

Concept Map

A Supplement to a Course on the Hard-Easy System For Recreational Endurance Athletes Who Want to Train Better and Get Faster.

By Brian Clarke © 2020

This Concept Map is intended to give you an overview of important concepts in the hard-easy system. It might help before tackling this concept map that you familiarize yourself with the section on concepts in the course introduction (see Appendix A, beginning on page 12).

Introduction. Workouts are the basic ability-building units in the hard-easy training system. You have to do workouts to build racing ability upon your fund of innate talent. Thus, in order to understand the training system and thereby make effective training decisions, you'll have to begin by understanding workouts.

Workout. All workouts have two fundamental ingredients: effort and energy.

Effort and Energy. There are four major intellectual constructs that delineate effort and energy (a construct is a nexus of related analytical concepts).

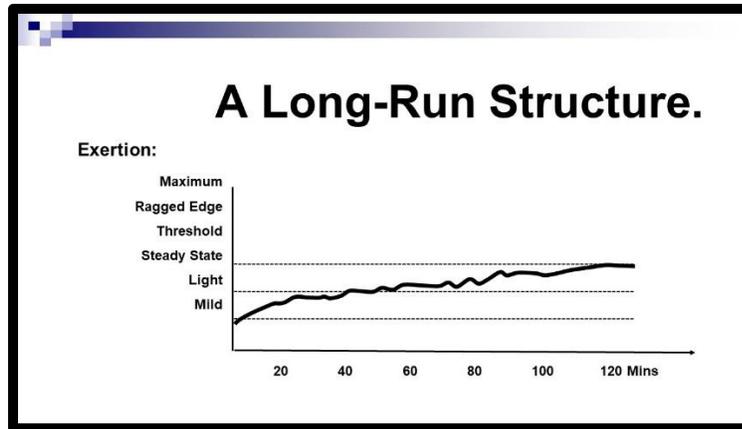
As you'll see below, pace exertion and running energy have to be viewed from a moment-to-moment perspective *during* a workout. In other words, in order to experience them you have to be exercising (say, running, jogging, or walking).

Pace Exertion. Is defined as the effort needed to sustain a running pace. Your sensations of exertion can change from moment to moment *during* a race or workout on the following scale: mild, light, steady-state, threshold, ragged-edge, and maximum.

Running Energy. Your sensations of running energy can change from moment to moment *during* a race or workout on this scale: no energy, little energy, some energy, ample energy, abundant energy.

By contrast, workout exertion structures and workout energy patterns (below) must be viewed from a fixed and structured perspective *after* a workout has been completed, during moments of reflection.

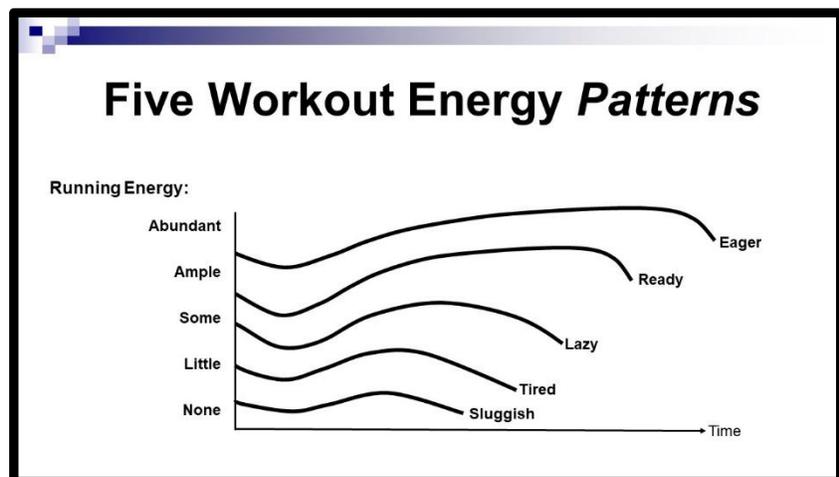
Workout Exertion Structure. An exertion structure is defined as the graphic or mental representation of exertion that has developed from start to finish of a now-completed workout. The accompanying graph shows a completed “long-slow run” exertion structure.



