

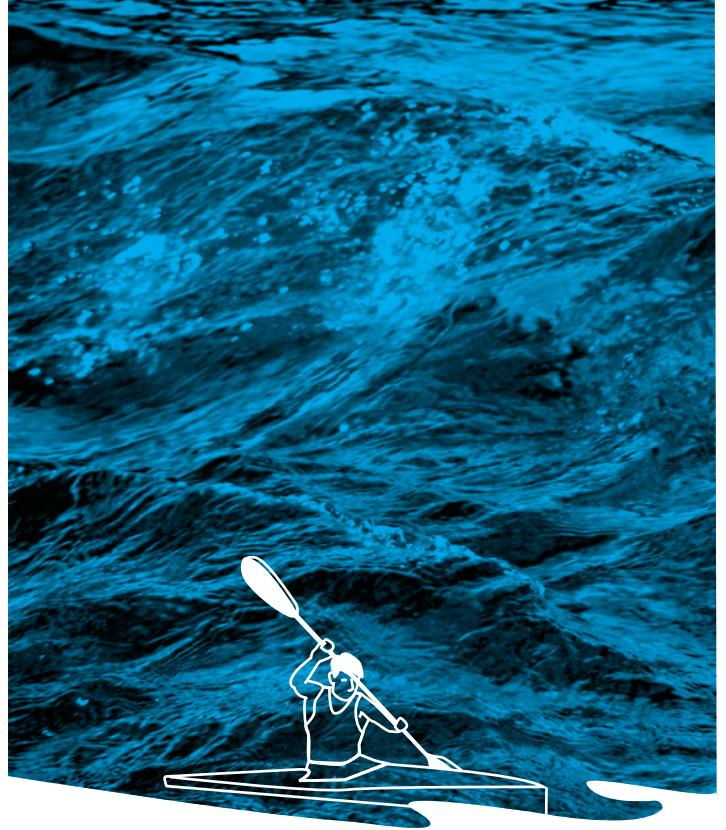
LTAD Guide

for Coaches and Clubs





“Physical activity should be fun and a natural part of every child’s daily life.”



Active Start

Age: 0-6 years

Objectives:

Learn fundamental movements and link them together into play.

Key Outcomes: Fun and Movement skills

Physical activity should be fun and a natural part of every child's daily life. Active play is the way young people are physically active. CKC does not play an active role in this stage other than recommending that: children learn to swim, use boats with their families at local canoe clubs, get acquainted with equipment through programming or family memberships and join Parent and Tot and Tyke programs that focus on boat safety and game centered learning on water and land.



FOREWORD

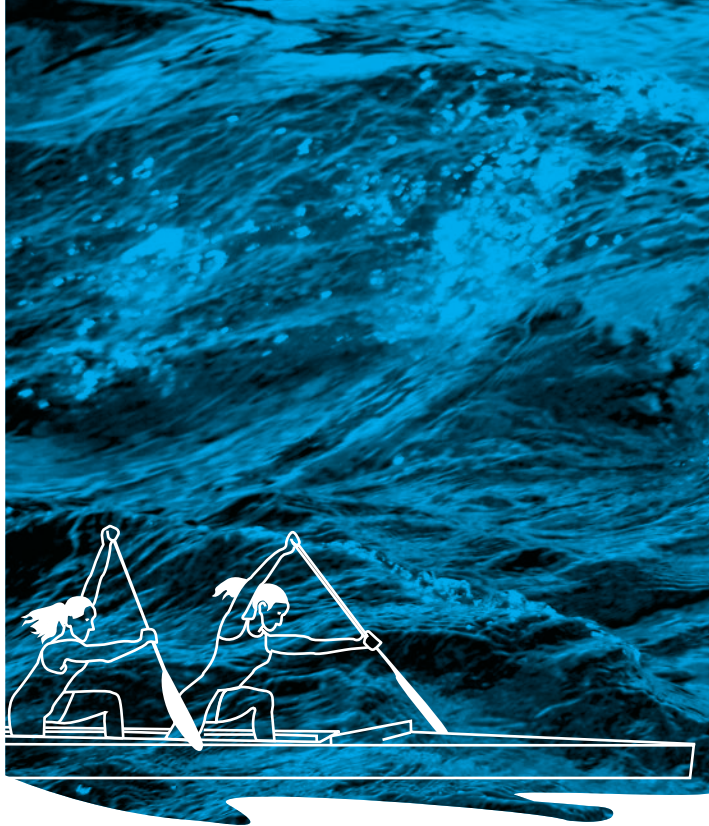
ASRCA would like to acknowledge CKC's contribution and leadership in the development of a sport specific Canoe/Kayak LTAD. By having this great framework to work from it made the implementation of an Alberta specific LTAD easy and effective. By only minor updates and customization to Alberta specific programming we now have a fully functioning LTAD that will help guide Sprint Canoe/Kayak development in Alberta for many years to come. The proposed LTAD Model is a framework that provides paddlers at all stages of development the opportunity to be the best they can be. It will ensure that paddlers are equipped with the fundamental building blocks required to progress. The LTAD Model will serve as a guideline for athletes, coaches, parents and volunteers at every level of paddling. Whether a paddler has their sights set on the Olympic Podium, Club Championships or just wants to have fun on the water in a non-competitive environment, LTAD is about giving every paddler the chance to achieve their ambitions and realize their dreams.

