



Cycling CANADA Cyclisme

Cycling Canada

**Long-Term Athlete Development
TRACK CYCLING**





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Canada



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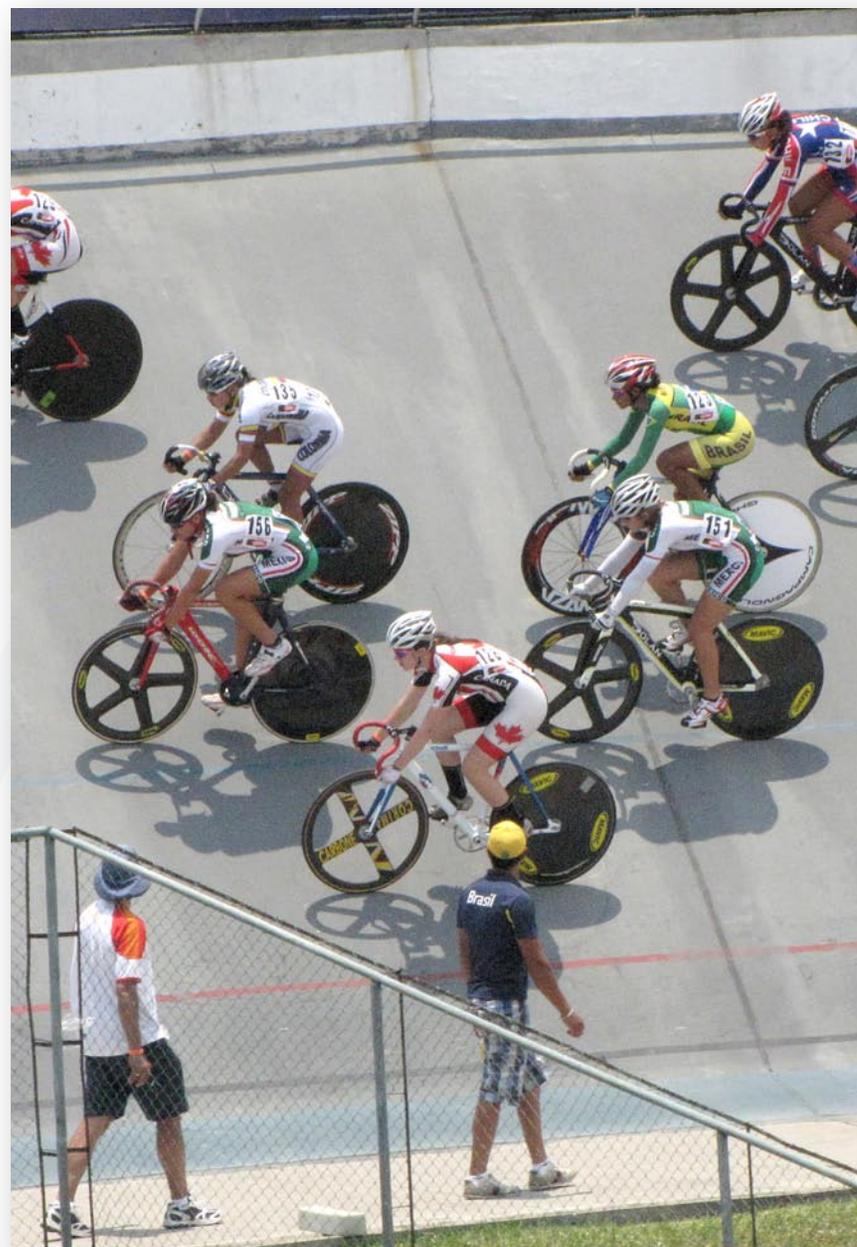
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1 – On Track for Success

Track cycling has a long and storied history: the first World Championships was held in 1893. Over the years Canadians have enjoyed much success in international track competition, with legends like Torchy Peden, Jocelyn Lovell, Gord Singleton, Curt Harnett, Karen Strong. More recently Lori-Ann Muenzer, Tanya Dubnicoff, Tara Whitten and Zach Bell have taken medals at the Worlds and Olympics, and Canada has also had success in Paralympic competition.

Canada's champions, whether in the 1930's, 1970's or the 2000's, rarely started out in cycling as track specialists. Success has come despite the fact that Canada has never had many cycling tracks ("velodromes"). Some athletes find the track early, but most migrate from other cycling disciplines, or compete on the track while also competing in other forms of racing. Whether or not a cyclist competes on the track, coaches and riders agree that track riding is helpful to skill development. Every cyclist should try the track!

Track cycling can be a key part of a cyclist's Long-Term Athlete Development (LTAD). We see three main opportunities: *Track for Development*, *Track for Performance*, and *Track for Life*. *Track for Development* is a place for young and developing cyclists to gain enhanced bike handling and competition skills, for track and for cycling in general. This is a vital developmental experience for all cyclists who can access a velodrome. *Track for Performance* is a stream for cyclists of all ages to work toward excellence and podium performances in international competition on the track. *Track for Life* is an opportunity for mature cyclists to build skills and fitness, try a new and exciting kind of cycling competition, and perhaps to extend or renew a racing career.

This document is a guide to success in track cycling, based on principles of Long-Term Athlete Development. LTAD is based on sport science research combined with the practical experience of working with thousands of athletes and coaches to develop a comprehensive set of principles for effective athlete development. LTAD is more than a model - it is a system and philosophy of sport development. Since athlete and participant development is at the core of Cycling Canada's mission, LTAD is key to everything we do, whatever our role or level within the cycling system. Our obligation is to help every Canadian cyclist fulfill their aspirations and be the best they can be.



Our goal is not simply to help Canadian cyclists onto international podiums, but to ensure that every athlete can enjoy participation in cycling for a lifetime. Despite all the benefits and fun to be had from track riding and racing, more cyclists, coaches and officials are needed. Track, with its long history, great traditions, and development possibilities, will be a vital part of Canada's cycling future.

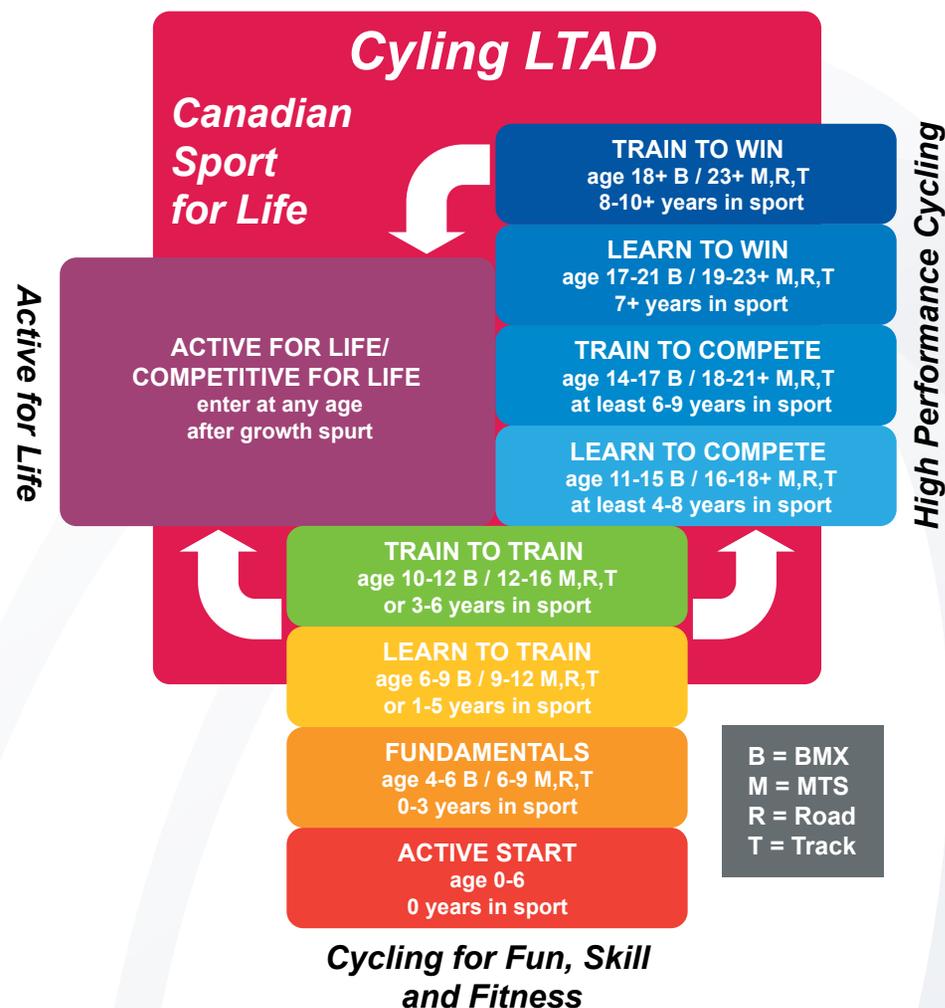


2 – The Long-Term Athlete Development Model

LTAD is a model of life-long development in which the athlete passes through stages, from Active Start to Active for Life. All individuals pass through the Active Start, FUNdamentals and Learn to Train stages from birth through adolescence, and acquire a critical foundation of physical literacy or competence in basic movement and sport skills. From there they progress as far as their will and potential carry them. Only a few reach the level of high performance of the Train to Win stage. The *Cycling Canada LTAD volume 1* document outlines the stages of development for cyclists including Track. You can also find other resources at www.canadiansportforlife.ca

Young riders (before or near puberty) participating in Track for Development are typically in the Learn to Train or Train to Train stages of LTAD. It is essential to understand that when working with young participants, we are not simply preparing them for our sport, but for all sports- and that by offering well-rounded development that builds physical literacy, we are also preparing them for a more active, healthy lifestyle. Young athletes of the same chronological age can vary widely in their development, ability to learn skills, and emotional readiness for competition. Over-emphasis on skills and tactics the athlete is not ready to learn, or intensive competition, can take the fun out of sport. Every young athlete deserves a program appropriate to his or her individual stage of development.

The Cycling model has 9 stages, which take a rider from learning to ride a bicycle through to participation for life. Not all cyclists pass through the Excellence stages; after learning the basics in the early stages an individual can move to the Active for Life stage at any time. Active life-long participation is as important as competitive success.





3 – Growth and Development

Long-term Athlete Development (LTAD) is a pathway for optimal training, competition and recovery throughout an athlete’s career, particularly in relation to the important growth and development years of young people.

