

Karate

FOR LIFE



**KARATE CANADA'S LONG-TERM
ATHLETE DEVELOPMENT MODEL**



Acknowledgements

The development of Karate for Life has been a collaborative effort between Sport Canada and Karate Canada. Below is a list of key individuals involved in the development of this resource paper:

Karate Canada LTAD Committee

Germain Bisson
Kraig Devlin
Jim Jennings
Gerard Lauziere
Calvert Moore
Paul Oliver

Canadian Sport for Life Expert Team

Istvan Balyi- External Project Lead
Richard Way – Canadian Sport for Life (LTAD) Project Lead
Danielle Bell – Citius Performance

Design

McAllister Media

Translation

Lyne Laroche

Photo Credits

Germain Bisson-pg. 49
David deRoy/Onelegwest Design-pg. 6
Kraig Devlin-pgs. 4, 11, 12, 15, 25, 31, 33, 37
Dick Grant-pg. 24
Marian Huen-pg. 26,
Jim Jennings-cover, pgs. 8, 9, 18, 39, 40, 48, 50, 51, 57
Phil Cha-pg. 47
Chris Webster-pg. 35
Mary Mungroosing-pg. 44

We acknowledge the financial support of the Government of Canada through Sport Canada, a branch of the Department of Canadian Heritage.

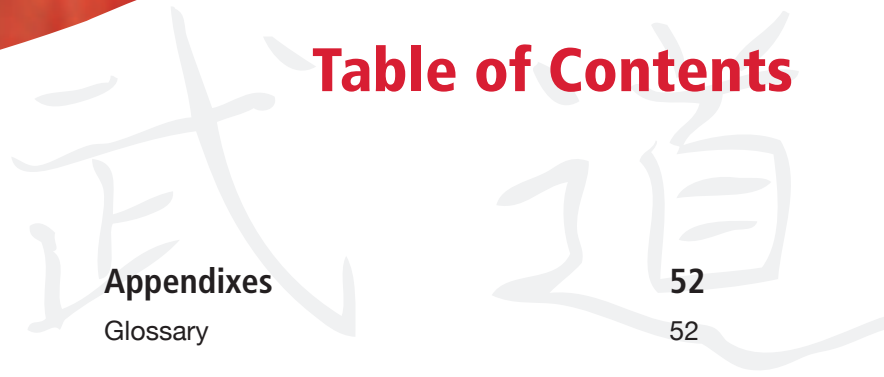
The logo for the Government of Canada, featuring the word "Canada" in a serif font with a small Canadian flag icon to the right.

All rights reserved. No part of this work may be reproduced or transmitted in any form for commercial purposes, or by any means, electronic or mechanical, including photocopying and recording or from any information stored in a retrieval system, without permission from the authors or Karate Canada.

Copyright Karate Canada, 2009

ISBN #978-0-9696231-1-3

Table of Contents



Dedication	2	Appendixes	52
Message from the President of Karate Canada	3	Glossary	52
Introduction	4	References	54
LTAD	5	Optimal Trainability Chart	58
Need for LTAD	5	Periodization Chart	59
• Where are we now?	6	Karate Systems	60
• Where do we want to be?	8	Physical Components of Karate	61
• How are we going to get there?	9	Technical/Tactical Components of Kumite	62
10 key factors of LTAD	10	Technical/Tactical Components of Kata	63
10's of Training and Performance	26	Ancillary Capacities	64
Stages	30		
Active Start	31		
FUNDamentals	32		
Learn to Train	34		
Train to Train	36		
Train to Compete	38		
Train to Perform	40		
Train to Win	42		
Active for Life	44		
Competition Review	46		
Annual Planning	48		
Impact of LTAD on Karate in Canada	49		
Implementation-Canadian Karate Working Together	51		

Dedication



In Memory Of Calvert Moore. 1935-2007

As President of Karate BC, Cal Moore's passion for encouraging and training athletes was a catalyst for introducing the LTAD concepts to British Columbian Karate. He subsequently became a founding member of the Karate Canada LTAD committee.

Cal passed away during the production of this manual.

Our thoughts are with you Cal.



Message from the President

It is my pleasure as the President of Karate Canada to introduce Karate for Life. This manual is a valuable resource for anyone interested in the development of Canada's karate athletes and practitioners. Its creation marks a turning point in the instruction and coaching of Karate within Canada.

Long Term Athlete Development (LTAD) is a plan for athletes to maximize their potential through optimal training, competition, and recovery techniques throughout their athletic careers. In addition, LTAD is about enjoying life-long participation in karate and other physical activity. Training, competing, and recovery programs are based on an athlete's developmental age rather than chronological age and are designed to optimize development during critical periods of maturation and trainability. LTAD also takes into account the physical, mental, emotional, and cognitive development of all participants.

Karate, along with several other sports, has been identified as an early introduction / late specialization sport, which means that most competitors will not achieve their maximum potential until their mid to late twenties. In turn, it signifies that the athlete development is a long term process. A solid foundation of movement skills and fitness is critical for everyone, especially athletes participating in late-specialization sports, such as karate. In order to reach their maximum potential, karate athletes need to build physical literacy as children – the mastering of fundamental movement skills and fundamental sport skills – by participating in a wide variety of sports and physical activity when they are young. Early specialization in karate can harm long term development.

LTAD also contributes to health and a life-long enjoyment of karate and all other physical activity. LTAD defines a clear, seamless development pathway. It gives coaches, administrators, clubs, and others involved a clear understanding of how they can best support the athletes for whom they are responsible. It gives athletes a clear idea of what they need to do and when they need to do it in order to excel at the elite level.

On behalf of Karate Canada, I extend gratitude, acknowledgement and congratulations to all those who contributed to the creation of this resource paper. I believe that the information contained within its pages will significantly improve our approach to instructing karateka, coaching athletes and ensuring their success at every stage.

Sincerely,

Rebecca Khoury
President,
Karate Canada

INTRODUCTION

Karate for Life is a framework of athlete development with special reference to growth, maturation and development, trainability, and the sport Karate system alignment and integration. It incorporates information from the Sport Canada resource paper “Canadian Sport for Life” which is a generic model of athletic development aimed at improving the nation’s health and excellence in sport. It also integrates information from the previously produced provincial Karate LTAD models of Quebec and British Columbia.

The health and well-being of the nation and the medals won at major Games are simple by-products of an effective sport system. This LTAD framework is not a model for elite athletes only. It is a pathway through which all participants travel whether they have a recreational or competitive focus.

This guide is designed to be used by parents, athletes, coaches, sensei and administrators and provides an overview of the stages of long-term athlete development within the sport and art of Karate. It outlines the ten key factors of LTAD and provides suggested activities for each stage of development. Recommendations for competition and training ratios are provided in addition to a brief competition review created to encourage dialogue on the current competitive system.



The Need for an LTAD Model for the sport of Karate

LTAD development is not a foreign concept to the art of Karate. In fact, Karate may have been at the vanguard in devising and implementing a structured framework for physical development and skill acquisition. The kyu and dan rank system, along with the associated style curricula, closely parallel the LTAD concepts. However, where the grading curriculum of a Karate style is based primarily on technique and skill acquisition, the LTAD framework is underpinned by proven scientific principles of human growth and development. This framework encourages young athletes to navigate defined pathways that increase their chances of achieving success on the world stage.

Research has proven that a long-term commitment based on sound and demonstrable principles is needed for training and practice to consistently produce elite athletes in all sports.

To ensure optimal development throughout an athlete's career, plans must address training, competition and recovery. Better preparation will facilitate higher peaks that are maintained over a longer period. Rushing to produce results will open the door to shortcomings in technique, tactics, fitness and physiology that will ultimately detract from performance.

Additionally, implementation of the LTAD framework for Karate will

- enable everyone associated with the sport of Karate to fit in somewhere
- define roles in the development of Karate in Canada
- allow all those involved in Karate training to define what they want from the sport

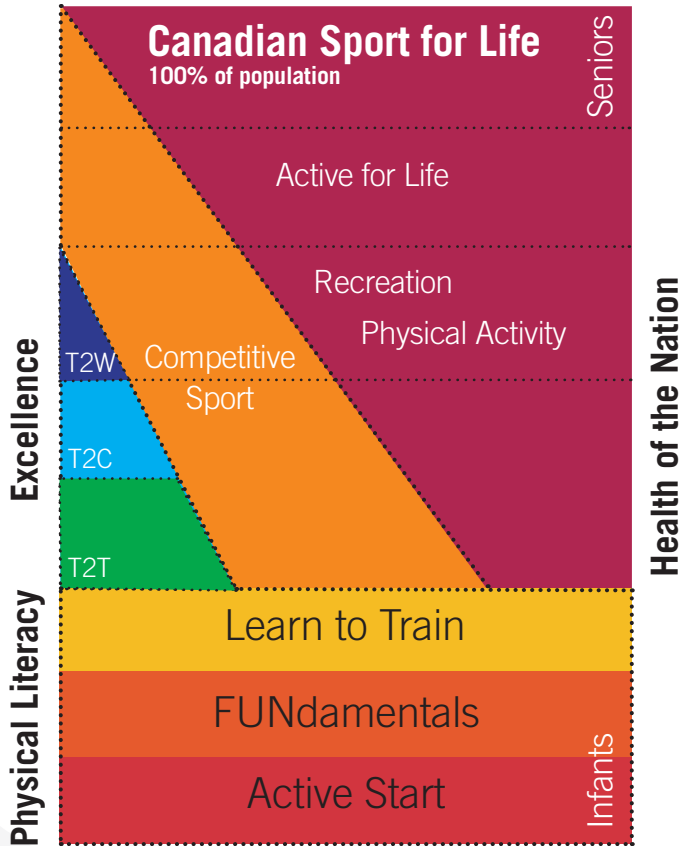
Dojo instructors, regional coaches and provincial coaches are key to the process and should implement the LTAD principles within their entire program. This may require a paradigm shift within existing provincial and national athlete development programs.

LTAD is not strictly a model for the elite. In fact, the competitive nature of sport implies that few remain in elite programs. The primary strength of the framework is that it provides a training foundation for all levels and ages that encourages long-term enjoyment and participation in Karate and physical activity in general.

LTAD encourages physical educators from all athletic disciplines to ensure that children correctly learn the fundamental movement skills and that these skills are introduced during the optimum point in their physical development, which is prior to age 11 for girls and age 12 for boys. Children who are physically educated using the LTAD model will

- feel confident and be encouraged to continue to build on these skills through competitive and recreational sport activity.
- enjoy overall health benefits by developing greater physical literacy, which in turn, encourages them to be more physically active throughout their lives. Increased activity has the potential to reverse the current trends in childhood and adult obesity and cardiovascular disease.
- discover a pathway to competition and excellence at the international level.

Figure 1 Canadian Sport for Life
Adapted 2009; Balyi, I., Way, R., Norris, S., Cardinal, C. & Higgs, C.



Where are we now?

The implementation of an LTAD model within Karate Canada must begin with an honest analysis of where we are now. Without an accurate picture of our current situation it will be impossible to build a blueprint for the future. After careful thought and consideration, the following strengths and weaknesses were identified within Karate Canada.



Toshi Uchiage - 2004 WKF World Championships
Bronze Medalist Kata

Strengths

- **Programs for all ages**

Karate and the martial arts in general are universally known to be beneficial to the health and well-being of all people. We enjoy this reputation in part because of the structured system of instruction and discipline that has been passed down for generations. Karate inherently has a developmental model within its belt rank system that allows for individual progression and development.

- **Strong recreation program for children**

Karate is well-known for being a fundamental activity for children. The art's underlying values of discipline, physical fitness and respect are very attractive to parents wishing to provide their child with a structured environment in which they can grow and mature.

- **Major improvements in international ranking**

Extremely strong coaching at the national level has brought our relatively small national association a number of World and Pan-American individual medals in recent years. The vision of the coaching staff and the dedication of the athletes have combined to produce these results and all indications are that results will only keep improving.

Weaknesses

- **Annual planning**

Most Canadian Karate athletes' training programs are reactive to the schedule of domestic and international tournaments. Often, little thought is given to ensuring that the athlete allocates adequate time in the preparatory and pre-competitive phases of training. Very few athletes organize their training schedule based on a periodized annual plan.

- **Competition alignment**

Integrating the Canadian national competitive schedule to align with the international schedule presents many challenges. Every effort must be made to base the timing of the Canadian national competitive structure on the most important international events and not allow conflicting dates to occur.

- **Tournament structure for junior athletes**

The modified repechage elimination structure currently in use at the National Championships has the potential for an athlete to have one and only one 2- minute match. There is an opportunity to leverage the athletes' training time and financial costs by altering the structure of the competition to ensure that every junior athlete is afforded more than one match at Nationals.

- **Lack of a long-term athletic pathway**

The style based pathway of the kyu and dan ranks needs to be extended to incorporate and augment our athletes' competitive pathway. Identifying each athlete's location on the Karate Canada LTAD pathway will assist athletes, instructors and parents in determining the most appropriate training methods. Just as we need to plan each year of training, we need to plan an athlete's Karate career.

- **Communication**

In the past, major breakdowns in communication have occurred within Karate Canada. These breakdowns have been detrimental to the well-being and performance of our athletes and every effort must be made to see that information flows freely from Karate Canada to the provincial associations and to the athletes.

- **International medalists are predominantly from either strong karate family or club environments.**

While the competitive success of any Canadian athlete is something to be celebrated, currently most of our international medalists come from either a strong Karate family or individual club and not necessarily from a strong provincial or national system.

- **Lacking coach education**

Many of today's Karate instructors lack the knowledge of how to best prepare their athletes to maximize their competitive potential as they mature and develop.



Mathieu Coderre - National Team Member

Where do we want to be?

Creating a cohesive, realistic and inspiring vision of the future of Karate within Canada will assist all members to work together for the benefit of our nation's athletes. Our vision should be broad enough to encompass the recreation and competitive streams as both are vital to our success. The health and development of our junior athletes must also be considered as they will inherit the structure that we create. Looking to the future, the Karate Canada LTAD Steering Group considers the following objectives essential to our vision.

