Wolverine Plan Remarks
Mike Caviston - 13 Jul - 09:38:52 PM

I continue to receive a steady trickle of requests via e-mail for more information regarding the Wolverine Plan. I try to accommodate everyone but I don't have the time to give every response as much attention as it deserves. Also, since I have mentioned in the past that I eventually hope to update & expand the original Wolverine Plan document, I am asked how that project is coming. Not too good, I'm afraid. Another summer is quickly slipping away and I'm already behind schedule preparing for fall classes and the upcoming collegiate rowing season. So I don't expect to have a revised WP ready before early next year. But to deal with some of the more common questions I am asked, I will try to highlight some of the main points regarding training with the WP. I have covered much of this before, but I guess repetition won't hurt, and some of this might be new for more recent readers. If you aren't interested in the Wolverine Plan, stop here.

FIRST, SOME DISCLAIMERS:
Remember that the original WP document wasn't intended for public use, but just as a supplement for the athletes I work with at the University of Michigan. So some concepts aren't fully explained. However, many questions that are asked repeatedly are clearly explained in the original plan. So, before you complain about what a crock the Wolverine Plan is, take time to read the damn thing. Read it all. Read it three or four times if you have to. It was never intended to be "Erging For Dummies", so don't expect to be able to skim over it and absorb everything in a couple minutes. I am becoming increasingly fond of the motto, "If you don't have the discipline to READ it, you don't have the discipline to USE it." (If you really suffer from a short attention span and can't make it beyond this sentence, the most important underlying message boils down to "WORK HARD", or if you prefer, "TLAMF".) If you do read it, and disagree with it, that doesn't bother me at all. Feel free to voice your complaints or criticisms without fear of hurting my feelings. I may even be willing to enter into intelligent debate with any skeptics, though I refuse to put on an "Argument Clinic" (see Monty Python). But what really aggravates me regarding the Wolverine Plan is when it is misrepresented by careless or malicious people. For example, I have read comments from people with complaints about the safety or effectiveness of Level 4 workouts, and when they describe what they do it is clear they aren't doing anything like what I suggest. So when reading comments from others regarding the WP, be aware that you may not be reading about the Plan as I intended it.

WHY FOLLOW A TRAINING PLAN, ANYWAY?
Many people row merely for basic fitness. These people need to remember some basic guidelines and should have some structure to their workouts, but as long as they work up a good sweat for 30-40' at a time 3 or 4 days a week they don't need to be fanatics about a specific plan. (They might still get useful advice or ideas for adding variety to their workouts from an organized training plan.) A Training Plan goes beyond simple exercise for fitness' sake and is geared toward maximizing performance in a specific sport or event. The Wolverine Plan is designed to improve performance when rowing 2000 meters. It is specific for that activity and that distance. Many training concepts apply across the board to all activities or events, but someone who wanted to row competitively at some other distance, or run or swim or bike at any distance, should follow a plan designed specifically for that event.

Proper training involves applying the correct stimuli to improve the necessary components of fitness for a particular event (strength, endurance, speed, power, etc.) while facilitating the proper technique for execution of the activity. The training stimuli need to be applied in a controlled, systematic and progressive fashion over an extended period of time. The training should be organized to ensure maximal performance at the appropriate time (for example, I want to be in peak form for CRASH-Bs; the Michigan women's team wants to peak at NCAAs.) So anyone hoping to perform well in a major competition really needs to take the PLAN part of "Training Plan" seriously. As the saying goes, those who fail to plan, plan to fail. In particular, people who train according to "how they feel" have it backwards. Your training should dictate how you feel. By building up volume and intensity gradually and systematically over time, allowing both your psyche and your body to adapt to the specific demands that will be encountered when you finally race, you will be in a solid position to perform at your best. People that randomly decide on the spur of the moment to try for a personal best are playing a game of roulette that will not often produce the desired results and make it difficult to reproduce them if you do.

Finally, the WP is an example of a well-designed training plan (in my biased opinion), but it is not the only example. Other plans are out there, so shop around and see what's best for you. Just make sure whatever plan you select is balanced and allows you to improve in a methodical way, and is something you will be likely to stick with long enough to make a difference. I caution against people who try to cobble together hybrid plans with the "best" features of other plans. For example, you may come up with an all high-intensity interval program that is fun and effective in the short term but likely to be damaging over the long term.

AN ESSENTIAL CONCEPT FOR FOLLOWING THE WOLVERINE PLAN: PACING

Proper pacing is a huge, huge component of effective training. Make it a priority to learn consistency and be able to cover any distance at a relatively even pace. The goal is to know your capabilities and to be patient in the beginning and save enough reserves for the end. There should be a certain amount of negative splitting (i.e., second half faster than first half), but not too extreme. But above all, avoid flying and dying. Also, variation of splits for individual strokes should be minimal, with each stroke as close to the overall mean as possible.

This idea of pacing should be applied to ALL aspects of training and racing!!! I need more exclamation points here!!!!!!! Examples... MICRO-pacing: each individual piece should be paced, even if only 500m. A consistent 1:45 split is much better than one that starts at 1:38 and finishes at 1:52, even if the overall average is the same. MESO-pacing: each individual workout should be paced across all pieces. If the workout is 8 x 500m or 4 x 2K or 3 x 5K, the overall pace should allow for general consistency while being fastest during the last piece. MEGA-pacing: each week and the entire season need to be paced. A common mistake with people beginning a new program is to push too hard too soon, looking for quick results, without taking the long-term view. They burn out or go flat before the big race. One of Dirty Harry's catch phrases sums it up for me: "A man's got to know his limitations." (Not as macho as "Do you feel lucky, punk" or "Make my day", but more useful.)

COMMENTS ABOUT LEVEL 1

A very important point to emphasize regarding training with the WP is that THIS (Level 1) is the focus, the heart, the apex of the Plan. Everything else is geared towards creating a solid platform on which to perform Level 1 workouts. Level 1 (e.g., 8 x 500m or 4 x 1K) is race-specific and will have the biggest impact on performance if done correctly. Some general comments:

SELECTING A PACE. A lot of discussion centers around how a workout like 8 x 500m should compare to 2K pace. But the discussion is usually backwards. A typical comment is, "I can do 2K @ pace x. What should I pull for 8 x 500m?" And someone will invariably suggest 2K - 1, 2K - 2, 2K - 3, etc. The correct response is, 8 x 500m is a training tool and you should do it as fast as you can do it (within the proper parameters for that workout). Don't worry about how it relates to 2K as you go through your training cycle. Just try to gradually improve your ability to perform that workout. I mean, if you are training to improve your 2K, your 2K speed is in transition anyway, so terms like "2K - x" don't have a lot of practical value. At the beginning of a new training cycle, a reasonable starting point is roughly 2K - 1 (meaning 1 sec/500m faster than your best 2K pace from the previous training cycle). If you've never done a 2K, just gradually get used to the format by doing 8 x 500m with the first 2 or 3 pieces at some moderate pace, gradually increasing as you go, finishing hard for the last couple. Calculate your average pace for the workout and next time start maybe half a second above that average and gradually bring the pace down over the course of the workout. Repeat until the variation between pieces is very small and you really have to work hard to maintain your pace at the end. Personally, I'm very happy to improve at the rate of about 2 tenths of a second/500m every week. I don't believe in doing Level 1 workouts more than once (very occasionally twice) per week for fear of overtraining and burning out too soon. - Now, once you have a Level 1 baseline, and as you approach your big race, it is reasonable to ask, "OK, if I can do 8 x 500m @ pace x, how fast can I do 2K?" There's no blanket formula for everyone, and it's worth charting your own personal progress to discover your personal correlation. I might suggest that if you perform your best 8 x 500m the week before a race, you might do the opening 500m of your 2K @ (8 x 500m) + 3 and evaluate whether to push the pace faster as you approach the halfway point. Personally, I find 4 x 1K to be a more accurate and reliable predictor of my 2K performance, and while I do 8 x 500m periodically I have made 4 x 1K my core race pace workout over the past couple seasons.

