



The United States Biathlon Association

# ATHLETE

## Development Model

A guide for coaches, parents, and athletes on how to support optimal long-term development for youth in the sport of biathlon.



# ATHLETE DEVELOPMENT MODEL



At all ages, the process of learning how to ski and shoot in biathlon is an exciting pathway to developing an outdoor, active lifestyle and sharp mental skills. The U.S. Biathlon Association (USBA) is committed to guiding coaches, parents, and youth through their participation and learning in biathlon in a way that sets-up every young athlete with the ability to reach his or her full athletic potential. The USBA Athlete Development Model is the foundational framework for youth development.

This booklet serves as a high-level overview of the Athlete Development Model, highlighting the philosophy for training, play, and competition as an athlete grows and develops. It is designed to help guide decision-making that keeps athletes healthy, well-balanced, and on a trajectory for success.

## PURPOSE OF MODEL

*The driving framework behind the U.S. Biathlon Coaches Manual and other development programming.*

**Goal 1:** To develop sustainable, whole athletes capable of achieving world-class biathlon results, using best science available.

**Goal 2:** To unite U.S. biathlon clubs and development programs under a common philosophy to achieve goals in high performance and lifelong personal development.

Title	Exposure to Biathlon	Biathlon Foundations	Learning to Train	Train to Compete	Train for Top Performance
Phase	1	2	3	4	5
Ages	8 - 12	13 - 14	15 - 16	17 - 20	21 +
Primary Goal of Phase	<p>Learning through play</p> <p>Exposure to fun, joyful environment</p>	<p>Physical activity everyday</p> <p>Build athletic foundation of physical parameters</p>	<p>Develop training base</p> <p>Introduce training concepts</p>	<p>Specialize athletic progression to biathlon</p>	<p>Create top performance</p>



## The Five Phases

Like the five targets in a biathlon shooting stage, the Athlete Development Model has five phases to guide development. Each phase corresponds to a general age range, and has a specific development goal for the training or competition in that phase.

### Training Goals

The primary goal for each stage of development is the most important idea for coaches and parents to keep in mind when training. The goals are designed to help foster an atmosphere where age-appropriate, respectful, clean sport can take place, and prioritize an athlete's long-term development. This includes injury prevention, maximizing healthy physical progression, and building a foundation for a successful career as an endurance athlete. The focus of each phase in the model intentionally builds upon a base of fun and learning, and gradually blends in more emphasis on professionalism and racing.

