

A Guide to Warm-Ups, Cool Downs, & Recovery

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Warming Up & Cooling Down

A warm-up is all about preparing the body and mind to perform at the highest level. It's about setting the stage. In this guide, I'll break down the variety of ways to set the stage from a physical and mental standpoint. This guide will cover everything you need to know about warming up and cooling down. Consider this a cheat sheet guide, intended to inform, but also guide you on what matters for your athletes. There is no one right way to warm-up. It's about figuring out what each athlete needs and then pulling out the tools to help that athlete. The more tools you have available as a coach, the more flexibility you have to find one that works for the athlete standing in front of you.

1. Overview and the Point of a Warm-Up
2. Priming the Body
 - a. Priming the Aerobic System
 - b. Muscles and Neural Priming
3. Priming the Mind
4. Timing of Warm-Up
5. Special Kinds of Warm-Up and Priming Methods
6. Cool Downs
 - a. Interfering with Adaptation
 - b. Boosting Adaptation

Overview:

- Point of a Warm-Up
 - Physical/biological
 - Goal= Getting the body revved up but without residual fatigue when the race starts
 - What a warm-up does:
 - Raises body and muscle temperature and metabolism.
 - Raises baseline VO₂
 - Increases Muscle motor unit activation.
 - Psychological/biological
 - Put in Challenge vs. Threat frame of mind.
 - Routine and Minimize decisions
 - Put your mind at the right arousal level
- Individualize
 - There is NO magic warm-up. Experiment and find what works.
 - When researchers tested and then made athletes do the average best warm-up protocol, results varied widely among the individual swimmers. Half the swimmers swam slower when they tried the best [warm-up protocol](#).

Priming the Body

- **Priming Aerobic System**
 - How?
 - Easy running to more intense running.
 - Start with easy running; insert more intense segments if you need to prime aerobic system for longer.
 - Length?
 - For endurance exercise, generally, need at least 5-10min of continuous exercise to get VO₂ up to good sustainable steady state.
 - Optimal probably in the 10-15min length for your easy running.
 - Individualize
 - Slow Twitch/Long-distance runners
 - work better with a small segment or repeats at tempo effort (i.e. 800m at threshold or 2x2min at threshold)
 - Need longer easy portion of the long run
 - Fast Twitch runners
 - 200m at mile pace or 150m at 800m race pace can be used to prime aerobic system more specifically
 - Shorter easy running
 - Questions to Ask:
 - Do you feel better on the 2nd or 3rd rep of your interval session?
 - Yes?--> Include a harder last interval to your workout.
 - For the aerobic system- 1-3min at tempo effort
 - For the muscular system- 150-200m at 3k-1mile race pace
- **Muscles/ Neural Priming**
 - Strides
 - Length:
 - Short and fast (50-60m) impact neuromuscular system more.
 - Longer (80-150m) at 800-3k pace prime muscular and aerobic system more so.
 - Long sustained effort- (400-800m)- Sustained long stride at around tempo effort can raise VO₂ for a prolonged period. Use this if you feel like it takes a while for you to find a rhythm in a race, or if in practice you don't feel ready to go until the 2nd or 3rd rep.
 - What to use?

- Mix and test. Usually, one hard short one with multiple slightly easier and longer strides works well, depending on the event.
- Reactive Exercises:
 - Can prime the muscles/tendons in terms of neuromuscular function and in increasing tension (makes them more spring-like.)
 - Light Drills (skips, hops, etc.)
 - Jump Rope
 - Plyos
 - Box Jumps
 - Weighted jumps
 - When/How much to use:
 - Use the feeling of “flatness” to judge how much you need to do. If legs feel responsive, less needed.
 - Think of it in terms of drills, you’d probably do one drill for 15-30sec max, then possibly repeat. Same applies here (i.e. 2x30sec jump rope)
 - Rule of Thumb- The “flatter” the muscles feel, the more intensity you need. So switch from easy drills to some plyos, for example.
- Post Activation Potentiation
 - For Sprint/Power events, performing a heavy or powerful exercise before a performance can increase muscle recruitment and performance
 - How?
 - Performing heavy resistance exercises at 60-85% 1RM
 - Research shows performing these exercises anywhere from 5-20min before a performance can work
 - Squats, weighted Jumps, Ballistic activities etc. depending on the activity
 - Theoretically, though the mechanism is different, the morning of could improve performance
 - Individualize
 - The more experienced the athlete, the heavier/more intense the load can be and still improve performance.
 - More Fast Twitch Fibers, the better the performance response
- Breathing
 - For those with breathing issues (asthma, trouble in cold air, etc.), some research suggests doing breathing exercises can help performance.
 - Deep breathing exercises focused on diaphragm breathing.
- Stretching?
 - For the most part, minimize pre-race Static stretching, unless there is a problem area.
 - Why?-