RECOVERY BETWEEN PIECES. This is another topic that in my opinion gets more discussion than it deserves. My advice in a nutshell is: get adequate recovery, and take a little extra rather than not enough. Maintain your ability to perform the workout at your planned intensity. Perform active rather than passive recovery to more completely facilitate the process. Some people imagine that by shortening the recovery interval you will benefit by more completely mimicking race conditions when you will be tired. My answer is, this isn't racing, it's training. The goal is to improve your ability to race well, not to practice crashing and burning in agony. The logical extension of that line of thinking would be to train while dehydrated, glycogen-depleted, sleep-deprived, hung over, in a hot humid environment with low oxygen levels and with "Dancing Queen" blaring at full blast in both ears. Hell, if you survived that, a simple 2K would be a breeze, right? But in reality, allowing more complete recovery allows the proper intensity to maximize the training stimulus and produce maximum adaptation to the workout. Still, make sure that recovery intervals are practical and not too excessive. I suggest a round number of allowing 5' per 500m. That means do a 500m piece, recover (some passive, mostly active) until 5' have elapsed since the start of the first piece, then start the next. For 4 x 1K, use 10' centers. Don't quibble about a few seconds one way or the other, but be generally consistent from one workout to the next. I

find that too much recovery is counterproductive from the standpoint that I lose my warmup, and I actually go slower. So it's a matter of finding the right balance.

COMMENTS ABOUT LEVEL 2
Similar advice as for Level 1. Once a week is probably optimal. Don't obsess about how the pace relates to 2K; just get started and gradually improve every week. These workouts really require mental toughness and are good practice for getting used to handling a fairly high intensity for 2K and to visualize your race plan. I like to alternate between 3K/2.5K/2K and 4 x 2K as Level 2 workouts, or occasionally 5 x 1500m for a little variety and a little more speed. For 4 x 2K, I allow about 6-7' recovery (or use 15' centers when working with a group).

COMMENTS ABOUT LEVEL 3
This is what most people would refer to as "steady state" rowing. Just find a fairly comfortable pace that can be held for 10-15K for starters. At the beginning of a training cycle, I find that 2K * 1.156 is a pretty realistic pace for 10K, but you may be a little faster or slower. My advice is to pick a distance and make sure to select a challenging but achievable pace, for example 10K @ 2:00. Execute the 10K with as much consistency of pace and rate as possible. Next time, follow the same plan except allow the pace to increase to 1:59 for the last 500-1000m. Don't get greedy. Don't go faster even if you feel like you can or want to. Next time, go to 1:59 a little earlier. And so on. Always leave yourself feeling like you could have done more (in fact, you should be anxious to try). It's tempting on a day you feel good to just put the pedal to the metal and go for it, but be disciplined and wait till you have several weeks of training and are in a strong position to get a fast time. A common training error is to push too fast too soon, leading to burnout and a mental barrier that will be hard to overcome. Another approach to Level 3 is to keep a constant pace (say, 2:00) and gradually increase the distance by 500m or so every week. It depends on what your specific goals are and how much time you have to train. I find it is possible to increase pace and distance simultaneously every week but you need to be patient and not try to improve too quickly. (Believe me, I speak from experience.)

COMMENTS ABOUT LEVEL 4
I won't go into a lengthy discussion but just remind everyone that a lot of what is routinely written about Level 4 workouts didn't come from me. For example, don't expect them to be a substitute for strength training. What Level 4 is meant to do is improve endurance in a gradual, systematic manner. Following the specified paces and rates makes it much harder to overextend yourself by exceeding your goals (see my Level 3 comments). Also, though it sounds paradoxical, Level 4 lets you work fairly hard and recover from other Levels of workouts at the same time. To do Level 4 correctly, you need to develop consistency of rate and power application. It does require more power per stroke than most people are accustomed to at lower rates, but contrary to popular perception the power is not all that extreme. Here are a few general comments:
• SELECTING A REFERENCE PACE. This is done in reference to the best 2K from your previous training cycle. Take the average pace from your best 2K and round to the nearest whole number. Round up if you have any doubts. If you've never done a 2K, it will take a little trial and error to find the appropriate pace. I haven't been able to come up with any reliable field test. I keep meaning to get some data on, for example, rowing 10' @ 16spm for most distance possible to correlate with L4 Ref. You may also get a rough idea from your Level 1 results. When selecting a pace, it's better to be conservative. I work with athletes who lobby for a faster Ref early in the season because they want to be perceived as hard working, but they can't keep it up for the entire season. (By faster I mean faster than their 2K would dictate; I rarely allow athletes to use a pace slower than their 2K.) The idea is to stay with a single Ref Pace over the course of a training cycle. You can always readjust for your next cycle.
• FOLLOW THE PROGRESSIONS GRADUALLY. The program is meant to start with a series of progressions in the 16-18spm range and gradually increase the average rate over the course of several weeks or months using continuous workouts of 40-60' in length. But I routinely read about people who in their first week go right for 220-220-220 at some Ref pace faster than recommended. Of course they can't do that continuously so they incorporate rest periods into their workouts. Now, I'm sure they're training something and it might even help their 2K performance, but it's just not the endurance training I was envisioning with the Wolverine Plan. So the correct approach is to begin with an average SR of approx. 18 and to build on that. Let's say, for example, the first 40' session is 176,180,176,180 (an avg. of 17.8spm) An appropriate rate of improvement would be to increase by 4 strokes for the next session, assuming you reached your goal for the first one. (If not, repeat or do a session using even easier progressions until you get on track.) So, the next session might be 176,180,180,180 and so on. You might occasionally increase by 8 strokes but I say again - don't get greedy. Or build up to a longer session such as 60' while keeping the average SR constant by selecting the appropriate combination of 6' or 10' sequences. (Yes, you'll need to do some calculating but it gets pretty easy with practice.) There is sort of an art and a science to choosing different sequences that give you the same total strokes, but that's part of the fun of the program.

• USE PROPER TECHNIQUE. Follow the ratings sequences as exactly as possible. A very common error I see among athletes I work with is to overstroke the planned sequences. Someone may supposedly do a 188, for example, but take anywhere from 2 to 10 extra strokes (not surprisingly, people rarely understroke their sequences). This of course inflates their meters, causing people to increase their Reference Pace when it isn't really warranted, and makes it harder to keep track of true progress. And make sure you achieve the desired ratings with good ratio and slide control. I have seen many people attempt to hold a 16 by pausing at the finish for several split seconds before racing up the slide towards the catch like they were shot out of a cannon. These aren't good strokes, just bad strokes done less often. Develop the proper control so that the handle is always in motion. I strongly recommend rowing with feet unstrapped (not only but most importantly for Level 4).

PUTTING IT ALL TOGETHER

By far the most common question I get regarding the WP is something like, "Okay, I think I understand all this Level 1-2-3-4 business. But how the heck do I put it together into a weekly program? The Plan says something about 9 workouts a week, and I ain't doing that! So what gives?" Hey, the 9 per week is an ideal we've never really achieved at Michigan. Our team generally does 8 per week in season (that means during the fall and spring outdoor seasons, and includes 2 erg sessions along with 6 H2O workouts) and 6 erg sessions per week in the winter. I myself usually do 11 workouts per week for about half the year, and 7-9 per week the other half. At the lower end of the spectrum, I could see people making gains on 4 workouts per week. The first thing you need to do is decide how many workouts a week you will realistically commit to. A general rule is to always include a Level 1 workout and usually a Level 2, and then to supplement them with as much Level 3 & 4 as is practical or you are willing to do. Do them in roughly a ratio of twice as much Level 4 as Level 3. This refers to total meters more so than number of workouts. Now, bearing in mind the format can be flexible and these aren't carved in stone, here are some examples of possible plans using 4-8 session per week:

4 Workouts/Week: Day 1: Level 1 OR Level 2 (alternate each week)
Day 2: Level 4 (40')
Day 3: Level 3 (12K)
Day 4: Level 4 (60')
• Alternate the Level 1 or 2 workouts until about 4 weeks before your big race. Then, while keeping Level 1, replace the Level 3 or one of the Level 4s with Level 2.
• You might occasionally use an interval format rather than a continuous format for Level 3 or 4 (see the Wolverine Plan for details).

5 Workouts/Week: Day 1: Level 1
Day 2: Level 4 (40')
Day 3: Level 2
Day 4: Level 4 (60')
Day 5: Level 3 (12K)

6 Workouts/Week: Day 1: Level 1
Day 2: Level 4 (40')
Day3: Level 2
Day 4: Level 4 (4 x 10')
Day 5: Level 3 (15K)
Day 6: Level 4 (60')

7 Workouts/Week: Day 1, AM: Level 4 (40') Day 1, PM: Level 3 (10 x 3')
Day 2: Level 1
Day 3: Level 4 (2 x 40')
Day 4: Level 2
Day 5: Level 4 (4 x 10')
Day 6: Level 3 (12K)

8 Workouts/Week: Day 1, AM: Level 4 (40') Day 1, PM: Level 3 (12 x 3')
Day 2: Level 1
Day 3, AM: Level 4 (40') Day 3, PM: Level 4 (60')
Day 4: Level 2
Day 5: Level 4 (4 x 10')
Day 6: Level 3 (15K)
• If doing more than one Level 3 or more than 2 Level 4s per week, do one using the interval format on a regular basis.