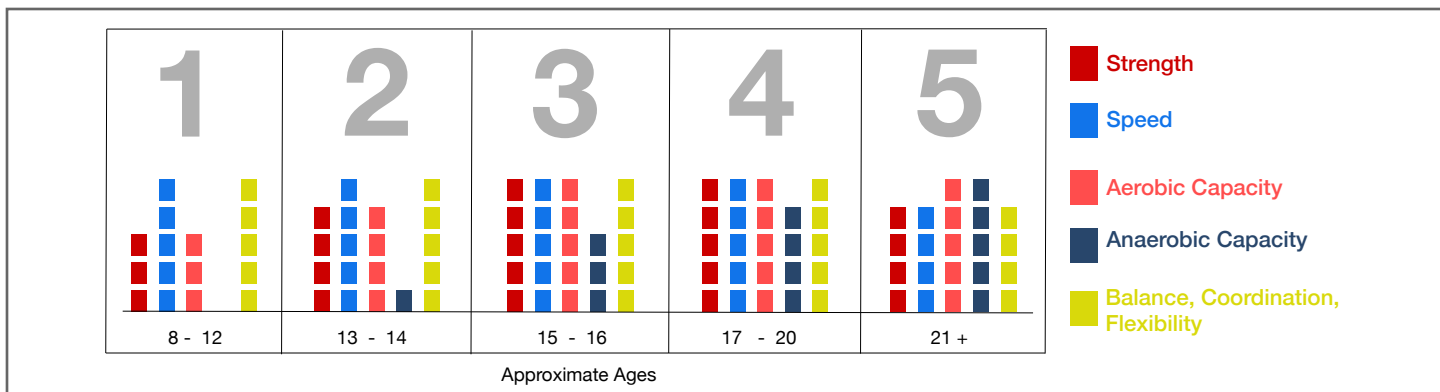
## The Five Physical Parameters

There are five physical parameters that USBA high-performance coaches refer to when considering athlete development: **speed, strength, aerobic capacity, anaerobic capacity, and coordination/flexibility**. Each can be optimized at different ages (Figure 1). For example, youth benefit from fast and fun games in training in the earlier stages when speed can be developed, and transition to larger volumes of aerobic training and strength as they specialize in the junior years. Further details on the science referenced in the making of training guidelines for each phase of development in this model can be found in the U.S. Biathlon Coaches Manual.

## How This Booklet is Structured

Recommendations for training emphasis, shooting, and athlete development focus at each phase are outlined in the following pages. View or print out each phase individually, or view the full model as a booklet. Racing and training opportunities for athletes at each phase are listed on the final pages.

Figure 1. Conceptual Model for Development of Physiological Parameters



NOTE: It is best to focus training at different ages on exercises that take advantage of times when the growing body is peaking or ready for certain types of physical development. This model suggests how the five physical parameters should be prioritized at different phases. Biological differences always exist within age groups and phases, so the model is only to be used as a guideline.

## PHASE 1

# Exposure to biathlon



## ATHLETE DEVELOPMENT MODEL

Biathlon is a fun & challenging way to develop athletic and mental skills.

For young and energetic youth, the best way to gain exposure to the sport at young age is to start learning in a **fun and joyful environment**.



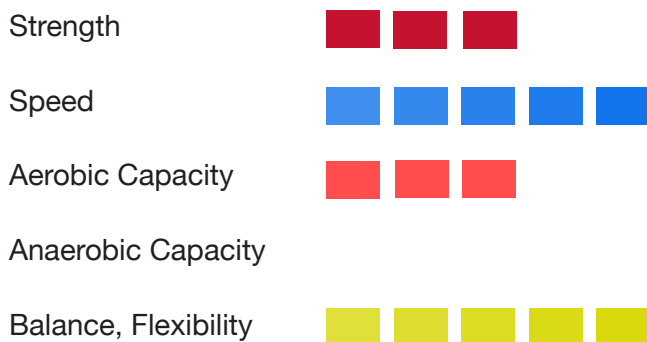
## AGES: 8 - 12 years old

### What is the training goal at this age?

At this stage, young athletes' bodies are rapidly growing. The focus of all training is to develop foundational athletic skills that will later result in a pattern of movement and body control that makes it easier for the athlete to adjust and adapt to training and specialization in a specific sport. Physiology research suggests that 8-11 years old is the optimal age to develop balance and rhythm, and the foundations of speed and flexibility. USBA recommends developing these attributes through a diversity of fun physical activities, games, and skiing of all kinds.

### Optimal Development Focus for this Phase

The five physical parameters can generally be prioritized in this training phase as follows:



NOTE: This model is designed to be used as a guide for coaches and parents in decision making for developing athletes. It is not a perfect prescription for each individual.

### General Training Guidelines for Phase 1

#### Ski and Strength Training

**Hours per year:** Not recommended at this age.

Speed training is vital at this age. Focus on exercises and games that stimulate a variety of body movements, such as obstacle courses and ball games. Games and relays can be used to build light endurance. Develop balance by playing a lot on skis in winter. Use body weight only in strength exercises, and introduce Olympic lifting and Maq techniques.

#### Shooting Training

**Frequency:** Focus on fun! No baseline required.

**Rifle Type:** Air rifles or .22 cal with junior stock.

Teaching **rifle safety** is the first priority, always. Building safe habits at a young age has a lasting impact. All shooting at this stage should be in prone position only, using blocks to support weight of rifle if needed (no sling). Teach the basics of shooting and the focus required on the shooting mat.

#### Mental Skills and Character Building

Young athletes should demonstrate a positive and fun attitude at training and show respect for all other athletes and coaches. A main goal is to learn how to focus on a task, and to listen and ask questions.