- Decreases performance, can potentially increase injury risk thanks to changing neural feedback from the muscle.
 - Decreases muscle stiffness (this is bad, makes us less elastic)
 - IF YOU HAVE TO STRETCH- Follow with dynamic exercise (leg swings, drills, strides), which will negate the negative impacts
 - Stretching OR an isometric contraction can momentarily “block” pain. So if you have a specific sore area in a muscle and just need to get through the race, then a short stretch or static contraction could help from a pain standpoint.
- Foam Rolling
 - Acute increase in range of motion.
 - May change sensation of pain in that muscle.
 - Potential improvement in neuromuscular efficiency (Behm ECSS 2017)
 - So what?
 - Can use acutely on spots that need attention.

Priming the Mind

Having the right mindset and mental framework is what allows an athlete to express his or her full potential. The process centers on three items:

1. Appropriate Expectations
2. How they appraise the race (Threat or Challenge)
3. Finding Appropriate Arousal

In the following section, we'll go through the skills and strategies for priming the mind for performance.

- Set the Mind
 - Appraising the Situation and Expectations
 - When it comes to dealing with fatigue and racing, our expectations greatly influence performance. When deciding whether to speed up or slow down or to increase the sensation of fatigue and effort, our brain makes a quick comparison: How we expected to feel versus how we actually feel. In other words, does it feel easier or harder than what we expected?
 - For these reasons, we need appropriate expectations of what a race entails.
 - How difficult will it be and what will it feel like?
 - Do we have the capabilities and resources to handle the race?
 - The goal isn't to be an eternal optimist, as having unrealistic expectations can be dangerous. If we expect a race to feel great, then we will inevitably be let down when it is difficult. This will send us into a spiral and result in poor performance.
 - Threat vs. Challenge
 - Do they see stress as a threat or a challenge?
 - When individuals believe the demands of a situation exceed their capabilities, they tend to view the situation as a threat and as out of their control
 - When individuals believe that they have the resources to meet the demands of the event, they tend to see it as a challenge.
 - Fear tends to shift us into preventative mindset (play not to lose)
 - To see a race as a challenge instead of a threat:
 - Have a strong foundation that you have the capacity to handle the race.
 - That means putting in the work.
 - How are you appraising the race?

- Are you catastrophizing and focusing on the pain or having a realistic expectation of how a race will go.
 - Mindset
 - View Stress and anxiety as a positive, preparing you for the challenge that is coming.
 - Control
 - Maintain and establish a sense of control. Uncertainty tends to shift you towards a threat mindset.
 - Cueing
 - Don't tell athletes to "Relax"
 - Signals that they looked stressed and that is bad
 - Shift to seeing the feeling of stress as meaning they are ready. Their body (adrenaline) is preparing for battle.
- Arousal Levels
 - Everyone has an individual Zone of Optimum Arousal. Determines whether they should be amped up, calm, or excited.
 - Rule of Thumb for Categorizing:
 - "A person who is normally relaxed tends to perform best if somewhat at ease. A person who is wound tight, or intense, tend to perform best at high levels of arousal"
 - Step one is figuring out which category each athlete falls into. Step two is knowing what strategies to utilize to get the athlete there.
 -
- Anxiety and Stress
 - Warrior or Worrier
 - Another way of classifying athletes is by using the warrior vs. worrier model. This posits that some individuals need stress to perform optimally, while others have an overactive response and will freeze or worry.
 - If you have a warrior, then you know the athlete needs to get excited, feel the pressure, and understand it's a big moment. If you have a worrier, you are trying to do the opposite. Shift and minimize expectations.
 - These aren't concrete categories. Worriers CAN handle stress, just need more training than natural "warriors"
 - Some research ties this to natural dopamine levels, which is the hormone that influences "wanting" or desire.
- Defining Success
 - How do they define Success?
 - Process over Outcomes in most cases
 - Sense of Control

