



Competition Pathway

LTAD stage	Racing category (age at Dec 31 of competition year)	Targeted events
Train to Win	Senior (23+)	<ol style="list-style-type: none"> 1. Olympic Winter Games and World Championships 2. Tour de ski 3. World Cup 4. European Continental Cups or National Championships 5. WSC and OWG trials 6. Canadian Championships 7. Canadian NORAM 8. US super tour
Train to Compete	U23 (20-21-22)	<ol style="list-style-type: none"> 1. Olympic Winter Games and World Championships 2. U23 World Championships 3. World Cup 4. European Continental Cups or National Championships(for athletes meeting U23 International Points Benchmarks (IPB) for their age) 5. FISU (University) Games 6. WSC and OWG trials 7. Canadian Championships 8. Canada Games 9. Canadian NORAM 10. US super tour, NCAA and other FIS races
Learn to Compete – part 2	U20 (18-19)	<ol style="list-style-type: none"> 1. World Junior Championships 2. FISU Games 3. European Continental Cups or National Championships (for athletes meeting junior men/women International Points Benchmarks (IPB) for their age) 4. WJC trials 5. Canadian Championships 6. Canada Games 7. Eastern or Western Canadian Championships 8. Canadian NORAM 9. Regional US races; 3-4 Supertour/FIS/US Nationals events for more advanced athletes 10. Division race series 11. Regional race series and loppets
Learn to Compete – part 1	U18 (16-17)	<ol style="list-style-type: none"> 1. Youth Olympic Games 2. Canadian Championships 3. WJC trials 4. Eastern or Western Canadian Championships 5. Other regional Canadian NORAM 6. Regional US races; 1-2 national level event if scheduled in region for more advanced athletes 7. Division race series 8. Regional race series and loppets
Train to Train - part 2	U16 (14-15)	<ol style="list-style-type: none"> 1. Canadian Championships 2. Eastern or Western Canadian Championships 3. Division race series 4. 1 or 2 regional US races 5. Regional race series and loppets
Train to Train - part 1	U14 (12-13)	<ol style="list-style-type: none"> 1. Eastern or Western Canadian Championships 2. Division race series or Division Midget Championships 3. Regional race series and loppets 4. Club events
Learn to Train	U12 (10-11)	<ol style="list-style-type: none"> 1. Division race series or Division Midget Championships 2. Regional race series and loppets 3. Club events
Fundamentals - part 2	U10 (8-9)	<ol style="list-style-type: none"> 1. Regional race series and loppets 2. Club events
Active Start - Fundamentals-part 1	U8 (6-7)	<ol style="list-style-type: none"> 1. Regional race series and loppets 2. Club events

Canadian Competition Model for Able Body

The Competition Model remains a model, i.e. it reflects the optimal development of an athlete from the Active Start stage to the Training to Win stage. Therefore, the guidelines per stages of development are appropriate for athletes of the corresponding average age ranges as long as those athletes' states of development (or developmental age) indeed correspond to the stage of development associated with the age range. For example, a majority of senior athletes (20 and older) do not belong to the T2C or T2W stages because despite their age, they simply have not reached those levels of development. This obviously needs to be taken into consideration by athletes, coaches and parents in determining the appropriate level of racing for the athletes. Although athletes usually don't have the option of "racing down" in appreciation of those considerations, there exists many ways to adapt the racing program to an athlete's needs such as choosing races of appropriate race distances and choosing appropriate levels of racing (regional, divisional, national, etc).

LTAD alignment means to avoid doing things we shouldn't be doing from a developmental perspective for specific LTAD stages (like having U8 and U10 athletes racing on courses with long steep up hills and down hills) but it also means to prescribe race distances and race formats that will allow skiers to take advantage of the Optimal Windows of Trainability (refer to NC's LTAD guide) for the different development factors throughout LTAD stages, when applicable. In other words, racing is not just an end but also one of skiers' most important **development** tools.

The core notion of the LTAD concept is that we do not treat younger and growing athletes as mini-adults but rather that we recognize the very specific needs of growing skiers from infancy to adulthood, needs that are also gender specific. It is therefore crucial that athletes, coaches and parents acquaint themselves with the various developmental benchmarks to look for to properly monitor an athlete's growth and development and consequently determine when an athlete is transitioning from one stage to the next one. NC's HP development and CAD staff will be at the core of the ongoing education efforts in that regard. Several tools are also currently available to help coaches' provide adequate guidance to parents and athletes: <http://www.ccski.com/Programs/Athlete-Development/LTAD-Long-Term-Athlete-Development/Resources.aspx>

CANADIAN COMPETITION MODEL

Nb: The following notes are meant to facilitate the interpretation of the detailed parameters per stage of development contained in the tables of the next section.

