



# LONG TERM ATHLETE DEVELOPMENT

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## BOCCIA BERMUDA

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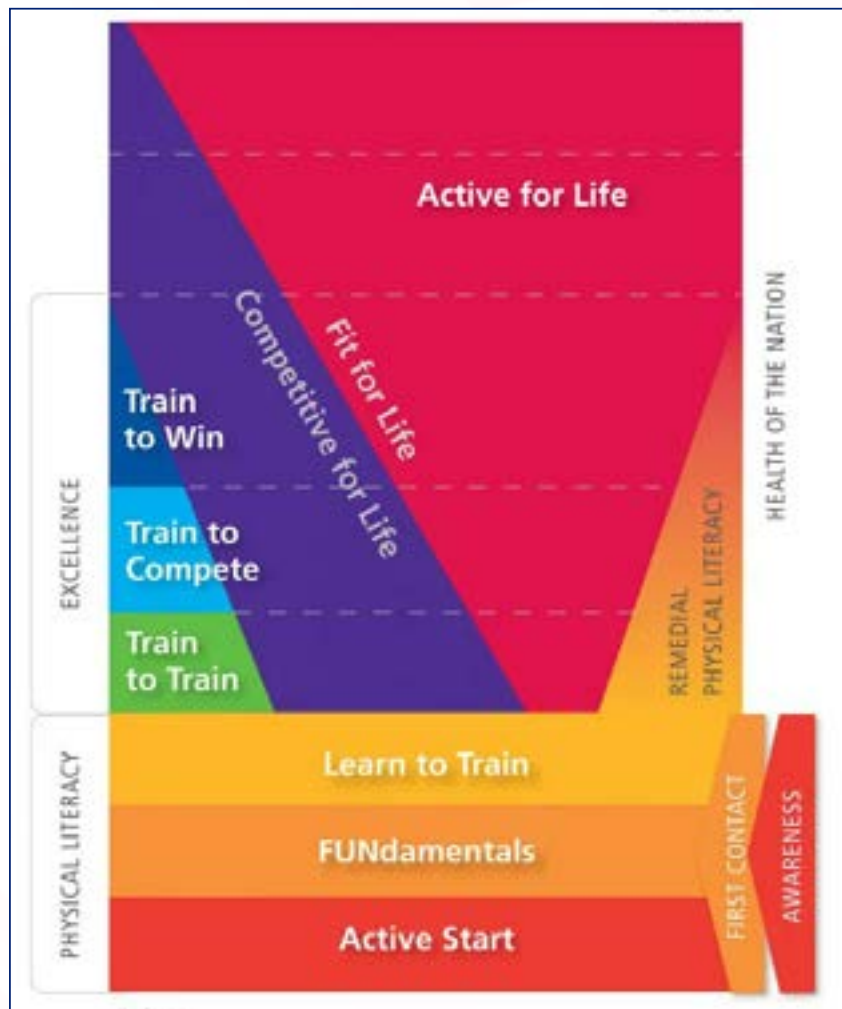
# 1. INTRODUCTION

## What is Long-Term Athlete Development (LTAD)?

LTAD is not one specific project or programme but a philosophy that, when adopted, permeates every programme and activity of our sport. The rationale behind LTAD is the recognition that better athletic performance and an active nation are both outcomes of a well-defined athlete development pathway. It focuses on the general framework of athlete development with special reference to growth, maturation and development, trainability and sport specific alignment and integration. LTAD is a framework that will guide sport development, decision making, and action into the foreseeable future. It is acknowledged that it will take time to fully implement.

Athletes under the LTAD model experience developmentally appropriate training and competition programmes at all ages. They develop physical literacy during the first three stages of LTAD. This allows them to move on to the later stages.

The model also recognizes that people go through stages of growth and development from birth to death. At any stage, a range of physical, psychological, social and environmental factors can affect the ability to participate, train and compete in physical activity.



## The top 10 key factors influencing LTAD for boccia

The following factors are the research, principles and tools upon which LTAD is built:

### 1. The 10 Year Rule

Scientific research has concluded that it takes a minimum of 10 years and 10,000 hours of training for a talented athlete to reach the elite level. This translates into a little more than three hours of training or competition a day for ten years. The length of time it takes to become an elite boccia player may vary from one division to another, but in general this rule holds true for boccia. There are no short cuts; athlete development is a long-term process.

### 2. The FUNdamentals

Athletes with and without a disability need to acquire basic movement skills: agility, balance, coordination – and sports skills: running, jumping, throwing, kicking, catching and swimming – through fun and games, and this needs to happen before puberty. Children with disabilities should be encouraged to develop as many of these skills as they can.

The combination of basic movement and sports skills is known as physical literacy. Without basic movement skills, a child will have difficulty participating in any sport.

Potential boccia players face difficulties in acquiring these skills because:

- overly protective parents, caregivers, rehabilitation facility staff, teachers and coaches may shield them from the bumps and bruises of childhood play;
- adapted physical education is not well developed in all school systems, especially with more severe disabilities; and
- it takes creativity to integrate a person with a disability into a group activity where FUNdamental skills are practiced and physical literacy is developed.

### 3. Specialization

Boccia is a late specialization sport. There is significant reliance on other components of the sport system to develop physical literacy. It is critically important that children with cerebral palsy and related disabilities be exposed to the full range of fundamental movement skills as much as possible before specializing in boccia. Intense training in boccia before the age of ten could lead to burnout and overuse injuries.

### 4. Developmental Age

Ideally, LTAD should be based on developmental age, not chronological age. Developmental age refers to the degree of physical, mental, cognitive and emotional maturity of the athlete. Children of the same chronological age can differ by several years in their level of biological maturation.

### 5. Trainability

All physiological systems are always trainable, but there are optimal periods in development when the body is more responsive to specific types of training. Little or nothing is known about windows of optimum trainability for children with cerebral palsy and related disabilities. In the absence of evidence to the contrary, the ages of optimum trainability should be adjusted based on the observed age of puberty.

### 6. Physical, Mental, Cognitive and Emotional Development

A major objective of LTAD is a holistic approach to athlete development. Sport can play a critical role in helping people with disabilities to develop a positive self-image and enhance their self-concept.



For this reason, at every stage, coaches should consider the emotional, mental and cognitive development of the athlete, in addition to their physical development. For a complete overview of the characteristics of emotional, mental and cognitive development and their implications for coaches, see Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics. When interpreting these implications, coaches should begin by comparing the characteristics that they observe being demonstrated by an athlete to the charts, rather than making assumptions based on chronological age.

### **7. Periodization**

Periodization is time management. It is a planning technique that provides the framework for arranging training and competition activities into a logical and scientifically based schedule to achieve optimum performance at the required time. There is no evidence that periodization for boccia athletes is substantially different from that for able-bodied athletes. The participants' physical fitness level may reduce strength and endurance, and so may their disability. Fatigue should be carefully monitored, and rest and recovery periods should be adjusted accordingly.