- Shift to goals/actions that they feel they have control over.
 - Shift pacing goals to those you control
 - A rabbit/pacer is beneficial, even with the pacing being out of your control, the pacer is not a threat, so you don't have to
- How are they judged?
 - Audience/Crowd better during Mastery phase of development, makes them perform worse when in the Learning phase.
 - During practice, athletes don't feel judged or threatened as much in competition.
 - Why? It's not a threat.
- Chance of Success:
 - Women tend to perform better when they feel they have a chance to win/succeed.
- Under Dog or Favorite
 - Depending on the individual, some perform better as an underdog, others as favorite. Related to how they view their chance of success.
- Routine
 - Minimize Decisions to eliminate decision fatigue
 - Small decisions eat up "willpower", so take care of the small
 - The goal should be a "flexible routine."
 - Make the minute details automatic.
 - But don't become so dependent on the routine that if you deviate a moment, that it will throw you off your game.
- Attentional Focus
 - What you pay attention to determines what you value at that moment.
 - Can also shift what your body gets attuned to.
 - Up and Downregulate what your mind picks up
 - i.e. focus internally (breathing) vs. externally (scenery/clocks)
 - Broad vs. Narrow attentional focus
 - They all have their benefits. It's really about cultivating the ability to shift focus. So that if an internal focus isn't working or appropriate you can switch to an external one.
- Visual Priming
 - Research shows that athletes looking at happy faces versus sad faces improve endurance performance. Even if the flashing of the smiley face occurs so fast it is subconscious.
- Environment
 - Environment Invites Behavior
 - The concept of affordances refers to the idea that our interaction with the environment elicits action possibilities and can even invite certain actions to be performed
 - Instead of seeing perception as information that needed an outside agent to provide meaning, in ecological psychology, the concept is that

perception is in fact direct, in that objects provided opportunities for action on their own

- What does this mean for performance?
 - You can use objects and cues to your advantage.
 - When Alan Webb was training, his coach would ingrain Alan to “hit it!” with 100 meters to go. His goal was to ingrain the changing of gears when Alan hit the last 100m of the race. So at the end of the majority of workouts, he’d “hit it.”
 - The goal is to couple environmental or verbal cues to actions and behaviors.

Timing of Warm-Up

The timing of a warm-up is critical. You want to take advantage of starting the race with a slightly elevated VO_2 (so that your aerobic system is primed and ready), but not so elevated that fatigue is still present. It's a balancing act of making sure that when the gun goes off you are warmed up properly, but not fatigued.

A good rule of thumb is to see what rep athletes feel best on when doing a fast workout. If they feel great on rep number one, the warm-up was probably spot on. If it takes them a few repeats to get into a rhythm, it's a sign that their warm-up needs adjusted.

- Muscle/Body Heat
 - Time for temperature to return to baseline= ~45min
 - By 20min, 40% of decline in core temperature drop
 - Wearing warm clothes/keeping muscles warm prevents this drop
- VO_2 / Breathing
 - VO_2 returns to baseline after about 10min of cessation of exercise
 - Priming exercise (long stride, etc.) can extend this
 - Intensity
 - If lactate raises too much, can impair performance
 - So what? Keep intensity moderately hard, or hard fast efforts short (less than 200m for things at mile pace or faster)
- Fatigue
 - Fast energy resource (creatine phosphate) take about 5min to fully restore
 - If you perform a really fast longer stride, make sure it occurs with enough time for this energy system to restore.
- Morning Priming
 - Why?
 - Can shift hormonal profile and timing of the day.
 - Increase Testosterone and decrease cortisol
 - Also, may limit the Testosterone decline that occurs naturally later in the day.
 - Primes body and sets it up to be more responsive during the warm-up for a race
 - How?
 - Aerobic
 - Can increase blood flow, loosen muscles up
 - Slightly more intense aerobic effort can prime hormonal system
 - Plyos/Ballistic exercise/ Hard strides
 - Primes Neuromuscular system
 - Can have hormonal impact
 - Examples:

- 2-3x200m at 800m race pace 3 hours before exercise showed to improve 800m race performance (Kilduff et al)
- Morning resistance training showed improvements in 400m and bench/squat performance 6 hours later (Cook et al).
- So what?
 - The time between the finish of warm-up and competition should be ~10min
 - Extend this time with:
 - Drills
 - Clothing to keep muscles warm
 - Strides, etc.
 - The longer wait until the warm-up, the more intense the final bout of exercise before the cessation of the warm-up. (i.e. if have 20min+, then do a hard aerobic priming 400-800m run before going into call room)