LTAD stages are based on “sport years” which is the time spent developing in sport. The prior sport experience of the athlete, combined with his/her individual stage of physical, mental and emotional development, is much more important than chronological age in determining what the athlete is ready for. Notice that the overlap between “sport years” in each stage may permit some athletes to progress through more than one stage per year. *It is strongly recommended the athlete not be “pushed” through more than two stages per year, no matter how “exceptional” they seem to be.*

It is also very important to take advantage of sensitive periods of adaptation as the child grows and develops. The mind and body are most able to develop in specific ways at specific times. Skills, for example, are learned quickly from about age 8 to 12. Physical strength, power and endurance can be developed after the growth spurt, also called “Peak Height Velocity” (PHV). See the glossary for definitions.

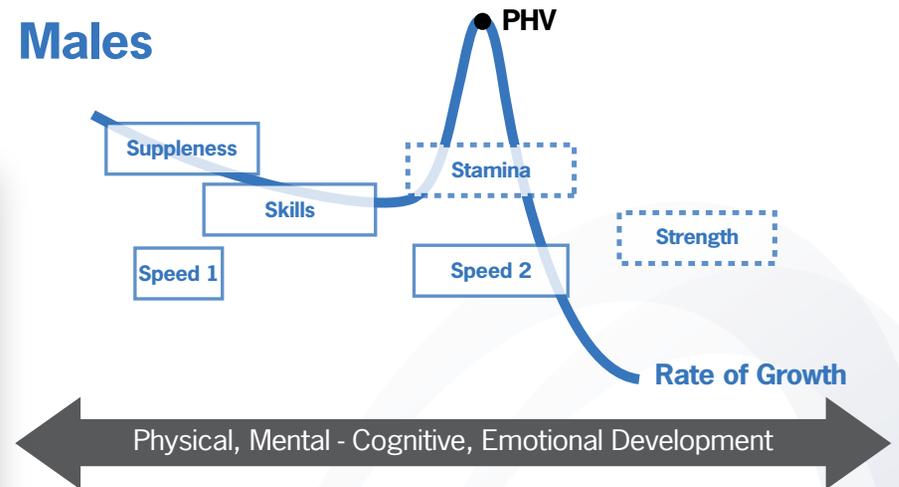
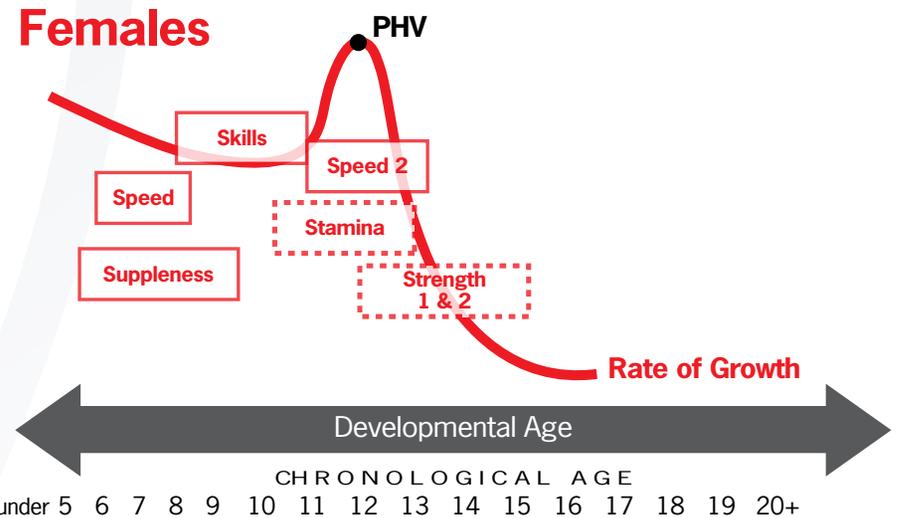


Diagram: Enhanced Periods of Adaptation in Relation to Rate of Growth (courtesy Canadian Sport for Life)

4 – Developing Winning Skills

Track riding requires specific skills including starting, riding and passing on a banking, pedaling a fixed gear at high leg speeds, pacing and more. These skills are best developed when the athlete is from 8 to 12 years old, a sensitive period of adaptation for the body and mind. While track skills can be developed at any age, there are advantages to early skill development. Excellent skills are required to reach high performance in Track, and they also transfer to other kinds of cycling and to other sports. It makes sense to base every cyclist's track experience on a solid foundation of winning skills.

What is the best way to develop those winning skills? Here are the lessons learned by top coaches and sport scientists:

- Skills learning can only occur if the learner is interested and engaged. Since young children have short attention spans, the best learning is through fun games specifically designed to build skills.
- Even in older children and adults, skills are learned best when learners use an experimental approach, trying out variations of the skill to see what works best. The coach provides feedback only when performance falls outside pre-determined limits, and questions the athlete afterward, effectively asking the athlete to discover determine what works for him/herself.
- Randomized practice, “difficult-first” instruction, and use of questioning and video to enhance feedback are all part of top skill development programs.
- When learners are highly motivated, they engage in “deliberate practice”. This is a highly focused, individual approach of trying a skill hundreds of times to perfect it. Nobody can *make* an athlete use deliberate practice- the urge comes from within. When a coach sees an athlete engaging in deliberate practice, he or she should support and guide it.

What does this look like in cycling? Here are some examples for *Track for Development* stages:

- Deliberate use of participation in other sports to develop well-rounded athleticism on land, in water, and on ice and snow, developing balance, agility, object-control (e.g. ball- or puck-handling) and eye-hand and eye-foot coordination.



- Riders playing all kinds of coach-led games, on and off the bike, to develop a wide range of skills.
- Riders given challenges to work out by themselves, with coaches intervening and explaining only when necessary; in other words, “try, then talk” not “talk, then try”.
- A good mix of relaxed fun and intense concentration during activities.
- Coaches who know how to mix up activities and try different approaches to help riders “get” a skill- not just by telling, but by demonstrating, trying different movements, and watching different situations and advanced riders.
- Intentional use of events such as sprint, pursuit, points race and madison to learn different skills (positioning, pacing, pack riding and contact and team tactics).
- Advanced riders helping newer riders out, and being role models for them.

The following Track Skills Grid shows a repertoire of Track skills and suggests when they can be developed. Note that “Training Age (Sport Years)” should be interpreted as years of participation in organized cycling, not as years of track riding.



TRACK SKILLS DEVELOPMENT GRID

Pathway	Fundamental				Learn to Train			Train to Train			Learn & Train to Compete		Learn & Train To Win
Chronological Age – M	6	7	8	9	10	11	12	13	14	15	16	17	18+
Chronological Age – F	5	6	7	8	9	10	11	12	13	14	15	16	17+
Training Age (Sport Years)	0 – 3 years				1 – 5 years			3 – 6 Years			4 – 9 years		>8 years
Skill Development	ACQUISITION (A) Introduction of skill (movement patterning) Cognitive Stage				CONSOLIDATION (C) Stability of skill through practice (correct execution in variable conditions) Associative Stage			REFINEMENT (R) Fine tuning of skills (Minor improvements and creative solution under all conditions) Autonomous Stage					

NCCP Coaching Contexts		Community Initiation				Competition – Introduction				Comp-Dev		Comp-HP	
Foundation Skills	Balance		A – C				R						
	Agility		A – C				R						
	Run Jump Throw+		A – C				R						
	Basic cycling skills		A – C				R						
	Other cycling disciplines e.g. BMX		A – C				R						
Motor Skills	Increase leg speed (appropriate gearing)						A – C – R				R		
	Balance						A – C – R				R		
	Agility on bike						A – C – R				R		
Technical Skills- Start & Stop	Body position start						A – C – R				R		
	Pedal position start						A – C – R				R		
	First pedal strokes						A – C – R				R		
	Modulate speed						A – C – R				R		
	Track stand						A				C – R		R
Technical Skills- Banking	Minimum speed						A				C – R		
	Low & high lines						A				C – R		
	Pace line						A				C – R		
	Accelerate: drop						A				C – R		



NCCP Coaching Contexts		Community Initiation				Competition – Introduction				Comp-Dev		Comp-HP	
Technical Skills-Sprinting	In saddle accelerate						A – C				R		
	Out of saddle acceleration						A – C				R		
	Hop (sideways)						A				C – R		
	Contact with riders (parking lot)			A			C – R						
	Contact with riders (on track)						A – C				R		
Tactical Skills	Track start						A				C		R
	Cornering lines						A				C		R
	Pace and Pursuit schedule						A				C		R
	Assess track & opponents & choose strategy										A		C – R
	Assess track & choose gearing										A		C – R
	Madison skills and tactics										A		C – R
Mental & Decision Skills	Use track layout to improve position										A		C – R
	React to crashes and maintain speed/ position										A		C – R
	Visualization										A		C
	Critical viewing of other races (live or video) for learning										✓		✓
	Focus & re-focus between heats										A		C
	Develop ideal performance state (IPS) routine										A		C



5 – Track for Development: Early LTAD Stages

The following table shows key Track cycling developmental factors for the first LTAD stages from Active Start to Train to Train, and Active for Life. For more information refer to the CCC *LTAD Volume 1*. Stages are based on both chronological age and “sport years” which is the time the athlete spent developing in sport. For example a cyclist with 3 years experience may be in Train to Train stage at age 30.

