

## Understanding Pace Exertion

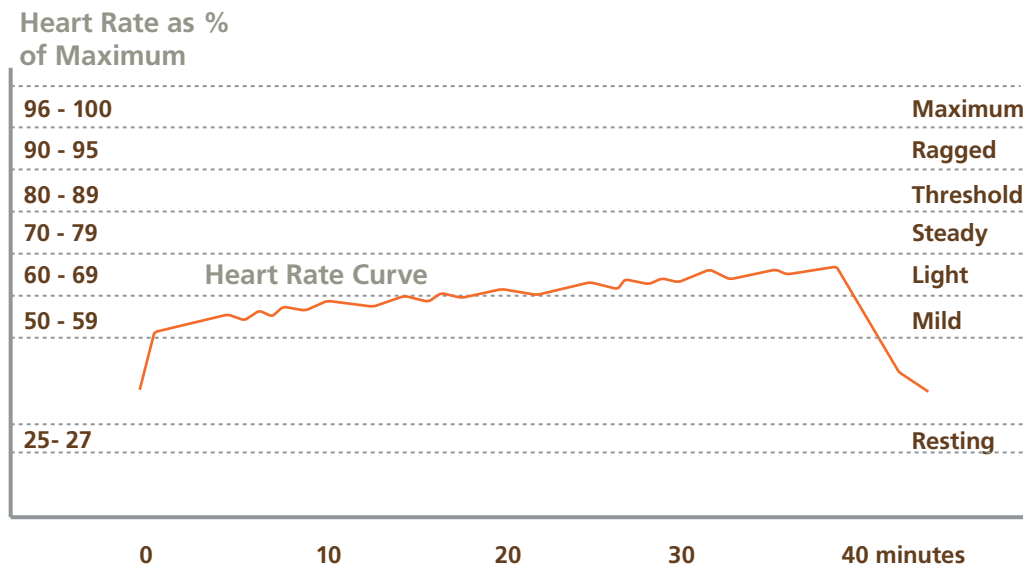
The hard-easy system is an effort-based training system. You can't improve your running ability without exerting an effort. Moreover, you won't improve unless you exert the right effort. Thus, an understanding of effort is the key to using the training process to your benefit.

Absolutely every time you do a run, you exert an effort. That effort takes two forms: pace exertion and workout effort. These are two entirely different ideas, yet many runners fail to distinguish between them. Some runners claim, for instance, that a long workout at an easy pace makes the workout easy, too. But this is not necessarily true, because an easy pace is not the same as an easy workout.

Rather than possibly being confused by such ambiguity, it would be better for us to use different words to distinguish between pace exertion and workout effort. In the following articles, therefore, an easy pace will be couched in terms of light exertion, which is distinctly different from an easy workout. To better understand exertion, take a look at Figure 1-1. What you see is a print-out of a heart rate curve that was recorded into the memory of my heart rate monitor. The upward-slanting curve measures the rate at which my heart was beating from minute to minute during the 40-minute workout.

**Figure 1-1: Heart Rate Curve for a 40-Minute Workout**

The heart rate structure of a workout is the path a heart rate curve takes on a graph from the start to the finish of the workout



The scale I'm using to measure my heart rate is based on a percent of my maximum heart rate. In this workout, I started at 50% of maximum and gradually increased my exertion to 65% of maximum.

I'm using percentages in this example (instead of actual beats per minute) because percentages usually equate to the same experience of exertion for different people. For instance, even though your personal maximum heart rate is probably different from mine, we will have approximately the same experience of exertion when we're both running at 65% of maximum heart rate. What would our experience of exertion be at 65% of max? We wouldn't know what to focus on unless we divide exertion into its five components: heart rate, breathing, power, tempo, and intensity (see Table 1-1). Together, these five components comprise our moment-to-moment experience of perceived exertion.

**Table 1-1: The Five Components of Perceived Exertion.**

Heart Rate	Breathing	Power	Tempo	Intensity
95-100%	Labored	Strained	Very Fast	Very Uncomfortable
90-94%	Heavy	Forced	Fast	Uncomfortable
80-89%	Audible	Pressed	Rapid	Tolerable
70-79%	Huffing	Relaxed	Quick	Comfortable
60-69%	Conversational	Held Back	Slow	Very Comfortable
50-59%	Normal	Gentle	Very Slow	Soothing

Table 1-1 indicates that the experience of running at 60-69% of maximum heart rate is a slow and comfortable tempo, with conversational breathing that requires you to hold yourself back. This level of exertion is called light exertion, which is one of the six levels of the pace exertion scale: mild, light, steady state, threshold, ragged edge, and maximum (see the scale on the right in Figure 1-1 above).

Thus, pace exertion can be defined as the moment-to-moment effort necessary to generate a running pace. It is couched in terms of five components—heart rate, breathing, power, tempo and intensity—which can be combined into a scale that measures pace exertion on six levels.