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CANADA

Long Term Athlete Development

GYMNASTICS
THE ULTIMATE HUMAN MOVEMENT EXPERIENCE





GYMNASTICS, WHERE GROWTH HAS NO LIMITS

Gymnastics is much more than what you see at the Olympics. These elite athletes are but one part of the big family of gymnastics. In fact, the six gymnastics disciplines offer opportunities for fun, participation, learning and competition for everyone, regardless of age, gender or ability.

In Canada, the family of gymnastics includes six different competitive disciplines – Men's Artistic Gymnastics (MAG), Women's Artistic Gymnastics (WAG), Rhythmic Gymnastics (RG), Trampoline and Tumbling Gymnastics (TG), Aerobic Gymnastics (AG) and Acrobatic Gymnastics (AcG).

Gymnastics-for-All is the historical and cultural base of all gymnastics. *Gymnastics-for-All* incorporates all educational and recreational gymnastics activity through a participation-based philosophy of fun, fitness and fundamentals for all ages.

The roots of all gymnastics and, indeed, the roots of almost every other sport, originate in the body's *Fundamental Movement Patterns*. Every single skill in every gymnastics discipline evolves from one or more of these movement patterns:

- Landings
- Static Positions
- Locomotions
- Rotations
- Swings
- Springs
- Object Manipulation

The quality of movement for each of these patterns is extended and enhanced through the use of music, rhythm and the principles of dance. Even the most difficult skills – the ones that win Olympic medals – are combinations of these basic movement patterns, and an infinite number of variations of the qualities of movement.

If well developed early in life, these movement patterns will:

- enhance sport participation and enjoyment
- contribute to a healthy, active lifestyle
- provide basic physical and motor capabilities that we can draw on for a lifetime
- allow those with the interest and ability to achieve success at any step of the competitive or recreational ladder in gymnastics.

WHAT IS THE PURPOSE OF THIS DOCUMENT?

The focus of this document is Long Term Athlete Development, or LTAD, for participants in gymnastics. By respecting the principles of LTAD, we will ensure that our programs meet the developmental needs and abilities of participants in each stage of LTAD.

This document sets out a framework for LTAD in gymnastics that also reinforces Gymnastics Canada's stated vision, mission and goals. When fully implemented, the LTAD framework should allow GCG to fully realize its goals for both high performance achievement and gymnastics for life.

This LTAD framework includes everyone who is part of the system of gymnastics in Canada:

- **Participants** – who will benefit from excellence in programming and coaching, at all stages of development, for all levels of interest and ability and in all gymnastics disciplines
- **Coaches** – who design and implement participation and training programs that respect the principles of LTAD
- **Parents** – who must understand and support the principles of LTAD and their importance in child development, and who must understand coaching decisions and be supportive partners in participant progression, training and competition
- **Clubs** – who provide organizational structure and programs that support LTAD, and who support ongoing professional coaching development appropriate to each stage of athlete development
- **Provincial/Territorial Gymnastics Federations and Associations** – who provide encouragement and resources for club development, and who ensure that provincial development programs, competitive structure and major events respect and support the principles of LTAD. They must work with GCG to integrate and align their programs according to the principles of LTAD.
- **Gymnastics Canada Gymnastique** – who provides national leadership and assists P/T offices to integrate and align all programming to respect the principles of LTAD
- **Officials, Sport Leaders and Volunteers** – who work within the national, provincial and club structure and who support and respect the principles of LTAD in all decisions
- **Educators** – who integrate the activities of gymnastics into school-based programs, and who ensure ongoing teacher training based on fundamental movement patterns
- **Performance Enhancement Teams** – who work with competitive athletes and coaches to ensure fit, healthy, successful athletes
- **Sponsors and Partners** – who work with GCG to support programs and events

We are all part of Gymnastics Canada!

TABLE OF CONTENTS

2	Foreword: In Gymnastics, There is Something for Everyone
4	Message from the President
6	GCG Mission Statement
7	Introduction
8	Long Term Athlete Development
11	Best Practice Strategies for LTAD
12	The 10 Factors Influencing LTAD
16	Additional Factors Affecting Athletes With a Disability
18	Long Term Athlete Development for Gymnastics
20	Active Start
22	Fun, Fitness, and Fundamental Movement Patterns
24	Building the Skills of Gymnastics
27	Specialization in a Gym Discipline
30	Becoming a Consistent Competitor
34	Winning at All Levels
36	International Excellence and Podium Performances
38	Gymnastics for Life – Active for Life
40	Appendices
41	Appendix 1: Resource List
43	Appendix 2: Glossary of Terms
46	Appendix 3: Model of Development by Frequency of Practice and Play
47	Appendix 4: The Stages of LTAD Compared to FIG Age Group Stages
48	Appendix 5: Summary of Physical, Cognitive and Emotional Characteristics of Each Stage of LTAD
54	Appendix 6: GCG's Partners
57	Appendix 7: Protocol for Height Measurements

FOREWORD: IN GYMNASTICS, THERE IS SOMETHING FOR EVERYONE

FUN

Ask anyone why they participate in gymnastics, and they will tell you that it is FUN. Regardless of your age or ability, it really is fun to learn challenging new skills, to play on interesting equipment, to do exciting routines in a group or to perform in a demonstration or competition.

The World Gymnaestrada is one of the largest sporting events in the world. Every four years, over 25,000 gymnastics enthusiasts come together to perform amazing, non-competitive routines in all different types of gymnastics. At the 2007 World Gymnaestrada in Dornbirn, Austria, the Canadian delegation consisted of over 500 participants ranging in age from 10 to 76. Some of these participants were former elite competitors, while others participated in gymnastics programs for two or three hours per week. Many of them will continue to participate in gymnaestradas for years to come. Participation and passion for gymnastics brings continuing enjoyment.

FITNESS and FUNDAMENTALS

Gymnastics is about 'how the body moves' and therefore is the *Foundation Sport* for all physical activity and sports. Early participation in gymnastics develops the most fundamental movement skills, physical and motor abilities, mental abilities, social and emotional abilities and performance skills that carry over into all aspects of life.

Gymnastics is the perfect activity for the development of *Physical Literacy* – the fundamentals of moving the body and moving objects. Physical literacy enables people of all ages to move confidently and efficiently in any environment that presents a physical challenge. It is an important life skill, and the benefits of physical literacy go far beyond sport participation.

All children must be active from their earliest days so that they develop physical literacy, which will enable them to enjoy healthy, active lifestyles, and a variety of movement activities. Some of these children will certainly go on to become the Olympic champions of the future. But the majority will go on to lead active lives, will continue to enjoy doing gymnastics and will be well equipped to pursue any other sport or activity that they choose.

OUR RESPONSIBILITY

Of the 200,000 registered gymnasts in Canada, only a very small percentage will ever take part in a competition. Over 90% of Canadian gymnasts come to a club for one hour of recreational classes per week, where they learn the basic body movement patterns that are part of physical literacy. Everyone in gymnastics has the responsibility to ensure that all of our participants have a positive experience.

We must ensure that our programs can meet the particular developmental needs of ALL gymnasts. We must ensure that all participants have FUN with gymnastics, gain FITNESS through gymnastics, and learn sound FUNDAMENTALS of gymnastics, regardless of age, ability or level of performance.



MESSAGE FROM THE PRESIDENT

At the 2007 Annual General Meeting, the Gymnastics Canada Long Term Athlete Development (LTAD) framework was endorsed by all the Provincial / Territorial Gymnastics Associations / Federations and the Technical Program Assemblies. This national endorsement represents a commitment from all the partners to collaborate, evolve, and to work together for the progressive development of Canadian gymnastics.

This document sets out a framework for LTAD that reinforces Gymnastics Canada's stated vision, mission and goals. When fully implemented, the LTAD model will be a vehicle for change in our organization and should allow Gymnastics Canada to realize its goal for both high performance achievement and gymnastics for life.

It is now well recognized that Gymnastics, as a foundation sport, provides the base for all other sports and represents the perfect activity for the development of fundamental movement skills and physical literacy. As we move forward with implementation, this model will positively impact on the Canadian delivery system and on the quality of the gymnastics experience for all participants, regardless of age, gender, ability or disability.

As we work toward achieving a fully integrated and unified Canadian gymnastics system, gymnastics in Canada will continue to grow and will encourage participants enjoy success at every level of participation. Principles of LTAD provide the framework we need to reach our goals.



Jean-Paul Caron
President & CEO



“A 7 hour 11 minute spacewalk – the ultimate gymnastics routine”

– Steve MacLean,
Canadian astronaut and first gymnast to walk in space

“Long-term athletic development is very important for all levels of gymnastics in Canada. We all know that inherent gymnastics skills are good fundamentals for almost any other sport. There is no question that gymnastics training prepared me for my future career and I am left with the reflection that my participation in gymnastics opened the door to an opportunity of a lifetime.”



“Gymnastics is my passion. It has provided me with so many experiences and opportunities. Gymnastics has helped me develop into a positive and healthy person and it had a tremendous impact on who I am today. I have gained numerous qualities through my participation in gymnastics and they will last a lifetime.”

– Kyle Shewfelt
2004 Olympic Gold Medal,
Artistic Gymnastics – Floor



Gymnastics – the ultimate human movement experience

- Gymnastics is a foundation for all sports. It demands a full range of physical and mental attributes and a combination of technical precision, artistry and creativity
- Gymnastics is for fun, for recreation, for competition, for education, for excellence, for personal improvement. Gymnastics is for life!
- Gymnastics is a multi-discipline sport
- Gymnastics is the ultimate human movement experience.

Gymnastics Canada's Mission

GCG, through its Provincial/Territorial members, is a federation of clubs, which has as its mission to:

Promote and provide positive and diverse gymnastics experiences through the delivery of comprehensive quality gymnastics programming by:

- Leading the Canadian gymnastics system
- Directing High Performance programs in the pursuit of international excellence
- Guiding the development of national programs at all levels

Vision of Gymnastics

We envision a future where:

- Gymnastics is a multi-discipline sport providing the opportunity of participation and promoting fitness, well-being and social values at all levels of interest and ability, regardless of age, from recreation to high performance
- The full potential of its diverse disciplines is maximized
- The integrity and specificity of its diverse disciplines are preserved
- Other gymnastics related activities / disciplines with similar attributes are developed and promoted
- Gymnastics is a major sport in Canada practiced in a safe and technically sound environment.



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INTRODUCTION

Dreams of success take many years to fulfill.

Success in gymnastics is the result of many years of extensive planning and preparation by coaches, clubs, parents and other supporting partners. Long term development applies to all levels of participants and in all gymnastics disciplines. The most successful long term development programs are the result of full system integration and alignment, with all partners working together in the best interest of the participant.

Early exposure to gymnastics activities should be one of the first steps for all children on the road to physical literacy. The optimal time for the development of physical literacy is during the first 10 years of a child's life. From their earliest days, all children should have opportunities to participate in many activities, under the guidance of trained instructors, teachers and coaches.

Canadian gymnastics has a well-earned international reputation for excellence. Canadian gymnasts are Olympic and Commonwealth Champions, World Championship medallists and Special Olympics World Games medallists. Canadian programs for coaching education and athlete development are recognized around the world and are the foundation for several other international programs. Our athletes, our programs and our successes are the result of many years of planning and development.

We know that success does not happen by chance. Research has shown that it takes 10 years of deliberate practice for an athlete to reach elite levels. For this preparation to be most effective, an athlete should first have a solid base of fundamental movement patterns and fundamental gymnastic skills, which equate to physical literacy.

Many children attain inadequate amounts of physical activity with the result that they are overweight, in poor physical condition, and have poorly developed movement skills. The decline in school physical education programs, and an increased trend to inactive leisure activities have combined to produce a generation where too many children are physically underdeveloped leading to a near-certainty for long-term health problems.

Change is certainly needed, and the vehicle for change is a Long Term Athlete Development (LTAD) Framework. LTAD supports the four goals of the Canadian Sport policy:

- Enhanced Participation
- Enhanced Excellence
- Enhanced Capacity
- Enhanced Interaction.

LTAD reflects a commitment to contribute to the achievement of these goals. LTAD has been successfully adopted by numerous Canadian and international sport organizations. It is participant-centred, coach-driven, and administration, sport science and sponsor supported. Athletes who progress through the stages of LTAD experience instruction, training and competition in programs that have been developed in consideration of their specific biological and developmental needs.

LONG TERM ATHLETE DEVELOPMENT

- Is “Made in Canada” and reflects the reality of our Canadian situation, while recognizing international best practices, research and normative data
- Is a journey that is divided into age-related steps, or stages, which are based on the physical, mental, emotional and social development of children and adolescents
- Ensures physical literacy in all children by promoting daily physical activity and a common approach to developing physical abilities through community recreation and elite sport programs
- Is inclusive and recognizes the need to involve all Canadians
- Ensures that optimal training, competition and recovery programs are provided throughout a gymnast’s career
- Provides an optimal competition structure for the various stages of a gymnast’s development
- Has an impact on the entire sport continuum
- Integrates elite sport, community sport and recreation, scholastic sport, and school physical education
- Promotes a healthy, physically literate nation whose citizens participate in lifelong physical activity.

(adapted from *Canadian Sport for Life*, Canadian Sport Centres, 2006)

A strong web of partnerships is required to ensure a national program of long term athlete development for all Canadians. We must work closely with all levels of government, with other sport groups and with the education and health systems to ensure a fully functioning, integrated system. This system should include early and appropriate exposure to gymnastics activity for all children, regardless of geography, income, or ability.

Our goal is that all Canadian children become physically literate, and that they are athletic, healthy and strong. Gymnastics must be an important part of LTAD for all Canadians.

What does LTAD mean for Gymnastics in Canada?

- Gymnastics is recognized by the International Olympic Committee as a Foundation Sport. Gymnastics participation is crucial to the development of fundamental movement patterns and fundamental sport skills that contribute to physical literacy. All children should have the opportunity to participate in gymnastics. Universal access to gymnastics programs can only be ensured by integrating gymnastics activity into the education systems in Canada.
- LTAD is a framework for the optimal development of gymnasts of all ages, interests and abilities and in all the disciplines of gymnastics. It provides a structure for national/provincial program design, for club program design and for coach education. It ensures that all gymnastics participants have the opportunity to reach their potential, and that Canada is continually represented on World and Olympic podiums.
- LTAD is a vehicle for change in our organization. By understanding and respecting the principles of LTAD, we are in a better position to make sound decisions about the future directions of gymnastics in Canada. It allows us to fully realize the goals we have set and to live up to the mission we have established for GCG.

**What challenges do we face in fully realizing our mission statement?
What must we do to overcome these challenges?**

- **Focus energies and resources on providing services to the majority of gymnastics participants**

Even though more than 90% of gymnasts in Canada participate in non-competitive *Gymnastics-for-All* programs, the focus of the Canadian sport system is strongly dependent on winning international medals. Sport funding and resource allocation must ensure that all children can benefit from gymnastics, and that quality gymnastics programs, and trained coaches are accessible to all, regardless of income level, geography, age, interest or ability.

- **Ensure a balance of resources and energies for all facets of gymnastics – from participation to elite**

All components of gymnastics are equally important and are interdependent. The variety of opportunities for participation, performance and competition makes gymnastics unique and provides all participants with the opportunity to enjoy success, according to their level of interest and ability. Program development and enhancement must take place in all disciplines, and for all types of participation and levels of ability.