RACING CATEGORY VS STAGE OF DEVELOPMENT

1. The racing category and corresponding age range associated with each stage of athlete development are determined to meet both the need to provide the appropriate guidance for athletes of a given stage of development and the practical considerations of event hosting across the country. Race organizers are nonetheless encouraged to combine several categories (seeded together) for racing on common distances and courses when appropriate, accounting for sizes of fields, race formats, venues' capacities and race objectives of the competition (ie. Team or Trip Selection).
2. For most athletes the progression from one stage of development to another is gradual. Although the graduation to the next racing category is not flexible once an athlete has reached the minimum age for that category, there are still ways to account for a specific athlete's level of development. For example, there may be circumstances when it is justified for more advanced athletes to "race up" in an older category. The decision of racing up or not will be left to the discretion of the athlete's coach, with input from parents and other persons involved in the athlete's development. Likewise, some younger athletes in a given race category may not be as developed as the average racers of their age. While international and Canadian race rules do not allow for an athlete to "race down" in a younger category, coaches and parents are strongly encouraged to educate these athletes as to how to interpret race results in their case and focus on personal improvement (improved CPL points for example).

OPTION OF SUB-DIVIDING AGE CATEGORIES RELATIVE TO ABILITY LEVELS

1. Although it is not presented in the tables below, NC encourages divisions and clubs to offer distinct "sport" and "elite" racing levels within race categories for suitable events such as club or local competitions. This option is considered to have value where there are large numbers of participating athletes, as it better accommodates different levels of abilities. It is also less intimidating for late comers to the sport.

COMBINING CATEGORIES IN CERTAIN CIRCUMSTANCES

- 1- While every athlete should have a chance to race on distances, course profiles and race formats suited for his/her level of development, there are several circumstances when combining racing categories for a race makes the most sense. Here are a few examples of such circumstances:
 - a) Fields in each category are quite small and not providing enough challenge for the athletes
 - b) Need to compare athletes of different categories for selection purposes
 - c) Providing more challenge to top athletes in a given category without requiring them to race up on a longer event and on a harder course

d) **Providing the opportunity to younger athletes to score more realistic CPL points at the start of the year.** This applies particularly to midget and juvenile athletes not carrying any points or quite low points at the start of a new racing season. The progression of such young athletes throughout the dryland season is usually quite significant but will only translate into better CPL points if they race against older and better athletes who will provide a point of comparison to reflect their progression since the previous season.

2- When combining categories to race on common distances and courses, chosen distances and courses should always be within the prescribed range for the younger category in the race. Additionally, the race distances should remain in the low end of that range when hosted at the start of the season.

RACE TIMES, RACE DISTANCES, COURSE PROFILES AND # OF RACES PER SEASON

1. Recommended race distances and durations for each stage of development and racing category are assuming that athletes are looking to complete the race distance in the least time possible, therefore skiing at the highest average intensity that they can maintain throughout the race. Accordingly, competing on longer distances than prescribed for a given category may not necessarily be counter-indicated if the athletes significantly reduce their average racing speed and manage their race pace to focus on completing the distance without reaching a state of exhaustion. In most cases, those opportunities will consist of popular mass start races (loppets) that are not selection events.
2. Race distances shown on the charts have been established based on the targeted race duration, since it is race duration that is used to define appropriate racing activity within the various LTAD stages. It is important that race distances are adapted to the targeted race duration according to the actual course conditions of the race day. For example, a 100m sprint which would normally be of 20 seconds duration (or less) in a race category might take longer than 20 seconds if conditions are particularly slow; therefore, the distance should be reduced to make sure the race stays within the targeted 20 seconds duration. This concern for the impact of prevailing course conditions applies mostly for the younger age categories (i.e. at the early stages of development), where there is potentially a wider range of abilities and race times can be expected to vary more than for older and more developed skiers.
3. The proposed ratio of sprint vs distance races reflects the present ratio at national and international levels of competition. Early and late specialization are not taken into account but should only be a consideration at the T2C and T2W stages of LTAD.
4. Along with race distances and formats, appropriate course profiles are also an important factor to consider for meeting LTAD-specific development goals within each race category and avoiding counter-productive racing experiences. In this respect, NC's Events Committee will review current regulations and will provide guidance for all stages of development and racing categories.
5. For the earlier stages of development where fun, skill and speed development are the key racing emphases, "unconventional" race settings are to be considered to optimize development of these factors (e.g. obstacle courses, terrain parks, games). As well, longer sprint-like events that would fall outside of the recommended racing times for a given stage of development (in order to avoid using anaerobic capacity) may still be adequate and useful as long as such events are designed as to emphasize skill development, thus reducing concerns about the use of inappropriate energy systems for a given stage of development. Typically, those events would be held on ski playgrounds, the course integrating several skill challenging components that would naturally disrupt the high racing tempo that you would normally see on those racing distances. In the current model, those races are called "skills races".