Workout Energy Pattern. Defined as the graphic or mental representation of the running energy pattern that has developed from start to finish of a now-completed race or workout.

The accompanying graph shows the five workout energy patterns referred to in this course (sluggish, tired, lazy, ready, and eager).

Note: These terms don't refer to separate moments during a workout, and thus shouldn't be confused with the five



running energy levels—none, little, some, ample, and abundant, which always apply to separate exercising moments in time.

The “ready-to-train-hard” workout energy pattern, for instance, has three defining marks or ideas (see the 2nd from the top curve, above): *some* energy at the start, *ample* energy in the middle, and *enough* energy to complete a hard workout before fatigue sets in.

That’s also our definition of a “good” workout, i.e., you end the workout feeling you have more energy than when you began.

Ancillary Concepts. Each of the above four major constructs has ancillary concepts associated with it. The following concepts are important because they will amplify your understanding of the hard-easy system and thereby facilitate effective training and racing decisions.

The Components of Exertion (are concepts related to pace exertion). Remember, pace exertion is the effort needed to sustain a pace from moment to moment during a race or workout. Remember also that the pace-exertion scale measures exertion as mild, light, steady-state, threshold, ragged-edge, and maximum.

The pace exertion scale is a composite of the five, more-specific components of exertion: heart rate, breathing, power, tempo, and intensity (see the following list).

1. **Heart Rate:** 50-59%, 60-69%, 70-79%, 80-89%, 90-95%, 96-100%.
2. **Breathing:** Normal, Conversational, Huffing, Heavy, Labored, Hyper.
3. **Power:** Gentle, Held Back, Relaxed, Pressed, Forced, Strained.
4. **Tempo:** Very-Slow, Slow, Quick, Rapid, Fast, Very-Fast.
5. **Intensity:** Soothing, Very-Comfortable, Tolerable, Uncomfortable, Very-Uncomfortable.

Obviously, each component of exertion has six measurable, descriptive, and experiential levels in its scale. You would be wise to develop a working knowledge of each scale and its levels.

Note: Using the composite scale (mild, light, steady-state, threshold, ragged-edge, and maximum) is not as accurate as using these individual component scales to measure your exertion during a race or workout because the various levels are not contiguous, i.e., they can increase or decrease independently of one another.

Racing Ability (concepts related to workout exertion structure).

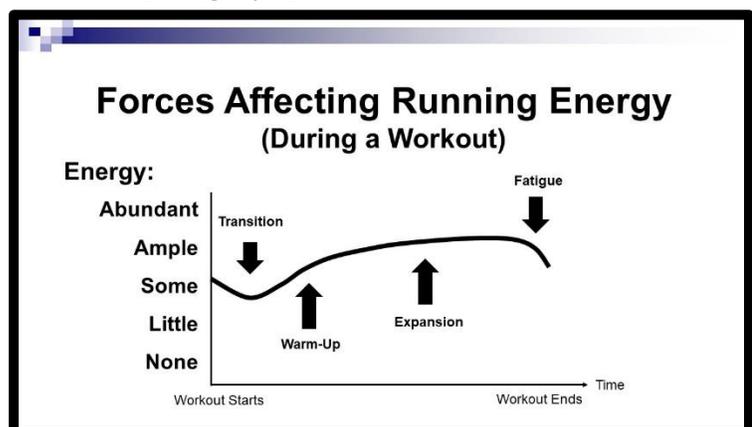
Ability is defined as having sufficient strength to achieve a running purpose. The ability *to do* something is the essence of the concept.

