



By: Tyler Inman

[Parts 1](#) & [2](#) described two exercise science theories foundational to all strength and conditioning programs. To increase fitness, training must be progressive in nature and the demands must be specific to the desired outcome. Part 3 ties it all together. Part 3 is the “military art” to the “military science” introduced in parts 1 and 2.

### **Underlying Theory 3: Fitness-Fatigue Paradigm**

Strength and conditioning coaches would be obsolete and unemployed if the only response to stress was that we get better the *next time* than we were the *first time*. Instead, stressors of all kind generate fatigue, and fatigue (like the enemy) gets a vote. Both fitness and fatigue are impacted by training, and their interplay determines overall preparedness. Managing this interplay to peak at just the right time keeps strength and conditioning coaches employed.

*Practical Exercise*

Warm up and then put your 3 repetition maximum (3RM) weight on the deadlift bar.

Execute 3 repetitions. Rest 30 seconds. Try another 3 repetitions. If you actually executed your true 3RM the first time, it is highly unlikely that you'll perform a second set of 3 repetitions due to the lingering fatigue from the first set.

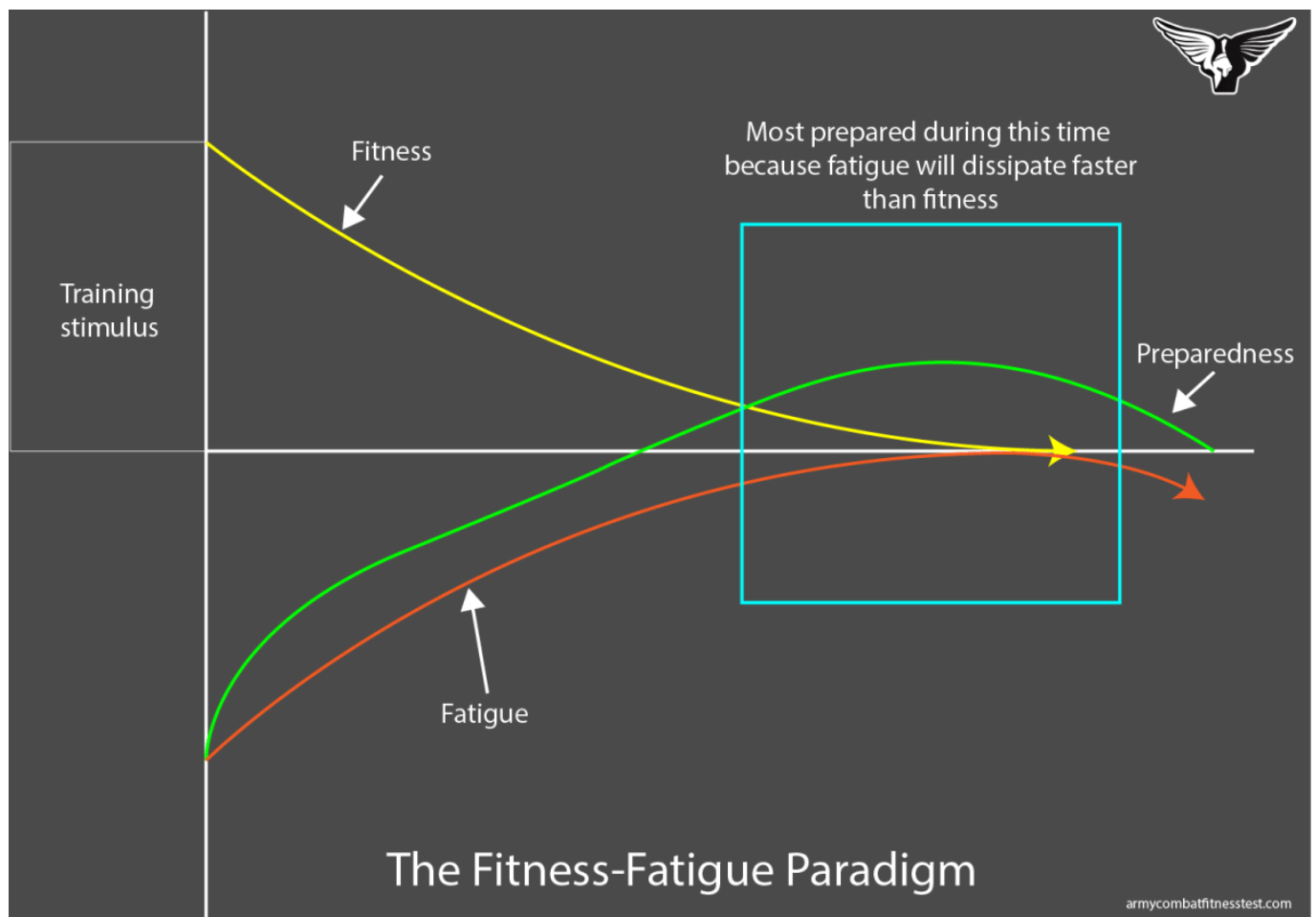


Figure 6 - Fitness Fatigue Paradigm - adapted from the NSCA's Guide to Program Design

This idea extends out over time as well. The greater the training stimulus, or the more difficult the workout, the more fatigue decreases overall preparedness. As we decrease the overall stress of the training stimulus, fatigue also dissipates. The most optimal level of preparedness occurs when we have allowed time for recovery from fatigue, but fitness still remains high. This is made possible by the notion that our fatigue is "lost" at a rate faster than our fitness.