- Aim for podium performance internationally
- Align provincial, national and international competitions
- Establish a national competition calendar aligning all levels of Karate within Canada
- Embrace change as an opportunity to develop our sport
- Ensure a balance of resources and energies for all aspects of the sport, from recreational to elite
- Improve international performances by offering better developmental programs
- Monitor the growth and development of athletes and use this information to individualize training, competition and recovery schedules
- Ensure that calendar planning is in the best interest of the athletes.
- Improve awareness and understanding of how to create more inclusive programs
- Increase public awareness of the sport



How are we going to get there?

Implementing the Karate Canada LTAD model will require the dedication and cooperation of all those involved from the grassroots up. This will be a multi-year project designed to:

- Ensure full sport system integration at the club, zone, provincial and national levels
- Provide various delivery methods for LTAD information and concepts such as:
 - Karate LTAD Website
 - Karate LTAD Poster
 - Additional Karate LTAD documents
 - Karate LTAD delivery presentation kit
 - Seminars and workshops
- Improve communication between all levels of karate in Canada
- Educate coaches, officials and sport administrators in the LTAD concepts
- Make full use of sport science and sport medicine support
- Solicit expertise, including international experts at the elite level
- Develop an integrated national coaching system



10 KEY FACTORS OF LTAD

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

1) The FUNdamentals

FUNdamental movements and skills should be introduced through fun and games. FUNdamental sports skills should follow and include basic overall sports skills.

- FUNdamental movements skills + FUNdamental sports skills = physical literacy.
- Physical literacy refers to competency in movement and sports skills.
- Physical literacy should be developed before the onset of the adolescent growth spurt.

Table 1 lists the wide variety of fundamental movements and skills that underpin physical literacy. They include 4 different environments: earth, water, air, and ice.

Travelling Skills	Object Control Skills	Balance Movements
<ul style="list-style-type: none"> • Boosting • Climbing • Eggbeater • Galloping • Gliding • Hopping • Ice Picking • Jumping • Leaping • Poling • Running • Sculling • Skating • Skipping • Sliding • Swimming • Swinging • Wheeling 	<p>Sending:</p> <ul style="list-style-type: none"> • Kicking • Punting • Rolling (ball) • Strike (ball, puck, ring) • Throwing <p>Receiving:</p> <ul style="list-style-type: none"> • Catching • Stopping • Trapping <p>Travelling with:</p> <ul style="list-style-type: none"> • Dribbling (feet) • Dribbling (hands) • Dribbling (Stick) <p>Receiving and Sending:</p> <ul style="list-style-type: none"> • Striking (bat) • Striking (stick) • Volleying 	<ul style="list-style-type: none"> • Balancing / Centering • Body Rolling • Dodging • Eggbeater

10 KEY FACTORS OF LTAD

The basic movement skills of 3 activities provide the base for all other sports.

- Athletics: run, wheel, jump or throw.
- Gymnastics: ABC's of athleticism — agility, balance, coordination, and speed.
- Swimming: for water safety reasons, for balance in a buoyant environment, and as the foundation for all water-based sports.

Without the basic movement skills, a child will have difficulty participating in any sport. For example, to enjoy baseball, basketball, cricket, football, netball, handball, rugby, and softball, the simple skill of catching must be mastered.

It is critically important that children with a disability have the opportunity to develop their fundamental movement and sport skills. Failure to do so severely limits their lifelong opportunities for recreational and athletic success. Despite this great need, children with a disability may face difficulty gaining the FUNdamentals because:

- overly protective parents, teachers, and coaches may shield them from the bumps and bruises of childhood play.
- adapted physical education is not well developed in all school systems.
- some coaches do not welcome children with a disability into their activities because of a lack of knowledge about how to integrate them.
- it takes creativity to integrate a child with a disability into group activities where fundamental skills are practiced and physical literacy developed.



10 KEY FACTORS OF LTAD

2) Specialization

Sports can be classified as either early or late specialization. Early specialization sports include artistic and acrobatic sports such as gymnastics, diving, and figure skating. These differ from late specialization sports in that very complex skills are learned before maturation since they cannot be fully mastered if taught after maturation. Karate is currently considered an early introduction/late specialization sport meaning that peak performance is achieved during the athletes mid 20's but that there must have been significant sport exposure well before puberty.

Specializing before the age of 10 in late specialization sports contributes to

- one-sided, sport-specific preparation.
- lack of ABC's, the basic movement and sports skills.
- overuse injuries.
- early burnout.
- early retirement from training and competition.

Early involvement in the FUNdamentals stage is essential in late specialization sports. Many sports resort to remedial programs to try to correct shortcomings.



3) Developmental Age

The terms “growth” and “maturation” are often used together and sometimes synonymously. However, each refers to specific biological activities.

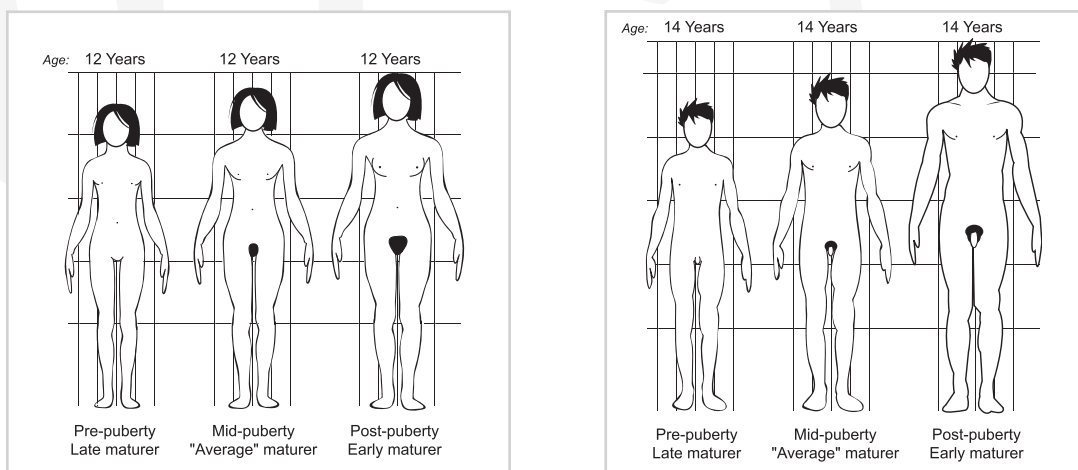
Growth refers to observable changes in quantity and measurable changes in body size such as height, weight, and fat percentage. Maturation refers to qualitative system changes, both structural and functional, in the body’s progress toward maturity such as the change of cartilage to bone in the skeleton.

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

Chronological age refers to the number of years and days elapsed since birth. Children of the same chronological age can differ by several years in their level of biological maturation.

Developmental age refers to the degree of physical, mental, cognitive, and emotional maturity. Physical developmental age can be determined by skeletal maturity or bone age after which mental, cognitive, and emotional maturity is incorporated.

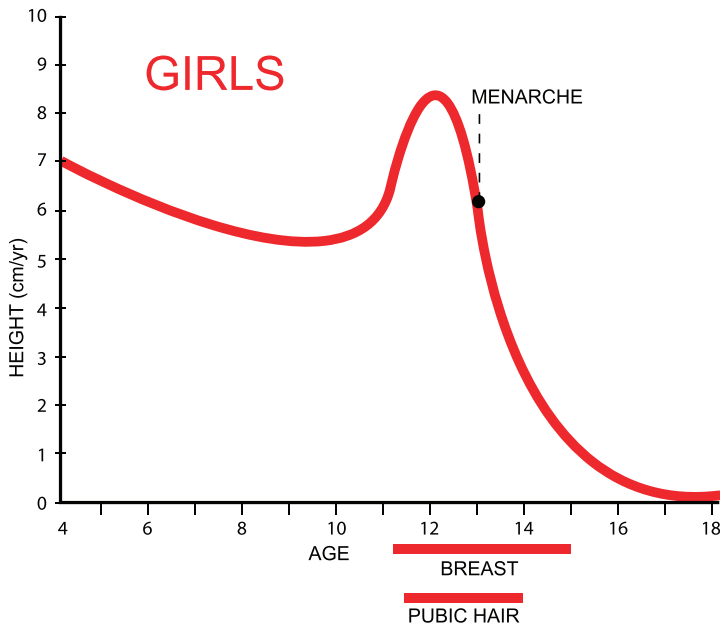
Figure 2 Maturation in Girls and Boys
(Adapted from “Growing Up” by J.M. Tanner
Scientific American 1973)



LTAD requires the identification of early, average, and late maturers in order to help to design appropriate training and competition programs in relation to optimal trainability and readiness. The beginning of the growth spurt and the peak of the growth spurt are very significant in LTAD applications for training and competition design.

10 KEY FACTORS OF LTAD

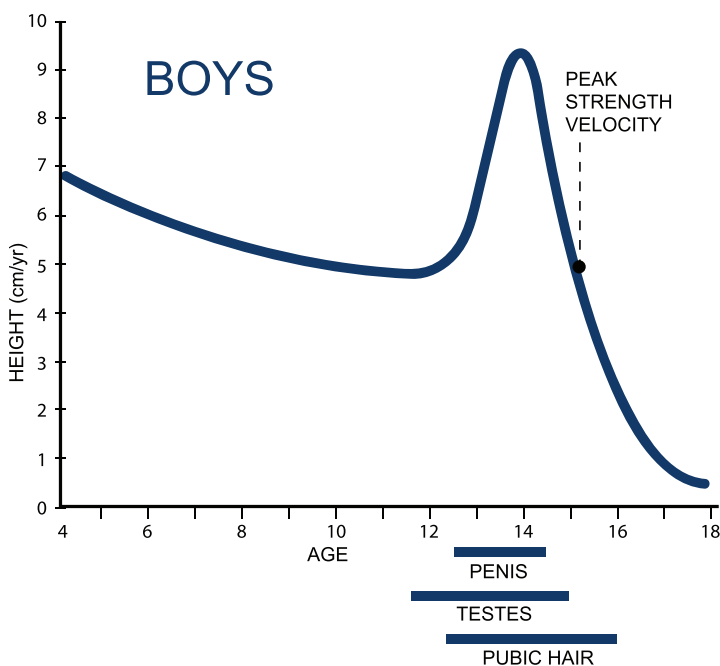
Figure 3 Maturity Events in Girls
(Modified after Ross et al.1977)



PHV in girls occurs at about 12 years of age. Usually the first physical sign of adolescence is breast budding, which occurs slightly after the onset of the growth spurt. Shortly thereafter, pubic hair begins to grow. Menarche, or the onset of menstruation, comes rather late in the growth spurt, occurring after PHV is achieved. The sequence of developmental events may normally occur two or more years earlier or later than average.

PHV in boys is more intense than in girls and on average occurs about 2 years later. Growth of the testes, pubic hair, and penis are related to the maturation process. Peak Strength Velocity (PSV) comes a year or so after PHV. Thus, there is pronounced late gain in strength characteristics of the male athlete. As with girls, the developmental sequence for male athletes may occur 2 or more years earlier or later than average. Early maturing boys may have as much as a 4-year physiological advantage over their late-maturing peers. Eventually, the late maturers will catch up when they experience their growth spurt.

Figure 4 Maturity Events in Boys
(Modified after Ross et al.1977)



Currently, most athletic training and competition programs are based on chronological age. However, athletes of the same age between ages 10 and 16 can be 4 to 5 years apart developmentally. Thus, chronological age is a poor guide to segregate adolescents for competition.

Training age refers to the age where athletes begin planned, regular, serious involvement in training. The tempo of a child's growth has significant implications for athletic training because children who mature at an early age have a major advantage during the Train to Train stage compared to average or late maturers. However, after all athletes have gone through their growth spurt, it is often later maturers who have greater potential to become top athletes, provided they experience quality coaching throughout that period.



4) Trainability

The terms “adaptation” and “trainability” are often used interchangeably in coaching. However, the difference between them is significant.

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

Trainability refers to faster adaptation to stimuli and the genetic endowment of athletes as they respond individually to specific stimuli and adapt to it accordingly. Trainability has been defined as the responsiveness of developing individuals to the training stimulus at different stages of growth and maturation.

The LTAD model will also take into consideration the point in the development of a specific capacity when training has an optimal effect. This period is referred to as a sensitive period of accelerated adaptation to training. Other factors that influence an athlete’s development include readiness and critical periods of trainability during growth and development of young athletes, where the stimulus must be timed to achieve optimum adaptation with regard to motor skills, muscular, and/or aerobic power.



10 KEY FACTORS OF LTAD

Figure 5 Variation in Trainability
(Adapted from work by Bouchard et.al., 1997)

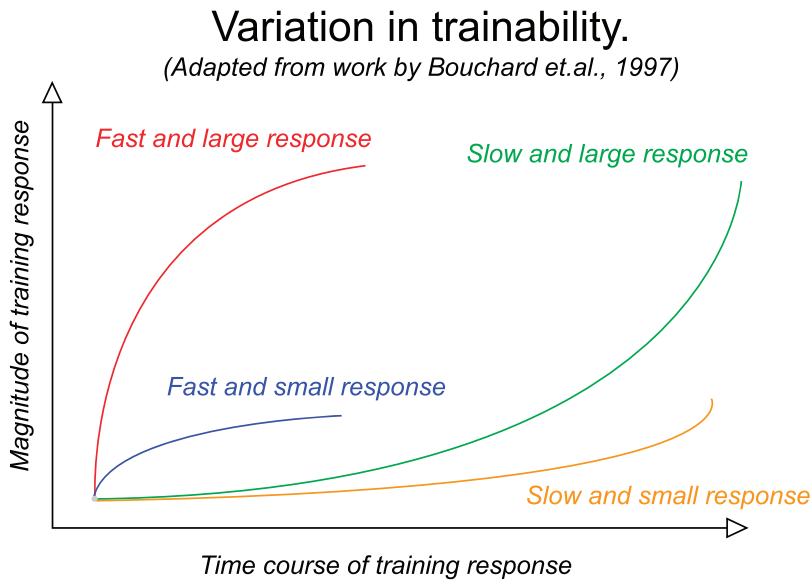


Figure 5 illustrates the evidence to date that supports the fact that there is a high degree of variation in the trainability of humans (athletes), both from the standpoint of the magnitude of change and the time course of response to a given stimulus. This probably reflects the 'elasticity' of response to various stimuli and human diversity (as largely dictated by the underlying genetic matrix and supported by the environment in which an individual is immersed) (Norris & Smith, 2002).