AWARDS AND RECOGNITION

1. To help athletes, coaches and parents acknowledge the potential impact of age-related growth differences within each race category, recognition of different ages within a racing category is strongly encouraged. This can be done, for example, by indicating Year Of Birth (YOB) on results and by awarding medals or ribbons per YOB. Such measures are viewed as being particularly desirable in the younger race categories.
2. Wider and more inclusive recognition of participation and performance can also have a positive impact on recruitment and retention at the early stages of development when children's motivation is primarily extrinsic. Although practising a variety of activities demanding different types of abilities should be encouraged to optimize physical literacy during the early LTAD stages, these first three or four stages are also the period when there is the strongest competition between different sports to attract and retain participation. In this respect, early gratification, along with quality programs, has a significant impact.
3. Although the U23 age group and corresponding T2C stage of development is usually viewed as a minor sub-division of the Senior category (and Open) in domestic competition, it is strongly encouraged that meaningful recognition is provided to this racing sub-category as it represents a distinct stage of development (T2C) for most racers that age.

IMPACT OF TRAVEL

1. Given the Canadian geographic reality, travelling distances/times and related costs are important considerations when it comes to establishing the racing calendar for each athlete (i.e. setting priorities) and for determining selection processes for PTSOs and NSOs. In most cases, excessive travelling and associated expenses will impair an athlete's capacity to meet LTAD goals, both because of inadequate allocation of financial resources relative to development priorities and because of the negative impact of extensive travelling on available training and recovery time.
2. NC is therefore strongly encouraging athletes and their clubs to also consider taking advantage of US races that are easily accessible in their region given the generally high caliber and good depth of US races. This recommendation still needs to be put in perspective depending on the age and stage of development of athletes, depth of field, local opportunities, etc. For example, athletes in the U16 category may be introduced to a limited number of regional US races and winter festivals while U18 and older athletes may compete in US races on a more regular basis depending on the opportunities.
3. While NC recognizes the benefits of travelling and racing overseas at some point of an athlete's development and athletic career, it should be noted that such experiences will only be beneficial and necessary for athletes having met prior standards of development in North America. The cost of European racing trips should also be taken into consideration vs domestic options. The rule of thumb is that an athlete should consistently rank among the best in his/her category in Canada at least and be limited to U20 and older athletes before planning a European racing trip.

OFFICIALS TRAINING

1. For the later LTAD stages and related race categories, it is important for the optimal development and preparation of athletes that the training of race officials qualifies them to apply rules and exercise judgment in accordance with international standards. The judgment of technique infractions in classic races and of obstruction infractions during mass starts and sprint races are notable examples where this concern is applicable.

Active Start/Fundamentals-1: U8 racing category (age 6-7)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<p>FUN</p> <p>Skill development</p> <p>Speed 1 (≤ 5 sec.)</p>	<p>Not applicable</p>	<p style="color: red;">Distance: 0.5 to 1.5 km (5 to 10 min)</p> <p>100-200m (skills race)</p> <p style="color: red;">Total = 4 - 6 races/season</p>	<p>1- Regional race series and loppets</p> <p>2- Club events</p> <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Competition focus is on personal improvement and done in a team environment when possible. ✓ Begin racing after 4 weeks of training on snow ✓ No racing below -15C maximum. (PS: ideally plan alternate activity in case of cancellation) ✓ Adapt race distances to race “time” guidelines for the age grouping ✓ Include some “legs only” events ✓ Use varied terrain; include some unconventional settings (i.e. obstacle courses; terrain parks; skills races) ✓ Include a variety of race formats (i.e. relays; mass starts); creative elements (i.e. costumes; changes of equipment) ✓ As much as possible, limit extended travel to races; ideally the race experience should be half a day (mostly club and regional races) ✓ Athletes 5-(6) years old (Active Start) should receive participation awards (such as a ribbon) ✓ Athletes (6)–8 (FUNdamentals): acknowledge achievements/results for each YOB (medals, ribbons, etc); recognition awards for all participants is encouraged 	<p>Anaerobic (capacity and power) efforts (i.e. 30-90 sec at highest intensity)</p> <p>Terrain extremes (i.e. long or steep hills; only flat)</p>

Fundamentals-2: U10 racing category (age 8-9)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<ul style="list-style-type: none"> ✓ Fun ✓ Skill development ✓ Introduce strength using body weight ✓ Athlete can race at high speed with good technique 	<ul style="list-style-type: none"> ✓ Taking part in a few aerobic sports' competitive events is recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the L2T-1 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p>Sprints: 100m or < 20 sec.</p> <p>100-300m (skills race)</p> <p>Distance: 1 - 3 km (5 to 20 min)</p> <p>Total = 4 – 6 races/season</p>	<ul style="list-style-type: none"> 1- Regional race series and loppets 2- Club events <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Competitive focus is on personal improvement, in a team environment ✓ Basic race rules are learned ✓ Basic race evaluation is introduced ✓ Generally begin races after 4 weeks of training on snow ✓ No racing below -15C maximum. (PS: ideally plan alternate activity in case of cancellation) ✓ Early season races should be at the shorter end of the range ✓ Focus on “fun” events that emphasize team effort and skills (i.e. Ski Tournaments) ✓ Adapt race distances to the “time” guidelines for the age grouping ✓ Include a variety of race formats (i.e. relays; mass starts); creative elements (i.e. costumes; changes of equipment) ✓ Use varied terrain; include some unconventional settings (i.e. obstacle courses; terrain parks; skills races); easier terrain earlier in the season ✓ Include some Double Poling and “legs only” events (at shorter distances) ✓ Emphasize that excellent technique is a major factor in racing success ✓ Emphasize the importance of skill dev. through recognition and rewards ✓ Use slightly declining slope for sprint races to develop speed and balance ✓ As much as possible, limit travel to races ✓ Ideally the race experience should be half a day, with only 1-2 key events being one day – club and regional races; provincial cup races when held in region; provincial youth championships ✓ Acknowledge achievements/results for each YOB (medals, ribbons, etc) ✓ Optional participation awards 	<p style="text-align: center;">Anaerobic (capacity and power) efforts (i.e. 30-90 sec at highest intensity)</p> <p style="text-align: center;">Terrain extremes (i.e. long or steep hills; only flat)</p>