Thank you to the following expert group of coaches, scientists and sport leaders who have contributed to the drafting of the CKC LTAD Model:

Istvan Balyi	Graham Barton
Tamas Buday Sr.	Drayton Coolen
Mike Creamer	John Edwards
Peter Giles	Mark Granger
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Penny Werthner	

And to the ASRCA volunteers and coaches that helped develop the specific Alberta version:

Jessi Temple	Joanne Devlin-Morrison
Edgar Garza	Genevieve Ketchum
Leon Schiebel	



FUNdamentals & Foundations

Age: Males 6-12; Females 6-11

Objectives:

At the beginning of this stage the objectives are to learn overall sport skills; build water sense and safety awareness; and learn basic boat and paddle handling skills in age appropriate sprint canoes and kayaks.

Key Outcomes:

At the end of this stage, children will:

- Be physically literate (competent in fundamental movement skills)
- Possess fundamental canoe/kayak skills
- Use the canoe/kayak basic boat steering skills in demonstrating boat control
- Paddle continuously in a single and team boat
- Be comfortable and confident in boats and playing in, on, and around the water
- Be able to swim 25m with a PFD

CKC promotes an active role at this stage with the Canoe Kids Day Camp program as well as the U11 and U13 programs. Children at this age are at the optimal point to learn basic skills; therefore the objectives of the U11 and U13 programs should be the introduction and continued learning of the basics (balance, steering, and propulsions) in all types of appropriate canoes and

kayaks. In addition to participating in these programs, parents should be encouraged to paddle with their children. This will help children master the basic skills. In addition it strengthens the family atmosphere that surrounds and supports the Canadian Club system. To help develop other basic sport skills, as well as coordination and body awareness, children should be enrolled in other sporting activities three to four times per week. Developing physical literacy requires a broad base of activities such as athletics, swimming, gymnastics, etc. The Run, Jump, Throw program offered by Athletics Canada for participants in this age group is a good example.

TECHNIQUE

Athletes at this stage should focus on learning how to balance and properly control all types of canoes and kayaks; there is no need at this age to specialize in canoe or kayak. By the end of this stage, athletes should be able to set up the body properly in the boat, be able to stay in stroke and be able to properly hold a paddle in both canoes and kayaks. Athletes should be able to properly steer a sprint canoe and kayak. By the time athletes reach the end of this stage they must have good fundamental canoe and kayak skills. Use fun drills and games to learn technique.

TACTICAL

In this stage, children should engage in deliberate play and should learn basic decision making skills such as how to dock a boat properly, how to avoid hazards in the water, and judging weather conditions for safety reasons. Children should also learn to launch and dock a boat, listen and follow instructions, and learn to paddle in a group. Toward the middle of the stage, athletes should be starting to make decisions on the race course such as properly lining up, starting, and propelling their boat down the course.