### **8. Calendar Planning for Competition**

The LTAD approach applies ratios for training to competition as, within the able-bodied sport system, under-training and over-training are common. There is no evidence to suggest different ratios for athletes with disabilities and currently this is not a problem in boccia. Available international competitions are limited in number and participation is limited by finances, and due to the small number of athletes within Boccia Bermuda, there is minimum domestic competition available. Increased numbers of athletes involved domestically would provide increased competition and will improve optimal development.

### **9. System Alignment and Integration**

LTAD is a holistic approach to athlete development. For the system to work well, all elements of the sport system must be aligned and integrated with each other. For boccia, this includes competitions, coaching, funding, facilities, equipment, carers, volunteers, sport science, ancillary services, daily living support and talent identification and development. True system alignment represents one of the greatest challenges to implementing the LTAD approach.

As a late specialization sport, boccia depends on treatment centres, schools and other sports to develop physical literacy and early fitness.

### **10. Continuous Improvement**

We should continually seek out, respond to and integrate new scientific research and sport specific innovations. LTAD is based on the best available scientific research, but knowledge evolves, especially in the young sport of boccia. Therefore, LTAD is also based on the concept of continuous development.

This document provides the basic information and tools that should be used as the basis for discussions among all stakeholders who are actively involved in boccia.

## 2. THE SPORT OF BOCCIA

The game of boccia was adopted from the ancient Italian game of bocce. The sport originated in the early 1980's when Europeans realized there were few, if any, sports that people with more severe disabilities could play.

Boccia Bermuda, which is recognized as the National Sports Governing Body in Bermuda, was established in 2014.



The athletes participating in boccia are perhaps the most disabled athletes within the Paralympic family and yet the sport requires a high degree of accuracy, muscle control, and tactics. Boccia players throw or roll balls within a "court". The goal is to have their ball rest closest to the "jack" ball, also known as the target ball or white ball.

While boccia can be played by anyone, it is particularly beneficial for people with severe cerebral palsy or other disability such as quadriplegia or muscular dystrophy. Most athletes use electric wheelchairs and require assistance with the activities of daily living. Some need assistants during a game in order to hold the chutes needed to roll the boccia balls out onto the court. Almost all athletes are born with a disability; it is rarely acquired later in life.

At the international/competitive level boccia athletes are grouped into one of 4 sport classes (BC1, BC2, BC3 and BC4) depending upon their degree of impairment. Prior to competing, athletes are assessed physically by medical professionals and must meet the criteria of one of the 4 sport classes in order to be eligible to compete in the sport. This process called "classification" aims to ensure fair and equitable competition.

### **Practical implications of LTAD on Boccia**

Adopting LTAD to the sport of boccia has practical implications for athletes, assistants, parents, carers, coaches, and the competition system when it comes to the optimal age for and way of exposing children with cerebral palsy and related disabilities to boccia. It is important to understand and respect the skills involved in being an elite boccia athlete.

For many parents, the first barrier to involving their child in a boccia program is the misconception that it is not possible for a child with a severe disability to play sports or be physically active. We should endeavour to reach parents with the positive message that their child CAN participate, and ultimately excel, in sport.

### **Challenges**

A lack of funding for proper equipment, from wheelchairs to good quality boccia balls, facilities, never mind physicians, physiotherapists, mental health professionals, etc., can result in limitations on our competitive athletes who are competing against others with access to so much more than we have. Many of the larger countries are state-sponsored – not only do they have the funds to pay multiple full-time coaches, medical staff, administrative staff, etc., but also many players receive individual funding and are paid to be a "high-performance athlete"; therefore they can focus solely on training /competing and don't need to work another job and worry about finances. Boccia is their full-time job.



Equipment, and travel to participate in international competitions, are the most expensive aspects of participating in boccia.

As the sport of boccia evolves, so does the equipment required to compete at a high level. National team athletes need to have top quality, personalized equipment.

In order to be able to compete at the highest level, including Paralympics and World Championships, athletes need to travel to boccia competitions overseas to compete for ranking points. In addition, athletes can currently only be assessed overseas for a classification.

Facilities and transportation can also pose significant barriers to a person becoming involved in boccia. Most boccia players have a disability that is too severe for them to drive their own vehicle. Even if they do have someone willing to be their driver, the cost of owning a vehicle is prohibitive for those on a fixed income. Bermuda's public buses do not have wheelchair access and there are few wheelchair-accessible taxis.

Boccia Bermuda is run by volunteers, has two qualified coaches and a few volunteers who facilitate weekly training. Fortunately, BHS allows us to use their gymnasium on Saturday afternoons free of charge. During the week, athletes generally train on their own. Coaches need to travel overseas for development courses.

Due to the small number of athletes currently in the programme, there is limited competition between them to assist in each of their development.

## Development of Boccia Bermuda

Year	Athletes in Training	# of Comp's Attended	Noticeable Results	World Ranking within Classification*				
				BC1 (F)	BC1 (M)	BC1	BC2	BC4
2017	6	3	<ul style="list-style-type: none"> <li>3rd place BC2 Female – Montreal Regional Open</li> </ul>			49	26	33
2018	5	3	<ul style="list-style-type: none"> <li>1st place BC4 Male – Buenos Aires World Challenger</li> </ul>			20	28	33
2018	6	3	<ul style="list-style-type: none"> <li>4th place BC1 Female – Sao Paulo Regional Championship</li> </ul>			34,36		38
2020	6	0 Covid				31'36		38
2021	5	0 Covid		31	39			55
2022	5	3	<ul style="list-style-type: none"> <li>3rd place BC1 Female, 3rd place BC1 Male – Veldhoven World Boccia Challenger</li> <li>5th place BC1 Female – Boccia World Championships</li> </ul>	10	29			
2023	3	4	<ul style="list-style-type: none"> <li>2nd place BC1 Female – Montreal World Cup</li> <li>2nd place BC1 Female, 2nd place BC1 Male – Santiago World Boccia Challenger</li> <li>1st place BC1 Female – Fortaleza World Cup Brazil</li> <li>2nd place BC1 Female, 4th place BC1 Male – Parapan American Games Chile</li> </ul>	4	13			
2024	3							

\* Classifications were separated between Female & Male from 2021





World Boccia has developed the Athlete Development Model for Boccia (ADMB) which is adapted from the Long-Term Athlete Development Model (LTAD). ADMB is taught in the Level 1 Coach Course to assist coaches to develop their athletes. It is important that the Player Pathway and Coach Pathway are aligned using the stages from the ADMB:

- **FUNDamentals** (Beginners)
- **Learning to Play and Practice** (Development)
- **Training to Train** (Intermediate)
- **Training to Compete** (Advanced)
- **Training to Win** (Elite)

### Athlete Development Model For Boccia



### 3. LONG-TERM PLAYER DEVELOPMENT IN THE SPORT OF BOCCIA

The development of boccia players has atypical characteristics. Defining one pathway between beginner and high-performance player based on the criteria of age can be difficult, as we observe players of all ages with magnificent performances throughout the pathway.

