The Taper Period

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The taper period comprises the final 2 to 4 weeks of the season and culminates in the most important meet, usually a championship. The resting process for such a meet is called a major taper. The usual practice is to plan for one major taper per season. Swimmers may also take minor (shorter) tapers and retapers during the season. A minor taper is used when a good performance is needed at a particular meet prior to the championship. The process of retapering refers to a second taper following closely after a major taper.

Coaches seem split over the advisability of minor tapers. Some feel they interfere with training and prevent swimmers from achieving peak performances. Coaches who favor several tapers point out that many swimmers have been able to equal or improve their times in subsequent tapers. They feel, therefore, that swimmers can use several minor tapers with no detrimental effect at season's end. The process of retapering is becoming more important as an increasing number of swimmers must go through a major taper prior to a championship in order to make the cutoff times for entry into the meet. There are also an increasing number of international competitions following national meets that require retapers.

Logic favors one major taper per season with perhaps one or two minor tapers. Tapering too frequently can cause swimmers to lose valuable training time and their conditioning may deteriorate as a result. A typical winter swim season is 20 to 24 weeks in length. The summer season may be 10 to 14 weeks long, depending upon whether training begins in April or June. Since each major taper reduces training time by 2 to 4 weeks, with minor tapers interrupting training for 3 to 7 days, a considerable amount of training time would be lost by swimmers who had gone through 2 or more major tapers and several minor tapers during a season. The time spent in training could be reduced by 50 percent as a result. No more than one major taper per season is recommended. Minor tapers are recommended only when absolutely necessary.

Physiological Factors in the Taper

The improvements of tapered swimmers are well documented. It is not unusual to improve 1 to 2 seconds in 100 races and 2 to 4 seconds at the 200 distances. Improvements of 4 to 8 seconds are commonplace at distances of 400 meters and 500 yards, while improvements of 20 seconds are not uncommon in the 1,500-meter and 1,650-yard freestyles.

The reasons for these improvements have not been identified at the present time. Some people have theorized that carbohydrate loading may be involved. This is a possibility in races of 400 meters and longer. However, it does not explain the tapered performances of swimmers in shorter events, nor does it explain why 2 to 4 weeks are required to produce a taper effect. Carbohydrate loading can be accomplished in 2 to 3 days.

Although we cannot identify the physiological factors involved in producing a taper effect, we can theorize as to the training stimulus that produces it. Training has repeatedly been shown to produce temporary overcompensating (super adaptation) effects on body physiology. It is reasonable, therefore, to assume that the process of tapering involves some as yet unidentified physiological overcompensation effects. It is conceivable that future research will demonstrate that a long period of training followed by a short period of rest will produce a super adaptation effect where such mechanisms as enzyme activity, lactate removal, and buffering capacity are concerned.

The stimulus for a super adaptation effect in these and other physiological mechanisms may be a training program that does not permit complete recovery from day to day. That is, some components of the training program could be depleting certain metabolic reserves faster than they can be replaced. After 10 to 20 weeks in which these metabolic processes are operating near peak capacity in their attempt to replace the resources that are being depleted, they become so conditioned that they continue supplying energy at high rates during the 2 to 4 weeks that follow. Since the resources are no longer being depleted the quantity of energy available for work will be considerably increased and swimmers will become capable of far better performances than they were able to achieve earlier in the season.

The timing of the taper is critical. If it is too short, the complete overcompensation effect may not be realized. If it is too long, the super adaptation effect will recede as lack of exercise causes a reversal of the training process and the body's homeostatic mechanisms restore the normal untrained internal environment.

The important questions to be answered concerning the taper are: How long should it last? and How much should the workload be reduced? There are no definitive answers to these questions. They differ according to the race distance, the volume of training that was completed prior to the taper; and the unique physiology of each swimmer. Obviously, the most effective tapers are individualized. However, since most coaches must taper large groups of swimmers, a general framework should be established for the team, with individual variations occurring within that framework. Following are some suggestions for establishing a general framework together with recommendations for individualizing it to meet the requirements of certain swimmers.