L2T: U12 racing category (age 10-11)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<ul style="list-style-type: none"> ✓ Fun ✓ Skill development ✓ Introduce strength using body weight ✓ Athlete can race at high speed with good technique 	<ul style="list-style-type: none"> ✓ Taking part in a few aerobic sports' competitive events is recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the L2T-2 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. ✓ Skiers at the L2T-2 stage may also start experiencing with RS racing at the club or regional level provided they have acquired the necessary technical skills to sustain high intensity on varied terrain 	<p>Sprints: 100m or < 20 sec.</p> <p>100-300m (skills race)</p> <p>Distance: 1 - 3 km (5 to 20 min)</p> <p>Total = 6 – 8 races/season</p>	<ol style="list-style-type: none"> 1- Provincial race series or provincial Midget Championships 2- Regional race series and loppets 3- Club events <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Competitive focus is on personal improvement, in a team environment ✓ Basic race rules are learned ✓ Basic race evaluation is introduced ✓ Generally begin races after 4 weeks of training on snow ✓ No racing below -15C maximum. (PS: ideally plan alternate activity in case of cancellation) ✓ Early season races should be at the shorter end of the range ✓ Focus on “fun” events that emphasize team effort and skills (i.e. Ski Tournaments) ✓ Adapt race distances to the “time” guidelines for the age grouping ✓ Include a variety of race formats (i.e. relays; mass starts); creative elements (i.e. costumes; changes of equipment) ✓ Use varied terrain; include some unconventional settings (i.e. obstacle courses; terrain parks; skills races); easier terrain earlier in the season ✓ Include some Double Poling and “legs only” events (at shorter distances) ✓ Emphasize that excellent technique is a major factor in racing success ✓ Emphasize the importance of skill dev. through recognition and rewards ✓ Use slightly declining slope for sprint races to develop speed and balance ✓ As much as possible, limit travel to races ✓ Ideally the race experience should be half a day, with only 1-2 key events being one day – club and regional races; provincial cup races when held in region; provincial youth championships ✓ Acknowledge achievements/results for each YOB (medals, ribbons, etc) ✓ Optional participation awards 	<p>Anaerobic (capacity and power) efforts (i.e. 30-90 sec at highest intensity)</p> <p>Terrain extremes (i.e. long or steep hills; only flat)</p>