A player's career development can also be related to their specific physical profile. The entry point to each stage within the pathway may be different for each player due to the impairment and ability of the player, and therefore it is essential to recognize the needs of the individual player.

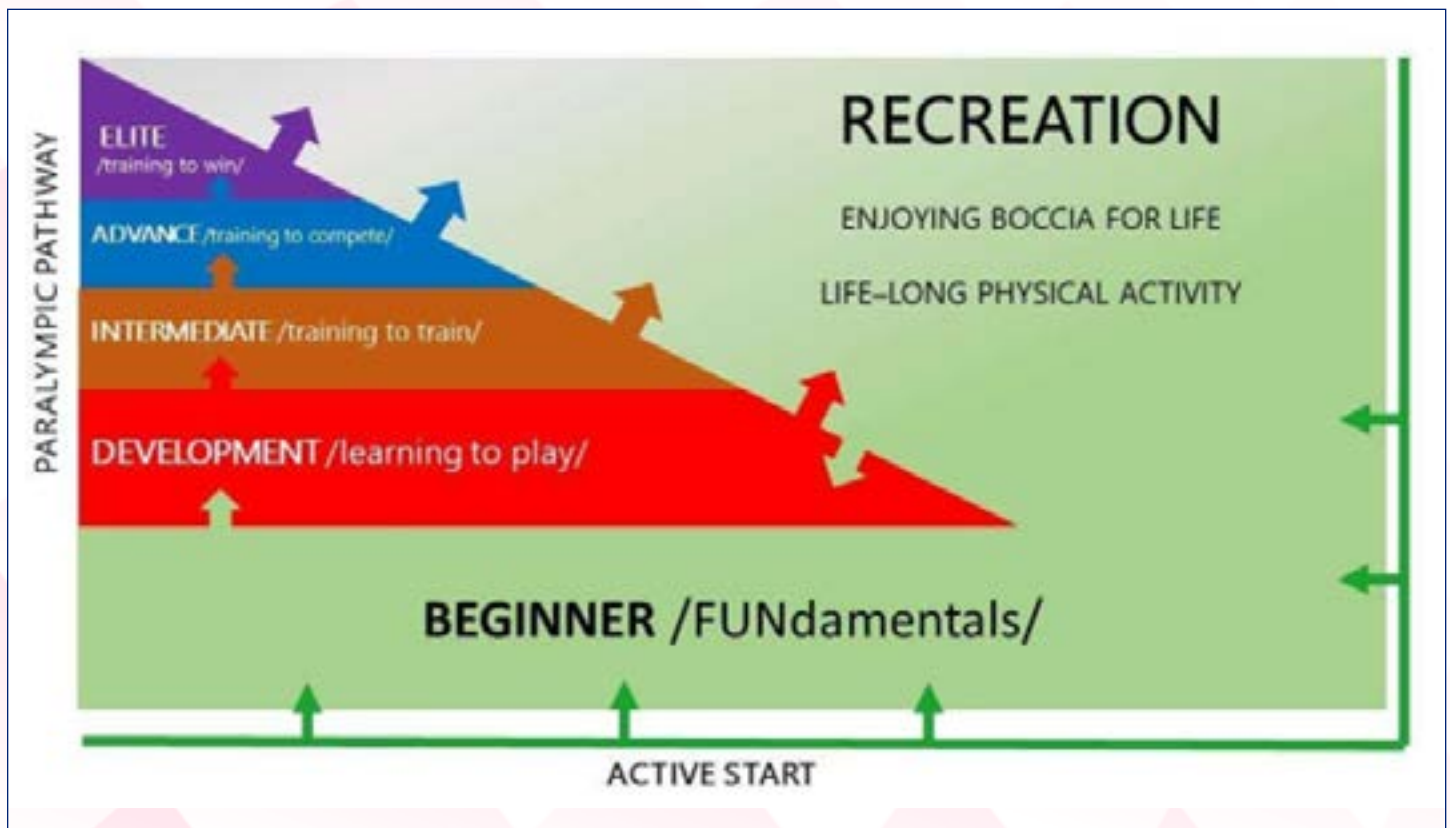
Regardless of age, we consider that it is important to define a set of sequential characteristics that allows us to create one consolidated pathway. Players will enter and transition through different stages depending on their individual characteristics.

Similarly to other sports, it is essential to develop fundamental movement skills before the development of sport specific skills. A player's individual development may follow different components of one or more stages at any one time.

The different pathway stage

s describe characteristics that players must reach in each phase. Illustrated in the chart below is the description of the pathway between entry level and Paralympic level.

**The following diagram illustrates the Boccia players pathway:**







## 4.0. LEVELS OF PLAYERS PATHWAY

### 4.1. LEVEL 1 / BEGINNERS / FUNDAMENTALS

This is the starting point of the player's journey. It may be introduced at a rehabilitation centre, school, at a young age or through family fun days / try-it sessions.

This should be an exploratory phase to promote the love for the sport through an enthusiastic and playful session.

Beginners participate in an inclusive session and their activities should be adapted according to their individual needs. Group practice eliminates passive downtime. Participants' focus and attention will guide the flow and pace of the session, and the goal is to build a positive attitude towards the sport.

Participants should be given the opportunity to try different methods of propelling the ball, with little emphasis on accuracy. Depending on the profile of the players, orientation of the chair and body should be directed to the target zone.

During this stage, the playing field may be reduced and modified, and, further along the pathway, longer distances can be explored.

Basic rules of the game should be introduced with understanding the dynamics of the game and awareness of the violations.

Promoting positive experience and increasing motivation is more important than calculating scores.

The format of pairs and teams can be introduced to foster motivation and enthusiasm for the sport.

Other than the order of throwing balls and having an equal number of throws, no other rules should be explored.

Equipment can be diverse, homemade, or players may comply with the requirements of the sport. Unused equipment from higher level players is a good option at this stage.

Depending on a player's ability, they can either stay at the recreational level or progress through the player's pathway.

Informal games between clubs, institutions and schools can be promoted at this stage.

#### **Important aspects when working with beginners:**

- PRAISE AND ENCOURAGEMENT – BOCCIA IS A GAME AND JOY – Play the game!
- CREATIVITY, PATIENCE AND A PLEASANT APPROACH – Learn to propel the ball!
- JOIN TRAINING ACTIVITIES, SHARING EMOTIONS AND EXPERIENCES – Get engaged!
- LEARN MORE ABOUT THE GAME – Explore the basic rules!
- ATTRACTION AND DIVERSITY OF SPORTS ACTIVITIES – Taking part in friendly club competitions.