There is a racing ability associated with each of the workout exertion structures described briefly here:

- 1) **Stamina:** the ability to run long and slow. Its exertion structure is long-duration (90-120 minutes) that feels light (conversational, held-back, and very comfortable);
- 2) **Power:** the ability to run relaxed for the first half of any racing distance. Power workouts are structured as uphill running that's slow enough to be relaxed;
- 3) **Tempo:** the ability to run comfortably for the first half of any racing distance. Tempo workouts are structured as bouts of race-pace running, which are short enough to remain comfortable throughout. Tempo training is high volume compared with speed work, which is low-volume;
- 4) **Speed:** the ability to sprint or surge in the final stages of a highly competitive race. Speed work is structured as bouts of running at your racing finish-pace. The bouts should be short-and-fast enough to be a notch above maximum sustainable race exertion, yet not faster than a "doable" finishing pace;
- 5) **Endurance:** the ability to sustain uncomfortable exertion during the second half of a race. Endurance workouts can be structured in one of two ways: 1) a very-slow or slow tempo, and long enough to become uncomfortable, or 2) bouts of race pace running which are long enough to become uncomfortable (the intensity component above is a measure of relative comfort or discomfort). Speed work is low-volume compared with tempo training, which is high-volume.

The Six Metabolic Forces (concepts related to running energy).

There are six metabolic forces (see graph) that either increase or decrease running energy on the running energy scale: none, little, some, ample, and abundant. The forces that occur *during* a workout are: transition, warm-up,



expansion, and fatigue (which are seen on the accompanying graph); the forces that occur *between* workouts are: contraction and recovery (not shown).

The above concepts and constructs all pertain to the process of structuring workouts to build racing ability. They are relatively concrete concepts, as it is simple to visualize or experience them as part of any race or workout you might do.

The Adaptive Process.

Special Concepts. The process of actually building your ability via training and adaptation is sufficiently complex to warrant special concepts and consideration.

The following major constructs are more abstract and therefore more difficult to understand and visualize than those above. Nonetheless, you are still capable of feeling/sensing them as parts of your training and racing experience.

These ideas are important aspects of the hard-easy system because whether you adapt to the stress of training depends on how you manage them as decision-making factors. You can't improve by simply doing ability-building workouts.

Thus, you could be training but, in terms of actually building your ability, you could also be spinning your wheels. In other words, the only thing that matters is whether you adapt, which is what the following concepts are about.

Workout Effort (a new concept). Defined as the effort of a workout as a whole, measured as very-easy, easy, moderate, hard, very-hard, and all-out.

The workout effort of a race or workout cannot be accurately measured until *after* the run is finished and you have stopped exerting yourself.

Please don't confuse workout effort with pace exertion, which is the effort needed to sustain a pace *during* a race or workout.

Capacity for Exertion (a new concept). Capacity is your metabolic engine and your energy gas tank, i.e., your body's propulsion system.

Capacity is the "container" within which exertion is structured and energy is consumed. It feels like one of the five patterns of energy that develops during a race or workout (sluggish, tired, lazy, ready, and eager).

Besides energy, capacity “contains” the experience of exertion. Although we can separate energy and exertion conceptually, these ideas cannot be separated experientially, unless you focus on them analytically.

Capacity develops during a workout in concert with a developing workout energy pattern. As running energy increases, say, from some energy to ample, the capacity propulsion system grows too, until fatigue sets in.

One of the central tenets of the hard-easy system is to always end a workout as fatigue sets in. That’s the point where your capacity has expanded the most, which is all you need to improve your ability.

Capacity also exists between workouts, though you might have to take a run and feel your energy in order to experience what it’s up to. There are other ways to check your capacity, such as whether you are sick or injured.

Effort/Energy Combination (a new concept). Defined as the combination of a workout effort level and a workout energy pattern.

There are thirty effort/energy combinations (see the accompanying matrix). Thus, there is one combination for every race or workout we can measure using:

The six workout effort levels (very-easy, easy, moderate, hard, very-hard, and all-out), multiplied by...

The five workout energy patterns (sluggish tired, lazy, ready, and eager).

Thirty Effort/Energy *Combinations.*

Workout Effort	All-Out	1	2	3	4	5
	Very Hard	6	7	8	9	10
	Hard	11	12	13	14	15
	Moderate	16	17	18	19	20
	Easy	21	22	23	24	25
	Very Easy	26	27	28	29	30
		Sluggish	Tired	Lazy	Ready	Eager
		Workout Energy Patterns				

There are basically three different experiences that cover the gamete of thirty effort/energy combinations.