• The amounts listed for Level 3 & 4 may need to be built gradually over several weeks.

So the general idea is to separate the high-intensity workouts with slower, more continuous workouts. It is possible to work hard on a daily basis within the framework of each type of workout by alternating workouts of different type. Level 1 doesn't have to be at the beginning of the week (I personally do mine in the middle of the week), but it's a good place if you need some extra recovery to be well rested and ready to perform at a high level. You may also periodically want to do time trials (such as a 95%-effort 2K or an all-out 6K) in place of the workout scheduled for the end of the week, and doing Level 1 early in the week allows you to recover without compromising your training. (Alternately, you may want to do a time trial at the beginning of the week, in place of the Level 1 workout, but I prefer not to go that route.)

A REGULAR FORMAT OR SCHEDULE IS KEY

It is very important to develop a schedule you are comfortable with and then stick to it as closely as possible over the duration of your training cycle. I don't think that the exact order of workouts is a crucial factor but keeping the workouts in the same order on a weekly basis is necessary to allow consistent and reproducible improvement. Occasionally something will come up and you will have to use your best judgement about what alterations to make, but do your best to keep your schedule as consistent as possible. I don't have a hard and fast rule about which workout(s) to toss if you know you can't complete an entire week, but a couple general rules would be: 1) drop Level 1 if you are far away from competition and drop Level 3 if you are close to competition; and 2) all other things being equal, the workout you struggle with most is the last one you should drop. One of our biggest challenges at Michigan (and I imagine for all college crews) is to maintain a consistent schedule despite multiple variables like competitions and the associated travel, seasonal changes, facility availability, exams, class schedules, holidays etc.

WHAT ABOUT STROKE RATE?

I am frequently asked about the importance of following a specific rate while training. Clearly, for Level 4 rating is specified. For other training Levels, I don't feel there is any optimal or ideal rate for a given workout or individual. So I tolerate a certain amount of variation. However, I wholly subscribe to notion that you must not over-inflate the rate to reach a faster pace. I definitely don't want to see anyone rowing at a high rate without a correspondingly high power output. I think a figure like 10mps is a very good approximate rate in most situations. I would rarely like to see anyone at LESS than 10mps, but have no problem seeing more. For myself, I do a lot of rowing at 16mps for much of my Level 4 rowing, almost 11mps for Level 3, maybe a fraction more than 10mps for Level 2, and just a hair under for Level 1. I try not to over-think it and go with what feels comfortable and appropriate for that workout. In general I want to leave myself feeling like I always can increase the power by bringing the rate up. I correct other athletes if it appears they are rowing too high or low for a particular workout. If an athlete does row too low (say, 28spm for an all-out 8 x 500m workout), the only way to get them on track is to have them increase the rate for a while even at the expense of power. So, I might have them focus on rowing 30spm even if their splits fall temporarily. Eventually they will bring their power in proportion with the higher rating.

Several months ago I posted at length about the effect of rating on both mechanical efficiency and psychological perceived exertion, so I won't say any more except to note that physical performance requires a complex interaction between mechanical, physiological, and mental factors. Sometimes the rating that leads to the best overall performance is not what you might first expect.

HOW DO YOU FOLLOW THE WOLVERINE PLAN ON THE WATER?

Well, it can be challenging, but in theory do the workouts exactly as you would on the erg: same distances, times, relative intensities, etc. But theory doesn't always match reality, and doing it in practice isn't always possible. The size of your body of water and the weather are two things you will have to consider (for example, at Michigan 2 x 6K with just enough time to turn has to replace 12K). Then you have to consider the technical abilities of your crew. At Michigan, when crews are on the water I make a general schedule of suggested workouts and each coach decides on a daily basis whether to do it or modify it or do something else depending on current conditions and the particular needs of that crew. For example, novices and the varsity fours do more drills and technical work (as a general rule) than the 2nd varsity or 1st varsity eights. But when possible the idea is to do workouts on the water with structure and specific goals for each piece and to progressively increase the goals throughout the season. Using a SpeedCoach is a big help (though they can be frustratingly inconsistent at times). If done right it pays off. For example, our 1st varsity 8 did an excellent job this year throughout the spring season of maintaining consistency within Level 1 workouts and of systematically improving their pace as we approached NCAAs.

FINAL INSPIRATIONAL THOUGHTS: TRAINING = $$$

I am always looking for metaphors or ways to visualize the effect training has on performance. For example, sometimes I think of my fitness as a wall that my competitors must go through or climb. I think of every workout I complete as another block or stone in my wall. I want a wall so thick and tall it would make you cry if you knew you had to get over it to beat me. But my favorite metaphor involves thinking of training as currency, and recognizing that success - be it winning a medal at a race like BIRC or CRASH-B, or placing at Henley or NCAAs, or simply getting a personal best in your basement or garage - is going to cost. How well you do depends on how much you can afford to pay, which in turn depends on how many funds you have accumulated through training. (I could develop the metaphor further, and talk about "weak currency" and "junk meters" vs. "strong currency" and smart, effective training.) As I say in the Wolverine Plan, "If the goal is to win, the price can't be negotiated. The only thing that can be negotiated is the goal."

If you've read this far, I hope you've found some of this helpful if you are attempting to incorporate the Wolverine Plan into your training. Good luck, and I do pay attention to legitimate comments and questions and hope to be helpful to as many people as possible.

Mike Caviston

Reflections On Training
Mike Caviston - 5 Mar - 02:35:02 PM

If you decide to read this, you may want to fix a snack first. You have been warned...

Over the past year I have been asked various questions regarding my training practices, whether it be on this forum, via e-mail, or at races such as BIRC or CRASH-B. I wanted to take an opportunity to review some of my training practices and make some comparisons regarding results this year vs. last. To remind those of you who may be relatively new to the Forum, I am the author of the document known as the Wolverine Plan (http://www.concept2.com/forums/wolverine_plan.htm). I remind everyone that the document was originally written for the University of Michigan women's rowing team without the general public in mind. As such, it was not intended to be a complete training guide but a supplement to the information I provide while working with the UM team as conditioning coach. For example, as many people have noted, there are no specific guidelines concerning which workouts to do on which days. The Plan refers to a schedule of 9 workouts per week, but even the UM team maintains that only during the fall and spring competitive seasons. I intend to expand & update the document over the next few months, with more detailed explanations and suggested schedules. I will be glad to make the updated version available when completed, but please be patient in the meantime.

The history of the Wolverine Plan dates back to about 1998, when I started to think I might like to see what kind of 2K erg score I could pull in competition if I prepared properly. I had been training on the erg and coaching crew for years, so I wasn't a novice and I was already in decent shape. My erg training had centered for years around the types of workouts described in the Wolverine Plan as Levels 1-3. But I was looking for even more structure and something new to supplement what I had been doing, to give me new focus and to allow me to quantify my progress as specifically as possible. Most of the training effect regarding 2K scores comes from shorter, high-intensity workouts (Level 1 & 2), but I was interested in further maximizing performance and keeping my weight low using increased volume. After tinkering around a bit I came up with the type of workouts I now refer to as Level 4. (I am not going to go into the theories behind Level 4 or the potential benefits at this time.) But the program has worked well for me. I managed to improve my 2K time from approx. 6:26 at the age of 36, to 6:24 at 37, 6:21 at 38, 6:20 at 39, and finally 6:18 at the ripe old age of 40. This year, at the age of 41, I hoped to shave even another second off my PR. It didn't happen (6:21 was this year's best time), and I'll share some observations and give my opinions regarding what was different last year vs. this. First, let me make yet another disclaimer that I don't view the Wolverine Plan as the ultimate training plan, and I recognize that different approaches have worked very well for others. But I have been glad to read reports from Forumites who have structured their training around Wolverine principles with some success. When we introduced the current training format to the women's team here at Michigan two seasons ago, the improvement in 6K & 2K scores was pretty significant. I also can't resist reminding everyone that three members of last year's World Champion women's eight contained 3 UMich graduates, and this year's CRASH-B men's open lightweight winner is a former Wolverine and current USNT member. All trained at some point in their developmental years using Wolverine-style workouts. But the key to any training program is structure and systematic progression more than the specific workouts (within limits, of course. The training needs to address the physiological demands of a 2K race). As far as the Wolverine Plan goes, I think it accomplishes these goals very well, but I'm not selling a product or preaching to convert anyone. I am simply sharing information in the spirit of cooperation. My only agenda is to improve my own performance and that of my team. Anyone else can take my advice or leave it as they see fit, and no hard feelings.