General Guidelines for the Taper

The taper should begin 3 weeks before the most important meet of the season, although it may be preceded by a pretaper of 1 to 2 weeks for swimmers who appear excessively fatigued. A pretaper is a period of reduced work that affords excessively fatigued swimmers some additional rest with no loss of conditioning. Daily yardage should be reduced by 1,000 to 2,000 yards/meters during the pretaper. More important, there should be a reduction in training intensity.

The First Week

Each swimmer's state of fatigue should be assessed at the beginning of the first week. Those who do not appear overly fatigued may continue hard training until the next week. Swimmers who, based on previous experience, recover quickly from training, may also wait an extra week before beginning the taper. Those who show signs of excessive fatigue should begin resting during this week. The best sign of excessive fatigue is unusually slow times in meets and practice sessions.

Daily training yardage should be reduced to 3,000 to 5,000 yards/meters for those swimmers who are beginning to taper in this week (3,000 for sprinters and middle-distance swimmers and 5,000 for distance swimmers). The intensity of training is reduced even more drastically. Some anaerobic threshold and $V0_2$ max training is used to maintain aerobic endurance, and sprint training is used to maintain the adaptations of the ATP-CP phase of energy metabolism. These forms of training are not stressful and will maintain training adaptations gained earlier in the season without causing further fatigue.

Stressful drills such as lactate tolerance and race-pace repeats are also reduced to maintenance levels. Two high-intensity training sessions per week should be sufficient to maintain anaerobic training adaptations (Chaplouka and Fox 1975). The distance of each high-intensity set should be reduced from those that were used during the competitive season. Continue with 3 to 5 sessions of sprint training per week but reduce the yardage in these sets to between 400 and 800 yards/meters per session. Swimmers may get tired in their training during this week but they should not be overly fatigued at the end of each practice session. Muscular endurance and power training on land should also be reduced to maintenance levels. Flexibility exercises should be continued throughout the taper period.

Considerable time should be spent practicing starts, turns, relay starts, race-pace, and race strategy. Race-pace is extremely important. Swimmers should be aware not only of the time they hope to swim at the meet but also the splits they must swim to achieve that time. They should enter the competition able to swim repeats within 0.2 to 0.5 of a second of the splits they hope to attain over the first three-quarters of their races.

Stroke drills should be done daily and swimmers should be encouraged to use perfect mechanics. Fatigue may have introduced some faulty mechanics during the competitive season that need to be corrected when the swimmers are resting.

Swimmers should continue to train twice daily if the meet will be swum in preliminary and final heats. By doing so, they can keep their physiological "time

clocks" adjusted to competing twice daily. It is also advisable to train during the same hours the meet will be held. This helps to adjust the physiological "time clock" for maximum effort at the correct time of day. Training twice per day is not necessary if the meet is swum as timed finals or if the taper is for a dual meet.

The Second Week

All swimmers begin tapering at this time even if they are swimming well in meets and practices. However, distance swimmers who are swimming well may taper more gradually. They may begin the week at normal training yardage and decrease that distance by 1,000 to 1,500 yards/meters per day throughout the week. The training pattern should be similar to that described for the first week of the taper.

Those swimmers who have been resting for one week should be evaluated once again. If they appear to be recovering faster than anticipated, add 2,000 to 3,000 yards/meters to their daily training during three days of the week. A small amount of that yardage should be in the form of high-intensity race-pace repeats. Sprinters and middle-distance swimmers who continue to show signs of fatigue should reduce their daily distances by an additional 1,500 to 3,000 yards/meters. These swimmers should reduce the number of high-intensity training sessions to 1 or 2 for the week.

The Final Week

Training yardage should be reduced to 2,000 to 3,000 yards/meters per day for sprinters and middle-distance swimmers, and 4,000 to 5,000 yards per day for distance swimmers. Most of this yardage should be in the form of warm-up swimming and low-intensity anaerobic threshold swimming. Intense training, race-pace swimming, and sprinting should comprise no more than 400 to 1,200 yards/meters during 2 or 3 sessions during the week. All-out sprints should be limited to the 25 and 50 distances since they are not stressful physiologically and recovery is rapid.

The last three days prior to the beginning of the meet are, perhaps, the most crucial of the taper. Swimmers should rest as much as possible during these days so training will not interfere with the super adaptation effects that may be occurring. If the taper has been correct swimmers will not lose conditioning in 3 days of easy swimming. If it has been too long, there is nothing that will remedy the situation during the last 3 days. Therefore, rest is the logical option if you are uncertain about what to do.