1. **Harmonious and satisfying** (your workout effort was *just right* for the energy pattern that developed).
2. **Dissonant and discordant** (your workout effort was *too difficult* for the workout energy pattern that developed).
3. **Blah and unfulfilling** (your workout energy pattern was too abundant for the completed workout effort).

Only five out of the 30 effort/energy combinations generate an optimal amount of adaptive value—one for each of the five workout energy patterns.

Some combinations generate more adaptive value than others; some combinations generate negative adaptive value.

Adaptive value is the potential of an effort/energy combination to increase your capacity for exertion.

Ancillary Concepts. In addition to the above three major constructs, there are a number of ancillary concepts that pertain to adaptive processes.

Training Periods. A training period refers to a period of time (typically several weeks to several months) during which a regimen of workouts is run in order to achieve a specific training purpose, typically:

- Base-building,
- Sharpening,
- Racing, and
- Resting.

A training regimen is essentially the overall training stimulus, i.e., all of the workouts one does during a training period.

A training regimen should be designed to achieve an overall adaptive purpose, whether building a full complement of racing abilities, becoming racing fit, or recovering from the exhaustion that can develop during a racing season.

The training stimulus is inherently stressful. It generates stress hormones that gear your body up for exertion. Unfortunately, there's a limit to the stress the body can handle at a given time.

Your stress threshold sets the limits within which adaptation can occur. When workout effort violates your stress threshold, stress symptoms multiply, which can lead to serious injury, illness, and exhaustion.

Nonetheless, the body will adapt to the stress of training and racing, provided the effort stimulus is optimal, i.e., not so hard that it causes injury, illness, and exhaustion, and not so easy that it fails to stimulate improved racing ability.

Proficiency. Proficiency is the link between training periods and training cycles (see below). Proficiency is the measure of your ability to do a workout, without becoming sick, injured, or exhausted. It's measured as:

- Fully able.
- Effectively able.
- Passably able.
- Ineffectively able.
- Unable.

Fully-able is another way of saying peak ability. But being fully-able to do a new workout isn't the best starting proficiency level because it isn't stressful enough to adequately stimulate adaptation.

Thus, one of the most difficult training problems is finding the best entry level for every new workout in a training regimen. If you over-train with your first workouts, most of the time you'll become sick or injured.

It's easy to say "passable" is the right entry level; it's harder to know exactly the sort of workout exertion structure that that implies, and accept it, too! The game is inherently psychological, as well as physical.

Ability, as you may recall, is sufficient strength to achieve a running purpose. Ability is on the effort side of our proficiency equation.

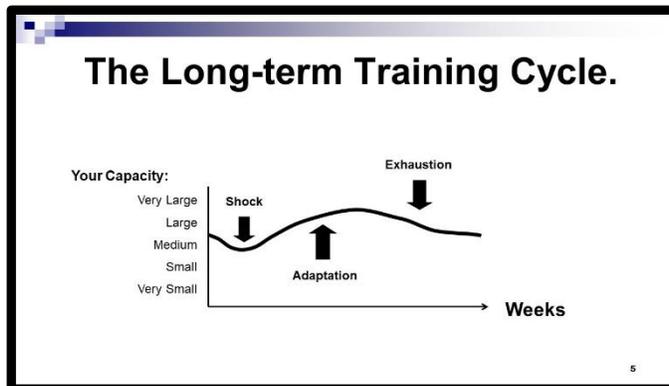
By contrast, being sick, injured, or exhausted are experiences that pertain to the energy side, i.e., the training-cycles side, as follows.

Training Cycles. A training cycle is essentially the physical response to a training regimen. It consists of three phases (see graph below):

1. Shock.
2. Adaptation.
3. Exhaustion.

There are several sorts of training cycle. The workout cycle is the shortest, lasting from the moment a workout begins, to the time when you return to the same workout-energy recovery-level you began with.

A “long-term” training cycle is made up of many workout cycles. If you do seven workouts a week, that’s seven different cycles. The way you manage these separate workout cycles determines your progress.



