



NEAT & “Aerobic/Cardio” Training

What is the goal of your Non-Resistance Training?



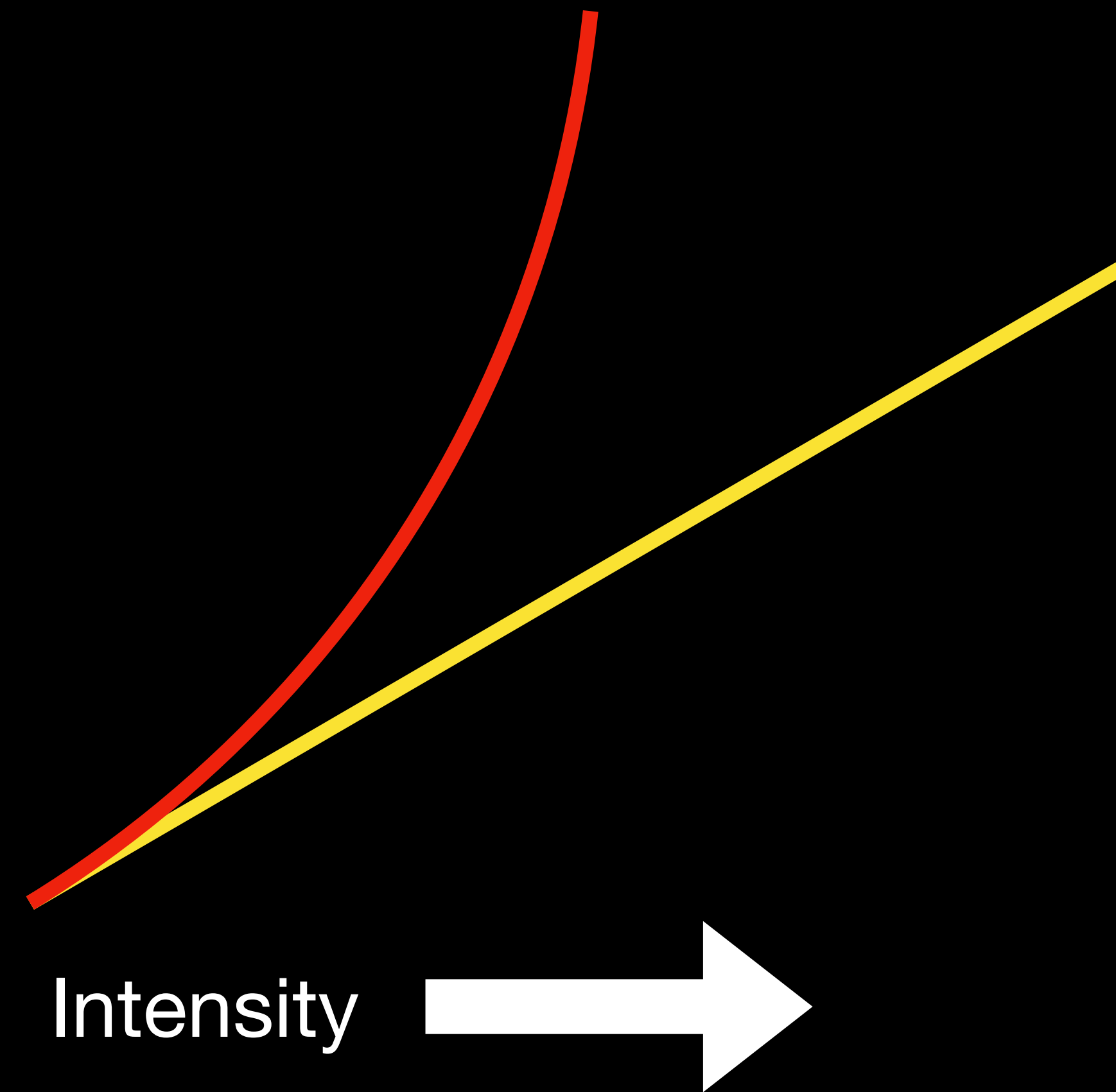
- ▶ Energy Expenditure?
- ▶ Additional Metabolic and/or cardiovascular, cardiorespiratory Stimulus
- ▶ Maintain Metabolic and/or cardiovascular, cardiorespiratory adaptations
- ▶ Conditioning/Performance?
- ▶ Improve Resistance Training performance?
- ▶ Improve and/or potentiate Recovery for Hypertrophy/Body Comp
- ▶ *Make up for time in gym constraints

Non RT - Energy Expenditure

- ▶ Total Volume management is key to limit interference
 - ▶ Interference is minimal at lower volumes
- ▶ Intensity of aerobic scales stimulus and fatigue exponentially.
 - ▶ High intensities can be well over 10x the stimulus/fatigue impact.
 - ▶ Higher intensities increase energy expenditure per unit of time, but limit the amount of time/volume you can spend limiting the total energy expenditure.