The more years I spend training myself and others, the more clearly I see that performance is directly linked to training in a straightforward input-output relationship. Good performances or bad performances don't "just happen". Simply stated, more training = better performance. People who perform poorly do so because they did not keep up with their training (for whatever reasons, legitimate or not). I don't want to get into a whole thing about overtraining or quality of training. I take it as self-evident that training should avoid meters-for-meters-sake (aka "junk meters" as someone has cleverly called them), and that at some point even the most elite or well-conditioned athlete will show performance decrements when training volume becomes too large. But any given athlete will show greater improvement training 6, 7, 8, or 9 times a week vs. 4 or 5. Of course the rate of improvement is not linear and each individual has to decide how much time they are able/willing to invest relative to their performance goals. (For example, I have settled on 11 workouts/week as being most practical for me.) I continue to use the "currency" metaphor to illustrate the relationship between training and performance: results "cost", and the funds you have available to pay the price when it comes time to race depends on how much you have put in the bank while training.

To tie this in to why my 2K dropped by three seconds this year, the simple explanation is that I just didn't have as many funds in the bank. Of course I was another year older, which clearly didn't help. To paraphrase former Ann Arborite Iggy Pop ("1969"):

Last year I was 41
I didn't have a lot of fun
Now I'm gonna be 42
I say, "Oh, my" and "Boo hoo"

Or, as my all-time favorite musician, Richard Thompson, put it ("Where the Wind Don't Whine"):

The price of running's getting dearer and dearer
And nothing ever seems to get nearer and nearer

But Father Time aside, my decline (or even failure to improve) was a result of reduced training. This year my ideal or hypothetical training week was structured very similarly to last year:

SUN: Level 3 (3K/2.5K/2K through mid-December; 4 x 2K for Jan-Feb)
MON AM: L4 (60')
MON PM: L4 (2 x 60' until Dec., but eventually cut back to 2 x 40')
TUE AM: L4 (50')
TUE PM: L3 (15K interval, usually 12 x 1250m)
WED: L1 (usually 4 x 1K; occasionally 8 x 500m or 4K pyramid)
THU AM: L4 (5 x 10')
THU PM: L4 (70')
FRI AM: 2K trial (goal = 5-6 sec slower than estimated best possible time)
FRI PM: L3 Continuous (built up to 35K week by week, beginning from 18K)
SAT: L4 (70')

My period of Specific Preparation for CRASH-B lasts 26 weeks (began week of August 25 last summer). I haven't found it possible to begin serious training before that date because of my work schedule (a lot of manual labor working for my landlord to supplement my teaching/coaching income), less access to training facilities, and the hot/humid Michigan weather. So I try to accomplish as much as I can in 26 weeks. In a given week I attempt to perform 11 workouts and cover on average about 190K (I went over 200K a couple times but found it hard to get in that much volume consistently). But if anything prevents me from doing all 11 workouts or putting in my normal amount of meters, that cuts into my Potential Training and the 26 weeks can become whittled down bit by bit over the season. This season my training took several hits that I didn't encounter last year. To begin with, Sept. & Oct. were exceptionally warm & humid last fall. I found it necessary to modify my plans considerably with shorter workouts, reduced paces, etc. I fell several weeks behind my projected rates of increase for Level 3 & 4 paces and distances by the time the weather finally cooled off. My trip to England for BIRC in November cost me a boatload of meters due to jet lag after arriving in Birmingham. I lost an entire Monday to travel on the trip home, which equals 2 workouts (about 50K). Residual fatigue after coming home eventually caught up with me, and more training was lost. Then, holidays. Thanksgiving: missed two workouts/40K. Christmas Eve & Christmas Day: trained some, but missed two more workouts, another 30K. Training trip to Tampa with UM rowing team: due to logistics, lack of facilities, hot weather etc. I only managed less than half of my normal volume; another 100K lost. A monster cold during the month of January caused me

to shorten or skip multiple workouts. Travel to coaching conference in Feb.: lost three workouts/60K. The end result was that my Effective Training for the season was reduced by the equivalent of about six weeks. In contrast, the previous season I lost very little potential training time. Better weather, no extended travel, no serious illness (the occasional asthma attack excepted), a very productive training trip to Tampa, and the only day in 6 months I didn't get on an erg was Christmas Day.

As would be expected, once I begin Specific Training in the fall I make rapid gains for the first few weeks before the rate of improvement eventually levels off considerably. I estimate I began the season capable of about a 6:40 2K; after a week could pull about 6:36; after 2 weeks about 6:33; and got steadily faster until BIRC which occurred at Week 13 (halfway to CRASH-B), when I pulled just under 6:24. From there, the rate of improvement is much slower. I estimate that in the final weeks leading up to Boston, when I am on the flat part of my training curve, I improve about .4 -.5 sec per week over 2K. Losing six weeks of Effective Training cost me about 3 seconds of speed, and I pulled 6:21 in Boston rather than my previous best of 6:18.

Well hey, it's a theory anyway. I realize it's probably not quite so cut and dried, but it fits well into my overall input-output conception of training. Besides Missed Opportunity, a couple other factors affected my performance as well. These might be classified as Tactical and Psychological. I made a huge tactical mistake this season in how I executed my Level 1 workouts. I made the decision to primarily focus my training on improving my 4 x 1K score, while doing other Level 1 variations only occasionally for variety. I am more convinced than ever that this was a good decision. But I made a mistake when judging my initial goal pace. During Week 1 I did 8 x 500m @ 1:33, so 1:36 for 4 x 1K in Week 2 seemed reasonable (in fact, compulsory). Turns out I was physically prepared for that pace, but not mentally prepared. On my first attempt, I finished the first piece feeling VERY challenged. I struggled to finish the second like it was the end of my hardest 2K ever. I blew up on the 3rd piece and didn't even try a fourth. I was so pissed off I went back to the same pace the next week - with similar results. It was about 5 weeks before I finally swallowed my pride, reduced my initial pace, and completed the workout with a quality final piece. I finally got on track and was making some progress, when along came the BIRC trip. I came back, tired and flat from the trip, but tried to keep my previous best pace. Yep, I was so f----n' stupid I spent the next few weeks banging my head into a wall just like before. I didn't get back on track again till January, when I made considerable progress, but it was too little too late. So next year I plan to focus on 4 x 1K again, but I plan to be a lot smarter about it. That workout kicked my butt this year, but next year I plan to return the favor.

The Psychology of Training was still another factor that had a measurable impact on my performance this year. One aspect of the season was that I had a greater overall sense of failure. I completed my workouts with my intended goal paces/distances much less frequently than the previous year. Last season I reached my goal (e.g., a given distance for 60' Level 4, or a planned pace for 4 x 1K) about 90% of the time. During one stretch I reached my goal for 99 straight workouts (and they weren't exactly creampuff goals, believe me). This year I stopped keeping track after about 10 weeks because I was getting too depressed from all the failures. I had to stop and remind myself that my goals were even tougher this year, and I was actually doing as much or more quality work than the previous year.

Also a psychological issue, and no doubt the biggest problem I faced this year and one I have to solve before next year, is that the process of training gradually became a chore or even something I dreaded rather than something I enjoyed. I think it was Joe Paterno (legendary Penn St. football coach) who said that many have the will to win, but few have the will to prepare to win. My strength has always been that I am willing to prepare, and in fact the process of preparing by training is what I enjoy and being able to chart my progress through training is the real challenge. Racing is very secondary, and while I enjoy the results I don't much care for racing itself. My approach has been to think of races simply as time trials under very strict conditions. (This is in contrast to someone like Graham Price, who has been the most dominant figure in senior lightweight rowing over the past four years. Graham tells me it's the racing that gets him psyched to train, and he couldn't train as hard as he does without the prospect of racing as a payoff.) Somehow this year I got twisted around to feel like I HAD to train because I was planning to race, starting with the BIRC. I HAD to train, because I didn't want to travel to England to make a fool of myself or let down my team. And as I fell farther behind my goals, I really felt like I HAD to train even more/harder, because my performance this year would be measured against my success last year. It got to me, and I found myself procrastinating more and more, getting into the gym later and later for my morning workouts and sometimes starting my evening workouts so late the gym closed before I finished. I wasn't having much fun. I had promised myself that if I just made it through the year, then screw it, no more racing for me. My experiences in Boston this year have made me reconsider my "retirement", but I need to recapture the more relaxed attitude of the previous year, when I had a specific goal for the season but was able to just take it step by step and enjoy the ride. I want to focus not on the ultimate goal of winning another hammer

(though I DO want another hammer!), and focus instead on simply reaching my performance goals for my Level 4, 3, 2, 1 workouts. If I can do that, the racing will take care of itself.

