

**CAMBRIDGE SPORTS UNION**

**JUNIOR NORDIC**

**HANDBOOK**

**2018-2019**



May 30, 2018

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## **I. MISSION STATEMENT**

Our club develops teenagers into high performing adults using skiing as our instructional tool.

### General Transferable Skills

- Goal setting
- Planning
- Logging
- Progress assessment
- Working with a coach or mentor
- Visualization
- Resiliency

### Specific Ski Skills for Life

- Daily fitness
- Ski technique
- Waxing
- Clothing and gear choice
- Nutrition and hydration
- Physical fitness: strength, flexibility, stamina
- Understanding of physiology

### Specific Short Term Ski Development

- Race in high school leagues
- Race Eastern Cups
- Race at U-16 Championships
- Race at Eastern High Schools Championships
- Make Junior National Championship
- Race for a college team
- Race NCAA Championships
- Make the USST/WJC/U-18
- Make the USST/WC/Olympics

## **II. DESCRIPTION OF CSU JUNIORS**

The CSU Junior ski racing program (referenced simply as CSU in this document) is for junior athletes who turn 14 during this calendar year or who are older. The motto of the club is “We have fun working hard and work hard at having fun”.

The program serves athletes who don't have a school ski team or who are interested in additional coaching beyond what they receive in their high school program. It accepts approximately 50 skiers for the year-round program. CSU has had students from Acton-Boxborough, Andover, Brookline, Belmont, Cambridge, Concord-Carlisle, Dover-Sherborn, Lincoln-Sudbury, Natick, Newton, Reading, Somerville, Waltham, Wayland, Weston, Wellesley and Winchester. Graduates have gone on to ski at the college level at Bates, Bowdoin, Colby, Dartmouth, Harvard, Middlebury, Saint Lawrence, University of New Hampshire, University of Vermont, Williams and others.

CSU is interested in athletes who are motivated and willing to make a commitment to the sport. CSU coaches both classical and freestyle (skate) racing techniques. Most CSU athletes qualify for the Massachusetts U16 Championships (ages 14-15) and Eastern High School Championships (9<sup>th</sup>-12<sup>th</sup> grades). Some athletes qualify for the New England team at the Junior National Championships and beyond.

CSU believes the key to success in winter races is a year-round training program beginning in the spring. The program has the goal that each athlete will acquire and master the following knowledge and skills:

- Setting goals
- Planning training
- Logging training and physical measurements
- Ski technique
- Nutrition for health and fitness
- Physiology of training
- Ski waxing
- Ski equipment selection, use, and maintenance
- Personal organization

- Self-reliance
- Confident performance in competitive events

### **III. ORGANIZATIONAL STRUCTURE, CONTACTS, & CONTRIBUTORS**

#### Structure:

CSU Juniors falls under the umbrella of Cambridge Sports Union, a 501(c)3 organization which is a club for athletes of all ages for running, skiing and orienteering. The CSU Juniors is led by head coach, Rob Bradlee and team manager, Alex Appleby. The CSU Juniors Board, whose Chair is David M. Brams, sets policies and oversees the general operation of the club.

Members are student athletes aged 14-18 who have a passion for Nordic skiing. Parents are active in the support of the club. All participants support the club in a volunteer capacity.

#### Contacts:

Rob Bradlee, Head Coach [rbradlee@yahoo.com](mailto:rbradlee@yahoo.com)

Alex Appleby, Team Manager [alexappleby@verizon.net](mailto:alexappleby@verizon.net)

David M. Brams, CSU Jr. Board Chair [david.m.brams@lahey.org](mailto:david.m.brams@lahey.org)

#### CSU Juniors Board:

The CSU Board, comprised of coaches and parents, oversees the club's management. Any concerns or questions relating to the structure or management of CSU should be directed to David M. Brams, Board Chair. Board membership includes:

David M. Brams, Board Chair

Peter Hoenig, Secretary

Stewart Tucker, Treasurer

Amie Smith, General Member

Andrea Brue, General Member

Hannah Parker, General Member

Rob Bradlee, ex-officio member as Head Coach  
Alex Appleby, ex-officio member as Team Manager

### Coaches:

CSU coaches offer their time and knowledge in a volunteer capacity to develop the fitness and Nordic skiing skills of our student athletes. They represent a diverse group of adult athletes with experience competing both in the US and abroad. For a full list of coaches and their bios, please visit our website. If you have experience Nordic skiing and would like to join our team of coaches, please contact Rob Bradlee, Head Coach ([rbradlee@yahoo.com](mailto:rbradlee@yahoo.com))

### Members:

CSU has approximately 50 members, aged 14-18. The 2018-2019 fee to join is \$875. Registration for current members and graduates of the Eastern Massachusetts Bill Koch (EMBK) League occurs during the first half of April. As of mid-April, and as space allows, CSU opens membership to other qualified skiers. CSU does not have the capacity to accept beginners. Applicants should be experienced in both classic and skate technique and be motivated skiers. Those interested in applying should check our website: [www.csujuniors.org](http://www.csujuniors.org).

### Communication:

Most news and information are disseminated by the CSU group email. To subscribe, send an email to [CSUJuniors+subscribe@googlegroups.com](mailto:CSUJuniors+subscribe@googlegroups.com). You will need to confirm your email by replying to the first message you get. To get to the discussion group online, go to: <http://groups.google.com/group/CSUJuniors>

CSU asks that both athletes and parents join the email list. This group email makes it easy to send emails to everyone on the team as well as receive announcements. It is the primary tool for coaches to communicate with the team. With so much activity, joining the discussion group is vitally important.

Our website ([www.csujuniors.org](http://www.csujuniors.org)) is a great resource for information about our team including contact information for coaches and skiers, copies of policies, team calendar, etc.

## Required Memberships

*New England Nordic Ski Association (NENSA, [www.nensa.net](http://www.nensa.net))* is the Olympic development organization for cross-country skiing in New England as well as the umbrella for most organized Nordic skiing events in the region. NENSA hosts over 50 events and more than 20 clinics for skiers and coaches at venues across the Northeast. All CSU members are required to join NENSA. In order to participate in Eastern Cup races, U16 Championships, or Eastern High School Championships, skiers must be NENSA members.

*United States Ski and Snowboard Association (USSA, [www.ussa.org](http://www.ussa.org))* is the national governing body of Olympic skiing and snowboarding. It is the parent organization of the US Ski Team, US Snowboarding and US Free Skiing. Developed to facilitate participation in national and international competition, the Olympic sports organization provides structure for competitive skiing and snowboarding. From grassroots programs to governance of sport, management of rules, competitions and athletic rankings, the USSA oversees athletic pipelines for development in the sport. All CSU athletes are required to be members of USSA.

## Parent Volunteers:

Parents are essential to the success of CSU. All athlete parents are encouraged to volunteer. Volunteer opportunities are announced via the email group or in person by the volunteer coordinator. Many positions become available in April as our oldest skiers graduate the program. Volunteering is a great way to get to know fellow parents with the team. Please let our volunteer coordinator know if you are available to help.

Some of our volunteer opportunities are listed below.