Other Types of Warm-Ups and Priming Methods

- Ischemia
 - Using blood pressure cuff to cut off blood flow during
 - Studies have been mixed, though some have shown improved performance in a 5k run or 100m swim following 5-minute bouts of ischemia training.
 - Example: 5 minutes of arm exercises with blood pressure cuff on arms before a 100m swim.
 - Potential Mechanism?
 - Increases in muscle blood flow.
 - Verdict?
 - Needs more research. Experiment with in practice
- Hormonal Priming
 - Can acutely increase natural Testosterone levels pre-race which has shown to influence performance.
 - How?
 - Music
 - Video-
 - pump up video shown to increase testosterone
 - Individualize- Know when athletes perform best (arousal levels)
 - Positive Feedback
 - An athlete watching himself or herself compete successfully with positive feedback from the coach, increased testosterone.
 - Watching mistakes, or success of an opponent increased cortisol
 - Pre-Game Speech
 - Do what you like!
 - Research shows, performing warm-ups or morning routines that they like increases Testosterone
 - i.e. Forwards in soccer practicing scoring goals improves performance. Them practicing defense in their warm-up does not.
- Warm up for workouts
 - A way to get extra work in.
 - Can make workout warm-ups more extensive.
- Special Conditions
 - Long Races or Warm conditions
 - Be wary of core temperature rising too much. Keep core temperature down while getting legs warm.
 - Advice
 - Cooling vest or ice-soaked towel.

- Drink Ice Slushy 15-30min pre-race to cool core temperature.
- Shorten warm up enough to simply get legs loose and functioning. Shift to short jog and a few short strides or reactive work to prime muscles, while not elevating body temperature.

Cool Downs

- Goal
 - Return body and mind to normal
 - Shift body from a break-down to a build-up mode
 - Ingrain or extend adaptations
- Return to Normal/Recovery
 - Goal:
 - Shift out of threat/stress response
 - The shift from sympathetic Nervous System to Parasympathetic NS dominance
 - Shift from catabolic to anabolic state
- Soreness?
 - Studies show mixed results.
 - Some show a reduction of muscle pain in the days after, others do not.
- How?
 - Easy cool down
 - shifts HRV (Heart Rate Variability)
 - Returns physiology to baseline
 - Allows for decompression psychologically
 - Active cool down right after workout can improve lactate clearance abilities.
 - Massage
 - Switches nervous system into parasympathetic state
 - Social Recovery
 - Interacting with others around you allows you to decompress and process in a non-threatening state.
 - Shifts hormonal profile (decrease cortisol)
 - How?
 - Spend your cool down jog with others
 - Team breakfast, lunch, or dinner right after the race/game.
 - Take away cell phones, get natural interaction.
 - Stretching
 - Does not help reduce muscle soreness
 - Stretching post exercise can increase flexibility if that is desired.
 - Can be useful in increasing social recovery.
- Interfering with Adaptation
 - We can blunt training adaptation via using the following substances/methods:
 - Ice Baths

- Potentially blunts adaptation from the elimination of the signal that inflammation sends to repair the muscle.
- Antioxidant Pills
 - Potentially interfere with Reactive Oxygen Species which signals the body to adapt to handle them better.
- Iron
 - Doesn't blunt adaptations, but post-hard workouts iron absorption is blunted. So you won't absorb iron supplement as well after hard workouts.
 - So what? Consume iron supplements at least 3+ hours post hard workout.
- Long Cool down post workout
 - Can inhibit anaerobic developments after an anaerobic type workout.
 - This could be desirable if you are a distance runner trying to get some anaerobic adaptation but not too much.
- SO what?
 - Timing matters. Do you want to adopt from the workout or recover?
 - Periodize recovery modalities! (i.e. Fewer recovery modalities during the pre-competition phase, more during peaking)
- Boosting Adaptation
 - Cool down runs=mileage under fatigue
 - Thanks to the workout or race, when you are cooling down you are in a pre-fatigued state. By doing a longer or moderate cool-down we can
 - Types:
 - Long cool down post race
 - Moderate workout
 - Take into account the type of fatigue, what adaptation you are seeking.
 - Can be aerobic, anaerobic, neural, etc. depending on what you are trying to work on in a fatigued state.
 - Ending workout with moderate effort
 - Great way to get a little aerobic bang for your buck, by ending a more intense workout with an 800-mile rep at a tempo effort.
 - Heat Adaptation
 - Post workout/Run- sitting in a sauna can boost your bodies ability to adapt to heat or humidity if racing in a warm environment
 - Spend 15-30min post-workout/race sitting in a sauna.
 - 60 to 90 minutes of moderate exercise per day in hot conditions would produce rapid physiological changes within a

few days, with full acclimatization taking place within about two weeks. Simply living through a hot summer isn't enough; you have to stress your system with exercise.