T2T – 1: U14 racing category (age 12-13)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<p><u>MALE:</u></p> <ul style="list-style-type: none"> ✓ FUN ✓ Skill development ✓ Develop aerobic capacity ✓ Develop speed 2 (≤ 20 sec.) ✓ Develop strength using body weight ✓ Develop tactics: tracking, sprints etc. ✓ Athletes race to win and do their best, but the major focus of training is on refining technique skills ✓ Athletes train in competitive situations several times per week in the form of practice matches, competitive drills and games 	<p style="text-align: center;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the T2T-1 stage are encouraged to take part in 3 to 4 RS events of different formats throughout the dryland season <p style="text-align: center;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the T2T-1 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center;">Sprints: 1-2x 100m or < 20 sec. 2-3 x 200-400m (skills race)</p> <p style="text-align: center;">Distance: 3 - 10k (10-30 min.)</p> <ul style="list-style-type: none"> ✓ 2 x 3k ✓ 5 x 5k ✓ 1-2 x 7.5k mass start ✓ 0-1 x 10k mass start at end of season <p style="text-align: center;">Total: 8-12 races</p>	<ol style="list-style-type: none"> 1- Eastern or western Canadian Championships 2- Provincial race series or provincial Midget Championships 3- Regional race series and loppets 4- Club events <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Emphasis on personal improvement and personal best ✓ Race on regional and provincial cup series, provincial youth champs and Games, Eastern or Western Canadians if close to home ✓ Begin racing after 4 weeks of training on snow ✓ Start to narrow competitive focus to two sports ✓ Adapt race distances to the duration guidelines for the age grouping ✓ Cap total distance raced over weekends to about 10km when more than one race ✓ Use all the official race formats ✓ Continue to include a few "fun" events that emphasize team effort and skills (skills races) ✓ Use slightly declining slope for sprint races to develop speed and balance ✓ Acknowledge achievements/results for each YOB (medals, ribbons, etc) 	<p style="text-align: center;">Anaerobic (capacity and power) efforts (i.e. 30-90 sec at highest intensity)</p> <p style="text-align: center;">Terrain extremes (i.e. long or steep hills; all flat)</p> <p style="text-align: center;">Not enough racing experiences</p>
<p><u>FEMALE:</u></p> <ul style="list-style-type: none"> ✓ FUN ✓ Skill development ✓ Develop aerobic capacity ✓ Develop maximal aerobic power (at the end of this period) ✓ Develop speed 2 (≤ 20 sec.) ✓ Develop strength using body weight; learn proper technique for using free weights ✓ Develop tactics: tracking, sprints etc. ✓ Athletes race to win and do their best, but the major focus of training is on refining technique skills ✓ Athletes train in competitive situations several times per week in the form of practice matches, competitive drills and games 	<p style="text-align: center;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the T2T-1 stage are encouraged to take part in 3 to 4 RS events of different formats throughout the dryland season <p style="text-align: center;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the T2T-1 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center;">Sprints: 1-2x 100m or < 20 sec. 2-3 x 200-400m (skills race)</p> <p style="text-align: center;">Distance: 3 - 10k (10-30 min.)</p> <ul style="list-style-type: none"> ✓ 2 x 3k ✓ 5 x 5k ✓ 1-2 x 7.5k mass start ✓ 0-1 x 10k mass start at end of season <p style="text-align: center;">Total: 8-12 races</p>	<ol style="list-style-type: none"> 1- Eastern or western Canadian Championships 2- Provincial race series or provincial Midget Championships 3- Regional race series and loppets 4- Club events <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Emphasis on personal improvement and personal best ✓ Race on regional and provincial cup series, provincial youth champs and Games, Eastern or Western Canadians if close to home ✓ Begin racing after 4 weeks of training on snow ✓ Start to narrow competitive focus to two sports ✓ Adapt race distances to the duration guidelines for the age grouping ✓ Cap total distance raced over weekends to about 10km when more than one race ✓ Use all the official race formats ✓ Continue to include a few "fun" events that emphasize team effort and skills (skills races) ✓ Use slightly declining slope for sprint races to develop speed and balance ✓ Acknowledge achievements/results for each YOB (medals, ribbons, etc) 	<p style="text-align: center;">Anaerobic (capacity and power) efforts (i.e. 30-90 sec at highest intensity)</p> <p style="text-align: center;">Terrain extremes (i.e. long or steep hills; all flat)</p> <p style="text-align: center;">Not enough racing experiences</p>