Thus, it’s fair to say that if you want to reach your adaptive potential, your workout energy cycles must be regular (on schedule) and adequate (optimally sufficient for the effort).

That’s the only way to maintain consistency, which is the major prerequisite for adaptive, incremental, and significant progress.

Consistency is like baking a cake: the dry and liquid ingredients have to be mixed correctly or the cake will be too dry or too moist. Similarly, your efforts and recoveries have to be consistent.

A well-established training regimen can last several weeks or several months before adaptation ceases and exhaustion sets in. Exhaustion is inevitable, which means you must be ready for it.

It follows that you should have a way to measure changes in your ability during a training period so you’ll know when to change your training regimen, in order to stimulate further adaptation.

The Logic of Progressive Adaptation. The training goal is always to optimize effort (in order to keep it at the right level).

Optimizing effort is a matter of running optimal effort/energy combinations, i.e., coordinating your workout effort with the pattern of energy that develops during the workout. Not the opposite. Thus...

It's never good to tailor your energy to your desired effort: the one usually dictated by your ambition. Unless you are really skilled at running specific efforts in specific time slots when you're ready for them, please beware.

Thus, if you add effort in one form, say, with duration, you must subtract it in another form, pace/intensity. Otherwise you might exceed an optimally adaptive workout effort level.

Besides, you don't have to increase effort, just change exertion structures. A new workout is essentially a novel workout structure, going from, say, long-slow to short-fast. In the process, workout effort remains the same.

But shock increases because the new workout is different from the usual structure and your body isn't used to it. Thus, initially, you have to be passably able to do the new workout.

Passable ability means you feel fragile and on the edge of injury while the workout effort is only moderately challenging, but not hard, because a hard workout is liable to violate your stress threshold, which will have contracted due to shock.

Each subsequent increment of exertion should bring you closer to a fully established workout, yet still at the passable level. Once the workout has been established, only then can you begin approaching peak ability.

The way to become fully able to do a workout is to *repeat* the same exertion structure as the one you recently established. That means repeating the same workout effort and the same exertion structure.

Scheduling. Defined as the process by which one decides how much workout effort to combine with certain workout energy patterns.

A schedule is a set of times during a training week when optimal effort/energy combinations will be run. Specifying a workout's ability-building purpose is not the highest scheduling priority because exertion structures are interchangeable within the context of, say, a hard/ready workout.

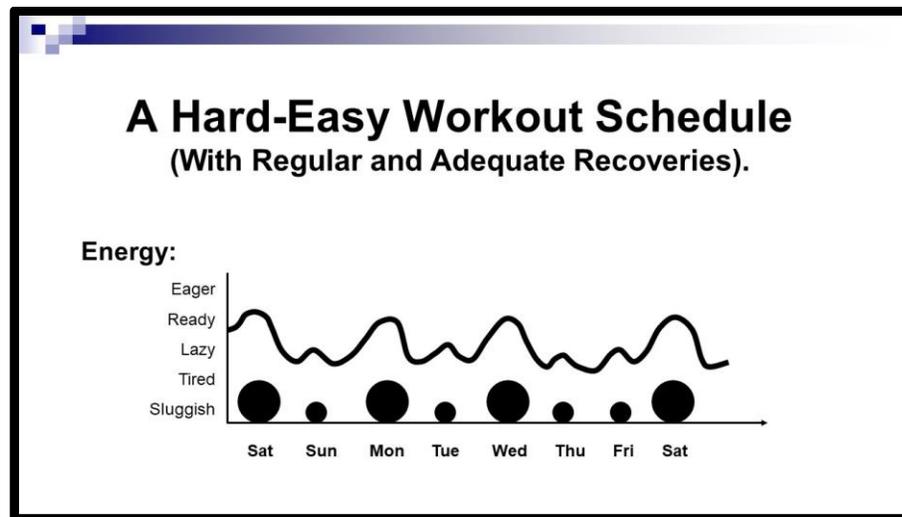
Every workout initiates a workout energy cycle consisting of six phases: transition, warm-up, expansion, fatigue, contraction, and recovery.