**Volunteer Coordinator:** Finds the volunteers to fill all jobs for the club.

**Team Manager:** Oversees and manages the various administrative tasks that keep CSU running. Coordinates and sets up the two Opening Meetings (May and September) for the team with Rob. Obtains meeting space for April yoga sessions. Renews insurance contracts. Coordinates agenda for and is member of the CSU Board of Directors.

**Team Membership coordinator:** Handles membership intake on-line, for returning CSU athletes and new rising BKL skiers, starting April 1st-15th. Monitors and maintains website for most up-to-date skier information. Will collect mailed annual membership dues checks and then turn them over to the treasurer (option for payment directly on-line as well). Assures that all waiver forms are received prior to the athlete starting training. Also compiles Membership Directory from registration database for team members at the end of May.

**Clothing Coordinator:** Works with our clothing manufacturers to make sample sizes available for the team to try on at the September team meeting, then coordinates and oversees one time late fall team clothing order. Collects order forms and checks, and distributes clothing when it arrives ~4 weeks later.

**New Parent Coordinator:** Answers all questions and concerns that new parents and athletes might have upon joining CSU regarding practices, races, equipment, etc. Organizes an informal welcome event for new parents in the spring/summer and for new athletes in the fall. Follows up with new parents regularly throughout the year to answer questions in anticipation of the change in training seasons.

**Eastern Cup Lodging Coordinator:** Investigates best rates and makes group hotel reservations for the four Eastern Cup race weekends. Sends out race schedule and lodging suggestions to club in late Summer/early Fall, so families can book rooms for the weekends they plan to attend. (If race at Craftsbury, had the option to coordinate one group reservation for 20% team discount). Some venues may allow for a team dinner on Saturday night, which this person would help coordinate. (Example: the T&C in Stowe)

**Jericho Camp Coordinator:** Assists Rob with a list of campers, collection of fees and organization of rides to and from our Jericho training camp over Columbus Day Weekend.

**Jericho Camp Chefs:** Shop for and prepare meals for the Jericho camp over Columbus Day weekend.

**Lunch Coordinators (Two):** Coordinate food for Lunch Table at all Eastern Cup weekends, as well as the MA qualifying races, and at U16 Champ and/or EHS Champ weekends (with Western MA parents). Organize transport of Lunch Table equipment (tables, propane tanks, supplies, etc). Coordinate/oversee volunteers

for set-up and clean-up of Lunch Table operations on these weekends at the various venues.

**Norway trip coordinator:** Coordinator for this April vacation trip would sign up athletes, collect deposits, answer questions; figure out a budget and pricing; arrange lodging; and with Rob's help create a trip schedule which would include some tourist time in Oslo and several days in Lillehammer skiing on the still plentiful spring snow!

**Toko Wax and Careline Order:** Works with our Toko Wax rep and Weston Ski Track to make one-time large team wax order purchase in the late Fall. Collects and tabulates individual wax orders and checks from team members. Sorts and distributes wax orders when received from Toko.

**Wax Team Leader:** Leads CSU Parent Wax Team on race weekends. Recruits new wax team members. Emails the wax team to ascertain who can be at each of the race weekends, and what equipment they will bring (ex. wax bench, tents, generator etc.). Reviews race schedule, number of skis to be waxed and forecast wax call in order to plan for race day. Assigns waxing roles to team members and makes sure the waxing assembly line flows smoothly. Monitors time on race day to ensure skis are fully prepared on time for each race.

**Wax Team (Many):** OPEN to new members joining us for the coming season! Members of the CSU Wax Team commit to showing up early at Eastern Cup and other races and staying until the job is done. You will have fun doing this job, in the cold, weekend after weekend, we promise! The Wax Team also includes our terrific CSU coaches, who test and determine all waxes, rills and topcoats for the day.

**Caldwell Sports Liaison/Ski Evaluation Coordinator:** Coordinates (and explains in detailed emails) all you need to know to get your current race skis stone ground (September) or to purchase new skis (May), through Zach Caldwell, with team pricing for CSU members.

**CSU Summer Camp Coordinator:** Works with the Head Coach on the administrative paperwork needed by the state of MA to run a summer camp. Handles the CORI screening process for coaches and for parents staying in the CSU team houses during other CSU training camps.

**Yoga Teacher/Bemis Hall Coordinator:** Coordinates and secures dates, location and instructor for our 4-5 week “off-season” yoga recovery classes.

**Littleton Fluids Coordinator:** Recruits volunteers to bring fluids to various drop points along the Littleton roller ski loop for the purpose of re-hydration of our athletes during the warm weather months – usually July and August.

**Lake Placid Climb-to-the-Castle Coordinator:** Coordinates hotel, meals and hike for the fun September weekend in Lake Placid for the “Climb to the Castle” roller-ski race up Whiteface Mountain

**Mt. Kearsarge Roller Ski Race Coordinator:** Coordinates and runs this 2 weekend roller ski race – one classic and one skate – in late October and/or early November at Mount Kearsarge in NH.

**Eastern Cup Race Coordinator:** Coordinates with Rob and the parent leads for Wax Team, Lunch Table, EC Lodging Coordinator in preparation for the Eastern Cup races. This involves checking in via email with the above to make sure they are all set, and then reaching out to the CSU community to remind everyone to sign-up for races, as well as collecting data about which athlete’s are coming and giving that information to the coaches and wax team. Also, let families know if there are special circumstances about the venue (or a change of venue) or specific dinner plans that need to be made. Basically it's an email job!

**Senior Nationals Coordinator:** Finds appropriate team housing for the athletes and coaches going to Senior Nationals in January and coordinates the flights, ground transportation, food shopping and meal planning for the group, for the week.

**MSA Team House and Carpool Coordinator:** For the MSA camp team condo(s) – collects names and checks of campers, and helps coordinate rides for campers coming up to MSA without their families. Alerts families to documentation needed for international border crossing (e.g. passport, permission letter for traveling without parent/parents).

**MSA Ski Ticket Coordinator:** Coordinates the massive discount ticket purchase for CSU athletes and families at MSA.

**MSA Parent Dessert Coordinator:** Organizes, but not necessarily hosts, a parent dessert at MSA. Find a parent condo near the team house and organize a pot luck dessert for the parents at MSA while the skiers have a dessert party at the team house.

**Bretton Woods Trip Coordinator:** For the February vacation, Breton Woods Camp team house – collects names and checks for campers at the team house and coordinates the team discount ticket purchase for CSU athletes and families at Breton Woods.

**Bretton Woods Team House Cook/Shopper:** Do all the food shopping, meal planning and cooking for team house.

**Bretton Woods Parent Social Coordinator:** Organizes, but not necessarily hosts, a parent pot-luck at Breton Woods. Find a parent condo near the team house and organize a pot-luck dinner for the parents at Breton Woods while the skiers have a dessert party at the team house.

**Mount Washington Road Race Volunteer Coordinator:** Registers and coordinates the CSU volunteers at the Mt Washington Road race in June. You do not have to find the volunteers, as every athlete who bypasses the lottery needs to provide a volunteer. This is a relatively simple job, and is probably best suited for a parent of an older athlete who is planning on running the race.

**Rudy Project Coordinator:** Send out emails about Rudy Project offers for skiers. We have a contact person at Rudy Project.