The 5 Basic S's of Training and Performance are Stamina (Endurance), Strength, Speed, Skill, and Suppleness (Flexibility).

Stamina (Endurance)

The sensitive period of trainability occurs at the onset of PHV. Aerobic capacity training is recommended before athletes reach PHV. Aerobic power should be introduced progressively after growth rate decelerates.

Strength

The sensitive period of trainability for girls is immediately after PHV or at the onset of the menarche, while for boys it is 12 to 18 months after PHV.

Speed

For boys, the first speed training period occurs between the ages of 7 and 9 years and the second period occurs between the ages of 13 and 16. For girls, the first speed training period occurs between the ages of 6 and 8 years and the second window occurs between the ages of 11 and 13 years.

Skill

The period for optimal skill training for boys takes place between the ages of 9 and 12 and between the ages of 8 and 11 for girls.

Suppleness (Flexibility)

The optimal window of trainability for suppleness for both genders occurs between the ages of 6 and 10. Special attention should be paid to flexibility during PHV.

10 KEY FACTORS OF LTAD

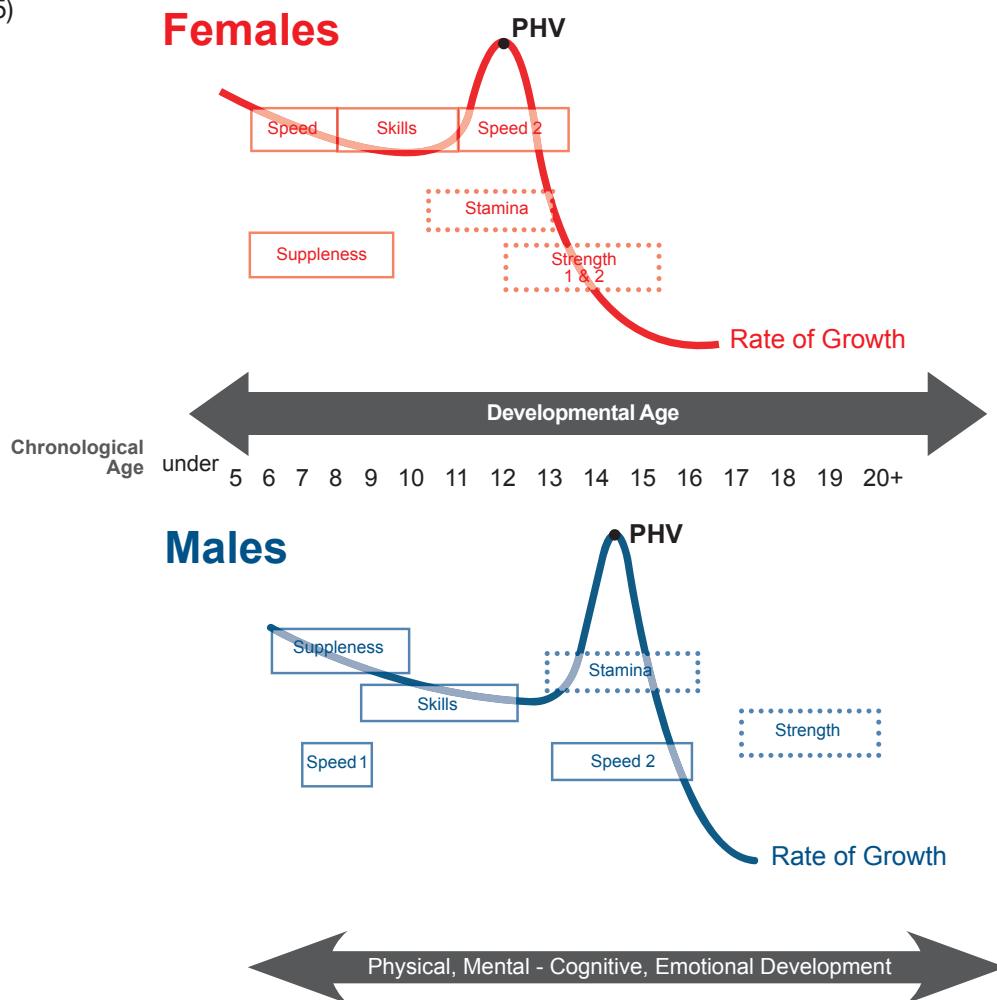
Figure 6 illustrates the sensitive periods of accelerated adaptation to training for females and males. The periods for stamina and strength are based on the moving scale of the onset of the growth spurt and PHV whereas the other 3 periods (speed, skill, and suppleness) are based on chronological age.

The trainability of the different systems for children and youth with a disability is not well understood. Applying this information to specific athletes with a disability is a good example of coaching being an art as well as a science.

All Systems Are Always Trainable!

Figure 6 Pacific Sport - Sensitive Periods of Accelerated Adaptation to Training

(Balyi and Way, 2005)



10 KEY FACTORS OF LTAD

5) Wholistic Development

Training, competitive and recovery programs should consider the physical, mental, cognitive, and emotional development of each athlete.

Beyond the physical, technical, and tactical development — including decision-making skills — the mental, cognitive, and emotional development should be enhanced.

For a complete overview of mental, cognitive, and emotional developmental characteristics and their implications for the coach, refer to the “Canadian Sport for Life” resource paper or www.canadiansportforlife.ca

A major objective of LTAD is a wholistic approach to athlete development. This includes emphasis on ethics, fair-play, and character building throughout the various stages, an objective that reflects Canadian values. Programming should be designed considering athletes’ cognitive ability to address these concepts.



Sumi Uchiage - National Team Member

6) Periodization

Simply put, periodization is time management. As a planning technique, it provides the framework for arranging the complex array of training processes into a logical and scientifically-based schedule to bring about optimal improvements in performance.

Periodization sequences the training components into weeks, days, and sessions. Periodization is situation specific, depending upon priorities and the time available to bring about the required training and competition improvement. In the LTAD context, periodization connects the stage the athlete is in to the requirements of that stage.

Periodization organizes and manipulates the aspects of modality, volume, intensity, and frequency of training through long-term (multi-year) and short-term (annual) training, competition, and recovery programs to achieve peak performances when required.

Periodization, far from being a single fixed process or methodology, is a highly flexible tool. When used appropriately, in conjunction with sound methodology and ongoing monitoring and evaluation, it is an essential component in optimal sports programming and athlete development at all levels.

LTAD addresses this requirement by developing periodization models for all stages, taking into consideration the growth, maturation, and trainability principles that are unique to the primary development stages — the first 2 decades of life — yet seamlessly integrating with the subsequent stages of athletic performance and life.

LTAD is typically a 10 to 12 year process that optimizes physical, technical, tactical — including decision-making — and mental preparation, as well as the supporting ancillary capacities. Within LTAD is quadrennial planning, which refers to the 4-year Olympic and Paralympic cycle for elite athletes, and the annual plan, which is based upon identified periods of athletic preparation, competition, and the transition into the next calendar plan.

Current examples of periodization models identified in the sport performance literature are designed for the sub-elite and elite senior/mature performers. There is very little information on periodization for children or adolescents or for athletes with a disability.

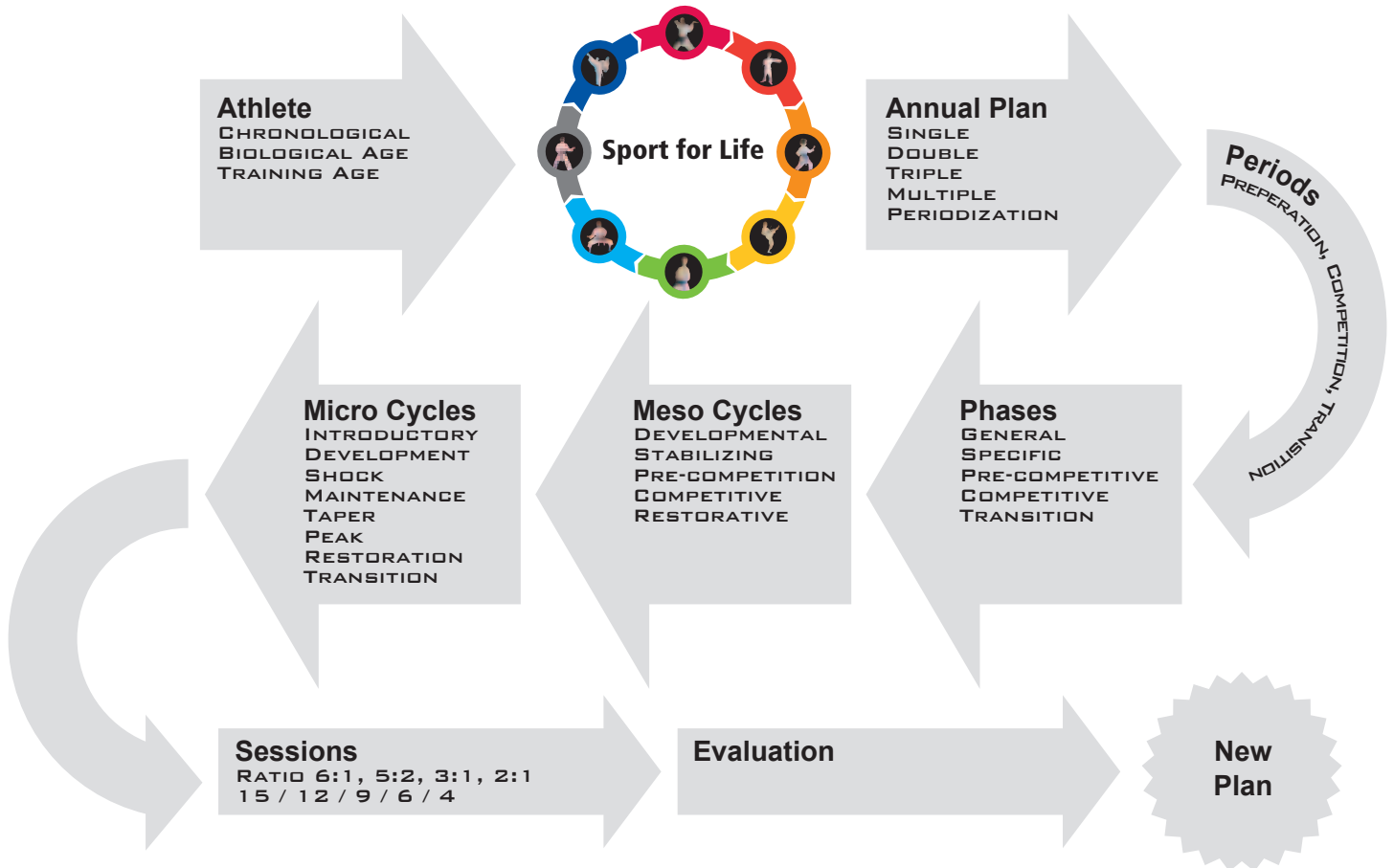
Single, double, triple, and multiple periodization formats follow the same principles with frequently introduced prophylactic breaks; that is, programmed and prioritized recovery and regeneration elements.

The terminology that describes the smaller subsets of time organized into blocks of training or competition are macro, meso, and micro cycles. Macro cycles are the largest blocks within a phase of training and are usually 8 to 16 weeks in length. Mesocycles are smaller blocks of time, usually about a month. The smallest training block is often organized as a micro cycle and by convention is usually 7 days. The introduction of a recovery micro cycle determines the length of a mesocycle after 1 (1:1), 2 (2:1), 3 (3:1) or 4 (4:1) loading microcycles.

10 KEY FACTORS OF LTAD

Figure 7 Phases of an annual plan from an LTAD perspective.

LTAD to your Next Training Session





7) Calendar Planning for Competition

Optimal competition calendar planning at all stages is critical to athlete development. At certain stages, developing physical capacities take precedence over competition. At later stages, the ability to compete well becomes the focus.

Table 2 outlines general recommendations for the ratio of training to competition and competition specific training. Consider how the quantity and quality of the training and competition program changes as long-term plans progress.

Table 2: Training to Competition Ratios

Stages	Recommended Ratio
Active Start	All activity fun based
FUNdamentals	All activity fun based
Learn to Train	95% karate training, 4% competition specific training and 1% competition
Train to Train	70% karate training, 28% competition specific training and 2% competition
Train to Compete	40% general training, 55% competition specific training and 5% competition
Train to Perform	30% general training, 65% competition specific training and 5% competition
Train to Win	25% general training, 70% competition specific training and 5% competition
Active for Life	Based on individual's desire

Optimal competition to training ratios should be utilized for all stages of LTAD and the following points should be considered when planning competitions:

- The level and length of the competitive season should be aligned with the changing needs of the developmental athlete progressing through LTAD.
- The appropriate level of competition is critical to the technical, tactical, and mental development at all stages.
- Individual competition schedules can be selected by the coach and athlete based on the athlete's developmental needs.
- The current system of competition is based on tradition. It should instead be planned to enhance optimal training and performance of the athlete depending upon their LTAD stage.
- Karate competitions in Canada must be created and scheduled considering strategic planning and with due regard for the optimal performance of an athlete and his or her tapering and peaking requirements.
- A systematic competition review needs to be undertaken. This is a significant challenge for LTAD design and implementation. An initial competition review is presented later in this document but further development will be needed to build a system of competition that best suits the needs of our athletes.

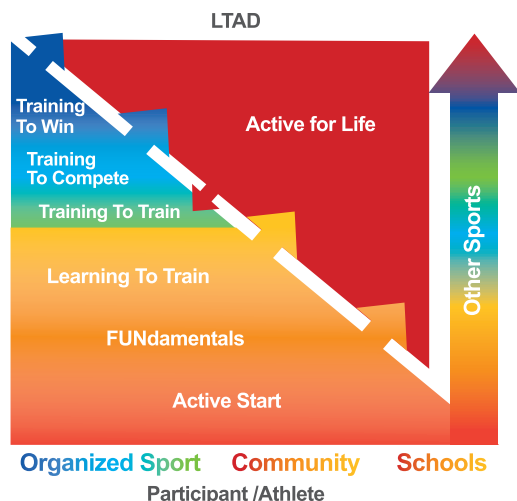
The system of competition makes or breaks athletes!