	ACTIVE START Age 0 - 6 0 - 1 years in sport	FUNDAMENTALS Age 6 – 8 or 0 – 3 years in sport	LEARN TO TRAIN Age 9 – 12 or 1 – 5 years in sport	TRAIN TO TRAIN Age 12 – 16 or 3 – 6 years in sport	ACTIVE FOR LIFE any age after growth spurt
	TRACK FOR DEVELOPMENT				TRACK FOR LIFE
Defining the Stage	<ul style="list-style-type: none"> • “Develop movement literacy” Participant builds basic movement skills through a wide variety of unstructured fun physical activities on land, in water, and sliding on snow and ice. • Later in the stage the participant learns to ride a bike. 	<ul style="list-style-type: none"> • “Developing physical literacy” Participants take basic movement skills and adapt them to sport, while learning basic sport concepts of rules and competition. • Learn basic sport skills through participation in multiple sports including cycling. 	<ul style="list-style-type: none"> • “Developing skills” Participants build on a base of physical literacy formed in the Active Start and FUNdamentals stages. • Introduction to a sport training program. • Major emphasis on acquiring and developing cycling skills. • Participation in multiple sports including cycling. 	<ul style="list-style-type: none"> • “Building the engine” • Enjoy and appreciate the sport of Track cycling • Participate in a progressive Track cycling training program. Build fitness by practicing skills in race and game situations. • Major emphasis on developing and refining Track cycling skills. • Participation in multiple sports. 	<ul style="list-style-type: none"> • “Maintain activity, give back” • Enjoy and appreciate the sport of cycling • Emphasis on maintaining fitness through year-round activity. • Competition as desired. • Participation in multiple sports including cycling. • Look for leadership opportunities e.g. coaching, officiating
Participant Profile	<ul style="list-style-type: none"> • From age 0 to 6 years old, a child is a “learning machine” full of curiosity and always on the move. Brain connections are being made and the body is growing rapidly. • The child has a short attention span and needs lots of variety and frequent breaks. • Social play with other children develops gradually, but the child loves to imitate and play with parents. • Limited ability to grasp concepts like sport rules- let them create their own games. 	<ul style="list-style-type: none"> • From age 6 to 9 years old, a child learns to participate in group activities. He/she expects to be directed by the coach and loves to follow. Due to short attention span, can quickly become frustrated or lose interest. • The child likes to show off skills and be the center of attention. Participation in sport can be a source of pride as long as success is praised and reinforced. 	<ul style="list-style-type: none"> • Moving into formalized sport and competition. • Windows of trainability are important: unloaded speed (e.g. leg speed) and skills are trainable in this stage. • Participant typically most interested in being with friends and experiencing the fun of competition. • Participant lacks long-term goal focus and may not be interested in “serious training”. Focus on fun. 	<ul style="list-style-type: none"> • Well-adapted and becoming more confident about sport. • Becoming serious about Track- “loving the sport”. • Participant may be any age, but if under age 12-15 windows of trainability are critical. • Participant wants to compete, and positive race experiences are important. 	<ul style="list-style-type: none"> • Confident about sport participation. • Enjoys cycling. • Participant may be any age after adolescence (basic physical literacy is developed). • Sport participation is important to physical and emotional well-being and is a part of social life.



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	TRACK FOR DEVELOPMENT				TRACK FOR LIFE
Basic Cycling Objectives	<ul style="list-style-type: none"> Learn how to ride a bike Learn the most basic cycling skills: balance, steering, braking. Build general activity level and movement skills through cycling and other sports. 	<ul style="list-style-type: none"> Learn how to ride a bike Learn basic cycling skills: straight-line riding, using controls (e.g. hand brakes), pedal standing up. Build general activity level and movement skills through cycling and other sports. 	<ul style="list-style-type: none"> Learn advanced cycling skills. Adapt to sport training. Develop good position on bicycle and pedaling technique and speed. Build general activity level and fitness through cycling and other sports. 	<ul style="list-style-type: none"> Consolidate advanced cycling skills Work with a good coach to adapt to Track cycling specific training routine Enter regular competition Build cycling fitness through cycling and other sports. 	<ul style="list-style-type: none"> Maintain regular physical activity May compete as desired Find ways to give to sport as a coach, official or leader.
Track-specific Objectives & Support	<ul style="list-style-type: none"> For children age 6 or younger, explain that the track, racing, etc are for riders who have learned sound basic cycling skills. Provide a “mini-track” with suitable terrain for new riders- the equivalent of the “bunny hill” in downhill skiing. For more advanced riders, introduce basic track riding, skills and etiquette. Do not use placings, times, or standings if fun competitions are permitted. Instead, praise riders for good skill execution and trying hard. 	<ul style="list-style-type: none"> Provide a “mini-track” such as a grass or flat track for new riders. Begin to use “the big track” (regular track) but do not introduce advanced cycling skills until the basics are mastered. Introduce basic track riding, skills and etiquette. Develop higher pedal rates e.g. 100-120 revolutions per minute (rpm) Minimize use of placings, times, or standings in competitions. Use a system of identifying and rewarding good skill execution. 	<ul style="list-style-type: none"> Use the regular track but continue to refine basic skills using “off-track” sessions. All the key technical skills, and some basic tactical (positioning) skills, are learned in this stage. The main focus is skill development not competition. De-emphasize competition results based on place or standings in competitions. Emphasize more “controllable” aspects such as times, good positioning, good use of skills. Continue to develop higher pedal rates e.g. 120-140 rpm. 	<ul style="list-style-type: none"> Continue to refine basic skills using “off-track” sessions. All the key technical skills are consolidated in this stage. More advanced tactical skills are added. The main focus is skill and tactical development. Continue to develop higher pedal rates e.g. 140+ rpm. Continue to emphasize “controllable” race results such as times, good positioning, good use of skills and tactics. 	<ul style="list-style-type: none"> Access to equipment and facilities Access to coach if desired Access to appropriate sport programs



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	TRACK FOR DEVELOPMENT				TRACK FOR LIFE
Physical Development	<ul style="list-style-type: none"> Daily activity: minimum 30 minutes/day for toddlers and 60 minutes/day for preschoolers. FUN activities on land, in water and air, and sliding on snow and ice. Encourage running, with stops, starts and changes in direction. Catching and throwing games using a wide range of soft objects, and balls of different sizes. Start with two hands then progress to using left and right hands to catch and throw. Balance, jump, slither like a snake, and roll like a rolling pin. Use hands, feet and other body parts to balance, push and jump. Learn to ride a tricycle or bike. 	<ul style="list-style-type: none"> Physical literacy: further development of basic movement skills including locomotor, object control and balance and agility skills. Speed, power and endurance through FUN and games Strength: Introduction to core strength and stability through fun games Warm up/cool down: Introduce the concept 	<ul style="list-style-type: none"> Be aware of and monitor maturation that may occur at different rates. Do not emphasize speed, power or endurance; develop only through FUN and games Introduction to concept of warm up/cool down 	<ul style="list-style-type: none"> Be aware of and monitor maturation that may occur at different rates. Use skill-building activities such as high repetitions of starts or practice races to develop speed, power and endurance. Strength: Build core strength and stability- using own body weight exercises. Refine warm up/cool down Aerobic and anaerobic power: Mix of development through fun and games, and specific development. Note window of trainability at growth spurt (approximately ages 11-12 girls, 12-13 boys). 	<ul style="list-style-type: none"> Speed, power and endurance through FUN and games Strength: Build core strength and stability- use own body weight or weights as desired Aerobic power: Mix of development through fun and games, and specific development. Participation in multiple sports and activities
Technical Development	<ul style="list-style-type: none"> Explore risks and limits in a secure environment. Learn to ride a bike. Develop basic cycling skills: turn, climb, descend, accelerate, brake. 	<ul style="list-style-type: none"> Explore risks and limits in a secure environment Develop good cycling position and pedaling technique Begin developing basic Track cycling skills: start, enter/exit the track, ride the banking, accelerate, modulate speed. Focus on motivating and FUN activities 	<ul style="list-style-type: none"> Continue to develop new skills in progressively challenging situations. Consolidate basic Track cycling skills: start, enter/exit the track, ride the banking, accelerate, modulate speed. Later, starts from the rail, develop out-of-saddle on all parts of track. Learn use of rollers. Continue to explore risks and limits in safe environment. 	<ul style="list-style-type: none"> Continue to develop new skills in progressively challenging situations. Refine basic skills and develop advanced skills. Spin pyramid 100-130 rpm. Introduce start gate. Balancing. Hops. Track stand Madison to develop contact skills and team tactics. Independent use of rollers. Continue to explore risks and limits in safe environment. 	<ul style="list-style-type: none"> Develop and maintain good cycling position and pedaling technique, cycling skills Focus on motivating and FUN activities



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	TRACK FOR DEVELOPMENT				TRACK FOR LIFE
Tactical Development	<ul style="list-style-type: none"> • Watch races. Understand basic concept of racing: idea of “first across the line” 	<ul style="list-style-type: none"> • Learn basic concepts and rules of Track racing: different types of race, heats. • Develop basic tactics, ethics • Watch races for learning 	<ul style="list-style-type: none"> • More advanced concepts and rules of competition. • Develop basic race tactics: gearing, pace, track positioning, drafting, best line on banking, passing. • Basic track rules and etiquette; lines on the track. • Understand different types of track race and how they are won. 	<ul style="list-style-type: none"> • Refine concepts of drafting, pacing, sprinting in racing. Develop concepts of strategy. • Madison and points race to learn team tactics. • Use and understand importance of gearing (warm up, race, cool down). 	<ul style="list-style-type: none"> • Tactics appropriate to level of racing (if desired)
Motor & Mental Skill Development	<ul style="list-style-type: none"> • Motor learning integrated into practices through games • Focus on motivating and FUN activities 	<ul style="list-style-type: none"> • Motor learning integrated into practices through games • Focus on motivating and FUN activities • Emphasize effort, doing one’s best, being a “good sport” 	<ul style="list-style-type: none"> • Motor learning integrated into practices through games. • Develop leg speed (120+ rpm) and reaction time. • Developing: warm up and cool down; focus and attention; race control and aggressiveness. • Develop appropriate attitude to competition: doing one’s best, respect for other racers, coaches and officials. 	<ul style="list-style-type: none"> • Motor learning integrated into practices through games. • Develop leg speed (140+ rpm) and reaction time. • Refining: warm up and cool down; focus and attention; race control and aggressiveness. • Develop appropriate attitude to competition: doing one’s best, respect for other racers, coaches and officials. 	<ul style="list-style-type: none"> • Mental skill development appropriate to level of racing (if desired)





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	TRACK FOR DEVELOPMENT				TRACK FOR LIFE
Training Program	<ul style="list-style-type: none"> No organized training in this stage. 	<ul style="list-style-type: none"> Limited introduction to “training” if desired. Program is based on fun, games, skill development. By end of stage, 2-3 x per week, 30-45 mins/session: including all cycling (not track specific). 	<ul style="list-style-type: none"> Seasonal training program Participate in multiple other sports and cycling disciplines to build athletic skills. By end of stage, 3-5 x per week in Track season, 60 min per session. 	<ul style="list-style-type: none"> Seasonal or annual training program with single periodization By end of stage, 3-5 x per week in season, 90 min per session. 	<ul style="list-style-type: none"> Daily physical activity Training appropriate to level of competition desired, if any Participation in multiple sport activities
Competition Framework	<ul style="list-style-type: none"> No organized competition in this stage. 	<ul style="list-style-type: none"> Limited introduction to competition if desired and appropriate to athlete. Late in stage, enter club, regional, provincial races. Recommended gear restriction 81” or less. 	<ul style="list-style-type: none"> Recommended gear restriction 88” or less. Training and competition with others is useful for development in this stage. This may include club programs, training groups, camps, etc. Introduction to regular competition if desired and appropriate to athlete: Club, regional, provincial races leading to Provincial Championships and Games. Compete in both speed and endurance events on Track. 	<ul style="list-style-type: none"> Provincial-level racing; introduce National-level near end of stage including National Championships Provincial Games Provincial Training Camps for Team selection. Compete in both speed and endurance events on Track and continue competition on Road. Accumulate Track racing experience wherever possible. 	<ul style="list-style-type: none"> Competition if desired and appropriate to athlete