**FOR MORE RESOURCES** on biathlon training and athlete development, go to [www.usbiathlon.org/coaching](http://www.usbiathlon.org/coaching).

## PHASE 2

# Biathlon foundations



## ATHLETE DEVELOPMENT MODEL

Shooting. Skiing. Biking. Hiking. Running. Kayaking. Training for biathlon is part of developing an **outdoor-oriented, active life.**

Training for biathlon at this age is focused on fun physical activity and shooting foundations.



## AGES: 13-14 years old

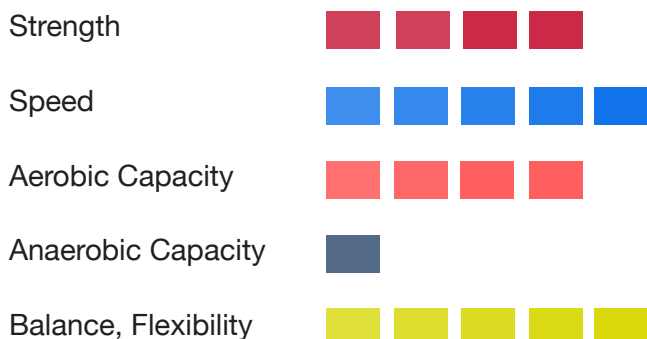
### What is the training goal at this age?

Phase 2 is a technical and physical learning period that includes training elements from all the five physical parameters and introduces more specific skills.

As kids hit puberty, the body is ready to handle a wider variety of endurance training activities like cross country skiing, biking, running, hiking, and rollerskiing. Light strength and high intensity training may also be introduced during this phase. The main goal should be to encourage fun physical activity everyday, understand shooting concepts, and to learn about right nutrition to fuel an active lifestyle.

### Optimal Development Focus for this Phase

The five physical parameters can generally be prioritized in this training phase as follows:



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### General Training Guidelines for Phase 2

#### Ski and Strength Training

**Hours per year:** Aim for 2-3 ski sessions/week.

General strength training with resistance is introduced up to 3x/week, as well as high intensity activities that initiate max heart rate about 2-3x/week. Coordination, speed, endurance are developed through games, other sports, and specific training. Beginning technique training on skis is important at this age.

#### Shooting Training

**Frequency:** 3x/week

**Rifle Type:** Air rifles or .22 cal with junior stock.

Continue to train the basic skills in shooting (position, bolting, breathing, hold, and trigger squeeze). Focus is on precision shooting, learning to shoot tight groups and understanding how the execution feels. Introduce concept of shooting in wind.

#### Mental Skills and Character Building

Beginning to learn how to accept failure as part of the training process is a key aspect of this stage. Building and exhibiting work ethic in training is also a goal, as well as deepening a self-awareness of what focus feels like on the range and ski course. Discipline in and outside of training is very important.

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## PHASE 3

# Learning to train



## ATHLETE DEVELOPMENT MODEL

To race fast, you have to learn how to train smart. Get focused.

Building an athletic foundation and providing education on training concepts is key to **preparing youth athletes for competition**, both domestically and abroad.



## AGES: 15-16 years old

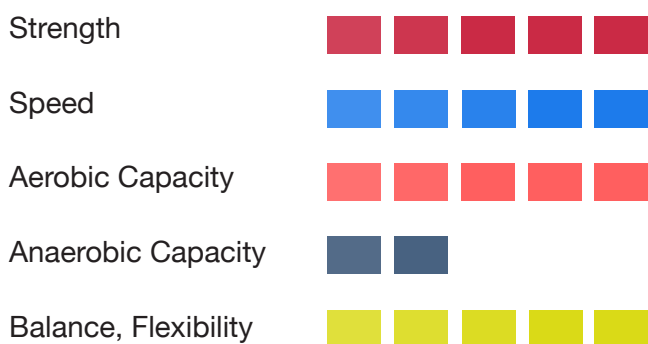
### What is the training goal at this age?