Daily yardage is inconsequential during these days, provided, of course, that it is minimal. Begin each session by warming up as you will at the meet. Then, practice stroke drills, starts, turns, and relay starts. Next, practice race pace by swimming a few underdistance repeats. Finish by loosening down for 400 to 500 yards/meters.

Many swimmers make the mistake of sprinting too much during the taper. If sprint training was used throughout the season, rest, rather than additional speed work, will be required during the taper if you expect to produce super adaptations in the energy systems of the muscles that make fast speeds possible. Too much sprinting at this time may delay recovery of the fast twitch muscle fibers, causing sprinters to

enter competition with a reduced metabolic capacity in the fibers they must rely on for energy during their races.

There will be a tendency for body weight to increase during the taper because reduced training requires fewer calories. Swimmers should be advised to reduce their food intake so unnecessary fat is not deposited during these final weeks.

Psychological Factors in the Taper

The success of tapers may stem as much from psychological factors as from those which are physiological in nature. Swimmers must believe they will swim well in order for a taper to have its full effect. Psychological preparation should begin at the first team meeting of the season. The season should be put in perspective by identifying the most important meet or meets and explaining the relative importance of each of the other meets. This will help swimmers maintain their perspective during the season so that their most intense motivation occurs during the taper. This will lead to a psychological as well as a physical peak.

The uncertainties of the taper, particularly whether a swimmer feels he or she is getting too much or too little rest, can create anxieties that may erode confidence. Leading coaches around the world are unanimous in their advice to remain positive during the taper. Athletes need the reassurance that a calm, positive coach can give. This does not mean that a coach should lie to swimmers if the taper is not going as expected. If setbacks make it impossible to honestly indicate that the taper is on schedule, the swimmers should be told so. The environment can then be kept positive by instituting procedures to remedy the situation.

Swimmers should be prepared for any meet conditions that could upset their confidence. Such problems as crowded warm ups, unusually cold or warm water, inadequate wave control, flat turning walls, poor visibility, and unusual starting blocks should be discussed and practice drills instituted to prepare for these conditions. If possible, arrive at the meet site a few days in advance of the competition so swimmers will have time to adjust to these conditions.

The Minor Taper

A minor taper is used to produce fast times in a mid-season meet. It is generally 2 to 3 days in length. Performances are expected to improve during a minor taper although not to the extent that they will improve following a major taper.

There seem to be two methods to achieve a minor taper that are commonly used. In the first method, swimmers reduce their daily yardage drastically for 2 to 3 days before the meet and train as they would during the final 3 days of a major taper. In the second, the daily yardage is reduced only slightly but the intensity of training is decreased until nearly all swimming is at a moderate pace. Both methods have been effective for improving performances and they have the advantage of causing only minimal loss of training time and little or no loss in conditioning.

The Retaper

The first procedure in retapering after a major taper, is to resume training near pretaper training levels. The workout should be sufficiently intense to maintain your present state of condition without causing the fatigue you experienced during the competitive season. This pattern is followed until you are within 3 to 7 days of the next important competition.

It will not be necessary to retaper for the same number of days that were required for a major taper because once swimmers have been fully tapered it will not take so much time to recover during the retaper. If the next meet follows closely, within 1 or 2 weeks, the retaper should be 3 days in length. If the time between meets is greater, the taper period can increase accordingly.

In cases where the performances during the major taper were not as fast as expected, more rest should be given during the retaper. If the next meet is only 1 week away it would be wise to continue resting without returning to hard work. The additional recovery time may correct the situation and produce the desired performances. If the poor performance was caused by too much rest, there is little you can do to correct the situation in 1 week.

When important meets are separated by more than a week it becomes necessary for the coach to make a judgment regarding whether the previous taper has been too long or too short. If you suspect that swimmers have had too much rest and have lost conditioning, work near mid-season levels of distance and intensity until you are within 3 to 4 days of the next meet. If you suspect that they have not had enough rest, maintain a reduced schedule of yardage and intensity similar to that followed in the first and second weeks of a major taper until you are within 5 to 7 days of the next meet. At that time the workload should be reduced and the training should be similar to that followed during the final week of a major taper.