Boat skill challenges and games can be used to develop these tactical abilities

EQUIPMENT

At this stage of development athletes will require stable boats, but by the end of the stage they should be using an intermediate style racing canoe or kayak. Therefore, Clubs should have a good progression in boats from very stable to newer style racing boats. Kayakers should be using seats, but the seats should sit as low as possible in the boat to maximize stability. As the athlete grows, longer and bigger blades can be used, but not at the expense of good technique. Young children should be exposed to a variety of equipment. Importantly, throughout this stage children should be taught to be responsible and careful in the use of fragile boats, paddles and other equipment.

Mini kayaks, Sit-On-Tops and Surfskis, Stand-up boards, Mini canoes, War-Canoe, Dragonboat Pleasure, Canoes C4s

Boats should foster appropriate Skill Development Objectives: Posture, position in boat, boat control / steering, core strength and development, balance, "water literacy", etc.

Kayak

- Sit-On-Tops should facilitate proper seat-footrest position ie. hips should not be lower than feet/ankles
- No backrest
- Specific Boats: Wave Kayaks, Pelican 8 ft Sit-On-Tops

Canoe

- Boats should facilitate proper position and posture in boat (Knee to back foot and front foot relationship)
- Boats allow development of basic technique that contribute to sprint skill development (propulsion A-Frame, steering, etc)



COACHING

Coaches will require a good knowledge of growth and development as well as knowledge of the fundamental movement skills and fundamental sport skills that make up physical literacy. They should have the ability to assess physical literacy and make recommendations to the children to improve any gaps. Coaches who are dealing with athletes at the start of this stage (CanoeKids) should have CanoeKids training (community coach course) whereas coaches who are training athletes that are nearing the end of this stage should be ELCC trained and certified.

TRAINING VOLUME

At the start of this stage, children who are not in a day camp setting should be participating in 3-5 sessions per week lasting 30-120 minutes. The session should include a warm up; work on general technical skills; modified games or activities with simple rules and a cooldown. Towards the end of this stage they should continue to do 3-5 sessions per week lasting 90-120 minutes with more of an aerobic fitness component included. Nevertheless, kids should be encouraged to 'hang-out', and 'horse around', in, and under boats. Throughout this process they are learning critical paddling skills.

Off season training should involve activity in other community and school sports while maintaining one night of activity with the club a week. i.e games night, x-country ski or other fundamental movement skill games

COMPETITION

Children in the CanoeKids program do not participate in Divisional regattas, but can be invited to informal club regattas combined with the U11 athletes. The regattas should be a half day in length and should be 'unlimited fun' (Jamboree style, see FUNDamentals stage) culminating with a Bar-B-Q at the end of the event. The athletes should compete in stable boats and both canoes and kayaks. In addition, coaches should start developing team boat skills and team boat races should be part of all regattas. There should be no championship regattas in small boats for this age group. Athletes nearing the end of this stage can start competing in head to head style competitions tailored towards their developmental needs. The length of the regatta can be increased to a one day event and these athletes may race 3-4 times per year in local, Divisional and inter-Divisional competitions. However, these athletes should continue to race in both canoes and kayaks, and team boat events should be stressed. Finally, even though the level of competition has increased these regattas should continue to be fun for the athlete and they should be recognized for their achievements by handing out medals or ribbons on a podium at the end of the day.

Novice Race Series – Novice Cups held at local canoe club biweekly during afternoon programming, Novice Championships in early August held in the north or south. Fun first races, relay, challenges and games.

ALBERTA NOVICE SERIES

Included Events

- 3 Regional Cups (North & South)
- 1 Novice Championships
- All events need to be run yearly independent of whether or not our Prov. HP coaches are present/available

Eligibility

- U11
- U13
- U15 – as long as the athlete is not training full time in the Train to Train group or Compete group or athlete has not raced for the Prov. Team at WCSG, CSG or LPI
- U19 – for athletes 15-18 in their first year involved in a paddling program

Event Details

REGIONAL CUPS

Logistics

- Will be held every 2 weeks starting the second week in July
- Will be held Friday afternoon during regular programming time from noon-4pm
- Each event day a regional cup will occur in the North and South
- South to include CCC and Lakes program athletes
- North to include GERCKC, SACKC and LBC athletes
- Provincial vehicles will be made available to regions for athlete transport to insure all athletes can participate. Athletes' show up to their regular program location and coaches will transport to and from event location.
- All Provincial team athletes will need to select at least one cup they can be present at to help out and mentor developing athletes (They are asked to wear a piece of team AB clothing) Sign up sheet will be present at PTT in the spring
- No medals but rather prizes will be given out for things like spirit, sportsmanship, best costumes if theme is chosen etc.
- Each region has say on exact races offered as long as it follows the race card guidelines of the province
- It will be up to each region to decide on each cup location. It would be advisable to share hosting duties through out the season. A formal race course is not required.
- Focus is on FUN while developing paddling, racing and general athletic ability skills

