



new england NORDIC NEWS

LATE FALL/EARLY WINTER 2003 VOL. 9, NO. 1

Something for Everyone

by Fred Griffin, NENSA Executive Director

I'm proud and I'm excited. I'm proud of the programs we are offering for Eastern skiers over the next eight months and I'm excited because, just like you, I'm going to have a whole lot of fun taking part in them!

We lead off in November with two roller-ski events that are becoming traditions—Bowdoin College's Jenex/Patagonia Duelathon and Coastal Nordic's New England Rollerski Championships. These events are low-key and fun, with completion more of a focus for most participants than speed. They cap-off our dryland period and usher us into what will hopefully be another equal opportunity winter of regionwide snow.

It is fitting that our first two NENSA events are education programs. Pat Cote is running an on-snow U-23 camp at Fort Montmorency, Quebec on November 26th-30th. He has reserved space for masters skiers and for junior coaches to bring up teams as well. Next in line is a coach's education clinic on snow at Grafton Ponds, VT. We're teaching the teachers of our kids classical and skating technique, waxing, and team-building on December 6th and 7th. These coaches will leave with the skills and vision to jumpstart youth programs all over New England.

At this point things open up in all directions! The next four months offer something virtually every week for recreational and fitness athletes, veteran racers, children, and junior racers. It's a matter of choosing what's right for you. It breaks down this way:

Bill Koch League clubs organize in November, start gathering by December and hold practices and events right on through to the 2004 Festival at Waterville Valley, NH on March 5-7. We'll be unveiling a new-from-the-ground-up BKL website shortly. On it we'll have a Ski For K's interactive log where kids update their totals themselves.

The Banknorth Club Series is built around three events and a championship. The races are perennial favorites run with a relaxed "why not jump in and have fun" philosophy that works wonderfully for skiers of all ability levels. We'll classic at the CSU Bogburn, skate at the Coastal Nordic Games, and do both at Putney Ski Club's exciting duathlon. Club skiers will also receive a point for finishing each of our marathons.

Speaking of which, our Banknorth New England Marathon Series is unique. Three states, three events, three adventures!

Each year the touring skiers outnumber the racers and everyone leaves with a weary smile and war-chest full of stories. In many ways these are our most popular and

important events. They are about lifestyle, community, personal challenge and personal accomplishment. Many of us plan our winter around these events.

Our nine Banknorth Eastern Cups provide the best regional racing series anywhere in our country. Juniors climbing the development ladder hand over fist contend for rung-space with college kids in our new U-23 division, and with New England's nonpareil corps of master skiers. BKL events begin each Eastern Cup day and every event also features an un-timed race for citizen skiers to test their skills on a championship course.

New England Women's Ski Day sponsored by Banknorth has rotated to Pineland Farms in New Gloucester, ME in 2004. Once again hundreds of women will have chance to learn to ski or to improve their skills in a relaxed and friendly environment. We're staging our NENSA Expo here as well, so expect a day packed with celebration on many fronts.

A new event caps the racing season for us in 2004, the Banknorth Eastern State Championships. All the skiing threads knit into a compelling fabric here: high school/private school, college, club, master, and recreational skiers will gather at Bolton Valley in Vermont to determine the 2004 Banknorth Eastern Cup Champions, U-23 Champions, Banknorth Club Champion, U-23 Club Champion, and New England Masters Champions.

With us all through the season are NE Nordic News, email newsletters for masters skiers and email updates from Staff. The website will feature online ski tips, online registration for all events, a Ski Log for clubs and skiers to list their K's,

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About NENN

Co-Editors

Anne Donaghy
anne.donaghy@valley.net
603-448-4133
Mary Hamel
nenn@nensa.net
413-527-0164

NEW ENGLAND NORDIC NEWS

NENN is published six times a year as a membership benefit of the New England Nordic Ski Association. If you are not yet a NENSA member, please join — support nordic skiing in New England!

To request a NENSA membership application, contact the NENSA Administrative Office. For fastest processing, send your membership fee in with your request for the membership form — as of 4/25/99, it's \$30 for the first member of the family (\$40 if not affiliated with a club), and \$20 for each additional family member (\$30 if not club-affiliated), payable to NENSA. When you return the signed membership form, you'll receive the NENSA competition guide and other membership benefits.

For information about life membership in NENSA, contact the Administrative Office.