- **Ensure that the education system is an important component of the delivery system for gymnastics**

The education system provides universal access to Canadian children. Gymnastics Canada, provincial associations and their partners must work closely with the education system to assist in ensuring that fundamental body management – gymnastics – is firmly established in a national physical education curriculum, to train teachers to teach fundamental movement patterns and fundamental gymnastics skills, and to integrate gymnastics activity into their programming. Teachers and schools must remove all barriers preventing children from learning gymnastics.



What challenges do we face in fully realizing our mission statement? What must we do to overcome these challenges? (continued)

• **Bring the family of gymnastics together**

GCG encompasses six competitive gymnastics disciplines as well as many non-competitive activities such as educational, recreational and display gymnastics which are grouped in a category called *Gymnastics-for-All*. LTAD is an opportunity to bring the family of gymnastics together, to explore our commonalities, to forge links for learning and communication and to understand and celebrate unique qualities.

• **Give *Gymnastics-for-All* a higher emphasis**

Gymnastics-for-All programs and activities are crucial components in the full implementation of LTAD. While each of the six gymnastics disciplines has unique qualities, they all have their roots in non-competitive *Gymnastics-for-All*. An enhanced communication between the different disciplines of gymnastics is crucial to the development of the sport. Non-competitive programs are often neglected, even though they provide the framework and structure for all types of gymnastics. In our implementation of LTAD, we must ensure that *Gymnastics-for-All* programs receive attention, funding and resources.

• **Recognize and support the spirit of sport for life**

Our attitudes must take into consideration that many children who begin gymnastics will not remain in the sport. We must re-orient our thinking toward teaching gymnastics for the development of physical literacy that can be applied to any sport. Similarly, we must work together as a family of gymnastics so that children who wish to remain in gymnastics are actively streamed into the most appropriate discipline, level and club setting.

• **Make formal links with organizations offering gymnastics programs for athletes with a disability**

Special Olympics Canada, leaders in sport programs for athletes with intellectual disabilities, has some of the best rhythmic gymnasts in the world. GCG partnerships with organizations such as Special Olympics Canada will help deliver quality coaching, current technical knowledge, and opportunities for participation in GCG programs and activities. We need more opportunities for athletes with a disability to access GCG resources, opportunities and club programs.

• **Improve international performances by offering better development programs**

All participants must develop sound fundamental movement patterns and fundamental gymnastics skills. For those who choose to move into competitive programs, sound basics, expert developmental level coaching and appropriate competitive structures are required to ensure success. We must ensure that children receive age-appropriate amounts of training and competition, and that we avoid doing “too much, too soon”.

• **Monitor the growth and development of athletes and use this information to individualize training and competitive schedules.**

It is important to understand that periods of rapid growth will require large adjustments to a gymnast’s program, and will almost inevitably result in a temporary plateau in skill development.

• **Ensure complete alignment and integration of the system of gymnastics in Canada**

We must broaden our perspective and work together to give all participants the ultimate movement experience that is gymnastics. System alignment should be both vertical (i.e. from GCG to P/T partners to clubs) and horizontal (linked among all the gymnastics disciplines).

• **Promote LTAD nationally and provide incentives for implementing best practice strategies**

Best Practice strategies for LTAD

- Entry level, active start and recreational programs should allow children to develop all fundamental movement patterns and gymnastics skills, through exposure to all the disciplines of gymnastics.
- Coaches require more information on LTAD.
- Coach training programs must focus on the commonalities of the 6 gymnastics disciplines and the fundamental movement patterns. Coaches should be trained to lead programs that are multi-movement, and which incorporate aspects of all gymnastics disciplines.
- Coaches need to incorporate more flexibility in their teaching and coaching strategies.
- Coaches require a thorough knowledge of the periods of accelerated adaptation to training, and the ability to modify training programs to accommodate these periods.
- Coaches, athletes and parents require more knowledge and awareness of the growth changes in gymnasts. Particular attention must be paid to accelerated growth during the adolescent years, especially for gymnasts in competitive programs.
- Coaching should be treated as a legitimate profession. Clubs must be educated to value their coaches as assets.
- Young gymnasts must be trained by experienced coaches.
- Increase the awareness and understanding of how to create more inclusive programs. Coaches should be trained to work with participants with a variety of disabilities. Clubs should be supported and provided with incentives to offer programs for athletes with a disability.
- Provincial/territorial governments must endorse and support Gymnastics Canada's LTAD framework, be partners in overall system alignment and integration, and provide incentives to P/T gymnastics organizations to implement the national framework.
- Calendar planning must cooperatively address the needs of all levels of LTAD. The needs of any one level should be considered individually.
- Competitive schedules, whether regional, provincial or national, must be in the best interest of the athletes they are servicing. If current competitive structure or events are in conflict with LTAD principles, they should be revisited to ensure achievement of program goals, and athlete performance goals.
- The fun and social aspects of gymnastics are very important to both recreational and competitive programs. *Fun, Fitness and Fundamentals* is a basic principle of Canadian gymnastics and should be reflected in all programs.
- We must always remember the important role that we play in developing the whole person, not just the gymnast.
- We should ensure that gymnastics supports a sense of fun, social interaction and holistic development, regardless of the age and level of the athlete.

THE 10 FACTORS INFLUENCING LTAD

1. The FUNdamentals

Gymnastics prepares children to participate in almost any other sport. Gymnastics develops fundamental body management skills via the movement patterns of Landings, Statics, Locomotions, Rotations, Swings, Springs and Object Manipulation. Through the development of these fundamental movement patterns, children develop a full range of physical and motor abilities (endurance, strength, power, flexibility, agility, balance, coordination and speed).

In addition, many gymnastics activities also develop rhythm and dance skills.

2. Biological Age versus Chronological Age

Chronological age refers to the number of years and days elapsed since birth. A group of children of the same chronological age will differ by several years in their biological age and maturity of physical, motor, cognitive and emotional qualities.

Long Term Athlete Development is based on maturity, not chronological age. We all follow the same stages to maturity, but the timing, rate and magnitude of maturity of various qualities differs between individuals. LTAD requires the identification of early, average and late maturation to help design appropriate instruction, training and competition programs according to the readiness of the participant.

In competitive WAG and RG, late maturing athletes have an advantage over early maturers. The pre-pubescent body has a mechanical advantage over the adult body for the acquisition of the complex skills required in these disciplines. Early maturing gymnasts develop an adult body at a much younger age than late maturing gymnasts.

Rapid or slow transit through puberty could be important in gymnastics sports. Rapid transit means that the individual goes through the growth spurt quickly (e.g. in 1.5 years), as compared to another individual who may take 4 or 5 years, or more, to reach maturity (slow transit). Rapid transit can have a detrimental (but not necessarily permanent) effect on skills, speed, strength, power and flexibility, because of the large changes in body and limb length. Coaches, parents and athletes must be well informed about the impact of rapid transit. Some sports have made the decision that athletes not compete during the growth spurt, or are highly selective about the number and type of competitions, and of the goals set for competition performance.

3. A Holistic Approach

Coaches must understand that physical, mental, motor and emotional traits all mature at different rates. The coach must consider the whole athlete, and not focus only on the technical and physical aspects of training.

4. Specialization

Every child should be introduced to gymnastics before the age of 10. Gymnastics activity is important for the development of physical literacy, and helps prepare children for a lifetime of activity and sport participation.

Basic and complex gymnastic skills are learned more easily before puberty; therefore competitive gymnastics is generally classified as an early specialization sport.

Implications for the sport:

- Canadian clubs must provide high quality gymnastics experiences that prepare children for a life in sport, and also entice children to remain in gymnastics.
- Our sport infrastructure should adjust to focus on providing programs for an increased level of participation.
- Introducing all children to gymnastics can provide a much larger talent screening pool for the gymnastics disciplines, as well as a business opportunity for coaches and gym clubs.
- Our sport culture/attitudes have to change to accept that many children will begin in a gymnastics program to develop physical literacy, which will enable them to move on to other sports.

5. Trainability

Trainability is the responsiveness of individuals to a training stimulus at different stages of growth and maturation.

Coaches must be aware and make best use of these periods of trainability when planning programs. LTAD addresses key periods in the growth and development of young athletes where training must be carefully planned to achieve optimal adaptation. LTAD identifies several qualities of training and performance:

ENDURANCE

Aerobic Endurance is not a primary physical capacity in gymnastics sports. However endurance still plays an indirect role in gymnastics by helping with recovery between combinations or routines, recovery between training sessions and after daily training, dealing with jet lag acclimatization and recovery from minor injuries.

The aerobic system is always trainable and even children under 10 can benefit from endurance activities. Aerobic trainability increases with the onset of Peak Height Velocity (PHV).

Aerobic endurance training, if over-emphasized, can result in a loss of power and strength. It is important to understand the sport specific needs for aerobic endurance, and to develop training programs that match this need. Aerobic training can also be an important contributor to weight maintenance.

STRENGTH

Gymnasts move their own body weight and therefore relative strength (i.e. strength compared to body weight) is more important than absolute strength. High resistance and high intensity strength training are effective before and after puberty. Before puberty the resistances should be provided by body weight, bungies, partners and other devices that do not load the skeleton with heavy weights.

Strength increases naturally and dramatically 12-18 months after PHV in males and is related to the increased size of the athlete as well as increased hormone levels. Peak Weight Velocity (PWV), or the rapid growth of muscle mass, occurs after PHV and this has a direct impact on increasing the relative strength capacity of a male gymnast.

In females, PWV occurs after PHV. PWV is associated with a less dramatic increase in strength and an increase in adiposity, which often results in a decrease in relative strength. This is an important time to monitor the level of difficulty relative to the athlete's changing body. Expectations must be adjusted according to the athlete's new level of relative strength.

SPEED

Speed is always trainable, both before and after puberty. Before puberty, speed development is likely related to nervous system development and improved coordination. After puberty, speed develops as a function of increasing muscle size and nervous system refinement.

FLEXIBILITY

Flexibility is always trainable, but is more easily increased in young athletes. Enjoyable activities for flexibility development should be included in programs beginning at the Active Start stage. During the period of most rapid growth, gymnasts may see a decrease in their level of flexibility. In these situations, special attention is needed when designing individual programs that maintain flexibility and reduce the risk of injury. Skill training may also need to be adjusted. In gymnastics, flexibility is important not only for injury protection, but also for amplitude and efficiency in technical skill performance and for aesthetic performance qualities.

SKILL

Skill is always trainable. As noted above, competitive female athletes are at a mechanical advantage to learn complex skills before the onset of the growth spurt, or PHV. For all gymnasts, fundamental movement skills should be developed first as these are the building blocks for learning all gymnastic skills.

During the time of rapid growth (before and after PHV), special attention should be given to skill training. With the sudden increase in body size and limb length, and the change in overall body proportions, there may be a deterioration in general and specific skill performance. It may be necessary to eliminate or reduce training of certain skills or to return to basic skills until the rate of growth has slowed. Parents, coaches and gymnasts should be educated about the impact of growth on training and performance and should expect a reduction in the rate of skill learning during rapid growth.

6. Periodization

Periodization provides the framework for organizing training, competition and recovery into a logical and scientifically based schedule to achieve optimum performance at the required time. A periodized plan that takes into account growth, maturation and trainability principles should be developed for athlete development during the *Building the Skills of Gymnastics* stage.

7. Calendar planning for competition

The domestic competitive and event calendar must support and be consistent with LTAD. Different stages of development and different levels of participation have different requirements for the type, frequency and level of competition. At some stages of development, training and development take precedence over competitions and short-term success. At later stages it becomes more important for gymnasts to experience a variety of competitive situations and to perform well at international and other high level events.

Regional, provincial and national competition and event calendars must be coordinated, and international competitions selected according to the priorities of the specific stage of development of the athlete.

8. The 10 year rule

Scientific research has concluded that it takes a minimum of ten years, 10,000 hours of deliberate training for a talented athlete to reach elite levels. This translates into an average of more than 3 hours of training daily for 10 years. There are no shortcuts; athlete development is a long term process. Short term performance goals must never be allowed to undermine long term athlete development. The International Gymnastics Federation requires that gymnasts be a minimum of 16 years of age to compete in the Olympics or World Championships. Canadian gymnasts who compete at world levels will have had at least 10 years of preparation by the age of 16, and likely well in excess of 10,000 hours. Further research is needed to validate this observation.

9. System Alignment and Integration

LTAD recognizes that physical education, school sports, recreational activities and competitive sport are interdependent. It recognizes that enjoying a lifetime of physical activity and achieving athletic excellence are both built on a foundation of physical literacy and fitness.

All elements of the sport system should be integrated and aligned to achieve these goals. Similarly, all parts of the Canadian gymnastics system - coaches, schools, universities, clubs, provincial and national associations - must be integrated and aligned. Each element in the system plays a crucial role in athlete development. The system must be clear, seamless and based upon a consistent set of principles.

10. Continuous Improvement

Continuous improvement ensures that:

- LTAD responds and reacts to new scientific and sport-specific innovations and observations and is subject to continuous research in all its aspects
- LTAD, as a continuously evolving vehicle for change, reflects all emerging facets of physical, education, sport and recreation to ensure systematic and logical delivery of programs to all ages
- LTAD promotes ongoing education and sensitization of all partners* about the interlocking relationship between physical education, school sport, community recreation, life-long physical activity and high performance sport.

* Refer to Appendix 6 for description of partnerships in gymnastics in Canada

ADDITIONAL FACTORS

AFFECTING ATHLETES WITH A DISABILITY

Gymnastics Canada has a strong desire to be an 'inclusive' sport organization. At this time, the majority of gymnastics programs for participants with a disability are in Rhythmic Gymnastics, and are for persons with an intellectual disability. As well, children with intellectual disabilities are sometimes fully integrated into local artistic gymnastics club recreational programs.

These programs vary in the level of formality and in level of participation, and some are affiliated with Special Olympics Canada (SOC). SOC is the primary agency for promoting physical activity and competitive programs for people with an intellectual disability. There are also very successful clubs that focus solely on the development of Special Olympics athletes. Both models work well, depending on the local available resources.

Intellectual disability is the leading form of lifelong disability worldwide and with over 500 different forms of impairment subsumed within this group, it represents a highly diverse (ability, needs, interests) collection of individuals. In simplest terms, two main groups can be identified – Down Syndrome and non-Down Syndrome – roughly described as having a disability that is biological in origin versus a disability of unknown origin. An additional challenge such as fetal alcohol syndrome, autism and visual or learning impairment is referred to as an associated disability and includes 10-15% of people with intellectual disabilities.

People with an intellectual disability tend to enter physical activity programs at an older age than those without disabilities. Many do not enter sport programs until they are well into adulthood. As a result, fundamental movement and sport skill development do not always parallel chronological age and physical development. There is little research to

indicate whether people with an intellectual disability go through puberty faster, slower, earlier or later than individuals without a disability. Each individual develops at a different rate, depending on the nature and severity of their intellectual disability and associated disabilities.

Although the 10 key factors of LTAD apply to all participants in gymnastics, some modifications are needed for persons with an intellectual disability. A full description of these modifications is provided in the Special Olympics Canada LTAD document.

- People with an intellectual disability seem to enter physical activity and sport later than the general population. Special Olympic sports are almost all late specialization sports. SO competition does not begin until age 8, although children may be involved in SO programs or generic sport programs until they are unable to 'keep up' with their peers, at which time an option would be to register with the local Special Olympics Chapter. Well designed, inclusive gymnastics programs for young children can result in early participation in an enriching movement program.
- Physical maturity may not be an issue with respect to ongoing development in the sport. Program design and training must consider cognitive and emotional maturity when developing training groups and determining which competitions the athlete will attend.
- In individuals with Down Syndrome, the pre-pubertal growth spurt occurs earlier (age 9-10), is less dramatic than other children and sexual maturity may occur earlier than the norm in boys and later in girls. For those with non-Down Syndrome, growth patterns are often parallel to those of persons without disabilities.