The basic idea in this phase is to build an athletic base (400-500 hrs/yr) for higher training volumes at the junior and senior level. Physical activity everyday remains a top goal, though athletes at this age are physiologically prepared for more endurance training and the introduction of systematized progression.

Coaches can start teaching athletes about key tools used to train systematically, such as the perceived effort scale, training logs, and nutrition for recovery and competition. Athletes should log training.

### Optimal Development Focus for this Phase

The five physical parameters can generally be prioritized in this training phase as follows:



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### General Training Guidelines for Phase 3

#### Ski and Strength Training

**Hours per year:** 400-500 (approx. 8-10 hrs/week)

Include intensity training 2-3x/week for 20-30 minutes per session at this stage, and general strength 3x/week. To get ready for the junior years of competition and training, endurance training should include many different sports. Ski technique work should play a bigger role in training.

#### Shooting Training

**Frequency:** 3-7x/week

**Rifle Type:** .22 cal long rifle

Standing shooting is generally introduced in this phase. Athletes should be using a cuff and sling to shoot prone, still focusing on shooting tight groups, and working to stabilize new standing hold. Begin new shooting drills and shooting with a heart rate (combo training) and working on range efficiency.

#### Mental Skills and Character Building

Mental skills for shooting and skiing can be introduced in theory and in practice. Athletes should be able to articulate feedback to coaches, and start taking ownership of equipment and race preparation.

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## PHASE 4



# Train to Compete



## ATHLETE DEVELOPMENT MODEL

A peak stage of involvement and competition in American biathlon happens in the exciting age of junior racing and competition.

This phase is focused on executing smart training, staying focused, and racing competitively.



## AGES: 17-20 years old

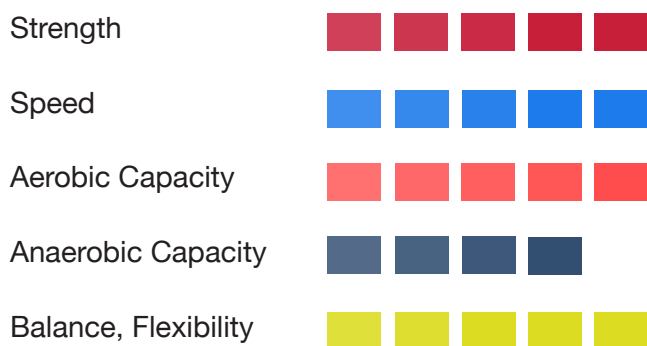
### What is the training goal at this age?

Phase 4 marks the start of specific training for biathlon competition. It is recommended to begin increasing total training volume at this age, as the body is physiologically prepared to start developing aerobic capacity.

Coaches should begin to write periodized training plans for athletes to develop the capacity to their full athletic potential. All training should be targeted and focused towards a consistent progression and high performance level for biathlon.

### Optimal Development Focus for this Phase

The five physical parameters can generally be prioritized in this training phase as follows:



NOTE: This model is designed to be used as a guide for coaches and parents in decision making for developing athletes. It is not a perfect prescription for each individual.

### General Training Guidelines for Phase 4

#### Ski and Strength Training

**Hours per year:** 550-700 hours

The main difference in this phase of development is increased training volume, with about 80%+ of training hours completed in a low intensity training zone. Strength should be performed 2-5x/week with the inclusion of more ski-specific exercises than in Phase 3. Intensity sessions increase to 2-4 times/week, especially as race season nears in order to sharpen body's ability to manage lactic acid.

#### Shooting Training

**Frequency:** 4-8 times/week (15 min. dryfire daily)

Athletes should be acting like a focused competitor on the range at all times as part of their training process. To prepare for competition in this stage, it is important to perform drills that optimize range efficiency and to start regularly shooting combos at higher intensity as the racing season nears.

#### Mental Skills and Character Building

This phase requires learning the power of positive self-talk and mental preparation to influence performance under pressure. Using the training log frequently and sharing with coach at this stage is vital to assessing workload and goals.

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## PHASE 5

# Train for top performance



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Seeking a top performance means training and racing to be the **best in the world**.