10 KEY FACTORS OF LTAD

8) System Alignment and Integration

Figure 8 is a generic model that illustrates the various performance priorities that LTAD addresses and the system development it affects. It was created with input from all levels of sport administration across the country and represents a “one country, one system” approach to sport. The seven generic stages of the LTAD model are represented in the following illustration. It must be noted, however, that the Karate LTAD model consists of an additional stage, Train to Perform, for a total of 8 stages.

Figure 8 System Alignment and Integration (Balyi et. al 2005)



Performance Priorities

- Athlete
 - Performance and Support
- Coach
 - Education and Support
- Competition
- Equipment
- Facility Access
- Sport Medicine
- Sport Science
- Talent ID - Scouting
- Teams
 - National
 - Provincial
 - Club
- Training
- Research

System Development

- Clubs
- Community Initiatives
- Communications
- Facility Plans
- Financial Sustainability
- Governance
- Games
 - International
 - National
 - Provincial
- Event Hosting
- Human Resource
- Marketing
- Organizational
- School Sports Academies and other Initiatives
- Risk Management
- Sport Sector
- Technology
- Volunteers

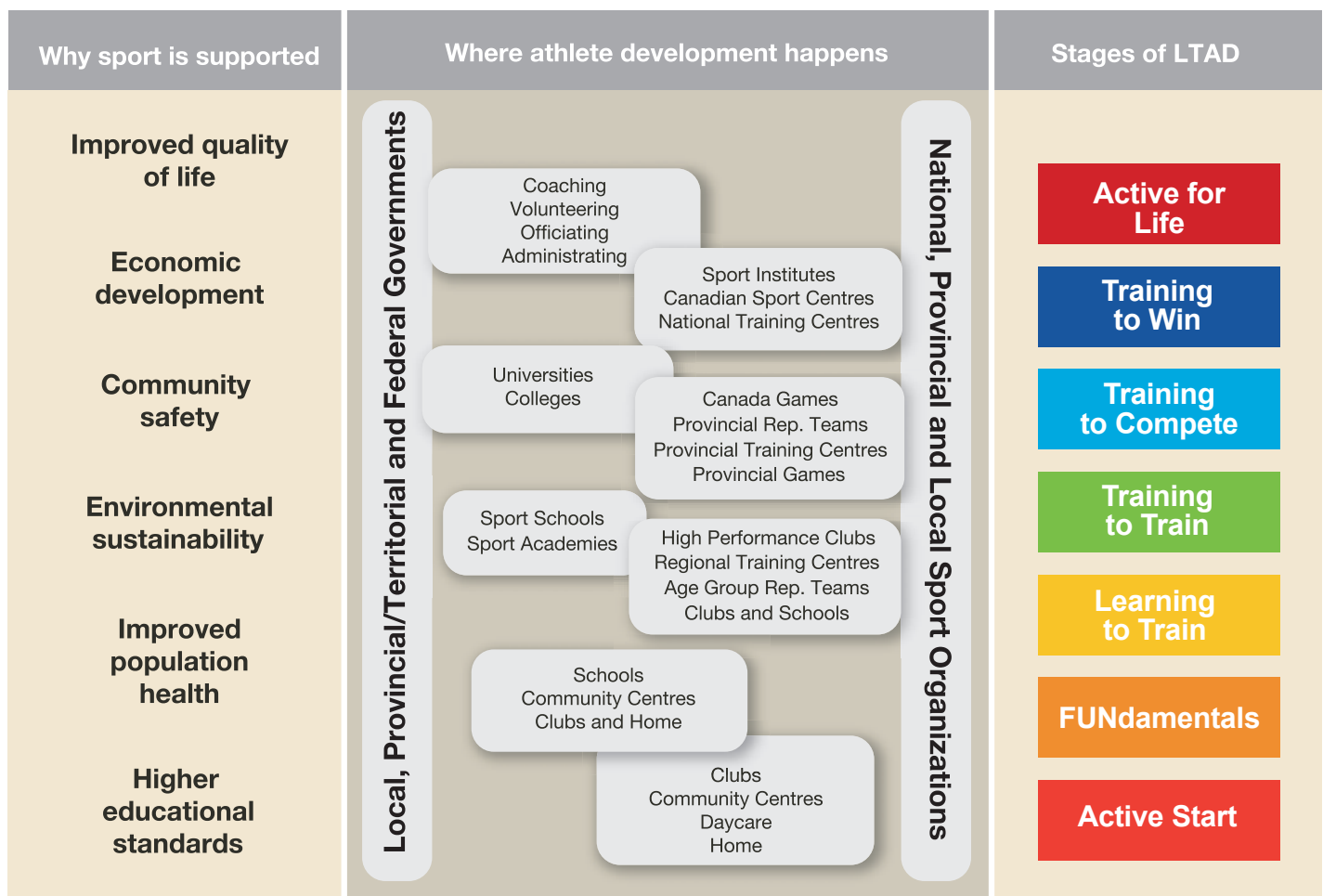
For Karate Canada to fully embrace the concept of “one country, one system” the following concepts should be integrated into our model:

- LTAD is the core business of national, provincial/territorial, and local sport organizations.
- LTAD is a tool for change towards full system alignment and integration.
- A seamless, sport-specific LTAD should be based on national and international normative data, both Karate-specific and sport science.
- After the LTAD design is completed, a Karate-specific system of competition should be established that matches the competitive needs of developmental athletes during Active Start, FUNdamentals, Learn to Train, and Train to Train stages.
- The content of training, competition, and recovery during the FUNdamentals, Learn to Train, and Train to Train stages are defined, taking into consideration the developmental levels of the athletes as these relate to the physical, technical, tactical — including decision-making — and mental requirements of the sport, rather than being based on chronological age.
- LTAD is an athlete-centered approach designed around the needs of athletes and institutionalized by rationalization of the system by sport governing bodies.
- The process of designing and implementing LTAD programs is athlete centered, coach driven, and administration, sport science, and sponsor supported.
- LTAD has a strong impact on the coaching education curriculum. Developmental readiness will replace ad hoc decision-making about programming preparation.
- Activities of dojos, provincial associations, and Karate Canada should be fully integrated through LTAD.

10 KEY FACTORS OF LTAD

Figure 9 illustrates the relationship between national and local agencies and programs. To build on the four goals of the Canadian Sport Policy, LTAD must be supported and promoted by all levels of government including Canadian Heritage (Sport Canada) and the provincial/territorial ministries responsible for sport and recreation; provincial/territorial health ministries and Health Canada; provincial/territorial education ministries; other relevant federal and provincial/territorial departments and ministries; and municipal governments.

Figure 9 Strategic Leadership for Sport
(Sport England, 2004 - Modified by Higgs & Way 2005)



10 KEY FACTORS OF LTAD

9) The 10-Year Rule (competition/podium stream)

Scientific research has concluded that it takes a minimum of 10 years and 10,000 hours of training for a talented athlete to reach elite levels. For athlete and coach, this translates into slightly more than 3 hours of training or competition daily for 10 years.

This factor is supported by The Path to Excellence, (Gibbson, ed., 2002), which provides a comprehensive view of the development of U.S. Olympians who competed between 1984 and 1998. The results reveal that

- U.S. Olympians begin their sport participation at the average age of 12.0 for males and 11.5 for females.
- most Olympians reported a 12- to 13-year period of talent development from their sport introduction to making an Olympic team.

Olympic medalists were younger — 1.3 to 3.6 years — during the first 5 stages of development than non-medalists, suggesting that medalists were receiving motor skill development and training at an earlier age. However, caution must be taken not to fall into the trap of early specialization in late specialization sports.



Pat Grant - National Team Member

10) Continuous Improvement

The concept of continuous improvement, which permeates LTAD, is drawn from the respected Japanese industrial philosophy known as Kaizen.

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 federal, provincial/territorial, and municipal governments, the mass media, sport and recreation administrators, coaches, sport scientists, parents, and educators about the interlocking relationship between physical education, school sport, community recreation, life-long physical activity, and high performance sport.

A commitment must be made by all parties to invoke the spirit of Kaizen at all times. Regular reviews of the Karate sport system must be undertaken and relevant upgrades integrated at the earliest opportunity. Simply acting out of habit and tradition does not reflect the true spirit of Kaizen.



The Ten S's of Training, Competition and Recovery Programs and Proper Lifestyles.

The original 5 Basic S's of training and performance was introduced in the Canadian Sport for Life (CS4L): Long-term Athlete Development document. The Five S's are: stamina (endurance), strength, speed, skill, and suppleness (flexibility). Building on the physical development, an additional Five S's create a wholistic training, competition and recovery program and a proper lifestyle.

Thus, there are Ten S's of training which need to be integrated when developing annual training, competition and recovery plans. Each of these capacities is trainable throughout an athlete's lifetime, but there are clear periods (or sensitive periods) in the development of each capacity during which training produces the greatest benefit to each athlete's improvements.

The CS4L document also describes the various stages of LTAD and identifies the windows of optimal trainability related to the critical or sensitive periods of the maturation process.

In all former LTAD documents the windows of trainability have been referred to as the "critical periods" of accelerated training; however, scientists now believe that critical periods should be referred to as sensitive periods. Thus, windows of trainability refer to periods of accelerated adaptation to training during the sensitive periods of pre-puberty, puberty and early post-puberty. The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

These sensitive periods vary between individuals as each athlete is unique in his or her genetic makeup. While the sensitive periods follow general stages of human growth and maturation, scientific evidence shows that humans vary considerably in the magnitude and rate of their response to different training stimuli at all stages. Some players may show potential for excellence by age 11, whereas others may not indicate their promise until age 15 or 16. Consequently, a long-term approach to athlete development is needed to ensure that players who respond slowly to training stimuli are not "short-changed" in their development.

"Developing children for and through sport must make the most efficient use of the most important development phases, which are pre-puberty, puberty and early post-puberty"

- Dr. Ekkart Arbeit



Stamina (Endurance)

The sensitive period for training stamina occurs at the onset of the growth spurt or Peak Height Velocity (PHV), commonly known as the adolescent growth spurt. Athletes need increased focus on aerobic capacity training (continuous or aerobic interval workloads) as they enter PHV, and they should be progressively introduced to aerobic power training (anaerobic interval workloads) as their growth rate decelerates. However, sport-specific needs will determine “how much endurance is enough” in a particular sport, thus minor or major emphasis of training the aerobic system will be defined by sport-specific and individual specific needs.

A reminder: The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

Strength

There are two windows of optimal trainability for strength in girls: immediately after PHV and after the onset of menarche. Boys have one strength window, and it begins 12 to 18 months after PHV. Again, sport-specific needs will determine “how much strength is enough” in a particular sport, thus minor or major emphasis of training strength will be defined by sport-specific and individual specific needs.

A reminder: The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

Speed

There are two windows of optimal trainability for speed. For girls, the first speed window occurs between the ages of six and eight years, and the second window occurs between 11 and 13 years. For boys, the first speed window occurs between the ages of seven and nine years, and the second window occurs between 13 and 16 years. During the first speed window, training should focus on developing agility and quickness (duration of the intervals is less than five seconds); during the second speed window, training should focus on developing the anaerobic alactic power capacity energy systems (duration of the intervals is 10-20 seconds).

It is highly recommended that speed should be trained on a regular and frequent basis, for example, at every training session as part of the warm-up. Towards the end of the warm up or immediately after the warm-up there is no central nervous system or metabolic fatigue present in the organism, and therefore this is an optimal time to train speed. The volume of training should be low and allow full recovery between exercises and sets. Short acceleration with proper posture and elbow and knee drive, take-off speed and segmental speed should be trained regularly outside of the window of optimal trainability for speed. In addition, proper blocks of training should be allocated to speed training during the periodized annual training, competition and recovery program according to seasonal and the sport-specific requirements.

A reminder: The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

Skill

Girls and boys both have one window for optimal skill training. For girls, the window is between the ages of 8 and 11 years, while in boys it is between 9 and 12 years. During this window, young athletes should be developing physical literacy. Physical literacy is the development of fundamental movement skills and fundamental sports skills that permit a child to move confidently and with control, in a wide range of physical activity and sport situations. It also includes the ability to “read” what is going on around them in an activity setting and react appropriately to those events. Physical literacy is the foundation of life-long involvement in physical activity and also for high performance participation.

A reminder: The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

Suppleness

The window of optimal trainability for suppleness occurs between the ages of 6 and 10 years in both girls and boys. However, because of the rapid growth, special attention should also be paid to flexibility during the growth spurt.

A reminder: The windows are fully open during the sensitive periods of accelerated adaptation to training and partially open outside of the sensitive periods.

Structure / Stature

This component addresses the seven stages of growth in the human body linking them to the windows of optimal trainability. (Phase 1: very rapid growth; Phase 2: very rapid deceleration; Phase 3: steady growth; Phase 4: rapid growth; Phase 5: rapid deceleration; Phase 6: slow deceleration; Phase 7: cessation of growth) It recognizes stature (the height of a human) before during and after maturation guiding a coach or parent to the measurements needed to track growth. The tracking of stature as a guide to developmental age allows planning to address the critical or sensitive periods of physical (endurance, strength, speed and flexibility) and skill development. Diagnostics to identify individually relevant critical periods of accelerated adaptation to training is essential to design and implement optimal training, competition and recovery programs.

(p)Psychology

Sport is a physical and mental challenge. The ability to maintain high levels of concentration, remain relaxed with the confidence to succeed are skills that transcend sport to everyday life. To develop the mental toughness for success at high levels requires training programs which are designed specific to the gender and LTAD stage of the athlete. The training programs should include key mental components identified by sport psychologists: concentration, confidence, motivation and handling pressure. As an athlete progresses through LTAD stages, the mental training aspect will evolve from: having fun and respecting opponents; to visualization and self-awareness; to goal-setting, relaxation and positive self-talk. To master the mental challenge of sport those basic skills are then tested in increasingly difficult competitive environments. Ultimately the planning, implementing and refining of mental strategies for high level competition will determine podium performances. The mental training program is critical at any LTAD stage as dealing with success and failure will determine continuation in sport and physical activity, therefore dramatically affecting an individual's lifestyle.