**End of Season Dinner Coordinators:** Finds a venue for the end of season dinner (early April), organizes the potluck dinner and collects volunteers to help set up and clean up. The actual content of the celebration is run by the Head Coach & Team Manager/Volunteer Coordinator.

**End of Season Coaches Gift Coordinator:** Collects money from CSU and organizes the coaches gifts at the end of season dinner

**Alumni Information:** Maintains a data base of alumni from the CSU program.

**CSU Handbook Coordinator:** Updates and maintains the CSU handbook, usually is a member of the CSU Board.

**Team Public Relations:** Spreads the good word, and good work, of CSU athletes to local media outlets as needed. Writes entries to the CSU blog. This job is also suitable for, or could be shared with, someone interested in taking photographs at race weekends for sharing with CSU community.

**Website Manager:** The Website Manager is responsible for the overall design, development, and management of our CSU Juniors website, as directed by the head coach, the team manager, and other volunteers, depending on what functionality needs to be designed or implemented and what content needs to be updated or added. The site uses the Wordpress content management system, so if you have past experience using and managing a Wordpress (or similar) site, that would be preferable. If you don't know Wordpress, then a general knowledge about front and back end web technologies, an aptitude for web design, or experience with web site administration would be the minimum starting points for this job. Tasks include user administration, site management, form design, content management, and lightweight graphic design, as well as being willing to train other parent volunteers in using Wordpress to add and manage content on the site.

**CSU Board of Directors:** The CSU Board, comprised of coaches and parents or alum parents, oversees the club's management. Roles include: Chair, Secretary, Treasurer, Three General Members, Ex-officio members as Head Coach and Team Manager. The Board generally meets approximately 6 times over the year.

#### **IV. TRAINING OVERVIEW**

CSU believes the key to success in Nordic ski racing is a year-round training program beginning in the spring. Dry-land practice runs from late spring until the start of December. As soon as the Leo J Martin Ski Track has snow, practice moves there. The ski track is located at 200 Park Avenue, Weston MA, 781-891-6575.

Athletes are not required to attend every practice provided they are doing alternative training approved by one of the coaches. Athletes are expected to provide their own wax although the club will provide final race wax for races.

## V. PRACTICE SCHEDULES

**Overview:** CSU offers a year-round, structured training program for high school Nordic skiers modeled on the highly successful German Youth Development Program. CSU derives individual training plans for athletes depending upon their background and racing objectives from our 4-year CSU base training that contains specific workouts for every day of the year. Training intensity increases year to year according to adolescent athletes' natural physiological development, progress and goals, building from 300-350 hours/year for high school freshman (or older 8<sup>th</sup> graders) to 500-550 hours/year for high school senior skiers who wish to continue racing in NCAA collegiate programs. The year-round training program is built from modules based on specific roles within the annual training/racing cycle. Training during each month serves a specific purpose in building up to the winter races.

CSU asks athletes in the program to set goals in the spring for the following winter. The most committed athletes train at the level of skiers who make the Junior National Team for New England. Most athletes try for the state teams to Eastern High School Championships or the U16 Championships. Some skiers who are newer to the sport focus on learning the fundamentals of technique and less on intense training.

**The workout process:** CSU tries to keep a lot of variety in its workouts, but athletes should follow a basic process for every workout:

- Fill a water bottle with a sports drink. Something with electrolytes is recommended.
- Bring a snack bar (one for short workouts to eat at the end or two for longer workouts, eat one in the middle and one at the end)
- Review checklist of necessary clothing, heart-rate monitor, and ski gear.
- Be ready to start on time.
- For ski workouts, arrive early if you need to classic wax.
- Warm-up as a group, before breaking up into groups for the main workout, warm-down as a group. Work as a team and no one gets left behind.
- If the workout will last over an hour, or if it is extremely hot, wear your water bottle belt.

- At the end of the workout, eat the snack bar and drink plenty of fluids within 15 minutes of the end of the workout.

CSU asks its athletes to remember that the training is only half of the process. The other half is proper nutrition, hydration, and rest after the workout so that the athlete's body can super-compensate and grow stronger for the next workout.

**Logs:** Athletes keep track of their workouts in a training log that matches the format of the CSU base training plan and automatically tallies workouts into their physiological categories and overall volumes. Well-kept logs allow athletes to discuss training with their coaches and monitor their progress.

**Dryland Training Schedule:** The organizing units of CSU base training plan are four-week periods. Daily workouts are arranged to maximize their mutual benefit on a weekly schedule; each period contains workouts appropriate for their role within the annual cycle.

The dryland training season begins in late spring and continues until the first snowfall. During that time, CSU offers a series of practices based on the CSU base training plan. Many students who are not engaged in a spring sport attend these practices. Others modify their training plan based on their practice schedules and school commitments.

As soon as there is snow at LJM Ski Track, CSU offers on snow practices on several weekday evenings and at least one weekend practice.

**Month by month schedule:** The following monthly schedule is a loose breakdown of what CSU proposes for its athletes:

	<b>May</b>	<b>June - August</b>	<b>September - November</b>	<b>December-March</b>	<b>April</b>
Focus	Getting used to summer training.	Volume ramps up.	Intensity with lower volume. Specific training modes.	On Snow, Race Season.	rest
<b>Monday</b>	Rollerski & Strength. <i>Wayland</i>	Rollerski & Strength. <i>Wayland</i>	Jesters or Hill-bounding. <i>Prospect Park</i>	Rest for racers or Ski on snow. <i>Leo J. Martin</i>	Yoga. <i>Bemis Hall</i>
<b>Tuesday</b>	Intensity run. <i>Concord, Wellesley</i>	Intensity run. <i>Concord, Wellesley</i>	Rollerski & Strength. <i>Wayland</i>	Ski on snow. <i>Leo J. Martin</i>	rest
<b>Wednesday</b>	Specific Strength/agility rollerski. <i>Newton, Concord</i>	Specific Strength rollerski. <i>Newton, Concord</i>	Long run with poles. <i>Prospect Park</i>	Intervals on snow/ski. <i>Leo J. Martin</i>	rest
<b>Thursday</b>	Running speeds. <i>Concord</i>	Easy run and Strength. <i>Wayland</i>	Rollerski Intervals. <i>Annursnac, Prospect Park</i>	Speeds on snow/ski. <i>Leo J. Martin</i>	rest
<b>Friday</b>	rest	rest	rest	Drive , rest/ski.	rest
<b>Saturday</b>	Rollerski Over Distance (OD) <i>Littleton</i>	Rollerski OD <i>Littleton</i>	Rollerski OD <i>Littleton</i>	Race or OD <i>Weekend up North or Leo J.</i>	rest
<b>Sunday</b>	Long Trail run <i>Various locations</i>	Long Trail run <i>Various locations</i>	Specific Strength. <i>Annursnac, Newton</i>	Race or OD <i>Weekend up North or Leo J.</i>	rest

Workout times and locations are listed on the calendar on the club website and details are communicated via the CSU email group.