To wrap up this novel, here are some examples of my training milestones for the various Wolverine Levels last year and this year:

2001-2:
2K: 6:18.2
60' (Level 4): 16,070m (1:52.0)/1196 strokes (AVG 19.9)/13.44 m/stroke
5 x 10' (Level 4): 13,832m (1:48.4)/1084 strokes (AVG 21.7)/12.76 m/stroke
10 x 1500m (Level 3): 1:43.4
32K Continuous (Level 3): 1:48.8
4 x 2K (Level 2): 1:38.2
4 x 1K (Level 1): 1:33.9

2002-3:
2K: 6:21.4
60': 16,132m (1:51.6)/1180 strokes (AVG 19.7)/13.67 m/stroke
5 x 10': 13,876m (1:48.1)/1068 strokes (AVG 21.4)/12.99 m/stroke
12 x 1250m: 1:43.6
35K: 1:49.2
4 x 2K: 1:39.2
4 x1K: 1:34.8

So overall I improved on Level 4. I didn't advance as far as last year on stroke rate, but I was using a 1:35 reference pace (vs. 1:36 the year before), so I was covering more meters with fewer strokes in a given time frame. My Level 3 pace wasn't too far off the previous year, and the high point was a 35K row. (This, incidentally, came after a morning 6:27 2K time trial.) It was the Levels 1 & 2 that suffered most in comparison to last year. Next year I plan to keep close to the structure I have used these past two years. I want to build up to about 370-380' minutes of Level 4 per week, and advance my average stroke rate closer to 20 spm by CRASH-B. I hope to build my total weekly Level 3 meters up to 50K or more, ideally culminating with a full 42K marathon. And of course prioritize improvement for 4 x 2K and 4 x 1K. Incidentally, these two workouts have proven to be accurate predictors of my 2K performance. In 2002, my 2K time ended up being (4 x 2K) minus 3.6; in 2003, it was (4x 2K) minus 3.8. In 2002, my 2K was
(4 x 1K) plus .7; in 2003, it was (4 x 1K) plus .6.

Hope some of you have found any of this helpful!

Best wishes,

Mike Caviston

Physical & Mental Preparation
Mike Caviston - 18 Sep - 11:27:21 PM (edited)

Chris,

I am definitely a firm believer in thorough warmup. I see athletes continually underperform on workouts or tests because of inadequate warmup. And the warmup should include some fairly intense (race-pace or faster) strokes. . . . you are just not going to leave yourself with insufficient energy to perform an all-out 2K (or 5- or 6K) by performing a rigorous warmup.

I don't know that the heart needs all that much time to adjust and reach maximal rate, but reaching maximal stroke volume probably takes a little more time (and intensity). So too to get the aerobic pathway FULLY functional and the active muscles' capillary beds FULLY dilated. As a confirmation of the need for full intensity to prepare, I have had exactly the same experience as you when doing an 8 x 500m workout, Chris. The first one is invariably the slowest and most difficult (unless I'm truly giving a max effort late in the season, when the last couple pieces are pretty difficult indeed.) Another bit of anecdotal evidence that convinced me of the importance of intense warmup long ago involved a workout I used to have my athletes do in one of the taller buildings on campus. We would run in the stairwell, 12 x 12 floors as fast as possible (most would finish in the 30-35' range). We would generally warmup by jogging to the top (12 floors) 2 times. But prior to the start of the workout, some

athletes would have to sprint an extra 2 circuits as penalty for various infractions during the previous week (late to practice, etc.) They had to meet a certain time standard or run even more circuits, so they ran HARD and finished out of breath and with their hands on their knees. Then they had to turn right around and run the 12 circuits with the rest of the team. A very interesting pattern developed: these athletes who had to run the penalty circuits invariably beat their previous best times by LARGE margins - more than 2 minutes in some cases, where others were improving by only 15-20 seconds. That really opened my eyes. Last season, I had the UM women's team come in the morning of 2K tests and do their full race warmup followed by a race pace 500m where they were asked to practice their first 500m. In other words, they had a specific race plan for their test and they practiced the opening 500m. Then they came back about 6 hrs. later to perform the actual test, complete with another full warmup. The response was very positive, and they claimed to be both mentally and physically prepared to test (and yes, some were skeptical before hand).

Now, when I sit down to row I have a very specific warmup format for each type of workout I do - 2K for Level 4; 2.5K for Level 3; and 4K for Levels 1 & 2. There's no exact science to the warmups, just some routines I've developed through tinkering and that I stick with now because they are very familiar. For example, the 4K warmup begins with 10 firm strokes (Level 3-ish pace, about 1:47-1:48 for me), which lasts about 100m; then I settle into a Level 4 recovery pace @ 14-16 spm (my splits range from 2:05-2:14) for the balance of 1000m. For the second 1000m I firm up to a Level 2-ish pace (1:43-1:44), then 500m @ 18 spm at my Level 4 pace, and finally 1500m more back down to my Level 4 recovery pace. Sometimes I toss in a couple more tens at 2K pace.

To prepare for a 2K race, I begin with the 4K warmup I've just described, take a very short break, and then do a 2K ritual that continues my physical preparation but also stresses my mental preparation. When I race 2K, I break it down into mental segments of 200m each (when I do time trials on my own or test the athletes on the UM team, I record 200m split times, not 500m). So during my warmup I do a sort of a 2K pyramid that escalates in intensity, with a 400m block somewhere in the middle at race pace before coming back down. I try to visualize the upcoming race and imagine myself successfully crossing each 200m interval at my planned pace. After I finish this 2K piece, I take another short break and finish up with a final 1500m @ 14-16 spm and a 2:10-ish pace. So the entire warmup is 7.5K and takes about 28-29 minutes by the clock. I try to time it so that I finish 5-10 minutes before scheduled race time. (Side note: this is rally chancy at CRASH-B, since the competition to claim warmup ergs is fierce, and if not careful one might end up left out in the cold. I managed to get my full warmup last Feb. but I happened to grab an erg that was low on batteries, and the monitor gave me garbage numbers, e.g., told me I was pulling 1:36 when I was trying to pull 2:15. I just had to wing it and use the Force to guide me. But I did leave a full puddle of sweat!)

As for concern about lactate buildup, I don't think it's a concern if you keep the time at race pace below some critical threshold; 250m is probably safe and 400m (maybe 375) seems to work OK for me. And allow time for active recovery following the race pace strokes.

Chris, I hope that helps and I'm sorry if I went on at greater length than you intended. That's a risk one takes, I guess, when asking me a question.

Best wishes,

Mike Caviston

RE: Reflections On Training
Mike Caviston - 6 Mar - 11:53:53 AM

Tony,

Thank you and everyone else who has responded for your thoughtful and insightful comments. I will work through them and attempt to answer most of the questions people have raised over the next couple days as time allows.

Regarding your observation about 4 x 1K pace: it's common enough for people to bite off more than they can chew (my athletes do it all the time), but I'm supposed to be the expert who knows better! As for my Level 4 progress, I'm hoping that a more solid foundation will eventually lead to more top-end speed even if it didn't happen this year. I don't feel as if I had any particular difficulty with the transition to higher rates, but I do plan to work in a few more supra-2K pace 8 x 500 workouts. The trick is to get the right balance, and as I explained this past year I got too caught up with trying to execute 4 x 1K properly.

Regarding my 26-week training schedule, I had a fairly lengthy dialogue on that topic last summer with Guy W., and ideally I think I'd like to try a format of about 35 weeks. But there isn't any serious down time during the other 26 weeks. I still train 7 days a week, but generally only once a day. I follow a similar schedule in terms of workouts: 1 Level 1, 1 Level 2, 2 Level 3s, and 3-4 Level 4s. I don't record my scores on paper, but I still keep pretty good track in my head. Although it can be hard, I find that by not letting myself record my workouts in the summer, I'm even more eager to begin the process come fall. My goal is to make sure I have a certain baseline fitness come the end of August but still leave myself room to improve over the next few months. I also tinker with developing new workouts or trying variations of old favorites, looking for ways to improve.

Anyway, thanks again for your input and I hope your own pursuits are going well. Cheers,

Mike

I'm Still Here
Mike Caviston - 4 Dec - 10:43:29 AM

Well, I've been keeping a low profile mostly because of time constraints. As I near the end of the semester I have more than enough on my plate to keep me from reading all the forum posts, much less responding. I don't see that name registration has improved the quality of the posts I have read, and there's still plenty of petty bickering and an astounding level of pig-headedness by some individuals. But you have spurred me to try my first post-registration response.