- Trainability of endurance, strength, power and flexibility is different between individuals with Down Syndrome and those with non-Down Syndrome. Some of these athletes may reach levels comparable to individuals without disabilities.
 - A person with Down Syndrome tends to develop skill later than average, has high variation in both rate of skill acquisition and skill quality, with some reaching levels comparable to norms for children without disabilities. Endurance and strength development may not reach the levels of persons without a disability, while flexibility may be greater than average due to low muscle tone and/or excessive ligament laxicity.
 - People with non-Down Syndrome show a wide variation in skill development and may approach norms for individuals without a disability. Similarly, endurance levels may approach the norms for peers without a disability, while there is some evidence that peak strength may be lower than norms for those without a disability. Further research is required.
- There is little information on periodization for athletes with an intellectual disability.
- Athletes should be challenged to be the best they can be under a fair and meaningful system of competition.
- GCG and SOC must work together to create optimal development and competition opportunities, and to identify best practices to enhance the ability of gymnastics coaches to 'know' their athletes with intellectual disabilities.

For more detailed information consult with Special Olympics Canada, and refer to the Special Olympics LTAD Overview document.



LONG TERM ATHLETE DEVELOPMENT FOR GYMNASTICS

Long Term Athlete Development for gymnastics is divided into 8 stages

1. Active Start
2. Fun, Fitness, and Fundamental Movement Patterns
3. Building the Skills of Gymnastics
4. Specialization in a Gym Discipline
5. Becoming a Consistent Competitor
6. Winning at All Levels
7. International Excellence and Podium Performances
8. Gymnastics for Life/Active for Life

The age of the participant in each stage will vary with the gymnastic discipline. Generally speaking, RG and WAG will have the youngest athletes, while MAG, AG and TG will have slightly older athletes. In all cases, there is an overlap of ages between each stage, which reflects the need to recognize individually varied rates of growth and maturation.

- All gymnasts will progress sequentially through the stages of LTAD.
- Not all gymnasts will progress through all stages.

Entry into the Gymnastics For Life/Active for Life stage can happen at any time, and at any age. Participation in this stage may include ongoing gymnastics or other sport participation, coaching, judging, administration or volunteering. Many gymnasts will progress through the first three stages of LTAD, then continue in Gymnastics for Life.

There are two additional LTAD stages for individuals with a disability. These stages are *Awareness* and *First Contact/Recruitment* and they are important for establishing an early commitment to an active lifestyle. Sport opportunities for people with an intellectual disability are not always well known and it is not always easy for someone with a disability to become involved in a sport.

- In the **Awareness** stage, individuals (and their parents/guardians) become informed of the range of activities that are available. The gymnastics community should be proactive in promoting its programs through a range of organizations, working closely with Special Olympics Canada to improve awareness of the benefits of gymnastics and accessibility to programs for all ages and abilities.
- The **First Contact/Recruitment** stage is the first opportunity for the participant to experience gymnastics. This first experience must be positive, otherwise the participant may withdraw from the sport, and lose the benefits of an active lifestyle.

1 Active Start

age 0-6 years
boys and girls



2 Fun, Fitness, and Fundamental Movement Patterns

females 6-8 years
males 6-8/9 years



3 Building the Skills of Gymnastics

females 7-9 years
males 9-10 years



4 Specialization in a Gym Discipline

females 9-11 years
males 10-12 years

5 Becoming a Consistent Competitor

females 10/11-13+ years
males 12-15+ years



6 Winning at All Levels

females 13/14-18+ years
males 15-18+ years

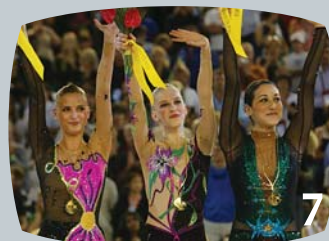
7 International Excellence and Podium Performances

females 16+ years
males 18+ years



8 Gymnastics for Life – Active for Life

any age



ACTIVE START

AGE 0-6 YEARS* – BOYS AND GIRLS

0 - 18 month: infant
(child with parent or caregiver)

18 months - 3 years: toddler, mature walker
(child with parent or caregiver)

3 - 6 years: preschool independent

Participants with an intellectual disability can enter at any age
(with or without support person)

Gymnastics is the ideal Active Start activity. Gymnastics Canada is one of only a few national sport organizations with specialized programming for this age group. All preschool-aged children should have the opportunity to participate in a gymnastics program.

An Active Start gymnastics program should be structured around creating movement challenges for participants to explore and resolve. Participants will progress at their own rate, and the program structure should allow for individual differences. The program must be holistic, child-centred, and develop cognitive, psycho-social, motor, and physical qualities. The language of instruction must be appropriate to the age and developmental level of the participant.

Through age-appropriate activities, and using adapted equipment, participants will be introduced to the Fundamental Movement Patterns: Landings, Static Positions, Locomotions, Rotations, Swings, Springs and Object Manipulation. The quality of movement for each of these patterns will be extended and enhanced through the use of music, rhythm and the principles of dance.

Gymnastics-based activity will:

- Enhance development of brain function, coordination, social skills, gross motor skills, emotions, leadership and creativity
- Help participants build confidence, independence and positive self esteem
- Support healthy growth and development: build strong bones and muscles, improve flexibility, develop good posture and balance, improve fitness, promote relaxation, improve sleep, promote healthy weight
- Help participants move skilfully and enjoy being active
- Provide participants with a movement base that will support lifelong enjoyment and participation in almost any sport.

What qualities will be developed in Active Start gymnastics programs?

- Fundamental Movement Patterns
- Gross motor skills (e.g. running, jumping, climbing, rolling, twisting, kicking, throwing, catching)
- Motor qualities of agility, balance and coordination
- Physical qualities such as strength and flexibility
- Cognitive development stages in laterality, patterning, directionality, space and body awareness, communication and problem-solving
- Creative movement and make-believe
- Exposure to music and dance activities
- Participants learn to explore space in a safe manner, learning to control their own movement in relation to equipment and others. Good class management ensures safety.
- Group social skills are developed as a basis for future sport ethics
- Psycho/socio development – desire to be active, self-confidence to try, self-expression and group social skills such as cooperation

Participants with a disability are often integrated into able-bodied programs, particularly where a support person, parent/guardian can participate. The “fun” environment, individualized progress and safe, specialized equipment in an Active Start program is very appropriate. In the case of some disabilities, specific medical clearance may be required prior to registering for an Active Start gymnastics program.

* In Active Start participants are identified by stage of development (not age). Each stage has a plus/minus 4 month expected minimum variant associated with the approximate ages listed above.

What does NOT belong in an Active Start gymnastics program?

- Repetitive and prolonged activity; competitive-type training
- Focus on training gymnastics “skills”
- Risky positions and exercises e.g. hurdlers stretch, inverted bridges, headstands, straight leg stretches, head rotations, candle stands, V-sits, jumping jacks
- Activities and equipment that are not appropriate, or which have not been adapted for small children
- Flexibility training
- Inflexible directed teaching approaches

Performance Qualities

There is no place for competition in an Active Start gymnastics environment. But because young children love to show and perform, activities should encourage the development of:

- Group social skills – interactions, sharing, taking turns, helping
- Showing what you can do
- Self-expression
- Confidence

Amount of time in gymnastics

- Under 4 years of age: 30-45 minute classes, once per week for 10-36 weeks of the year
- 4-6 years of age: 45-60 minute classes, once or twice per week for 10-36 weeks of the year
- Participants with an intellectual disability: begin with 30- 40 minute classes and progress to 60 minutes, once or twice per week
- Participation in other, non-structured play activities is encouraged.

Role of Parents

- To introduce participants to a range of activities, provide encouragement and participate in activities such as parent days, shows, and parent/child classes
- Must be prepared to transport participants to activities, and to pay for these activities

Monitoring

- Development of Fundamental Movement Patterns
- Social skills
- Emotional & behavioural stabilities
- Cognitive abilities

Events and activities

- Show & tell during and at end of each class
- Share with others in class
- Class closing activity
- Special event theme days
- Performance of “Rou-tinys” (short movement sequences) and mini-displays

GCG programs for this stage: GCG NCCP Active Start Coach Training program

Type of coach: NCCP Foundations to Gymnastics coach with Active Start Coach specialization

Special Olympics Canada Community Coach program

Other specialized training for coaches of athletes with a disability



FUN, FITNESS, AND FUNDAMENTAL MOVEMENT PATTERNS

Age: 6 - 8 years (females)

6 - 8/9 years (males)

Participants with an intellectual disability can enter at any age (with or without support person)

In this stage, participants continue to develop and master the fundamental movement patterns in a multi-gymnastics (i.e. all gym disciplines) environment. They will also begin to learn gymnastic sport skills. Skill development programs should be well-structured, positive and FUN!

This is a “sampling stage”, that is, participants should sample a range of sport activities, and gymnastics should be one of the sports for all! There is little pressure to achieve, as participants have an opportunity to enjoy sport, have fun, and develop fundamental motor skills. The skills that participants acquire in FUNdamentals gymnastics programs will be beneficial for both competitive and recreational activities in any sport and will enhance their quality of life and health. During this stage, many participants will move from gymnastics to other sport programs.

Some participants will show an interest in more advanced gymnastics programs. These participants will be streamed into special programs that suit their ability and which may include preparation for competition or Special Olympics. All advanced programs should still include participation in at least two of the gym sports. The basic premise of Fun, Fitness and Fundamentals does not change, but more advanced classes will be of slightly longer duration, with a higher intensity of activity. There is no participation in formal competitions during this stage.

What qualities will be developed in this stage?

- The Fundamental Movement Patterns gain quality, definition and refinement as the basis for building gym-specific skills.
- Fun activities and games should be used to develop physical capacities (basic strength, postural control, core strength and flexibility), as well as agility, balance and coordination
- Basic skills should be introduced for all gym disciplines
- A variety of fast-moving, active games should be used to develop power and endurance, as well as linear, lateral, multi-directional and segmental speed
- Cognitive development: Recall/memory, concentration, problem-solving
- Participants develop an acceptance of gym rules, related to safety and accepted social behaviour
- Sport ethics are introduced (fairness, acceptance, right to participate)
- Psycho/socio development: Desire to learn and to be active, self-confidence to try, self-expression and group social skills, self comparison and task focus

What does NOT belong in a FUNdamentals gymnastics program?

- Excessive repetitions of exercise for conditioning
- Risky positions and exercises - hurdlers stretch, candle stand, head rotations, hyper-extensions of joints, inverted bridges without legs or hands raised, jumping jacks
- Inflexible teaching approaches
- High emphasis on comparison of physical and motor abilities; testing programs that encourage comparison with others
- Excessive skill training activities
- Selectivity and focus on more skilled participants

Performance Qualities

There is no formal competition in this stage.

Activities and programming should be designed to allow participants to perform in informal settings to develop:

- Social skills – communication, relationships, cooperation, leadership
- Self-expression
- Confidence
- Self-esteem
- Love of performing

Amount of Time in Gymnastics

In this stage, some participants may be guided into programs that may lead into competitive stream in future years.

- Recreational gymnastics programs: one class per week for 1 to 1.5 hours
- More advanced programs: two or three classes per week for 1.5 to 3 hours per class.
- **Participants in this stage should not train more than 6-8 hours per week. Younger participants in this stage should train 6 or fewer hours per week.**
- Number of weeks per year: up to 36-40
- All children should continue to participate in at least 3-4 other activities on a regular basis.

Role of Parents

- Parents should introduce participants to a range of activities, provide encouragement and show interest in participating in sport and physical activity
- Usually parents make the decision to register the participant for gymnastics; to keep the child busy and expending energy, to help with socialization and to develop fundamental skills.
- Parents should ensure that a balance is maintained with school, other sport and non-sport activities
- Parents should be prepared to transport participants to activities, and to pay for these activities

Monitoring

- Fundamental movement patterns and skill development
- Social skills
- Emotional and behavioural stabilities
- Cognitive abilities
- Monitor growth by taking standing height measurements on the birthday and recording for future reference. As well, shoulder, back and hip flexibility can be monitored. (see measurement protocol in Appendix)

Events and Activities

- In-class demonstrations and sharing
- Performances for other gymnasts and parents: “Rou-tinys” and mini-displays, holiday shows
- Local public demonstrations and performances
- Recognition - awards, rewards and achievement
- Fun participatory events: Ribbon days, skill demos
- Becoming “little helpers” at club activities and events

GCG programs for this stage: Participants in this stage may be working in the early levels of the CANGYM family of programs. Participants in advanced programs may progress to the intermediate levels of CANGYM.

Up Down All Around and other provincially endorsed school-based programs

Type of Coach: Certified GCG NCCP Foundations to Gymnastics coach



BUILDING THE SKILLS OF GYMNASTICS

Age: 7 - 9 years (females)

8 - 10 years (males)

Participants with an intellectual disability can enter at any age (with or without support person)

In this stage the focus is on the development of gymnastics skills and overall sport skills. Participants will continue to develop, extend and refine agility, balance, coordination and flexibility. Posture and core strength should be well-established during this stage.

In addition, the gymnast will develop sound basic skills on large apparatus and with hand apparatus, which ensures successful, ongoing and progressive participation in recreational, demonstration or competitive gymnastics. For many participants, their gymnastics training allows an easy transition to another sport or into the Gymnastics for Life stage.

Participants who have the desire to continue in more advanced gymnastics programs will be streamed into the gym discipline that is most suited to their abilities. Proper program placement is the key to successful development and overall personal achievement. All participants should continue participating in one other complementary gym discipline, as well as one or two other sports/activities. Toward the end of this stage, participants will begin to shift from “sampling” a variety of sports to identifying one or two sports (or gym disciplines) that are of special interest.

While competition is not yet the primary goal, participation in formal competitions may start toward the end of this stage. The Canadian system provides opportunities for gymnasts to compete in many levels, from club, to regional, to provincial, national and international. Each level of competition has specific technical requirements and therefore training must match the needs of the competitor.

What qualities will be developed in this stage?

- Match drills with skills and fitness level; ensure proper progressions and physical preparation
- Activities should continue to develop physical capacities (basic strength and flexibility), and refine the ABCs of athleticism (agility, balance, coordination, speed). Body symmetry (strength and flexibility) must be developed.
- A variety of fast-moving, active games should be used to develop power and endurance, as well as linear, lateral and multi-directional speed and correct running technique
- Participants should develop sound basic skills in two of the gym disciplines. Gymnasts who wish to participate in more advanced programs may begin to specialize in only one gym discipline in this stage.
- Gym rules relating to safety and accepted social behaviour need to be reinforced. The gymnast should take ownership in the design and consequences of these regulations.
- Sport ethics are emphasized and more complex understanding is developed
- Cognitive development: Recall/memory; concentration; problem-solving, communication and decision-making
- Psycho/socio development: Desire to be active, develop confidence, dedication and commitment, communication and relational skills
- Refining quality of movement as reflected in skill performance

What does NOT belong in the gymnastics program?