Non RT - Energy Expenditure cont

- ▶ So **stimulus/fatigue** have an exponential curve with intensity but a more linear curve for **energy expenditure**.



Non RT - Energy Expenditure cont

- ▶ When time is constrained higher intensities may allow for greater energy expenditure because you won't be limited by fatigue.
- ▶ When fatigue is the constraint, lower intensities may allow for a greater total energy expenditure because you can do more “volume/time”.

Tolerance to Non RT Volume

- ▶ The amount of volume/intensity of aerobic work that can be tolerated without excess fatigue and interference is very individual dependent.
 - ▶ Nutritional Status
 - ▶ Metabolic Health
 - ▶ Current Conditioning Level

Adding Stimulus

- ▶ Is the added stimulus overlapping/synergistic or complimentary to the RT.
 - ▶ What is the systemic demand of the RT session
 - ▶ What is the average HR of the RT session
 - ▶ What about the comparative local metabolic demands?

Adding Stimulus cont

- ▶ **Timing of sessions**
 - ▶ **Back to back vs different times of day vs different days**
 - ▶ **What is the cost benefit ratio of volume of the RT methods vs the non RT methods?**
 - ▶ **Impact, eccentric, local metabolic/local volume, time efficiency.**
- ▶ **Do you need stimulus & energy expenditure, or just stimulus?**

Maintaining Stimulus

- ▶ What is the RT contributing?
 - ▶ Do you need additional or just complimentary stimulus
 - ▶ IE: (Enough local need more systemic/aerobic)

Maintaining Stimulus cont

- ▶ **Timing of sessions**
 - ▶ **Back to back vs different times of day vs different days**
 - ▶ **What is the cost benefit ratio of volume of the RT methods vs the non RT methods?**
 - ▶ **Impact, eccentric, local metabolic/local volume, time efficiency.**
- ▶ **Do you need stimulus & energy expenditure, or just stimulus?**

Conditioning / Performance Goals

- ▶ Do you have priorities sorted between RT and non RT specific goals?
 - ▶ Can't maximize very different performance qualities at the same time, even when it comes to the same category (local vs systemic)
- ▶ Is the RT now supportive or maintenance?

Conditioning / Performance Goals

- ▶ Timing of sessions
 - ▶ Back to back vs different times of day vs different days
 - ▶ What is the cost benefit ratio of volume of the RT methods vs the non RT methods?
 - ▶ Impact, eccentric, local metabolic/local volume, time efficiency.
- ▶ What performance carry over exist between training methods?
- ▶ Is there a skill/task portion of the performance goal, or is it non specific conditioning

Do you need to do a metabolic program for endurance athletes?

- ▶ Just because the stimulus happens outside the weight room doesn't mean we look at it any differently.
- ▶ What stimuli are they getting
- ▶ What fatigue are they getting
- ▶ Where

Performance / Conditioning Metrics

- ▶ Average HR
- ▶ Max HR
- ▶ HR Recovery
- ▶ Time, distance, output
- ▶ V02

Heart Rate Metrics

- ▶ Average HR is a good all in one measurement, but it offers the least specificity.
- ▶ Max HR has several variables, 1 being are you currently limited by local factors
 - ▶ (legs give out before you reach a certain HR)
 - ▶ However it can also be a sign of max cardio performance, think of this like the “local” metric for HR.
 - ▶ When your HR max decreases for the same activity - stroke volume has likely improved (think coordination)
 - ▶ When you can achieve a higher max HR, contractile force and Rhythm have improved and/or local limitations have decreased
- ▶ HR Recovery is going to incorporate cardio respiratory and vascular variables outside of the actual heart muscular performance.
 - ▶ The better gas exchange and delivery of nutrients/clearance of metabolites, the faster your HR comes down relative to cardiac output. This is why breathing mechanics and speed can bring your HR down faster.

Time, Distance, Output Metrics

- ▶ Tangible Measures, but are the result of overlapping variables.
 - ▶ The shorter more high intensity work, the more local adaptations can influence performance.
 - ▶ Changes in nutritional status, pre-fatigue, bodyweight, and even environmental factors (temperature, wind, surface, etc) can influence the results as well.