Sustenance

Sustenance recognizes a broad range of components with the central theme of replenishing the body. This is to prepare the athlete for the volume and intensity required to optimize training or living life to the fullest. Areas addressed are: nutrition, hydration, rest, sleep and regeneration, all of which need to be applied differently to training (life) plans depending on the stage within the LTAD. Underlining sustenance is the need for optimal recovery management moving the athlete to the 24/7 model which places a high degree of importance on the individual's activities away from the field of play. For proper sustenance and recovery management there is a need to monitor recovery through the identification of fatigue. Fatigue can come in many forms including: metabolic; neurological; psychological; environmental and travel. While overtraining or over-competition can lead to burn-out, improperly addressing sustenance can lead to the same result.

Schooling

In training program design, the demands of school must be considered. This is not only limited to the demands placed by school sports or physical education classes but also includes integrating school academic loads, duties, school related stresses, and timing of exams. When possible, training camps and competition tours should compliment, not conflict, with the timing of schools major academic events.

Overstress should be monitored carefully. Overstress refers to the everyday stresses of life, like schooling, exams, peer groups, family, boyfriend or girlfriend relationships as well as increased training volume and intensities.

Interference from other school sports should be minimized; communication between coaches who are responsible to deliver the training and competition programs are essential. A good balance should be established between all factors and the coach and the parents should be working on this together.

Socio-Cultural

The socio-cultural aspects of sport are significant and must be managed through proper planning. Socialization via sport will ensure that general societal values and norms will be internalized via sport participation. This occurs at the community level and as an athlete progresses through the LTAD stages can lead to international exposure. This socialization can be broadening of perspective including ethnicity awareness and national diversity. Within the travel schedule, recovery can include education of the competition location including; history, geography, architecture, cuisine, literature, music and visual arts. Proper annual planning can allow sport to offer much more than simply commuting between hotel room and field of play.

Sport socialization must also address sport sub-culture. As well, coaches and parents must guard against group dynamics which create a culture of abuse or bullying. Ethics training should be integrated into training and competition plans at all stages of LTAD.

Overall socio-cultural activity is not a negative distraction or interference with training and competition activities. It is a positive contribution to the development of the person and the athlete.

Children often choose to play a sport after the windows optimal of trainability for speed, skill, and suppleness have passed. These children are therefore dependent on schools, recreation programs, and other sports to provide timely training in these capacities. LTAD advocates that sports build relationships with these organizations to promote and support appropriate training. If athletes miss these training periods entirely, coaches will need to design individualized programs to remedy any shortcomings.

Stages of LTAD

The LTAD model for Karate consists of 8 stages.

	Active Start	FUNDamentals	Learn to Train	Train to Train	Train to Compete	Train to Perform	Train to Win	Active for Life
Chronological or Developmental Age	Chronological	Chronological	Chronological and Developmental	Developmental	Developmental and Chronological	Chronological	Chronological	Chronological
Male Age	Under 6	6-9	9-12	12-16	16-18	18-24±	Kumite 24± Kata 27±	Enter at Any Age
Female Age	Under 6	6-8	8-11	11-15	15-17	17-22±	Kumite 22± Kata 26±	Enter at Any Age

*Shaded areas indicate stages that involve developmental ages

The first three stages encourage both physical and Karate literacy:

1. Active Start
2. FUNdamentals
3. Learn to Train

Recreation Stream

The next four stages focus on skill development and Karate excellence:

4. Train to Train
5. Train to Compete
6. Train to Perform
7. Train to Win

Competitive Stream

The eighth stage encourages life-long Karate involvement:

8. Active for Life - enter at any age

Stage 1 Active Start

Hajime

Males under 6 years old

Females under 6 years old

Learn fundamental movements and link them together into play.

The purpose of the Active Start stage of the Karate LTAD is to learn fundamental movements and link them together into play. Physical activity is essential for healthy child development. Among its other benefits, physical activity:

- encourages the development of brain function, coordination, gross motor skills, social skills, leadership skills, emotional intelligence, and imagination
- builds confidence and positive self-esteem
- builds strong bones and muscles, improves flexibility, develops good posture and balance, improves fitness, reduces stress, and improves sleep patterns
- promotes healthy weight
- helps children learn to move skillfully and enjoy being active

Physical activity should be fun and an integral part of every child's daily life. When children engage in play, they learn to associate fun and enjoyment with being physically active. This allows them to easily and willingly develop a repertoire of physical skills and a healthy level of fitness. It also instills a positive attitude towards sports participation and physical activity that will benefit them throughout their lives.



Stage 2 FUNdamentals

Building Blocks

Males 6-9 years old

Females 6-8 years old

Chronological Age

The aim of the FUNdamental stage is to develop general movement skills using a fun but structured approach. Physical skills are introduced through multi-sport participation using methods that keep children interested in sport and physical activity.

The general movement skills that should be emphasized during this stage are referred to as the fundamentals of physical literacy. These include: the ABCs of athleticism (Agility, Balance Coordination and Speed), RJT (Running, Jumping, Throwing) and posture. Correct demonstration (modeling) of these skills by coaches and accurate detection and correction of errors is essential, since children learn through imitation.

Children should be encouraged to participate in a variety of games and activities that provide an opportunity to practice these skills. The environment should be fun and playful to maintain their interest.

This stage focuses on developing the fundamentals of physical literacy because mastering the general movement skills will improve the ease with which children successfully learn the more complex, sport-specific skills taught in the later stages of the model. Ideally, the general movement skills should be mastered by the end of the FUNdamental stage.

The first period of accelerated adaptation for speed occurs in this stage. Coaches should take advantage of this window by introducing games and activities which encourage improvements in quickness and agility.

Strength can be developed using body weight, stability balls, medicine balls and elastic tubing.

A positive mental outlook should also be encouraged during this stage along with the development of self-esteem, concentration and an awareness of “positive self-talk”.

This stage should also be used to introduce:

- the basic ethics of Karate
- style specific kihon and kata
- the rules of competition
- correct guard and fighting stance
- footwork
- single attacks
 - kizami-tsuki, gyaku-tsuki, gyaku-tsuki with a step, uraken-uchi, ura mawashi-geri, mawashi-geri, mae-geri, yoko-geri, mawari-ushiro-geri
- single attacks on static targets
- correct breathing and eye position
- respect for your opponent

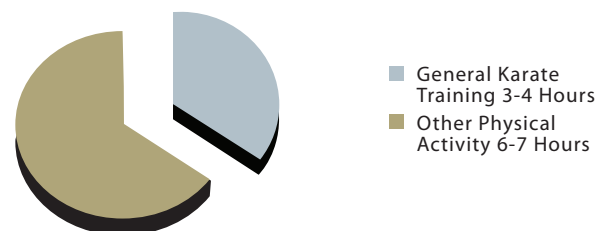


An appropriate weekly training schedule for children in the FUNdamental stage would include 9 to 11 hours of physical activity. This should include 3 to 4 hours of Karate and 6 to 7 hours of general physical activity. Each training session should last 30 to 60 minutes, and focus on developing fundamental movement skills.

No formal periodization is recommended for this stage but activities should revolve around the school year with multi-sport camps occurring during school holidays. Regular participation in formal competitions is discouraged.

Talent identification for this stage should be based on a wide range of athletic skills and not only on Karate ability or competitive success.

Recommended Weekly Hours of Training 9-11 Hours Per Week



Stage 3 Learn to Train

Karate Literacy

Males 9-12 years old

Females 8-11 years old

Chronological and Developmental Age

The Learn to Train stage continues to focus on developing fundamental movement and basic Karate skills. During this stage children should be involved in two other sports besides Karate so that the general movement skills acquired in the FUNdamental stage are reinforced.

The development of motor coordination is a priority now, because of the period of accelerated adaptation for motor coordination that occurs during this stage. This window presents itself between ages 8 and 11 for girls and between the ages of 9 and 12 for boys. Taking advantage of this opportunity to develop motor coordination is of critical importance vis-à-vis long-term athletic development.

If this opportunity is neglected or minimized, it will have negative consequences on athletic performance later on, as it is difficult to develop motor coordination in the later stages of an athlete's training.

It is also important to recognize that this stage emphasizes training and mastery of the fundamental general and Karate skills, rather than competition. One of the main reasons that athletes plateau during the later stages of their career is because too much emphasis is placed on competing and winning before the fundamental skills are developed and mastered.

Differences in gender become more apparent towards the end of the stage, as females gradually outpace males of the same age in abilities including strength, flexibility and fine motor control.

Strength development is continued through the use of stability balls, body weight movements, medicine balls and the introduction of light plyometrics (hopping/bounding) and jumping. Quickness, agility and flexibility training is continued and fun Karate style games continue to be the recommended method of strength training and physical conditioning.

This stage should be used to introduce:

- distancing
- rhythm
- phases of the technique
- double attacks technique:
 - kizami -tsuki/gyaku-tsuki
 - gyaku-tsuki/mawashi-geri (front leg)
 - uraken-uchi/mawashi-geri (front leg)
 - kizami-tsuki/ura-mawashi-geri (front leg)
 - gyaku-tsuki/kizami-zuki
 - gyaku-tsuki/step/gyaku--tsuki
 - uraken-uchi/gyaku-tsuki
 - others
- block-counter defensive technique against:
 - kizami-zuki
- nagashi-uke/gyaku-tsuki
 - gyaku-tsuki
- osae-uke/gyaku-tsuki
 - mawashi-geri
- shuto-uke/gyaku-tsuki
 - mae-geri
- gedan-barai-uke/gyaku-tsuki
- the defensive concepts of:
 - partial evasion in short the distance
 - interceptive, partial/total evasion and active attack in the middle distance
 - total evasion in the long distance
- reactive targeting with single and double attacks
- decision making
- shadow kumite
- skipping to enhance lower body speed and quickness
- correct biomechanics
- focus of power (kime)
- shite and tokui kata

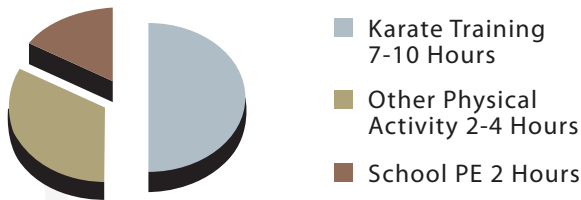


Protocols relating to the ancillary capacities of warm-up, cool-down, stretching, nutrition and mental training should be introduced.

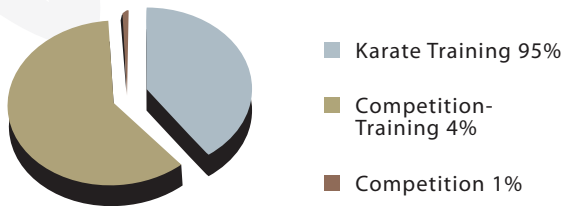
Multi-sport activities are still encouraged. These should be a part of the total training load of 10-14 hours of activity per week. This load should also include 5 to 7 hours of Karate specific activities, broken into 30 to 90 minute sessions, and be supported by 2 hours of physical education at school per week.

Athletes should follow single periodization within a well-structured program that includes a taper and peak. Talent identification becomes more and more Karate skill-specific as this stage progresses but should not be the sole criteria.

Recommended Weekly Hours of Training 10-14 Hours Total



Competition or Competition Simulation vs. Training



Stage 4 Train to Train

Developing Karate Skills and Fitness

Males 12-16 years old

Females 11-15 years old

Developmental Age Based on PHV

The primary purpose of the Train to Train stage is to “build the engine”. There is also a focus on refining and individualizing training and technique rather than on competitions per se.

It is very important that coaches recognize and take full advantage of several windows of optimal trainability that occur in this stage. The first of these is the window for fitness, which occurs after the onset of Peak Height Velocity (PHV), commonly known as the adolescent growth spurt. Windows of optimal trainability for speed and strength occur during the latter part of the Train to Train stage.

Flexibility should be especially emphasized during the growth spurt (PHV) due to sudden changes in bones, tendons and ligaments. Increased flexibility training will help to limit the injury potential associated with such changes.

Sport-Karate skills such as an increasing the range of techniques, deception and reducing the amount of extraneous movement while attacking should be emphasized during this stage. This stage also introduces the concepts of personal, technical and fitness programs.

Tactical preparation continues to be developed now and the concepts of reading opponents, playing to personal strengths and exposing opponent’s weakness being introduced. Sport karate preparation should start to outweigh traditional karate training.

The introduction of the following specific training components should occur during this stage:

- Mobile targeting (single, double and multi attacks)
- Multi attacks
 - Kizami -tsuki//gyaku--tsuki:
 - Mawashi-geri (front leg)
 - Mawashi-geri (rear leg)
 - Ura-mawashi-geri (front leg)
 - Ura-mawashi-geri (rear leg)
 - Kizami -tsuki/gyaku -tsuki/step/gyaku-tsuki
 - Gyaku-tsuki/uraken -uchi/gyaku-tsuki
 - Kizami-tsuki/-gyaku-tsuki/step at angle/mawashi--geri chudan or ura--mawashi-geri jodan
 - Others
- Block-counter defensive technique against:
 - kizami/gyaku-tsuki
 - nagashi-uke/Osae-uke/gyaku-tsuki
 - uraken-uchi
 - age-uke/gyaku -tsuki
 - ura-mawashi-geri
 - shuto-uke/gyaku -tsuki
- Defensive concepts of:
 - protective and obstructive in the short distance
 - passive attacks in the long distance
- Offensive-defensive transition
- Competitive simulations
- Competitive strategies:
 - Opponent analysis (kata and kumite)
 - Match plan (kata and kumite)
 - Time management (kumite)
 - Ring management (kumite)
 - Rhythm management(kumite)
 - Referee management (kata and kumite)
 - Scoreboard management (kumite)
 - Athlete/coach communication (kata and kumite)

- Match plans
 - pre-match routines
 - entering the ring
 - beginning the match
 - returning to the line
 - the last 30 seconds
 - match over-time
 - the last 10 seconds of over-time
 - between matches
 - preparing for repechage
- Correct focus of attention, embusen and bunkai of kata

Education in the “ancillary capacities” should begin at this stage along with pre-competition, competition, and post-competition routines.