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	TRACK FOR DEVELOPMENT				TRACK FOR LIFE
Parents help by...	<ul style="list-style-type: none"> Allow lots of room for exploration and risk-taking in a safe environment. Promote physical activity and healthy eating as a family activity. Role modeling is very important. Provide short-duration, rapidly changing activities with lots of breaks. Let the child's attention span and interest dictate the activity. These are the "sampling" years. Support the child to participate in many kinds of activity including many kinds of sport. 	<ul style="list-style-type: none"> Look for coaches who are National Coaching Certification Program trained. Continue to support "sampling" participation in many kinds of activity including many kinds of sport. Support skills, skills, skills. Emphasize fun, friendships, and honest effort in your child's sport experiences. Remember children can be far apart in maturation: don't compare to others. 	<ul style="list-style-type: none"> Look for coaches who are National Coaching Certification Program certified. Continue to support "sampling" participation in many kinds of activity including many kinds of sport. Minimize signaling that winning is important; don't ask "how did you do?" but instead emphasize fun, friendships, and honest effort. 	<ul style="list-style-type: none"> Look for coaches who are National Coaching Certification Program certified in Introduction to Competition. These are the "support" years. The child is beginning to specialize by reducing the number of other sports- 2 or 3 at most. Parents help by assisting the child to get to practice and competitions, ensuring equipment is safe, and supporting the coaches' decisions. Don't add pressure to your child by emphasizing winning and performance; instead, remove pressure by letting him/her make their own decisions and supporting them by ensuring they have looked at all options and opportunities. 	<ul style="list-style-type: none"> Supporting all kinds of sport activity and interests, including learning to coach or officiate. Supporting non-competitive sport interests.
Coaching	<ul style="list-style-type: none"> Parents, family, and teachers are the main "coaches" at this stage. Track coach should be Let's Ride! Community Cycling Initiation – trained (NCCP) 	<ul style="list-style-type: none"> Let's Ride! Community Cycling Initiation – trained, or Coach working toward certification in Ready to Race! Introduction to Competition 	<ul style="list-style-type: none"> Coach certified in Ready to Race! Introduction to Competition 	<ul style="list-style-type: none"> Coach certified in Ready to Race! Introduction to Competition 	<ul style="list-style-type: none"> Coach if appropriate and desired
Testing & Talent ID	<ul style="list-style-type: none"> None in this stage. 	<ul style="list-style-type: none"> None in this stage. 	<ul style="list-style-type: none"> Introduce performance measurement (by coach) based on performance of Track skills and overall physical abilities. 	<ul style="list-style-type: none"> Introduce performance measurement (by coach) based on performance of Track skills. Functional movement screen 	<ul style="list-style-type: none"> None in this stage.



6 – The Role of Competition

“Competition is a good servant, but a poor master.”

What do we mean by this?

Since athletes and coaches want to win, competition formats and schedules often determine the shape of athlete training programs. Winning is an obvious indicator of success, so it becomes easy to neglect harder-to-measure factors such as skill development and satisfaction. The highly competitive athlete- or coach, or parent- becomes focused on getting to and succeeding at a series of competitions, above all else. Unless sport leaders pay careful attention to matching the format of competition to the developmental needs of athletes, the quest for success may distort development, for example, by leading an athlete to lift weights to improve his/her start, when he/she has not yet developed all the necessary skills to ride the track. Competition has become the master.

If competition is to be a good servant rather than a poor master, the nature of Track competitions should reflect the goals for each developmental stage, including reinforcement of social, psychological and physical development objectives. In the early “Track for Development” stages, enjoyment of the sport and the development of good skills are most important goals. Later, in the “Track for Performance” stages the format of competitions should help the rider develop fitness, focus and competition abilities. Every competition should have a specific purpose tied to the athlete’s stage, whether it is to develop tactical skills, to practice for a major competition, or to perform at a Championship event. Here are some tips:





■ In the “Track for Development” stages:

- Introduce competition only when the rider has developed sound basic track skills.
- Choose competitions that use track profiles suitable for the rider’s skill level.
- Emphasize the rider demonstrating skills in competition, not winning. For example, “great position out of the start!” or “great pass on that banking!”
- Use non-Olympic/Paralympic events such as madison, miss-and-out, handicap races, etc. to learn different skills (positioning, pacing, pack riding, contact, and team tactics).
- Avoid comparing results to other riders. Compare to previous performances- look for improvement and consistency.
- Avoid excessive, expensive travel to national competitions until the rider is ready (i.e. until the second half of the Train to Train stage).

■ In the “Track for Performance” stages:

- Select competitions based on specific criteria: development of skills and tactics, trying a higher level of competition for learning, or trying a different event for the first time.
- At first (Learn to Compete) select only a few races per season where performance and ranking matter. Increase the emphasis on performance progressively.
- Later (Train to Compete, Learn to Win) the emphasis is on refining race preparation and tactical skills, developed through participation in many national and some international events. This athlete may compete even more than a Train to Win athlete.
- Constant monitoring to ensure there is enough time for recovery and training between competitions in the plan.

How to know when the rider is ready to move to the next stage of development and tougher competitions? Just because the rider is winning races, that does not put him or her in the “Train to Win” stage. Some stages have growth and development markers- for example, puberty marks the beginning of the time when the athlete can build strength and power, so the “Track for Performance” stages (*Learn to Compete to Train to Win*) cannot begin until then. An experienced, trained coach usually has the best perspective on when to take the next step.



PHOTO: FGSC



7 – The Stages of Track for Performance

The following table shows key Track Cycling developmental factors for the LTAD stages from Learn to Compete to Train to Win, and Active for Life. For more information on Cycling's LTAD refer to the *Cycling Canada LTAD Volume 1*. Stages are based on both chronological age and "sport years" which is the time the athlete spent developing in sport.

	LEARN TO COMPETE Age 12 - 15 4 - 7 years in sport	TRAIN TO COMPETE Age 15 - 17 6 - 9 years in sport	LEARN TO WIN Age 17 - 21 7+ years in sport	TRAIN TO WIN Age 18+ 8+ years in sport	ACTIVE FOR LIFE any age after growth spurt
Defining the Stage	<ul style="list-style-type: none"> • "Optimizing the engine" • Major focus on implementing skills learned earlier in competition; learning through competition. • Continuing to refine and perfect technical skills. • Developing mental skills for competition. 	<ul style="list-style-type: none"> • "Optimizing the engine" • Major focus on implementing skills learned earlier in competition; and refining competition tactics and abilities in a wide range of events. • Continuing to refine and perfect technical skills. • Developing mental skills for competition. 	<ul style="list-style-type: none"> • "Maximizing the engine" Major focus is developing speed and power. • Learning to perform "on demand" in high-pressure competition situations. • Refining and perfecting skills and tactical skills. • Refining mental skills for competition; learning to maintain performance while balancing life skills in high performance competition. 	<ul style="list-style-type: none"> • "Performance on demand" – ability to perform at top level despite setbacks • Perfecting all physical abilities and recovery/regeneration. • Able to perform "on demand" in high-pressure situations. • Refining and perfecting skills and tactical skills. • Refining mental skills for competition; maintain performance while balancing life skills in high performance competition. 	<ul style="list-style-type: none"> • "Maintain activity, give back" • Enjoy and appreciate the sport of cycling • Emphasis on maintaining fitness through year-round activity. • Participation in multiple sports including cycling. • Look for leadership opportunities e.g. coaching, officiating





	LEARN TO COMPETE Age 12 - 15 4 - 7 years in sport	TRAIN TO COMPETE Age 15 - 17 6 - 9 years in sport	LEARN TO WIN Age 17 - 21 7+ years in sport	TRAIN TO WIN Age 18+ 8+ years in sport	ACTIVE FOR LIFE any age after growth spurt
Participant Profile	<ul style="list-style-type: none"> Is interested in pursuing excellence. Is prepared to train hard and focus on competitive success. Self-image becomes defined, includes sport as a major element in identity. Growth spurt and onset of puberty in this stage- implications for growth, level of fatigue, coordination, Needs support network including family, coach to maintain focus on sport career. 	<ul style="list-style-type: none"> Is serious about sport and pursuing excellence. Is prepared to train hard and focus on competitive success. Is likely experiencing life challenges in balancing school, family, personal relationships and work, which may detract from commitment to sport. Self-image includes sport as a major element in identity. Looking ahead to next steps in sport success e.g. college, National Team but may be frustrated by injury or other priorities. Needs a support network including family, coach, sport science and health care to sustain sport career. 	<ul style="list-style-type: none"> Fully committed to Track and pursuing excellence. Training hard and focus on competitive success is a "full time job". Learning to cope with life challenges in balancing school, family, personal relationships and work, which may detract from commitment to sport. Self-image includes sport as a major element in identity. Completely focused on next steps in sport success e.g. National Team, Worlds, Olympics. Building a support network including family, coach, sport science and health care to sustain sport career. 	<ul style="list-style-type: none"> At the top – a role model. Fully committed to Track and excellence. Working to stay on top of the Track world. Training hard and focus on competitive success is a "full time job". Copes with life challenges in balancing school, family, personal relationships and work. Self-image includes sport as a major element in identity. Completely focused on next steps in sport success e.g. National Team, Worlds, Olympics. Has built a support network including family, coach, sport science and health care to sustain sport career. 	<ul style="list-style-type: none"> Confident about sport participation. Enjoys cycling. Participant may be any age after adolescence (basic physical literacy is developed). Sport participation is important to physical and emotional well-being and is a part of social life.
Track specific Objectives & Support	<ul style="list-style-type: none"> More advanced tactical skills as well as mental/decision making skills are added. The main focus is tactical development. Increasing emphasis on race results (placings) and working toward consistent results. Continue to use elements such as times, race positioning, good use of skills and tactics to help analyze race results. Continue to develop higher pedal rates e.g. 140+ rpm. 	<ul style="list-style-type: none"> More advanced tactical skills as well as mental/decision making skills are refined through competition. Increasing emphasis on race results (placings) and working toward consistent results. Continue to use elements such as times, race positioning, good use of skills and tactics to help analyze race results. Continue to develop higher pedal rates e.g. 140+ rpm. 	<ul style="list-style-type: none"> Advanced tactical skills as well as mental/decision making skills are refined through competition. Working toward "performance on demand"- emphasis on consistent race results. Use elements such as section times, race positioning, video to help analyze race results. Maintain high pedal rates e.g. 140+ rpm. 	<ul style="list-style-type: none"> Advanced tactical skills as well as mental/decision making skills are refined through competition. Working toward "performance on demand"- emphasis on consistent race results. Use elements such as section times, race positioning, video to help analyze race results. Maintain high pedal rates e.g. 140+ rpm. 	<ul style="list-style-type: none"> Access to equipment and facilities Access to coach if desired Access to appropriate sport programs