## FUNDamentals / BEGINNERS

<b>TECHNIQUE / SKILLS</b>	<ul style="list-style-type: none"> <li>• Explore types of propel/release for throwers/kickers</li> <li>• Explore types of release for BC3</li> <li>• Explore limits of trunk control and wheelchair movement</li> </ul>
<b>TACTICS / STRATEGY</b>	<ul style="list-style-type: none"> <li>• N/A at this stage of development</li> </ul>
<b>EQUIPMENT</b>	<ul style="list-style-type: none"> <li>• Access to age and disability, specific equipment is key (boccia balls, boccia ramp, target mat etc.)</li> </ul>
<b>RULES</b>	<ul style="list-style-type: none"> <li>• N/A at this stage of development</li> <li>• Players may learn the general concept of boccia</li> </ul>
<b>TRAINING / COMPETITION ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Focus on developing confidence and desire to play boccia</li> <li>• Minimal instruction and correction allowing individuals to test their own physical limits</li> <li>• Activities accommodate the repetition of movement skills e.g. throwing to a target</li> <li>• Activities are largely unstructured with some structured play</li> <li>• Joint sport activities</li> </ul>

## 4.2. LEVEL 2 / DEVELOPMENT / LEARNING TO PLAY AND PRACTICE

After a successful introduction to the sport, players can progress to the next stage of the pathway. One of the key factors at this level is to find the best technique to propel the ball in a consistent way. A player determines the best position of their chair in the throwing box and its orientation to the playing area. In the beginning, the court can be used with reduced dimensions. The targeted areas of the court for throwing drills should be progressively adjusted by the preferred width and length of the player. Specific physical strength and conditioning training becomes crucial at this level to enhance the player's motor control.

Players should have a strong knowledge of the basic rules, game dynamics and scoring process. Players have the ability to apply the rules during various game situations which occur during a training session. Sport terminology is recommended to be used and promoted. An augmentative method of communication can be used.

The focus is on the ball placement within the scoring area and offensive and defensive play can be introduced. Indirect strategies may be introduced, as push on or push off shots. Equipment should be the best fit for the player and include balls of varying hardness.

Players should be familiar with the game of pairs and teams.

Players can be introduced to clubs and regional competitions.

At this stage players may undergo a classification process.

### **Important aspects when working with intermediate athletes:**

- Learning and practicing the variety of throwing.
- Understanding rules during the competitions.
- Using basic tactical elements during the match.
- Introducing pair or team competitions.
- Preparing for classification, how it works, knowing the rules.



## Learning to Play and Practice / DEVELOPMENT

<b>TECHNIQUE / SKILLS</b>	<ul style="list-style-type: none"> <li>• Adjust the position of the box chair in the box towards the target</li> <li>• Determine best propelling technique and pattern</li> <li>• Refine trunk control and balance</li> <li>• Refine ball grips</li> <li>• Breath control</li> <li>• Controlled delivery of the ball</li> <li>• Practice on the preferred type of shots</li> <li>• Augmentative alternative communication if needed</li> </ul>
<b>TACTICS / STRATEGY</b>	<ul style="list-style-type: none"> <li>• Being able to choose a position and angle of the chair</li> <li>• Understand ball arrangement</li> <li>• Progression of different target areas</li> <li>• Build on placement in the scoring area</li> <li>• Reduced court dimensions may still be used</li> <li>• Offensive and defensive play introduced</li> <li>• Progress in decision making</li> <li>• Understand a call room process</li> </ul>
<b>EQUIPMENT</b>	<ul style="list-style-type: none"> <li>• Start using different hardness of balls</li> <li>• Determine set of balls, ramps and assistive devices for player's individual needs</li> </ul>
<b>RULES</b>	<ul style="list-style-type: none"> <li>• Introduction of formal rules</li> <li>• Familiar with basic rules, game dynamics and scoring process</li> <li>• Adjust size of court pending developmental age of player</li> <li>• National classification</li> </ul>
<b>TRAINING / COMPETITION ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Focus on developing motor skills to build strength, power, posture and endurance</li> <li>• Participate in other activities such as swimming or other fitness activities</li> <li>• Boccia terminology used</li> <li>• If interested, athletes can start competitive practice at local / regional or school competitions</li> <li>• Cooperation between players and sport assistants</li> <li>• Familiar with the pair and team game</li> </ul>

## 4.3. LEVEL 3 / INTERMEDIATE / TRAINING TO TRAIN

This is the last stage of the training process and shows the greatest player development. At this level, the player has a defined classification and a greater understanding of the sport.

Players have defined and developed technical and tactical skills, and basic strategies.

The technical process has a consistent execution of the four stages (Set-up, Preparation, Delivery, Follow-through). The player improves in placement and pushing in their preferred areas.

Player requires a strong understanding of the rules and is able to consult about the rule book, when necessary, to answer questions.

Player chooses and uses the appropriate strategies to achieve the desired outcome against their opponent.

Players reflect on their performance through notations, video analysis, statistics and feedback from the coaches.

The player has their own dedicated equipment that allows them to play in the full court. The player follows a strong physical, psychological and nutritional routine. At this level, anti-doping policies should be introduced.

Players prepare for different levels of aspects of the competition cycle including pair and team format.

### **Important aspects when working with intermediate players:**

- Defined classification
- Understanding and using the rules
- Using wide variety of technical elements of propelling the ball
- Using tactical skills to build up the game
- Learning how to compete in different levels of competitions
- Knowledge about mental, physical, nutrition preparations
- Following the strength and conditioning routines
- Data analysing



## Learning to Play and Practice / DEVELOPMENT

<b>TECHNIQUE / SKILLS</b>	<ul style="list-style-type: none"> <li>• Well developed technical process</li> <li>• Range of propulsion techniques</li> <li>• Able to execute good line, pace and trajectory for selected shots</li> <li>• Accurately propel the ball to the target</li> <li>• Grow the efficacy level in 1st ball and in placement shots of players' preferred area</li> <li>• Well developed shot types covering all areas of the court</li> <li>• Practice the range of individual players' shot choose the best position of the wheelchair in the box</li> <li>• Cooperation and communication with sport assistant</li> </ul>
<b>TACTICS / STRATEGY</b>	<ul style="list-style-type: none"> <li>• Well defined strategies of the game</li> <li>• Assess and choose the most appropriate type of shot</li> <li>• Create offence and defence situations</li> <li>• Create and use tactical elements to develop their own game</li> <li>• Understand the flow of the game</li> <li>• Cooperate within their pair and team, building up their own games</li> <li>• Aware of where their performance needs to be improved</li> <li>• Can identify multiple solutions for each situation and consolidate the decision-making process.</li> <li>• Able to ask questions and has an opinion about the tactics</li> <li>• Analysing their game using video analyses</li> </ul>
<b>EQUIPMENT</b>	<ul style="list-style-type: none"> <li>• Adapted sports equipment to the player's needs and are essential for the quality of sports performance</li> <li>• Own dedicated sports equipment that meets their individual needs and cover majority areas of the court</li> </ul>
<b>RULES</b>	<ul style="list-style-type: none"> <li>• Knowledge and complies with the rules of boccia</li> <li>• Confirmed classification</li> <li>• Understand international classification requirements</li> <li>• Complete ADeL antidoping program</li> <li>• Understand and comply with antidoping requirements and procedures</li> <li>• Understanding of TUE and medical declaration form</li> </ul>
<b>TRAINING / COMPETITION ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Use of game analysis</li> <li>• Players supported by integrated support team including:             <ul style="list-style-type: none"> <li>• Physicians, Physiotherapist, Strength condition coach, Sport psychologist, Nutritionist, Lifestyle coaches, Biomechanics</li> </ul> </li> <li>• Participation in national, regional and international competitions</li> <li>• Play in team and pair divisions</li> <li>• Able to make part of the training process, learning about the technical process</li> <li>• To mentor the developmental players</li> </ul>

## 4.4. LEVEL 4 / ADVANCED / TRAINING TO COMPETE

This stage requires a high level of autonomy and commitment from the player. Performance is consistent with skills and strategies well developed. Different types of shots are effectively demonstrated over preferred zones across the whole court. The player's technical process is refined for each different type of shot.