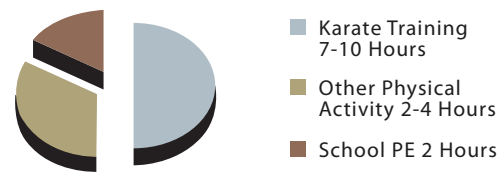
Karate athletes desiring elite success should be training 11 to 16 hours weekly by the end of this stage. The total weekly training load should consist of 5 to 6 hours training general Karate skills and 2 to 4 hours training specific competitive skills. Each training session should be 2 hours long. Participation in one other sport and school PE for a total of 4 to 6 hours/week make up the remainder of the weekly training load.

Double periodization can now be implemented including a taper and peak at two major competitions. Karate athletes can participate in four to eight competitions per year during the Train to Train stage, but the emphasis is still on the mastery and refinement of skills, not on winning competitions.

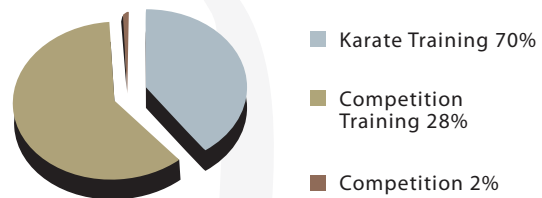
Talent identification could now be undertaken via provincial and national results along with other identified methods.



Recommended Weekly Hours of Training 11-16 Hours Total



Competition or Competition Simulation vs. Training



Stage 5 Train to Compete

Developing performance

Males 16-18 years old

Females 15-17 years old

Developmental and Chronological Age

The purpose of the Train to Compete stage is to optimize fitness preparation, to further develop Karate skills, and to learn to compete under a wide variety of circumstances. Training for fitness, technique, tactics, mental and decision-training should all be individualized. This individualization includes specialization in either Kata or Kumite. A total focus on the chosen Karate event is recommended by the end of this stage.

Further improvements in the areas of technique development, speed and economy of movement should be encouraged. Strength, speed and power development is continued through the use of resistance training, plyometrics and technical sessions that incorporate linear, lateral and chaotic movements.

All techniques and tactics should be highly individualized. Self-analysis, planning and opponent analysis should be introduced. The Train to Compete stage is also characterized by a gradual increase in the volume and intensity of training. Training content should be identified through diagnostics (testing) to identify individual specific training loads, volumes and intensities for optimizing (enhancing) preparation and performance.

Training components introduced during this stage include:

- self-analysis
- opponent management
- destructive blocks in the long distance

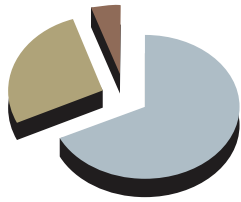
A weekly training load of 15 to 23 hours is appropriate at this stage, comprised of 4 to 7 hours of style-specific practice, 6 to 10 hours of specific competition training and 5 to 6 hours of specific fitness training.

Non-elite Karate practitioners can spend 45% of this total weekly training time on general training, 20% on competition-specific issues and 35% on physical preparation.

Double periodization can be applied at this stage with refinement in the concepts and practice of tapering to peak. Eight to twelve competitions annually is appropriate.

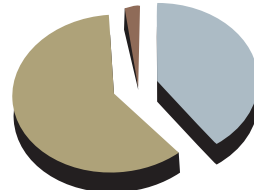
Talent can be identified by tournament observation, fitness test standards and national ranking. Anthropometric screening and fitness test results should be used to develop training guidelines.

Recommended Weekly Hours of Training 15-23 Hours Total



- Competition Specific Karate Training 6-10 Hours
- Karate Specific Fitness 5-6 Hours
- Style Specific Training 4-7 Hours

Competition or Competition Simulation vs. Training



- Training 40%
- Competition or Competition Simulation 55%
- Competition 5%



Daphen  Trahan-Perrault - National Team Member

Stage 6 **Train to Perform**

Optimizing Performance

Males 18-24 + years old

Females 17-22+ years old

Chronological

The Train to Perform stage aims to optimize Karate-specific preparations and to enable Karate practitioners to make the transition from junior to adult divisions while gaining experience in international senior events. All components of preparation including physical, technical, tactical, mental and ancillary capacities should be mastered prior to entering this stage. The 10S's (Stamina, Strength, Speed, Skill, Suppleness, (p)Sychology,

Structure/Stature, Sustenance, Schooling, and Socio-cultural) continue to be emphasized, along with individualization and specialization to enhance performance.

Karate athletes should continue to develop technical and tactical proficiency. Consistency at high speed is refined and physical capacities should also continue to be developed and improved. Content of training should be identified through diagnostics (testing) to individual specific training loads, volumes and intensities for optimizing (enhancing) preparation and performance.

Weekly training for elite athletes should total 17 to 25 hours per week, and consist of 12 to 16 hours of sport Karate training and 5 to 7 hours of Karate-specific fitness. Athletes should also be gaining experience in all areas of international competition in preparation for the Train to Win stage.

Non-elite Karate athletes can divide their total weekly training time so that 70% of training is technical/tactical and 30% fitness related. Double periodization will be applied with tapers and peaks for major competitions and frequent prophylactic breaks.

Training components introduced during this stage include:

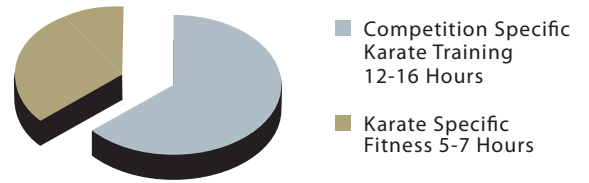
- Discover own "fighting personality"
- Discover opponent's "fighting personality"



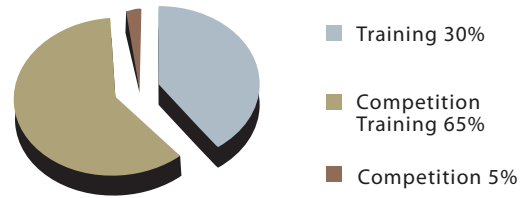


**Chris De Sousa Costa -
National Team Member**

Recommended Weekly Hours of Training 17-23 Hours Total



Competition or Competition Simulation vs. Training



Stage 7 Train To Win:

Maximizing Performance

Males 24+/- years old (Kumite)
27+/- years old (Kata)

Females 22+/- years old (Kumite)
26+/- years old (Kata)

Chronological

The goal of the Train to Win stage is for the athlete to maximize performance by fine-tuning fitness, technique, tactics, decision-making, mental abilities and all ancillary capacities. This will help to ensure the highest level of competitive proficiency. Additionally, anticipation skills should be refined and the athlete's lifestyle should be directly linked to effective performance.

This stage is identical to the preceding stage except that the athlete now has the benefit of competing in pressure situations at the highest level and is better prepared to win. The content of training should continue to be identified through diagnostics (testing) to identify individual specific training loads, volumes and intensities for optimizing (enhancing) individual preparation and performance.

Elite athletes' weekly training schedule should include 14 to 16 hours, focusing on competition-specific components and 5 to 7 hours of competitive fitness for a total of 19 to 23 hours per week. Non-elite athletes should be training 70% of the time on Karate-specific items and 30% on fitness.

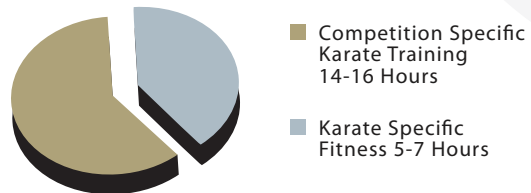
Major and minor peaks will be based on the timing of major international competitions to ensure adequate prophylactics breaks are scheduled.



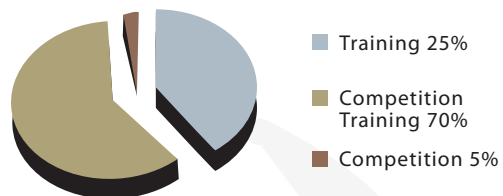


**Nassim Varasteh -
2006 and 2008 WKF
World Championship
Silver Medalist -60kg
Kumite**

Recommended Weekly Hours of Training 19-23 Hours Total



Competition or Competition Simulation vs. Training



Stage 8 **Active for Life**

Retire, Retain, and Retrain

This stage can be entered at any age or level. Karate practitioners of all levels should be encouraged to participate in areas of officiating, administration, coaching, instructing, volunteering etc. The success of any sporting association depends upon having these positions filled by qualified and enthusiastic individuals.



Karate-do, a way of life

The practice of karate-do is more than just training for fitness and self defence; it is a way to self-perfection. It is also an avenue for achieving mental discipline and control over emotions. It is an inner journey which will enable the karateka to become a better person and promote a society of peace, happiness and justice.

Mastering the technique is a method for achieving self-control, respect, tolerance and acceptance of others. The main goal is victory for oneself and not victory against others.

A karateka distinguishes himself through his behaviour and respects the *reigisaho* concept. *Rei* means courtesy, or bow; *gi* means ceremony; *sa* means to make; and *ho* means reason, or method. Therefore, *reigisaho* can be defined as etiquette and manners. The more a karateka trains, the calmer, more dignified, and more humble he should become. Therefore, students who study etiquette ultimately make themselves better people as well as better karateka.

The karateka will also develop by abiding to the principle of *kyozon kyohei*: mutual friendship for mutual prosperity. The sensei must create an environment conducive to everyone's development. In traditional karate-do, there is no opponent, only training partners who make their way together towards a common goal.

The karateka's evolution will honour the *shu-ha-ri* principle. He will begin by emulating the technique that he learns (*shu*). Then he will break the mold to find his own identity in his practice (*ha*). Finally, he will achieve the martial art's mastery, his own interpretation of karate-do (*ri*).

A kyu (colour belt ranks) and dan (black belt levels) system has been put in place to motivate the karateka in his lifelong practice. He will need to handle challenges and face adversity which will allow him to develop and use discipline and character for life.

COMPETITION REVIEW

A primary purpose of the Karate Canada LTAD steering group is to provide recommendations that will assist in creating a better system for developing athletes. The existing competition structure has evolved out of tradition, convenience, funding limitations and the good intentions of administrators. This has created issues where the competition structure is poorly aligned to the stages of athletic development.

Several factors exist within Karate Canada's system of competition and national team selection that could have serious consequences. These factors include:

- Adult competitive structures imposed on junior athletes.
- Junior talent identification is done by strictly using competitive results at the National Championships.
- Focus on winning in the juniors categories encourages athletes to specialize early in either kata or kumite.
- Early specialization in kumite is often focused on the "super specialization" of a single scoring skill and not on the development of a wide range of techniques.
- In many provinces, national team members must re-qualify at the provincial level to be eligible for funding.
- Junior athletes participate in very few high-caliber matches at both the provincial and national level.
- Timing of the National Championships often conflicts with international events.

Based on these observations, the LTAD steering group has compiled a list of recommendations. These recommendations and their corresponding rationale are identified below.

- De-emphasize winning at the Canadian Junior Karate Championships.

Many of our Train to Train and younger athletes are encouraged to focus on winning from a young age at the expense of their overall development as Karate athletes. In some cases, athletes are encouraged to train and compete in either kumite or kata only. For those athletes who prematurely focus on kumite, specialization in a small number of scoring techniques is not uncommon and often supplants the wholistic development of overall Karate skill. Train to Train and younger Karate athletes should be encouraged to train and compete in both kata and kumite. Specialization could, however, occur during the Train to Compete stage.

The removal of the aggregate point system for the Junior Karate Championships should also be considered to further eliminate the focus on winning.

- Create a method of talent identification based on more criteria than just competitive results.

Currently, the only national level method of talent identification is competitive results. The development of a supplementary method should be considered when identifying talent. National fitness standards and a minimum competitive skill inventory for each stage may also be considered along with competitive results. Work needs to be done in this area to find a way to encourage the "late bloomers" to continue to train and compete.

- Increase the competitive experience of the athletes at the Junior National Championships.

The recent implementation of a junior training camp after the Junior National Championship has been an excellent way to increase the level of elite level training to which the junior athletes are exposed. Another way to increase their exposure would be to run the Junior National Championships as a round robin or at the very least as a double knock-out tournament. This would increase the time needed to complete the tournament but the crucial developmental experience gained would be worth the extra effort on the part of the coaches, officials, volunteers and administrators.

- Align the provincial, national and international competitions.

COMPETITION REVIEW



On a number of occasions in the past, the National Championships have been scheduled within weeks of a major international event. Scheduling conflicts such as these can significantly reduce an athlete's ability to truly peak at the desired time.

The ideal system of training periodization would allow each athlete adequate general preparation time prior to the start of the competitive season. This should be followed by a sequential patterning of competitions of increasing importance and 1-3 well spaced peak competitions preceded by a correctly timed and planned taper period.

Given that both the Junior and Senior Championships are held concurrently, despite the fact that their respective international events are not, indicates that our current system may have been created out of administrative convenience and in response to funding limitations instead of with the athletes' best interest in mind. Consideration should be given to the calendar planning of provincial and national events to ensure that athletes have a fighting chance of performing at their best when it counts.

The overlap of provincial, national and international competitions leads to a distinct lack of "clear preparation" time for elite athletes. Clear preparation is a significant period of time within the General Preparation phase that is completely void of any competition. This time allows the athlete to be free from any pressure to perform, to focus on fundamental skills, to rehabilitate injuries and to increase physical fitness levels in preparation for the next competitive phase.

In spite of our National and International performance-based ranking system, some Senior National Team members are required to re-qualify at the provincial level in order to earn a spot on the provincial team and thereby access provincial funding. This system misalignment deprives the athlete of the opportunity for clear preparation and the chance to focus on peaking internationally.

- Discontinue the practice of sending 14 and 15 year olds to the Junior World Championships.

Athletes in the 14/15 year- old division fall into the Train to Train stage where the primary goal is to develop excellent Karate fitness and skill. Very little emphasis should be placed on winning at this stage, however, the current practice of including the 14/15 year-olds in the Junior World Championships indicates a high level of competitive emphasis.