### **Application 3: Periodization**

Periodization is the systematic modulation of training variables to bring about the most efficient achievement of training goals. Good periodization takes into account both the GAS and fitness-fatigue paradigm in order to intelligently modify training variables. Manipulate duration, intensity, and rest time to stress the body appropriately, allow time for recovery, progress the training variables, and then repeat. Training protocols are typically arranged so that certain domains or components of fitness are trained in a logical and sequential manner to bring about an optimal level of fitness at just the right time — aka “peaking.”

In the case of a field sport athlete, primarily concerned with the ability to demonstrate explosive power on the field of play, training is sequenced in blocks. The general preparation block might include training focused on aerobic and muscular endurance. As indicated in the chart, during the specific preparation phase, training volume is reduced as the intensity (weight of the load or intensity of the work) increases. As the athlete transitions from the specific preparation phase to the competition phase, volume again decreases as training looks more and more like the actual competition. Ideally, the athlete's capacity in the most desirable traits peak at the most appropriate time during competition. This elevated capacity is not sustainable forever; however, the well-periodized plan accounts for this during the transition phase. During transition, the plan should decrease the intensity before elevating volume again and starting a new general preparation phase during the off-season.

Exercise scientists have written entire books on periodization, and elite training facilities utilize many different types of periodization to achieve their athletes' fitness goals. The traditional periodization technique described above merely scratches the surface of periodization, but the small-unit level leader should use these general guidelines to systematically and intelligently modify training variables in the pursuit of the unit's training goals.