**The Ercolina/Robolina** CSU encourages development of the upper body, particularly for those student athletes who participate in sports where the lower body is a greater focus. The Ercolina or handcrafted Robolina is used to work on the upper body strength. For more information on the Robolina go to:

<https://docs.google.com/viewer?a=v&pid=sites&srcid=Y3N1c2tpLmNvbXxic3VqcnNraXRlYW18Z3g6NDAwYzNkNGlwY2ExMWU4Ng>

**Dryland Practice Tests:** An extensive testing program tracks athletes' progress, provides motivation, and helps coaches tailor individual training plans across the wide range of physiological and technical parameters needed for Nordic skiing. These run from early June through the first snowfall. Athletes participate when possible. On roller skis: uphill double pole, uphill no pole, uphill skate full technique and 100m time trial. On land: 3000-meter track run, strength and uphill run. For more information go to: [www.csujuniors.org/training/the-training-process/testing-program/](http://www.csujuniors.org/training/the-training-process/testing-program/)

Test Objectives:

- Monitor your progress, month-to-month and year-by-year;
- Establish performance benchmarks;
- Do intensive workouts;
- Build the mental skills for competition;
- Provide motivation for your daily training

Test Descriptions:

- *3000m test:* 7.5 laps around the track. Please bring watches to time yourself and capture your splits every lap. If you have a heart-rate monitor, wear it. As a test preparation, set a time goal for yourself. Then compute the average lap time you need to hit to achieve that goal. That will help you pace yourself. The 3000 meter test takes place in June, August and October at the Concord-Carlisle Track.
- *NP (no pole) and DP (double pole) test:* 4 NP/ DP runs up Annursnac Hill, with 5 min recovery between sets as you return to the starting line. Younger skiers do 3 sets and 6 min recovery between runs. Wear HR monitor and record time for each run, total time, maximum and average HR for each run. We record all these records in our testing database. The double pole test takes place in June, July, September and November. The no pole test takes place at the end of May, August and October.

- Strength: USST “Canadian” strength test as done at Region Elite Camps. The format is 1 minute on with 1 minute off to rest. Do the maximum number within time or to exhaustion of Pull-ups, Push-ups, Dips, Sit-ups, and Box Jumps. Test takes place at Wayland in June and September.
- Speed: 100 Meter Rollerski. This test occurs in May, July, and August at Wayland.
- Uphill run: Run up the access road at Mt. Wachusett - takes about 30 minutes. June and August.
- Uphill rollerski Race: 6K rollerski up Mt Kearsarge (closed road). October and November
- Rollerski time trial: 5K course at Prospect Park (closed road) in Waltham in October and November.

## **VI. CAMPS**

During both the dry-land season and ski season, many athletes choose to participate in training camps. These are not required but they can help athletes with training and technique. These include:

### **CSU Camps:**

Details of CSU camps are provided on the website and are communicated via the e-mail group.

CSU Summer Training Camp – This week long camp is usually held in the first half of July. CSU members are encouraged to attend. Sign up usually begins in February and opens up sometime in May to non-CSU athletes, based on space availability.

Jericho Rollerski Camp – If the site is available, this camp is arranged over the Columbus Day weekend.

Mont Sainte Anne New Year’s Ski Camp – Between Dec 26<sup>th</sup> and New Year’s, CSU runs a week of training up at Mont Sainte Anne. Training is intensive with sessions both in the morning and afternoon. Athletes often stay with their families in the

area. CSU books a team house for athletes whose families cannot attend. Athletes who wish to stay in the CSU team house are encouraged to commit early, as spaces fill quickly.

Bretton Woods February Ski Camp – During school vacation week, CSU athletes are invited to train in Bretton Woods, NH. Training is intensive with sessions both in the morning and afternoon. Athletes often stay with their families in the area. CSU books a team house for athletes whose families cannot attend. Athletes who wish to stay in the CSU team house are encouraged to commit early, as spaces fill quickly.

**Non-CSU Camps:** A number of ski schools - such as Stratton Mountain School, GMVS and Burke School - hold training camps with open registration during the summer months and, occasionally, during other points in the year. For details, search ski camps on the NENSA web site at [www.nensa.net](http://www.nensa.net).

NENSA and the USSA also hold several invitation-only camps. Attendees are usually selected based on performance in the Eastern Cup Races or at other National events. Information can be found on NENSA at [www.nensa.net](http://www.nensa.net).

## **VII. RACING PROGRAM**

### **A. THE RACING SCENE**

Age groups for skiers who turn the listed age during the current calendar year are as follows:

(Age 14-15) = U16

(Age 16-17) = U18

(Age 18-19) = U20

Nordic skiing has five tiers of ski races for our junior skiers from U16 to U20:

1. Local high school league races that take place each week during January and February.
2. Two Massachusetts state qualifier races (skate and classic) in which the top 24 male and top 24 female skiers overall go on to compete in the Eastern

High School Championships. The top 24 male and top 24 female U16 skiers qualify for the U16 Championship.

3. Eastern Cup races (Junior National Qualifier (JNQ) races) in which skiers from all of New England compete and the top 6 male and top 6 female skiers in each age group qualify for Junior Nationals. (see [www.nensa.net](http://www.nensa.net) for details regarding qualifying rules)
4. Junior Nationals, the national championship races for the top U16-U20 skiers in the nation.
5. International competitions: U18 Nations Cup and World Junior Championships.

These races are described in detail below:

### **High School Teams**

Many skiers in our program compete for their high school team. Some cannot because they are in the 8<sup>th</sup> grade or their school does not have a Nordic team. CSU exists both as a supplementary program for junior skiers with teams, as well as a surrogate team for those who do not have their own high school team. CSU enjoys very cordial relationships with all the local high school team coaches and wishes to keep it that way. If an athlete is on a high school team, he or she has an obligation to that team and should attend its practices and participate in its races. In the rare event of a conflict between CSU events and high school events, the athlete should consult with the coaches of both CSU and the high school team.

Massachusetts Interscholastic Athletic Association (MIAA) Teams in Eastern Massachusetts divide into two leagues:

<b><u>Mass Bay West</u></b>	<b><u>Mass Bay East</u></b>
Acton-Boxborough	Brookline
Concord-Carlisle	Dover-Sherborn
Lincoln-Sudbury	Natick
Nashoba	Newton North
Wayland	Newton South
Westford Academy	Wellesley
Winchester	

In addition, Belmont Hill and Rivers have teams that compete in the Prep School league.

## **Massachusetts State Championship**

In addition to the eastern Massachusetts leagues, western Massachusetts has a league with several high schools. The MA State Championship is held each year in mid-February. Only students who are on a MIAA high school team may participate.

## **Massachusetts State Qualifier Races for Eastern High School and U16 Championships**

Massachusetts ski coaches organize two races to select the team for Eastern High School Championship and U16 Championship. These qualifier races are held on the same day in either late January or early February. All CSU members participate in these races and a majority of our athletes qualify for one or both of these events.

## **U16 Championships**

The U16 Championships is for skiers aged 14 and 15 (as of December 31<sup>st</sup>). Athletes must be members of NENSA. Each state (MA, NH, ME, VT) sends a team of 24 boys and 24 girls. Massachusetts selects its team using the combined times from its two qualifier races plus discretionary selections made by the coaches. The event is usually held the second weekend of March. The location varies each year. Skiers must miss a day of school (Friday) to attend this event. Cost is usually \$450 for the weekend (includes lodging, food, coaching, wax, and race entry, but not transportation).