DEADLINES

Articles and pictures submitted for publication in NENN must be in the editors' hands not later than:

Midwinter (January) issue: November 25

Late Winter (March) issue: January 25

Spring (May) issue: March 25

Summer (July) issue: May 25

Early Fall (September) issue: July 25

Late Fall (November) issue: September 25

Photos and graphics are always welcome. If related to an article, photos or graphics should be submitted with the text.

ADVERTISING

For complete particulars on advertising in NENN and/or the NENSA Competition Guide, contact the Administrative Office.

CONTACTING NENSA

NENSA Administrative Office
Fred Griffin, Executive Director
PO Box 176
Fairfax, VT 05454
(802) 849-2270
email: nensagr@mail.sover.net

NENSA Program Office
Patrick Cote, Program Director
96 First Rangeway
Waterville, ME 04901
(207) 873-0498
email: pat@nensa.net

Information Services, Membership, media/photos/
journalism/graphics, publications
Dorcas Wonsavage
(207) 778-0653
dorcas@nensa.net

Web: <http://www.NENSA.net>

Be sure to check here frequently for the latest info. on upcoming events!

FROM THE EDITORS

Mary and I waved to each other across a crowded room a few weekends ago, finding it funny that we were there in different roles from our NENN editing roles. We were there as event organizers — along with about twenty-six other members of the New England cross-country skiing community. Fred Griffin had organized this day-long workshop that brought together in one big room the organizers of every key upcoming NENSA winter event, as well as all of the regional cross-country technical delegates. What a great idea!

Max Cobb, former USBA Program Director and national and international racing official and race director, led us off with colorful slides and a discussion of what goes into creating the ideal event. Max is inspiring and energizing and also the perfect person to speak about how to optimally organize an event: after working with the MWSC organizing committee, including Max Saenger, "the other Max," to nail down every detail of the Nordic Heritage Spring Series, Chief of Race Max Cobb found himself stranded in Russia with U.S. biathletes and unable to return to the U.S. just as the event opened. It went perfectly without him, a testimony to how well organized the event was ahead of time.

In the afternoon NENSA's chair of Technical Delegates, Jim Rodrigues, led us in a lively discussion of the role of the TD at an event. Jim is also inspiring and energizing, as well as entertaining. He talked about not only the basic tasks a TD performs, but also led an in-depth discussion of the importance of start crews at races, particularly with the more complicated formats such as seeded mass starts and pursuits.

This NENSA workshop for race organizers and TD's got us all excited about creating the best possible events for our racers and participants. The levels of energy and commitment to our sport are truly remarkable... and they are now pointing us toward the 2004 ski season. In this issue of NENN, Fred Griffin highlights the opportunities ahead for recreational as well as highly competitive skiers, Pat Cote clarifies points about mass starts for both racers and organizers, Zach Caldwell offers technical information on ski base structure, Dr. Don Christie educates us on training through the cusp between fall and on-snow winter. Bill Koch skiers will find special inspiration from Kris Freeman, who talks on our BK page about how he began skiing and what led up to his medal at the U23 World Championships last winter.

This is also our special advertising issue. We hope you will be a customer of our title sponsor, Banknorth, and our associate sponsors Buderus and L.L.Bean, as well as of the companies advertising with us in the insert of this issue.

Happy winter!

Anne and Mary

BILL KOCH YOUTH SKI LEAGUE

Interview with Kris Freeman

Hailing from Andover, NH, last season Kris Freeman posted the best results for a US skier since Bill Koch. He won the new U23 Championships in February and a week later finished 4th in the 15k classic at the World Championships where he also won the scramble leg of the 4x10 relay. We have special reason to be proud of Kris since he began his career as a Bill Koch skier with the Andover Outing Club. NENN caught up with Kris in Utah where he is training with the US Ski Team.

NENN: When did you start cross-country skiing?

Kris: I started skiing as soon as I could walk. Before that my dad pulled me on a sled, an early Norwegian Pulkin.

NENN: In the Bill Koch League, family plays an important role. How has your family influenced your success in skiing?

Kris: My parents came out to every race when I was younger. Later, my father coached in my local club which was the Andover Outing Club. My father pretty much gave up every weekend to get me to the races I needed to get to. Dad did all my waxing when I was young.

When I was in high school, I didn't have a job because I was going to school and training so my parents supplied me with the gas I needed to get to the races.

NENN: What was your favorite Bill Koch Festival?

Kris: Well, I guess it would be the one at Holderness. I was a J5 skier at that point and I had a good time.

NENN: Growing up, did you have any heroes you were trying to emulate?

