PERIODIZING THE YEAR

For many years, experienced international athletes in most sports have recognized the necessity of stressing different objectives during the year, and different objectives in off-years than in World Championships or Olympic years. Their aim is simply to reach a peak at a very specific time. In planning their training over a long period, these athletes (or their coaches) know the following principles:

* The body adapts best to fewer stresses at one time than to many. For example, one can aim to develop cardiovascular ability (high physiological stress) at the same time as technique (low physiological stress),

* The net adaptation is greater if you work successively on one energy system, then maintain it while concentrating on another.

* Work first and longest on those aspects of your sport which demand more time to develop. For example, it takes longer to build up endurance (3-4 months) and technique than it does speed (6-8 weeks).

However, in my experience, to learn proper slalom gate skills, they have to be learned at high speed, because as Jon Lugbill once said, "there are certain techniques for going slow and other techniques for going fast. You have to develop the techniques for going fast." Thus, periodizing for new or up and coming boaters should probably mean a great deal of short course work throughout the year in order to develop the skill level at the requisite speed. For these reasons, the periodizing discussed in this chapter applies best to experienced international racers.

In slalom, given the fact that the World Championships is every two years, this has led to a two-year cycle for most top paddlers. There now exists literature on periodizing that has widespread acceptance and its principles can be adapted to slalom training very nicely.

I have found that the training year for slalom can be conveniently broken down into two major periods and five or six phases, depending on the ease or strain of the racing season.

PREPARATION PERIOD

PHASE I

This phase, lasting roughly from September through December, occupies about one third of the entire year, and is thus the longest phase. The major objective of Phase I is to increase the paddler's ability to sustain a heavy intense workload later on, particularly in the spring. In a sense, the paddler has to "train in order to be able to train."

In Phase I, the paddler should concentrate on increasing his volume of work, rather than the intensity. The objective is to make the paddler work on increasing his aerobic capacity. This is because the 02 system takes the longest to develop and therefore work on it should start first.

GENERAL TRAINING: Traditional literature says that the work during Phase I should be more general and not always in the boat. The objective is developing a sound base of aerobic fitness. Thus, things like running, swimming, bicycling, cross-country skiing, soccer, squash are recommended. The traditionalists state that the general nature of the training during Phase I is also best for psychological reasons: It allows the athlete to get away from his event for a while.

While I generally agree with the idea that it is best to emphasize aerobic work in Phase I, I underscore the word "emphasize" as opposed to "do exclusively." Furthermore, I feel that most of the aerobic work should be done in the boat. Slalom is such a technical event that even in Phase I, most of the training has to be pretty specific. Thus, the out of the boat training described above should never be substituted for boat training, it should complement it. I have found that if there is sufficient variety in the boat work, the paddler does not need much of a psychological break from being in the boat. Thus, I would say that if you must choose between boat work and other training, choose boat training. The following are aerobic workouts adapted to paddling:

* 3000 meter flatwater paddles for time; or
  2 X 1500 meter intervals for time.

* 9 minute downriver races in slalom boats in whitewater.

* Long distance gate courses for time. There are many ways to do this. One is "gate loops" where the paddler decides on his course, and runs it through once as fast

as he can. Then, the target time for each lap is set at about 105% of that time. The coach yells the lap time out to the paddler as he completes each lap. The paddler continues doing laps until he cannot meet the target time. By lowering the target time in mid-workout, the coach can control how long the paddler stays on the course. For example, if a paddler has been on the course for five minutes and shows no signs of fatigue, the coach can lower the target time to speed him up. I have found that 2 X 10 minutes makes an excellent workout of this sort.

Other aerobic gate workouts can simply be very long courses (up to 8 minutes, say) also consisting of loops, or even an extended course if you have enough gates. On these, the rest period between runs should be very short: equal to the work time, or half the work time.

* The key to success in these aerobic gate workouts is the intensity level. It should be high (75-84% of maximum heart rate). Timing each run -- the athlete can do it himself -- will ensure sufficient intensity.

PERFECTING INDIVIDUAL COMPONENTS OF SLALOM: Phase I is also the best time to emphasize technique. This is because before a paddler can use new technique successfully in a race situation, he must be able to do it without thinking about it. It doesn't take a particularly long time to teach paddlers new technique, but it does take a long time to make those new techniques habitual. Thus, the technique you learn in the fall will, by and large, be the technique you will have to use in the spring.

For this reason, Phase I must also consist of very technical gate work, often without the stopwatch. This is so the boater can learn the new techniques in a non-pressure atmosphere. He will learn them fastest this way -- although it is crucial that he later stabilize them through a large volume of competitive, timed gate work on whitewater.

The best, most effective way of learning proper gate technique is with small groups (2-3 individuals). Each session, lasting about 45 minutes or so, is devoted to a single type of gate or combination. The gate is run many times, with ample discussion of the best way to do it. The coach compares boaters (this is why it's better to have more than one person) and the boaters watch each other. Plenty of time should be allowed to discuss the move. After the gate has been run many times in one position, a similar (but not identical) gate is sought somewhere else and practiced again. In this way, the paddler

is sensitized to the variations of the move, too. Afterwards, the athlete writes in his training log the lessons he has learned.

There are 30-40 key moves in slalom (see technique section) and if the paddler spends one workout a day on each move (some moves will require many days) he can learn a tremendous amount in two months. Other workouts, of course, should be much more demanding physically. But I have found that particularly on gate loops, the boater can practice his newly acquired techniques while also getting a good aerobic workout.

COMPETITION-SPECIFIC TRAINING: Here the boater is rehearsing his gate technique in a competitive situation. Typically this would be timed runs against other boaters. While traditional literature says that this work should not be done a great deal during Phase I, I have to disagree. I have found that the boaters I have coached can handle a large amount of timed, competitive work all year round, although it is certainly true that they do proportionately less of it in Phase I.