Training is centred around how to compete, and the player's primary focus is to reach peak performance at targeted events, achieving success in a competition environment. Training and competition planning is conducted collaboratively between coaches and players.

The player chooses the strategy which best complements their individual abilities, while video and data analysis is used to assess the opponent's strengths, weaknesses and in-game strategies.

The player understands competition structure and how results affect their performance in a competition.

The player's equipment is high quality and customised to best accommodate the athlete's physical characteristics and preferred in-game tactics. The player is familiar with their own set of boccia balls and understands how to adapt to different types of flooring and changing environmental factors such as temperature. Sport specific wheelchairs and custom designed ramps contribute to the athlete's enhanced performance.

Psychological aspects play a major role; mental preparation and routines help the player to manage stressful situations. Physical therapy and nutrition are important to facilitate recovery and build stamina during training and competition.

At this level, the player's goal is to achieve a slot in the national team program, and an opportunity to represent their country at international competitions.

### **Important aspects when working with advanced players:**

- Knowledge on how to compete.
- Ability to execute and adapt tactical decisions.
- Understand strategies.
- Game analysis.
- Understands the importance of preparation, including mental, physical and nutritional aspects.
- Understands competition formats including pairs / teams' competition.



## Training to Compete / ADVANCED

<b>TECHNIQUE / SKILLS</b>	<ul style="list-style-type: none"> <li>• Be consistent in all different shot types to cover the court</li> <li>• High level of consistency of the technical process execution</li> <li>• Demonstrate high level of control of the line, pace and trajectory</li> <li>• Effective cooperation with sport assistant</li> </ul>
<b>TACTICS / STRATEGY</b>	<ul style="list-style-type: none"> <li>• Strong understanding of strategy and tactics</li> <li>• Shot risk management</li> <li>• Understand the decision-making process and be able to make independent tactical decisions</li> <li>• Take advantage of your own strengths and weaknesses to develop strong strategy</li> <li>• Be able to consider the best tactics based on knowledge of the opponent's strength and weakness</li> <li>• Complete a self-reflection on your own tactical decisions and impact of the opponent's game and score</li> </ul>
<b>EQUIPMENT</b>	<ul style="list-style-type: none"> <li>• Best equipment possible that meets individual players' needs, tactics and playing surface</li> </ul>
<b>RULES</b>	<ul style="list-style-type: none"> <li>• Full understanding of the game rules and competition format</li> <li>• Confirmed classification status</li> <li>• Complete ADeL anti-doping program and understand antidoping processes including TUE</li> </ul>
<b>TRAINING / COMPETITION ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Collaborate with coach to develop and implement long-term training, competition and recovery plan</li> <li>• Clarity of explicit targets at competitions</li> <li>• Participation in national, regional and world international competitions</li> <li>• More comprehensive support:             <ul style="list-style-type: none"> <li>• Physicians, Physiotherapist, Strength condition coach, Sport psychologist, Nutritionist, Lifestyle coaches, Biomechanics</li> </ul> </li> </ul>

## 4.5. LEVEL 5 / ELITE / TRAINING TO WIN

This is the level of excellence that all players strive to reach, and if they succeed, they certainly will be a legend!

Great players are motivated by personal growth and improvement, they have a love for the process and their sport. They are committed to reaching their full potential in all aspects of training, preparation and competition.

As the player progresses the mental training becomes more important.

Players have great control of their technical process across all areas of the court, while executing various strategies and tactics. The player can identify the strengths and weaknesses of the opponent and implement a strategy and use tactics which minimises the opponent's strength and targets the weaknesses.

Game and data analysis is used to enhance preparation, planning and training.

The player's annual training and competition plan is designed to ensure the player reaches peak performance at major international events and players at this level may reach the top of the world ranking.

Players at this level often mentor developing players, setting an example and serving as motivation for these athletes.

### **Important aspects when working with elite athletes:**

- Understanding and experience of how to win.
- Comprehensive understanding of strategies and the tactics required to execute strategies in-game.
- Competing for better world ranking.
- Has an influence on the whole sport movement.
- Taking part in a committee.
- Higher responsibility.
- Has an influence on the team.



## Training to Win / ELITE

<b>TECHNIQUE / SKILLS</b>	<ul style="list-style-type: none"> <li>• Highest consistency of all shot types</li> <li>• Demonstrate highest level of control of pace, line, trajectory</li> <li>• Highest consistency of technical process execution</li> <li>• Highly effective ball delivery to cover the court</li> <li>• Highest level of cooperation with the sport assistant</li> </ul>
<b>TACTICS / STRATEGY</b>	<ul style="list-style-type: none"> <li>• Successfully implement of long term strategies during the game</li> <li>• Optimise use of tactics to set up successful strategies</li> <li>• Ability to decide the most suitable shot</li> <li>• Manage and understand the flow and momentum of the game</li> <li>• Game time management (managing per shot timing in order to play within the time frame)</li> <li>• Complete a self-reflection on your own tactical decisions and impact of the opponent's game and score</li> </ul>
<b>EQUIPMENT</b>	<ul style="list-style-type: none"> <li>• Best equipment possible that meets individual players' needs, tactics and playing surface</li> </ul>
<b>RULES</b>	<ul style="list-style-type: none"> <li>• Confirmed classification status</li> <li>• Full understanding and application of the game rules and competition format</li> <li>• Understanding the Paralympic pathway and the qualification processes</li> <li>• Complete ADeL antidoping program and full understanding and application of the anti-doping processes including TUE</li> </ul>
<b>TRAINING / COMPETITION ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>• Sanctioned world competitions</li> <li>• Collaborate with coach to develop and implement macrocycle of training, competitions and recovery to meet explicit targets</li> <li>• Comprehensive team support: <ul style="list-style-type: none"> <li>• Physicians, Physiotherapist, Strength condition coach, Sport psychologist, Nutritionist, Lifestyle coaches, Biomechanics</li> </ul> </li> <li>• Video game analysis</li> <li>• Game statistics for risk assessment</li> <li>• Comprehensive reflection and review on an annual basis</li> </ul>

## 5. RECREATIONAL LEVEL

Boccia does not always have to be competitive or guided by levels of excellence. Boccia is a very inclusive sport which can be played by everyone, regardless of age, ability and gender.