As much as the topics interest me, I have found it unrewarding to get involved in discussions related to physiology or nutrition, and I've made it a general policy not to get caught up in constantly re-iterating points from the Wolverine Plan. However, whenever someone asks a simple "what do you do" question, I'm more than happy to share. I gave a more detailed response about pre-race preparation a couple months ago, but here is the routine I followed last year in the week prior to CRASH-B:

SUN: 4 x 1K (Level 1)
MON AM: 60' (Level 4)
MON PM: 2 x 40' (Level 4)
TUE AM: 40' (Level 4)
TUE PM: 15K (Level 3 intervals)
WED: 500m/500m/1K/500m (Level 1)
THU AM: 60' (Level 4)
THU PM: 6 x 10' (Level 4)
FRI: 4 x 250m (race pace) + 20' (Level 4)
SAT: 500m (race pace) + 20' (Level 4)
SUN: 2K

In other words, it was pretty much my normal routine until 2 days before the race. (I substituted a Level 1 for a Level 2 on the previous Sunday.) I followed my normal increase in Level 4 progressions and actually increased them on Thursday. The 6 x 10' workout was one of the 2 or 3 single toughest workouts I did all year. Then I eased up a bit on Friday & Saturday before racing Sunday. I was pleased with how I responded and felt like I raced to my potential, so I plan to stick close to this format this year.

Hope that helps. Thanks for asking.

Best wishes,

Mike Caviston

Rambling Response
Mike Caviston - 12 Aug - 11:51:19 PM

One point I would make up front is the generalizations I make in the Wolverine Plan are just that - generalizations. As such there will be exceptions to fit specific circumstances and sometimes there are differences between the Plan as written and as executed. I am pretty rigid about maintaining the structure I've outlined, but occasionally make adjustments (I'll give an example or two momentarily). But I do stick as close to the overall consistent mesocycle structure you have described. The analogy I use in the Wolverine Plan document is to imagine an infant in development: the growth of all organs is interdependent and maturation of

all organs must be somewhat proportional. And so with training the various factors such as aerobic, anaerobic, strength, endurance, speed, power, etc. etc. should be developed in some proportion to each other. But the proportions don't have to be held EXACTLY constant throughout the entire training season, and I am more relaxed with my Level 1 & 2 paces in the first couple months. Someone who wanted to follow a more traditional mesocycle structure could probably still improve with less race intensity training early in the season. But I would still advise at least occasional race-pace workouts to provide a frame of reference from which to base the rest of training.

As far as tapering and specific preparation for races, my approach is a blend of what I believe to be best from an overall physiological perspective, and what appears to work best for me personally (though I concede I am probably somewhat of an atypical case). Still another thing to consider is that my priorities when it comes to racing probably aren't the same as many other ergers. For many, a training plan is a means of developing the capacity to race fast. My motivation is to create a challenging training plan and follow it despite numerous personal challenges during the year. It just so happens that also prepares me to race well, but that's a consequence more than a specific goal. My primary reason for racing last year was to get a better perspective on the kids I work with and to help them deal with their race anxieties by being forced to deal with my own. Anyway, before I get too far off the original topic, if I'm going to show up at a race I want to perform as well as I can, and I adjust my schedule accordingly where necessary.

One benefit of the overall consistent weekly structure (besides reducing risk of overtraining due to large or sudden increases in volume or intensity) is that it brings one systematically up to a point where at any given week one's best performance of the season should be not only possible but practically a foregone conclusion. All that needs to be done is let the progression take its course. In the days immediately before race day, very little adjustment should be required, with the only serious reduction in volume on the day before the race. Here is how I prepared for 3 races last year:

Overall, I perform better without too much taper. I seem to get very sluggish if I miss any workout during my normal training schedule, with my next couple of workouts ending up being subpar. That may well be more of a psychological response, but I assure you it feels very physical to me. However, when planning workouts for the athletes I coach, I am more conservative and give them a little more reduction in training. If they think they are really rested, they tend to perform better.

More Rambling
Mike Caviston - 14 Aug - 10:32:57 PM

Of course a big part of my limited taper policy is that rather than seeing training as a preparation for racing, I see racing as an interference with training. The entry in my training log for FEB 24 this year is simply: workout # 262; weight 162; warmup 7.5K; work 2K (with time & splits). I flew that night from Boston to Austin, TX to join the UM team on its spring break training trip, and about 20 hours after pulling my 2K I was sitting down to do 3 x 40' Level 4. The athletes couldn't believe it and thought I was friggin' nuts, but for me it was simply workout # 263.

Please Pay Attention...
Mike Caviston - 16 Sep - 12:36:09 AM (edited)

The rules for recovery are 1/6 of the work time (40' work followed by 6:40 recovery; 20' work followed be 3:20 recovery). The major difference with my training this year is to increase my Level 4 reference pace from 1:36 to 1:35, and to eventually increase my Level 4 minutes to 420/week (last year I topped out at 360/week; this week I am scheduled for 368'). Eventually, Monday will be 60' AM and 2 x 60' PM. It will be pretty tough, I imagine. The other Level 4 workouts range from 40-70' in length. So far Level 4 has been about 57% of all my training meters. That number will increase slightly until I build up to my 420' goal; then it will decrease again as I start increasing my Level 3 meters more aggressively. I don't think I hit 50K in a single day last year but I went over 40K many times. Incidentally, I count my total meters as all Level 1-4 meters + warmup; I don't count recovery or cooldown. My greatest single week last year was about 182K and I expect I'll break that easily; the week just completed was 165K.
. . . what evidence is there that my improvement was not simply due to more training, and not Level 4 training specifically. Actually, I didn't double my training to improve from 6:24 to 6:18 . . . but I did increase from 7 to 10 workouts per week. And some of those workouts were Level 4 precursors as I worked on developing the format. But the only way to know for sure the effect of Level 4 training would be to perform a controlled experiment with genetically matched subjects performing similar amounts of training under various formats. In

lieu of that, the best alternative is to infer the effects based on known principles of physiology and to look at the anecdotal evidence as it accumulates. I have seen plenty of evidence first-hand with the UM rowing team. (Don't know if anyone has noticed, but three of the athletes in the women's eight at this year's World Championship are Michigan graduates.) Forum readers will provide other anecdotal evidence (positive OR negative) as they spend more time with the program. But, as I have said before, I'm not seeking converts. I'm just sharing information. Using it or not is every individual's prerogative.
Mike Caviston

For ChrisHeth Re: Interval Training
Mike Caviston - 17 Oct - 04:29:47 PM

Chris,

As promised, here are some thought s related to your query regarding interval training (others should be able to pick up the gist in context). Things may get a little jumbled since there are a lot of concepts to consider but hopefully this will make sense. First off, I believe the 2K test is an interesting animal from the perspective of energy systems involved. It is at a sort of metabolic crossroads somewhere between aerobic and anaerobic. The conventional numbers listed are something like a 70/30 % split between aerobic and anaerobic energy utilized for 2K which is probably fine as a generalization but I'm sure there is much individual variation. Different athletes recording similar raw scores will produce their results with various reliance on different energy pathways. There is room in 2K competition for power beasts as well as endurance freaks. Wherever on the spectrum an individual might lie, they would still maximize their competitive potential by addressing both aspects in their training. While I think it is certainly true that athletes should address their weaknesses and work to limit them - e.g., the person who loves Level 1 work like 8 x 500 needs to also do Level 3 & 4 no matter how boring or distasteful because some endurance is required - it is also equally logical to play to one's strengths. If you happen to have a lot of power, go with that. Develop it to its fullest. In my training, my philosophy has evolved to prioritizing endurance and power per stroke through Level 4 training, to build a solid foundation. But the foundation exists to support the top of the training pyramid, which is Level 1. I developed Level 1 workouts like 8 x 500 to maximize 2K speed in as little time as possible (to get maximum return on the training investment). That Level of training really separates the adults from the children and I'm sure accounts for most of the speed I've developed over the years. But to take those last few seconds off and make the difference between a competitive time and an outstanding time requires further investment in extended endurance work. Still, in and of itself, 8 x 500 requires/develops not only power (for each individual piece) but endurance to repeat the intervals multiple times. Also, for myself, I don't look at Level 4 as addressing a particular deficiency (I think my physiological arsenal is pretty balanced) but as a type of training that I CAN do a lot of without overtraining (knock on wood). Too much Level 1 would be counterproductive.