I believe that this pressure work is the single most important facet of slalom training. Physically, these workouts ensure sufficient intensity levels, which we have seen are necessary for optimum development of the three energy systems. Technically, once the boater has mastered moves without pressure, these timed sessions force him to learn proper technique at high speed -- speeds often faster than race pace. This is important because it allows the boater to develop faster and faster moves, which result in faster running times. I believe that in order to win in modern slalom, you have to be fast enough to win -- no more cautious clean runs and waiting for the opposition to make a mistake. Therefore, the emphasis in training much of the time must be on speed.

The final benefit of competitive workouts is psychological. The boaters become accustomed to racing and the psychological stresses associated with that. Thus, on race day they have rehearsed the situation better than the opposition. The best illustration I can give of this phenomenon is something Paul Grabow, C2 Bronze Medalist (with Jef Huey) at Bala told me. Several weeks after the World Championships, I was timing a workout back home on the Feeder Canal and Paul was watching. He said, "It's only now that I realize that our winning a medal was different from just taking another run on the Feeder Canal." Subconsciously, Paul had become so used to the competitive situation in practice that the race itself did not produce the same anxiety levels in him as it did for the opposition.

Types of workouts to stabilize gate technique at high speed during Phase I include:

* 30, 60, 120, 200 second whitewater courses, with or without long rest (depends on which energy system you

are trying to develop, simultaneously with gate technique). The shorter the course, naturally, the more speed of the gate techniques will exceed actual race speed.

* Team runs for time (more aerobic).

* Parallel slaloms. Set up two identical courses side by side and race boaters in pairs. Count penalties but don't time the runs.

Thus far, I have focused primarily on gate training. I also think that Phase I is a good time to get in a lot of whitewater experience from running rivers (without gates). Playing with individual moves and stunts (enders, pirouettes, squirts, etc.) is pretty anaerobic, while the long length of the typical river run (a couple of hours) also stresses the 02 system. Psychologically, the river runs are a good break from a lot of gate training.

PHASE II

This is the winter period, lasting approximately from mid December through February, when it is too cold for most boaters to be outside regularly. Theoretically, this is supposed to be the hardest working period of the year. The athlete's ability to sustain very hard workouts should have been built up by now, so in this phase, while the volume of training stays the same as in Phase I, the intensity of slalom-specific training increases sharply. Thus, more gate workouts are timed and against competition.

The major obstacle for most paddlers in achieving the goal of Phase II is cold weather. They just can't paddle outdoors. For many years, however, the paddlers I have coached have been particularly fortunate to have the use of the U.S. Navy's David Taylor Model Basin, a 700 meter long, indoor flatwater pool on which we hang gates.

In recent years, we have also used Dickerson, a nearby outdoor whitewater canal, the water of which is used to cool huge generators owned by a public utility company. Downstream of the generators, the water is very warm, thus making it possible to paddle in freezing air temperatures.

More and more top paddlers, Richard Fox, Norbert Sattler, Albert Kerr, Jon Lugbill, David and Cathy Hearn, for example have even gone to Australia, New Zealand, and Southern California during the winters in order to do more specific gate work during Phase II.

During Phase II, it is crucial to make sure that development of technique, strength and speed take place at the same time. If for

example, the paddler engages in a high volume of high intensity work and his technique is improper, he will ingrain the improper technique into his mind. Thus, the athlete and his coach must still pay a great deal of attention to technique during Phase II.

It has been traditional for paddlers to begin or intensify weight lifting programs during the winter. Over the years, however, I have warned against over reliance on weight programs to REPLACE boat workouts rather than COMPLEMENT them. For example, in past years when winter paddling was not considered an option for most boaters, weight lifting represented one form of strenuous exercise that could be done during the winter. In that situation, I think it is very good, especially if the weight workouts can be made very specific to slalom movements. However, because many top paddlers in the past did a lot of weight lifting, I think a lot of today's paddlers have made the mistake of trying to copy that rather than finding new ways to paddle in gates.

I'm not saying that weight lifting is inappropriate at all, only that it has often been misused. For example, if a paddler, after critical analysis of his past race season, decides that lack of strength in a specific move or position has kept him from having proper technique, then it may be that a weight program targeted to strengthen the muscles involved in that particular move may be in order for him. Let us assume for a moment that a K1 paddler decides he is weak in the duffek position. Instead of doing dead-lifts, sit-ups with weights, and the bench press, he needs to design an exercise that will strengthen the specific muscles used in the duffek position. It is a question of specificity of training. Besides the duffek/draw position, other slalom movements that many people are weak in are bow sweeps, and reverse sweeps. Weight exercises designed to improve these are good, as long as they don't take away from time in the boat.

Finally, regarding weights, I think the paddler should try to use several different grips on each weight exercise; this way he develops the muscle in several different positions, not just one, and this is best for slalom.

Towards the end of Phase II, the athletes should be exposed to more difficult training circumstances, such as those that occur with rain, noise, and other distractions. This teaches the boater to concentrate even in the midst of such distractions, an important asset, come race day.

Workouts that are appropriate for Phase II include: * Timed gate work on various length courses

* Timed flatwater sprints in both slalom boats or

downriver boats, including sprints in reverse in slalom boats. Paddling the downriver boat doesn't work as well for C1s as it does for the other classes because the big deck of the C1 downriver boat makes it impossible to use the same stroke in both boats. In recent years, however, American C1 Paddlers have designed low deck downriver C1s which do permit the same stroke.

* Timed Grand Prix runs. These stress flat-out speed in gates. All the gates are forwards and penalties don't count.

At the end of Phase II and the start of Phase III, an experienced slalom paddler should be very close to his previous best performances. Younger paddlers will be less close, especially after only one race or so, but by increasing the workload, particularly through more races, they will improve further. If no improvements follow, it is often because the intensity of the training has been increased too fast in Phase II.

COMPETITION PERIOD

PHASE III

This is the beginning of the competition period up through the team selection trials and lasts about 2 months. The main task during this phase is to stabilize competition performance as much as possible, that is, to practice consistency in gates at high speed. After this work the paddler will be able to produce optimal performances in major races. Specific whitewater work in gates is increased while general work and special weight work are decreased.