PHOTO: FQSC



	LEARN TO COMPETE Age 12 - 15 4 - 7 years in sport	TRAIN TO COMPETE Age 15 - 17 6 - 9 years in sport	LEARN TO WIN Age 17 - 21 7+ years in sport	TRAIN TO WIN Age 18+ 8+ years in sport	ACTIVE FOR LIFE any age after growth spurt
Physical Development	<ul style="list-style-type: none"> Advanced sport specific drills Speed, power: specific sprint training. Strength: Athlete specific core strength and stability, ankle and knee stability, free weights. Sport specific strength in specific preparation phase Warm up/cool down- integral, specific to training and competition Anaerobic power: specific prep and competition phases, targeted development Aerobic power: Specific training and complementary sports. 	<ul style="list-style-type: none"> Advanced sport specific drills Speed, power: specific sprint training. Strength: Athlete specific core strength and stability, ankle and knee stability, free weights. Sport specific strength in specific preparation phase Warm up/cool down- integral, specific to training and competition Anaerobic power: specific prep and competition phases, targeted development Aerobic power: Specific training and complementary sports. 	<ul style="list-style-type: none"> Major power development window. Speed, power: specific sprint training. Strength: Athlete specific core strength and stability, ankle and knee stability, free weights. Sport specific strength in specific prep phase Warm up/cool down- integral, specific to training and competition Anaerobic power: specific prep and competition phases, targeted development Aerobic power: Specific training and complementary sports. 	<ul style="list-style-type: none"> Primary focus is on adequate recovery/regeneration from intensive training and competition. Major power development focus. Strength: Maintain athlete specific core strength and stability, ankle and knee stability, free weights. Sport specific strength in specific preparation phase Anaerobic power: specific prep and competition phases, targeted development Aerobic power: Specific training and complementary sports. 	<ul style="list-style-type: none"> Speed, power and endurance through FUN and games Strength: Build core strength and stability- use own body weight or weights as desired Aerobic power: Mix of development through fun and games, and specific development. Participation in multiple sports and activities
Technical Development	<ul style="list-style-type: none"> Perfecting all Track skills. Refine skills in team races (team sprint, team pursuit) including starting, efficient exchanges, drafting. Master start skills (first 10 pedal strokes). Leg speed 140-150. Maintains own equipment. 	<ul style="list-style-type: none"> Perfecting all Track skills. Refine skills in team races (team sprint, team pursuit) including starting, efficient exchanges, drafting. Master start skills (first 10 pedal strokes). Leg speed 140-150. Maintains own equipment. 	<ul style="list-style-type: none"> Perfecting all Track skills. Innovating skills and tactics. Continue developing leg speed up to 170 rpm. 	<ul style="list-style-type: none"> Perfecting all Track skills. Innovating skills and tactics. Continue developing leg speed up to 170 rpm. 	<ul style="list-style-type: none"> Develop and maintain good cycling position and pedaling technique, cycling skills Focus on motivating and FUN activities
Tactical Development	<ul style="list-style-type: none"> Advanced tactics, execution of a race plan. Proficient in drafting, pacing, sprinting in racing. Execute race strategies. Appropriate positioning on track in all race situations. Appropriate gear selections for track, event. 	<ul style="list-style-type: none"> Advanced tactics, perfecting race plan. Proficient in drafting, pacing, sprinting in racing. Execute race strategies. Appropriate positioning on track in all race situations. Appropriate gear selections for track, event. 	<ul style="list-style-type: none"> Advanced tactics, execution of a race plan & multi-round strategy. Advanced knowledge of competitors 	<ul style="list-style-type: none"> Advanced tactics, execution of a race plan & multi-round strategy. Advanced knowledge of competitors Innovating tactics 	<ul style="list-style-type: none"> Tactics appropriate to level of racing (if desired)



	LEARN TO COMPETE Age 12 - 15 4 - 7 years in sport	TRAIN TO COMPETE Age 15 - 17 6 - 9 years in sport	LEARN TO WIN Age 17 - 21 7+ years in sport	TRAIN TO WIN Age 18+ 8+ years in sport	ACTIVE FOR LIFE any age after growth spurt
Mental Skill Development	<ul style="list-style-type: none"> Focus on decision-making in races and understanding consequences Development of competition routines pre-race, post-race 	<ul style="list-style-type: none"> Race focus, decision-making Refining competition routines pre-race, post-race Life skills, team relations, managing distraction 	<ul style="list-style-type: none"> Race focus, decision-making Perfect competition routines pre-race, post-race Life skills, team relations, managing distraction, coping with adversity, time management 	<ul style="list-style-type: none"> Race focus, decision-making Perfect competition routines pre-race, post-race Life skills, team relations, coping with adversity, time management 	<ul style="list-style-type: none"> Mental skill development appropriate to level of racing (if desired)
Training Program	<ul style="list-style-type: none"> 300-600 hours per year (all cycling- not track specific). 4 to 6 sessions per week; 7 to 10 hrs/week. Sessions to 90 min- 3:00 hrs Should participate in up to 1-2 other sports and cycling sports (e.g. road) Double periodization- periods of Track focus and 1 main track competition alternating with periods of road focus. 	<ul style="list-style-type: none"> 400-750 hours per year (all cycling- not track specific). 5 to 8 sessions per week; 9 to 16 hrs/week. Sessions up to 2.00- 3:00 hrs May participate in up to 1-2 other sports, and is now beginning specializing in Track Double periodization- periods of Track focus and 1 main track competition alternating with periods of road focus. 	<ul style="list-style-type: none"> 500-1000 hours per year (all cycling- not track specific). 6 to 10 sessions per week; 10 to 20 hrs/week. Sessions up to 2.00- 3:00 hrs May participate in up to 1 other sport but is now specialized in Track Longer, consolidated periods of Track focus alternating with periods of road focus. Multiple periodization- multiple peaks. 	<ul style="list-style-type: none"> 600-1000 hours per year (all cycling- not track specific). 6 to 10 sessions per week; 10 to 20 hrs/week. Sessions up to 2.00- 3:00 hrs May participate in up to 1 other sport but is now specialized in Track Longer, consolidated periods of Track focus alternating with periods of road focus. Multiple periodization- multiple peaks. 	<ul style="list-style-type: none"> Daily physical activity Training appropriate to level of competition desired, if any Participation in multiple sport activities
Competition Framework	<ul style="list-style-type: none"> Train and compete in provincial program and provincial/national selection camps. Major focus is National Championships. First exposure to international competition. 	<ul style="list-style-type: none"> National and initial International races National Championships National Development Camps Provincial Team 	<ul style="list-style-type: none"> International races and initial World Cup races National Championships National races National Team Camps 	<ul style="list-style-type: none"> International races: World Cup, World Championships, Major Games National Championships National races National Team Camps 	<ul style="list-style-type: none"> Competition if desired and appropriate to athlete



	LEARN TO COMPETE Age 12 - 15 4 - 7 years in sport	TRAIN TO COMPETE Age 15 - 17 6 - 9 years in sport	LEARN TO WIN Age 17 - 21 7+ years in sport	TRAIN TO WIN Age 18+ 8+ years in sport	ACTIVE FOR LIFE any age after growth spurt
Parents help by...	<ul style="list-style-type: none"> • These are the “support” years. The athlete is beginning to specialize by reducing the number of other sports- 1 or 2 at most. • Parents help by assisting the athlete to get to practice and competitions, ensuring equipment is appropriate quality, and supporting the coaches’ decisions. • Don’t add pressure by emphasizing winning and performance; instead, remove pressure by letting him/her make their own decisions and supporting them by ensuring they have looked at all options and opportunities. 	<ul style="list-style-type: none"> • These are the “support” years. The athlete is beginning to specialize by reducing the number of other sports- 1 or 2 at most. • Parents help by assisting the athlete to get to practice and competitions, ensuring equipment is appropriate quality, and supporting the coaches’ decisions. • Don’t add pressure by emphasizing winning and performance; instead, remove pressure by letting him/her make their own decisions and supporting them by ensuring they have looked at all options and opportunities. 	<ul style="list-style-type: none"> • These are the “investment” years. The athlete is mature, capable of making their own decisions and has specialized in Track Cycling. Parents help by providing financial assistance and being there to offer extra support as needed. 	<ul style="list-style-type: none"> • These are the “investment” years. The athlete is mature, capable of making their own decisions and has specialized in Track Cycling. Parents help by providing financial assistance and being there to offer extra support as needed. 	<ul style="list-style-type: none"> • Supporting all kinds of sport activity and interests, including learning to coach or officiate. • Supporting non-competitive sport interests.
Coaching	<ul style="list-style-type: none"> • Track coach certified in NCCP Competition Development • Personal coach and may be working with Provincial Team Coaches 	<ul style="list-style-type: none"> • Track coach certified in NCCP Competition Development • Personal coach and may be working with Provincial and National Team Coaches 	<ul style="list-style-type: none"> • Track coach certified in NCCP High Performance • Personal coach and may be working with Provincial and National Team Coaches 	<ul style="list-style-type: none"> • Track coach certified in NCCP High Performance • Personal coach and may be working with National Team Coaches 	<ul style="list-style-type: none"> • Coach if appropriate and desired Community Cycling Ongoing – trained
Performance Testing	<ul style="list-style-type: none"> • By end of stage, testing by recommended • Video skill analysis • Power-Wingate test (at end of stage) • Functional movement screen 	<ul style="list-style-type: none"> • Regular testing by coach (quarterly) • Power-Wingate test • Video skill analysis • Functional movement screen 	<ul style="list-style-type: none"> • Regular testing by coach (monthly-quarterly) • Power-Wingate test • Aerobic power • Video skill analysis • Functional movement screen 	<ul style="list-style-type: none"> • Regular testing by coach (monthly-quarterly) • Power-Wingate test • Aerobic power • Video skill analysis • Functional movement screen 	<ul style="list-style-type: none"> • None in this stage.