- Multiple, high impact repetitions
- Skill development before physical preparation
- Inflexible teaching approaches
- Overtraining and under-recovery due to excessive training hours

Performance Qualities

- All gymnasts in this stage should have opportunities to perform for an audience, whether it is at the end of class, in an end-of-year show or club gymnastrada. Performances should be fun, with creative group routines and interesting music and props.
- By the end of this stage, gymnasts in competitive programs may also be participating in formal competitions. The purpose of competition is to introduce the process and format of competition, and to allow children to enjoy performing their skills and routines.
- **There is no focus on competitive results.**

Amount of Time in Gymnastics

- Recreational gymnastics programs: one or two classes per week for up to 1- 3 hours per class
- Advanced programs for children aged 7-8: two or three classes per week for 1.5 to 3 hours per class, 3 to 6 hours per week
- Competitive gymnasts (9+ years old): up to three classes per week of 3 hours per class; **maximum of 9 hours per week.**
- Number of weeks per year: up to 40 - 48
- The FIG training matrix does not apply for athletes with a disability
- All gymnasts should continue to participate in other activities on a regular basis, including other gymnastics disciplines
- Involvement in dance programs

Role of Parents

- Parents continue to expose participants to a range of activities, provide encouragement and show interest in participating in sport and physical activity
- Parents must listen to the participant to help identify sport preferences
- Parents will continue to maintain a balance with school, other sport and non-sport activities
- Parents should be prepared to transport participants to activities, and to pay for these activities

Programs for this stage:

Intermediate and advanced levels of the CANGYM family of programs

Provincial development programs

Programs provided through Special Olympics Canada

Type of Coach:

Certified Foundations to Gymnastics coach

Certified Foundations to Competition coach

Special Olympics Canada Competition coach



Monitoring

All gymnasts:

- Skill development
- Social skills
- Emotional and behavioural stabilities
- Cognitive abilities

Advanced level gymnasts as above PLUS:

- Height monitored every 3 months. Measurements should include standing height, sitting height and arm span
- Body alignment and symmetrical development of flexibility and strength
- Shoulder, back and hip flexibility
- Physical abilities

Events and Activities

- In-class demonstration and sharing
- Leadership becomes a portion of the class activity
- Local public demonstrations and performances
- Involvement in regional events such as standards meets, gymnaestradas, group routines
- Recognition and encouragement of effort and personal achievement
- Fun participatory events
- Mini club meets to introduce format of competition – focus on performance not comparative results
- Include activities that allow for development of self-direction and leadership skills



Age: 9 - 11 years (females)

10 - 12 years (males)

Participants with an intellectual disability can enter at any age (with or without support person)

Gymnasts may remain in this stage past the age of 11/12

4 SPECIALIZATION IN A GYM DISCIPLINE

This stage is one of the most important periods of motor development and is a window of accelerated adaptation to skill training. All key gymnastics skills should be well-established during this stage and discipline-specific skills will be developed.

Those who continue to do gymnastics at this age have usually developed a strong love and enjoyment of the sport, and have chosen to **specialize** in gymnastics as their primary activity. The number of other extra-curricular activities will likely decrease so the participant can specialize in gymnastics. Participation may be at an advanced recreational, demonstration or competitive level, but basic skills are well-established and there is a long-term commitment to the sport. Fun is still important, and it takes on a different meaning as training becomes more structured and skill-oriented. Skills are challenging and the fun of gymnastics is found in achieving a new skill, working with a group of athletes and friends, and striving to do one's best. In this stage, gymnasts will be guided into the most appropriate program and discipline.

Some early-maturing gymnasts may begin the growth spurt toward the end of this stage. Gymnasts should be closely monitored to identify when the growth spurt begins.

What qualities will be developed in this stage?

- This is an important time for development of complex gymnastics skills. MAG and WAG athletes should train on all events. RG athletes should train with all apparatus
- Physical preparation - strength, endurance and flexibility - must accompany skill training (prepare the body to advance the skill). Pay particular attention to flexibility after the onset of the growth spurt. Injury prevention and management become even more important as intensity and volume of training increase
- Spatial orientation development must be emphasized as perceptual judgement skills are developing in this stage. Use trampoline for training spatial orientation
- Continue to develop speed through specific activities that focus on agility, quickness and change of direction
- Include ballet and creative expression development in training
- Ensure that training is enjoyable for all. Encourage social interaction and activities with the gymnasts, as well as participation in activities outside of gymnastics
- Cognitive development: concentration, communication, problem-solving, decision-making
- Psycho/socio development: desire to be active, dedication, commitment to train
- Gymnasts must learn strategies for stress management, coping with commitment and life balance, and strategies for competition/performance (e.g. planning, goal setting, concentration, imagery and relaxation skills)
- Gym rules relating to safety and accepted social behaviour need to be reinforced. The participant learns to accept consequences of behaviour
- Sport ethics should be considered as part of the training program

What does NOT belong in the gymnastics program?

- Elements on knees should be taught and used with caution, particularly in RG programs
- Repetitive lower back hyperextension skills
- Inflexible teaching approaches that do not consider the individual developmental needs of each gymnast
- Overtraining and under-recovery; gymnasts must be monitored, and training programs adjusted to address individual needs
- Overstress and lack of balance in life due to excessive training demands

Performance Qualities

- All gymnasts will benefit from participation in a variety of activities including club Gymfests, Provincial and National Gymnaestrada or recreational meets.
- Competitive athletes will also participate in competitions at the provincial, interprovincial and national levels.
- Gymnasts are becoming more comfortable with competition. The goal of competition is focused on the performance of clean, consistent skills/routines, not on results. This is an important time for gymnasts to develop strategies for competition. It is equally important that parents and coaches emphasize “doing your best routines” rather than rankings and competition results.

Amount of Time in Gymnastics

- Recreational and performance gymnasts: two to three training sessions per week, up to 3 hours per session
- Competitive MAG and WAG gymnasts: four or five training sessions per week, up to 3.5 hours per session; maximum 16 hours per week for a national level gymnast
- Competitive RG gymnasts: four or five training sessions per week, 3 to 3.5 hours per session; maximum 16 hours per week for a national level gymnast (including ballet preparation)

- AG and TG gymnasts: 9 to 12 hours per week
- Number of weeks per year: up to 45-48
- Single or double peak periodization, based on provincial or national championships; 4-6 competitions per year.
- Involvement in dance programs
- Encourage ongoing participation in at least one other complementary sport/activity (e.g. dance, aerial sports, other artistic sports)

Role of Parents

- Parental involvement increases and parents develop a growing interest in the child’s sport.
- Parents are expected to volunteer at activities and with club organization. They become spectators at events and competitions, and gain technical knowledge. Some parents may take judging courses.
- Parents may commit a great deal of time to their child’s sport, which involves sacrificing their own leisure time
- Ensure ongoing communication between parents, coach and gymnast. Parents must trust the coach, talk and provide advice to the gymnast and intervene only when necessary.
- Parents must provide a “positive push”, rather than pressuring the gymnast
- Parents continue to ensure that there is a balance of gym with school and non-sport activities, and that gymnasts are properly nourished and rested
- Parents should be prepared to transport participants to activities, to purchase equipment and clothing, and to assume increased costs of training/competition

Monitoring

- Fitness levels
- Body alignment and symmetrical development of flexibility and strength
- Social skills
- Emotional and behavioural stabilities
- Cognitive abilities
- Physical and technical abilities

- Height monitored every 3 months. Measurements should include standing height, sitting height and arm span (as per standardized protocol – see Appendix)
- Flexibility
- Recovery and Regeneration

Events and Activities

- Maintain a varied combination of events, performances and competitions as in Learning to Train stage
- Support, assist and mentor gymnasts in class and event/competitive activities
- Selection of competitive and performance events reflects the specific needs of the gymnast
- Competitions are used for ability and performance measurement and are not driven by results

Programs for this stage: Provincial Competitive programs (MAG, WAG CPP, RG, TG)

GCG Pre Novice program (WAG, RG)

GCG Novice program (WAG, RG, TG)

GCG Age Group development programs for national and high performance stream (MAG)

GCG WAG Physical Ability Program

Programs provided through Special Olympics Canada

Type of Coach: Certified Foundations to Gymnastics + appropriate specialization

Certified Competition-Introduction coach
(Up to provincial stream competitive)

Certified Competition – Development coach
(provincial stream and above)

Special Olympics Canada competition coach

“I want to be innovative, I want the kids to enjoy every day, I want the process to be more important than the end result; enjoying everything in the gym is far more important than just trying to get to the top”

– Kelly Manjak
Coach of Kyle Shewfelt, 2004
Olympic Floor Gold Medallist



BECOMING

A CONSISTENT COMPETITOR

Age: 10/11 – 13+ years (females)

12-15+ years (males)

Participants with an intellectual disability can enter at any age (with or without support person)

Gymnasts may remain in this stage for several years

Athletes who progress to this stage are passionate about their sport and committed to a competitive career. They are high-level provincial stream, national stream, or high performance athletes who enjoy meeting a challenge. These are years of **investment**, in which the participant becomes solely committed to gymnastics, is focused on achieving an elite standard, and builds a close relationship with the coach.

Gymnasts have consolidated all basic skills, are developing and refining advanced skills and are performing routines of increasing complexity and difficulty. Gymnasts must now learn how to compete well under a variety of conditions. They will reach an optimal performance state that will enable them to meet their individual performance goals.

During this stage, almost all female, and many male gymnasts will be going through puberty. Coaches must be vigilant about monitoring growth, noting PHV and adjusting training programs to allow recovery, accommodate changing body sizes and reduce the possibility of injury. Coaches must be aware that each gymnast will develop at a different time and different rate. Individuality and flexibility of training programs are extremely important in this phase.

Monitoring is important for all gymnasts, regardless of their level of participation. Coaches, parents and athletes must be patient as fast growing athletes may show some skill regression and reduced training capacity. With the sudden change in body size, limb length and body proportions, general and specific skill performance may deteriorate. Basic skills may need

to be emphasized to accommodate these changes. It may be necessary to temporarily restrict the number and type of competitions to allow the gymnast to adapt to his or her changing body and to reduce the stress on the body, thereby reducing the possibility of injury and early retirement.

More focus is needed on the emotional and social impact of this growth spurt on the athlete. Coaching methodology should be adjusted to properly address the impact of these changes. Ensure that the needs of the gymnast are matched to the appropriate program, coach and club environment.

Competition becomes more important, with the focus on achieving consistency and quality of performance, and on learning to cope with the physical and mental challenges of competition. Results only become important toward the end of the stage, when athletes are being selected onto national teams.

What qualities will be developed in this stage?

- Gymnasts must develop advanced skills early in the stage, before the onset of the growth spurt
- Educate gymnasts about nutritional requirements for adolescent athletes
- Provide opportunities to foster positive body image, high self-esteem and confidence
- Refine routine skills performed at high quality and intensity. Consolidate and increase the variety of elements
- Increase difficulty and artistry; develop individual creative expression
- Flexibility and symmetrical development must be emphasized, given the rapid growth of bones, tendons, ligaments and muscles
- Spatial orientation development must be emphasized as perceptual judgement skills mature in this stage. Use trampoline for training spatial orientation
- Incorporate aerobic endurance, speed and strength training; develop core strength
- For females, strength gains are seen immediately after Peak Height Velocity (PHV) and again with the onset of menarche. For males, strength increases 12-18 months after PHV, after the rate of growth slows
- Aerobic trainability improves after the onset of PHV. Aerobic training is important to recovery and the ability to withstand the demands of training, but it must be planned to develop a sport-appropriate level of aerobic endurance, while not interfering with power development
- Consolidate and refine stress management and competition preparation strategies; learn how to manage distractions and different environmental demands
- The gymnast gains independence in decision-making. While coach input is essential, the gymnast becomes responsible for many decisions that affect training and competition
- Develop ability to deliver consistently good performances at important competitions
- Gym rules relating to safety and accepted social behaviour need to be reinforced. The participant learns to accept consequences of behaviour
- Sports ethics should include ethical issues related to competition
- Encourage life balance through outside interests
- Emotional development (e.g. mood) is different between males and females

What does NOT belong in the gymnastics program?

- Inflexible approach to training that does not consider individual levels of maturation
- Elements on knees or going down on the knees should be taught and used with caution
- Repetitive lower back hyperextension skills
- Repeated impact activities that can cause epiphyseal damage
- High resistance training and high muscular loads that can result in apophyseal avulsion injuries
- “Rushing” skills to the next level before the basic skill and physical preparation are well established (e.g. adding a second twist before the gymnast is fully comfortable performing a single twist)
- Over-emphasis on competition at the expense of skill development

Performance Qualities

- Gymnasts in this stage are competing at provincial, national and international levels
- Expectation is that performance will be of consistently high quality. Gymnasts must strive for perfection in skill performance
- Gymnasts should learn to understand their own strengths and weaknesses. Routines should be planned to highlight strengths and minimize weaknesses
- Careful planning is required in selecting competitions for specific purposes
- Single or double peak periodization
- The focus of international competition is on learning how to compete under FIG rules, exposure to other cultures and on learning to cope with the physical and mental pressures of travel, training, competition and officiating in another country.

Amount of Time in Gymnastics

- Provincial level athletes: 3 or 4 times per week for 3-4 hours per session; maximum of 16 hours per week
- National and HP level WAG and MAG athletes: 5-6 times per week for 3-4 hours per session; maximum 24 hours per week. Younger athletes should be training less hours than the maximum.
- National and HP level RG athletes: 5 times per week for 3.5 to 4 hours per session, including ballet preparation; maximum 20 hours per week. Younger athletes should be training less hours than the maximum.
- AG gymnasts: 12-16 hours per week

- TG gymnasts: 9 to 15 hours per week
- Number of weeks per year: 45-48
- Goal-setting should be realistic and appropriate to the maturity and ability of the gymnast

Role of Parents

- Parents tend to move into the background and play a less direct role in the gymnast's sporting career, but they still provide emotional and tangible support.
- As the gymnast becomes more responsible for decision-making, the parents continue to provide support, but allow increased independence of the gymnast. They must continue to provide a "positive push", and be available when the gymnast needs guidance.
- Parents remain active as volunteers within the club
- Parents ensure that the gymnast's schedule is organized, and that there is a balance between gymnastics and other aspects of the gymnast's life (social, school, family). This may entail some sacrifices within the family, as the overall schedule is organized around gymnastics. There will be limited vacations, few family meals.
- Parents should remain aware of the needs of other family members, and cultivate an environment of mutual support. Siblings often help out at club events and competitions, but it is important that they find their own niche.
- Parents will be driving several times per week to training and competitions
- Parents will continue to pay for training and competition costs, equipment and clothing, private or specialized coaching, and other related costs (e.g. nutritionist, physiotherapy, psychologist). Travel costs to competitions may increase significantly if the gymnast is attending international events that are self-funded.

Monitoring

- As intensity and volume of training increase, general health must be monitored regularly
- Ongoing screening for hip and knee alignment, and imbalances in strength and flexibility will help reduce the risk of injury
- Monitor iron levels in female athletes annually
- Pay special attention to PHV; monitor standing and sitting height, arm span and weight every three months
- Physical abilities testing; active flexibility testing is particularly important during PHV
- Monitor skills, technique and difficulty
- Monitor emotional development. Be aware that girls are at an increased risk for lower moods, which can increase the risk of depression, eating disorders and low self-esteem
- Educate gymnasts about doping control at the end of this stage

Events and Activities

- Canadian Championships, Eastern and Western Canadian Championships, Provincial Championships, Canada Games and Provincial Games
- Selection events
- Special performances and demonstrations (club, provincial, national)
- Selected international competitions at the Junior level

Programs: Provincial competitive programs

National competition structure and system

AG Canadian Program

Special Olympics Canada competition program

Type of Coach:

NCCP Certified

Competition-Development (early in stage)

NCCP Certified Competition High-Performance (later in stage)

Special Olympics Canada Competition Coach



6 WINNING AT ALL LEVELS

Age: 13/14-18+ years (females)

15-18+ years (males)

Participants with an intellectual disability can enter at any age (with or without support person)

Gymnasts may remain in this stage for several years

Gymnasts in this stage are optimizing their performance according to the goals they have set for themselves. They have well-developed abilities to perform on demand and are more results-driven than in previous stages. These athletes are striving to become the best gymnasts and have set their goals on consistent, personal best performances, which will lead to winning championships at the provincial, national and international level.