During Phase III, traditional theory is that the total volume of training should decrease while the intensity should increase. I have found however, that among top slalomists this is not always true. With the onset of better weather, many paddlers increase their training so that they are doing 2 - 3 (in some extreme cases, 4) boat workouts a day. It is important during Phase III not to omit strength training entirely, for strength losses can be significant over as short a period as a fortnight or a month. However, I feel that adequate strength training can be done in the boat, through the use of short courses with long rest. These force the paddler to go at maximum intensity and produce powerful bursts of energy. Best of all, of course, is that the movements are exactly the ones needed for slalom. Once again, to ensure maximum intensity, I have found that competitive workouts are the best for this. Short courses are the most fun since the work doesn't last long and there is plenty of rest.

A slalom paddler should be able to produce his best performance of the season 6 - 8 weeks from the start of this phase. This is typically when the team selection trials occur.

Workouts during Phase III include:

* Timed gate loops for gate skill and aerobic work.

* Timed short courses for ATP development; other non-timed short courses consisting of "impossible moves" to teach technique and build confidence. The paddler should feel, "If I can do these clean, I can clean any course."

* Timed 30 - 90 second courses for the LA system

* Full length runs, timed and scored against competition. This simulates race conditions.

* Simulations. On a full length course, do 30 seconds of it at maximum intensity, then rest

15" and repeat all the way down the course.

    * Split runs. Again on a full length course, do the top half, rest, then do the bottom half. Then try to match it with a couple of full length runs.

* Grand Prix: for speed in gates.

    * Locomotion. On/off/on/off on a full length course

    * 10 second sprints on flatwater with 50 seconds rest, for ATP development.

    * Whitewater sprints. There are two kinds of these. In the first, a sprint of 40 seconds or so is done by pairs of boaters. The boaters start out on opposite shores, peel out into the current on "GO!" and race each other down a wave chain. They paddle back up and repeat 8 12 times. In the second method, boaters do point-to-point ferries. The boater starts on one shore, ferries to a point on the far shore, and races to the near shore again, this time to a point lower than the original start. He paddles easily back to the original start and repeats the whole process. Many boaters can be run off in either of these workouts.

    * Flatwater sprints. Boaters can either race each other in waves over 100 - 500 meter distances or do sprints on their own. Here is one workout that Richard Fox does by himself. With the stopwatch left running continuously, start on even minutes (with one exception) as shown below:

Start minute		Approx. time in seconds	Approx. rest in seconds	Cycle time secs.
0	30 strokes (count on one side)	34	26	60
1st	60	75	45	120
3rd	90	115	65	180
6th	120	150	90	240
10th	150	185	145	330
13.5	150	185	145	330
17th	120	150	90	240
21st	90	115	65	180
24th	60	75	45	120
25th	30	34	26	60
27th	30	34	26	60

Three minutes rest; then repeat the whole thing. This covers about six miles and lasts about an hour. "You have to pace yourself," Fox says, "particularly on the first time round."

PHASE IV

If the major event of the year is to occur after Phase III -- and in slalom it always does -- it is useful to have a short period (2 3 weeks) of relatively lower intensity before preparations begin for the final race period. This typically occurs right after the team selection trials. During Phase IV, the emphasis reverts back to more general training and more aerobic boat work, both as in Phase I. If the paddler has peaked in Phase III, Phase IV helps him to recover and prepare for Phase V. If the paddler has not peaked in Phase III, then Phase IV can be eliminated entirely.

PHASE V

This coincides with the period starting a couple of weeks after the team selection trials and ending with the World Championships themselves. It is a period of direct preparation for the World Championships. By combining races and competition-specific training (timed and scored runs on whitewater courses) the paddler will improve still further in about 3 - 4 weeks. Ideally, therefore, the major event of the year will fall at the end of Phase V.

A training camp environment is typical for slalom paddlers during this phase. By training with other top paddlers who have been selected for the World Championships, athletes spur each other on to peak performances. Workouts during Phase V are very similar to those during Phase III, except that more care is taken to make them very high quality and short duration. Sessions include:

* Interval work on long training courses on easy whitewater.

* Full length runs on very hard whitewater courses; split or half runs on these.

* Pace work. This is done by taking multiple splits on a long course and seeing whether the faster overall time comes from fast opening splits or slower ones, etc.

* Race simulation. Three timed and scored runs on a long, hard whitewater course. Change the course and repeat. The three runs represent a practice run and two timed and scored official runs. Aim to make the practice run as good as the other two, because in this way you are practicing the course at race pace, which is quite different from practicing it at slow speeds with a rest in every eddy.

* Occasionally (once a week) 4 - 5 clean runs on a full length course, but no times. Go as easily as you like. The object is simply to clean the course. Stay there until you achieve the requisite number of clean runs.

It is normal that during this phase, the athletes will be in a training camp for much of the time. I have found, however, that 3-4 days in a row is about all top slalomists can take on hard whitewater gates. After that, they need a day or two of rest (although they can paddle on flatwater gates) before they go back to the whitewater. Thus training camps should either not last longer than 3-4 days, or there should be a rest period programmed into them every 3-4 days.

PHASE V1

This is a transition phase. If it has been an easy season and the athlete has not experienced great strain, he can go right into Phase I again. This means a rapid increase in the volume of training but a drop in the intensity. If on the other hand, it has been a very big season, as much as 3-6 weeks of active recovery should occur before Phase I begins. Paddlers coming off a hard season should not go into Phase I with insufficient recovery. If they do, their progress in Phase I will be retarded.

During Phase VI, there should be a decrease in the workload, with the emphasis going once again to general training rather than to competitive boat workouts. While the emphasis should be on physical and mental relaxation, this does not mean complete rest, or a detraining effect will set in. While most top paddlers do not make

this mistake, I have seen many others who have; they do practically no training in August and September and even into October.

Types of sessions in Phase VI include:

* Cutting back the workout frequency to one a day or even less.

* Easy paddles, perhaps only in the downriver boat on flatwater.

* Easy running.

* Light exercise and games.