T2T-2: U16 racing category (age 14-15)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<p>MALE:</p> <ul style="list-style-type: none"> ✓ Skill development ✓ Develop aerobic capacity ✓ Develop maximal aerobic power ✓ Develop speed 2 (≤ 20 sec.) ✓ Develop strength using body weight; learn proper technique for using free weights ✓ Develop tactics ✓ Athletes race to win and do their best, but the major focus of training is on refining technique skills ✓ Top level athletes should aim to make their divisional development team in order to be on target for international success 	<p style="text-align: center; color: red;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the T2T-2 stage are encouraged to take part in 3 to 4 official RS events of different formats throughout the dryland season <p style="text-align: center; color: red;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the T2T-2 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center; color: red;">Sprints:</p> <ul style="list-style-type: none"> ✓ 2 x 0.1k (or ≤ 20 sec.) ✓ 4 x 0.8-1k (>2 min.) <p style="text-align: center; color: red;">Distance: 3-10k (7-40 min)</p> <ul style="list-style-type: none"> ✓ 3 x 2-3km as team relays or prologue ✓ 6 x 5-7.5k ✓ 2 x 10k <p style="text-align: center; color: red;">TOTAL: 13-17 races</p>	<ol style="list-style-type: none"> 1- Canadian Championships 2- Eastern or western Canadian Championships 3- Provincial race series 4- 1 or 2 regional US races 5- Regional race series and loppets <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Emphasis on personal improvement and personal best ✓ Compete at regional and provincial cup series, provincial youth champs and Games, Eastern or Western Canadians ✓ Compete at National championships to acquire trip experience at a big event ✓ Start taking advantage of some regional US races to experience higher level of competition and depth of field ✓ Begin racing after 4 weeks of training on snow ✓ Narrow competitive focus to two sports ✓ Create race situations that develop tactics and ability to stand ground in mass starts events, start and finish (scramble zones, turns near finish, etc) ✓ Limited travel to races; some of yearly racing should be one day events; regional and provincial circuit races; not more than one major championship per year (i.e. Nationals) ✓ Adapt race distances to the duration guidelines ✓ Use all the official race formats ✓ Continue to include a few "fun" events that emphasize team effort and skills ✓ Acknowledge achievements/results for each YOB (medals, ribbons, etc) 	<p style="text-align: center;">Long anaerobic capacity effort</p> <p style="text-align: center;">Distances that are too long</p> <p style="text-align: center;">Not enough racing experiences</p>
<p>FEMALE:</p> <ul style="list-style-type: none"> ✓ Skill development ✓ Develop aerobic capacity ✓ Develop maximal aerobic power ✓ Develop strength ✓ Develop tactics ✓ Develop anaerobic power and capacity ✓ Athletes compete to win and do their best, but the major focus of training is on refining technique skills ✓ Top level athletes should aim to make their divisional development team in order to be on target for international success 	<p style="text-align: center; color: red;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the T2T-2 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center; color: red;">Sprints:</p> <ul style="list-style-type: none"> ✓ 2 x 0.1k (or ≤ 20 sec.) ✓ 4 x 0.8-1k (>2 min.) <p style="text-align: center; color: red;">Distance: 3-10k (7-40 min)</p> <ul style="list-style-type: none"> ✓ 3 x 2-3km as team relays or prologue ✓ 6 x 5-7.5k ✓ 2 x 10k <p style="text-align: center; color: red;">TOTAL: 13-17 races</p>	<ol style="list-style-type: none"> 1- Canadian Championships 2- Eastern or western Canadian Championships 3- Provincial race series 4- 1 or 2 regional US races 5- Regional race series and loppets <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Emphasis on personal improvement and personal best ✓ Compete at regional and provincial cup series, provincial youth champs and Games, Eastern or Western Canadians ✓ Compete at National championships to acquire trip experience at a big event ✓ Start taking advantage of some regional US races to experience higher level of competition and depth of field ✓ Begin racing after 4 weeks of training on snow ✓ Narrow competitive focus to two sports ✓ Create race situations that develop tactics and ability to stand ground in mass starts events, start and finish (scramble zones, turns near finish, etc) ✓ Limited travel to races; some of yearly racing should be one day events; regional and provincial circuit races; not more than one major championship per year (i.e. Nationals) ✓ Adapt race distances to the duration guidelines ✓ Use all the official race formats ✓ Continue to include a few "fun" events that emphasize team effort and skills ✓ Acknowledge achievements/results for each YOB (medals, ribbons, etc) 	<p style="text-align: center;">Distances that are too long</p> <p style="text-align: center;">Not enough racing experiences</p>

L2C-1: U18 racing category (age 16-17)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<ul style="list-style-type: none"> ✓ Develop aerobic capacity ✓ Develop maximal aerobic power ✓ Develop strength ✓ Develop anaerobic power and capacity ✓ For top level skiers at the end of this stage, acquire N. American and European racing experience to learn more about travel ✓ Develop event specific tactical skills (sprints, mass starts, etc) ✓ Introduce and develop knowledge about peaking and periodization ✓ Top level athletes should aim to qualify for their divisional team and/or a National Team Development Center and/or the Junior National Ski Team in order to be on target for international success 	<p style="text-align: center;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the L2C-1 stage are encouraged to take part in 3 to 4 official RS events of different formats throughout the dryland season <p style="text-align: center;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the L2C-1 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center;">Sprints: 6-7 x 0.8-1.0k (>2 :30)</p> <p style="text-align: center;">Distance: 3-30k (7- 90 min.)</p> <ul style="list-style-type: none"> ✓ 2-3 x 2-4km as team relays or prologue ✓ 5-7 x 5-10k ✓ 2-4 x 15k ✓ 1-2 x 20k mass start or pursuit ✓ 0-1 x 30k mass start end of season <p style="text-align: center;">TOTAL: 20-25 races</p>	<ol style="list-style-type: none"> 1- Youth Olympic Games 2- Canadian Championships 3- WJC trials 4- Eastern or western Canadian Championships 5- Other regional Canadian NORAM 6- Regional US races; 1-2 national level event if scheduled in region for more advanced athletes 7- Provincial race series 8- Regional race series and loppets <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Choose between possible national level races to attend; try to limit extensive traveling ✓ More regular regional US racing to experience higher level of competition and depth of field ✓ Adapt race distances to the duration guidelines ✓ Create race situations that develop tactics and ability to stand ground in mass starts events, start and finish (scramble zones, turns near finish, etc) ✓ Limit number of selection races in order to limit extensive travel and cost of competing ✓ Narrow competitive focus to two sports with a primary focus on xc skiing ✓ Acknowledge achievements/results for each YOB, when numbers warrant and when possible (merchandise, gift certificates, etc; at least show YOB on results lists) 	<p>Distances that are too long (athletes need progressive steps towards longer distances)</p>
		<p style="text-align: center;">Sprints: 6-7 x 0.8-1.0k (>2 :30)</p> <p style="text-align: center;">Distance: 3-20k (7- 60 min.)</p> <ul style="list-style-type: none"> ✓ 2-3 x 2-4km as team relays or prologue ✓ 5-7 x 5-7.5k ✓ 2-4 x 10k ✓ 1-2 x 15k mass start or pursuit ✓ 0-1 x 20k mass start end of season <p style="text-align: center;">TOTAL: 20-25 races</p>			