Okay, as to your question about Level 1 workouts as predictors of 2K performance… I hope as the racing season progresses, more people will respond to your requests for information. I am very interested in what others find as well. Here are some comments/observations about various interval sessions (I'm not commenting on pyramid-style workouts or multiples of 750-800m because I don't use them enough to provide any useful insights):

8 x 500M: The general correlation with 2K in my experience/observation is approx. 2k -2. But there is a certain amount of variation. Some of it is due to physiological differences, but more is probably due to motivation (or lack of) and perception of what one is capable of. I think 8 x 500 is very similar to 2K in terms of qualities required or emphasized. If a person possesses power but no endurance, they might have a great opening 500 but a poor overall average. If a person is all endurance but no power, they might still record the same average score as the power maniac by virtue of having smaller decrement in performance over the 8 intervals. But some people are really motivated for 8 x 500 and push themselves to the extent of 2K-3. Others can barely go below 2K pace. I actually coached one woman last year whose best 8 x 500 was 2K PLUS 1. She pulled 6:57 for 2K so she was no slacker, but she just couldn't seem to get up to speed for 500m. Incidentally, I always perform Level 1 & 2 workouts from a dead stop (or nearly so), rather than setting a set time for recovery and picking up the work intervals on the fly. I don't look at that as cheating, but a static start does make the interval a little tougher, and offers a chance to practice settling into race pace in a way that more closely simulates racing. Regarding my best performance of 2K - 4: well, I've been doing this for a while. I estimate that between 1988 and 1998 I did 8 x 500 an average of 40-45 times/year pretty much on a weekly basis. The last 3 or 4 years I've been working in more variations like 4 x 1K, but I still do a hard 8 x 500 every few weeks at least. I don't have exceptional power (although the only all-out 500m I've ever done have been at the end of 8 x 500 workouts) but its pretty good, and combined with pretty good endurance the result is a fast 8 x 500 AVG. There are also tricks of efficiency I've picked up that others probably don't utilize. Things like optimizing the recovery with the correct recovery pace, and really being consistent with power within and between pieces. A lot of people just hammer for 100-200m

and slowly fade. I get on pace in 4 strokes or less and hold it steady on through. And I don't do 2K - 4 all the time. I begin the year around 2K - 1.5 and steadily improve from there. I was highly motivated to get my all-time best performance last year after CRASH-B since I hadn't PR'd for that workout in 2 years. And it took an exceptional effort, if I do say so myself. It left me more wasted than my effort at CRASH-B (and I wasn't taking it easy there!)

4 x 1K: I have shifted my emphasis to maximizing this workout to develop 2K speed (although unfortunately not with as much success as I'd like so far this year). The format is similar to 8 x 500m in that I start from a dead stop, and afterward paddle some as well as do 1000m of active recovery, and start the next interval approx. 10' after the start of the previous. Most people seem capable of doing this workout in 2K + 1 or 2K + 2 pace. My best AVG last year was 2K - .7 which again may be partially due to my efficiency of execution. It is DEFINATLEY a very tough workout. From my perspective, I cannot get my head around the idea of doing 2K at FASTER than 4 x 1K pace.

4 x 2K: The format I use is to start the second interval no more than 15' after starting the first (and repeat for the 3rd & 4th). For me this works out to about 8' recovery which is largely active along with some light paddling. Your estimation of pace as 2K + 5 is pretty typical of what I see from many athletes, though the mentally tougher athlete is capable of better. My best performance last year was 1:38.3 AVG for all 4 intervals, but that came in early Jan. and I should have been capable of better, but for some reason peaked early on that workout. A realistic goal for me is a 1:37.5 AVG, or to get all 4 intervals at 6:30 or better (which would be roughly 2K + 3).

I hope this answers some of your questions or gives you food for thought. Feel free to redirect me if you wish, since I am as interested in this topic as you are. All the best,

Mike Caviston

Alternate 4 x 10' Workout
Mike Caviston - 9 Mar - 09:57:39 PM

One workout I do periodically during the off-season is 4 x 10' (3' 20" recovery): 10' @ 16 spm; 10' @ 18 spm; 10' @16; and 10' @18. I start the piece pulling about 1-2 sec below my normal Level 4 pace, and progressively bring the pace down further over 10'. For example, my Level 4 pace for 16spm is 1:59, so I start at about 1:58 and finish with the last minute at maybe 1:54 or lower. I don't have accurate records but I have averaged under 1:55 for 10'. For 18spm, my normal Level 4 pace is 1:55 and I might average 1:51-1:52. Then repeat. My goal is to average 4 spm better than my normal Level 4 pace for each rate, but I don't think I've ever gotten it for all 4 pieces. I tried 10' @ 20spm once, but didn't finish. It's a deceptively tough workout and leaves me pretty zonked. I especially like to do it a few times before I start my Specific Training period, so my normal Level 4 paces feel a little lighter by comparison.

Level 3 and Me
Mike Caviston - 26 Nov - 04:50:09 PM

Tom,

My personalized program calls for two Level 3 workouts per week. One is continuous and I gradually increase the distance per session a little each week. This year I started at 16K and am scheduled to attempt 23.5K on Friday. I've been adding 500m per week as long as I equal or improve upon the previous week's pace. Without making it a priority, the pace has improved by nearly 2"/500m over the duration with only two weeks where I've failed to improve at all.

My other weekly Level 3 uses the interval format. I've tinkered for the past few years with a number of different formats but they all total about 15K distance or 45-50' of total work and they all use the specific work:recovery ratio of three minutes/one minute. I used to program the workout by time and commonly did 3' on/1' off (x15). I've also tried 2' on/40" off (x24), 4' on/1' 20" off (x12), and 5' on/1' 40" off (x9 or 10). All of those formats give essentially the same results and it was just a matter of getting a little variety. I do find that the shorter/more frequent intervals allow me reduce the pace a little more by taking more frequent advantage of the low splits one can get when starting an interval off the fly. (I've read that you can't do that with the new PM3, but I haven't had the opportunity to try yet). For the past two years I've done all the Level 3 intervals based on distance rather than time. I've tried 1000m x 15, 1250m x 12, 1500m x 10 and 2000m x 8 as work distances while setting the recovery interval based on what I estimate will give me a 3:1 ratio. Like many people, I just psychologically like watching meters count down more so than minutes (and I get enough of minutes with Level 4 anyway). So the

1500m intervals end up being in the 5 ½ minute ball park and the 2K intervals around 7 minutes. I've settled on 1500m as being my primary distance if for no other reason than it makes the math much simpler.

One additional observation about this workout, based on my personal experience, is that it can be about the most mentally demanding workout I do. 4 x1K (Level 1) is hands-down the hardest, but when I do that one I usually know I'm PHYSICALLY limited (although I have cracked mentally while doing it). But with 10 x 1500m I often feel like I COULD finish but I'm just not sure life is worth living that much anymore... So this has been described as a Level 3 from hell because it eventually feels like a Level 2 that just won't end. What I have learned the hard way is the importance of letting the improvements come slowly and gradually over the course of the season. Don't get greedy and go too fast too soon because then you paint yourself into a corner and once you reach a certain point you won't find much room to improve. Despite all my experience I essentially made that mistake again this year. For the first few weeks this was probably my favorite workout and I looked forward to it because I could row with a nice steady relaxed Level 3 rhythm, take several breaks, and finish feeling really good. I made rapid progress even while trying to limit myself in how much I improved per week. After about 12 weeks my pace was as low as it's ever been for that workout, but all of a sudden I sat down one evening and it turned out I had to pull about twice as hard just to take another tenth of a second off my pace, and it seemed to get even harder the next week. All of a sudden I was really dreading Tuesday evenings. After all, I do Level 1 on Wednesdays, and that's supposed to be the REAL battle. I can't get that mentally up EVERY time. Last night I turned the clock back a few weeks and let the pace come up considerably. I'll try to be even more controlled as I bring it back down again. Moral of the story (I learned this the hard way last year): be prepared to lose a battle or two on your way to winning the war.

Sorry for being so long-winded. Hope you find something useful here.

Mike Caviston

Long Level 3 Response (Pun Intended)
Mike Caviston - 19 Oct - 04:42:49 PM

Tom,

"Level 3" is just a term I use within the Wolverine Plan format to designate conventional, continuous steady-state work. (Many people use "steady-state" when referring to Level 4, although it is anything BUT steady.) This might be anything from a moderately paced 5 or 6K to a full marathon, and the technique would be to find a comfortable stroke rate and fairly consistent pace for the entire session. I personally row about 25 spm for my extended level 3 work. In broad terms, the desired pace might be described as challenging but not maximal. I don't quantify intensity based on HR but as % of 2K the range might be anywhere from 8-18% slower than 2K pace depending on the length of the Level 3 session.