DETERMINING THE PROPER NUMBER OF RACES

One of the most important parts of arranging the yearly schedule is determining the proper number and spacing of races. In arranging your Competition Period, the following factors must be considered:

* The appropriate number of races for reaching optimum performance. For the young paddler, it is not necessary to prepare a strict structure of races, but for the elite paddler, in a World Championship year, it is. The young paddler -- and even elite paddlers in an "off-year" -- should emphasize race experience by attending a lot of races (15). Indeed, this is really the aim of the off-year; reach a good base of race experience.

  But in a World Championships year, it is important for the elite paddler, or one who hopes to become elite, to carefully prepare his race schedule. For this paddler, it would be a mistake to enter too many races with insufficient recovery between them. Typically, this has meant for the elite paddler, about 5-6 races in Phase III, preceding the team selection trials and one or two more in Phase V before the World Championships.

* Dates of major races. In a World Championship year, the major races are the team selection trials and the World Championships themselves. In off-years, they are the team selection trials and the Europa Cup races. In each year the National Championships can also be used as a major race for certain paddlers -- those who either did not qualify for the World Championships or Europa Cup races, or who could not realistically hope to do very well in

them and are looking for another peak for the season.

The major races are regarded as the starting point for all planning and everything else is figured out around them, planning your training from race dates, backwards.

Typically, arranging race dates for the elite paddler follows this pattern, although it is important to realize this is very individual, since it depends on what the paddler is working on in the races:

a) In phase III, starting in late February/ early March, one low-key race, the first competition of the year, to get back in the swing of things.

b) Perhaps two weeks to assess how that race went and to adjust training before the next races.

c) One race a weekend for the following 3-4 weeks.

d) Another break of a week or two to adjust and prepare for the team selections trials.

e) One last race preceding the trials in order to rehearse the race strategy you will use in the trials.

* Recovery period between races. Traveling to and from races generally takes so much time, often two days total, that it seriously eats into the training time available in the week. Largely because of this, a race every weekend makes it almost impossible to work on a specific technique or psychological preparation and have it ready in time for the race. Thus, before a racer commits himself to several races on successive weekends, he should feel that he has no goals other than race experience, determining proper warm-up, race strategy, race execution, and maintenance of established improvements. If there are other problems, he would do well to skip the next race and try to work on them at home in a less pressured atmosphere. For these reasons, the recovery period will be unique to each paddler depending on age, experience, and objective of the particular race.

UNITS, MICROCYCLES and MACROCYCLES

TRAINING UNIT: A training unit is a single session devoted to achieving a particular objective, such as increasing speed, improving certain gate techniques, or race pacing, for example. A day's training might consist of several different units, however, each designed to work on a particular weakness or reinforce a particular strength.

MICROCYCLE: A microcycle is a group of training units combined in such a way as to achieve a total objective. For example, if increased speed is the desired goal, a week's worth of training units oriented towards speed development might be in order. The units comprising the microcycle could consist of things like short gate courses, Grand Prix runs, or long rest interval work. Microcycles can be repeated many times during a season.

Microcycles permit the paddler to concentrate on one particular objective which inevitably means that he will be more efficient in pursuing it. Microcycles also help avoid boredom during periods of intense training. If microcycles are not used, there is a tendency to rely on one standard workout or variations of it, too much, with the result that performance levels plateau and stagnate. In creating microcycles, the following factors must be weighed:

* The athlete should not be subjected to extremely hard workouts, back to back, since he will have great difficulty recovering from them.

* Each training unit should pursue a specific objective and it should vary from day to day so that the workouts are not dull.

* The interval between two similar training units should be long enough for the paddler to recover.

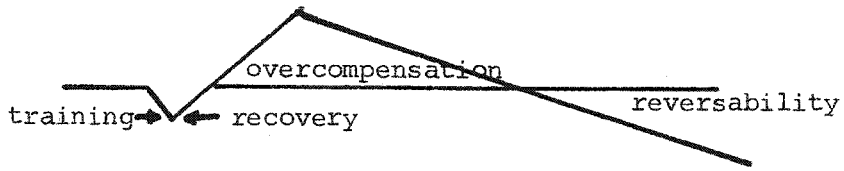
* His recovery will be accelerated if units of active recovery are interspersed between other units of training. For example, in a training session, if the athlete is switching from an endurance unit to a speed one, then several minutes of easy paddling might be indicated before starting the next unit.

* However, if training units with very different purposes follow each other, active recovery units may not be necessary. For example, if a paddler is switching from a speed unit to a technique one, a separate recovery period might not be necessary.

* Workouts which stress maximum strength should be scheduled for days when the athlete is at full capacity, and not following extremely hard days, especially if the LA system is involved. A similar rule applies to workouts held in one day.

* Generally more than 24 hours of recovery are necessary from very hard workouts. Thus, one might have-an extremely hard workout in the morning of one day and another hard one in the late afternoon of the next.

* The best improvement in performance comes when new stimulus to the paddler comes at the highest point in his overcompensation phase. After a paddler goes through a workout, his capacity is reduced for a while until he recovers from the stress. But then he reaches a capacity slightly above the original one. The process is called overcompensation. But reversibility sets in after a certain point. Thus, the trick is to determine when the paddler is at the height of his overcompensation phase and then intro-duce another stimulus. The following diagram shows this:



MACROCYCLE: A macrocycle is the sum of units and microcycles that are necessary to achieve a certain purpose in training. For example, a boater may engage in a two month macrocycle designed to improve his gate technique. The macrocycle may be broken down into microcycles as follows; the first, in which the boater learns the new techniques with no pressure at all; another, in which he stabilizes them at higher speed against the stopwatch; and a third in which he learns to do all of this under race conditions on a whitewater course.

A macrocycle is also determined by a change in intensity or volume of training. For example, switching from indoor gate work to outdoor work would mark a change in macrocycles. In very rough terms, macrocycles last on the order of 4-6 weeks.

TRAINING PRINCIPLES

The following principles should be adhered to in designing a training plan:

* A high volume of training without sufficient intensity fails to produce improvement, just like high intensity with too little volume.

* The closer the duration and intensity of a workout approach an optimum level relative to the paddler's capacity at the time of the workout, the faster his/her improvement will be.

* If the workout is too hard, or doesn't stress the right item, then the paddler's improvement will be retarded and maybe even reversed.