These gymnasts are quite independent and, with the coach, are partners in goal-setting and decision-making. Many are leaders among their peers, and some may begin coaching young gymnasts. It may be necessary for the gymnast to leave his/her home club to train in a high-performance environment, or to train with a different coach.

Some of these gymnasts will begin competing internationally at junior and senior level competitions and major games. The team members for future World Championships or Olympic Games will likely be selected from these athletes.

Some female athletes, and most male athletes will still be going through puberty in the early part of this stage. Ensure that standing and sitting height, arm span and weight of all gymnasts are monitored regularly, and that training programs are flexible enough to accommodate the varying developmental needs of athletes.

Gymnasts will become comfortable traveling and competing in different cities, regions and countries. They are taking their competitive performance skills to the next level and some are preparing to represent Canada. MAG and WAG athletes may be apparatus specialists, although training continues on all competitive apparatus.

What qualities will be developed in this stage?

- Refine routine skills performed at high quality and intensity
- Consolidate and increase the variety of elements and artistry
- Aim for highest standards of difficulty, composition and performance
- Gymnast should be in total command of the routine
- Pay special attention to maintaining active flexibility during PHV
- Continue to develop strength throughout this stage
- Fully develop mental preparation skills: imagery, concentration, emotional control, positive self-talk, relaxation
- Gymnasts should have a sound knowledge of competition rules, competition protocol and judging requirements for their level
- Self-discipline should be encouraged to govern safety and accepted social behaviour. The participant accepts consequences of behaviour
- Develop self-reflexivity, emotional debriefing and self-regulation skills
- Sport ethics should include ethical issues relating to competition and social maturity
- Education on concepts of doping control, weight issues
- Introduce gymnasts to media relations

Performance Qualities

- Performance standards are highest provincial, national and FIG Junior and Senior requirements, and requirements for Special Olympics World Games
- These gymnasts are competing to win championship titles. Some gymnasts are establishing their reputation in international level gymnastics

Amount of Time in Gymnastics

- MAG, WAG and RG gymnasts: 5 to 6 times per week, 4 to 5 hours per training session, including dance training and artistic preparation
- Many top Canadian gymnasts train about 24 hours per week
- AG and TG gymnasts: 12 – 18 hours per week
- 48 weeks per year
- Single or double peak periodization (e.g. Elite Canada and Canadian Championships, or important international competition)
- Training time is divided between preparing for competitions and learning important new skills

Role of Parents

- Parents become the primary support person to manage the gymnast's schedule
- Parents continue to provide a positive push, and offer unconditional support for the gymnast
- Parents will continue to pay for training and competition costs, equipment and clothing, private or specialized coaching, and other related costs (e.g. nutritionist, physiotherapy, psychologist)

Monitoring

- As intensity and volume of training increase, general health must be monitored regularly
- As training volume and intensity increase, ensure that recovery and regeneration are monitored on an individual basis

- Ongoing screening for hip and knee alignment, muscle imbalances and flexibility will help reduce the risk of injury
- Monitor for symptoms of compression, distraction and shearing, Osgood Schlatter's and others, spondylolysis
- Height and weight should be monitored monthly, and training adjusted as a function of PHV
- Monitor iron levels in female athletes
- Physical abilities testing; active flexibility monitoring is particularly important during PHV
- Monitor skills, technique and difficulty
- Continue to monitor emotional development as in previous stage

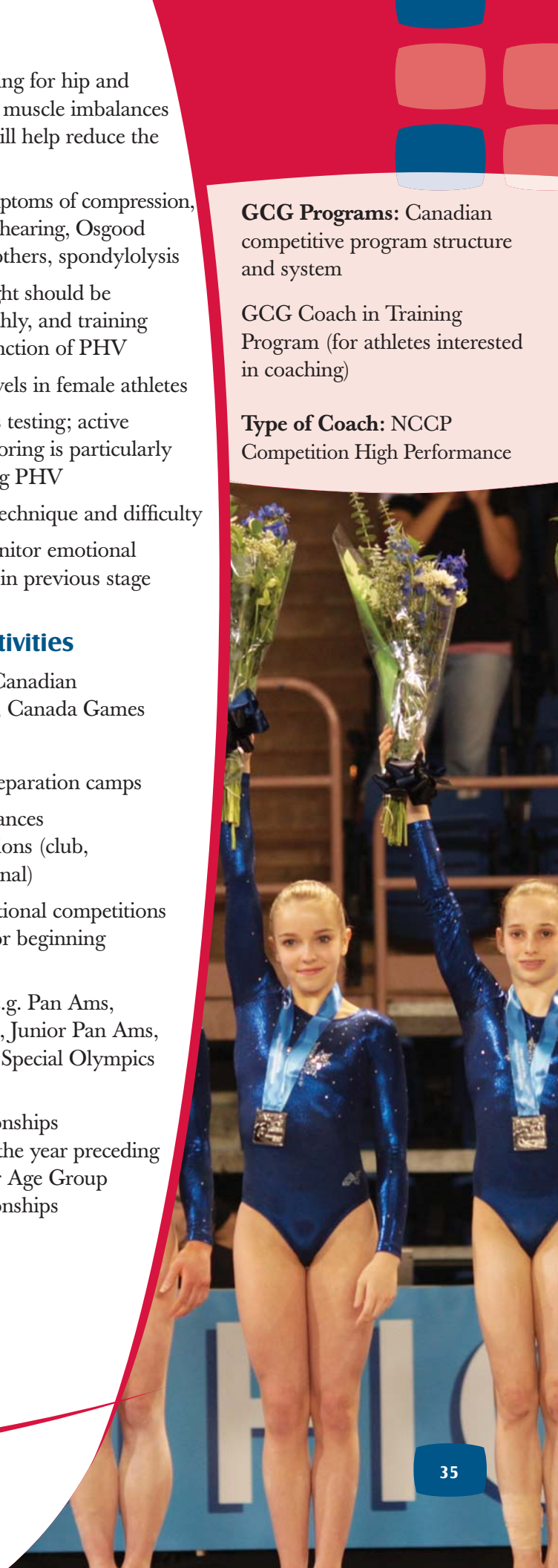
Events and Activities

- Provincial and Canadian Championships, Canada Games
- Selection events
- Training and preparation camps
- Special performances and demonstrations (club, provincial, national)
- Selected international competitions at Junior level, or beginning Senior level
- Major Games (e.g. Pan Ams, Commonwealth, Junior Pan Ams, Pacific Alliance, Special Olympics World Games)
- World Championships (age 15 only, in the year preceding an Olympics) or Age Group World Championships

GCG Programs: Canadian competitive program structure and system

GCG Coach in Training Program (for athletes interested in coaching)

Type of Coach: NCCP Competition High Performance



INTERNATIONAL EXCELLENCE AND PODIUM PERFORMANCES

Gymnasts in this stage are at the highest level of international competition. They are representing Canada at World Championships, Olympic Games and other major games, are on the World Cup circuit and are invited to the most prestigious international events. MAG and WAG gymnasts may be event specialists. Gymnasts often compete as both individuals and as team members, which requires a shift in attitude and in some aspects of competitive preparation.

Many Trampoline and MAG gymnasts will remain in this stage for 8-10 years. WAG and RG gymnasts will normally remain in this stage for one Olympic cycle before retiring or continuing their education on a sport scholarship at university.

With international success comes recognition, media attention and the possibility of sponsorships and endorsements. These gymnasts may have many sources of distraction but should continue to focus on maintaining consistently high levels of performance. They may spend several weeks or months of the year traveling to competitions and will often be training outside of their home gym.

What qualities will be developed in this stage?

- Refine routine skills performed at high quality and intensity; develop/refine unique skills.
- Consolidate and increase the variety of elements and artistry.
- Achieve highest international standards of difficulty, composition and performance
- Gymnast retains total command of the routine, regardless of competitive environment and situation.
- Maintain physical attributes: strength, power, flexibility and endurance
- Focus on recovery and regeneration strategies
- Fully developed mental preparation skills: imagery, concentration, emotional control, positive self-talk and relaxation
- Well developed self-regulation, decision-making, and coping skills. Gymnasts should have a strong sense of adaptive perfectionism and self-confidence
- International team competitive events bring different pressures, and require development and management of team work skills
- Capable of managing interviews and media events
- Capable of managing distractions and interruptions in training, while maintaining peak performance over the long term
- Takes a stronger role in decision-making, working in partnership with the coach
- Self-discipline governs safety and accepted social behaviour. The participant accepts consequences of behaviour
- Sport ethics should include ethical issues relating to competition and social maturity
- Maintains life balance through outside interests and friends, education
- Preparation for retirement and transition from sport that can include exploration of career and educational options

Performance Qualities

- Performance standards are FIG Senior requirements
- Consistent performances of the highest international quality
- Goal is to reach finals and podium

Amount of Time in Gymnastics

- WAG and MAG gymnasts: 5 to 6 times per week for 4 to 5 hours per session
- Many top Canadian WAG and MAG gymnasts train 24 hours per week
- RG gymnasts: 6 times per week for 5.5 to 6 hours per session, including dance preparation and conditioning
- TG gymnasts: 12 – 15 hours per week
- 48 weeks per year
- Double or multiple peak periodization, depending on international competitive schedule.

Role of Parents

- Parents' role in managing the gymnast's schedule decreases as the gymnast becomes older and more independent. Parents may encourage the gymnast to learn to drive, so that they can reduce the time commitment for transport to training.
- Parents continue to offer unconditional support and a positive push.
- The primary contribution in this stage is financial, as there are training and competition expenses, however these may be partially defrayed if the gymnast is a provincially or nationally carded athlete.
- Parents take an active role in helping the gymnast make decisions about university, scholarships, living environment and life after sport.

Monitoring

- As intensity and volume of training increase, general health must be monitored regularly
- Ongoing screening for hip and knee alignment, imbalances in strength and flexibility
- Monitor height and weight quarterly for baseline measurements
- Blood tests should be done yearly to monitor iron levels
- Physical abilities testing
- Skills, technique and difficulty assessment
- Recovery and regeneration status should be assessed daily
- Injury prevention and injury management
- Monitor ability of gymnasts to compete as a member of a team

Events and Activities

- Canadian Championships
- Selection events
- Training and preparation camps
- Special performances and demonstrations (club, provincial, national)
- Selected international FIG senior competitions
- World Championships
- Olympic Games
- World Cup events
- Major Games and Championships

GCG Programs: National Team Program

GCG National Coaching Certification Program

GCG Judges Training Program

Type of Coach:
NCCP Competition – High Performance



8 GYMNASTICS FOR LIFE – ACTIVE FOR LIFE

The Gymnastics for Life stage welcomes gymnasts of all ages, all backgrounds and all performance levels. In this stage are opportunities to learn new skills, to be part of a performing group, to try new gym disciplines and even to travel internationally and represent Canada. For those who wish to try a new aspect of gymnastics, there are opportunities for coaching, judging, volunteering and working in the sport.

This stage is for anyone who has ever participated in gymnastics. It welcomes new participants – even at advanced ages - and athletes with a disability. It welcomes athletes from other sports who know the benefits that gymnastics will bring to their overall sport performance. It allows everyone and anyone to continue to have FUN with gymnastics, gain FITNESS with gymnastics and learn the FUNDAMENTALS of gymnastics at a level that suits their age, interests and ability. And last but not least, it encourages former gymnasts to apply their gym skills into other sports and activities so they remain active for life.

What qualities will be developed in the Gymnastics for Life stage?

- Application of learned skills to new focus (e.g. new gym discipline, different level of performance, other sport, dance etc.)
- Improve performance quality of specific skills related to new focus
- Maturity in combination, adaptation and creative extension of skills and open to mental challenges
- Develop other skills and relate to gym background e.g. teaching, coaching, administration, marketing, promotion
- Application of gymnastics experience to life skills
- Desire to remain active and involved, and to give back to the sport
- Non-self centred attitude
- Enjoys social participation in the sporting activity
- Commitment to a program or a group
- Open to new experiences in the sport
- Safety and ethical considerations are of continuing importance and are relative to the participant and activity

What does not belong in the Gymnastics for Life stage?

- Risky exercises or advanced skills that require high level physical preparation
- Be aware that inconsistency of training increases risk factors
- Be aware of physical limitations of participants

Performance Qualities

- Will vary with the gymnast's performance goals.
- Fun, Fitness, Fundamentals is the overriding philosophy
- Advanced gymnasts may be preparing for Masters level competitions or high level demonstration events such as Canadian and World Gymnaestrada

Amount of time in gymnastics

- Will vary with age and performance level of gymnast
- May be 1 X 1 hour per week recreational program, up to 4 X 3 hours per week for an advanced demonstration team
- Up to 48 weeks per year
- Single peak or no periodization

Role of Parents

- The parents' role depends on the age and level of the gymnast. Generally there is a financial and time commitment, which entails driving to training, and paying for training time, costumes, equipment etc.
- Parents must support the gymnast's desire to remain in gymnastics
- For older, or more advanced gymnasts who participate in events such as Canadian and World Gymnaestrada, there may be significant travel costs

Monitoring

- As needed, depending on age.
- Ensure PHV is monitored for adolescent aged gymnasts in advanced programs
- General health and fitness
- Required applicable skills

Events and Activities

- Club and Provincial Gymnaestrada/ GymFests/Shows/Demonstrations
- Canadian and World Gymnaestrada
- Masters Competitions
- Recreational meets
- School and University competitions
- May have varied roles at events – organization, leadership, coaching, judging

GCG Programs: GCG Demonstration program

GCG Coach in Training program

GCG National Coaching Certification Program

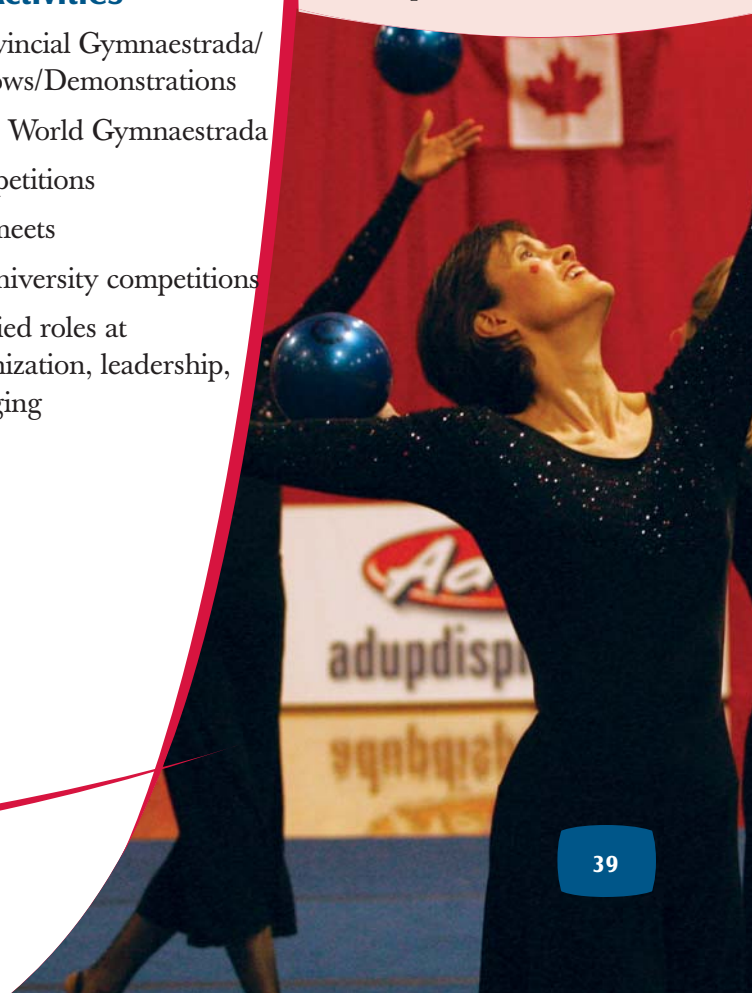
GCG Judges Training program

Type of Coach: The type of coach will depend on the age and performance level of the gymnast:

NCCP Foundations Coach plus specialization

NCCP Competition-Introduction coach

NCCP Competition-Development coach



APPENDICES



Appendix 1: Resource List

- BAR-OR, O. (ed). *The Child and the Adolescent Athlete*. Balckwell Science Ltd. Oxford, UK, 1996.
- BEAMER, M., CÔTÉ, J. and ERICSSON, K. A. (1999) A comparison between international and provincial level gymnasts in their pursuit of sport expertise. *Proceedings of the 10th European Congress of Sport Psychology* Prague, Czech Republic
- BLIMKIE, C.J.R. and BAR-OR, O. "Trainability of Muscle Strength, Power and Endurance during Childhood". In. Bar-Or, O. ed., *The Child and Adolescent Athlete*. London: Blackwell Scientific Publications, 1996.
- British Diving, *Talent Identification for British Diving: Physiological and Anthropometrical tests* (undated CD).
- CALMELS, C., D'ARRIPE-LONGUEVILLE, FOURNIER, J.F., and SOULARD, A. (2003). Competitive strategies among elite female gymnasts: An exploration of the relative influence of psychological skills training and natural learning experiences. *International Journal of Sport and Exercise Psychology*, 1, 327-352.
- Canadian Sport Centres (2005) *Long Term Athlete Development: No Accidental Champions. Athletes with a Disability*, Canadian Sport Centres Vancouver.
- Canadian Sport Centres (2005) *Long Term Athlete Development: Canadian Sport for Life*. Canadian Sport Centres Vancouver.
- CÔTÉ, J. (1999) The influence of the family in the development of talent in sport. *The Sport Psychologist*, 13, pp. 395-417.
- CÔTÉ, J., BAKER, J. and ABERNETHY, B. (STARKES, J. L. and ERICSSON, K. A. eds.) (2003) From play to practice: A developmental framework for the acquisition of expertise in team sports. *Expert performance in sports* pp. 89-110. Human Kinetics , Champaign, IL
- CÔTÉ, J. and HAY, J. (SILVA, J. M. and STEVENS, D. eds.) (2002) Children's involvement in sport: A developmental perspective. *Psychological foundations of sport*, pp. 503-519. 2nd ed., Allyn & Bacon , Boston
- DEAKIN, J. M. and COBLEY, S. (STARKES, J. L. and ERICSSON, K. A. eds.) (2003) A search for deliberate practice: An examination of the practice environments in figure skating and volleyball. *Expert performance in sports* pp. 115-132. Human Kinetics , Champaign, IL.
- DURAND-BUSH, N. and SALMELA, J. H. (2002) The development and maintenance of expert athletic performance: Perceptions of World and Olympic champions. *Journal of Applied Sport P 14* , pp. 154-171.
- Fédération Internationale de Gymnastique (FIG) (2003, August), *Age Group Development Model*.
- HANKIN, B.L., ABRAMSON, L.Y., MOFFIT.T.E., SILVA, P.A., MCGREGOR, R., ANGELL, K.E. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology*, 107, 1, 128-140.
- MACTAVISH, J. (2003, November). *The Sport Information and Consequences Questionnaire (SIC-Q): Mapping the connection between intellectual disability and elite sport performance*. Keynote presentation, Asia, South Pacific Conference on Eligibility, Tokyo, Japan.
- MALINA, R.M. and BOUCHARD, C. *Growth, Maturation, and Physical Activity*. Champaign, Ill.: Human Kinetics, 1991.

- MUSCAT, A.C. and BEAMER, M. (2001, October). Parental Influence in Elite Gymnastics, Presentation at Fall Congress, Surrey, B.C.
- MUSCAT, A.C. and LONG, B.C. (2007). Critical comments, disordered eating and female athletes. *Journal of Applied Sport Psychology*. Accepted for publication.
- NOLEN-HOEKSEMA, S and GIRGUS, J.S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin*, 115, 3, 424-443.
- ROSS, W.D. and MARFELL-JONES, M.J. Kinanthropometry, In MACDOUGALL, J.D, WENGER, H.A. and GREEN, H.J. (eds), *Physiological testing of the High Performance*, 2nd Edition, Champaign, IL, Human Kinetics, 1991.
- RUSHALL, B. The Growth of Physical Characteristics in Male and Female Children. In *Sports Coach*, Vol.20, Summer, 1998. pp. 25-27.
- Special Olympics Canada, Long Term Athlete Development Overview Document, 2007
- STEIN, N.W. Strength and Conditioning for Youth. Paper presented at the Hong Kong Sports Institute Annual Seminar, 2002
- Synchro Canada, Long Term Athlete Development, 2006
- VIRU, A. *Adaptation in Sports Training*. CRC Press, Boca Raton, 1995. p. 310.
- VIRU, A, LOKO, J., VOLVER, A., LAANEOTS, L., KARLESOM, K and VIRU, M. Age periods of accelerated improvements of muscle strength, power, speed and endurance in age interval 6-18 years. In "Biology of Sport", Warsaw, V., 15 (4) 1998, pp. 211-227.
- WHITEHEAD, M (2001) The concept of physical literacy. *European Journal of Physical Education* (6), pp. 12-138
- WICHSTROM.L. (1999). The emergence of gender differences of depressed mood during adolescence: The role of intensified gender socialization. *Developmental Psychology*, 35, 1, 232-245.
- WOLFENDEN, L.E, & HOLT, N.L. Talent Development in Elite Junior Tennis: Perceptions of Players, Parents, and Coaches, *Journal of Applied Sport Psychology*, 17 (2) 2005, pp. 108-126.

Websites:

<http://www.fig-gymnastics.com/index2.jsp?menu=disgg> accessed on March 6, 2007

Appendix 2: Glossary of Terms

Adaptation

refers to a response to a stimulus or a series of stimuli that induces functional and/or morphological changes in the organism. Naturally, the level or degree of adaptation is dependent upon the genetic endowment of an individual. However, the general trends or patterns of adaptation are identified by physiological research, and guidelines are clearly delineated of the various adaptation processes, such as adaptation to muscular endurance or maximum strength.

Apophysis

a protruberance from a bone, often serving as an attachment for a muscle.

Apophyseal avulsion

a bone fracture that occurs when a strong muscular force pulls the bony protruberance off the bone, rather than ripping soft tissue (tendon or muscle).

Child-centred

focusing on the needs, learning styles and individuality of the child

Childhood

ordinarily spans the end of infancy – the first birthday – to the onset of puberty 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 preschool children aged 1 to 5 years, and late childhood, which includes elementary school-age children, aged 6 through to the onset of puberty.

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.

Development

refers to the passage to, or percentage of maturity of various traits including social, emotional, intellectual, physical and motor qualities.

Directionality

Movement qualities relating to direction in space as per Laban principles of movement i.e. up/down; forward, backward, and sideways

Epiphysis

refers to the rounded end of a long bone; the growth portion of the bone.

Growth and Maturation

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.”

Gymnastics Disciplines

The disciplines of gymnastics are Men’s Artistic Gymnastics (MAG), Women’s Artistic Gymnastics (WAG), Rhythmic Gymnastics (RG), Trampoline Gymnastics (TG) Aerobic Gymnastics (AG) and Acrobatic Gymnastics (AcG). All education and recreational activities of gymnastics are *Gymnastics-for-All*.

Laterality

a component of body awareness by which a person perceives and develops 2 distinct sides capable of independent movement

Osgood Schlatter

is a common cause of knee pain in young, growing athletes. It is characterized by swelling, tenderness and pain just below the knee and over the shin bone (tibia).

Patterning

the ability to remember and repeat simple or predictable sequences of movements or words.

Peak Height Velocity (PHV)

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

Peak Strength Velocity (PSV)

the maximum rate of increase in strength during growth spurt. The age of maximum rate of increase in strength is called the age at PSV.

Peak Weight Velocity (PWV)

the maximum rate of increase in weight during growth spurt. The age of maximum rate of increase in weight is called the age at PWV.

Periodization

refers to the structuring of short and long term training, competition and recovery periods to provide optimum performances at a given date.

- Single peak = one preparatory and one competition period within the year
- Double peak = two preparatory and two competition periods within the year
- Multiple peak = competing all year round while maintaining physical and technical skills

Physical Literacy

refers to the mastering of fundamental motor skills and fundamental sport skills. “A physically literate person moves with poise, economy and confidence in a wide variety of physically challenging situations, is perceptive in reading all aspects of the physical environment, anticipates movement needs or possibilities and responds appropriately with intelligence and imagination” (Margaret Whitehead, 2001)

Puberty

the phase of growth that begins with the onset of hormonal changes in the reproductive system and ends with sexual maturity.

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 optimal 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.

Spondylolysis

refers to a stress fracture of a lumbar vertebra which causes lower back pain.

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.”

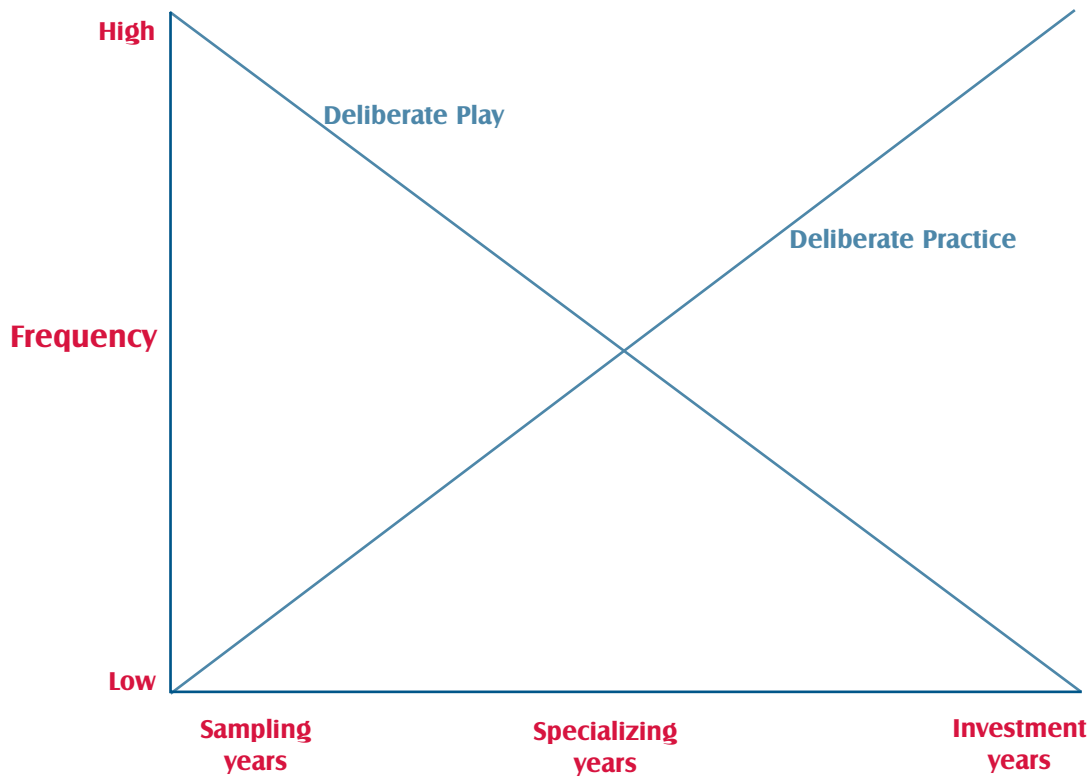
Training and Performance Factors

refer to the knowledge and experience base of an athlete and includes warm-up and cool-down procedures, stretching, nutrition, hydration, rest, recovery, restoration, regeneration, mental preparation, and taper and peak. The more knowledgeable athletes are about these training and performance factors, the more they can enhance their training and performance levels.

Appendix 3: Model of Development by Frequency of Practice and Play

from: Muscat and Beamer, 2001

Deliberate Practice, Deliberate Play and Level of Development



Appendix 5: Summary of Physical, Cognitive and Emotional Characteristics of each stage of LTAD

(Modified from FIG Age Group Development Program)

ACTIVE START		
PHYSICAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS		
BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • The rate of growth in height and weight is most rapid up to the age of 2 years, followed by a reduced but continuous gain in height and weight throughout childhood. • The change in the ratio of head to body and limb length causes the body to be disproportional. • The ratio of muscle and tendon strength to bone strength is lower at this age because increases in bone length precede strength development. 	<ul style="list-style-type: none"> • Rapid physical changes parallel rapid skill development. • Varying limb lengths and weights may affect balance, momentum and speed in ballistic and dynamic skills; arms are short relative to the head. • When the strength of the child’s leg or arm muscles cannot meet the increased demands of acquired bone length, there is an increased risk of skeletal overuse injuries. 	<ul style="list-style-type: none"> • Provide continual skill development challenges and varied environments. • Skills such as backward rolls may be difficult. Their introduction should await adequate limb growth. • Keep the activities simple and monitor the growth and the effort level at all times.
COGNITIVE DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS		
BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Reasoning processes are limited until the age of 7. • Increased demonstration of symbolic functions; language develops dramatically. • Young children take longer to process information to be remembered. 	<ul style="list-style-type: none"> • Children are not capable of thinking from any point of view other than their own. • Young children can attend to only a limited number of cues or instructions. 	<ul style="list-style-type: none"> • Include games that use analogies to movement patterns from nature e.g. walk like an elephant. • Present activities in a fun and playful context. Use symbols in teaching interventions. • Children over the age of 4 can use self-talk in motor skill performance, e.g. say “jump” when you jump. • Instruction should be simple, specific and goal-directed.
EMOTIONAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS		
BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Children in this age group are often shy and self-conscious. • At this age, children are egocentric, assume that everyone thinks the way they do and may have problems sharing and getting along with others. 	<ul style="list-style-type: none"> • They may be fearful of new situations and unwilling to leave the security of what is familiar. 	<ul style="list-style-type: none"> • Provide opportunities in which children can express their autonomy in a reasonable and proper manner (involve them in decision-making, let them choose activities and work on their own in a supervised manner). • Provide cooperative activities in which children are able to interact with each other in a positive way.

FUN, FITNESS AND FUNDAMENTALS

PHYSICAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Larger muscle groups are more developed than small ones. • The size of the heart is increasing in relation to the rest of the body. The cardiovascular system is still developing. • Ligaments are becoming stronger, but the ends of the bones are still cartilaginous and continue to ossify. • Basic motor patterns become more refined towards the end of this phase and the balance mechanism in the inner ear is gradually maturing. • During this phase, girls develop coordination skills faster than boys but the developmental differences between boys and girls are negligible. 	<ul style="list-style-type: none"> • Children are more skilful in gross movements involving large muscle groups than in precisely coordinated movements involving the interaction of smaller muscles. • The child's aerobic system is trainable, but the emphasis of training should be on the anaerobic alactic system. • The body is very susceptible to injuries through excessive stress or heavy pressure. • There is great improvement in speed, agility, balance, coordination & flexibility toward the end of this phase. • Sex differences are not of any great consequence at this stage in development. 	<ul style="list-style-type: none"> • Basic skills should be developed during this phase. • Short duration, anaerobic alactic activities should be planned. Endurance must be developed through play and games (lack of attention span for continuous work). • Use slow progressions in hopping and bounding. Strength training should be limited to own body weight or use of medicine ball exercises (neural recruitment). • Specific activities and games should emphasize coordination and kinaesthetic sense. • Training and playing together should be emphasized at this age and phase.