Kris: Not really... but I did have all the posters on my wall. I wasn't really sure who Bill Koch was but I knew he was a fast skier and he was on my Rossignol poster. I didn't know who the other racers were by name but I knew I wanted to be on a poster.

NENN: Can you think back to the time when you began to think about training to improve your performance?

Kris: I started to train year round in about 7th grade. In the summer, I mostly ran and did my own version of a strength workout that included push-ups, dips, sit-ups, crunches and back extensions. I only roller skied about 3 times a summer.

NENN: Did you start setting goals for yourself then?

Kris: I really started setting goals for myself when I was 15. That year I wanted to go to junior nationals and to win at Nationals. It happened for me that year. After that I started setting more long term goals for myself.

NENN: Over the years, how have you kept your interest in training and racing?

Kris: That hasn't been much of a challenge because skiing and racing is all I ever wanted to do. Also, it's easy to stay motivated because I haven't reached my ultimate goal which is an Olympic Medal.

NENN: Making the Olympic Team must have been so exciting for you. What did it feel like to toe the starting line in your first race?

Kris: By the time I got to the start of the race, I had a lot of time to prepare. I had been in Utah training and had already experienced the Opening Ceremonies. When I got to the line, I was very focused. It was the same as other races, only louder.

NENN: Your successes last year are an inspiration to young and old cross-country skiers all over the US. Could you tell us about your win at the U23 Championships and your World Championship races last year?

Kris: Well the win at the U23 Championships was a goal I set shortly after the 2002 Olympics with Trond Nystad [U.S. Head Coach]. He asked me how I wanted to do there. I said I wanted to win. Then we mapped out my entire year based on that one race. Going into the race, I knew that I was the fastest skier in my age group in the world. I peaked for the year at that race. It pretty much went exactly as I expected. It was a mass start and I pulled away from the field at 3k and kept increasing my lead from there.

In the 15 K at World Championships, I didn't expect to be in contention for a medal. I was surprised when I realized I was skiing in second place. If I had been more mentally prepared, I would have placed better. At this level of competition, the guy who thinks he's going to win is going to win. I was more prepared in the relay. I expected to win my leg and I did.

NENN: We know that there is another Freeman on the US Ski Team. What's it like to have your brother as a competitor?

Kris: I've been competing against my brother my whole life so it's nothing new for me. We live right next door to each other and we train together often. He's a great skier. The only difference between me and my brother is that I have been in the US Ski Team system since I was 15 and was recognized. My brother was ignored until he was 25.

CLUBS NEWS

Clubs News Fall 2003

collected by Rob Bradlee, rbradlee@yahoo.com

(Send him your news for our Winter issue!)

Once again, NE Nordic Ski Club will conduct two highly intensive non-profit camps in fall and early winter. They are targeted specifically at J-2 and EHSC athletes who are seeking success on the NENSA Eastern Cup Junior Olympic circuit, but who lack a high-school program or club that provides weekend support. There is one slot per camp open to coaches wishing to intern. See page 11 for more specific information.

Bowdoin College tells us that junior Alison Flint is spending the year studying in Oslo and sharpening her ski skills. Watch out college racers when she returns. The rest of the team is back in Maine organizing the 3rd annual Patagonia/Jenex Bowdoin Duathlon - 5k classic rollerski with on-the-clock changeover to 5k cross country run. They promise great prizes and an overall fun event.

Stratton Mountain School has lots of changes planned for this year. Dartmouth grad Brayton Osgood will test out a career teaching math while training for a spot on the U-23 National team. Coach Sverre Caldwell points out that we need to create more opportunities for our young skiers to combine long-term career development with shorter-term training for skiing excellence. And the big news out of Stratton is the planned arrival of a new Caldwell. Zach and Amy are looking forward to sleepless nights starting in mid-January. Lilly Caldwell and Kristina Joder will fill in for Amy while she's on maternity leave. By spring Zach will be able to give a three-hour lecture on optimal diapering techniques.

Jay Davis of Ford Sayre has a three month head start on Zach, though. He and his wife Julie welcomed Kathryn Taylor Davis into the world on Oct. 4 and the report is that she is such a competitor that she jumped the gun a bit (by a month) — just couldn't wait until November. Looks like there's some new Clubs competition now!