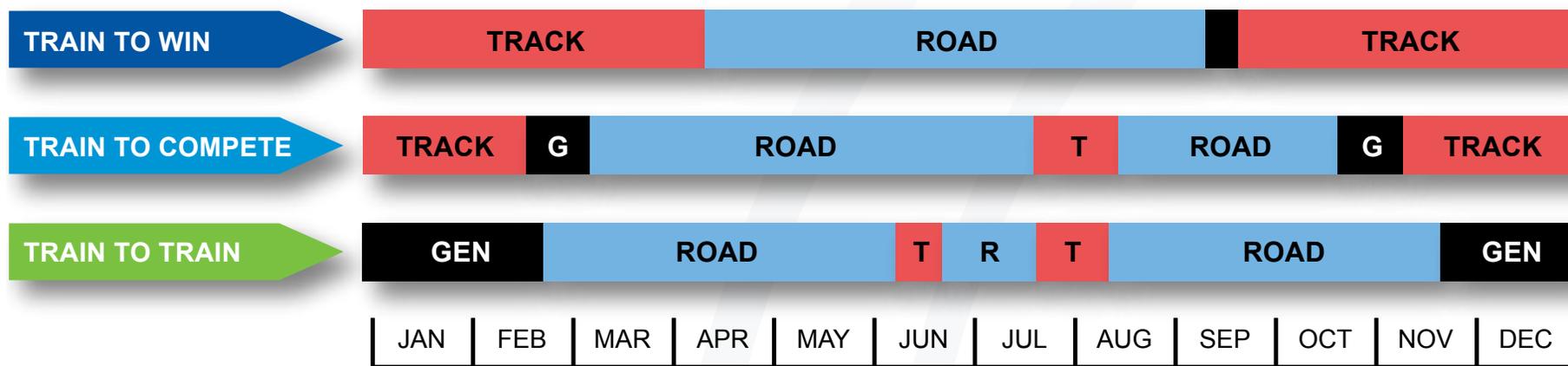
Periodization in the Track for Performance Stages

A stage-appropriate, periodized training and competition plan is a key factor in successful Long-Term Athlete Development. Coaches and sport scientists have learned much about how periods of training and competition alternating with recovery can be varied to optimize performance. The volume, intensity and patterns of work and recovery must all be tailored to the development stage of the athlete.

Cyclists typically integrate track into their overall cycling training and competition program. In the Learn to Train and Train to Train stages, cyclists may be taking part in road, mountain bike or BMX as well as starting to ride track. Even in Train to Compete and Train to Win stages when athletes are specializing, track is typically only part of the calendar. There is typically an alternation of focus on road and track training and competition. Road-based training is effective for track endurance cyclists, and limited access to track time and need for variety makes road training essential.

The Train to Win athlete has much longer periods of track specialization, but even in these periods there is a significant amount of road-based training and often some road competitions. By comparison the Train to Train athlete has very short periods of track specialization and more off-bike general preparation in the winter months.

The graphs on page 21 show examples of volume (in hours of training and competition per week) and periods of track vs. road specialization for athletes in three stages: Train to Train, Train to Compete and Train to Win. The main track competition and two secondary competitions are also shown as red dots. These graphs are based on male track athletes primarily competing in endurance-based track events.





Note the differences between the stages:

- The Train to Train athlete has a focus on developing technical and tactical skills, while training to “build the engine”. As in the previous Learn to Train stage, it is desirable to participate in multiple sports (e.g. cycling, cross-country skiing, soccer) and multiple cycling disciplines (e.g. MTB, road and track). Success in competition is a secondary goal, with the most important competitions at provincial-level events. This athlete has a general preparation phase in the winter months which provides an opportunity for other sports, and several brief periods of track training and development in the summer totaling about 15% of the program. A Track for Life athlete might have a similar pattern.

A Train to Train athlete with access to an indoor velodrome (e.g. London ON, Burnaby BC) would likely have a different periodization with an extended track focus in the winter months. The overall training volume would remain similar and the emphasis would remain on skills, not competition.

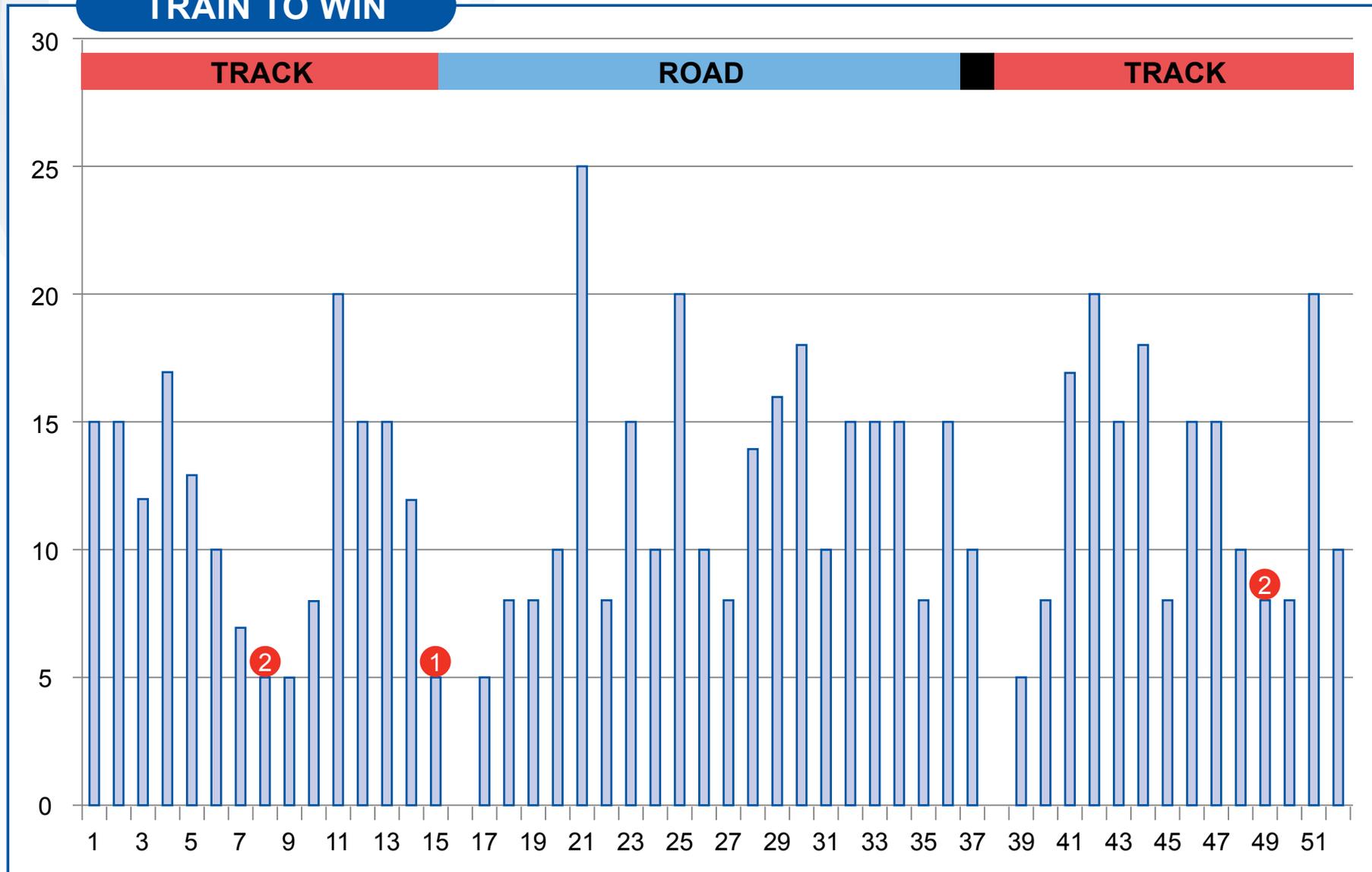
- The Train to Compete athlete has a focus on maintaining a high level of performance while learning and refining high performance racing skills and tactics. He or she is more specialized in cycling, and within cycling, more specialized in a few disciplines- in this case, road and track. More frequent competition, and entry into international competition, is a priority. As a result the profile of weekly volume is relatively “spiky” with frequent travel and competition alternating with cycles of recovery and training. The most important competitions are national and international level events. Note that this athlete is spending about 35% of time on specific track training and competition, with longer periods of track specialization during the year. The winter and spring months have a major track focus.
- The Train to Win athlete is highly specialized, spending about 55% of the year with a track focus. The periods of track and road focus are consolidated, reflecting the specialization in this stage. Success in international competition is the main goal, and this athlete is participating in World Cup and World Championship-level track competition, primarily in the winter and spring. Regular cycles of travel, competition, and recovery alternate with training cycles, making the profile even more “spiky”. This athlete is training and competing nearly year-round, with recovery taking place within cycles. There is a very short transition phase between annual plans.

Integrating track cycling in the earlier stages is essential for skill development, and whether or not the athlete continues in track racing, the skills developed are useful in all forms of cycling. For the track-focused athlete, a progressive specialization in the Train to Compete period brings an increase in track training and competition. Finally in the Train to Win stage the rider is fully specialized and is perfecting track competition techniques. In all stages, road training and competition is a key part of the program.