* The relationship between work and rest is crucial and they should always be treated together. Furthermore, they are unique to each individual and thus the proper personal formula must be found.

* Whereas overcompensation quickly results in improvements in performance among younger athletes, the process takes much longer for more experienced ones. For the highly experienced athlete each optimum workout will cause a slight overcompensation, but it is only after the cumulative effect of a lot of this training that improvements come. Furthermore, the improvements do not always come at predictable intervals. There will typically be plateaus of performance, suddenly followed by a noticeable improvement.

* The amount and intensity of work must be constantly increased if improvement in performance is sought. If they are not increased, the athlete will simply maintain at a certain level.

* The rate at which an athlete regresses following the cessation or reduction in training depends on how recent his adaptation to the high workload is. The more recent, the quicker will be his reversibility. Thus, one can see the necessity for long periods of training as opposed to "crash" programs.

* Increases in workload should be brought about in the following order:

    1. Raise the frequency of training -- more workouts a week.

    2. After adapting to this, then increase the volume of training in each session.

    3. Lastly, raise the intensity of each workout.

* A uniformly constant increase in the workload is not as effective as increasing by little jumps spaced at certain intervals. Apparently, this method forces the athlete's system to adapt better. The interval between each jump is unique to each individual. How much should a paddler attempt to increase his training each year? Based on fragmentary evidence (see training plans of elite athletes in SECTION III) somewhere between 15 and 20 percent seems appropriate.

TYPES OF WORKOUTS
Summary

The following section summarizes the major workouts done by elite slalomists, by objective. It also indicates what time of the year the workout -- or objective - - is particularly appropriate. However, this by no means should imply that the type of work indicated is the only thing the athlete should do. He should do everything all year round. It is only the proportion of each that changes with the season. Also bear in mind that this section is aimed at experienced racers, racers whose gate techniques are fairly well established. For another boater whose technique needs a lot of work, attempting to periodize the year like this might not be the best thing. Instead, that boater should concentrate more on developing gate techniques at high speed. This means lots of timed repeats over 30-60 second courses, with longer pieces just before, and during, the race season. For this boater, attempting to apply the principles of interval training is probably nowhere near as important as learning the gate skills: If he wants to take extra time after a run to discuss a move, that's fine.

By using this section as a guide, the racer can construct his own training program, which I feel is preferable to trying to follow someone else's because with his own, the athlete can introduce spontaneity and excitement which is important for maintaining high morale. High morale is crucial for winning.

Under each objective, there are several workouts listed, so the boater can introduce variation easily. Furthermore, it is my hope that once he understands the principles of training he can make up an endless variety of workouts and thus make training even more interesting.

OBJECTIVE: Gate Skills

Particularly appropriate in the Fall. Should be done practically every day for 2-3 months.

TYPES OF WORKOUTS:

1. KEY MOVES: Go through each of the key slalom moves, devoting entire sessions to just one move. Whole sessions last 45 minutes or so. They should be this short because maximum concentration cannot be maintained for longer periods and trying to force it is counterproductive. Do the same move on several different gates to learn the variations. Do not take times. Do them on easy whitewater first, then race-type water. Discuss the best methods and write down conclusions in a log book.

2. COMBINATIONS: Put several key moves together into little courses of about 40 seconds duration. Do not take times, but the boater should take the courses at a brisk pace, especially after he takes a couple of familiarization runs. Use very hard and tight courses, as well as very wide open ones, to learn all the variations in technique.

3. FULL LENGTH COURSES: Take 6 clean runs on a full length course, again without times, but at a brisk pace. The objective is to execute properly all the individual gate techniques that the boater has learned, and put them together in a smooth, fluid run.

OBJECTIVE: Gate Skills/0_2 System

Particularly appropriate for the fall and winter. During the period of emphasis, the 02 system should be worked 4-5 times a week. To maintain, you need only 1-2 times a week. Use very long courses against the watch with short measured rest between runs.

TYPES OF WORKOUTS:

1. GATE LOOPS: Using, say, 10 gates, repeat them over and over to make a full length course -- or even better, longer than full length. Rest time equals work time or half work time.

2. LAPS on gates within a set target time: 2 X 10 minutes, for example, with a 5 minute break between the two.

3. TEAM RUNS on a long course.

4. HARD, EASY, hard, easy: On an 80 second loop, for example, do:

   1 lap easy
   1 lap hard
   1 lap easy
   2 laps hard
   1 lap easy
   3 laps hard
   1 lap easy
   3 laps hard
   1 lap easy
   2 laps hard
   1 lap easy
   1 lap hard
   (none of this is timed)

5. MEDLEY: This is a combination of untimed, hard-easy loops on a slalom course and hard, easy paddling on a straightaway. Pick a loop lasting say, 60 seconds, and a straightaway of about 200 meters long. The work does not have to follow any particular pattern -- you do what you feel like at the moment. The following is one suggestion:

   On the Gates: 2 laps easy, 2 hard
   On the Straightaway: 2.5 laps easy, 1/2 very hard
   Gates: 1 lap easy, 2 hard, 1 easy
   Straightaway: 30 strokes very hard; paddle very easy;
   5 strokes very hard; paddle easy;
   10 strokes very hard; do full spin;

5 strokes very hard, paddle very easy;
turn around; paddle easy;
150 meters very hard; paddle very easy;
5 strokes very hard; paddle easy; when
preparing to turn around, go into the
turn very hard, do a duffek stroke,
come out of the turn with:
5 very hard strokes, do a full spin
followed by:
5 very hard strokes; paddle very easy.
And so on, as you please.

Gates: 1/2 lap easy, 1/2 hard, 1/2 easy, 1/2 hard; 1 easy,
2 hard and so on.

Warm down on gates: 1/2 lap easy with one blade (in Kl),
1/2 lap with other blade.

OBJECTIVE: 0_2 System Without Gates

Generally, this is long distance paddling on either flatwater or whitewater.

TYPES OF WORKOUTS:

1. 3000 meters timed.

2. 2 x 1500 meters timed.

3. 9 minute wildwater race in slalom boats.