International Tournaments can be a tremendous learning experience, but without the proper skill base the 14/5 year-old athlete may be nothing more than an "athlete tourist" who is there solely for the experience; Participating without the correct foundation of techniques and tactics to capitalize on the opportunity.

Consideration should also be given to the practice of 14 and 15 year old participation in the Junior Pan-American Championships and whether is it congruent with the concepts outlines in both this document and "Canadian Sport of Life".



Saeed Baghbani - (blue) 2008 WKF World Championships Bronze Medalist -75kg Kumite

ANNUAL PLANNING

A review of the existing competition structure is being undertaken. At the present, an ideal system of competition is being considered. Upon completion, the new recommended training, competition and recovery structure will be provided to all key stakeholders.

In the future, a comprehensive review will be undertaken and published by Karate Canada. Rowing Canada and Speed-skating Canada have both just completed and published similar reviews with recommendation for “meaningful” and “developmentally appropriate” training and competition programs for all stages. This review process lasted several months and included a thorough analysis of the respective national sports programs and policies.

A similar process will be the next challenge for the LTAD steering group. At present, however, it seems that the training and competition structure is characterized by over competition and under training. To ensure the future development of karate in Canada, significant periods of general preparation clear of any significant competitions should be identified for all stages.

The General Preparatory, Specific Preparatory, Pre-Competitive, Competitive and Transitional phases of the annual plan should be clearly defined. Training should be increased and competitions replaced with “meaningful competitions” versus ad hoc competitions.





On Parents

Few adults who were physically inactive as children become active as adults. Inactive adults tend to produce inactive children and the reverse is also true. Encouraging children to enjoy moving and promoting confidence in movement skills at an early age helps to ensure later participation in physical activity.

LTAD will

- provide a framework for parents to understand physical literacy and its implications on a healthy lifestyle through lifelong physical activity and on competitive sport involvement for all Canadians, including those with a disability.
- facilitate the understanding of physical, mental, cognitive, and emotional development.
- facilitate the understanding of special requirements such as proper hydration, nutrition, and recovery for the growing child.
- enable parents to help children to choose a pathway in physical activity and sport.

On Coaching

To be successful, an athlete development model such as LTAD requires highly skilled, certified Karate coaches who understand the stages of athlete development and the various interventions that should be made.

LTAD will

- have a significant impact on the coaching education curriculum.
- have a significant impact on Karate-specific coaching education by the Karate Canada.
- identify a need for Karate coaches who will specialize in coaching developmental athletes.

On Dojo and Community Karate Programs

Canada's Karate dojo and community Karate programs provide broad opportunities for participation and are essential to the successful implementation of Karate Canada's LTAD program.

LTAD will

- identify the need for programs to deliver LTAD.
- inform and educate coaches, instructors and parents about the benefits of LTAD.
- align programs with dojo and both provincial and national teams.
- rationalize the competition system at the national and provincial levels and in dojo.



Philippe Poirier - 2006 WKF World Championships Bronze Medalist -80 kg Kumite with Manuel Monzon - Canadian National Karate Team Head Coach

IMPACT OF LTAD

On Karate in Canada

"Keeping the funnel full" of physically literate Karate-ka will both increase the pool of talented Karate athletes competing on our national team as well as enhance the quality of life for those who choose the recreational Karate stream. Canadian athletes are systematically achieving world-class results at the highest levels of international competition because of dedicated and knowledgeable coaches at the dojo, Provincial and National levels. This success will only be enhanced with the implementation of these LTAD recommendations and the recognition of the importance of the correct training at the correct time for our countries young Karate-ka. When an ethically based, athlete/participant-centered development system is in place and continually modernized and strengthened as required, Karate Canada will be more connected and coordinated as a result of the committed collaboration and communication amongst the stakeholders.

These goals can be achieved through the system-wide implementation of LTAD.

LTAD will

- signal changes to the structure and delivery of Karate programs.
- cause realignment or rescheduling of competition calendars.
- provide clear pathways for progression.
- help Karate athletes attain higher and more sustained levels of success.
- provide athlete-centered planning and decision making.
- provide a basis for which to monitor and evaluate the effectiveness of programs.
- provide a framework so that all stakeholders understand their role in programming interventions at each stage.



IMPLEMENTATION: Canadian Karate Working Together



Giant steps forward have been taken by the federal, provincial, and territorial governments in endorsing the concept of LTAD. The same level of support must also come from dojo, the provincial associations and Karate Canada.

Acceptance of LTAD provides the basis on which future development of athletes is planned and implemented.

To implement a LTAD model for Canadian Karate the following actions need to be completed:

- Review coach education in each province and nationally, based on LTAD factors and objectives.
- Review competition structures and schedules in each province and nationally, based on LTAD factors and goals.
- Promote the development of the full range of motor and sport skills at the FUNdamentals and Learning to Train stages.
- Incorporate FUNdamental activities into Karate sessions for younger children, especially during warm-up and fun activities.
- Promote greater cooperation and communication between Karate organizations, instructors, and coaches in the scheduling of sessions and competitions.
- Formulate a declaration on the implementation of LTAD that is supported by all dojo and provincial associations across Canada.





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 by the various adaptation processes, such as adaptation to muscular endurance or maximum strength.

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

Age

Chronological age refers to the number of years and days elapsed since birth.

Skeletal age refers to the maturity of the skeleton determined by the degree of ossification of the bone structure.

Relative age refers to differences in age among children born in the same calendar year (Barnsley and Thompson, 1985)

Developmental age refers to the degree of physical, mental, cognitive, and emotional maturity.

General training age refers to the number of years in training, sampling different sports.

Sport-specific training age refers to the number of years since an athlete decided to specialize in one particular sport.

Ancillary Capacities 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. When athletes reach their genetic potential and physiologically cannot improve anymore, performance can be improved by using the ancillary capacities to full advantage.

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

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

APPENDICES

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

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

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

Developmental age refers to the degree of physical, mental, cognitive and emotional maturity. Physical developmental age can be determined by skeletal maturity or bone age after which mental, cognitive and emotional maturity is incorporated.

General training age refers to the number of years in training and sampling different sports.

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

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

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

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

Post-natal growth is commonly, although sometimes arbitrarily, divided into 3 or 4 age periods, including infancy, childhood, adolescence, and puberty.



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

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

Relative age refers to differences in age among children born in the same calendar year (Barnsley and Thompson 1985).

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.

Sport-specific training age refers to the number of years since an athlete decided to specialize in one particular sport.

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.”



Steve Kelly - National Team Member

APPENDICES

References

- Alpine Integration Model. Alpine Canada Alpine, High Performance Advisory Committee, 1999.
- Arbeit, E. PRACTICAL TRAINING EMPHASES IN THE FIRST AND SECOND DECADES OF DEVELOPMENT, XXth European Athletics Coaches Association (EACA) Conference, Belgrade, 5-6 April 1997.
- Balyi, I., Way, R., Norris, S., Cardinal, C. & Higgs, C. Canadian sport for life: Long-term athlete development resource paper. Vancouver, BC: Canadian Sport Centres. 2005
- Balyi, I. Sport system building and long-term athlete development in Canada. The situation and solutions, in Coaches Report. The Official Publication of the Canadian Professional Coaches Association. Summer 2001. Vol.8, No.1, pp.25-28.
- Bar-Or, O. Developing the Pre-pubertal Athlete: Physiological Principles. In Troup, J.P., Hollander, A.P., Strasse, D., Trappe, S.W., Cappaert, J.M. and Trappe, T.A. (Eds.), Biomechanics and Medicine in Swimming VII., London: E & FN Spon. pp. 135-139, 1996.
- Bar-Or, O. Nutritional Considerations for the Child Athlete. Canadian Journal of Applied Physiology. 26(Suppl.), pp. 186-191. 2001.
- Bar-Or, O. (ed). The Child and the Adolescent Athlete. Balckwell Science Ltd. Oxford, UK, 1996.
- Bisson, Germain. Karate Quebec Long Term Athlete Development. 2009.
- Bloom, B. Developing Talent in Young People. New York: Ballantines, 1985.
- Bompa, T. From Childhood to Champion Athlete. Toronto. Veritas Publishing Inc. 1995.
- Bouchard, C., Malina, R.M., Perusse, L. 1997. Genetics of Fitness and Physical Performance. Champaign, IL: Human Kinetics.
- Canadian Child Care Federation. (2001). Supporting your child's physical activity (Resource Sheet #52). Retrieved November 22, 2004, from www.cfc-efc.ca/docs/cccf/rs052en.htm
- Devlin, Kraig. KIME: Karate Integration Model. Karate British Columbia, 2006
- Drabik, J. Children and Sport Training. Stadion, Island Pond, Vermont. 1996.
- Gibbson, T ed., THE PATH TO EXCELLENCE: A Comprehensive View of development of U>S> Olympians Who Competed from 1984-1998. USOC, Colorado Sprigs, 2002.
- International Gymnastics Federation. Age Group Development Program. CD Rom. 2000.
- Kane, Lawrence A., and Kris Wilder. The way to black belt. Boston, MA.
- Karate Canada LTAD Steering Committte, Karate Values Matix 2008
- Laroche, Lyne. Essay "How karate-do can help create a better world" 2008
- MacDougall, J.D., Wenger, H.A. and Green, H.J. (Eds) Physiological Testing of the Elite Athlete. Movement Publications, Inc. Ithaca N.Y., 1982.
- Malina, R.M. and Bouchard, C. Growth, Maturation, and Physical Activity. Champaign, Ill.: Human Kinetics, 1991.
- National Coaching and Training Centre: Building Pathways in Irish Sport. Towards a plan for the sporting health and well-being of the nation. Limerick, Ireland, 2003.
- Norris, S.R., & Smith, D.J. 2002. Planning, Periodization, And Sequencing of Training And Competition: The Rationale For A Competently Planned, Optimally Executed Training And Competition Program, Supported By A Multidisciplinary Team. In M. Kellmann (Ed.), Enhancing Recovery: Preventing underperformance in athletes, pp.121-141. Champaign, IL: Human Kinetics.

Ross, W.D. and Marfell-Jones, M.J. Kinanthropometry. In: Physiological Testing of the Elite Athlete. Eds. MacDougall, J.D., Wenger, H.A., and Green, H.J. Movement publications, Ithaca, N.Y., 1982. pp. 75 – 104.

Rowell, Richard E. Budo Theory: Volume 1: Introduction to Budo Theory. Madden, AB: Richard E. Rowell, 1993.

Rushall, B. The Growth of Physical Characteristics in Male and Female Children. In Sports Coach, Vol.20, Summer, 1998. pp. 25 – 27.

Sanderson, L. "Growth and Development Considerations for the Design of Training Plans for Young Athletes". Ottawa: CAC, SPORTS, Vol.10.No.2.1989.

Seba, Antonio Oliva et al. Combate Supremo. D. Angel Delago Pozo, Tarragona, Spain, 869 pages, 2002.

Shimabukuro, Masayuki. Living Karate: The Way to Self-Mastery. San Diego, CA: J.K.I., 2006

Tanner, J.M. Foetus into Man Physical Growth from Conception to Maturity, Second Edition, Castlemead Publications, Ware, England, 1989.

Thumm, H-P. "The Importance of the Basic Training for the Development of Performance" New Studies in Athletics, Volume 1. pp.47-64, 1987.

Tihanyi, J. Long-Term Planning for Young Athletes: An Overview of the Influences of Growth, Maturation and Development. Sudbury: Laurentian University, 1990.

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, 211-227 pp.

Viru, A. Adaptation in Sports Training. CRC Press, Boca Raton, 1995. 310.p.

Vorontsov, A.R. Patterns of Growth for Some Characteristics of Physical Development: Functional and Motor Abilities in Boy Swimmers 11 – 18 Years. In: Biomechanics and Medicine in Swimming VIII. Eds. Keskinen, K.L., Komi, P.V. and Hollander, A.P. Jyvaskyla, Gunnars, 1999.

Vorontsov, A.R. Multi-Year Training of Young Athlete as Potential Modifier of Growth and Development (Analysis of some biological concepts). Sport Medicine in Aquatic Sports – the XXI Century, FINA World Sport Medicine Congress, 2002.