Race Card

- No race over 200m
- Can be a mix of standard races and other relay/skill challenge events.
 - Example
 - Start at dock go out and back to buoy dock back up run up hill shoot a basketball and soccer ball then run across finish line
 - Team 200m relays K-1,2,4 or C-1,2,4.
 - Slalom course down buoy line working on boat skill
- All equipment can be used (recreational, racing, outrigger, dragonboat etc.)
- Both canoe & kayak races will be offered

NOVICE CHAMPIONSHIPS

Logistics

- Will be held every August the weekend one week prior to travel weekend to Nationals (exact weekend will change yearly depending on timing of Nationals)
- Will be a one day event
- No medals but rather prizes will be given out for things like spirit, sportsmanship, best costumes if theme is chosen etc.
- Location/Host club will be rotated between regions and confirmed by April 1st of each year
- Exact Date will be confirmed by April 1st of each year
- Focus is on FUN while developing paddling, racing and general athletic ability skills
- Athletes will not be required to have club racing singlets however if clubs have any club clothing athletes are encouraged to wear it (ex. Cotton t-shirt)
- All Entries are due one week prior to event

Race Card

Exact races being offered will be confirmed by July 31st of each year so that clubs can formulate entries

Short Distance

- No Race over 200m
- Will be a mix of standard races and team relay events
- All equipment can be used (recreational, racing, outrigger, dragonboat etc)
- Both canoe & kayak races will be offered

Long Distance

- All races will be done in long distance format of there and back with corner from right to left.
- U11 500m (250m and back)
- U13 1km (500m and back)
- U15 2km (1000m and back)
- U19 4km (2 loops of 1000m and back)



MENTAL PREPARATION

The main objective at this level is to create an environment where the children want to paddle, enjoy being on the water, learning early skills on how to paddle. Coaches need to clearly understand the importance of such a social environment and have the skills to create it. They need to be skilled at teaching the basic skills (because even though at this level, the 'athletes' are young, they still will begin to build confidence by 'improving' in the sport. There needs to be a variety in the training, again so the young

athletes-to-be want to continue. A key point here is building desire to stay involved and building self-confidence. Some suggestions are movies on Olympic Heroes (motivation), kilometre charts or personal improvement recognition, games to foster team play. All of this will create a foundation upon which the coach and the athlete develop a long term productive relationship.

NUTRITION

Children at this age should be made aware of proper hydration. They can also be taught about nutrition through analysing the snacks they bring to the Club and be encouraged to make healthy choices. Coaches can also use informal talks to inform athletes and parents on healthy choices. Clubs should be encouraged to provide healthy snacks during regattas.

