

Recently, while reading and reviewing training articles and books I came across a few really good statements. The first was in an article by Coach Owen Anderson called *Periodization 1*, in which he simple states, “*Basic scientific research reveals that periodization does work, in that it produces better improvements in performance than non-periodized training programs*”. The other statement was by Coach Chris Carmichael in his book *The Ultimate Ride*, where he writes “*When I started coaching with the U.S. Cycling Team, there was not much of an overriding structure to the team’s training... organizing training into blocks of similar workouts was one of the changes we made... When I was racing, the common training program was structured to hit all aspects of cycling every week. Monday was rest day, Tuesday was hill training, Wednesday was a long day, Thursday was for intervals and Friday was a short ride to rest up for racing or group rides on the weekend. The limit of that program was that there was never enough of a load on any one energy system to lead to significant growth. A full week was too long to wait...when we started restructuring training to tilt the balance to specific energy systems, the athletes made significant gains very quickly.*”

Both Coaches Anderson and Carmichaels’ suggest that the methodology of training, called Periodization is currently the best known methodology. Coach Anderson quotes science while the Coach Carmichael is telling us through his vast experience, as a professional rider and professional coach, that periodization is the way to train.

Look up periodization in the dictionary and you will not find it. So what is periodization? Simply stated, periodization is the methodology of training in which an athlete structures their annual training plan in blocks or phases each of which focuses on the complete development of a specific energy system with the goal of increasing fitness steadily so to reach optimal fitness in time for their priority event or events. Sounds simple, huh? Well there are some very important details. One of the details was alluded to in Coach Carmichael’s statement where he mentions the development of “energy systems”. The problem lies in that an athlete needs to know what those energy systems are, which order they should be developed, know how to develop each and know when they have been fully developed.

Developing an annual training plan needs to take into account things like experience level, available time to train, current fitness level, goals, strengths and weaknesses. One needs to take a good look at these things when developing the plan because changes in any of these variables will change each athletes plan. For example, reaching any fitness goal takes work and time. Taking into account the time it takes to complete the total training volume, as well as whether the athlete has ever done a workload close to that level and whether they have the time to accomplish this work is imperative.

The following is a brief outline of the Phases of Periodization. Each phase’s length is suggested. These lengths are dependant upon the development of each energy system. The development of each energy system is the true determinant of length of phase. Brief discussions of the energy systems and some specifics have also been added.

The Annual Training Cycle using Periodization

1. Transition Phase/Testing (2 -8 weeks) - This phase is the end of one season and the beginning of the other. Fitness is relatively high. The Athlete should be tested to establish baseline numbers. Tests such as Lactate Threshold, body composition, maximum wattage and others should be performed at the start of this tapering progress, before fitness is lost. Reflection and recording of this year's successes and shortcomings should begin. Developing goals for the next season should begin to be outlined. Active Recovery and using cross training to maintain aerobic fitness is the exercise goal of this phase as well as possible rehab of aches, pains and injuries. Athletes should not consider this phase completed until they have addressed any physical aches and pains as well as mentally rekindled the fire to train.
2. Preparation Phase (2-4 weeks) – It is time to get ready to build your aerobic base. Aerobic Fitness has probably declined, hopefully only slightly. It is time to start a high volume, low intensity weight training program and start biking at low intensity concentrating on form and recovery. The strength training routine should be preparing your muscles for the next phase in the strength program and the intensity to come. Movements should be slow and controlled concentrating on perfect form. Resistance should be VERY light. Avoid any excessive Delayed Onset Muscle Soreness (DOMS). Begin getting back on the bike a couple of times a week. Cross training is still recommended. This Phase is complete when the muscles have been familiarized (no DOMS) with high repetition strength training.
3. Aerobic Base Phase (10-24 weeks) – This phase is the longest for two reasons, the aerobic system is the most important system to develop and it also takes the longest to develop. The biking in this phase starts with medium volume and builds to high volume near the end, while intensity starts low and builds throughout. Your weight programs' intensity builds throughout this phase as well. Building functional strength should be the goal of the strength program. If conventional weight programs don't seem to be translating into increased cycling strength take a closer look at range of motion, speed of reps and load to ensure specificity and/or consider changing to a core/strength ball type routine. Along with building volume (what I refer to as a wide base) and aerobic power (what I refer to as a high base) your cycling workouts should be concentrated on efficiency drills to improve your stroke. This phase is complete when the aerobic system has been significantly developed both in aerobic power and aerobic endurance. Signs of this include leveling off in aerobic time trial test performances and ability to complete long workouts without excessive difficulty. Strength gains should also be maximized at this time.
4. Build Phase (8-12 weeks) – In the weight room, maximum strength needs only to be maintained. Changing the routine to a short intense circuit one day a week has shown good results for most. On the bike, it is time to start adding shorter highly intense, race-like, efforts to your program. Low priority racing may start during the Build Phase. The Anaerobic system needs to be developed and maximized. Efforts at and above lactate threshold are prioritized as well as maintaining aerobic power base.