This phase requires a deep commitment to sport. It is met with the reward of international racing & reaching one's highest level of athletic performance.



## AGES: 21+

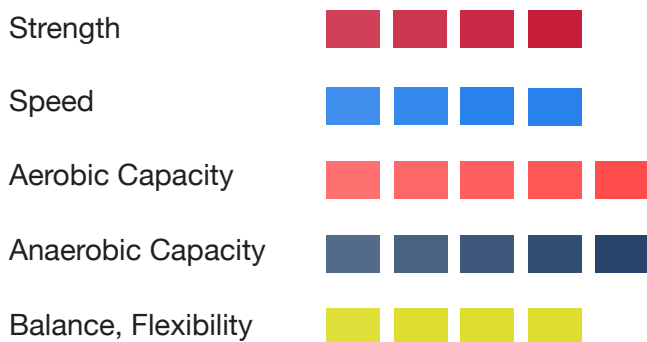
### What is the training goal at this age?

At this stage, athletes must execute refined training plans and psychological strategies to perform well on an international stage in a high-pressure environment. The goal of all training is to have a high constant level of performance throughout the season (IBU and World Cups) and at specific key events.

Athletes in this phase must show patience and ownership in their development by following the details of a training plan, trusting in the plan, and communicating openly with coaches to adapt as needed.

### Optimal Development Focus for this Phase

The five physical parameters can generally be prioritized in this training phase as follows:



NOTE: This model is designed to be used as a guide for coaches and parents in decision making for developing athletes. It is not a perfect prescription for each individual.

### General Training Guidelines for Phase 5

#### Ski and Strength Training

Hours per year: 650+ hours

The composition of training for high-performance is the same as the base program defined in Phase 4; the difference is that training becomes even more periodized in order to optimize recovery and peak for specific racing events. Coaches work with athlete to create highly individualized plans. Reference the USBA Coaches Manual (Summer 2018) for details.

#### Shooting Training

Frequency: 4-8 times/week (dry fire 15. min daily)

Athletes are skilled enough at this stage to begin developing world class shooting times and learning advanced shooting techniques (i.e. shading). The biggest focus and challenge is to develop a mental approach for the psychological aspect of shooting.

#### Mental Skills and Character Building

One of the most important psychological skills to master at this phase is the ability to contextualize failure, rebound quickly, and refocus on what is most important. Athletes at this level exercise a great deal of responsibility and discipline in their training.

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OTHER

# American Pathways



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MODEL

The five phases represent guidelines for optimal development of a biathlete, but there is another significant pathway worth acknowledging.

Racing in college is a major component of American development of elite Nordic athletes.



## AGES: Pre-/Post-Collegiate

A major component of the development pipeline in American nordic sports is the collegiate cross-country racing circuit. USBA recognizes the significant role played by the college system, and encourages athletes to consider how college racing can play a personal role in their personal long-term development goals as an elite biathlete.

There are generally two ways that biathletes interact with the college system:

- a) **Exposure to biathlon before college** --> opportunity to capitalize upon talent and compete in the junior and early senior ages; athlete may prioritize college Nordic racing and return to full-time to biathlon after college racing
- b) **Exposure to biathlon during/after college** --> participate in *USBA Talent ID Camp* one year before graduation; provides opportunities to pursue biathlon racing as a senior and develop long-term career as biathlete

Some of America's most successful biathletes, Susan Dunklee and Lowell Bailey, competed as student athletes in Division I colleges in these pathways. World Champion Lowell Bailey competed in biathlon as a junior, and went on to ski for the University of Vermont for 4 years while remaining in touch with his biathlon roots. World Championship silver medalist Dunklee started to learn how to shoot while racing for Dartmouth College, and started seriously pursuing the sport after graduation.