## **Eastern High School Championships**

The EHS event is usually held the third weekend in March. The location is different each year. Each state (MA, NH, VT, ME) sends a team of 24 boys and 24 girls. The skier must be in high school (public or private). Massachusetts selects its team using the combined times from its two qualifier races. Some athletes who qualify elect not to attend so alternates will be selected to replace them. The event requires missing a day of school (Friday). Cost is usually about \$450 (includes lodging, food, coaching, wax, and race entry, but not transportation).

## **Eastern Cups (Junior National Qualifiers (JNQs))**

NENSA sanctions 8 races during the season as Junior National Qualifiers (JNQs). CSU encourages its athletes to attend as many JNQs as possible. While only about a sixth of CSU skiers qualify for JNs, these races provide excellent experience, expose athletes to top competition and demonstrate just how fast it is possible to ski. The Eastern Cup races require a great deal of commitment as they involve travel and often require overnight stays. CSU coaching staff is always on hand with the tent, waxing benches, and coaching advice. Skiers who have done these races have always been grateful for the experience when they get to the U16 and EHS championships.

However, at first these events can be intimidating and it is important for the young athlete to keep perspective on his or her performance. An athlete who finishes in the top five of a Mass Bay East league race may finish 80<sup>th</sup> at an Eastern Cup and be one of the last finishers.

Using the best 3 or 4 races to create an average score, NENSA creates a ranking list which is published on [www.nensa.net](http://www.nensa.net). From this list, NENSA selects the New England team to compete in the Junior Nationals

## **Junior Nationals (JNs)**

Junior Nationals are the National Championships for junior age (14 to 19) ski racers. They are organized by the United States Ski and Snowboard Association (USSA, [www.ussa.org](http://www.ussa.org)) and are usually held the first or second week in March. The site of the JN competition moves around the country to a new location each year. Competition to make the New England JN team is very intense. New England skiers are the best in the country and the last qualifier on the NE team usually finishes in the top half at JNs. Some CSU juniors set their sights on making the New England JN team. Given the small number of spots and the fierce competition, making this team is a very difficult goal to achieve. Athletes will have to miss at least a week of school. Cost is around \$2200 plus air travel (includes ground transportation, food, lodging, wax, coaching, and race entry fees).

## **Senior Nationals and World Junior Championships Qualifiers**

Juniors are allowed to compete in the USSA Senior Nationals (but they must have a current USSA membership available from [ussa.org](http://ussa.org)). The location of Senior Nationals rotates around the country. It is usually held during the first week of January. A Junior skier finishing in the top 20 overall at Senior Nationals automatically qualifies for Junior Nationals. The top 5 or 6 juniors qualify for the U.S. World Junior Championship Team. The top 6 U18 skiers who do not make the WJC team qualify for the U-18 Nations Cup Trip.

### **U18 Nations Cup Trip**

There are other opportunities for talented junior skiers. Each year, the USSA takes a few talented U18 athletes (age 16 and 17) to Scandinavia for a series of races with top Scandinavian juniors. To qualify for this team, you must compete at the USSA Senior Nationals held in the first week in January.

### **World Junior Championships**

USSA sends a team each year to the World Junior Championships. This is essentially Olympic level competition for those under the age of 23. To qualify for this team, you must compete at the USSA Senior Nationals held in the first week of January.

## **B. RACING PREPARATION: The Race Day Process**

Ski racing is complicated. It takes years of practice to develop a good race-day routine and learn how to follow it. Below is a suggested process for athletes to build on and modify to suit their own taste:

- Register for the race a week ahead of time (or earlier). For most races you register at [www.skireg.com](http://www.skireg.com); details will be at [www.nensa.net](http://www.nensa.net). Learn the start time for your age-category race.
- Get a wax tip from the coaches and wax your skis.
- Set a process goal for the race: e.g. "I will do as much V2 as possible".
- Eat a high-carbohydrate, high-calorie breakfast at least 3 hours before your race (skip sleep to eat if necessary).
- Arrive 90 minutes to 2 hours before your start time. Wear your watch!

- Meet at the CSU tent if it's a team event.
- Give your race skis to the coaches for final waxing. No ski ties!
- Register and pick up your bib.
- Put on your bib right away, if possible, so you don't lose it.
- Put on warm-up skis, wax if necessary, and inspect course if possible.
- 45 minutes before the race begin your warm-up: 20 minutes easy skiing, 10 minutes moderate skiing, 5 minutes hard skiing, then final organization, removing warm-ups, etc.). The course inspection can be combined with the warm-up if possible.
- Race well and enjoy being young and fit!
- As soon as the race is over, put on warm clothing, drink fluids and eat a snack bar. Recovery begins immediately and is the beginning of the preparation for the next race. Consume 1 to 1.5 g/kg/hour of carbohydrates for 4 to 6 hours post-race.
  - Do a warm-down ski for at least 20 minutes with at least 10 minutes at Level 2 intensity.
  - Put skis in ski ties and back in bag.
  - Put on dry clothes.
  - Help coaches pack up wax gear and tent.

## VIII. EQUIPMENT AND TECHNICAL SKILLS

The most important rule about equipment is: **MARK ALL GEAR**. Skis and poles can be marked by putting masking tape with the athlete's name onto the skis and poles or use permanent marker. Skiers can and do mix up equipment and it is easier to relocate your equipment if it has your name on it.

**CLOTHING:** CSU uniforms—race pants, top, vest, jacket, hat, buff—are available but not mandatory. Uniforms are ordered in the fall, see the Clothing Coordinator.

The key to a happy skier is being warm enough for conditions, but not so warm as to prevent movement or overheat. The secret is to follow this LAYERING system:

- **VENTILATION** – closest to the skin to allow perspiration to move away from the skin. Breathable polypropylene or other synthetic long underwear provides the ventilation layer. **NO COTTON!**

- **INSULATION** – to trap the warmth generated by your body and keeps you warm. Fleece, wool, or other synthetic material provides the insulation layer.
- **PROTECTION** – the outer layer that protects you from wind and wet. CSU jacket, a pullover type shell, provides the protection layer. Wind pants are often necessary during periods of wind or extreme cold. Wearing a hat is important on all but the warmest winter days. On cold days a neck warmer or buff keeps both the neck and the lower face warm. For hands, gloves that are skiing specific are best. Sunglasses are important to protect eyes from injury and from the sun.

Athletes will need to vary the insulation layer based on the temperature, keeping in mind that skiers warm up when they are moving, but cool off when they are not. Keeping the extremities warm is the biggest challenge when it is cold. Wool or synthetic socks keep the feet warm.