- Slushies:
 - The ice melting in your stomach causes a phase change energy shift. Research shows that a slushie can lower your core temperature by about 1 degree Fahrenheit.
 - Other research shows that slushies allowed athletes to push their core temperature to slightly higher states before fatigue set in.
 - Drinking a hot drink like tea can ramp up your sweating response

A Guide to Recovery

How to Use This Guide:

Recovery is half the battle for getting a positive adaptation, but it's also one filled with gimmicks, pseudoscience, and misinformation. Even if something works, we often throw the same treatment at athletes regardless of the situation. Are they tired, sore, fatigued, worn down? Ice bath, massage, or some other modality. These two concepts, what works and when should we use it serve the foundation of this guide. It's based on a combination of science, theory, and practice.

The chart below serves as the foundation for the guide. When evaluating recovery needs, we need to understand what the underlying issue is. I've divided different reasons for recovery into several categories. Once you've identified your category, then there are options for recovery methods to utilize.

1. Fatigue or Muscular?

The first divide is whether the majority of the athlete's symptoms are from a general feeling of fatigue, or more specifically in the muscles. In other words, is it a feeling of malaise or tiredness that predominates or does it feel like it is mostly in the legs?

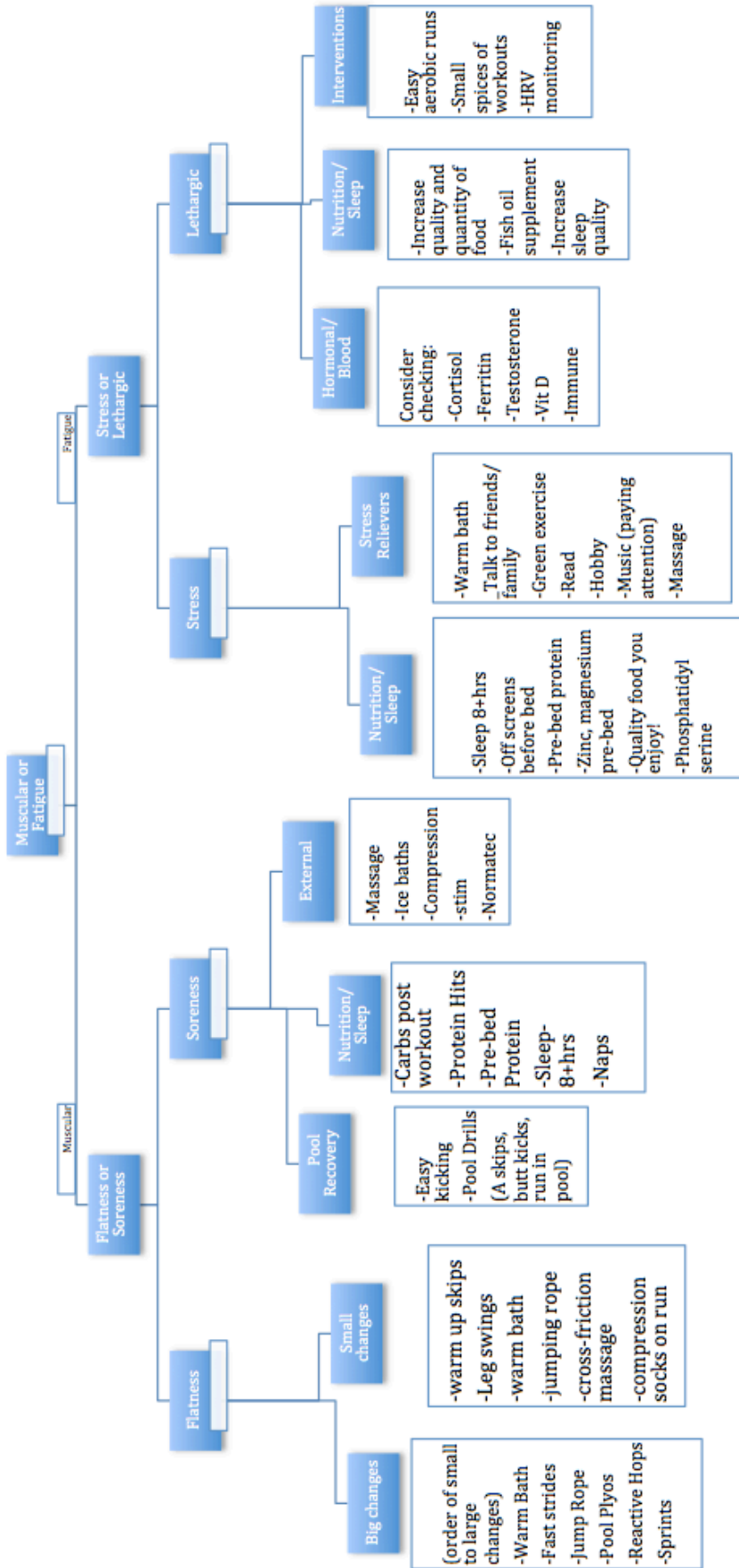
2. Divide again into one of the following categories:

Soreness- Do your muscles ache or feel tender to the touch? We've all dealt with muscle soreness before, often when we've introduced a new exercise to the program.

Flatness- How reactive or responsive the muscle feels is important to performance. In running terms, I call this feeling "pop." When you have a lot of pop your stride feels bouncy and reactive, like you are bouncy ball springing off the ground. If you have low pop, then you are flat. Meaning that you don't feel like you are getting any energy return from the ground, and instead feel like you are sinking into it. Your muscles feel dull and lethargic instead of reactive and bouncy.

Stress- A general feeling of feeling frazzled, overwhelmed, and maybe even anxious. A feeling like your nervous system is in overdrive.

Lethargic- Staleness and malaise. A feeling of general fatigue and tiredness that persists for days. Low energy and poor general performance in training.



Flatness

Flatness occurs when our muscle tension is off. It's best to think of the idea of tension in terms of a rubber band. If the rubber band is stretched far and worn out, then if you try to pull it back and try to fling it, it won't travel far. It lacks tension. Training (especially slow, high volume work) tends to reduce tension over time.

These interventions are ordered based on their degree of impact. If an athlete feels really flat and has no pop, then he or she will need an intervention that causes a big or sudden change. In addition, you need to take into consideration whether an athlete is what I call a Fast Twitch or Slow Twitch orientated athlete. A Fast Twitch athlete needs a bigger stimulus to get a change in muscle tension.

- Big Change (Utilize for those who are really flat OR are a fast twitch orientated athlete. These are listed in order of the smallest to the largest change)
 - A warm bath (10-15min)
 - Fast strides (4-8x 100 meters or less)
 - Fast strides in spikes
 - jump rope (1-5 minutes. You don't want to create fatigue, just good reactivity).
 - Pool plyos/power
 - 5-10 Hops in the pool
 - 3-5 Squat jumps in the pool
 - 3-5 Hard pushes off the wall
 - Reactive Hops (smallest to biggest changes- choose 1-2)
 - "quick" feet step through
 - 5 to 10 short hop plyos
 - 2-5 big hop plyos
 - Cut Down Workout
 - 2x200, 2x150, 2x120m cutting down from 3k to 800 pace.
 - Power Exercises
 - Box Jumps
 - bounds
 - Sprint uphill
 - 8 seconds, full recovery up a moderate grade.
 - Make sure that the athlete is used to these or else they will feel sore.
 - 4 to 8 in total
 - Sprints
 - 4-6 x 40-60m sprints with full recovery.
 - 150m accelerations where every 50m you change gears. (i.e. 800 pace, 400 pace, sprint)
- Small Changes:
 - Warm up Skips
 - Skips and arm swing combo

- A skips
 - Skips for height
- 1-3min of Jumping Rope

- Leg swing protocol
 - Front swings, side swings, figure 8 swings
- Warm bath-5-10min
- Cross-friction massage

- Short run on a hard surface
 - A hard surface helps with reactivity. A soft surface will decrease tension.
- Compression socks on the run