And rumor has it that Jay's fellow Ford Sayre skier Chris Nice has been planning something (NOT club affiliated) in early November called a "StadFest." This apparently involves a number of area cross-country skiers running one hundred "stadiums" (from the bottom to the top of a local college's football stadium East stands) in sets of ten with short rest intervals in between sets (someone must have talked some sense into Chris!). The goal is to hypothetically reach the summit of Mt. Everest in vertical gain, or vertical pain. Stay tuned for another report on this in the next issue of NE Nordic News...

2004 Banknorth NENSA Club Series: Jan. 17 - VO Max Bogburn; Feb. 7 - Coastal Nordic Ski Games; Feb. 15 - Putney Duathlon. For more info. see www.nensa.net!



Playing their way toward general body strength! (photo: Rob Bradlee)

NENSA Masters Clinics

This fall NENSA held four Masters dryland training clinics in Burlington VT, Jackson NH, Boston MA, and Portland ME. NENSA visionary-in-chief Fred Griffin created the series as a service to Masters members of NENSA.

"While junior development is the most visible part of NENSA programming, we are committed to education of all age groups and ability levels right across the board," Fred stated when we contacted him about these clinics. "Everything is connected. Many Masters racers do double-duty as BKL or junior coaches. When we expose them to the latest thinking on good technique and methods of conditioning it spreads out in all directions."

Coach Rob Bradlee created a one-day program focusing on technique and speed. Most masters are familiar with the basic principles of aerobic conditioning and are doing as much training as time allows. Where they can still improve is in the area of technique and speed. Rob started the day with a series of exercises to strengthen the core and the specific muscles used in good technique. From there the skiers learned a set of drills to do on foot to achieve correct body position, balance, and explosive strength. Finally, the skiers moved to rollerskis where all the work on fundamentals could be applied to the complete ski motion.

The clinics were a resounding success, as evidenced by these quotes from participants:

"This clinic was a great inspiration for me and it served as a catalyst to get me out on the pavement to train for the winter. It offered simple training techniques and fitness/strength exercises to ensure that I will be a smarter and stronger skier in the 2003-04 season."

"I think that Rob's clinic last Sunday at Jackson was the best of

MASTERS

the dozen or so dryland clinics I've attended."

"The individual feedback, and specific (and useable) suggestions made the difference. I came back with a full page of things to work on."

"The New Steady Ski for Nordic Athletes" by Doug Garfield

Book Review by Rob
Bradlee, masters racer and coach I've been using Doug
Garfield's program of balance training for the past two years
both in my own training and with the juniors and masters that
I coach. In his first book, "The Steady Ski," he expanded my
understanding of skiing by demonstrating that balance was a
trainable skill just like endurance and strength. I was delighted
to read his new book on the subject this summer. In this edition
he has expanded his balance concepts into the very popular
area of core stability and specific strength conditioning.

As Zach Caldwell says in his foreword to the book, "The secret
to success in cross-country ski racing is simple: strength and
speed." But how do we develop those? This book provides
simple, clear, and step-by-step directions on how to build
balance, core stability, leg and arm stability, and specific
strength. Once a skier improves in all those fundamental areas,
he or she can acquire the excellence in technique required to
go fast on skis.

The book begins with an explanation of "quiet balance,"
stabilization, and the physical systems involved in achieving

balance and stability. The next chapter introduces Garfield's
revolutionary new approach to building functional strength:
RepMotions. This may be one of the biggest breakthroughs in
strength conditioning in decades. You'll have to read the book
to learn the full details of RepMotions, but in essence it's a new
way to do the strength work you've always done in a way that
gives you better functional strength in less time. The following
chapter lists twenty-one basic exercises for balance, primary
stability, secondary stability, and specific strength. Each exercise
is both illustrated with complete pictures and described in
words. The final chapter describes seven different scenarios
showing how you can combine the exercises into effective
workouts.

I've added many of the new exercises to our club's weekly
group strength workout. Not only are they effective, they are
fun too. The book is available from Jenex, Inc., and should be in
every serious skier and coach's library.

Masters Skiers - Introducing the 2003-2004 SuperTour Masters,
an opportunity for masters racers to compete in 3 NorAm races
for points and prizes! The Dec.29-30 Nordic Heritage Sprints
at Presque Isle, ME will be the Eastern event this year. For more
info. on this event and the whole series, go to www.nensa.net.



Smiles at the end of the Craftsbury Tour (photo: Dorcas Wonsavage)

The next time you buy from one of these
sponsors, say
“Thanks for supporting NENSA!”

