Power training is not exclusive to cardio training - mixed modal training is equally, and often more, effective than traditional running, rowing, biking or other traditionally used “cardio” methods.

Example Training

4 x (4:00 on / 4:00 off)

In each 4 minute window complete:
20 Lateral barbell Burpees
500/450m Row
Max reps of Power Cleans (135/95) in remaining time.

Rest 4 minutes between windows

Breaking Down Training Principles

Lactate Threshold

LT Training is best improved by training with intervals of 4-15 minutes, but could be done with steady state work as an athlete's Lactate Threshold (LT) is usually defined as the intensity level an athlete can sustain for 40-60 minutes. More precisely it is when the lactate volume in the blood reaches 4 mmol/L. Or said another way, at higher intensities of exercise there is no longer enough oxygen present in muscle tissues to produce enough energy (ATP) and the body begins to break down glucose through anaerobic metabolism, producing higher levels of lactate in the blood. As exercise intensities increase, the point at which the body can no longer utilize the accumulation of lactate in the blood to produce more energy is your lactate threshold. When we train near our lactate threshold we allow our body to become more efficient at utilizing lactate to produce more energy, allowing our body to perform harder, and longer.

Building your LT is best achieved with longer, less intense intervals (with shorter rest periods) than Aerobic Power workouts, and/or tempo work .

Example Training

3 Seven minute AMRAP:
7:00 rounds of:
15 Cal Bike
15 Wall balls

Rest 2 minutes
etween AMRAPS

Breaking Down Training Principles

Cardio Respiratory Endurance

Cardiovascular Endurance training is often referred to as Long Slow Distance (LSD) or Zone 2 (Z2) training. It is performed at low intensity - essentially the point where you can still comfortably hold a conversation. This lower intensity allows for great volume of work, which increases capillary and mitochondrial densities in your muscles, increases in the strength and size of your heart muscle, increases blood plasma volume, improves endurance (you can go longer before getting tired), burns fat, and increases your ability to recover.

It is easy to push zone 2 training sessions a little too fast. It is better to be on the too slow side as opposed to too fast. These runs shouldn't lead to high levels of local muscle fatigue and/or soreness, but more of a general overall fatigue. The longer runs should leave you a little sleepy and hungry, but not beat you up.

We choose to do our Cardio Endurance training once per week on Sundays, and we choose running because of the carry over to real life - self-powered, bi-pedal movement across the earth (but you can use a bike or rower if you prefer).

If you have 30 minutes to train you will do a 2-3 mile run. If you have 1-2 hours to train on a Sunday you will climb in distance for three weeks, then reset back one week. This “wave progression” allows you to add volume without physically or psychologically overloading.

Example Training

Run an easy 6 miles

The Framework of Training

Our training is about preparing to overcome “Challenges” of life and sport.
What do you mean by “challenges”?

Challenges vary in kind (mental and physical), intensity, and duration. If it happens on the field of play or in the course of life, you should be ready. Challenges can be known or unknown, voluntary or involuntary: From the pursuit of goals, to handling unexpected hardships.

1. Known and voluntary | **training to become a professional athlete**
2. Voluntary and unknown | **competing in adverse situations**
3. Unknown and involuntary | **personal defense**
4. Known and involuntary | **fighting aging and decrepitude**

Why be ready “at all times”? What about periodizing your training?

To train this way means that you are at 90% of your peak fitness at all times — ready for anything, at any time, and 3 weeks away from a peak if you need it.

This is in stark contrast to periodized training, which seeks to target individual aspects of your training in phases moving from one focus to another, in an effort to peak at a certain date. While this has been the default training for much of the past 50 years, there is a more productive way to train. EPP takes a concurrent approach; focusing on all aspects of your fitness at the same time, so you are ready for any challenge at any time.

The Framework of Training

Training in the gym needs to transfer to the field of sport or life.
How does proper programming ensure this happens?

There are two main considerations to focus on:

- Training to maximize power output, which we have already discussed
- Targeting “Second Wave Adaptations”.