4. Long paddle (an hour or so) at high intensity (pulse rate over 150).

0_2 System Out Of The Boat

This is particularly appropriate in the fall and winter, also.

1. LONG RUNS. Make sure the intensity is high (pulse rate up over 150).

2. JUNGLE RUN. A long run punctuated with 30 exercises -- push-ups, dips, chins, etc.

3. GAMES. Soccer, basketball.

4. SWIMMING, BICYCLING, CROSS-COUNTRY SKIING. (Keep the intensity high).

Use interval training principles with the above exercises, that is, do the event intensely for a while, rest, then do it again. This ensures that the intensity level stays up.

OBJECTIVE: LA System/Gate Skills

During the period of emphasis, the LA system should be stressed 3-4 times a week. It takes 6-8 weeks to build this system to its maximum, but only 1-2 times a week to maintain it. Thus, the period of emphasis is March-April.

TYPES of WORKOUTS:

1. Courses of 30-120 seconds, for time. Done with rest equal to time it takes to return to start, paddling lightly. Or done with brisk paddle back to start. This latter variety is called "work relief" (as opposed to "rest relief"). In the rest period you are doing some work so that you never completely get rid of lactic acid from previous runs, thus starting each new run at increasingly higher lactic acid levels and reaching very high levels by the end of the work-out. This type of workout is very hard and should not be attempted too often.

   EXAMPLES:

   a. On whitewater: 2 x (7 x 40 sec.)

   b. On easy whitewater/flat-water: 3 x (7 x 40 sec.)

   c. On whitewater and on easy whitewater/flatwater: 10 x 120 seconds

2. UPSTREAM GATE LOOPS: Courses with a lot of paddling up-stream, against the current, not just going up the eddies. Take times.

3. Grand Prix courses lasting 60 seconds.

OBJECTIVE: LA System alone

TYPES OF WORKOUTS:

1. 30 - 120 second sprints on flatwater, racing head to head.

2. 30 - 120 second sprints on whitewater, sending two boats off at a time from eddies on opposite shores and racing to a fixed point.

3. Relay races on flatwater.

OBJECTIVE: ATP-CP System in gates

This is particularly appropriate in the spring, and summer. It takes only 2-3 weeks to develop this system. During that time it can be worked almost every day.

TYPES OF WORKOUTS:

1. 5 X 5 {15-20 seconds) with long rest between runs. Take times. Do fewer runs on big whitewater. I have two varieties of this. In the first, you run 1-3 gate courses all upstream, with the time ending as the boater goes through the last upstream gate. Then, he has to drift through a little 2-3 gate course on the way back downstream to the start. For obvious reasons, this only works with one person at the workout. In the second variety, you simply run the little courses downstream.

2. Grand Prix courses lasting 15 seconds. Generally I mix these in with the above work.

OBJECTIVE: ATP-CP System not in gates

TYPES OF WORKOUTS

1. 20 x 15 seconds with 45 seconds rest (on flatwater). Actually since the work lasts more than 12 seconds and the rest is not quite long enough, this is a combination of ATP-CP and the LA system. But since each piece starts on the even minute it is very easy to administer, and I have done it a lot. 20 x 10 seconds with 50 seconds rest would focus more exclusively on the ATP-CP system, but I have found that boaters don't like the long rest. They think of it as dead time.

2. POINT-TO-POINT FERRIES on whitewater. These are done for time -- 12-15 seconds. The first boater ferries to a point on the opposite shore and is told his time. Then the second boater ferries between two points about 30-40 yards downstream of the first points, while the first boater drifts downstream to the new start position. And so on. In this way a coach can process several boaters at the same time.

3. UPSTREAM SPRINTS. Short upstream bursts, boater drifts back downstream to the start.

OBJECTIVE: Mixed Sessions/Gate Skills

These are particularly appropriate in the spring and summer. They target all three energy systems.

TYPES OF WORKOUTS

1. 15 X 20 seconds
   4 X 75 seconds
   2 X 150 seconds

2. LOCOMOTION. Hard, easy, hard, easy, etc., in gates. Not for time. Teaches you ability to change speeds in gates without hitting.

OBJECTIVE: Gate Skills/Simulations

These are appropriate in race season.

TYPES OF WORKOUTS

1. Set a full length course, do the first 10 gates very fast, then stop and rest 30 seconds and do the rest of the course like this, in increments.

2. HALF RUNS. Divide a full length course into halves. Do three runs on the top half, three runs on the bottom half, and three runs on the whole thing and see how your combined segments time compares to the full length time.

3. RACE SIMULATION. 3 runs only on a full length course (preferably whitewater).

4. PACE WORK. Full length course with multiple splits, so you can determine whether it is best for you to go out fast or slower, pick it up at the end or whatever.

OBJECTIVE: Maximum Speed and Concentration in Gates

This is particularly appropriate in the spring and summer.

TYPES OF WORKOUTS

1. REPEATS. Timed courses over various lengths, at all-out intensity, with no measured rest -- as long as the boater wants.

OBJECTIVE: Balance/Strength/Agility/Confidence

This is appropriate all year round.

TYPES OF WORKOUTS

1. River playing: Do enders, hands rolls, hard surfs and so on.

2. Fartlek on whitewater. Run a river at various speeds.

3. Water reading ability. Do imaginary courses on whitewater for time, but without gates.

4. One-bladed or cross-draw paddling on easy gates.

OBJECTlVE: Strength/Endurance

These are appropriate in the winter.

TYPES OF WORKOUTS

1. WEIGHTS:

   a. Strength = Low reps, high weights.

   b. Strength/Endurance = 30-40 reps with 40% of max weight.

   c. Endurance = 1 X 100-150 reps with 30% of max weight.
      2 X 120 seconds of lifting with 25% of max weight.

   d. Power/Endurance = 2 sets of 30 reps with about 50% of max weight using a metronome to assure desired tempo.

2. CIRCUITS. Put 20 exercises back to back and do them as a circuit for time.

OBJECTIVE: Flexibility

This is appropriate all year round, but especially during period of intense work.