**NO PART OF THE LAYERING SYSTEM SHOULD INCLUDE COTTON CLOTHING!  
COTTON IS THE WORST MATERIAL FOR WARMTH AND PROTECTION.**

## **DRYLAND EQUIPMENT**

Equipment needed for off-snow (known as dryland) training:

- Running shoes
- Water-bottle belt pack and water bottle
- Classic ski boots
- Skate ski boots
- Roller skis: 1 pair of skate, 1 pair of classic.
- Roller ski poles: 1 pair for classic, 1 pair for skate
- Roller ski pole tips – Jenex or Niffleheim tips recommended. Exel okay too. Do NOT get Swix.
- Helmet. (Mandatory for roller ski workouts)
- Reflective Vest. (Mandatory for roller ski workouts)
- Blinking safety light. (Mandatory for roller ski workouts)
- Diamond file for sharpening pole tips

- Hill-bounding poles – a pair of old poles 10 cm shorter than classic poles
- Upper body training device: Ercolina is the best option. Concept 2 SkiErg also good. Or stretch cords (from PerformBetter.com, get Lifeline Professional Exercise Tubing with Handles)
- Sports Watch (mandatory to own and to wear to each practice and to know how to use)
- Heart Rate Monitor. (Optional, but highly recommend) (Suunto is a recommended brand)

**ROLLER SKIS** are listed below in order of preference:

Recommended Skate Skis:

Jenex XLQ98R with speed reducers

Nifleheim Nordic S600 Skate skis with speed reducer.

Recommended Classic skis:

Jenex XLQ920 with speed reducers

Jenex XL 920 with speed reducers

Jenex 920 with speed reducers

Jenex skis are available from Bikeway Source, Nifleheim are available via [www.nifleheim.com](http://www.nifleheim.com).

**CHANGING SKI TIPS (FERRULES) FOR ROLLER SKIING**

Athletes can obtain roller ski tips by calling: Jenex at 603-672-2600. Mention CSU. Order ferrules and get a diamond hone for sharpening them. Jenex also sells very reasonably priced poles. Athletes can get poles without any snow tips and just use them for roller skiing if they want to avoid the work of changing tips spring and fall.

Athletes can also buy poles and roller ski tips from Chris Li at Bikeway Source in Bedford ([www.bikewaysource.com](http://www.bikewaysource.com)). Chris will mount them for you.

To change pole tips, athletes can follow these steps: Boil a pot of water. Put pole tip into the boiling water for about 30 seconds. Try to pull off pole tip (a pot holder or other hand protection highly recommended). If the tip doesn't come off, then boil longer. If the tips are really stubborn then it may take two people - one pulling the pole and the other pulling the ferrule. (Additional note: Coach Alex suggests using a hair dryer to remove tips if without access to boiling water. Turn the hairdryer on to "high" and slowly rotate the pole so that the hot air gets all sides. Then take off the tip as above.)

Once the old ferrule is off then you can put on the new roller ferrule. Dip the tip of the pole in the boiling water to heat up the remaining glue, and then slide the new tip on. Put the pole tip on a board on the floor and press down hard to make sure it goes all the way on. If the tip is at all loose then use a glue gun to add glue to the end of the shaft before putting on the tip. Be sure to use the yellow "hobby" glue and not the white glue. The yellow glue softens when heated so you can take the tips off again later.

Warning: most folks put the tips on facing backwards: the correct way can appear counter intuitive. The tips need to point FORWARD. If you hold the pole and imagine it leaning forward you'll see why this works. Don't sweat it though, if you get it wrong these can be rotated in the field after heating the tips in the exhaust pipe of a car.

## **WINTER SKI EQUIPMENT**

**Skis:** Ski choices will be a function of the rate of growth of the athlete, their budget and their goals in skiing.

Any CSU athlete who is entering any race will need race and warm-up skis. The race skis should be good quality and appropriate in length and flex for the skier. Warm-up skis are far less critical provided the classic skis can be properly waxed for kick (i.e. appropriate for the skier's weight).

As athletes grow in weight and strength, skis can often be re-purposed: a klister ski from a previous year might serve as a hard wax ski. Families will typically buy one or two pairs of skis each year to fill the needs of the developing athlete.

Below are typical ski inventories for CSU skiers.

	Minimum	Typical	Advanced	Optional
Classic	Race skis Warm-up skis	Hard wax ski Klister ski		Zero skis
Skate	Race skis Warm-up skis		Cold race skis Warm race skis	Clear base skis

CSU has a relationship with two vendors: Chris Li at Bikeway Source in Bedford, MA ([www.bikewaysource.com](http://www.bikewaysource.com)) and Zach Caldwell of Caldwell Sports. Our Ski Evaluation parent volunteer will be the contact person between Caldwell Sports and CSU. The parent volunteer will coordinate a day to have your skis evaluated by Zach Caldwell if you are interested in getting new skis. The ski evaluation is usually done in late April.

**Boots:** Almost all CSU athletes will have dedicated skate and classic boots. Combi boots might be appropriate for the start of your CSU career but you will get better results from boots designed for the purpose. Boots are a very personal choice, with fit, support and flexibility being factors. There is no substitute for trying on boots at a reputable retailer such as Bikeway Source.

**Bindings:** Most CSU athletes have equipment within the NNN/Prolink binding system. This has allowed for last minute equipment swaps in event of personal equipment failures.

**Poles:** Classic poles should be no longer than 83% of the skier’s height. This is a rule of the FIS/USSA and applies at Eastern Cup and other races. Skate poles should reach to roughly the skier’s upper lip.

**In addition athletes need the following equipment:**

- Synthetic fabric, moisture-wicking long-underwear. (Craft, Patagonia, etc.).  
Tops, bottoms, and, for boys, wind-briefs.

- Synthetic fabric training tops and bottoms: can be old lycra suits or any lightweight training fabric.
- Warm-up pants with zippered sides so they can be removed over ski boots
- A warm-up jacket
- A warm-up vest
- 2 or more pairs of ski gloves
- 2 or more ski hats
- Earmuffs or headband or hat that covers the ears for cold days.
- Thin material balaclava. Optional, but great for very cold weather.
- Winter Boots – not sneakers!
- Sports Watch (mandatory to own and to wear to each practice)
- Heart Rate Monitor. Optional, but highly recommended.
- Water-bottle belt pack and water bottle
- Clothing gear bag with boot compartments to carry all clothes, gloves, hats, boots, etc.
- Ski bag or bags to hold skis and poles
- Ski ties to hold skis together
- Glide wax kit (see details below)
- Kick wax kit (see details below)
- All equipment and clothing should be labeled with the athlete's name.

#### **Glide wax kit:**

- Form bench to hold ski while working on it.
- Iron
- Thick plastic scraper
- Groove pin
- Toko Copper brush
- Toko Nylon polishing brush
- Toko LF Black, Blue, Red, Yellow: 1 each at least
- Toko System 3 NF Yellow: 2 or more

Athletes may wish to purchase the HF versions of the Black, Blue, Red, and Yellow if you can afford it. The club provides Jetstream and other pure fluoro topcoat waxes at important races. The coaches will provide waxing clinics for all athletes to demonstrate how to apply glide wax. All athletes are expected to learn to wax

and to regularly wax their skis. CSU has a discount club purchase of wax every fall.

**Kick wax kit:**

- Sandpaper 150 and 180 grit
- Toko Gel Clean wax remover
- Toko Green Stick binder
- Toko Red Stick
- Toko Universal klister
- Plastic Cork

If you plan to do a lot of classic skiing on your own, then it would be good to purchase a full set of the stick waxes and perhaps some of the klisters. The club will provide these waxes at practices and races. However, you will be expected to arrive with your kick zone sanded and, on stick wax days, with the green stick binder corked onto the base.