VO2

- ▶ Great metric for looking at the whole system, but also hard to measure.
 - ▶ Testing measures are not calibrated well for higher BMI or bodybuilder body types
 - ▶ The test itself is a significant time/fatigue commitment.
- ▶ Algorithmic estimations from wearables have limited accuracy but may be good for looking at trends.
 - ▶ Still requires some specific activities done consistently to evaluate.

Client trying to improve $\dot{V}O_2$ max and failing?

- ▶ Is their aerobic base too low to support more intense aerobic and metabolic work?
- ▶ Is intensity constraining your volume you too much?
- ▶ Compounding variables
 - ▶ Changes in programming variables, local conditioning, carryover fatigue, bodyweight, PEDs, Nutrition, Timing and conditions of testing.
- ▶ Are they just to fucking fat?
 - ▶ Bodyweight is a large factor in $\dot{V}O_2$ calculations as well as Oxygen utilization. It takes more gas to move a bigger ass.

Aerobic Training to Potentiate/Maximize RT

- ▶ Increased Recovery Between Sets
 - ▶ More significant for non overlapping
- ▶ Increased Recovery Between Sessions
- ▶ Greater tolerance to energy deficit
- ▶ Greater tolerance to high energy flux
- ▶ Greater tolerance to fasted periods

From a Mitochondrial Lens

- ▶ Better mitochondrial quality and quantity is more than just better fuel economy.
- ▶ Influences inflammatory and metabolic factors
- ▶ Even impacts hypertrophy through
 - ▶ Performance
 - ▶ Recovery
 - ▶ Signaling, (even myostatin)

Research Vs Reality

- ▶ CICO isn't completely accurate, but its a large enough factor to offset most everything else when we look at averages in controlled conditions.
 - ▶ Very few “controls” exist in the real world, and the average doesn't mean anything to an individual.

▶

CV, CR, and Mitochondrial adaptations can massively change the experience

- ▶ **How do you feel on x amount of calories, x amount of volume, frequency etc**
 - ▶ **This impacts performance, compliance, consistency, and duration of programming**
 - ▶ **“If it was easy, everyone would be jacked and fit”**
 - ▶ **A good coach makes it as easy as possible for someone to do the challenging things needed to reach their goals. Most coaches deliver a list of task, and leave their client to face unnecessary challenges that often times keep them from reaching their goals.**

Starting and Progressing Aerobic Training

- ▶ Poor aerobic conditioning limits performance in longer work periods and recover between periods.
- ▶ Poor local conditioning limits performance per work period, and can make it hard to get an aerobic stimulus.

Starting and Progressing Aerobic Training

- ▶ Bigger stronger muscles create more local fatigue, but also require a big aerobic base to refuel them. The work to rest ratio for aerobic or systemic training needs to be calibrated to the size, strength, and local conditioning of the muscle.
- ▶ Small weak and neurologically inefficient muscles can struggle to create enough of a systemic demand to improve aerobic conditioning.

Starting and Progressing Aerobic Training

- ▶ On paper, bigger stronger people need a more modest aerobic program, and smaller weaker people need a more aggressive aerobic program.
- ▶ Both can be locally “limited”, but via opposite mechanisms.

Starting and Progressing Aerobic Training

- ▶ Build a Base First
 - ▶ Understand that you may run into different limiting factors as you progress.
 - ▶ Try not to choose an approach where one limitation doesn't severely limit your progress in other areas.
 - ▶ This includes working around time and fatigue constraints.

Starting and Progressing Aerobic Training

- ▶ Intensity and volume are relative
 - ▶ What is a moderate today, may be low later.
- ▶ The amount of potential limiters increases with intensity.
- ▶ If you try to use too much intensity too early, you actually get less stimulus.
 - ▶ It's the equivalent of a beginner trying to do max intensity sets of 1-3 when they first start training.

Starting and Progressing Aerobic Training

- ▶ LISS - Zone 1-low 2 sustained
- ▶ MISS - Zone high 1-2 sustained
- ▶ MIIT - Zone 3-4 peaks (Zone 2-3 average)
- ▶ HIIT - Zone 4-5 peaks (True HIIT may have an average lower HR than MIIT despite higher peaks because of the greater recovery period)

Relative HR Zones

- ▶ The HR for a given “effort” can vary drastically depending on the individual limiter.
- ▶ Local limitations = lower HR
- ▶ Higher HR = poor CV/CR low stroke volume, poor coordination, poor respiratory mechanics/O₂ exchange
- ▶ Poor HR Recovery = Also could be poor stroke volume or respiratory mechanics/flow

Going after the specific aerobic limitations

- ▶ Local limitations = HITT or local metabolic training
 - ▶ Cellular health protocols - mitochondrial support
- ▶ Higher HR = Volume of moderate intensity over HITT, if combined with high blood pressure, consider exercise selection as well.
- ▶ Poor HR Recovery = If not paired with higher HR and/or high BP, then use more HITT periods.