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NENSA

NENSA/ NE Nordic Fall and Winter Camps

Once again, NE

Nordic Ski Club will conduct two highly intensive non-profit camps in fall and early winter. They are targeted specifically at J-2 and EHSC athletes who are seeking success on the NENSA Eastern Cup Junior Olympic circuit—but who lack a home program or club that provides weekend support.

Camps will provide a fundamental focus on building technique, strength, and conditioning. Slots are limited to 8-9 athletes per camp. First consideration will be given to athletes who sign up for both camps. As follow-up, training plans and race support at Eastern Cup races throughout 2003—2004 will be provided at no additional costs to all camp participants. There is one slot per camp open to coaches wishing to intern.

Thanksgiving Camps: Cost 55.00 includes food, lodging, transportation in camp. 11/28 – 11/31, Friday through Monday, Fairfax, VT.

Athletes must be prepared for skiing on snow and/or rollers; video analysis; core strength; flexibility; games, more. Carpooling to and from Fairfax is encouraged and will be coordinated by Fred Griffin.

Mt. Ste Anne's Camp: Cost 130.00 includes food, lodging, transportation. 12/11,12,13,14, Thursday through Sunday at Mt Ste Anne's Quebec.

Athletes will meet in a central location, be picked up and driven to site in Canada. This on-snow camp focuses on technique, strength, endurance, and race strategy; athletes will stay at the Montmorency Chalets within walking distance of the trail system. This camp is designed to bring skiers to the first Eastern Cup weekend (12/20, 12/21) and the JOQ Series physically and psychologically race-ready.

NE Nordic Staff: Jeff Hixon, co-coach NE Nordic; 2002, 2003, 2004 Team Leader for New England Junior Olympic team; Fred Griffin: co-coach, NE Nordic; NENSA Executive Director.

Athletes and coaches should apply directly to Fred Griffin at fred@nensa.net or 802-849-2270. Slots will be filled on a first come, first-served basis

Gaining Ground On Snow

NENSA Cross-Country Skiing Coaches Certification Clinic

December 6th and 7th

Grafton Ponds X-C Center, Grafton VT

This is a an intensive 2-day look at classical and skating technique coupled with units on successful coach-athlete communications and team-building skills. Go to www.nensa.net for more information and registration form. Contact Fred Griffin with questions: 802-849-2270.

(Fred's Something for Everyone, cont'd from pg. 1)

a "Comments and Suggestions" link where we can give feedback on events and much, much more. Oh, yes, we'll close the year out the way we began it, with an on-snow coaches education clinic in the last weekend of March.

Any way I look at it, we have something for everyone. I'm proud and I'm excited.

Mass Starts Come to New England – Make Sure You're Ready!

By Pat Cote, NENSA Operations Director

NENSA has four mass start events on the Banknorth Eastern Cup schedule for 2004. Why all the mass starts? Mass start events are becoming more and more common in World Cup and Olympic schedules. A rare occurrence as little as two years ago, mass start events are the wave of the future for elite cross country ski racing. In fact, mass starts are replacing the traditional distance individual start in all but one race at the next World Championships. The accepted view is that they will become more and more common in the World Cup and Olympic schedules. To prepare our athletes for national and international competition, NENSA is working to include many mass start opportunities in 2004 and beyond.

All racers know mass starts are different than individual start events. The purpose of this article is to give you some ideas and advice to help you prepare for this season's mass start racing. I will focus on four areas: getting ready, the start, the race, and the finish.

Getting Ready. Start lists for mass starts are based on rankings. The top ranked skiers start first, with the lowest ranked or unranked skiers starting last. If you do not have FIS, USSA, or NENSA points from previous seasons, be prepared to start near the back at early season mass start events. As your points improve, so will your start position. Because of this starting format, race directors will require that all racers who wish to be seeded must register on time. Please look closely at the NENSA Winter Event Guide, or NENSA Website for registration deadlines. Late registrations will be allowed by most sites, but late registrants will not be seeded and thus will start at the back of the field.

The Start. The most difficult part of race day for mass start organizers is the start. When you show up at a mass start race, check out the start line as part of your warm-up. Look at your bib number and at the posted starting grid to figure out where you will be lining up. All racers must be at their place on the starting line 5 minutes before the start of the race. Being late to the start means that you will start at the back of the field. It is the racer's responsibility to be on time for the start.

As the name mass start implies, all racers start at the same time on the GO signal. With the arrowhead format planned for the NENSA events – fastest skiers up front with the remaining (Mass Starts, cont'd pg.12)

SPORTS MEDICINE

(Mass Start, cont'd from pg. 11)

field in ranked order – the chaos of the traditional mass start is eliminated.