MONITORING

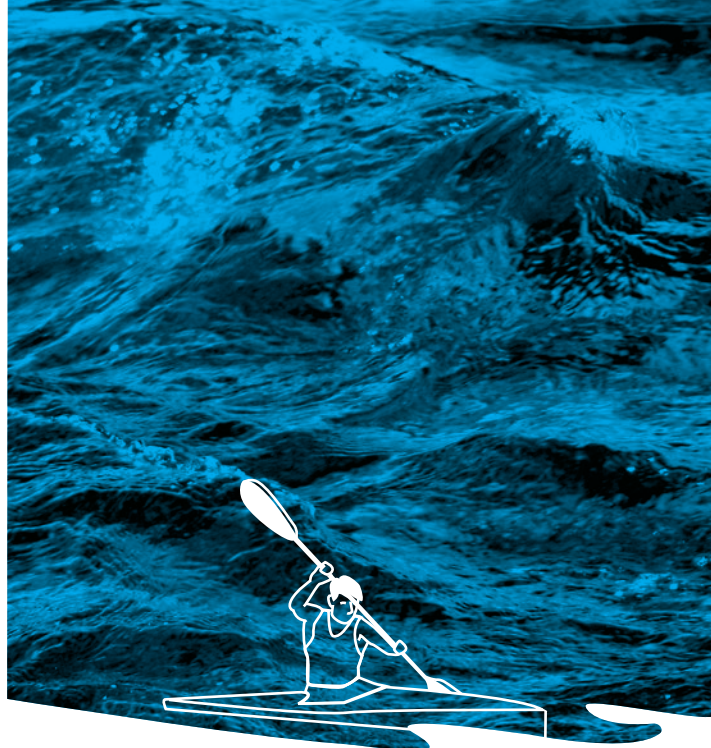
During this stage many children will start their growth spurt, especially females. This is known as peak height velocity (PHV). Since PHV is used as a marker for many of the critical windows of trainability, height should be measured a minimum of 4 times per year. Standing height, seated height and arm span should all be measured. This stage also coincides with the critical windows for suppleness and speed (agility); therefore it is suggested that a simple flexibility test such as the "Sit and Reach Test" be used to monitor hamstring and low back flexibility; and a shuttle run test to monitor agility. Finally, although endurance is not one of the critical windows of trainability listed in this section, it is still a very important measure of general health and wellbeing and can be used as a benchmark for future improvement. CKC suggests using a simple field test such as the Cooper test or the Leger test to measure endurance.

SAFETY

CKC recommends a coach to athlete ratio of 1:10. In addition, all children enrolled in these programs should wear life jackets when on the dock or in the water. It is also a requirement that coaches follow the CKC Code of Safety and have first aid and CPR.

ANCILLARY CAPACITIES

By the end of this stage, children and parents should be educated about proper clothing and equipment at practice (hat, water bottle, sunscreen, change of clothes) and they should be aware of how to properly warm-up and cool down for practice and races; calisthenics, stretching, jogging.



Training to Train

learning to paddle &
'building aerobic machines'

Age: Males 12-16 years; Females 11-15 years

Objectives:

- Build general endurance
- Learn to paddle with proper technique (block method)
- Develop speed and strength
- Proficiency in paddling singles and crew boats (technical template)
- Speed

Key Outcomes:

At the end of this stage athletes will have developed:

- A strong aerobic base (2km times; 1500m run times; 300m swim times; template; measurable)
- Core strength
- Specialize in canoe or kayak towards the end of the stage

CKC currently plays an active role in the development of athletes at this stage through the delivery of the U13 and U15 and U17 racing programs. This stage encompasses many different windows of trainability for both males and females as most athletes will begin, and some may complete PHV during this stage. The first training window will likely be the second speed window for both males (13-

16 years) and females (11-13 years). This speed window should focus on the development of anaerobic alactic power and capacity through the use of 0-20 second intervals with lots of rest. The onset of PHV will signal the start of the aerobic capacity window. Athletes at this age should start doing some dryland aerobic training to supplement on-water aerobic training in order to avoid over use injuries. Finally, the onset of menarche for females will signal the start of strength training window, however since males normally reach their growth spurt after females, males will not likely reach this window during this stage as the onset of the strength window for males is 12-18 months after PHV.

TECHNICAL

By the end of this stage of development, athletes should be specializing in either canoe or kayak. Athletes should be getting into more advanced technique block method. By the end of this stage athletes should be competent in all racing craft. Understanding timing in crew boats. Athletes should also be able to adapt their technique to accommodate varying race conditions. Coaches are advised to assess balance frequently and make sure the athletes are using the proper equipment. Advancing an athlete too quickly into a more advanced racing boat will result in poor balance making it more difficult for the athlete to master technique.

TACTICAL

During this stage athletes should be introduced to the various aspects of racing such as pacing, assessing stroke rate, and washriding for long distance competitions without the help of a coach. They should also be introduced to race plans for the various distances and practicing their race preparation warm-up plans.

EQUIPMENT

Boat progression should correlate with balance and maturation; athletes should be mastering their technical skills in stable boats before they progress into competitive racing boats and should have mastered block technique before progressing in boat levels. Athletes should also be responsible for their equipment and know how to properly take care of it.