Soreness Protocol

- Pool Recovery Program
 - 3min of easy kicking/cycling of legs
 - Pool Drills
 - Leg Swings
 - Easy skips
 - A skips
 - Butt kicks
 - Run in pool
 - 3min of easy kicking/cycling legs
 - Entire circuit should be 10-20 minutes total
- Nutrition
 - Carbs post workout
 - Protein- Aim for 5+ hits of protein spread throughout the day
 - 10-15 grams each hit+
 - The “hits” of protein keep protein synthesis elevated throughout the day, increasing report
 - Before Sleep:
 - Protein binge (25g+) right before sleep. Elevates protein synthesis and muscle repair while sleeping.
- Sleep
 - Aim for 8+ hours of sleep a night. (See tips on sleep below)
 - Naps
 - 10-30 minutes: creativity, energy boost
 - 90-120 minutes: restorative sleep
- Massage and foam rolling
- Ice Bath
 - Make it tolerable.
 - If it makes you feel better, then it’s worth doing.
 - Do not overuse it, as it's possible that it could interfere with adaptation. Inflammation actually triggers positive adaptation.
 - It’s best to save ice baths for when you need it (i.e. in the season versus out of the season).
- Compression
 - Can be beneficial, especially on flights.
 - The hydrostatic pressure of walking in a pool creates a better pressure gradient than any of the compression technology or garments out there. So that’s my first line of defense (and cheaper!).
- Muscle Stim

- Use on the calf to create calf-pump
- Use lightly on sore muscles/areas
- Isolated soreness/feeling of muscle inhibition
 - Short isometric holds of that muscle post workout (four to five- 10-20sec holds with equal rest)
 - This is a good way to change the perception of soreness. You can temporarily alter the “pain” signal from the muscle by performing a few isometric holds. Only good for temporary relief.

Stress Profile

The key to managing stress is all about the transition. In our modern, always-on world, we often get stuck in a middling in-between state. Stress isn't a bad thing; it's our body preparing for what's to come. If we didn't have a stress response, workouts and races would be much more difficult. The key is to transition from stress to rest in a timely manner.

- Sleep!
 - The best way to decrease stress is by allowing your body to recover. (See below for sleep hygiene suggestions)
 - Daily nap
 - Even just closing your eyes for a few minutes helps as a reset.
 - Protein before bed
 - 25 grams of protein right before bed.
- Warm Bath
 - Decreases cortisol (stress hormone)
- Quality Food/Meal
 - Choose quality nutrition, but also something YOU enjoy (and preferably with others!). Meals are a great way to shift out of a stressful state
- Social Recovery
 - Talk to friends and family (that you like!)
 - Spend time with others you enjoy.
 - Oxytocin is also released, which plays a role in shifting your stress response
- Go Outside and Enjoy Nature
 - Go for a short walk outside (15-20min)
 - Allow the mind to wander (shifts stress response)
 - Sit outside and read
 - Do your shakeout run somewhere new or somewhere you enjoy.
 - “Green” exercise decreases your stress hormone levels, so go find nature.
 - Research has found that even just looking at pictures of nature can help in recovery and creativity.
- Light Exercise
- Read
- Listen to music where the focus is on listening to music...
- Relaxing massage
- Meditation (Open monitoring)
- Time spent reflecting or journaling on your experiences
- Doing a creative hobby
- What NOT to do
 - Veg out completely

- Boredom
- Make lots of decisions
- Get on your phone. (your phone is like a slot machine...keeping you in a mild stressed state.)

Lethargic Profile

- Consider blood work
 - Cortisol-gives an overall indicator of stress levels
 - Ferritin- A marker for iron levels. Low iron can cause fatigue.
 - thyroid hormones- these fluctuate with extreme stress and can indicate burnout/overtraining.
 - Testosterone- drops in testosterone levels are associated with high levels of training and fatigue.
 - Vitamin D- Low Vitamin D can cause symptoms of fatigue/ depression.
 - Vitamin B12
 - immune system markers- Indicate if your immune system is suppressed due to overtraining.
 - *(Note I am not a doctor, consult them first).
- Sleep!
 - Protein before bed (25-30grams right before sleep)
- Nutrition
 - Increase quality of food and quantity
 - Fish oil supplements
 - Can decrease inflammatory response, increase recovery.
 - Protein!
 - Immune system support
 - Probiotics[?] influence gut microbiome
 - Vitamin D- check-
- Interventions on Workouts
 - Easy aerobic recovery runs
 - Start with easy runs only, then progress to surges then small spices of workouts.
 - Split runs into short segments (i.e. instead of an 8-mile run, consider two 3-4 mile runs during the day).
 - Keep them easy and by feel.
 - Add in easy surges (30sec) into a normal run.
 - Occasionally when you do only easy runs, an athlete gets locked into a fatigued/sluggish zone. Introduce 4-8x 30sec pickups with a full recovery into a normal run.
 - Small spices of enjoyable workouts
 - Perform 25-50% of a normal workout that they enjoy.
 - For example:
 - 4-6x200m repeats by feel
 - 2-3 sets of 8x100m with short jog recovery.
 - 2-3 x 5min at a moderate tempo with 5min easy in between.