A training schedule has to account for the time needed to complete the cycle associated with the following standard, optimal effort/energy combinations:

- Very-easy/sluggish = 6 hours.
- Easy/tired = 12 hours.
- Moderate/lazy = 24 hours.
- Hard/ready = 48-60 hours.
- Very-hard-eager = 72-84 hours.

The scheduling process has to start with a desired workout energy pattern. Otherwise, one doesn't know how hard to run or how much recovery time to allocate before the next scheduled workout.

A hard-easy schedule, therefore, consists of hard and easy workouts situated in appropriate weekly time slots, allocating periods of time necessary for regular and adequate recovery from every workout.



Appendix A.

The Hard-Easy System

Introduction

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The Hard-Easy System is based on the premise that *workouts* are the fundamental ability-building units of a training program. In other words, you have to do workouts in order to improve your racing ability. Otherwise, why train? You might as well just go out and race.

In our system, every workout is made up of two fundamental ingredients: effort and energy. You can't do a workout without exerting an effort, and you can't exert an effort without encountering your sensations of running energy.

Your body is a separate entity from your thinking, ego-self. Your body sends messages to your mind in the form of physical *sensations*, such as pain, abundant energy, or audible breathing.

You are capable of directly experiencing your sensations of effort and energy during a workout. Effective training decisions are based on an understanding of these physical sensations. You don't need complex instrumentation.

Thus, you can learn to train effectively by paying attention to your sensations of effort and energy, and thereby learn how to read your body. Some say it can't be done; I believe this course can impart the necessary skills and knowledge.

Your Learning Project in this course is to use the hard-easy system to understand the following:

The *steps* in the training process (what has to happen in order to improve your ability).

The perennial training *pitfalls* (mistakes in thinking and practice that lead to injury, illness, and exhaustion).

The major training *principles* (ideas that experience indicates are true about training and racing).

The basic training *problems* that have to be solved for progress to be made (for example: how to *optimize* the effort of every workout so you build racing ability without injury, illness, or exhaustion).

Important training *relationships* between factors affecting your decisions (e.g., the *faster* you run at the beginning of a workout, the *greater* your risk of injury).

Our Conceptual System. This course will teach you a systematic way of thinking about your training so you can make effective training decisions. This way of thinking is fundamentally *conceptual*. It's based on words with precise meanings.

Learning to use the words in this system is like learning a new language made up of common words, with uncommon meanings. The course has a lexicon of important analytical concepts you must master to pass the quizzes and graduate with honors.

In order to learn a new concept in our system you'll need to memorize the exact set of ideas pertaining to that concept, without confusing those defining ideas with another word or concept.

For example, "pace exertion" has four essential ideas (essential refers to an idea, without which the word has a different meaning):

- a) The effort necessary
- b) To sustain a pace
- c) From moment to moment
- d) During a bout of (running, jogging, or walking) exercise.

You'll not only have to parrot that definition, but use it to think about your own exertion, without confusing it with other concepts such as *workout effort*, which initially seems the same as pace exertion, but is a very different concept.

Thus, "workout effort" is the effort of a workout as a whole. As such, workout effort can only exist *after* a workout has ended, instead of *during* the workout, which is a defining mark of pace exertion (see idea (d) above).

The concept "pace exertion" will enable us to *structure* workouts that build racing ability; the concept "workout effort" will enable us say whether an exertion structure was *optimal* (i.e., not too hard or too easy, but just hard enough for injury-free training and improved race performance).

Scales. The course makes extensive use of *scales* to describe most of the measurable phenomena within your running experience.

A scale is a full range of five or six measurable levels, generally from lowest to highest, smallest to largest, or slowest to fastest.

For example, the ***pace exertion*** scale has six, lowest-to-highest levels: mild, light, steady-state, threshold, ragged-edge, and maximum.

In other words, your exertion (the effort needed to sustain a pace from moment to moment during a run) can be scaled (measured) on the pace exertion scale.

By contrast, ***workout effort*** will be measured on the following scale: very-easy, easy, moderate, hard, very-hard, and all-out. In other words, two concepts; two scales.

The scales not only describe the range of specific concepts, but they also describe the full scope of the training and racing process.