## **IX. SAFETY**

Risks are inherent in any outdoor activity. As a club, CSU values the safety of its athletes. The club asks its athletes and parents to know and follow the rules to prevent injury to themselves and others. It asks everyone to use good judgment during all aspects of training, skiing, racing, and in **driving to and from** CSU events.

Standard safety protocol for CSU athletes includes the following:

1. Use your equipment properly, especially poles (people can be seriously injured by the sharp points of ski poles). Keep all equipment in good working order, for example, roller ski brakes.
2. Pay attention to trail signs and be sure that you are going in the correct direction of travel if the trail is marked “one way”.
3. Observe roller ski safety; one of the most dangerous aspects of our sport is roller skiing since we are sharing the road with cars. In order to maximize safety, CSU has established roller skiing ground rules. CSU coaches have set a goal of having the safest roller skiers in the country.

- a. All CSU athletes must take the safety training course and receive a CSU roller skiing license.
- b. Everyone must wear a helmet, reflective vest, and red blinking helmet light.
- c. Everyone will use roller skis with speed reducers or brakes that are in working condition.
- d. All athletes ski with a coach on the Littleton loop.
- e. Everyone roller skis in single file along the right side of the road.
- f. All athletes must own two pair of roller skis – classic and skate. NO COMBI SKIS

Roller ski safety classes are held at the end of April, May, and June. Athletes and coaches are required to take the course EVERY YEAR before they can begin roller skiing with the club.

All new roller skis should have either speed reducers or brakes and must be kept in working condition. Coaches will inspect roller skis before workouts.

While CSU requires dedicated classic and skate roller skis, it is possible to retrofit 940 skis with somewhat more stable wheels and dedicate them to classic skiing only. Bikeway Source can help with this retrofit.

See our website for a list of roller ski recommendations and resources.

## **X. RECOVERY AND REST**

Developing fitness is a process of stressing the body and allowing it to recover. Repeated cycles of stress and recovery cause the body to adapt to the stress through a process of super-compensation. For the body to gain new capacity it must have a period of rest after hard workouts. Sleep is particularly vital in the recovery process. Growing teens should be getting 8 hours per night plus an hour for every hour they train. That means shutting off the cell phone and the computer completely and sleeping undisturbed. Naps are also an excellent way to get extra rest. Remember, you don't get faster during the workout; you get faster during the recovery from the workout.

Other important recovery aides are foam rolling, massage, saunas, hot tubs, and contrast baths (hot and then cold baths).

Quoted from the Wall Street Journal, May 15, 2012:

“Ms. Randall is religious about her daily nap, which can last up to two hours. Napping allows her to train as hard as she does. Growing up in Alaska, she is accustomed to falling asleep in bright daylight so she can get her usual eight to nine hours of sleep each night. "It can drive everyone else crazy, but all I need to do is climb into bed and close my eyes and I'm out," she says.

## **XI. ILLNESS POLICY: Guidelines To Live By**

In Winter 2017-2018, the medical community across New England saw an increase in severe illness, the worst in decades. It is important to realize that in a group, illness (both major and minor) spreads rapidly in spite of everyone’s best efforts. Illness can become epidemic in a group setting and even more so in a group living situation. Rest and recovery is critical to athletic training. You are not helping yourself, and could be harmful to others, if you show up ill to train, compete, and spread your germs.

Do **NOT** travel to or show up for the CSU team-house camps/Junior or Senior National trips/Eastern Cup Weekends/ U16 or EHS Championship weekends or team practice with:

- **Fever >100.4 by mouth.** You must remain home until free of fever (temp<100.4) for 24 hours without the use of fever lowering agents such as acetaminophen or ibuprofen.
- **Vomiting or diarrhea.** You must be able to eat and drink normally, be able to participate in all activities *and be free of symptoms for 24 hours and be at least 3 days from the start of illness.*
- **Influenza-like viral illness.** You must be free of fever for 24 hours and at least 5-7 days out from start of illness.
- **Productive cough**
- **Conjunctivitis-** red, itchy, swollen eyes- often a sign of systemic viral illness.

- Colds are okay, but the athlete must be able to participate fully in all activities. This guideline is often a good marker of degree of illness. Be aware that some athletes have medical issues such as asthma. Upper respiratory infections, a.k.a. “colds”, can be quite detrimental to their breathing and sometimes require medical attention. Use proper handwashing and be mindful of containing coughs and sneezes. Make sure you don’t have a fever!

## **XII. SPORTS NUTRITION**

CSU encourages its athletes to eat a healthy diet and coaches may ask an athlete to discontinue or reduce practice if they appear not to be getting adequate nutrition in quantity or quality.

To be sure you can perform at your best follow these guidelines

- Eat a good diet
- Eat the right amount of calories
- Eat a diet with adequate amounts of protein and fat
- Eat a diet high in carbohydrates to maximize your glycogen stores
- Time your meals so that you can have energy during your workout/race and recover quickly
- Hydrate (the other secret to feeling good)

A healthy diet is full of fruits and vegetables, whole grains, milk products, lean meats and beans, nuts and seeds; it includes a variety of real whole foods and avoids processed foods.

**Protein** is needed for building and repair of body tissue, a healthy immune system and the formation of hemoglobin. It is the last fuel source for athletes. Athletes need more protein than sedentary individuals for growth, repair and maintenance of muscle and other tissues in the body.

**Iron:** adequate iron stores are necessary for building hemoglobin, the molecule that carries oxygen to your muscles. Iron deficiency is common among female athletes. CSU recommends that female athletes have a CBC and ferritin blood

test annually to assess their iron stores and take an iron supplement if the ferritin is <40. (See details in CSU Iron Health Policy in Appendix A to this handbook below)

**Fat's** most important role is providing essential fatty acids. These maintain the integrity of cell membranes, play a role in the growth, reproduction, and maintenance of skin tissue, and transport and absorb fat-soluble vitamins (A, E, D, K). Best sources are:

- monounsaturated fats--olive oil, avocado oil;
- polyunsaturated fats—corn oil, sunflower oil;
- omega-3 fatty acids—salmon, tuna, sardines, grass fed beef, flax seeds, walnuts.

Limit saturated fats to less than 10% of your total calories –cuts of meat, sausage, bacon, and pastries. Avoid trans fats (partially hydrogenated oils) found in processed baked goods, cookies and crackers. Athletes need 20-25% of their calories to come from fat.

**Carbohydrates are the key to good sports nutrition. If you don't eat enough carbohydrates, you won't perform at your best.** Athletes should pay attention to eating quality carbohydrates from nutritious, wholesome sources that provide vitamins, minerals and fiber.

Carbohydrates are stored in the body as glycogen: Carbohydrates → gut → glucose → glycogen. Glucose can also be used immediately as energy. Excess carbs are stored as fat – Nordic skiers don't need to worry about this. The purpose of glycogen is to store enough glucose to get us to our next meal. If the muscles can no longer maintain a given power level, the body slows down and fatigue develops. Many of us have probably experienced “bonking” or “hitting the wall”. It results in dizziness, muscular weakness, nausea, irritability and fatigue and comes, in part, from inadequate pre-race consumption.

