The Peak Period

Most athletes believe that peaking is simple – just "taper" by reducing the volume of training for several days before a big race. But I've found there's more to it than that.

When a true peak comes about, an athlete will experience an increase in form like never before. The physiological changes that come with a peak include increased power, reduced lactic acid production, increased blood volume, greater red blood cell concentration, and increased glycogen storage. Top these physical changes with sharper mental skills such as concentration, confidence, and motivation and the athlete is in top race form.

The problem is that few serious athletes are willing to change their training for several weeks before an A-priority race for fear of losing fitness. Most have become so familiar with the feeling of chronic fatigue and overreaching that a change, such as I propose here, is scary.

How to Peak

Several scientific studies of the peaking process have shown that manipulating the elements of training can usually produce a performance peak at the right time. I say "usually" because training is as much an art as a science. You may use all of the following recommendations with great precision and yet fail to

come to a peak as planned. I've seen it happen to many times. We're humans – not machines.

Here are six recommendations for peaking that have emerged from research on the topic. My experiences as a coach and athlete are mixed in with the science here. (Note that when starting a peak period it is best to be well-rested.)

- **Taper for 10-20 days.** The exact length of the taper depends on three elements: how fit you are coming into it, the length of the race for which you're peaking, and the orthopedic effect of the sport on your body.

An athlete with a great base of fitness; meaning aerobic endurance, muscular strength, and skills are well established; may taper longer than another with a poor base of fitness. The more unfit you are, the more necessary it is to continue training and creating higher levels of fitness until perhaps as few as 10 days before the big race. Since it takes about 10 days to fully realize the benefits of a given workout, training hard beyond the tenth day prior to the event is unlikely to produce significant additional fitness. Deciding how fit you are is a subjective call. If you err, make it on the side of allowing too much taper time.

The longer the race is for which you're tapering, the longer the taper should be. For example, an Ironman or a week-long stage race should be preceded by a longer taper than that of a sprint-distance race or criterium.

Multisport racing presents an interesting situation in which the individual sports may be tapered at different rates. Since running is more likely to produce

orthopedic damage, it requires a longer taper than does swimming. It will take longer for your body to recover from high-workload running than it will from a lot of swimming, so running may be cut back early in the peaking period, and swimming later on. Cycling falls between these two sports in terms of its impact on the structure of the body.

- **Reduce volume.** There are only three ingredients of training you can modify to produce a peak — the frequency of training, the duration of workouts, and the intensity of the effort within a workout. The combination of frequency and duration is called "volume." This is how much distance you put in every week. Of the components of volume, the one to reduce the most during a peak is individual workout duration. The workouts should get progressively shorter. I'll cover frequency next.

If you're tapering for 20 days cut the volume back each four to seven days by about 20 percent of the preceding period's volume. A two-week taper involves reducing volume by about 30 percent or more every four to seven days. For a 10-day taper cut volume by 50 percent for the entire period.

- **Maintain frequency.** As described, in reducing volume you're better off cutting back on each day's duration rather than the number of weekly workouts. Significantly reducing how often you train could be detrimental to performance. Swimmers call this "losing feel for the water." What they are probably describing is a loss of movement economy – skill – from infrequent swims. The same is

probably true of other sports. You may not feel as smooth and comfortable making the movements of your sport as you normally do if workout frequency is greatly reduced. In other words, skill may deteriorate as you get sloppy. So cut back on the frequency of training in each sport by no more than 20 percent. For most athletes that would probably mean paring only one weekly workout per sport. Do not eliminate any If you presently doing only two or three workouts in a sport per week.

- **Maintain intensity.** Of the three ingredients of training, intensity is the most important. Research has shown that if you cut back on the intensity of training, fitness erodes faster than if duration and frequency are reduced. Continue to train at near race effort throughout the peaking period.

Every 72 to 96 hours include a workout that rehearses the goal effort, pace, or power of your targeted A-priority race for shorter than race duration. The idea is to become very comfortable with the intensity of the event. Do not attempt workouts that are significantly harder than your goal intensity. This is unlikely to improve fitness beyond what training at goal pace would accomplish and may leave you guessing at the proper pace on race day for certain types of events.

These higher intensity sessions should focus on your race-related weaknesses. If climbing hills is a problem, include hill repeats. If open water swimming is the greatest challenge, be sure to work on that. For the multisport athlete, several, if not all, of these race-effort sessions should be combined

workouts, such as swim and bike, run and bike, or bike and run. Again, this will prepare you for the stresses expected in the race.

It may also be helpful to do a short, low-priority tune-up race as one of these sessions in the peak period.

- **Otherwise, train easily.** All workouts besides those at race-intensity should be quite easy to allow for recovery. By taking it easy you'll come into the "BT" (breakthrough) workouts rested and ready to achieve the full benefits. Rest is the key to greater fitness at this time both because it allows the body to absorb the stress you've been placing on it and because it results in higher quality training at the right times.

- **Limit seasonal peaks.** Such a peaking process should only be done two or three times in a season with at least six weeks between them. A greater separation is even better. Each of these peaks could last a couple weeks with races on back-to-back weekends. More than about two weeks for a sustained peak is unusual, but is more likely to happen near the end of the season when fitness is high than at the start of the season. Eventually, however, there will be an erosion of aerobic fitness necessitating a return to more endurance training. At that point the build up to the next peak can begin.

References

Banister, E.W., et al. 1999. Training theory and taper: Validation in triathlon athletes. *European Journal of Applied Physiology* 79 (2): 182-191.

Houmard, J.A. 1991. Impact of reduced training on performance in endurance athletes. *Sports Medicine* 12 (6): 380-393.

Houmard, J.A., et al. 1994. Effects of taper on swim performance. Practical Applications. *Sports Science* 17 (4): 224-232.

Neary, J.P., et al. 1992. The effects of a reduced exercise duration taper program on performance and muscle enzymes of endurance cyclists. *European Journal of Applied Physiology* 65 (1): 30-36.

Shepley, B., et al. 1992. Physiological effects of tapering in highly trained athletes. *Journal of Applied Physiology* 72 (2): 706-711.

Velikorodnih, Y., et al. 1986. The marathon (pre-competitive preparation). *Soviet Sport Review* 22 (3): 125-128.

Zarkadas, P.C., et al. 1995. Modeling the effect of taper on performance, maximal oxygen uptake, and anaerobic threshold in endurance triathletes. *Advanced Experiments in Medical Biology* 393: 179-186.