The Race. It may seem like a mass start race is won or lost in the first 500 meters. This is not true. Especially at the junior levels, there is plenty of time for catching up and passing other racers throughout the race. Since the trails are more crowded in a mass start race, you'll need to be extra aware of your surroundings. Before you change tracks, check to see that a lane is clear for you. If you call "track" be sure that you are able to efficiently overtake the skier in front of you. In general, be mentally prepared for more challenges on the trail.

The Finish. As you approach the finish, chances are that you'll still be around some other racers. This is what makes mass start racing so exciting. Get ready for a sprint! The final 100 meters of the stadium will be divided into at least three lanes. As you approach the 100 meter mark, choose a lane and expect to stay in that lane all the way to the finish line. You may change lanes for only one reason: to overtake another skier. Also, your lane change may not obstruct another skier who is already in that lane. These rules allow for a fair finish and give all athletes an equal chance in the sprint finish.

Mass start racing is a lot of fun. If you've only competed in individual start events, expect more excitement, faster skiing, and a whole different way of experiencing a cross country ski race.

More on the arrowhead start format mentioned above (we didn't have room for a diagram!): It's called an arrowhead because if you're looking down on it from above, it looks a bit like an arrow, with the no. 1 seeded racer at the tip and the next seeded racers staggered to the left and right from the leader's center lane. Each lane is 1.2 m wide and the stagger for each position to the side is 1m. So staggered 1 m. back to the left of racer 1 is racer 2, and staggered to the right of racer 1 is racer 3, with racers 4 and 6 farther back from racer 2 and racers 5 and 7 farther back from racer 3. The next tier begins with racer 8 directly back of racer 1, as far behind as racers 6 and 7, with the next group of racers staggered back from him. If this just made you more confused, contact Pat or one of our NENSA race officials for a diagram that shows how simple a concept it really is!

On the Brink: Now, What?

by Donald Christie Jr., MD. Chair, NENSA Sports Medicine Committee

On the brink of

the new season, we want to make the most of the training days left before the snow flies. Articles in recent issues of NENN emphasized the need for adequate rest for the weary body at the end of the long season past, followed by carefully-planned dryland training, a program that while advancing one's endurance capacity, would include increasing amounts of anaerobic capacity training (interval sessions, threshold pieces, speedwork) to allow for improved racing times this coming season. It's also the time to see about nagging injuries and to settle any question about problems such as exercise-induced bronchospasm. (Consult the Sports Medicine pages on the NENSA website for articles on EIB and musculoskeletal problems commonly encountered by Nordic skiers.)

If you were able to determine your performance capacities, either through formal laboratory testing or in well-designed field tests, at the beginning of dryland training and again as you approached this winter, you have a pretty good idea of the success of your dryland program. Indeed, you may have discovered that, hesitant to train too long and hard and to include too much speedwork, you underestimated your body's capacity for growth and development. (Better to have found this out, however, than to have overplayed your hand and incurred injury and dismay!)

If what you found to be your "threshold pace" in early June (or even what was your "race pace" last March, which would have been at a heart rate 8-12 beats higher than threshold pace) now seems too easy for you, fine. That means you've made progress, and during the time remaining till the first race of the season, you can probably safely intensify your threshold sessions — one additional session per week with each fast interval accomplished at a heart rate 2-3 beats higher, and for a longer duration, than possible even 2 months ago. (Overall training volume will drop, however. Read on.) By the time you reach the moment of your most important race(s) of the season, your hoped-for performance "peak," you need to be able to attain and hold your projected race pace for basically the entire duration of the event.

This is also a time to focus on improving your "mechanics."

Next to aerobic and anaerobic capacity, mechanical efficiency is the most-important determinant of performance. Some call this "technique" and it is what good coaching and being able to follow good coaching are all about. With improved technique, you make the most of what your hard-earned advances in aerobic and anaerobic capacity have brought you.

"Racing is not training," notes former Olympian and long-time Nordic coach Dick Taylor, a member of the NENSA Sports Medicine Committee, in his book, *No Pain, No Gain?* In his first chapter, entitled "A Letter to Parents" (alone, worth the price of the book), Coach Taylor rightly consigns the concept of "racing into shape" to the bin of sports mythologies. He likens the training base acquired over the months of dryland season to a physiological savings account that, carefully drawn upon, lasts

(On the Brink cont'd pg. 14)

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(On the Brink, cont'd from pg.12)
beyond the coming winter season.