- Keep the workouts short and enjoyable, with the goal of making them feel good.
- Reset the Nervous System
 - Although not technically “correct” sometimes a shock to the system can cause a sudden change in perception of fatigue.
 - Ice Bath plunge/ Cold shower “shock” with focus on deep controlled breathing
 - Trying to take control of Autonomic Nervous System
- Hormonal Priming
 - Power poses before/after runs (increase Testosterone output temporarily)
 - Do something they like pre-workout/game
 - Research shows that we can get a temporary bump in natural testosterone levels when we perform an activity we enjoy. If an athlete likes jumping rope or doing a few hard strides or practicing starts, let them. In team sports, if they enjoy scoring goals, make that their pre-game warm-up.
 - Videos or inspirational speeches can cause an acute bump in testosterone levels and performance, according to [research](#).

Post Workout Guidelines and Consideration

These guidelines are meant to be used to help athletes transition from stress to rest.

- Post workout return to normal:
 - Standard
 - Easy running or a cool down.
 - A little bit more
 - Easy running followed by:
 - 6-8x100m easy stride (5k-10k pace) with short jog/turn-around rest
 - Dynamic flexibility work
- After longer/tempo work IF need to preserve some “pop” for next few days
 - Finish with easy reactive work
 - 2-3x 30sec jump rope
 - and/Or set of ballistic drills (more intense skips) OR 4-6x moderate plyos
- Nutrition
 - Post hard workout- carb+protein mix quickly after
 - If tendon issues-
 - Take gelatin and then do 5-10min of work that targets that area (i.e. for Achilles- take gelatin then easy calf raises or jump rope)
- Trouble area
 - If you have particular muscle/area that needs to recover:
 - Isometric holds- Short isometric holds of that muscle post workout (four to five- 10-20sec holds with equal rest)
 - Prevents an inhibition/protection response (essentially- tells your brain- this muscle is okay...)
- Social/Shift out of workout state
 - Social Time
 - This might be your biggest bang for your buck. Make sure athletes are doing their cool down together, or engineer practice where there is some time post workout where athletes are gathered around conversing with each other.
 - After big competitions or workouts, meals together work well, as long as the athletes are interacting and NOT on their phone.

- Social recovery is huge- shifts out of fight/flight mode- chat on cooldown, talk to friends, whatever.
- Try to prevent them from going straight to their phone.
- Use social recovery OR some activity for 20-30min post workout that takes you out of stress state. Even performing routine activities which you can do without thinking (dishes, laundry, etc.) can help do this.
- Enhanced/need to bounce back quick
 - Pool drills/ splash around in the pool.
 - Pool's hydrostatic pressure PLUS reflex from splashing water on face, will push blood back to the core.
- What NOT to do:
 - Avoid within hours after a HARD workout unless you really need it:
 - Ice baths
 - Antioxidants
 - Anti-inflammatory pills
 - Iron supplements (won't absorb well for 4hrs or so post hard workout)
 - Inflammation is good for an adaptation. It signals that the muscle/body need repair. If we take that signal away too early, we can dampen our adaptation.

Sleep Guidelines:

- Keep phones/devices off and out of the room.
- Limit blue-light exposure prior to bed.
- No caffeine within 5-6 hours prior to bedtime.
- Only use your bed for sleep and sex.
- Don't drink alcohol close to bedtime.
- Keep your room as dark as possible—consider black-out blinds if you can.
- Melatonin: only when you need it, contextual.

Other FAQ:

- Cryotherapy
 - Whole body Cryotherapy functions more as a [placebo](#) than anything else.
- Expectations
 - Don't discount the placebo effect. In terms of recovery, our EXPECTATIONS matter a lot. If an athlete is convinced that it will help, it likely will. In one [study](#) researchers found that an ice bath worked better than a warm bath, but a warm bath with a recovery oil worked better than both! The trick, the recovery oil was just bath soap.
- In the [best meta-analysis](#) on recovery modalities so far, they found the following:
 - Contenders: active recovery, massage, compression garments, immersion, contrast water therapy, and ice baths
 - Pretenders: electrostimulation, hyperbaric therapy, and the other pretenders.
 - Best for muscle soreness and fatigue: massage.
 - Best results for inflammation: massage and cold exposure.