Kayaks

Round bottom boat (not V) Minimal variance between top of boat and boat under the water line

Boat Examples: Kayakpro Lightning, Hody Dolphin, Elio Penguin, Plastex K1-Junior, Vajda Minisonic, others

Canoe

Flatbottom / rounded hull, Minimal variation between above and below waterline. Boat Examples: Hody Kenu (465cm), Elio Titan (480 cm), Plastex Cadet (520 cm)

COACHING

Coaches who are instructing at this stage should be minimum ELCC certified and continue with on going professional development. All coaches working with athletes at this stage of development should have a thorough knowledge of the growth and maturation stages (physical literacy). The coach will be acting as a teacher, a leader and a facilitator to athletes and parents.

TRAINING VOLUME

As mentioned above there are up to 3 critical training windows that occur during this stage (Speed #2, Aerobic Capacity, and Strength). Each of these windows should be emphasized at the appropriate time during this phase, in addition to the other training components. CKC recommends that during the paddling season athletes in this stage should be training a minimum of 4-8 times per week on water and each session should consist of 60-90 minutes

of activity (structured and unstructured). Since this stage is crucial for the development of the aerobic system, dryland training can be introduced as well to supplement on water training. It is important to note that 4 sessions has been chosen as the minimum because anything less than that is simply maintenance work. During the off season, athletes at the start of this stage should be participating in other complimentary sporting activities (swimming, cross-country skiing, cross-country running, and gymnastics to name a few), but at the same time Clubs should offer 1-4 session per week of canoe/kayak specific training so they do not lose touch with their athletes. By the end of this stage athletes should be moving more and more into sport specific training and Clubs should offer 4-6 training sessions per week during the off-season. With the introduction of strength training main focus and goal should be on proper techniques for lifts rather than the load being lifted and slowly progress based on athletes ability to maintain technique during lifts with heavier loads



COMPETITION

Athletes at the beginning of this stage are ready to participate in formal competitions. This stage reflects the speed window and the aerobic capacity window therefore, competition should reflect these windows. It is important for the development of the athlete that they race both short and long distance races. As athletes progress through this stage they should start being exposed to increasingly competitive style regattas. Athletes nearing the end of this stage should be competing at the National Championships. As the athlete progresses through this stage, more and more major and minor competitions will be available for the athlete to compete in. CKC recommends that the athlete only compete in one major competition per season and one minor competition per month. This is not to say that athletes should only go to one regatta per month, but rather that local Club regattas should tailor their race cards to emphasize skill development instead of traditional head to head races, PTT, WCSG, Divisionals, Pacific Cup, Canada Day Regatta, Local Invitational Regatta's.

MENTAL PREPARATION

This age group is ready to learn what to focus on and how to develop that skill. In doing this, they will begin to understand/can be taught that what they think and feel affects their performance; and, how to develop 'control' over those thoughts and feelings. They can also learn how to set effective goals at a number of different levels; outcome, performance, process, and its relationship to the

skill of focus. In addition, athletes should be introduced to breathing and relaxation skills. Finally, it could also be appropriate to begin to teach the athletes how to communicate effectively with their coach(es) and how to ask for feedback.

NUTRITION

In addition to proper hydration and food choices, athletes in this stage should be aware of proper pre-race and race day foods as well as the timing of snacks and meals throughout the day in relation to practice and races. This information can be provided through coach information or through lunch cards.

MONITORING

Almost all children will have reached their growth spurt during this stage, therefore it is very important to measure height at least four times per year to monitor PHV. In addition, rapid growth generally results in losses in flexibility, so the "Sit and Reach Test" should also be employed here to monitor hamstring and lower back flexibility. Finally, during this stage athletes should be working on general endurance, so the 'Cooper test' or the 'Leger test' also be used as a means to monitor endurance during this stage. Focus on tracking PHV and monitoring general athletic ability development

- Monitoring is not paddling specific
- Monitoring Tests
 - Standing Height
 - Seated Height
 - Arm Span
 - Weight
 - Vertical Jump
 - Long Jump
 - Flexed Arm Hang
 - Max Pushups
 - 5min Plank Test
 - Leger (Beep Test – Australian version)
 - Agility Test
 - 1500m Run
 - 5km Run
 - 300m Swim
 - Kilometre Tracking (paddling)
 - Recording PB for race distances/time controls
 - Skill Checklist Tracking

SAFETY

The volume of training is increasing at this stage, therefore athletes should be introduced to basic injury prevention ideas such as stretching (when and how), and various recovery techniques (stretching and ice). Cold water paddling rules should be followed in early spring and late fall.