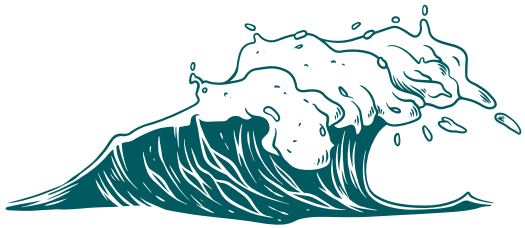
FIRST WAVE ADAPTATION

NUEROLOGICAL
early stage, quick wins

First Wave Adaptations come from learning the fundamental techniques and skills of new movement patterns.

SECOND WAVE ADAPTATION

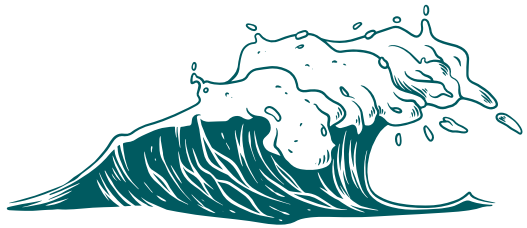
ORGANIC
transferrable to sport and life



Second Wave Adaptations are the gains from training that produce greater strength, speed, stamina, endurance, etc. — these are the adaptations that improve performance outside of the movement itself.

THIRD WAVE ADAPTATION

NUEROLOGICAL
Non-transferrable technique



Third Wave Adaptations are related to technical proficiency on a more granular level, implying full mastery of very specific skills.

The Framework of Training

Why Power Production biased?

Strength and endurance are important factors of physical training (and certain sports obviously favor greater capacities in one over the other), but it is a person's ability to express power over varied time domains that is the greatest determinant of their physical prowess.

If you can do more work in less time, you are fitter.

This makes obvious sense in the context of running. If you can now run a mile in six minutes, when it used to take you seven minutes, you have become fitter. This is the case with all work (lifting, bodyweight, and cardio).

In addition to muscular and cardiovascular adaptations, Power Output biased training produces a hormonal reaction called a *neuroendocrine response*. Unlike isolation training or endurance training, training to increase power output places a beneficial stress on the body (known as *hormesis*) which has a multiplicative effect on the systems of the body beyond muscular and cardiovascular systems (for example, the neurological and hormonal systems) . This substantially increases testosterone, insulin-like growth factor (IGF-1), and human growth hormone (HGH), leading to increased muscle mass, bone density, and peak health and performance.

It has been theorized that the most important adaptations to exercise are a result of this hormonal response. It’s worth stating again that isolation movements are void of this shift — it’s the big lifts, high intensity, high heart rate, minimal rest periods that create this beneficial response.

The Framework of Training

What are the principles of our training methodology?

This training model is comparable, mixed modal, and biased for power output.

- **Comparable:**
  - Workouts are measurable — how far did you go, how much did you move, how long did it take you? What gets measured gets improved. (Note: integrity of movement standards are required to create measurability.)
  - Everyone does the same workout on the same day. The group effect is a powerful performance tool.

- **Mixed Modal:**
  - We aim to improve all aspects of your capacity simultaneously, concurrently building strength, endurance, power, and stamina.
  - Training has a balance across weightlifting, bodyweight and cardio movements. Smaller athletes will see gains, while bigger athletes get leaner.

- **Power Production Biased:**
  - We bias the ability to perform tasks faster and increase potential power output by combining big, multi-joint, complementary movements, both intra workout and intra week.
  - Workouts use intentional movement selection, time domains, rep schemes, and loading that make it easy to work hard without burning out or overtraining.

The Framework of Training

How do you program to incentivize greater power output?
Proper programming strategically integrates the following considerations to maximize potential power output:

1. Complimentary macro movement patterns
2. “Big”, high power, micro movement selection
3. Loading/reps that fall in the “sweet spot”
4. Order/scheme that incentivize high power output

What are “macro movement patterns” and how do they impact power production?
There are 10 primary movement patterns of the body, which if strategically combined, allow for greater power output than random selection, or training muscles in isolation.