**During a race or hard workout glycogen stores last for ~ 90 minutes:**

< 1 hour probably don't need anything but water

> 1 hour then you need to take a “feed”

“Feed” = sports drink or gel. Need carbs, water and electrolytes

Brand – Find something that taste good and has a combination of sugars

Concentration – 6-8% carbohydrates

Amount – Approximately 8 oz. every 15 -30 min

16-32 oz. at 8% concentration = 30-60 g of carbs per hour (60 g = maximum amount body can handle)

### **What do I need to do after a race/hard workout to recover quickly?**

Glycogen Window

1-1.5 g of carbs per kg in the **first 30 min.**

132 lbs. (60 kg) = 60-90 g carbs

Focus on high glycemic foods

1-1.5 g of carbs again at **2 hours**

Glycogen resynthesizes stays high 5-6 hours after exercise

Carbs and protein in a 4:1 ratio enhances glycogen synthesis and helps repair muscle. Low fat chocolate milk is a great recovery whereas alcohol slows down glycogen synthesis.

### **Hydration**

Exercise performance is impaired with progressive dehydration.

A simple 1 – 2 % loss of body water can cause as much as a 10 -15% decrease in performance.

In a 150-pound person, that is a loss of 1.5 - 3 lb. of water.

That equals 3-6 cups.

That equals an additional 3 – 4 ½ minutes in a 30 min race.

1 lb. = 2 cups or 16 ounces

### **Hydration Guidelines:**

Drink a minimum of 11 - 16 cups of fluid per day when not training.

When training drink ½ -1 cup every 15 minutes = one 16 oz. bottle every 30 – 60 minutes.

Check the color of your urine to determine hydration status.  
Start your competitions/workouts hydrated.  
You can weigh yourself every morning to help monitor hydration.

## **Race Day Cheat Sheet**

### Pre-race Tips

- Experiment! Everyone is different
- Ideally eat breakfast 3-4 hours before the start of your race
  - If you eat 3 hours before aim for 3 g of carbs per kg
  - If you eat 2 hours before aim for 2 g of carbs per kg
  - If you eat 1 hour before aim for 1 g of carbs per kg
- The closer you get to the race the more important it is that you eat easily digested carbs. For example: Toast, bananas, sports drinks and gels are good choices.
- Protein and fat will slow down the speed of digestion, therefore foods such as omelets, pastries, bacon and sausage are not the best choice unless you have a stomach of steel 😊 These foods also fill you up and make it hard to take in the proper amount of carbs.
- If you have a tendency to get hungry before your start, have a light snack 2 hours before your start.
- Drink water up to 1 hour before your start and then stop drinking, this will keep you from having a full bladder during your race.
- You can drink 1 cup of sports drink or water 10-15 minutes before your start for an extra carb boost, or if you are worried you might get thirsty.
- Stop eating 1 hour before your start (risk reactive hypoglycemia and stomach upset).

### Post Race Tips

- Consume 1-1.5 g of carbs in the first 30 minutes following your race.
- Consume another 1-1.5 g of carbs 2 hours after your race.
- These guidelines are especially important if you have consecutive days of racing.

### **XIII. YOUTH PROTECTION**

All coaches will complete CORI/SORI reporting. This is a requirement of their USSA coach certification.

Parents who will be in a residential setting (such as volunteering in a team house during a camp or team trip) with the athletes will also complete CORI and SORI reporting requirements.

Coaches will not drive with a sole athlete in their car. They may take more than one athlete.

Athletes experiencing harassment, discrimination or assault should approach a trusted adult in the club in addition to informing their parent, if appropriate.

### **XIV. REFERENCES**

Handbooks referenced to write this CSU Junior Nordic Handbook:

CSU junior website: [www.csujuniors.org](http://www.csujuniors.org), with extensive entries by Rob Bradlee and Jim Stock

Anchorage Junior Nordic League Parent Handbook

Community Rowing Inc. Handbook

Mt. Bachelor Sports Education Foundation Stevenson Youth Program

Parent/Athlete Handbook Cross Country Skiing Training Plan: 2010-2011

McLaughlin, Sara. "Sports Nutrition for Cross-Country Skiers," presented to CSU in Lincoln, MA, January 22, 2011. Power point presentation available on [csuski.com](http://csuski.com).

Other relevant references:

Fasterskier.com: a web site where the prominent Nordic skiing news and skiers' blogs are posted.

Orlick, Terry. In pursuit of excellence: how to win in sport and life through mental training. Human Kinetics, Champaign, IL, 4<sup>th</sup> edition, 2008

## **APPENDIX:**

### **A. CSU IRON HEALTH POLICY** (Written November 20, 2016)

#### **Recommendations**

We want CSU athletes to be healthy and happy.

We suggest that every female athlete get a ferritin test and a CBC test at least once every year.

We suggest that female athletes with a ferritin level below 40 take iron supplements.

#### **Explanation**

We have found that many female athletes have low-iron issues as a result of rigorous training. This results in fatigue, poor performance in workouts and races, and frequent illness. With proper dietary supplements the low iron can be corrected and the athlete returned to good health, high energy, and fast performances.

#### **Testing Issues:**

Some doctors are resistant to doing tests unless there is a serious problem. However, if you wait until you have symptoms, you then face months of recovery. Insurance will usually only pay for the test if it is associated with a diagnosis. A diagnosis of "fatigue" will often be sufficient. Even if you have to pay for the test yourself, it is not very expensive. Often doctors will report that "your level is normal". Please request the exact number.

#### **Treatment:**

Ferrous gluconate 1 or 2 hours before eating. With vitamin C to aid absorption.

Serious: 325 mg twice per day

Mild: once per day

Take for 2 to 3 months and then retest

## Details of Blood Tests

### Hemoglobin:

Hemoglobin, abbreviated Hb or Hgb), is the iron-containing oxygen-transport metalloprotein in the red blood cells.

Measured in g/dL.

Normal levels:

Men: 13.8 to 18.0

Women: 12.1 to 15.1

### Hematocrit:

The hematocrit, also known as packed cell volume (PCV) or erythrocyte volume fraction (EVF), is the volume percentage (%) of red blood cells in blood.

Normal levels:

Male: 40 - 50%

Female: 36 - 44%

### Serum Iron (Iron Saturation)

Measures the amount of circulating iron that is bound to transferrin.

Measured in ug/dl

Normal range:

Female: 50 to 170

Male: 65 to 176

### TIBC - Total Iron Binding Capacity

Measures the total amount of transferrin (capacity to store iron)

Normal range:

240-450 ug/dl

### Transferrin Saturation

Normal range:

20 - 50%

### Ferritin

Test for presence of the ferritin protein that stores 2 iron molecules.

Usually correlates directly with total amount of iron in the body so is a good test of iron problems.

Lack of ferritin > lack of hemoglobin > lack of oxygen > fatigue during high intensity efforts.

Measured in nanograms per milliliter.

Normal range:

Females 18-160 (but anecdotally coaches of endurance athletes have found that at least 40 is necessary for good performance and recovery)

Males 18-270