At this time of year, during the weeks before serious racing begins, one reduces overall training volume, chiefly through a sharp reduction in aerobic base training (which by contrast, occupies the majority of one's training during the mid-to-late summer months), and devotes most of the training time to threshold pace and speed workouts. This increased intensity requires a reduction in total time per session to avoid overtraining injuries. The body withstands such pre-season and early season training and racing only after adequate dryland training, which every year builds upon what is "left in the bank" at the end of the previous season.

From the point of view of physiological challenge, this lead-in to the competition season looks a lot like the racing season itself: skiing a bit at aerobic pace — heart rate (HR) about 70-75% of maximal HR — with a majority of time spent at or very slightly above threshold pace — HR 85-90% max — with well-chosen bursts of supreme effort (speedwork), at what qualifies as near-maximal level HR (above 95% max HR).

Athletes — especially those participating in fall sports like soccer, cross country, and field hockey — must not forget to include upper body training, whether by roller skiing, hill climbing with poles, or using a d-pole ergometer. (That a gifted and promising teenage skier may want to forego soccer or field hockey, as well as traditional sprint sports in the spring, in favor of focusing upon a well-thought-out, year-round Nordic training program is a subject worthy of an entire article. Interested athletes, parents, and coaches should consult Dick Taylor's book.)

Finally, one must continue to get adequate rest once the winter season is underway — not just a good night's sleep every night, but sometimes by sitting out a race or two, or just taking a few days off. Each athlete, depending on her or his training history and stage of growth and development, will need to sense when it is time to say "No!" to a training and racing schedule that will leave one overtrained and injured. One should always feel "fresh" (recovered) before proceeding to the next workout or race. Dick Taylor notes that when fresh, an athlete trains better. (Also, all sorts of technical flaws surface when the body tires.) He declares, "An athlete should always be 'fresh to race!'"

Athletes who have recently experienced a major growth spurt often discover that their recovery times are temporarily longer and race times poorer, and they, especially, need to feel free to say "No." Such discipline, in the face of schedules fixed by administrators and under pressure from parents, friends, and other athletes to perform, no matter when or where, requires extraordinary resolve and understanding on the part of both athletes and coaches. It is the good coach's task to lay this matter out with parents, administrators, and teammates before the season begins, making clear that what counts most is the optimal development of each athlete. Serious Nordic skiers (and their loyal camp followers) must take this long view. Dr. Christie practices sports medicine in Lewiston, ME, where

he takes a special interest in the physiology and clinical problems of Nordic skiers. He can be reached with comments and questions at dchristie@adelphia.net.

The abiding interest of Dick Taylor, director of the Nordic program at Gould Academy, Bethel, ME, is seeing each athlete realize optimal development and performance. He can be reached at Richard.Taylor@gouldacademy.org.

Hand Structuring Guidelines

by Zach Caldwell

In order to optimally structure your skis using hand tools it is important to understand some basic information on the role that structure plays in speed and the way different types of structure work.

Structure refers to a pattern of relief in the ski base that works to counter various frictional forces in the interface of the ski and the snow. These frictional forces include air suction, the surface tension of liquid water and the related water suction, and mechanical solid particulate friction between the ski base and snow crystals. The role of structure in relieving the forces of suction is well understood while the mechanical relationship between the ski and the snow is relatively poorly understood. There is a common misconception that water moves around under the ski base and that structure is there to facilitate this motion. It's more helpful to envision the water staying put and the ski base moving over it.

The original efforts at creating structure generally resulted in what are referred to as linear patterns. These are relatively long and unbroken grooves running along the length of the ski base. Linear structure is most effective at relieving air and water suction and aiding in the clearance of free moisture along the ski base.

Traditional rillers or structure bars put very regular and aggressive linear structure into the ski. Stiff brushes will also impart some linear structure. A file card (a very stiff steel brush with short bent bristles - available at any hardware store) is also a very effective tool for applying a light, random linear structure. It is important to take care when using any sort of structuring brush to remove the resulting PE hairs from the base by first shaving with a very sharp scraper or razor blade and then using a very mild buffing pad such as V2 Omni-Prep or the white Swix fibertex.