COGNITIVE DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Attention span is short and children are action oriented. Memory is developing in a progressive manner. • Children at this level have limited reasoning ability. Later in the phase there is a growing capacity for more abstract thought. • The repetition of activities is greatly enjoyed. Young athletes improve their abilities through experience. • Imagination is blooming. 	<ul style="list-style-type: none"> • Young athletes cannot sit and listen for long periods of time. • Children are generally leader oriented: They love to be led! • Experimentation and creativity should be encouraged. • Children do not learn skills correctly if using only trial and error teaching methods. 	<ul style="list-style-type: none"> • Use short, clear and simple instructions. Children want to move and participate in action. • Coaches should adopt a “follow me” or “follow the leader” approach and ensure that all activities are fun and well planned. • Coaches must provide correct demonstrations of the basic skills required at this level. The best coaches must work at this level. • While playing and practicing, encourage input from the children. They love to try new things.

continued on p. 50

FUN, FITNESS AND FUNDAMENTALS

EMOTIONAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • The child's self concept is developing through experience and comments from others. • Children like to be the centre of focus and attention. • The influence of peers becomes a very strong driving force behind all activities. • The child is hungry for challenges and opportunities. There is a no fear attitude. • The child begins to understand the need for rules and structure. 	<ul style="list-style-type: none"> • Youngsters perceive these experiences as a form of self-evaluation: "I am a good person if I do well – I am a bad person if I do poorly." • When situations become threatening, they quickly lose confidence. • Acceptance into the peer group often depends upon one's abilities in physical skills and activities • The child is trustworthy and vulnerable and can be easily frightened or injured through carelessness. • Children can understand and play simple games with simple rules and will tend to question rules and expect thoughtful answers. 	<ul style="list-style-type: none"> • Children need positive reinforcement from the coach on a regular basis. This will provide strong motivation to continue with the activity. • Structure skill teaching activities so that success is virtually guaranteed by gradually progressing from simple to complex. • The coach must be capable of properly assessing basic skills and providing a varied repertoire of practical opportunities for technical and tactical development. • The coach must develop courage, a no fear attitude and confidence through an anxiety free environment, proper sequencing of activities & positive reinforcement (e.g. activity circuits that suit ability and age.) • Emphasize participation and fun versus winning. Focus on the process, not on the outcome (have lots of FUN)!

BUILDING THE SKILLS OF GYMNASTICS / SPECIALIZATION IN A GYM DISCIPLINE

PHYSICAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Significant proportional changes occur in bone, muscle and fat tissue. • Girls begin their growth spurt between the ages of 10 – 14 years, boys between 12.5 – 15 years. Girls attain a maximum rate of growth at an average age of 11, boys at an average age of 14 years. • Primary and secondary sex characteristics manifest themselves during this period. For girls, the normal range for onset of menarche is between 10 – 16 years. • Smaller muscle groups are becoming more developed. • During this phase, the various parts of the body do not grow at the same rate. The growth rate of the legs and arms will reach a peak prior to that of the trunk. • A significant increase in red blood cells occurs, especially in boys due to the hormone testosterone. • The central nervous system is almost fully developed. 	<ul style="list-style-type: none"> • During growth spurts adaptation is influenced by sudden changes of body proportions. • Early in this phase, girls are faster and stronger than boys, later in this phase boys are becoming faster and stronger than girls. • After the onset of menarche, iron levels of girls should be monitored regularly. • Speed, agility and coordination are still improving rapidly during this stage. • A change in the centre of gravity, length of limbs and core strength will determine the content of training. • The oxygen transport system is still developing and aerobic endurance is continuing to increase. • Agility, balance and coordination are fully trainable. 	<ul style="list-style-type: none"> • Monitor training carefully and individualize the content of training to ensure adaptation. • Chronological age may not be the most appropriate way to group athletes. • Avoid situations where fear, guilt and/or anxiety are brought about by sexual development. • With the improvement of fine motor movement all basic technical skills should be mastered. Athletes should learn how to train during this phase, including physical and ancillary capacities. • Some of the already learned skills have to be refined (re-learned) again, since growth of limbs affects technique. • The increase in body mass requires more structured aerobic training. Only short duration anaerobic activities are recommended. • Use the warm up for further development of central nervous system activities.w

BUILDING THE SKILLS OF GYMNASTICS / SPECIALIZATION IN A GYM DISCIPLINE

COGNITIVE DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Abstract thinking becomes more firmly established. • Young athletes develop a new form of egocentric thought. More emphasis is placed upon self-identity. • Young athletes are eager to perfect their skills. 	<ul style="list-style-type: none"> • Decision making though more complex technical training should be introduced. • This may result in a strong fear of failure. • Individual specific direction and structure in the learning process is required. A variety of methods to measure success is important to maintain motivation. 	<ul style="list-style-type: none"> • Decision-making on tactical and strategic solutions should be based upon the skill level of the athlete. Athletes should learn how to train, including all technical, mental and tactical components. • Create optimum learning environments, match skill and drill levels. Introduce simple coping strategies, concentration skills and mental imagery. • Positive reinforcement is imperative. Physical and mental development can vary greatly. The coach must be careful not to select early developers and neglect or de-select late developers. • The coach's ability to demonstrate specific skills is important. AV material and video feedback will help create mental images.

EMOTIONAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • There is a tremendous influence on behaviour from peer groups. • During this phase, athletes are capable of cooperating and accepting some responsibility. • Tension generally exists between adults and adolescents. • It is important that young athletes at this developmental level be able to display tenderness, admiration and appreciation. • Physical, mental and emotional maturity do not necessarily develop at the same rate. • There is a desire to have friends of the opposite sex. 	<ul style="list-style-type: none"> • Values and attitudes are being created and reinforced by the group. • Some athletes may be less responsible mainly due to a fear of failure. • Communication channels should be kept open by adults, as all teenagers need help even though they do not recognize the need, or seem grateful for the help. • Deprivation of these qualities often leads to exaggerated and/or unacceptable behaviour. • Feelings of confusion or anxiety may exist as a result. • Social activities are important events for this age group. 	<ul style="list-style-type: none"> • The coach should exercise strong direction and supervision. A role model for young athletes is very important. • The coach must have open communication with the athletes so the athletes learn how to train including all ancillary components. • The coach is usually better accepted than other adults & should always attempt to foster two-way communication. Young athletes should have input into decision-making processes. • Early maturers often become leaders and excel in physical performance. Coaches should not play favourites as this can have negative effects on the other athletes' development. • The coach's communication skills and understanding are important in this regard. • Co-educational activities are recommended.

BECOMING A CONSISTENT COMPETITOR

PHYSICAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> The circulatory and respiratory systems reach maturity. Increases in height and weight gradually slow down. Stabilization occurs in the muscular system. Skeletal maturation continues in males and females. By age 17, girls have generally reached adult proportions, whereas boys do not reach such proportions until several years later. 	<ul style="list-style-type: none"> These systems are generally capable of giving maximum output. Muscles have grown to their mature size but muscular strength continues to increase reaching its peak in the late twenties. Connective tissues are still strengthening. Girls generally gain more weight than boys during this phase. 	<ul style="list-style-type: none"> Aerobic and anaerobic systems can be trained for maximum output. Full sport-specific energy system training should be implemented. Strength training can be maximized to improve overall strength development. Neuromuscular training should be optimized during this phase. Progressive overloading in training should be continued. Aerobic training for girls should be optimized. Coaches should be aware how to deal with weight gain. Athletes should learn how to compete in varied circumstances.

COGNITIVE DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> Generally, by age 16, the brain has reached its adult size but continues to mature neurologically for several more years. Critical thinking is well developed during this phase. 	<ul style="list-style-type: none"> Athletes can cope with multiple strategies and tactics, particularly near the end of this phase. The capacity for self-analysis and correction is developing. 	<ul style="list-style-type: none"> Coaches should ensure the refinement of all technical and tactical skills. Decision-making should be developed further through technical and tactical development.

EMOTIONAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> Peer group influence is still a powerful force. Athletes are searching for a stable, balanced self-image. Activities and interaction with the opposite sex are important during this phase. 	<ul style="list-style-type: none"> Independent decision-making and leadership skills are becoming more developed. Self-concept is still very much influenced by success and failure. Coping techniques are useful. Male athletes must be aware that female athletes now face a problem of femininity versus sport development. Female athletes must be aware that male athletes now face a problem of relating performance to masculinity. 	<ul style="list-style-type: none"> Athletes should be given the opportunity to develop through participation in appropriate leadership or responsible roles (i.e. team captain, athlete representative, etc.) but strong direction and discipline must be maintained. Positive evaluation of performances and positive reinforcement are imperative. Allow time to establish independent social interaction. Facilitate the recognition of these and other issues through education and club programs.

WINNING AT ALL LEVELS / INTERNATIONAL EXCELLENCE AND PODIUM PERFORMANCES

PHYSICAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Physiologically the body reaches maturity during this phase. • Final skeletal maturation occurs at around age 19 - 20 for females and approximately three years later for males. 	<ul style="list-style-type: none"> • All physiological systems are fully trainable. 	<ul style="list-style-type: none"> • Coaches should use the most advanced physical training methods and programs to ensure maximum adaptation and to minimize injuries. • Coaches should ensure that all muscle groups and body alignments are well balanced, and complemented by optimum flexibility ranges. • Coaches, when designing training programs, should use state of the art sport science and medicine information, including results of appropriate and timely testing and monitoring. • Overtraining and overstress should be carefully monitored. • Regular appropriate medical monitoring should be conducted, with additional blood tests for female athletes to prevent iron deficiency.

COGNITIVE DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

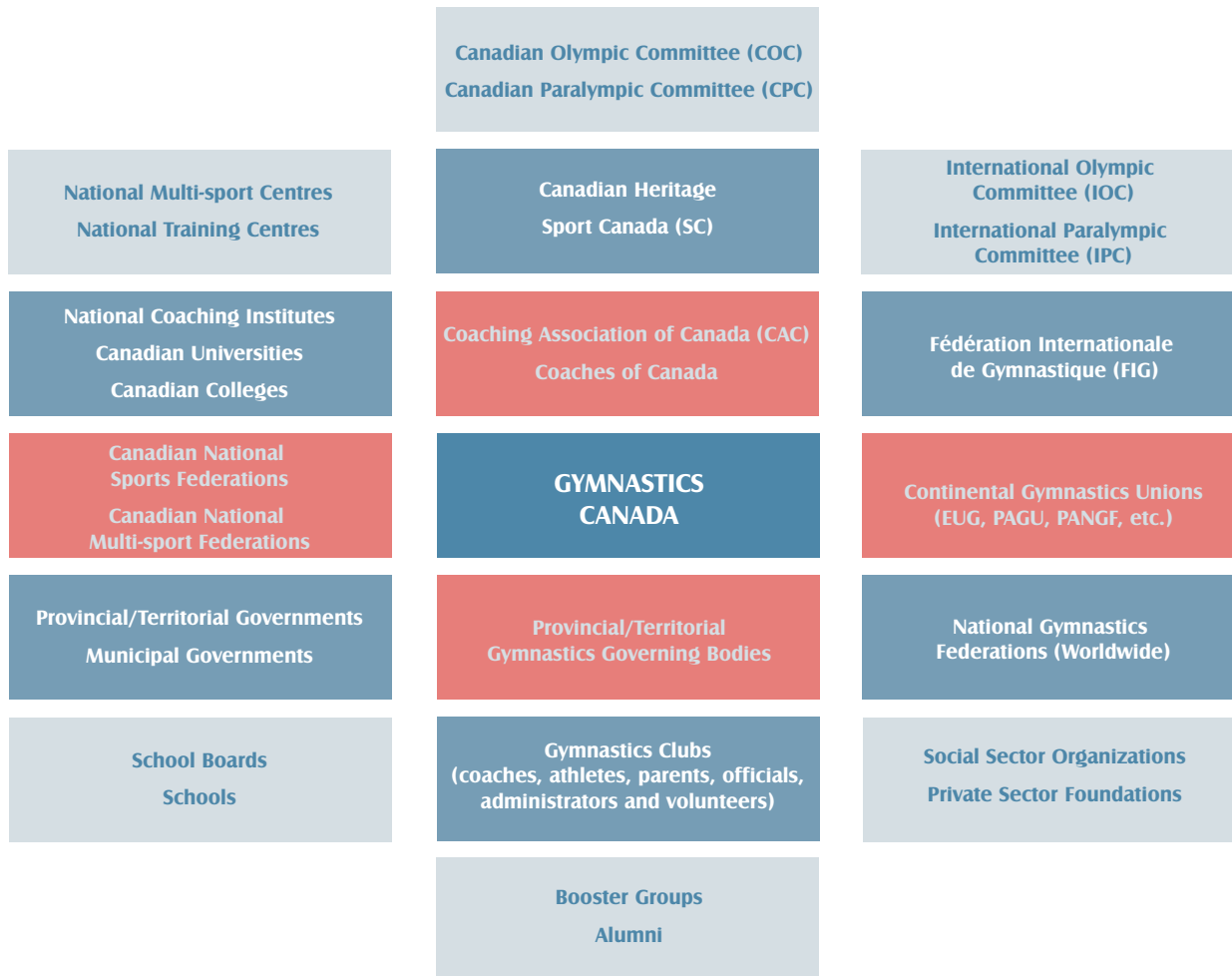
BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • Neurologically the brain reaches maturity when athletes are between 19 and 20 years of age. • There is a complete understanding and acceptance of the need for rules, regulations and structure. 	<ul style="list-style-type: none"> • Athletes are capable of self-analysis and can correct and refine skills themselves. Athletes can analyse and conceptualize all facets of their sport. • Well-developed information processing skills improve the athlete's ability to visualize verbal instructions. • For the young adult, the rules and structure of training and competition must be perceived as clearly defined and fair. 	<ul style="list-style-type: none"> • Winning becomes the major objective. • Principles of adult learning should be implemented at this stage. • Athletes should be involved in decision-making and in the planning of team or group activities.

EMOTIONAL DEVELOPMENT – CHARACTERISTICS AND IMPLICATIONS

BASIC CHARACTERISTICS	PERFORMANCE CAPABILITIES AND LIMITATIONS	IMPLICATIONS FOR THE COACH
<ul style="list-style-type: none"> • There is a need to be self-directed and independent. • Self-actualization and self-expression are important. • Major decisions about career, education and lifestyle become a priority at some point during this phase. • Interaction with the opposite sex continues to be a priority and lasting relationships may develop. 	<ul style="list-style-type: none"> • The athlete is ready to assume responsibility and accept the consequences of his/her actions. • Major changes in interests, hobbies and physical activities may occur during this phase. 	<ul style="list-style-type: none"> • Goal setting should be strongly emphasized to give definite direction and purpose to the athlete's overall program. • The athlete needs to be treated as an adult and with respect. Direction and structure provided by the coach is still important. • Professional guidance should be made available to help athletes make decisions about off-season and educational pursuits. • Athletes must have ample opportunities for independent social interaction.