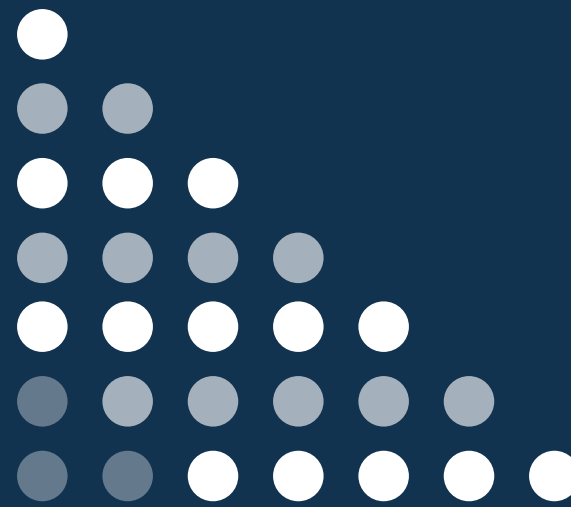
Above: Biathlon World Champion Lowell Bailey (left) representing the University of Vermont with a top-6 finish at NCAA's in 2001.

Although it is optimal to gain exposure to biathlon in earlier development phases to maximize the exciting racing opportunities available to junior athletes, many biathletes begin later. Biathlon is an endurance sport where success is found well into 20-30+ years of age.

Talk to your coach when making decisions about college or getting involved in biathlon. A Regional Coordinator may also connect you with USBA development staff for additional guidance and training ideas. Remember---there is not one right path to high performance.



Above: Biathlon World Championship silver-medalist Susan Dunklee racing for Dartmouth college before she tried biathlon. It's not "too late" to learn shooting at this age and have a successful career.



# Racing and Training Opportunities

## RACING

### U.S. World Youth/Junior Team Trials

This 3-day race series is where youth and junior athletes compete annually to make the team that represents the U.S. at World Youth/Junior Biathlon Championships. It is one of the premier competitive events of the year for U.S. youth athletes.

### International Biathlon Union (IBU) Cups

The competitive circuit one step below the World Cup where many athletes compete before advancing to World Cup.

### World Cups

The premier international biathlon racing circuit. More than 20 million viewers in Europe tune in to watch a single race on average!

### Liatoppen Races (Norway)

USBA has developed an arrangement to bring young American athletes to Norway each March for their first exposure to biathlon in an international setting. Criteria are listed online.

### IBU Cup Trials

A U.S.-based race opportunity for selection onto an IBU cup startlist.

## NATIONAL TEAMS & GROUPS

### A-, B-, and X- Team

USBA nominates athletes each year to three different national team categories. Each team receives different levels of support throughout the training year.

### Junior and Senior Development Groups

Junior and senior athletes meeting criteria from prior season are eligible to receive partial support from USBA and are invited to special camps each year.

## OFFICIAL USBA TRAINING OPPORTUNITIES

### Shooting Stars

Started in 2016, Shooting Stars is a mini-camp program that invites youth between 8-14 years old and their parents to learn the basics of biathlon. Regional coaches and local volunteers staff the events.

### Recruitment and Development Camps

Starting at age 13, youth athletes can start attending regional USBA development camps. Training is designed for beginner groups and more advanced youth later in the summer. Training camps are staffed by regional coaches & USBA Development staff.

### Talent ID Camp

This annual camp targets talented cross-country ski racers (collegiate or post-collegiate) interested in trying biathlon training and pursuing racing. It puts them on a fast track towards biathlon development after the end of a weeklong training. Requests for applications are announced April each year.