L2C-2: U20 racing category (age 18-19)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<ul style="list-style-type: none"> ✓ Develop aerobic capacity ✓ Develop maximal aerobic power ✓ Develop strength ✓ Develop anaerobic power and capacity ✓ For top level skiers at the end of this stage, acquire N. American and European racing experience to learn more about travel ✓ Develop event specific tactical skills (sprints, mass starts, etc) ✓ Introduce and develop knowledge about peaking and periodization ✓ Top level athletes should aim to qualify for their divisional team and/or a National Team Development Center and/or the Junior National Ski Team in order to be on target for international success 	<p style="text-align: center;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the L2C-2 stage are encouraged to take part in 4 to 6 official RS events of different formats throughout the dryland season <p style="text-align: center;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the L2C-2 stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center;">Sprints: 4-5 x 1-1.2k (>2 :45) 2-3 x 1.2-1.4k (>3 :00)</p> <p style="text-align: center;">Distance: 3-30k (7- 90 min.)</p> <ul style="list-style-type: none"> ✓ 2-3 x 2-4km as team relays or prologue ✓ 7-10 x 10-15k ✓ 2-3 x 20k mass start or pursuit ✓ 1-2 x 30k mass start end of season <p style="text-align: center;">TOTAL: 20-25 races</p>	<ol style="list-style-type: none"> 1. World Junior Championships 2. FISU Games 3. European Continental Cups or National Championships (for athletes meeting U20 International Points Benchmarks (IPB) for their age) 4. WJC trials 5. Canadian Championships 6. Canada Games 7. Eastern or Western Canadian Championships 8. Canadian NORAM 9. Regional US races; 3-4 Supertour/FIS/US Nationals events for more advanced athletes 10. Division race series 11. Regional race series and loppets <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Choose between possible national level races to attend; try to limit extensive traveling ✓ More regular regional US racing to experience higher level of competition and depth of field ✓ Athletes meeting junior men/women International Points Benchmarks (IPB) for their age should consider gaining European racing experience once a year ✓ Adapt race distances to the duration guidelines ✓ Create race situations that develop tactics and ability to stand ground in mass starts events, start and finish (scramble zones, turns near finish, etc) ✓ Limit number of selection races in order to limit extensive travel and cost of competing ✓ Narrow competitive focus to two sports with a primary focus on xc skiing ✓ Acknowledge achievements/results for each YOB, when numbers warrant and when possible (merchandise, gift certificates, etc; at least show YOB on results lists) 	<p style="text-align: center;">Distances that are too long (athletes need progressive steps towards longer distances)</p>
		<p style="text-align: center;">Sprints: 4-5 x 1-1.2k (>2 :45) 2-3 x 1.2-1.4k (>3 :00)</p> <p style="text-align: center;">Distance: 3-20k (7- 60 min.)</p> <ul style="list-style-type: none"> ✓ 2-3 x 2-4km as team relays or prologue ✓ 7-10 x 5-10k ✓ 2-3 x 15k mass start or pursuit ✓ 1-2 x 20k mass start end of season <p style="text-align: center;">TOTAL: 20-25 races</p>			