The primary movement patterns are:
1. Lower Body Push | **micro example: squat**
2. Lower Body Pull | **micro example: deadlift**
3. Upper Body Push | **micro example: push up**
4. Upper Body Pull | **micro example: pull up**
5. Total Body Push | **micro example: wall ball shot**
6. Total Body Pull | **micro example: rowing**
7. Hip Opening Dominant | **micro example: hang power clean**
8. Hip Closing Dominant | **micro example: toes-to-bar**
9. Ankle Dominant | **micro example: double-under**
10. Carries and Holds | **farmers carry**

Notable exception: *Midline rotations (russian twist). It seems counterintuitive, but the most effective way to train midline rotation is by training midline stability. From there, rotation should be practiced in a sport specific manner; golfers should swing golf clubs, and baseball players should hit baseballs.*

The Framework of Training

Prioritizing and Combining Movements

There are three main considerations for the strategic combination of movements:

1. Complimentary movements within a training piece
    a. Example: combining an upper body pull like pull ups, a lower body push like a front squat, and ankle dominant like running in a workout is a powerful combination.
2. Complementary movements across a training week
    a. Example: if day one is front squats and pull ups, a high power potential workout for day two would be deadlifts and push ups.
3. Complimentary combination of training modalities
    a. Weightlifting, bodyweight, and cardio across workouts and training weeks

Sample week of training using complementary movements:

Day 1 | wall balls + toes to bars + double-unders
Day 2 | row + box jumps + push press
Day 3 | power clean + burpee + run
Day 4 | bike + dumbbell snatch + push up
Day 5 | run + pull ups + front squat

The Framework of Training

What are "big" movements, and why are these prioritized?
Big movements imply moving big weights over big distances using multiple joints: deadlifts, squats, cleans, jerks, presses, snatches, thrusters, lunges, pull ups, push ups, burpees, box jumps, running, rowing, biking.

All of these use large muscle groups across multiple joints to move large loads.

How does movement ordering and loading influence power potential?
Ordering of your training session should go from most neurologically demanding to most energetically demanding; for example, Olympic lifts should precede slow lifts, which should precede metabolic conditioning.

This ensures each piece of your training minimally impacts the next. For example, doing heavy single snatch (high neurological demand) followed by the workout "Murph", is more productive than the opposite order.

Ordering and the scheme of movements inside a workout also influences the power potential. For example; the workout 1200m row + 60 wall balls + 30 pull ups won't produce as much power as the same work done in the reverse order — 30 pull ups + 60 wall balls + 1200m row. With the row as the last movement athletes are incentivized to row at a hard effort, where they're more likely to pace if it's the first movement.

You could further increase the potential power output of this workout by splitting this work into 5 rounds of: 6 pull ups + 12 wall balls + 200m row. You could further increase the power potential by changing the 200m row (which is linear) to a 15 calorie row (which is exponential, meaning you're credited for working harder).

The Framework of Training

Is there a structure to the weekly Conditioning?

Using a weekly conditioning template helps ensure that we're covering all the bases in helping you get the most out of your time in the gym. Couplets and triplets performed at “sweet-spot” weights and rep schemes are a staple of CompTrain’s methods, and will help you develop the highest levels of EPP. While weekly programming will deviate from time to time, the bullet points below are what you'll see most often:

Weekly Conditioning Template:

- 5x Per Week Couplets & Triplets in “sweet spot” loading and reps
- 1-2x Long (20+ minutes)
- 1-2x Intervals
- 1 Benchmark or Repeat WOD
- 1 No Shoulders
- 1+ No Barbell

The Framework of Training

Sample week of programming

MONDAY	TUESDAY	WEDNESDAY	THURSDAY
1. Back Squat 5x3, on the 2 minute 2. 3 RFT: 400m Run 12 Front Squats (155/105) 12 Chest to Bar Pull ups	4 rounds x AMRAP 4: 20 Lateral Barbell Burpees 500/450m Row Max Power Cleans (135/95)	1. Strict Press 5x3, on the 2 minute 2. AMRAP 12: 7 Toes to Bar 5 Dumbbell Thrusters (50/35)'s 30 Double Unders	3 Rounds For time: 20 Deadlifts (185/135) 40 Sit ups 60/40 C2 Bike Calories
FRIDAY	**SATURDAY**	**SUNDAY**	
1.Snatch 5x3, on the 2 minute 2. AMRAP 7: 7 Power Snatches (95/65) 14 Wall Balls (20/14)	3 Rounds For Time: 1,000 Meter Row 50 Burpees 50 Box Jumps (24"/20") 800 Meter Run Time Cap: 45 Minutes	1. EMOM 40 For total completed rounds (30 possible) Min 1 | 30 Double unders Min 2 | 15/12 Calorie row Min 3 | 10 Push ups Min 4 | Rest 2. Run 2-3 miles	**Sample Week of CompTrain Gym programming** ***(30 minute track in individual app)***