The advent of stonegrinding introduced crossing structures to nordic skiing. These are patterns where the structure lines

SKI BASE STRUCTURING BY HAND

are interrupted and a diagonal pattern of small grooves is visible on the ski base. Crossing structures are very effective at improving the efficiency of the structure in a ski base by breaking up free moisture into little droplets by creating turbulence. In this manner they help to counteract the frictional forces of surface tension. The diagonal pattern of crossing structures makes it appear as though they will move water to the side. However, water doesn't move under the base - the base moves over water, which stays relatively stationary. The diagonal pattern is in place to more effectively break surface tension by avoiding an overly rhythmic structure (imagine a ski base where the breaks in the structure went straight across the base - a highly frictional wave action would result in the ski/snow interface).

The new generation of rolling structure tools will put crossing structure into the base. Rolling structure tools press structure into the base rather than cutting as well as pressing and produce no PE hairs to speak of. They are generally quite passive and the resulting structure may disappear when wax is ironed into the base. These structures can be very effectively applied on top of a wax job as a final pre-brushing treatment.

The relative strengths of the different structure types suggest a range of treatments for a range of conditions. In general coarser and wetter conditions require a coarser and deeper structure. The following recommendations are based on the assumption of a flat base in good condition. It may be necessary to use a metal scraper to remove old structure and burned or hardened base material before optimal hand structuring can take place. If you are inexperienced with a metal scraper I suggest using a stiff cobalt scraper sharpened at 90 degree on a fine diamond stone. I also recommend practicing on rock skis. If you are not confident in your ability to use a metal scraper to peel bases without ruining them, I suggest professional hand-tuning or stonegrinding.

Very Cold Dry Snow (single digits F) - Desired structure is a fine linear pattern. Maintaining a large proportion of flat base material is important. A rolling linear structure tool is advised here. If a more traditional press/cut tool such as a Swix riller is used the resulting structure should be shaved with a sharp scraper or razor blade to remove the ridges that get plowed up along side the rills.

Cold Dry Snow (teens F) - A similar treatment is fine though it is somewhat less important to maintain the very flat base surface. This is a good place to use a file-card, perhaps in combination with a fine linear rill. The filecard must always be run down the base from tip to tail with the bristles pointing away from the direction of travel, toward the tip - the most passive position. Plenty of pressure can be applied. Take care to remove PE hairs after using the file card.

Moist New Snow (20s F) - Snow containing a lot of moisture but with a fine enough crystal structure so that no water can be squeezed out requires a crossing structure. Moisture clearance is not a huge issue so linear structure is not required. However, the surface tension created by the presence of free moisture in the snow requires a crossing structure for efficiency. A rolling structure tool can be applied to the base

with a great deal of pressure. Several passes may be necessary but over-structuring should be avoided. The point is to impart intermittent structure, not confused structure. In higher moisture conditions - temperatures toward the high twenties - the crossing structure can be applied over filecard structure, after the base has been de-haired.

Sugary Dry Snow (20s F) - Partially transformed sugary snow or particularly dry man-made in the 20s requires a different structure than new snow in the same temperature range. This is where a medium linear rill should be used. A Swix-type riller or structure bar, or a linear rolling structure tool will work well. In these conditions it is not important that the base be shaved flat after structuring.

Wet New Snow (high 20s to low 30s F) - New snow with free moisture that can be squeezed out of it by hand is potentially the most suction-prone snow condition. Anytime there is water present that cannot be entirely reabsorbed by the crystal structure of the snow it is important to have linear structure capable of facilitating the clearance of moisture along the ski. A relatively deep linear structure is required here. The addition of a crossing structure on top of the linear pattern will create a compound structure that will clear moisture (by virtue of the linear structure) with improved efficiency (by virtue of the crossing structure). In order to optimally apply good crossing structure it is useful to shave the base after the application of linear structure to ensure a good flat working surface for the rolling crossing structure tool.

Saturated Transformed Snow (30s and up) - These conditions require very strong linear channels. Most rolling structure tools will not provide a strong enough linear pattern and a coarse press/cut tool must be used. A secondary layer of medium linear structure can help a great deal. A final layer of crossing structure will aid in efficiency as well. Flat base material is not a concern in these conditions. However, it is important that the structure be as clean and minimal as it can be to avoid picking up dirt. The strong linear channels should be applied in one strong pass. The medium linear structure should also be applied in one pass. And the crossing structure should be strong but applied in only two or three passes. More is not better - the structure must be as clean as possible and still do its job or it will be a dirt magnet. In particularly clean conditions this is less of a concern than in a Spring melt-down where the season's impurities collect at the surface of the snow.

Good luck! zc@engineeredtuning.net

Engineered Tuning

www.engineeredtuning.net; zc@engineeredtuning.net

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