T2C: U23 racing category (age 20-21-22)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<ul style="list-style-type: none"> ✓ Optimize fitness preparation ✓ Master individual and sport-specific skills ✓ Further develop self-awareness, independence and knowledge about peaking ✓ Optimize event specific tactical skills (sprints, mass starts, etc) ✓ For top level athletes in the older part of this age group acquire further N. American and European racing experience to decrease negative impact of travel ✓ Top level athletes should aim to qualify for a National Team Development Center and/or the Senior Development National Ski Team 	<p style="text-align: center; color: red;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the T2C stage are encouraged to take part in 6 to 8 official RS events of different formats throughout the dryland season <p style="text-align: center; color: red;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the T2C stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center; color: red;">Sprints:</p> <p style="text-align: center;">5-6 x 1.2-1.4k (>3 :00) 3-4 x 1.4-1.6k (>3 :30)</p> <p style="text-align: center; color: red;">Distance: 3-50k (7-150 min.)</p> <ul style="list-style-type: none"> ✓ 2-3 x 3-5km as team relays or prologue ✓ 10-12 x 15-20k ✓ 3-4 x 30k mass start or pursuit ✓ 1-2 x 50k mass start end of season <p style="text-align: center; color: red;">TOTAL: 25-30 races</p>	<ol style="list-style-type: none"> 1- Olympic Winter Games and World Championships 2- U23 World Championships 3- World Cup 4- European Continental Cups or National Championships 5- FISU Games 6- WSC and OWG trials 7- Canadian Championships 8- Canada Games 9- Canadian NORAM 10- US super tour, NCCA and other FIS races <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Training program with double or triple periodization ✓ Competitive focus on one sport ✓ Adapt race distances to the duration guidelines ✓ Evaluate and consider specialization options based on demonstrated predispositions ✓ Choose between possible national level races to attend, trying to limit extensive traveling ✓ Take advantage of regular US races to experience higher level of competition and depth of field ✓ Athletes meeting U23 International Points Benchmarks (IPB) for their age should consider gaining European racing experience once a year ✓ Create race situations that develop tactics and ability to stand your ground in mass starts events, start and finish (scramble zones, turns near finish, etc) ✓ Limit number of selection races to limit extensive traveling needed and to limit cost of competing ✓ Provide U23 category awards and aggregates ✓ Competition calendar should include 1 or 2 mini-tours (3-4 continuous days of racing) 	<p style="text-align: center;">Competing against older seniors on longer distances too often (still need ability to perform over 15-20k before 30k+)</p>
		<p style="text-align: center; color: red;">Sprints:</p> <p style="text-align: center;">5-6 x 1.2-1.4k (>3 :00) 3-4 x 1.4-1.6k (>3 :30)</p> <p style="text-align: center; color: red;">Distance: 3-30k (7-90 min.)</p> <ul style="list-style-type: none"> ✓ 2-3 x 3-5km as team relays or prologue ✓ 10-12 x 10-15k ✓ 3-4 x 20k mass start or pursuit ✓ 1-2 x 30k mass start end of season <p style="text-align: center; color: red;">TOTAL: 25-30 races</p>			<p style="text-align: center;">Competing against older seniors on longer distances too often (still need ability to perform over 10-15k before 20k+)</p>

T2W: Senior racing category (age 23+)

Major Goals for LTAD Stage	SUMMER RACING	WINTER RACING	Targeted competitions	Other Considerations	Major Factors to Avoid
<ul style="list-style-type: none"> ✓ Maximize event specific tactical preparation (sprints, mass starts, etc) ✓ Optimize peaking ability ✓ Top level athletes should aim to qualify for the Senior World Cup National Ski Team 	<p style="text-align: center;">ROLLER SKIING:</p> <ul style="list-style-type: none"> ✓ Roller ski racing is the most specific intensity training a skier can do during the dryland season ✓ Roller ski events should be fun, challenging, safe and hosted in a friendly atmosphere, but still be credible and fair competitions by using standard equipment for all participants ✓ Skiers at the T2W stage are encouraged to take part in 6 to 8 official RS events of different formats throughout the dryland season <p style="text-align: center;">OTHER ACTIVITIES:</p> <ul style="list-style-type: none"> ✓ Taking part in a few other aerobic sports' competitive events is also recommended to continue developing race specific skills throughout the dryland season and as quality intensity training ✓ Occasional summer racing is also a great way to maintain athletes' motivation throughout our long dryland season ✓ Skiers at the T2W stage are encouraged to take part in 3 to 4 aerobic sports' competitions such as running, biking and swimming. 	<p style="text-align: center;">Sprints:</p> <p style="text-align: center;">7-9 x 1.2-1.4k (>3 :00) 3-5 x 1.4-1.6k (>3 :30)</p> <p style="text-align: center;">Distance: 3-50k (7-150 min.)</p> <ul style="list-style-type: none"> ✓ 2-4 x 3-5km prologue ✓ 2 x 10k relay ✓ 8-10 x 15k ✓ 4-6 x 30k ✓ 1-2 x 50k end of season <p style="text-align: center;">TOTAL: 30-35 races</p>	<ol style="list-style-type: none"> 1- Olympic Winter Games and World Championships 2- Tour de ski 3- World Cup 4- European Continental Cups or National Championships 5- WSC and OWG trials 6- Canadian Championships 7- Canadian NORAM 8- US super tour <p>(see NC Competition Pathway for an overview of racing progression throughout stages of development)</p>	<ul style="list-style-type: none"> ✓ Acquire further international racing experience to decrease negative impact of travel ✓ Based on predisposition, optimize event specialization ✓ Maximize event specific tactical preparation (sprints, mass starts, etc) ✓ Competition calendar should include 1 or 2 mini-tours (3-4 continuous days of racing) and up to 1 major tour (Tour de ski= 8 races in 10 days) ✓ Adapt race distances to the duration guidelines 	<p>Underestimating need to recover despite heavy training and racing load</p>
		<p style="text-align: center;">Sprints:</p> <p style="text-align: center;">7-9 x 1.2-1.4k (>3 :00) 3-5 x 1.4-1.6k (>3 :30)</p> <p style="text-align: center;">Distance: 3-30k (7-90 min.)</p> <ul style="list-style-type: none"> ✓ 2-4 x 3km prologue ✓ 2 x 5k relay ✓ 8-10 x 10-15k ✓ 4-6 x 20k ✓ 1-2 x 30k end of season <p style="text-align: center;">TOTAL: 30-35 races</p>			