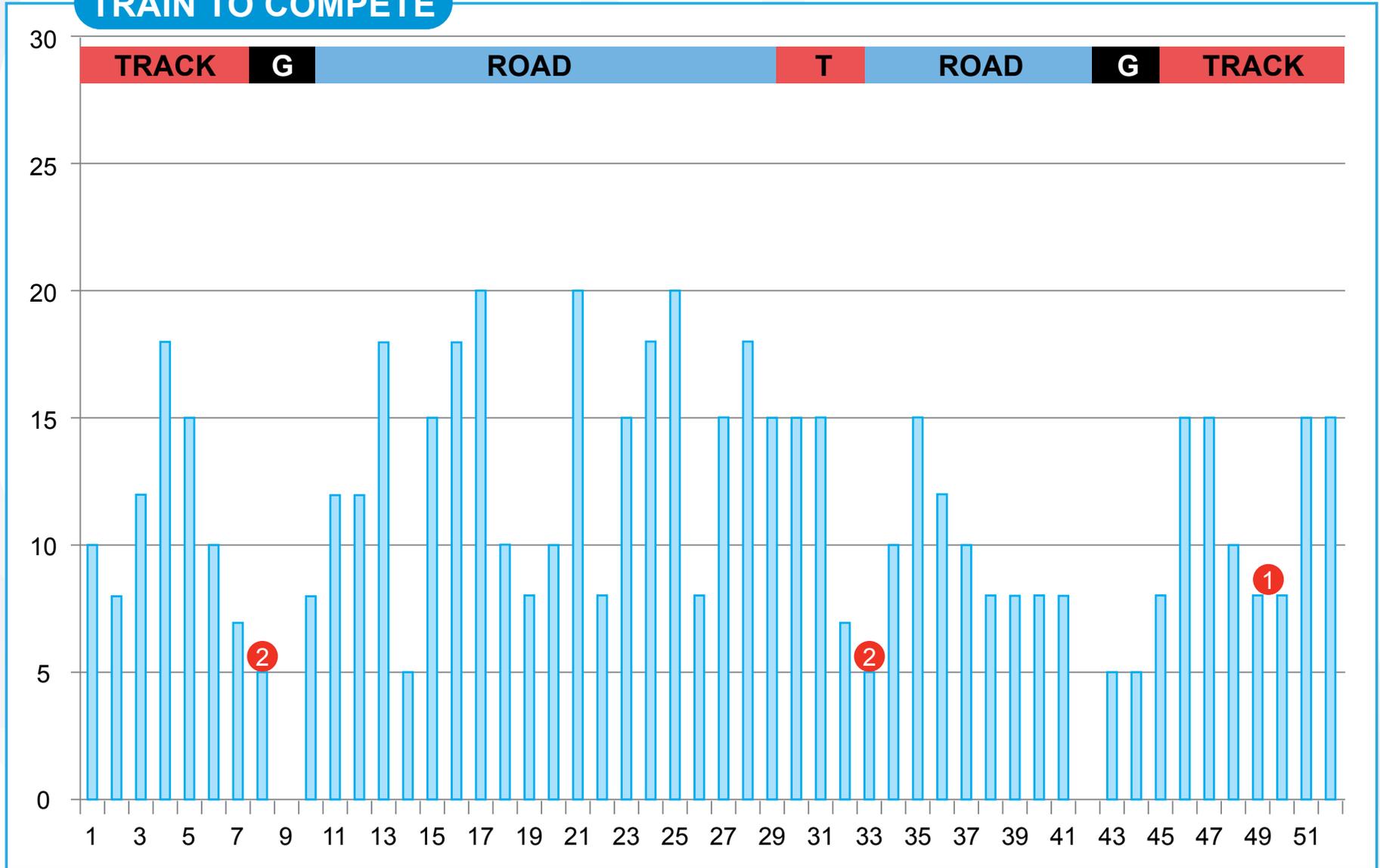


TRAIN TO WIN



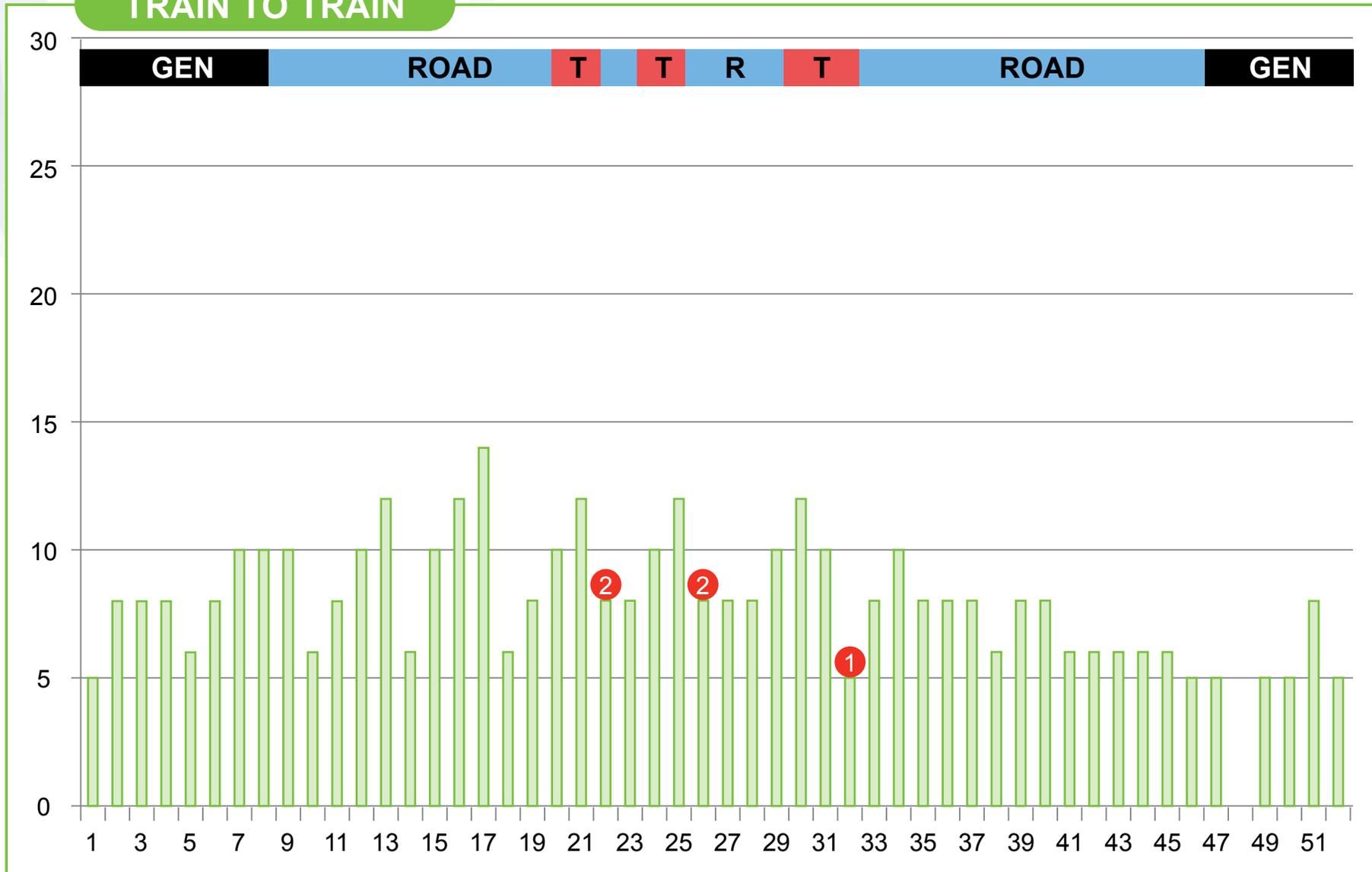


TRAIN TO COMPETE





TRAIN TO TRAIN





8 – Building Canadian Track Cycling

Currently the majority of cyclists cross over to track from other cycling sports, some around ages 14 to 16, others in their 20's, and some older still. In this guide cyclists under 18 starting out on the track are considered part of "Track for Development". They may progress directly to Track for Performance, or continue to ride Track occasionally as they work toward specialization in other cycling sports. This section on Track for Life is specific to athletes who begin Track later, in their 20's or older.

Late-entry or Track for Life represents a new opportunity for many cyclists. They may feel they have progressed as far as they can in other forms of cycling, or they may simply want to try something new and exciting. There are many examples of Canadian cyclists who transferred over to track after successful careers in other forms of cycling: Tanya Dubnicoff was a BMX champion before starting track at age 18; she represented Canada at 3 Olympics and won the World Championship in Sprint in 1993. In general these "cross-over" racers bring fitness and an understanding of training and racing, but require accelerated development in track skills and race tactics. Initial, intensive participation in track skill development "clinics" and coaching for skills prior to entry in track competition is recommended.

The approach to competition for Track for Life racers depends on the athlete and on the event. Endurance events, especially individual events such as Pursuit, are relatively "safe" for a relative novice while Sprint events, especially multi-rider tactical events (e.g. Individual and Team Sprint) require greater skills. The athlete's initial skill level and attitude are important considerations in deciding when to begin competition. Simulated competitions in training situations, and watching and analyzing races, are an important bridge to competition.

Choice of events depends on the athlete's interest and background, but for skill development purposes the athlete should be encouraged to try all types of track events, at least as simulations in training. Crossover athletes may have a strong aptitude and inclination for either sprint or endurance racing based on their background – see the example of Tanya Dubnicoff above – or they may simply be interested in "sampling" different kinds of events.





9 – Building Canadian Track

Although track has been part of Canadian cycling for many years, it has relatively small participation compared to other cycling sports. Different provinces and territories have different availability of tracks and coaches, different levels of organization, and (of course) different climates and proximities to track racing in the USA. To create more opportunities for our racers we need to work together to build Canadian track. Cycling Canada, its partner provincial/territorial sport organizations (P/TSOs), coaches, organizers and parents all have key roles:

OBJECTIVE	RESPONSIBILITY
Develop a national framework for Track development based on Canadian Sport for Life/Long Term Athlete Development	CC
Develop and deliver coach and officials training programs	CC, P/TSOs
Work to support the building and development of more quality tracks and clubs	CC, P/TSOs, Clubs
Create stage-appropriate development programs and competition schedules that support rider development.	CC, P/TSOs, Clubs, TC
Commit to ongoing personal and professional development, including NCCP certification, to provide the best quality of stage-appropriate development for athletes.	Coaches
Maintain a healthy perspective on competition and winning, remembering that we are working to build individual growth and development, long-term gains and success, and a love for all kinds of sport and physical activity.	Coaches, Parents
Ensure young racers get the best quality development by understanding Canadian Sport for Life principles and insisting on a NCCP-certified Track coach.	Parents
Understand the importance of building skills in the “Track for Development” stages, and prioritize skill development ahead of winning for young racers.	All

BUILDING TRACK Means Building Tracks- Or Finding Alternatives

The development of track racing depends on the availability of tracks, or velodromes. As velodromes are expensive to build and maintain, it is essential to use alternatives. Flat-track racing, either on grass or dirt (sometimes called “cycle speedway”) presents an opportunity to develop track cycling skills and tactics in nearly any community. Most of the developmental benefits and many of the technical and tactical skills can be had through racing on flat tracks.

Although alternative track racing is better than none at all, we must also make a concerted effort to preserve our existing velodromes and build new ones. Success in the past years in Burnaby BC and London ON is being followed with construction of a new track in Milton ON for the 2015 Pan Am Games. This will be a stepping-stone toward much greater Track participation in Canada- if we work together!





10 – From Winning Track to Winning for Life

Providing the latest information on development, training and competition, like this guide, is part of Cycling Canada's commitment to growing the sport of track cycling in Canada. Our goal is not simply to help Canadian athletes onto international podiums, but to ensure that every athlete can enjoy participation in cycling and sport for a lifetime.

Our framework for growth is the Canadian Sport for Life movement. A key part of the movement is Long-Term Athlete Development, which is a comprehensive set of principles for effective participant development. LTAD is based on research combined with the practical experience of working with thousands of athletes and coach-instructors.