Wienek, J. Manuel d'entrainement . Paris: Vigot, 1990.

www.canadiansportforlife.ca

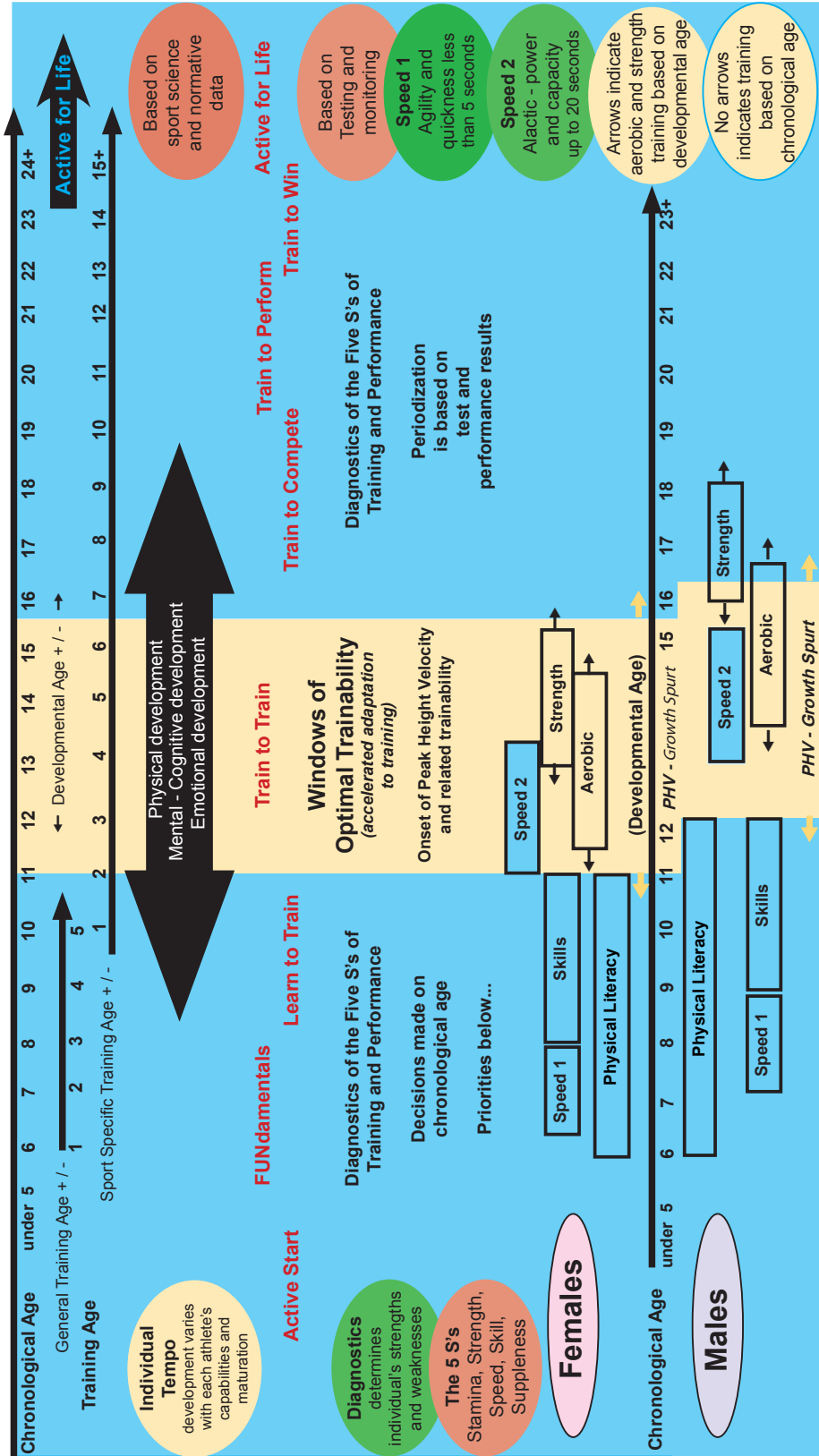


Katarina Vadovicova - 2008 WKF World Championships 5th place Kata

APPENDICES

Karate - Optimal Trainability

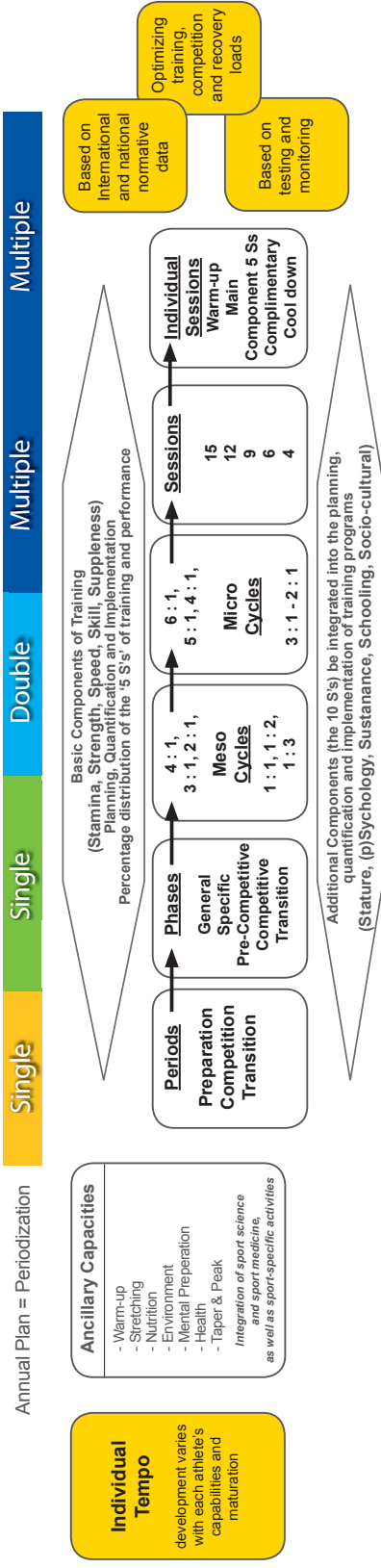
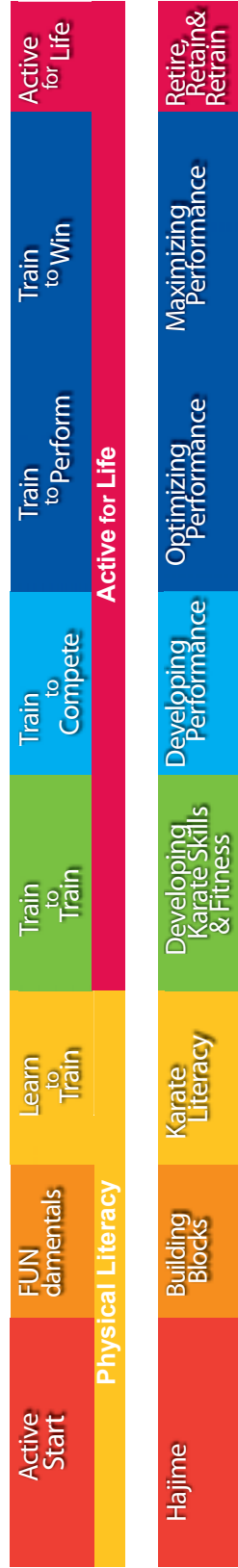
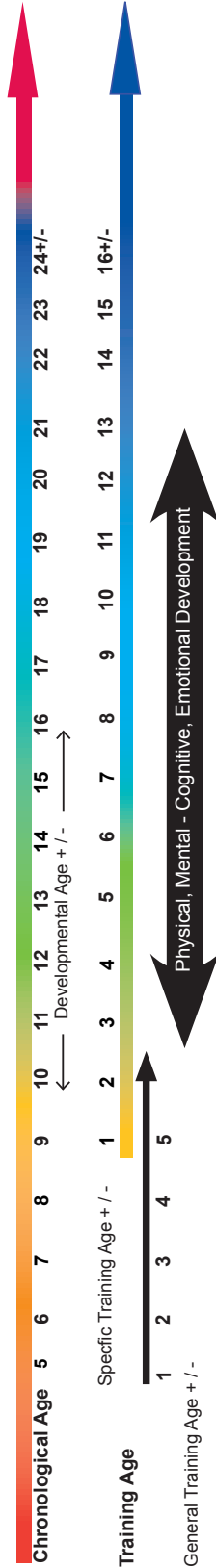
Balyi, Devlin, Lauzière, Moore and Way, 2009 ©



(ABC's = Agility Balance Coordination Speed + RJT = Run Jump Throw + KGB's = Kinesithesia Gliding Bouyance Striking w/object + CPK's = Catching Passing, Kicking Striking w/body)

Karate - Long-Term Athlete Development - Periodization

Balyi, Devlin, Lauzière, Moore and Way, 2009©



Karate System Overview							
Stage	Active Start	FUNDamentals	Learn To Train	Train To Train	Train To Compete	Train to Perform	Train to Win
	Hajjime	Building Blocks	Karate Literacy	Developing Karate Skill and Fitness	Developing Performance	Optimizing Performance	Maximizing Performance
Age	0-6	6-9	9-12	12-16	16-18	18-24+	24+ kumite
Male	0-6	6-8	8-11	11-15	15-17	17-22+	27+ kata
Female	0-6	6-8	8-11	11-15	15-17	17-22+	22+ kumite
Stage of Maturation	Early Childhood	Late Childhood	Late Childhood Early Puberty	Early Puberty Late Puberty	Late Puberty Early Adulthood	Adulthood	Adulthood
Talent Progression	N/A	Screening	Identification	Selection	Specialization	Performance	High Performance
Number of Sports	Activities	Many	3	2	1 (kata or kumite) "a 24 hour athlete"	1	1
Training Session Length	30-45 min	30-60 min	60-90 min	90-120 min	90-120 min	90-120 min	90-120 min
Style Specific Training		3-4 hours	5-7 hours	5-6 hours	4-7 hours	Athlete focused on competitive components	
Competition Specific Training		Minimal competitive training	Minimal competitive training	2-4 hours	6-10 hours	12-16 hours	14-16 hours
Non-karate Sports or Activities	Daily physical activity	6-7 hours	5-7 hours	4-6 hours	Athlete focused solely on karate training		
Karate Specific Physical Conditioning		Incidental to technical training	Incidental to technical training				
Total Hours		9-11 hours	10-14 hours	11-16 hours	15-23 hours	17-23 hours	19-23 hours
General Karate and Fitness Training			95%	70%	40%	30%	25%
Competition specific training			4%	28%	55%	65%	70%
Actual Competition			1%	2%	5%	5%	5%
Tournaments per Year			2-4	4-8	8-12	8-12 (peaking for major championships)	
Matches per Year			8-16	16-32	32-48	32-48	
Periodization			Single	Single	Double	Multiple	

Physical Components of Karate										
Stage		Active Start	FUNDAMENTALS	Learn To Train	Train To Train	Train To Compete	Train to Perform	Train to Win	Active for Life	
Age	Male	0-6	6-9	9-12	12-16	16-18	18-27	24+ kumite 27+ kata 22+ kumite 25+ kata	Enter at Any Age	
Female	0-6	6-8	8-11	11-15	15-17	17-25				
Skill	General Movement Skills	ABCs								
		RJT								
		Posture								
	Agility	General Sport Skills								
		Lineal Speed								
		Lateral Speed								
		Multi-Directional Speed		Intervals of < 5 seconds						
	Speed (trained year round right after warm-up)	Hand Speed								
		Foot Speed								
	Training Objectives	Karate Skill Repetition								
Sprint Training										
Skipping										
Training Method	Plyometrics						Intervals of 5-20 seconds			
Suppleness (dynamic mobility used during warm-up)	Static									
	Dynamic									
Training Methods	PNF									
	Power									
Training objectives	Functional Strength									
	Joint stability									
	Core Stability									
	Body Weight									
	Stability Ball									
	Medicine Ball									
	Weight Vest									
	TEDO Hand Weights									
	Free Weights									
	Olympic Lifts									
Training Methods	Power (0-5 secs)									
	Capacity (10-30 secs)									
	Power (20-30 secs)									
	Capacity (40-120 secs)									
	Power (3-10 mins)									
	Intervals									
	Plyometrics (lactic power)									
	Anaerobic Alactic									
	Anaerobic Lactic									
	Aerobic									
Stamina	Intervals									
	Plyometrics (lactic power)									
Define	Introduce									
	Develop									
Consolidate	Refine									
	Maintain									

Technical/Tactical Components of Kumite									
Stage		Active Start	FUNDAMENTALS	Learn To Train	Train To Train	Train To Compete	Train to Perform	Train to Win	Active for Life
Age	Male	0-6	6-9	9-12	12-16	16-18	18-27	24+ kumite 27+ kata	Enter at Any Age
	Female	0-6	6-8	8-11	11-15	15-17	17-25	22+ kumite 25+ kata	
Offensive Concept	Footwork/Guard/Fighting Stance								
	Distance/Rhythm								
	Phases of the Technique								
	Single attack								
	Double attack								
	Multi attack								
	Protective								
	Partial Evasion								
	Obstructive								
	Interceptive								
Defensive Concept	Partial/Total Evasion								
	Active Attack								
	Destructive								
	Total Evasion								
Strategy	Long Distance								
	Passive Attack								
	Offensive/ Defensive Transition								
	Know the Rules								
	Ring Management								
	Time Management								
	Referee Management								
	Opponent Management								
	Score Board Management								
	Rhythm Management								
Targeting	Coach/Athlete Communication								
	Static								
	Mobile								
	Reactive								
Define	Shadow Kumite								
	Decision Training								
	Pre-Match Routine								
	Competitive Plan								
			Develop	Consolidate	Refine	Maintain			

Technical/Tactical Components of Kata									
Stage		Active Start	FUNDAMENTALS	Learn To Train	Train To Train	Train To Compete	Train to Perform	Train to Win	Active for Life
Age	Gender								
	Male	0-6	6-9	9-12	12-16	16-18	18-27	24+ kumite 27+ kata	Enter at Any Age
	Female	0-6	6-8	8-11	11-15	15-17	17-25	22+ kumite 25+ kata	
	Basic Techniques								
	Biomechanics								
	Correct and Proper Use of Breathing (kokyu)								
	Correct Eye Positioning (metsuke)								
	Correct Focus of Attention (chakugan)								
	Focus of Power (kime)								
	Kata Diagram (embusen)								
	Understanding of Techniques Being Used (bunkai)								
	Style Kata								
	Imposed Kata (shitei)								
	Free Kata (tokui)								
	Rules								
	Opponent Analysis								
	Match Plan								
	Coach/Athlete Communication								
Define			Develop	Consolidate	Refine	Maintain			
	Introduce								

Ancillary Capacities		Stage	Active Start	FUNDAMENTALS	Learn To Train	Train To Train	Train To Compete	Train to Perform	Train to Win	Active for Life
Age	Male	0-6	6-9	9-12	12-16	16-18	18-27	24+ kumite 27+ kata	Enter at Any Age	
	Female	0-6	6-8	8-11	11-15	15-17	17-25	22+ kumite 25+ kata		
Recovery and Regeneration	Warm-up									
	Cool-down									
	Taper and Peak									
	Environmental Influences									
	Periodization									
	Chrono-nutrition (food intake timed to training)									
	Hydration									
	Static									
	Dynamic									
	PNF									
Physical	Massage									
	Chiropractic									
	Acupuncture									
	Hydrotherapy									
	Cryotherapy									
Rest	Physiotherapy									
	Active									
	Passive									
Mental Preparation	Themes	Debrief								
		Relaxation								
		Confidence Building								
		Communication								
		Focusing								
	Skills	Arousal Management								
		Competition Planning								
		Controlled Breathing								
		Progressive Muscle Relaxation								
		Imagery								
Define	Self-talk									
	Positive Reinforcement									
	Goal Setting									
	Feedback/Meditative Techniques									
	Affirmations									
Introduce	Focusing Strategies									
	Time Management									
Develop	Simulation									
	Simulation									
Consolidate	Simulation									
	Simulation									
Refine	Simulation									
	Simulation									
Maintain	Simulation									
	Simulation									

空手