EQUIPMENT PROFILE

What equipment do I need in order to follow CompTrain Gym programming?

EQUIPMENT
PULL UP BAR
SQUAT RACK
FLAT BENCH
BARBELL + BUMPER PLATES
JUMP ROPE
CLIMBING ROPE (15')
CONCEPT 2 ROWER
CONCEPT 2 BIKE

EQUIPMENT	VARIANTS
DUMBBELLS	• Men: pair of 70lb and 50lb • Men over 55: pair of 50lb and 35lb • Women: pair of 50lb and 35lb • Women over 55: pair of 35lb and 25lb
KETTLEBELLS	• Men: 70 and 53 • Men over 55: 53 and 35 • Women: 53 and 35 • Women over 55: 35 and 25
MEDICINE BALLS	• Men: one 20 pound ball • Men over 55: one 14 pound ball • Women: one 14 pound ball • Women over 55: one 10 pound ball
PLYO BOXES	• Men: 30 and 24 inches • Men over 55: 24 and 20 inches • Women: 24 and 20 inches • Women over 55: 20 and 14 inches

Note: If you don't have equipment, every workout provides equipment substitution suggestions.

PR ATTEMPTS & BENCHMARKS

What metrics do you use to benchmark performance improvements?

Athletes will be able to measure their performance against their personal records several times each week while still allowing several weeks of training between each benchmark.

STRENGTH TESTS	WORKOUTS		MONOSTRUCTURAL
1/3/5 REP SQUATS	ADDERAL (2X)	GLEN	1 MILE RUN
1/3/5 REP DEADLIFT	WELL ROUNDED	JERRY	
1/3/5 REP BENCH PRESS	BERGERON BEEP TEST (2X)	FAST BREAK	
1/3/5 REP STRICT PRESS	BIG CLEAN COMPLEX (2X)	KELLY	
1/3/5 REP PUSH PRESS	BOAT RACE	MACHO MAN (2X)	2,000M ROW
1/3/5 REP PUSH JERK	CHAD	MIND ERASER	
1/3/5 REP CLEAN	COMPTRAIN STANDARD	MURPH	
1/3/5 REP SNATCH	DT	NANCY	
1/3/5 REP THRUSTER	FORTITUDE (2X)	THE CHIEF	

MONOSTRUCTURAL CONVERSIONS CHART

Use this conversion chart to make needed modifications to workout programming based on equipment access. It's important that your modification options remain consistent.

Machine distances: Women do 90%. World record numbers for women are approximately 90% of men's times.
The 2,000m row record for men is 5:35 (335 seconds), for women it's 6:21 (381) — 88%

TIME DOMAIN	RUN	*SHUTTLE RUN	C2 ROWER METERS | CALORIES		C2 BIKE METERS | CALORIES		ECHO / ASSAULT BIKE METERS | CALORIES		C2 SKI ERG METERS | CALORIES	
0:45-1:00	200	8	250/225	15/12	500/450	15/12	625/560	12/10	200/180	12/10
1:30 - 2:00	400	16	500/450	30/24	1,000/900	30/24	1,250/1,125	25/20	400/360	25/20
3:30 - 4:00	800	32	1,000/900	60/48	2,000/1,800	60/48	2,500/2,250	50/40	800/720	50/40
7:00 - 8:00	1,600	64	2,000/1,800	120/96	4,000/3,600	120/96	5,000/4,500	100/80	1,600/1,440	100/80

*Shuttle runs completed in 25' down and 25' back

*Distances measured in meters