Players at the recreational level play for the pleasure and the enjoyment of the sport. All athletes can be active in the developmental pathway. Local and regional competitions can be organized to encourage recreational players to participate.

Equipment can be adapted to accommodate the player's physical characteristics; rules can be modified to facilitate greater understanding and a higher number of participants. This level is an opportunity to introduce the sport and have fun.

## 6. CONCLUSION

The creation of this document is just the first step in implementing the principles of Long Term Athlete Development for boccia in Bermuda. The principles of the model will be incorporated into future budgets and strategic plans.

The introduction of athletes to boccia, the recruitment and development of coaches and volunteers, and obtaining funding through government, individual and corporate donors, is critical to the future of boccia in Bermuda.

When the system provides adequate support, and the athlete attains the key competencies in each stage, including previous foundation stages, then the athlete is able, within his or her own limitations, to reach his or her full potential. By following the Boccia Bermuda LTAD model and participating as both athlete and facilitator, we can create a system that allows athletes to reach their potential.

## 7. REFERENCES

**World Boccia – Boccia Players' Pathway**  
**Canadian Cerebral Palsy Sport Association – Long Term Athlete Development Model**



## 8. APPENDICES

### APPENDIX A

#### Appendix A: Boccia Skill Chart

*Note: The acquisition, consolidation and refining rates in this chart are based on participants with congenital cerebral palsy. Participants who have a degenerative condition or acquired disability will move through the same stages, but the rates may vary. These stages are also based on IDEAL ages. Older athletes who come late to boccia can still experience success at a high level and should be encouraged to participate.*

**A** is for **Acquire** - when does the person learn the basics of the skill  
**C** is for **Consolidate** - when does the person know the basics and work on reinforcement.  
**R** is for **Refine** - means the person has the skill and is now perfecting the details  
**A/C or C/R** - Because the stages are several years long, it's likely the person will acquire and consolidate some skills in the same stage.

BOCCIA SKILLS	I/II	III	IV	V	VI	VII
Chronological Age	5-9	10-15	15-18	18-22	23-25	25-30
<b>A. TECHNICAL</b>						
Balance (Being able to deliver the balls without any risk)	A	C	R	R	R	R
<b>Positioning</b>						
Being able to physically position the chair	A	A/C	R	R	R	R
Choosing optimal position of chair in the throwing box			A	C	C/R	R
<b>Body positioning</b>						
Knowing the angles	A	A	A/C	C	C/R	R
Learning and rehearsing shot sequence		A	A/C	C	C/R	R
<b>Delivery skills</b>						
<i>Note: method of ball delivery will partially depend on an athlete's level of disability. ALL athletes should try ALL skills when first starting to play. Coaches and athletes should work together to determine the most effective method of ball delivery for that player. Athletes who cannot throw can use a ramp to deliver a ball and should focus on the delivery skills needed for that method.</i>						
<b>General Skills</b>						
Breath control		A/C	R	R	R	R
Bending over and coming back up	A	C	R	R	R	R
Stabilising trunk to provide stable base for accurate throwing	A/C	R	R	R	R	R
Using trunk to generate throwing force	A	C/R	R	R	R	R
Generating velocities		A/C	R	R	R	R
Aiming a ball	A/C	R	R	R	R	R
Timing release of a ball		A/C	R	R	R	R
Releasing a ball	A/C	R	R	R	R	R
<b>Throwing Skills</b>						
Grip (Holding the ball properly, finding the proper grasp)	A	C/R	R	R	R	R
Underhand throw	A/C/R	R	R	R	R	R
Overhand throw	A/C	R	R	R	R	R
Backswing	A/C	R	R	R	R	R
Kicking	A/C	C/R	R	R	R	R
Follow through	A/C	R	R	R	R	R
<b>Ramp skills (if applicable)</b>						
Head control for pointer use			A/C/R	R	R	R
Hand/Finger/Foot control for ramp use			A/C/R	R	R	R
<b>B. TACTICAL</b>						
<b>General Skills</b>						
Multi-shot planning				A	C	R
Shot risk assessment				A	C	R

## APPENDIX A

### Appendix A: Boccia Skill Chart

Shot risk management				A	C	B
Shot selection		A	A/C	C	B	B
Keeping track of managing playing time			A	C	B	B
Throwing shot to target	A	C	C	C/R	B	B
Concepts of offense and defense			A	C	B	B
Identify and correct technical errors			A	A/C	C	B
Applying the rules to your advantage			A	A/C	C	B
Determining when to call for the head referee			A	A/C	C	B
<i>Edits</i>						
Drawing		A	A/C	C	B	B
Busting		A	A/C	C	B	B
Lubbing		A	A/C	C	C/R	B
Bouncing		A	A/C	C	C/R	B
Ricochet/Rebound		A	A/C	C	C/R	B
Push/Bump		A	A/C	C	C/R	B
Block		A	A/C	C	C/R	B
<i>Combinative Edits</i>						
Push to block			A	C	C/R	B
Push to score			A	C	C/R	B
Flare and push			A	C	C/R	B
Flare and ricochet/rebound			A	C	C/R	B
<b>C. STRATEGIC</b>						
Playing the jack		A	C	C/R	B	B
Choosing which set of balls to use before the game starts			A	A/C	B	B
Choosing which colour to use after the toss		A	C	C	B	B
Knowing the rules		A	C	C/R	B	B
<b>D. DECISION MAKING</b>						
Where to throw jack		A	C	C	B	B
Choosing which ball to throw during the game			A	C	C/R	B
Choose when to use which equipment (extension, towel etc.)			A	C	B	B
Assessing when to use techniques to increase/decrease arousal			A	C	C	B
Deciding when to protest to the lead		A	C	B	B	B
Deciding when to maximize points		A	A/C	C	B	B
<b>E. PHYSICAL PREPARATION</b>						
Flexibility	A	C	C/R	B	B	B
Muscular endurance	A	C	C	B	B	B
Cardiorespiratory Endurance	A	C	C	B	B	B
Strength	A	C	C	B	B	B
Power	A	C	C	B	B	B
Posture	A	C	C/R	B	B	B
Techniques to increase/decrease arousal (breathing etc.)			A	C	B	B
Speed			A	C	C/R	B





APPENDIX B

Appendix B: Ancillary Skill Chart

A is for Acquire - when does the person learn the basics of the skill.  
 C is for Consolidate - when does the person know the basics and work on refinement etc.  
 R is for Refine - means the person has the skill and is now perfecting the details  
 A/C or C/R - Because the stages are several years long, it's likely the person will acquire and consolidate some skills in the same stage.