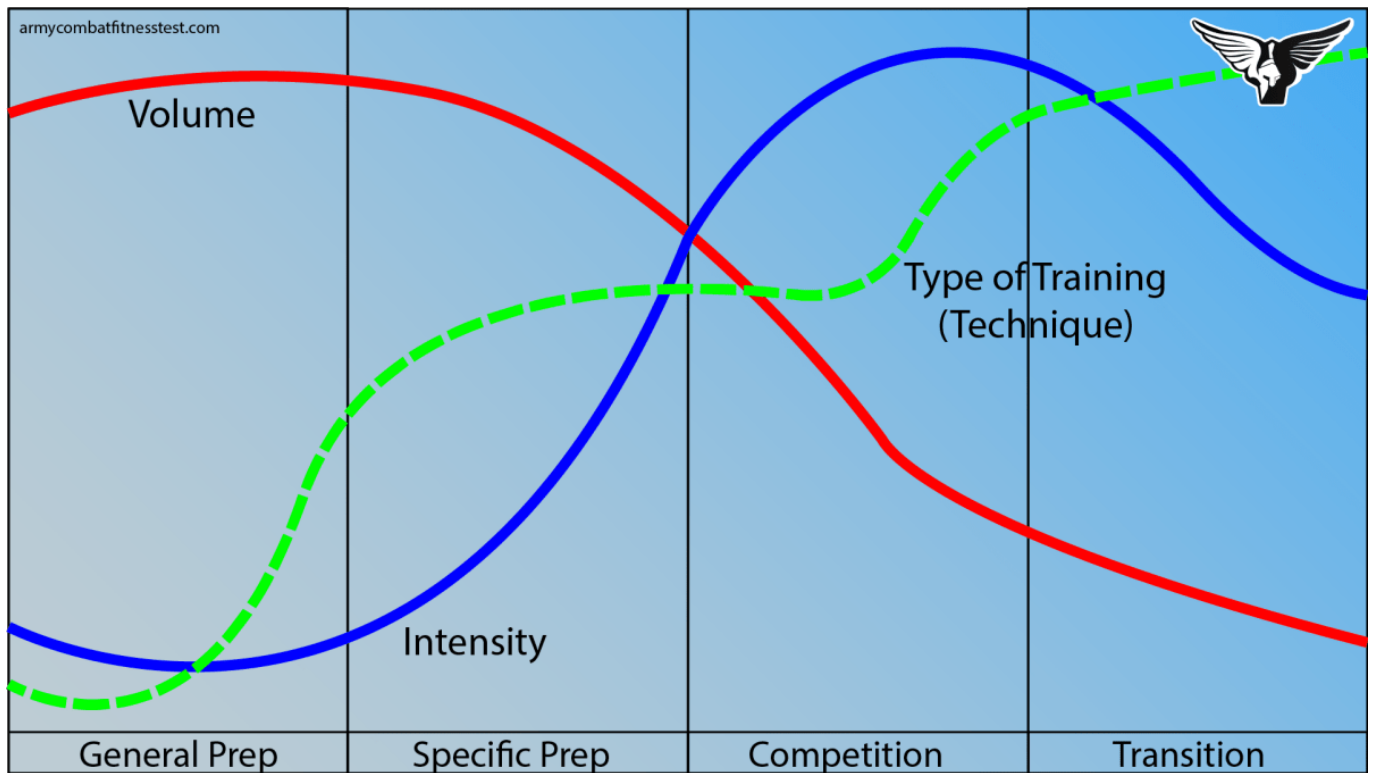


Figure 7 - Traditional Periodization - adapted from *Periodization: theory and methodology of training* (Bompa, Buzzichelli)

*Periodization Example- Preparation for an extended movement to contact under load*

**General Preparation Phase:** Six months before the designated mission, the training plan should focus on longer distance aerobic events and higher repetition muscular endurance events to build an aerobic and muscular endurance foundation. Training might include steady-state cardiorespiratory training like terrain runs, long, slow foot marches under light loads, and high repetition, bodyweight training in events like air squats and lunges.

**Specific Preparation Phase:** Several months before the mission, training should shift to the specific preparation phase, characterized by moderately reducing the training volume and elevating the intensity. Cardiorespiratory training should be conducted at faster paces for less distance (to include interval training like 60:120s); foot marches should be faster and/or under heavier loads, and moderately heavy weights may be introduced during exercises like squats, deadlifts, and lunges.

**Competition Phase:** A couple weeks prior to the mission, training should look very similar to



the actual mission. Soldiers should conduct foot movements at or above mission pace and load. Soldiers will spend less time on long, slow aerobic training and should focus on aerobic intervals like 30:60s. Leaders must also take care to ensure that while intensity is elevated, volume is low enough to avoid overtraining, leaving Soldiers at a lower state of mission readiness.

Transition Phase: During transition, leaders must focus on not only recovering weapons and equipment, but also recovering the individual Soldier. During this period, both intensity and volume are reduced, and efforts may be focused on flexibility, mobility, nutrition, and sleep.

To perform well on the ACFT, and arguably in combat as well, Soldiers must develop a broad capacity across each of the fitness domains and move well in a variety of modalities via precise movement patterns. New fads and the latest “one-size-trains-all” fitness plans are ineffective. Instead, plans must be tailored to the individual and their training goals or the unit and its mission. Leaders do not need an advanced fitness training certification to plan training for the ACFT that is both safe and effective; however, just like when planning for any military operation, they should consider the key concepts and basic principles that are the hallmark of a sound plan. Army leaders must learn to apply progressive overload, train for the specific needs of the mission, and manage fatigue through intelligently modifying training variables. This is the formula for prolonged physical readiness training success.

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