TYPES OF WORKOUTS

1. Stretching on land.

2. Stretching in the boat through stroke mobility (going through key strokes slowly and in extended positions). Paddling on the cross-draw in C1 and K1 is an example.

OBJECTIVE: Mental Training

This is appropriate all year round, but especially as the race season approaches and in the race season itself.

TYPES OF WORKOUTS

1. RELAXATION DRILLS. Start first with physical relaxation drills and then go to mental relaxation ones. (See chapter on psychologicalprinciples.)

2. CONCENTRATION DRILLS.

3. MENTAL REHEARSAL.

TRAINING LOG

I am acutely aware that many World Champions do not keep training logs. They know intuitively how they need to train and they do not really need detailed records to help them. Furthermore, they may just not have the time to fill out the log every day.

Nevertheless, I believe that keeping a good, thoughtful log is a particularly useful device for forcing the athlete or coach to think about his training. Thinking about ways to make training better, to improve areas of weakness, and fortify areas of strength is key to success in slalom.

I also believe that there are two other psychological benefits in keeping a detailed training log. The first is that it gives a sense of professionalism to your work. If you are willing to write it down and force yourself to think about it, then you inevitably become more serious about what you are doing. Secondly, I believe that the training log is a priceless treasure of all the work, planning, and evaluation that has gone into your training. In our sport, the greatest reward is self-satisfaction in reviewing a log from a successful year. When I read through it, I often find that events were somewhat different than I remembered them. Sometimes I find that I have simply forgotten important conclusions I came to a year or two ago. Having in my hands the true record of the way things were gives me a tangible way of dealing with the welter of memories, thoughts, schemes, and hard work that I have put in over the years.

Purpose of the Log

The essential purpose of the training log is to help you learn quicker the precise formula which makes you have your best performances when you want them. By having a historical record of your training, you can, over time, see patterns and actually determine the formula. A champion who keeps no log has learned all these things through years of trial and error. He may well have made the same mistake many times before he finally learned the correct way. But a log will make it quicker for the younger, less experienced paddler to gain the same knowledge.

What Goes Into the Log

I. PERSONAL DATA.

* Hours of sleep. The object is simply to spot the pattern that produces your best performances. I think it is possible to get too much sleep as well as too little sleep. You may find that you need X hours of sleep over X days before you can have an optimum performance in a big race.

* Body weight. I don't think it's necessary to keep track of your body weight every day, but you should do it on a fairly regular basis (a couple of times a week) and particularly before and after important sessions or races. A loss of body weight in a highly trained athlete may leave him physically below par on the big day. I have found this is a common occurrence when traveling and the food is not good or is too expensive. The athlete tends not to eat well. Spotting a slight drop in weight may make it possible to nip the problem in the bud. By the same token, it is also possible that a paddler may find that his optimum performances occur when he weighs somewhat less than what he considers "comfortable."

* Rested pulse. This should be taken at the same time each day, probably when you wake up in the morning. If it is higher than normal, it may mean that you have not fully recovered from the previous workout ("overtrained") and should go a bit lighter today. However, an elevated pulse rate might also mean that you are coming down with a cold, or that something is bothering you emotionally.

II. WORKOUT DESCRIPTION.

PLAN AHEAD. The best logs I have seen plan ahead what type of work needs to be done and afterwards go back and show 1) whether the goal was the right one and 2) how close the athlete came to meeting the goal. For example, Richard Fox often plans many weeks ahead the general nature of the work he wants to do and on Sunday evenings forecasts in more detail the upcoming week. Some examples:

5/1/81: 11 1/2 weeks to go.

2 weeks solid endurance paddling + strength.

3 weeks high quality strength endurance, consistency and accuracy. Intense pressure work.

1 week lower pressure. Competition preparation. Merano.

1 week increased anaerobic work. Increase quality of previous weeks.

1 week (5 days) rough water Augsburg. Speed endurance, skill, accuracy under pressure.

Competition work.

2 weeks speed under pressure. Still high content of anaerobic and explosive work. More rest. High quality. No penalties. Competition performance. One competition at Washburn at end of week.

10 days week 1 (4-5 days) competition speed. Work at Bala. Possibly only last 2 days. Concentrating on maximum effort over first two repeats on any course. Rest relaxation.

Another example:

3/22/81: Next week preview: 15 hours and competition.

Mon.	Gate endurance - isokinetics.
Tues.	Gate technique and speed – endurance - running.
Wed.	Isokinetics strength Bala - technique at speed X 2.
Thurs.	Technique speed - endurance gates - isokinetics.
Fri.	Rest.
Sat.	Hambledon competition.
Sun.	Canal intervals - gate endurance - running.

Looking ahead like this ensures that the training will have a very specific purpose and that each session will be integrated into a whole program that is well thought-out.

WORKOUT DESCRIPTION. The first thing you should do is record the date and the time of day for the workout. Then, I feel it is wisest to state the purpose of the session. The object, once again, is to cut down on aimless playing by setting a definite target for each session. Purposes might be working on full spin reverses, ideal upstreams or offsets. Other purposes might be working at speed higher than competition speed; or aiming for 6 clean runs in a row without any times.

The next section should be a factual description of the workout. An example:

4:15-5:15 Whitewater gates, Little Falls

a. warm-up 15 mins stroke mobility. Paddling with only one blade.

b. 10 X 83 sec courses with 35 rest:

84.3
85.2
84.8
83.2
83.2 +5
83.1
83.4 +5
84.0
83.0
83.1

All courses had a lot of ferries and upstream paddling.

III. EVALUATION.

When I write up an important workout, I always ask myself the question, "What did you learn from this workout?" Simply trying to answer that question in writing forces me to think carefully about what has happened. Examples of evaluations from Richard Fox's log:

2/25/81: No sharpness, no power. Position o.k. Can work from here, Need practice on full spin reverses and spins.