LTAD Stage	II/III	III	IV	V	VI	VII
Chronological Age	5-9	10-15	15-18	18-22	21-25	25-30
<b>ANCILLARY CAPACITIES</b>						
<b>Nutrition</b>						
• making sound nutritional choices	A	A/C	C	C	R	R
• foreign travel nutrition plan					A/C	R
• know Canada's Food Guide	A	C	C	C	R	R
<b>Travel Skills</b>						
• coordinate packing and preparing of all personal & sports equipment (wheelchair, ramp, medications, clothing, etc.)			A	C/R	R	R
• arrange appropriate inoculations or other medical preparations for travel				A	C/R	R
<b>Medico-Physical Upkeep</b>						
• skin care		A	C	R	R	R
• know and follow medication prescriptions			A/C	R	R	R
• awareness of community resources		A	A/C	C	R	R
• know meds/labels/interactions			A	C	R	R
• awareness of effects of time changes on prescriptions				A	C	R
<b>Recovery/Regeneration</b>						
• know how to stay hydrated		A	C	R	R	R
• awareness of personal physical status and needs		A	C	C	R	R
• sleep maintenance/jet lag strategies				A	C	R
• relaxation skills		A	C	C	C	R
• awareness of community health resources (massage therapy, sports psychology)		A	A/C	C	R	R
<b>Relationships</b>						
• Separate personal relationships from sport relationships		A	A/C	C	R	R
• recruit sport assistant			A	C	R	R
• select sport assistant			A	C	R	R
• training sport assistant			A	C	R	R
• manage sport assistants' functioning			A	C	R	R
<b>MENTAL PREPARATION</b>						
<b>Social</b>						
• assertiveness		A	C	C	R	R
• leadership skills		A	A/C	C	C	R
• communication skills	A	C	C	C	R	R
• sportsmanship	A	C	B	C/R	R	R
• team player	A	C	C	R	R	R
• confidence in social situations	A	C	C	C	R	R
<b>Emotional</b>						
• self-confidence	A	C	C	C	R	R
• positive/control of emotions		A	C	C	R	R
• adapts to change	A	A/C	C	C	R	R
<b>Cognitive</b>						
• learn from observing others	A	C	C	R	R	R
• goal setting		A	C	R	R	R
• time management		A	C	R	R	R
• mental imaging/ focus		A	A/C	C	R	R
• evaluating advice			A	C	R	R

## APPENDIX C

### Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics

#### Physical, Mental and Cognitive, and Emotional Development Characteristics

The following Moving Scales provide a guideline on how to utilize the Physical, Mental, Cognitive and Emotional Development Characteristics tables, pointing out the overlaps at the various stages of LTAD.



#### Late Childhood - Physical Development

Basic characteristics	General impact on performance	Implications for the coach
Heart size is increasing in relation to rest of body.	Endurance capacity is more than adequate to meet the demands of most activities.	Understand that the child has the capacity to keep going.
Anaerobic system is not developed.	There is a limited ability to work anaerobically.	Plan short duration anaerobic activities. The ability to hold breath must be practiced and built up gradually.
A child's metabolism is less economical than an adult's.	Children use more oxygen whether it's expressed in absolute values or prorated for body weight.	Do not expect younger children to keep up with older children.
Large muscle groups are more developed than smaller ones.	The child is skilful in movement requiring the use of the large muscle groups.	Emphasize the development of general motor skills involving the large muscle groups. Then gradually introduce more precise, co-ordinated movements requiring the interaction of smaller muscle groups.



APPENDIX C

**Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics**

Basic characteristics	General impact on performance	Implications for the coach
Children have a shorter tolerance time for exercise in extreme temperatures.	Children may show symptoms of overheating or hypothermia more quickly.	To acclimatize children will take longer so longer warm-ups may be required. Watch closely for signs of distress caused by extremes of temperature.
Children subjectively feel able to be active in the heat before physiological adaptation has occurred.		Postpone or restrict exercise in heat or humidity and ensure that plenty of fluids are ingested. Thirst is not a good indicator of fluid need.
Motor patterns become more refined and the balance mechanism in the inner ear gradually matures.	Great improvement in agility, balance, co-ordination, and flexibility occurs towards the end of the stage.	Emphasize co-ordination and kinaesthetic sense when doing activities. Balance in the water using buoyancy aids is one way to develop these abilities.
Strength develops by the improvement in the neural pathways.	There is apparent improvement in strength not brought about by the neuro-muscular adaptations of muscle fibres.	Plan coordination activities.

**Late Childhood - Mental and Cognitive Development**

Basic characteristics	General impact on performance	Implications for the coach
The attention span gradually increases.	Children cannot listen or stay still for long periods.	Provide short and precise instructions. Devise strategies to ensure children are listening. Children learn well by imitating and practicing correctly-modelled movements.
Children are enthusiastic and often impatient.	Children want to move and not listen.	Do not bombard children with technical information. Give only sufficient detail for the activity to be undertaken. Keep the fun.
Children have very limited reasoning ability.	Children love to be led.	Direct the training and give it a tight focus with activities that are fun and well planned. Introduce imaginative ways of achieving performance goals.

## APPENDIX C

### Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics

Basic characteristics	General impact on performance	Implications for the coach
Children enjoy the repetition of activities and improve through experience.	Skill learning must be directed; children do not learn correctly just by trial and error.	Provide correct demonstrations of the basic sport skills. Personal demonstrations must be accurate.
Children establish their preferred learning style.	Learning is through verbal, visual, or manual means. Most children are doers!	Use a variety of learning styles to suit individual needs.
Imagination is blossoming.	Creativity should be encouraged.	Allow the children to play and experiment. Use their ideas to create exciting sessions. Structure to encourage individuality and creativity. Sport provides an excellent vehicle for expression.
Language skills may be limited but are improving.	Children can't make corrections to their performance unless they understand what is being asked of them.	Use terminology that can be easily understood. Gradually introduce technical terminology. Children love long words.

#### Late Childhood - Emotional Development

Basic characteristics	General impact on performance	Implications for the coach
Children like to be the centre of attention.		Develop this characteristic. Plan activities that guarantee success. Always move from simple to more complex when teaching a skill movement. Allow children to show their skills.
Children are developing their self concept.	Children tend to evaluate their performance as a whole and in terms that may be black and white. (I was brilliant, or, I was useless.)	Provide positive reinforcement to build self-esteem. Children are likely to perform the actions again if they are successful and feel good about it. Build on success.
Children feel secure with a routine and structure to training.	Introduce change sensitively and gradually.	Build a structure that is progressive but maintains continuity.
Children feel secure when coaching is constant.	Children like things to be fair.	Set and maintain high levels of expectancy, but be consistent with each child. Do not let mood swings or personal situations change coaching behaviours.