We believe:

- Life has different stages of development that include transitions from child to adolescent, to adult, and then to senior, resulting in changed capabilities.
- Training, competition and recovery programs should be based on participant capability rather than chronological age.
- For optimal development, sport and physical activity programs must be designed for the capability and gender of the participant.
- Physical literacy is the basis of life-long participation and excellence in sport and engagement in health enhancing physical activity.
- Every child has the potential to be an athlete; therefore, is genetically predisposed to be active if the environment encourages participation.
- Life-long participation and excellence in sport are best achieved by participating in a variety of sports at a young age to develop athleticism, then specializing in a particular sport later.

- There are sensitive periods during which there is accelerated adaptation to training during pre-puberty, puberty and early post-puberty.
- A variety of developmental, physical, mental, cognitive and emotional factors affect the planning of optimal training, competition and recovery programs.
- Providing guidance through the developmental stages of sport and physical activity will result in increased participation and performance across the lifespan.
- Mastery in sport develops over time, through participation in quality sport and physical activity programs.
- LTAD is participant/athlete centered, coach-led and organization-supported and, therefore, takes into account the demands of home, organized sport, community recreation and school.
- Quality sport and physical activity, combined with proper lifestyle, result in better health, disease prevention, enhanced learning, enjoyment and social interaction; leading to improved wellness.
- Sport practices, scientific knowledge and societal expectations are ever changing and, therefore, LTAD needs to continually adapt and improve.

We encourage you to support every athlete by following these principles, whether their time in track leads them to the podium, to other cycling disciplines, to other sports, or to contributing to sport in other ways.

Let's go!





Glossary of Terms

Adolescence is a difficult period to define in terms of the time of its onset and termination. During this period, most bodily systems become adult both structurally and functionally. Structurally, adolescence begins with an acceleration in the rate of growth in stature, which marks the onset of the adolescent growth spurt. The rate of growth reaches a peak, begins a slower or decelerative phase, and finally terminates with the attainment of adult stature. Functionally, adolescence is usually viewed in terms of sexual maturation, which begins with changes in the neuroendocrine system prior to overt physical changes and terminates with the attainment of mature reproductive function.

Aerobic Endurance- Ability to exercise for long durations using aerobic energy systems.

Agility- The ability to move quickly in three dimensions while remaining in control of the movement.

Anthropometry: Measurement of body lengths and girths. In early stages height and weight should be measured regularly to help in determining Peak Height Velocity (growth spurt). Later, body fat measurement should be added.

Balance- Ability to remain upright while moving. Includes static balance and balancing while moving or gliding.

Childhood ordinarily spans the end of infancy — the first birthday — to the start of adolescence and is characterized by relatively steady progress in growth and maturation and rapid progress in neuromuscular or motor development. It is often divided into early childhood, which includes pre-school children aged 1 to 5 years, and late childhood, which includes elementary school-age children, aged 6 through to the onset of adolescence.

Chronological age refers to “the number of years and days elapsed since birth.” Growth, development, and maturation operate in a time framework; that is, the child’s chronological age. Children of the same chronological age can differ by several years in their level of biological maturation. The integrated nature of growth and maturation is achieved by the interaction of genes, hormones, nutrients, and the physical and psychosocial environments in which the individual lives. This complex interaction regulates the child’s growth, neuromuscular maturation, sexual maturation, and general physical metamorphosis during the first 2 decades of life.

Coordination- Moving several parts of the body serially or simultaneously to achieve movement.

Critical periods of development refers to a point in the development of a specific behaviour when experience or training has an optimal effect on development. The same experience, introduced at an earlier or later time, has no effect on or retards later skill acquisition.

Community Initiation: A National Coaching Certification Program context describing coaches of entry-level pre-competitive athletes.

Development refers to “the interrelationship between growth and maturation in relation to the passage of time. The concept of development also includes the social, emotional, intellectual, and motor realms of the child.”

The terms “**growth**” and “**maturation**” are often used together and sometimes synonymously. However, each refers to specific biological activities. Growth refers to “observable, step-by-step, measurable changes in body size such as height, weight, and percentage of body fat.” Maturation refers to “qualitative system changes, both structural and functional in nature, in the organism’s progress toward maturity; for example, the change of cartilage to bone in the skeleton.”

Fine Motor Skills- Movements controlled by small muscles, e.g. hand or finger movements.

Functional Movement Screen- A test of core strength and balance while performing simple movements.

Goal Setting- The ability to set targets for future behaviours or outcomes.

Gross Motor Skills- Large movements of the limbs and body using multiple joints and muscle groups.

Introduction to Competition: A National Coaching Certification Program context describing coaches of early-stage competitive athletes.

Memory- Ability to retain and recall instructions, information, and experiences.

Mental Models- Ability to understand and manipulate mental models of real-world processes.



Movement Literacy: The competence of an athlete in a wide range of physical activities; a foundation for all sport development.

National Coaching Certification Program (NCCP)- Canada's coach education program which prepares coaches in Community, Introduction to Competition, Competition Development and Competition High Performance contexts.

Periodization: A training program broken down into phases (periods) to promote progressive development.

Peak height velocity (PHV) is the maximum rate of growth in stature during growth spurt. The age of maximum velocity of growth is called the age at PHV.

Physical literacy refers to the mastering of fundamental motor skills and fundamental sport skills.

Puberty refers to the point at which an individual is sexually mature and able to reproduce.

Readiness refers to the child's level of growth, maturity, and development that enables him/her to perform tasks and meet demands through training and competition. Readiness and critical periods of trainability during growth and development of young athletes are also referred to as the correct time for the programming of certain stimuli to achieve optimum adaptation with regard to motor skills, muscular and/or aerobic power.

Skeletal age refers to the maturity of the skeleton determined by the degree of ossification of the bone structure. It is a measure of age that takes into consideration how far given bones have progressed toward maturity, not in size, but with respect to shape and position to one another.

Skill- The ability to perform complex movements with a high degree of precision and consistency. This includes both movement skills (agility, motion and object-control) and sport skills (reading and reacting to sport situations).

Speed 1- Speed increases due to improvements in neuromuscular coordination.

Speed 2- Speed increases due to improvements in energy systems, anaerobic alactic and lactic.

Strength 1- Strength increases due primarily to increases in neuromuscular coordination, not growth.

Strength 2- Strength increases due primarily to increases in lean muscle mass-hypertrophy.

Stamina- Also called "aerobic endurance" this is the ability to continue intense exercise for long periods.

Suppleness- Also called "Flexibility" this is the range of physical movement at the joints.

Talent ID: Talent identification tests used to direct athletes into activities based on their potential. Talent ID must NOT be used to compare athletes (e.g. for selection).

Trainability refers to the genetic endowment of athletes as they respond individually to specific stimuli and adapt to it accordingly. Malina and Bouchard (1991) defined trainability as "the responsiveness of developing individuals at different stages of growth and maturation to the training stimulus."

Wingate Test- A test of anaerobic power and capacity.





Resources and Contacts

In addition to the resources and contacts listed here, useful information can be found at www.cyclingcanada.ca/development-programs/cycling-ltads/

Resources

Canadian Cycling Association Long-Term Athlete Development, Volume 1. 2008. Canadian Cycling Association, Ottawa, ON. ISBN 978-0-9809082-0-6

Canadian Sport for Life, 2005. Balyi, I., Cardinal, C., Higgs, C., Norris, S., and Way, R. Canadian Sport Centres, Vancouver, BC. ISBN 0-9738274-0-8

Additional information on Canadian Sport for Life and Long-Term Athlete Development can be found at www.canadiansportforlife.ca

Provincial Cycling Associations

Cycling British Columbia

#201-210 West Broadway
Vancouver, BC V5Y 3W2
Direct: 604 737-3164
www.cyclingbc.net

Alberta Bicycle Association

Percy Page Centre,
11759 Groat Road,
Edmonton, AB T5M 3K6
780 427-6352 (B)
www.albertabicycle.ab.ca

Saskatchewan Cycling Association

2205 Victoria Avenue,
Regina, Saskatchewan S4P 0S4
306 780-9299 (B)
www.saskcycling.ca

Manitoba Cycling Association

200 Main Street, Suite 309,
Winnipeg, Manitoba R3C 4M2
204 925-5686 (B)
www.cycling.mb.ca

Ontario Cycling Association

307-3 Concord Gate
Toronto, Ontario M3C 3N7
416 426-7243 (B)
www.ontariocycling.org

Fédération Québécoise des sports cyclistes

4545 Pierre de Coubertin
Montréal, Québec H1V 3R2
514 252-3071 (B)
www.fqsc.net

Vélo New Brunswick

P.O. Box 3145
Fredericton, New Brunswick E3A 5G9
506 877-7809 (B)
www.velo.nb.ca

Atlantic Cycling Center,

200 Prom. Du Parc,
Dieppe, NB E1A 7Z3
Contact: Luc Arseneau

Bicycle Nova Scotia

5516 Spring Garden Rd, 4th Floor,
Halifax, Nova Scotia B3J 1G6
902 425-5454 x 316 (B)
www.bicycle.ns.ca

Bicycle Newfoundland and Labrador

P.O. Box 2127, Station C,
St. John's, Newfoundland A1B 4R3
709 738-8889 (B)
www.bnl.nf.ca

Cycling Association of Yukon

9B Diamond Way,
Whitehorse, Yukon Y1A 6G4
867 667-8212 (B)

Cycling PEI

P.O. Box 302
Charlottetown, PEI C1A 7K7
1800 247-6712
www.sportpei.pe.ca

Canada's Velodromes

Bromont, QC – outdoor, 250 m

Centre national de cyclisme de Bromont
400 rue Shefford,
Bromont, QC J2L 3E7
(450) 534-3333
www.centrenationalbromont.ca

Burnaby, BC – indoor, 200 m

Burnaby Velodrome Club
Harry Jerome Sports Centre
7564 Barnet Highway
Burnaby, BC V5A 1E7
www.burnabyvelodrome.ca

Calgary, AB – outdoor, 400 m

Glenmore Velodrome,
Calgary Bicycle Track League
Glenmore Athletic Park
5300, 19 Street SW, Calgary, AB
www.cbtl.com

Dieppe, NB – outdoor, 250 m

Caisse populaire Dieppe Velodrome,
National Cycling Centre Atlantic Canada
2200 prom du parc Dr.
Dieppe, NB E1A 7Z3
(506) 877-7809
www.atlanticcyclingcentre.com

Edmonton, AB – outdoor, 333 m

Argyll Velodrome Association
6850 88 Street
Edmonton, AB T6E 5H6
(780) 490 5979
www.argyllvelodrome.co

London, ON – indoor, 138 m

Forest City Velodrome
4380 Wellington Rd S
London, ON N6E 2Z6
(519) 649-6142
www.forestcityvelodrome.ca

Milton, ON (opening 2015) – indoor, 250 m



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