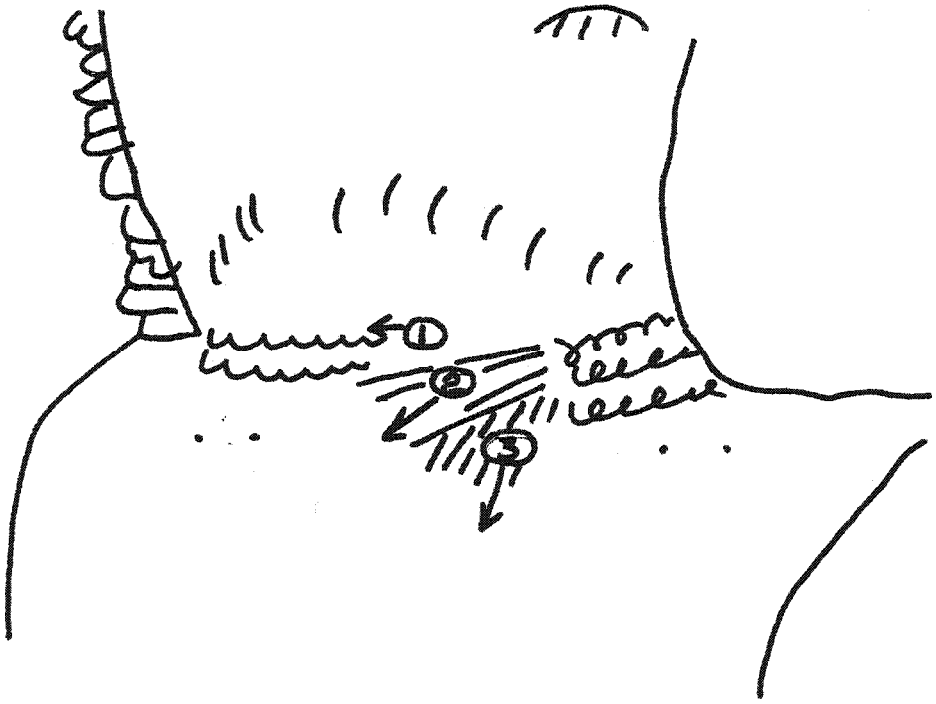
5/30/81: Not concentrating on clear runs on interval work, but endurance level seems quite good,

Technique points: Full spins on two strokes without feedthrough (feathering) or control.

Staggers (offsets) without bow rudders (duffek stroke).

Other forms of evaluation from Fox's log are far more detailed. Here is an evaluation of a workout on one part of the Treweryn River.

Bala Topside - Bottom Fall 11/4/80



Fan on stopper moves water in 3 different directions -

(1) along stopper (hole) to right bank
(2) at 45 degrees to straight through
(3) straight through

1. It is no. (2) that is the crucial angle for a high right hand breakout (upstream). If the boat is too straight in the stopper, it is shot downstream and a very low breakout results.

Too much angle and you shoot very fast along back of stopper -- maybe into gate. Possible escape route here is a Merano.

The most consistent method was to always work to get close to the right hand side of the stopper (1) and position boat at 45 degrees to river and bounce through on a left pull/draw. A fairly slow approach proved best. If any error resulted, it was not as great and could be corrected earlier.

You must be prepared to act very quickly having bounced through.

2. A cross from right hand breakout to left hand. Stopper fan is liable to surge or flatten out. It remains in either state for some time.

If flat, it is simplest to cross the back and quite fast. It is possible to get fairly high in for eddy this way.

When it surges up, it presents a mound that is hard to cross behind and reach a high point in far eddy. You either get pushed out low or drawn into the stopper.

I found the best compromise was to breakout with room to accelerate out for cross and get as much speed on as possible. Trying to cross the back, keeping the bow fairly well upstream. But a good chance of ending in stopper exists. That's o.k. If you have the speed on you end in much the same position but wetter.

3. Left hand breakout. More straightforward. A hard drive through stopper and quick bow rudder. Hard to penetrate deep into eddy.

4. Cross left hand breakout to right hand. Accuracy here again depends on being at the right angle to pull through. Possible to do without dropping in, but depends on boil.

Safest method is to drop in as late as possible into stopper, keeping bow out of way of far end of stopper -- the bit that holds most. Hold hard on left blade, wait for push out and use left blade to correct bow position.

Here is another evaluation, this time from Richard's coach, Ken Langford:

3/20/81: Pacing Speedwork

You have the times.

Conclusions seem to be that pacing is most important because of varying speed of water.

It seems at first sight that stop/go/stop/go, etc. is uneconomical. However, because of the change in speed and direction of the water you need to know where easing off will not lose much time and where going hard will not save time.

E.g., five hard strokes on a high cross may prevent you from being low on a breakout and needing extra strokes in the slack.

ADVANTAGES ARE:

(1) Easing up at the gate gives more control.

(2) POSITIVE (hard) exit, avoiding indecision, will get you back to optimum speed earlier. It takes more energy to accelerate than to maintain speed. Therefore, get to high speed early and then decide where you can ease off without losing the speed.

(3) Choosing the correct speed for the gate on each run, including practice, leads to consistency. Variations in pace should NOT be on the gate line if this can be avoided. The water speed is constant on all runs. Varied speed (unless following the current) means different lines being taken (e.g. staggers) and affects HOW the boat handles changing from one current to another.

III. SUMMARY OF WEEK'S WORK.

A short summary at the end of each week's work (on Sunday) makes it very easy to review several months of work at a glance. An example:

14 hours work:

4 weight sessions
2 swims
3 gate technique sessions
2 canal distance
1 river distance
1 slalom distance
= 22 miles

IV. VISUAL APPEARANCE OF THE LOG.

Remember, the log is not much use to you if you don't read it. Therefore, the information should be presented in an attractive way that invites and facilitates your browsing through it. I have found that the most effective mode of presentation is simply to use lined paper, with one sheet for each day, if possible.

I have seen log books that have been issued to athletes by a

sports federation or some other central committee but I don't think they are as good as simply using lined paper. For one thing, these kinds of log books are usually too cluttered; lots of little boxes all over the place which you are supposed to fill in. Most of the boxes don't even relate to paddling, but to some other sport such as running. Secondly, such log books usually do not leave enough space for a narrative text. I think the detailed, subjective commentary is probably the most important thing about a log and whatever format you choose, it should facilitate the writing and reading of the commentary.