APPENDIX C

**Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics**

Early Adolescence - Physical Development		
Basic characteristics	General impact on performance	Implications for the coach
Significant proportional changes occur in bone, muscle, and fat tissue.	Athletes may temporarily lose some of their kinaesthetic awareness, their ability to 'know where they are'.	Because athletes will need to constantly change their positions, monitor carefully to ensure appropriate adaptations are being made.
Different parts of the body grow at different rates. Arm and leg length increases before the trunk.	Athletes may appear gangly and lose control of their extremities.	Make athletes aware of the effect of their changing body shape. Skills already refined may need to be re-learned.
Decreases in flexibility result directly from growth.	Movement may become restricted.	Emphasizes low stretching exercises.
Increases in growth and decreases in flexibility make adolescents prone to injury from acute impact.	Injury can result from exercise of an acute nature such as forced elongation of muscles during kicking and jumping or from overuse.	Vary land-based activities and activities to avoid overuse.
Girls begin their growth spurt between 10 and 14 years and grow at very different rates.	Athletes are very different sizes at the same age.	Be aware that age-related groupings may not be appropriate.
There is a significant increase in the production of red blood cells.	The oxygen transportation system is improved.	Introduce structured aerobic training to make the most of these changes. Only short duration anaerobic training is recommended.
The central nervous system is almost fully developed.	Agility, balance, and co-ordination are fully trainable.	Use this period for maximum improvement in skill development.
Abstract thinking becomes firmly established.	Adolescents should be part of decision-making processes and be more responsible for their decisions.	Base decision making for strategies on skill level.
A new form of egocentric thought develops.	The result may be a strong fear of failure.	Plan for success. Introduce coping strategies, including mental imagery.
Young people are eager to perfect their skills.	Structure successful skill learning based on individual needs.	Build on success. Be aware that athletes develop at very different rates and although early developers make early progress, include all athletes. Be aware that late developers may have greater potential.

## APPENDIX C

### Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics

#### Early Adolescence - Emotional Development

Basic characteristics	General impact on performance	Implications for the coach
Physical, mental, and emotional maturity may not develop at the same time.	Athletes who look mature may not act it. Confusion or anxiety may arise.	Develop communication skills and understanding.
Tensions may arise between adults and adolescents.	Adolescents need help to cope with their physical and emotional changes.	Ensure two-way communication channels are always open. Allow athletes input into the decision making.
Hormonal activity increases.	Athletes may experience mood swings and behaviour may change.	Communicate and accept changes, but don't let hormonal changes be an excuse for negative behaviour.
Social interaction between males and females becomes important.	Athletes want to form friendships and it is important to allow time for them to develop positive relationships.	Try to organize social events that allow social interaction.

#### Late Adolescence - Physical Development

Basic characteristics	General impact on performance	Implications for the coach
Post-menarche height begins to stabilize. Increase in height is about 5%. Stabilization of muscular system also occurs.	Muscles have grown to mature size, but increases in muscular strength continue into the 20s.	Maximize strength training to bring about overall improvement. Optimize neuromuscular training.
Skeletal maturation continues.	Connective tissue is strengthening.	Continue progressive overloading in training.
By 17, girls have generally reached adult proportions.	Girls proportionately gain more weight during this period.	Optimize aerobic training. Be aware of how to deal with weight gains. Teach athletes how to compete in varied circumstances.
Rate of improvement in motor ability declines.	Rate of improvement in skill development declines.	Be aware that the rate of improvement in motor ability will be slower, but improvement will still be made.



APPENDIX C

**Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics**

**Late Adolescence - Mental and Cognitive Development**

Basic characteristics	General consequences for performance capabilities and limitations	Implications for the coach
Generally by 16, the brain has reached adult size, but continues to develop neurologically.	Athletes can understand the technical requirements of their sport.	Make sure athletes understand why they are doing certain things.
Critical thinking becomes more established.	Athletes can make decisions about their training pathway.	Allow athletes input and reduce the amount of feedback and make athletes think for themselves. Develop awareness of performance by increasing kinaesthetic knowledge.
There should be complete understanding and acceptance of the need for rules, regulations, and structures.	Rules are seen in simplistic terms and must be clear and well defined.	Always be seen to be fair because adolescents have a strong sense of fairness in making decisions. Make athletes part of the decision-making process.

**Late Adolescence - Emotional Development**

Basic characteristics	General impact on performance	Implications for the coach
Major decisions about examinations, universities, and employment work have to be made.	There are 'pulls' on time and energy.	Build in prophylactic breaks. Be aware of external pressures. Seek professional guidance to ensure the correct career and educational pathway.
Peer group pressure leads to conflicting loyalties.	An athlete may give up sport because of peer pressure and the need to be seen as one of the gang.	Be sensitive in goal setting to ensure that common goals are established and met.
Self-actualization and self-expression are important.		Treat athletes as adults. Share goals and work co-operatively towards them. Maintain a coached structure.
Interactions with friends of both sexes continue to be a strong priority.		Allow time to establish independent social interaction.

## APPENDIX C

### Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics

#### Early Adulthood - Physical Development

Basic characteristics	General impact on performance	Implications for the coach
Physiologically, the body reaches maturity during this stage.	All physiological systems are fully trainable.	Ensure that physical training programs employ the most advanced techniques and sport science information to facilitate maximum adaptation and minimize injuries.
		Ensure that all muscle groups and body alignments are well-balanced, complemented with optimum flexibility ranges.
		Use state-of-the-art testing and monitoring programs.
		Carefully monitor overtraining and overstress.
Final skeletal maturation in females occurs at about 19-20 years and in males about 3 years later.		Organize regular medical monitoring Schedule additional blood tests for females in case of anemia.

#### Early Adulthood - Mental and Cognitive Development

Basic characteristics	General impact on performance	Implications for the coach
Neurologically, the brain matures about 19-20 years of age.	Athletes are capable of self-analyzing and correcting and refining skills. Athletes can analyze and conceptualize all facets of their sport.	Establish winning as the major objective.
	Well-developed information processing skills improve the athlete's ability to visualize verbal instructions.	Implement principles of adult learning.
There is a complete understanding and acceptance of the need for rules, regulations, and structure.	The young adult must perceive the rules and structure as being clearly defined and fair.	Involve athletes in decision making and planning team or group activities.





APPENDIX C

**Appendix C: Physical, Mental and Cognitive, and Emotional Development Characteristics**

**Early Adulthood - Emotional development**

Basic characteristics	General consequences for performance capabilities and limitations	Implications for the coach
There is a need to be self-directed and independent.	Athletes are ready to assume responsibility and accept the consequences of their actions.	Emphasize goal setting to give definite direction and purpose to the athlete's overall program.
Self-actualization and self-expression are important.		Treat athletes as adults and with respect. Remember that the coach's direction and structure remain important.
Major decisions on career, education, and lifestyle are priority at some point in this stage.	Major changes in interests, hobbies, and physical activities occur.	Make professional guidance available, considering off-season and educational pursuits.
Interactions with the opposite sex continue to be a strong priority with lasting relationships developing.		Provide athletes with ample opportunities for independent social interaction.



## LONG TERM ATHLETE DEVELOPMENT



### BOCCIA BERMUDA

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