Two general approaches to Level 3 workouts might be to either select a set distance (such as 12K) or set time (such as 60') and progressively go a little faster each week, or to settle on a comfortable pace (e.g., 1:55) and progressively increase the distance/time at that pace. The first approach would be best for someone with time restrictions, while the latter might appeal to someone interested in ultradistance performance. Besides continuous sessions, one variation includes mid-distance intervals such as 2 x 6K or 3 x 5K, but treated almost as a continuous workout. So one might row 6K at 12K pace, take a short 2-3' break, and perform the second 6K. This is a good way to practice negative splitting a long workout. Another variation of Level 3 is an interval format with a work:recovery ratio of 3:1 (e.g., 15 x 3' on/1' off). The pace can be kept moderate or gradually pushed to extremes (the rowers I work with call this the "Level 2 from hell".)

My routine includes 1 session/week of Level 3 using the interval format. I currently do 12 intervals of 1250m (15K total) and adjust the recovery time based on my expected pace for the work intervals. I personally like using distance rather than time for work sessions. My pace for this workout is about 12% slower than 2K though in the past I have gone much faster (I am trying to pace myself for the whole season). For long continuous Level 3 work, I also do one session/week. I began the year at 16K and every time I meet my goal (complete the session without interruption at a pace equal to or faster than the previous session) then I add another 1K for the next session. I finished 20K yesterday on pace so next week it will be 21K. Last year I got as far as 32K at a pace about 14% slower than 2K.

I enjoy Level 3 because to me it really feels like pure rowing and on a good day I really feel as one with the erg (and boy, does that sound corny but hopefully you understand what I mean). No intense burning like all-out 1Ks and no need to focus on rating shifts and power changeups. Of course, after a hard 25 or 30K, your body hurts in

a deep and comprehensive way that can't really be described. The specific effects that I look for are endurance, weight maintenance (for racing), and mental toughness. I try to do the long sessions continuously, but this workout is highly variable regarding my success rate. Various things interfere: poor nutrition (lack of glycogen) or poor hydration; the weather (excess heat & humidity); nature calls; or various overuse injuries affecting my elbows, wrists, fingers etc. make it difficult to grab the handle for over two consecutive hours. So sometimes I take a short break or two as needed to stretch/drink/use the bathroom etc., and then finish the remainder of the scheduled distance. I just don't count that workout as a successful completion, and repeat the same distance until I can finish without stopping for any reason. I don't think the physiological benefits suffer from stopping, but I want to improve mental toughness as much as possible. And in the context of racing at 2K, that distance starts to look a whole lot smaller when you can knock out 30K nonstop.

Hope that answers your question, but let me know if it doesn't. Best wishes,

Mike Caviston

Paces
Mike Caviston - 3 Nov - 10:53:23 PM (edited)

Thomas,

Regarding Level 3, I haven't been using the 2 x 6K format myself. I recommend it for people who are intimidated by the thought of doing 12K continuously. I am currently doing a workout similar to 3' on/1' off, except I do 1250m on'/(approx.) 1:30 off. I started in Sept. with a pace of 1:48 and have just recently dipped under 1:45 average for 12 pieces (15K total). For continuous Level 3, I did 22K last Friday at an AVG pace of 1:49.6.

The Level 4 sequence you mention is pretty tough, in my opinion (116 116 116 128 128 140). I didn't do it at all last year and haven't gotten around to it yet this year (but I'll have to eventually just to prove I'm not scared!) The final 140 sequence is the killer. I was using a 1:36 Reference Pace for the past three years, and this year I've gone down to a 1:35 pace. The new pace was a challenge for the first few weeks of my current training season, but I've gotten pretty comfortable with it now. I should have used 1:35 last year, based on my previous best 2K of 6:20.1, but I was still experimenting a little with the Level 4 format, sequences, total volume etc. and was afraid of changing too many variables at once. In hindsight, it was a mistake, and I'm sure I would have benefited last year with the faster Reference Pace. Live and learn!

Mike Caviston

Level 4 Variations
Mike Caviston - 23 Sep - 01:18:35 PM

Thomas,

This morning my workout was 48', alternating 104/112^ (repeat * 4). I don't use 200^ too often, but have been using it as part of 4 x 10'. This Thursday morning my plan is 200^, 208, 208, 200. I use 4 x 10' for a little more intensity, and to get used to faster sequences I will eventually be using in continuous workouts (i.e., 40-60' continuous).

Have fun!

Mike Caviston

Guideline For 12K
Mike Caviston - 18 Sep - 11:46:09 PM

Tracy,

FYI, I've modified that guideline a little bit. I suggest a reasonable beginning Level 2 pace would be 2K * 1.083, and a reasonable pace for a continuous 12K would be 2K * 1.156. So someone with an 8:00 2K would attempt a 2:18.7 pace for 12K. Good luck!

Mike Caviston

RE: Wolverine - 6 minute intervals
Mike Caviston - 16 Sep - 12:25:19 AM

Tracy,

I'm a little surprised there has been no mention of the 6' sequences. Some rowers I work with like them because it gives you even more to think about and a sense of completing stages more frequently. Perhaps people will discover them when they get tired of the 10' sequences. I use 6' sequences as a bridge when I'm building my minutes for a particular workout over several weeks (e.g., 40' > 42' > 48' > 50'). I tend to start with lots of 104s and gradually substitute 112^s or 116s. An extremely difficult Level 4' workout is 36' total: 116,116,116,128,128,140. I never attempted it last year, I think partly because I was afraid I wouldn't be able to finish!

Good luck with your training.

Posted: Tue Feb 22, 2005 3:48 pm Post subject:
Quoting Thomas:

Congrats on your victory. I am interested in the new "wrinkles and variations to training that extend the principles of the Wolverine Plan".

Thanks, Thomas. It was definitely an interesting race. The new “wrinkles” in the Wolverine Plan consist of:
1) Level 4 sequences based on odd-numbered spm (e.g., 186 = 2’/2’/2’/2’/2’ @ 17/19/21/19/17). This has created more variety and increased the precision of force application, which is a valuable skill for maximizing efficiency.
2) A concept I call “integer pacing” which is a detailed and systematic format for pacing Level 1-3 workouts. I’ve created a whole new set of tables but the premise is pretty simple. For workouts like 4 x 1K, 4 x 2K, 3K/2.5K/2K, or even 20K continuous I start with a target average pace for the workout and follow a strict plan for shifts in pacing each segment of each piece to allow me to negative split in a very efficient manner. It’s been a very effective tool for letting me mentally break up the tough Level 1 & Level 2 workouts. For example, let’s say I planned to average 1:43.0 for 3K/2.5K/2K. I would break the 3K up into 600m segments and pull 1:45/1:44/1:44/1:43/1:42 for an average of 1:43.6. Then I’d break the 2.5K into 500m segments and pull 1:44/1:44/1:43/1:42/1:41 for a 1:42.8 avg. Then I’d break the 2K into 400m segments and pull 1:44/1:43/1:42/1:42/1:41 for a 1:42.4 avg. So I’m always building intensity in a planned, smooth fashion. I like my workouts to be mentally stimulating as well as physically challenging.

Mike Caviston

Posted: Fri Feb 25, 2005 5:03 pm Post subject:
Gentlemen,

I’m glad to share information, but it’s not my style to shove it down people’s throats. I get lots of requests for information about my training when I attend races, including people I race against, and everybody’s welcome to whatever help I can give. I don’t worry about giving up any trade secrets or losing a competitive edge, because I know the hard part isn’t planning the training – it’s executing the training. The key to performance is hard work. If someone else is able and willing to work harder than me doing my workouts, more power to them. I’ll shake their hand and put the gold medal around their neck myself.

Thomas, the Level 4 modifications are pretty much a matter of interpolating the odd-number paces between the even numbers. There are a few roundings and anomalies depending on which Reference Pace is actually being used. If I had somewhere to post the new tables, as well as the Level 1-3 tables, I’d make them available. (I've tried to paste a sample here, but it won't format properly.) The negative splitting format for the other workouts is a training tool, and not necessarily meant to represent the most optimal way of obtaining the best possible results for an individual session. It’s designed to allow long-term steady progression. I believe in negative splitting during races or test pieces, but the gap between the high and low end would not be as extreme.

I’ll be away from my computer for the next 10 days (on semester break from my university) but I’ll look out for any Wolverine Plan discussion when I get back.

Mike Caviston