Appendix 6: GCG's Partners

Outside of the immediate family of gymnastics, GCG is part of a large network of sport partnerships (see below). Some of these partners provide funding and support to GCG, some assist with coach training and development, while others are part of the delivery system for gymnastics programs. See the next page for a description of the roles of various partners.



Roles of the Partners

Success in gymnastics requires the coordinated efforts of numerous people, organizations and institutions. The many partners offering services to gymnasts have different but complementary roles, and may play either a direct or indirect role with varying degrees of involvement.

Parents

- Provide access to participants
- Provide support to participants for training and competition
- Provide support to clubs and coaches for training and competition

Clubs

- Provide access to training and competition facilities
- Run large-scale programs to bring the greatest number of children in contact with the type of gymnastics activities that hold their interest
- Provide positive experiences through supervised gymnastics activities, and identify children with the necessary qualities to excel in one or another of the gymnastics disciplines
- Provide coaching support during training / competition to athletes, at all levels, from beginner to high performance
- Host training camps and competitions
- Support coach mentorship programs
- Administer LTAD programs developed by GCG and P/TO
- Promote the sport locally

Gymnastics Canada Gymnastique

- Leads the Canadian gymnastics system
- Mandates national coaches
- Runs national team program
- Directs high performance programs
- Sets guidelines for LTAD
- Develops programs for LTAD
- Promotes the sport nationally

Provincial / Territorial Governing Bodies

- Include Centres of Excellence into their HP plan
- Mandate their provincial/territorial coach(s)
- Run regional and provincial / territorial competition circuits
- Promote gymnastics throughout its territory
- Support recruitment of new participants

Schools and School Boards

- Support school sport, gymnastics classes, etc.

Federal Government (Sport Canada)

- Supports excellence and participation
- Supports the implementation of Clubs of Excellence
- Supports the hiring of NT coaches
- Financially supports elite athletes (Carded athletes)

National Gymnastics Clubs of Excellence

- Plan, supervise & control group and individual training of NT athletes.
- Physical monitoring and evaluation of NT, aspiring NT and P/T team athletes
- Hold training camps for Canadian HP athletes
- Provide access to the facilities and equipment necessary for training and lodging of athletes, and the training of coaches and judges
- Promote access to professional, scientific and medical services, particularly those offered by the National Multisport Centres
- Train future coaches
- Plan logistics for teams participating in development projects and training camps outside Canada
- In cooperation with local, regional and provincial organizations, encourage activities that promote gymnastics and the detection of athletic talent

National Multisport Centres

- Offer professional, scientific and medical services to HP athletes

Coaching Association of Canada

- Supports the National Coaching Certification Program
- Supports the Women in Coaching Program
- Offers coaching bursaries, scholarships, apprenticeships, etc.

National Coaching Institutes

- Provide coach education and training programs
- Offer education bursaries

Foundations, Philanthropists and other bodies

- Provide financial support
- Provide visibility

Municipalities

- Offer community gymnastics programs

Private enterprises

- Offer support in return for visibility and promotion
- Sponsor gymnastics programs, events and activities

Appendix 7: Protocol for Height Measurements

From: Talent Identification for British Diving

Standing Height (cm)

- The gymnast stands erect in bare feet with heels, buttocks and shoulders pressed against the stadiometre
- Heels together with arms hanging freely by the side (palms facing thighs)
- The tester applies gentle upward traction to the skull behind the ears
- The gymnast is instructed to look straight ahead, take a deep breath and stand as tall as possible
- Draw down the measuring bar to the gymnast's head and record standing height to the nearest 0.1 cm

Sitting Height (cm)

- Gymnast sits on the base of the stadiometre with knees slightly bent, hands rested on knees.
- The buttocks and shoulders rest lightly against the stadiometre, which is positioned vertically behind the gymnast. Ensure there is no gap between buttocks and the stadiometre
- The tester applies gentle upwards traction to the skull behind the ears to ensure the trunk is fully stretched.
- Draw down the measuring bar to the gymnast's head and record sitting height to the nearest 0.1 cm

Arm Span (cm)

- Mount a tape measure on the wall about shoulder height of the gymnasts being measured. Ensure the starting point of the tape measure is fixed to a corner of a wall. This is where the gymnast's fingers must be fixed.
- The gymnast stands erect with the stomach and toes facing the wall, feet together and head turned to the right
- The arms are extended laterally at shoulder level (horizontal) with palms facing forward. Fingers are stretched.
- The tip of the middle finger is aligned with the beginning of the tape measure (corner of wall) and arms are outstretched along the tape measure
- Use a rule held vertically to the tape measure to record total arm span to the nearest 0.1 cm

LTAD Steering Committee Profiles

Jean Paul Caron

Jean Paul Caron is the CEO of Gymnastics Canada Gymnastique. A former club and university level gymnast, Jean Paul brings his extensive experience as a men's artistic coach and sport leader to the LTAD Steering Committee. Jean Paul is a former GCG Women's High Performance Director, Technical Director for QGF, and CEO of Gymnastics Ontario, and has wide range of knowledge and experience in all aspects of gymnastics.

Stéphan Duchesne

Stéphan Duchesne is the Trampoline and Tumbling (T&T) High Performance Director at Gymnastics Canada Gymnastique. He is responsible for the leadership and direction of the T&T High Performance and National Team program, and in this capacity he works closely with Canadian coaches, judges and athletes. Stéphan has many years of judging experience and has been a Brevet Judge in Trampoline since 1992. He has judged at three World Championships and many World Cup and Continental events. Stéphan was the Canadian Judging Chair from 2003 to 2006 and is a member of the Pan American Gymnastics Union Trampoline Commission.

Mario Lam

Mario Lam has been involved in rhythmic gymnastics in various capacities - parent, judge, BC board member and coach. He is an early adopter of technology and created one of the first websites to carry technical information about rhythmic gymnastics. Mario created other tools like the scoring program which is used throughout Canada. He created the world's first rhythmic gymnastics routine scripting program that reaches beyond North America. He is an active advocate for Special Olympics and has created visual tools that help with the training of judges and coaches. Mario was responsible for bringing Canada's first men's rhythmic gymnastics (Martial Gym) to Japan to compete at the world's first men's RG championship. This discipline is now recognized as a future growth area by both Gymnastics Canada and Special Olympics Canada. Mario brings his strong knowledge of programs for athletes with an intellectual disability to the LTAD project.

Évelyne Ménard

Evelyne Menard has a background in womens artistic gymnastics as an athlete, coach and judge. She developed knowledge in all disciplines of gymnastics, at all levels through her work as Technical Director with Gymnastics Saskatchewan. She has a Kinesiology degree and provided input to the development of the GCG LTAD document.

Sheila Mozes

Sheila Mozes is a sport and community development consultant. Her background in education, dance and recreational artistic gymnastic has led her to specialize in preschool gymnastics and coach education. She has worked as a coach, administrator, director and teacher with Gymnastics British Columbia and Gymnastics Ontario since 1970. As one of the originators of the Canadian Preschool Coaching Certification Program, she led the development of the Active Start, FUNdamentals and Gym for Life portions of the GCG LTAD document.

Teresa Orr

Teresa Orr has been actively involved with gymnastics in many capacities; as an artistic gymnast, an artistic and rhythmic coach & choreographer, team manager, coaching instructor, meet director, committee member and technical advisor. After representing Canada at 3 Olympic Games (1968-1972-1976) she has been on staff at Seneca College for almost 30 years. Volunteer work has been an important aspect of her career. Teresa has served numerous years on the Gymnastics Ontario & Gymnastics Canada RG Program Committees. She is presently the RG Technical Advisor for Ontario facilitating many camps, workshops & new initiatives for athletes, coaches & judges. As a Technical Meet Director Teresa has hosted over 20 competitions, one of the most recent is the Junior RG Pan American Championship.

Teresa has been awarded with a FIG Pin, the Gymnastics Ontario Recognition Award, the Syl Apps Special Achievement Award from the Sport Alliance of Ontario and is a Gymnastics Canada Life Member.

Jeff Thomson

Jeff Thomson is the Men's Program Director for Men's Artistic Gymnastics at Gymnastics Canada.

Jeff worked for 2 years as the Education Manager for the New Zealand Gymnastics Association and for 18 years at the University of British Columbia as a Lecturer in the School of Human Kinetics, where he was also coach of both the Men and Women's Artistic Gymnastics teams.

Jeff is a FIG Brevet judge and has judged for Canada at 3 Commonwealth Games, 8 World Championships and 2 Olympic Games. Jeff is a long-standing Course Conductor in the NCCP and is active in ongoing coach education programs.

Ron Weese

Ron Weese is a Professor at Seneca College, North York, Ontario and is the curriculum coordinator in the Competitive Gymnastics Coaching Program at that Institution. The majority of his professional life has been spent training and teaching coaches in a number of sport disciplines, concentrating his expertise in the areas of Exercise Physiology and Biomechanics. As a published author, he has contributed to the National Coaching Certification Program (NCCP) and is a Master Learning Facilitator in that Program.

Ron has a diverse gymnastics background with Gymnastics Ontario and Gymnastics Canada and has contributed extensively to the development of the F.I.G. Age-Group and Academy Program for Aerobic Gymnastics.

Special Advisors on Sport Science:

Hardy Fink

Hardy Fink is currently the Director of Education and Academy Programs for FIG, and has been a member of the FIG Academy and Age Group Program Working Group since 1996. From 1988-1998 Hardy was the Canadian Men's National Coach and High Performance Director, and was Men's Program Director from 1998-2000. Hardy was a member of the FIG Men's Technical Committee from 1998-2004, and was President of MTC from 1996-2000. As well, Hardy is a well-respected FIG Brevet judge and has judged at 33 major FIG competitions, including Olympic Games, World Championships and World Cup Finals. He is committed to coach and judge education, and has instructed at over 30 international coaching courses, and 25 international judging courses, as well as being a long-time Course Conductor in the NCCP. Hardy is also a respected writer and has published over 160 gymnastics technical articles and papers.

Anne Muscat

Anne Muscat is a PhD candidate with the University of British Columbia and holds two Masters Degrees (sport psychology and counseling psychology). Anne is the founder of Mynd Matters Consulting – a sport psychology consulting firm that she established in the early 90s. She works with a number of national, provincial and regional organizations in this capacity. She has supported Team BC sports as a sport psychology consultant through 3 Canada Games cycles.

Anne was a successful international athlete in trampoline and a national collegiate gymnast. She has been able to combine her experiences as an athlete, competitive coach and researcher while consulting and conducting workshops in the area of sport psychology. Anne is a NCCP course conductor and is a member of the managing council for the Canadian Sport Psychology Association. She also teaches part-time at Langara College and the University of British Columbia in Vancouver, B.C. Anne has also provided sport psychology support to several Olympians.

Keith Russell

Dr. Keith Russell is an Associate Professor in the College of Kinesiology, University of Saskatchewan. He is a well respected coach, educator and author, and is in great demand both in Canada and internationally. Keith is a former Canadian Men's National Coach, and was the personal coach of two Olympians. He is the former Head Coach of the U of S men's gymnastics team, and is a 3 time ALCOA Coach-in-Residence in Western Australia. He has been an invited international expert for 4 Olympic Solidarity Courses, and was honoured in 1995 with the 3M Canada Male Coach of the Year Award for Individual Sports. Keith applies his vast coaching experience to ongoing coach education; he is a Master Course Conductor for all levels of the NCCP, the author of the Level 1 technical manual for gymnastics, a contributing author for the Level 2 and 3 technical manuals, and a course director for the GCG Level 4 program. Keith is also a member of the FIG Academy Writing group for artistic gymnastics, trampoline/tumbling, acrobatic gymnastics and gymnastics for all. He is the author of several modules of the FIG Academy programs, and has taught Levels 1 to 3 of the FIG Academy program since 2003. Keith is a member of the FIG Academy Sport Science Steering Committee, and of the Management Committee of the National Sport Centre, Saskatchewan.

LTAD Expert Group Consultants

Istvan Balyi

Since 1994, Istvan Balyi has been the resident sport scientist of the National Coaching Institute at the University of Victoria. He has worked with several Canadian National Teams as high performance advisor and planning and periodization consultant for major games. He is a world renowned coaching educator and his series on Long-term Athlete Development and periodization have been published in Australia, Canada, the United States and the United Kingdom.

Istvan is currently the Long-term Athlete Development (LTAD) advisor for **sportscoachUK** (National Coaching Foundation), The Sports Council for Wales, and the Sports Council for Northern Ireland. He worked with 19 sports in the UK on LTAD, including Rugby, ECB, Tennis, Cricket, British Swimming, Diving, Water Polo and Synchronized Swimming, British Judo and British Gymnastics.

Istvan is a member Sport Canada's expert advisory group of Long-term Athlete Development and presently works with a wide range of Canadian sports to develop LTAD models.

Mary Bluechardt

Dr. Mary Bluechardt is a member of the LTAD Expert Committee with a focus on athletes with intellectual disabilities. She has degrees in Physical and Health Education (Lakehead), a Masters of Science in Coaching (Lakehead), and a PhD in Exercise Science (Toronto). Mary is the Director of the School of Human Kinetics and Recreation at Memorial University (Newfoundland and Labrador). She was formerly the Director of Coach Development for Special Olympics Canada where she led the development of their new NCCP. Prior to Special Olympics, Mary was a Professor and Program Head in the Faculties of Kinesiology and Education at the University of Regina. Mary has been working with people with disabilities since 1976 from the local to international level. She is a Master Learning Facilitator, with International experience with the Commonwealth Sport Development Program in Barbados, Guyana, St. Kitts, and Nevis, and has done development work in China and Thailand. Mary has received numerous awards for her work, including the University of Regina Award of Excellence in Public Service, and YWCA Women of Distinction for Health and Wellness.

LTAD Project Leader and Technical Writer

Cathy Haines

Cathy Haines is a sport consultant specializing in LTAD and Coaching Education. She has over 30 years of experience in artistic and rhythmic gymnastics, as an athlete, coach, administrator, parent and volunteer. From 1987-2000, Cathy was the Coaching Development Coordinator at Gymnastics Canada and was responsible for the ongoing design and implementation of the NCCP. Cathy has also been a technical meet director for numerous provincial level RG competitions and received the Gymnastics Ontario Volunteer Recognition Award in 2001. Since 2000, Cathy has been an independent sport consultant based in Ottawa. Cathy has worked as a consultant with the Coaching Association of Canada, and is presently working with a variety of sports on LTAD and on NCCP design and development.

The LTAD Steering Committee would like to thank other individuals who reviewed this document and provided valuable feedback:

Holly Abraham

Holly Abraham has been a FIG Brevet Judge in Aerobic Gymnastics since 1995. She is a developer and instructor of the FIG Academy Program for Aerobic Gymnastics, and has created numerous resources for the sport that are being implemented at the provincial and national level. Holly has an extensive background in gymnastics and has been a NCCP Course Conductor/Learning Facilitator since 1989. She is currently the CEO of Gymnastics Ontario.

Guy Lavoie

Guy Lavoie is currently Coordonnateur à la Formation with the Fédération de Gymnastique du Québec (FGQ). He has an extensive background in both Men's and Women's Artistic Gymnastics and has coached many national level athletes. Guy has been a Course Conductor/Learning Facilitator since the inception of the NCCP, and is a Level 4 certified coach. He continues to work closely with athletes and coaches, and remains dedicated to coach education.

Andrée Montreuil

Andrée Montreuil reviewed the French LTAD document and did part of the translation. Mrs Montreuil now works at Gymnastics BC as technical director. She was first involved as a coach and has been a FIG Brevet judge since 1997.

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