This phase is complete when anaerobic endurance has been developed as well as power at Lactate threshold. Maintaining lactate threshold power for 20km time trials should not be extremely difficult. Build Phase's will be repeated prior to each Peaking Phase and should be specific to the race goal. In other words, if the priority race to follow this Build Phase is a hilly road race the efforts in this Build phase will be different than if the priority race to follow was a 40km time trial.

5. Tapering Phase (2-6 weeks) – This phase is the most difficult to gauge. Individuals new to periodization and those with less than 2500 annual miles might need as little as 7 days to bring out Race or Peak fitness. On the other hand, those planning on 5000+ miles might need as many as 21 days of tapering to Peak. Tapering of volume and the maintaining or increase of intensity are the keys to peaking. After an extensive Aerobic Base phase and an intense Build Phase the body needs some type of reduction in training stress to fully recover, adapt and complete the training response. The reduction of training volume typical in Tapering allows for this complete adaptation. Athletes must practice this process to perfect it. The response to tapering is highly individual. Athletes will know when they are tapered properly when their riding seems to be impressively good and their desire to race is extremely high.
6. Race or Peak (2-6 weeks) – Sadly, true peak race fitness can only be held for a limited amount of time. Timing of the peak is critical and unfortunately difficult to master. Once the formula is found it may only need minor adjustments if any but the fact will remain, athletes only can stay Peaked but briefly. Athletes know when they have passed Peak. When they are peaking – Race, recover, race, recover, and race some more and have fun!

The amount of time needed to be spent in each phase is highly individual. It will depend on many things including the level of development of the athlete, when the athlete gets started in the process, fitness level when they get started, and when their first priority race is scheduled.

I have seen many people follow, what I would call, The Weekly Periodization Plan. Many have done very well. This is due to their following the first commandment of training or what is called Specificity of Training. Specificity of Training simply states if you want to get good at a specific sport do that specific sport. It is simple and works. If athletes only use this concept it will work but the results will be limited. The reason for the limitation can be understood if we refer back to Coach Carmichael's quote in the first paragraph and add this statement, "without properly timed rest and full recovery workouts are never maximized". The full intensity of an athlete's effort cannot be reached without full recovery from the previous training stress. If an athlete cannot apply maximum training stress maximum training response can never be reached. Mediocre intervals produce a mediocre response. Three difficult training days back to back to back will not produce fitness as much as they will probably produce progressively mediocre efforts. This will definitely limit results. I believe Lance Armstrong and others have shown that to be your ultimate best you must prioritize your goals. Lance raced all season

with good results but not as much racing as the majority of other racers. This is because he understood that constant racing would not help him reach his number one priority. He approached his goal with single mindedness, and he realized that NOT every race would help him win his priority race. His entire program was designed around accomplishing that one goal. Finishing behind the top five or ten in a Spring Classic was not a cause for alarm. Choosing to race less than others wasn't a sin, especially when it produced these types of results. As racers develop over the years it will become apparent which races they are suited to compete in. Even USA Cycling suggests that as a racer reaches Cat 3 they should be focusing on their specialty. No, we are not Lance but your results with periodization can be similar. Why not find out how FAST you really can be!



Peter Cummings specializes with training with Power meters and the use of the Trainingpeaks platform and WKO+. He was certified by the American College of Sports Medicine in 1993. He is a Certified and Licensed USA Cycling Level II (Expert) Coach, and Certified USA Cycling Skills Instructor. As a health club owner and coach he has directed and overseen the programming of over 10,000 individual and has been racing bicycles since 1991. His many athletes stand on podiums at Nationals, State and Local championships and have worn the Stars and Stripes National Championship Jersey. He is available for consultations, presentations, testing, programming or coaching. Those interested can contact him at Peter@Plan2Peak.com. For more articles on training and racing with power and other cycling specific topics by Coach Cummings visit www.Plan2Peak.com. For those interested in a Time Trial Specific Training Camp including wind tunnel testing check back with www.Plan2Peak.com this fall.