Mix to get the desired outcome

- ▶ LISS - For more expenditure with less fatigue
- ▶ MIIT - For more stimulus and expenditure in a little less time. HIIT type benefits for the untrained.
- ▶ MISS - Keeps building the base and good for expenditure when time is more constrained
- ▶ HIIT - Fastest way to get stimulus when you can take advantage, extremely time efficient, but needs the most volume and time considerations.

Aerobic work

- ▶ Does it need to add to the training stimulus?
- ▶ Does it need to avoid interfering with the training stimulus?
- ▶ Do you have time constraints and energy expenditure goals that conflict?
- ▶ Do you have access to methods that will decrease interference with training?
- ▶ Are you adding or maintaining aerobic adaptations or just going for energy expenditure?

Coming off the couch protocol part 1

- ▶ LISS and steps to establish an aerobic base.
 - ▶ Faux(fake) HIIT for those with time constraints.
 - ▶ Warm up - FH - +LISS unit volume met
- ▶ Systemic formatted resistance training
 - ▶ Don't overdue the density at first
 - ▶ Progress intensity first (high reps to moderate reps)

Coming off the couch protocol part 2

- ▶ Progress to MISS or MIIT+LISS while keeping steps for volume
- ▶ Keep using the systemic format
 - ▶ Maintain moderate density so that performance improves with conditioning improvements.
- ▶ Swap some volume for more hypertrophic exercise

Coming off the couch protocol part 3

- ▶ Incorporate some low volume HITT at the beginning of MISS/LISS
- ▶ Keep using the systemic format
 - ▶ Progress in effort and volume where it makes sense
 - ▶ Exercise selection is mainly hypertrophy aligned

Coming off the couch protocol part 4

- ▶ Regress to MISS, MIIT
- ▶ Local Metabolic phase
 - ▶ IRMS, Drop sets, super sets, etc for time efficiency and effort maxing.
 - ▶ Consider dropping set volume for the first week or two, then progressing.

Coming off the couch protocol part 5

- ▶ Lots of options at this point because the base adaptations should be established.
- ▶ Could return to systemic format for time maxing body composition
- ▶ Could do a hypertrophy or strength phase
- ▶ Aerobic routine will vary based on goal and time/volume constraints.

Non Metabolic Meat Head

- ▶ Low rep strength trains and no cardio
- ▶ Start by increasing local metabolic through resistance training.
- ▶ MISS and or MIIT + Liss if additional volume is needed.
- ▶ Make adjustments based on BP and specific HR variables

Non Metabolic Meat Head part 2

- ▶ Why not start with systemic?
 - ▶ Local will be somewhat systemic for them, but local will limit them for an all out systemic program. Take advantage of the muscle tissue and strength adaption.
 - ▶ Once they have a better aerobic base, systemic programs may be more productive, but if you are too out of shape relative to your strength, systemic programs can be very inefficient in terms of the resistance training benefits because performance will be so poor.

Super Bro - King of the PUMP

- ▶ Lives off local metabolic training for the pump.
- ▶ Start with a systemic program, can do a hybrid with some local metabolic to suit preference,
- ▶ Start with MISS and/or MIIT + LISS for additional volume. Can progress to HIIT + MISS for time efficiency relatively fast when you switch out of systemic as long as it's away from overlapping training.

Super Bro - King of the PUMP part 2

- ▶ Remember to accommodate the systemic program to the muscle size/strength
- ▶ Beware of local metabolic overlaps of the cardio methods with the resistance training.
- ▶ The more resistance training volume the less interval work.

Forest “Pump”

- ▶ High intensity resistance training combined with LISS
- ▶ Choose either local metabolic training or an interval based aerobic method (not both).

Stuck in the “zone”

- ▶ Does high volume zone 2 work while binging podcast.
- ▶ HIIT or VO2 Max protocols + strength program, or local metabolic training and keep the zone work.

High FLUXING for Fat LOSS

- ▶ Trying to accumulate as much of an energy deficit as possible.
- ▶ Start by filling volume with lower intensity work, then progress in intensity/effort.
- ▶ Look for continued progressions or maintenance of HR/CV/CR variables
 - ▶ The deficit will mask performance and limit progression, but remember performance is not the goal, fat loss is.
 - ▶ You just want to avoid excessive mal adaption (most variables should plateau and maintain). Positive movement with short de-loads.