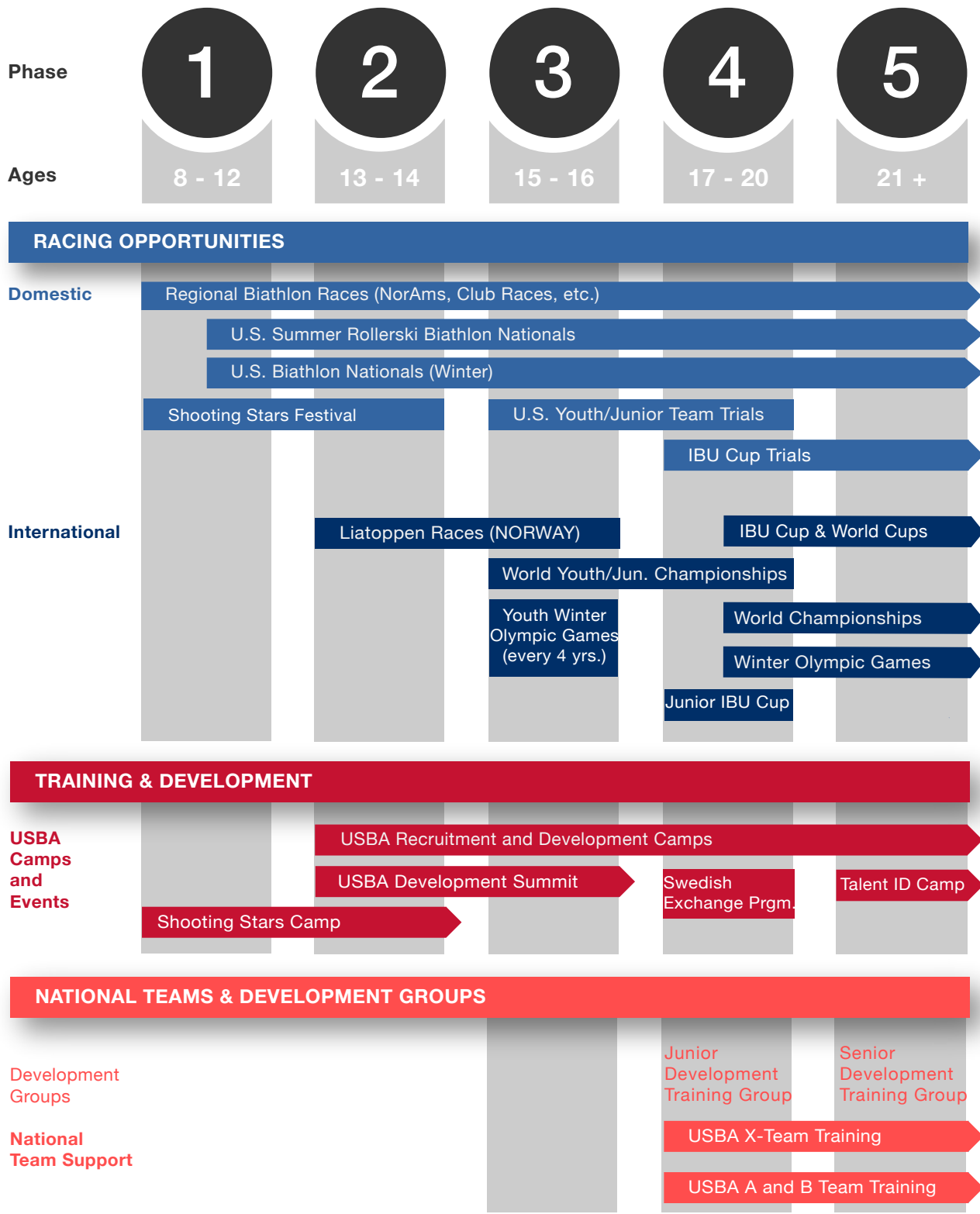
### Development Summit

A week-long training session before or after U.S. Summer Rollerski Biathlon Nationals, where youth athletes from across the country are invited to stay and train in Lake Placid with national team coaches. Nominations for the camp are submitted by USBA Regional Coordinators each summer.

### International Biathlon Exchange Program

Each year, several youth and junior biathletes from Sweden, Italy, or other countries are invited to train and race in Jericho, VT and Lake Placid, NY for U.S. Summer Biathlon Nationals and the USBA Development Summit. In exchange, youth and junior American biathletes have the opportunity to train and race in Sweden's Biathlon National Championships or other international winter races.

# Racing & Training by Development Phase



NOTE: This illustration shows general timelines for racing and training opportunities, and does not account for discretion. Selection criteria for national teams and training groups can be found at [www.usbiathlon.org](http://www.usbiathlon.org).

**TO FIND RACE AND TRAINING OPPORTUNITIES** for this competition season, go to [www.usbiathlon.org/events](http://www.usbiathlon.org/events).