ANCILLARY CAPACITIES

At this stage of development athletes should be responsible for doing a proper warm-up and cool down as part of their practice and should be developing warm-up routines for race day. Towards the end of this stage they should be introduced to the concept of tapering, but a shorter taper should be used to avoid detraining. Athletes should also be aware of the importance of proper nutrition for training and on race day.

Training Focus

TECHNICAL

At this stage the athletes should be looking to improve and understand their technique through kinaesthetic sensation (feel) and a variety of feedback from the coach. It is essential that the athlete's good technique transfers to the boat in terms of good boat propulsion. The athlete should also learn to transfer their technique to racing.

TACTICAL

Athletes should experiment with race plans and pacing strategies for all distances.

EQUIPMENT

By the end of this stage athletes should have their own personal equipment; singles and paddles. At the end of this stage athletes should be able to paddle in the most current shapes of racing singles, doubles and fours; use of the ultimate technology of paddles. Athletes should be able to adjust equipment to personal settings.

COACHING

Coaches training athletes at this stage should be a fully certified ELCC and mentored by a competition development coach. They should also consider taking the competition development certification, carry on with coaching education, and consider taking various professional development courses.

TRAINING VOLUME

Athletes at this stage should be specialized in canoe or kayak and this should be their main sport focus throughout the summer. During the competitive season these athletes need to be doing 8-12 session per week. During the general preparation period these athletes should be doing 6-9 canoe/kayak specific training sessions per week of 60-90 minutes each. By the end of this stage, athletes should be introduced to training camp environments. Athletes should be introduced to heart rate versus effort, heart rate versus speed, and their relation to stroke rate.

COMPETITION

Athletes in this stage should be competing in 4-7 events per season. Half the events should be designed as traditional regattas where crews can practice and perfect their race plans for major competitions. One of the regatta's should be a crew boat only regatta that focus on the development of crew boat skills and two regattas should be long distance to emphasize the aerobic capacity window that occurs in this stage. Athletes in this stage are ready to compete in two major regattas per year, one being the National Championships and the other a Provincial Team Trials. After the competitive season there should be an active recovery period lasting a minimum of two weeks.

PTT, NTT, Nationals, Divisionals, Canada Day Regatta, Local Invitational Regatta's, WCSG, CSG, Lake Placid Invitational, Canada Cup

MENTAL PREPARATION

During this stage all the psychological skills need to be taught/learned; what to focus on and how to train it; how to re-focus if you lose it; how to set various goals (process, performance, outcome; and how/why each are important, but how they can also be stressors); understanding and learning how to relax for sleep, and within a competition; how to energize and how to recognize when it is necessary; how to set up effective plans for training and for competition; how to assess each of the above skills on a regular basis (after competitions, at the end of the year); how to visualize

Learning to Compete

learning to race

Age: Males 14-17 years; Females 13-15 years

Objectives:

- Refine and consolidate paddling skills
- Learn to race
- Develop sport specific endurance, strength, speed and skills for racing

Key Outcomes:

At the end of this stage athletes will have developed:

- Proficiency in singles, doubles and fours under a variety of conditions
- Confidence in a variety of regatta and race situations (including seat racing and time controls)
- Good decision-making skills with regard to all aspects of training and boat handling
- Appropriate and measurable improvements of sport-specific endurance, strength and speed. This is a critical stage where biological maturation has a strong influence on training and it is essential to measure PHV to determine when the various training windows occur. The second speed window for girls will occur at the beginning of this stage between the ages of 11 and 13, and the same window for boys occurs between the ages of 13 and 16. The aerobic capacity window occurs with the onset of PHV for both sexes and the strength window occurs with the onset of menarche for females and 12-18 months after PHV for boys.



effectively (not an easy skill for many athletes). The order in teaching and learning of these skills will depend, to a degree, on the athlete's needs.

NUTRITION

Athletes will refine nutritional skills and strategies which include pre and post training and racing. Self analysis and awareness of food choices and bring in professionals to a group setting.

MONITORING

As in previous stages, height should be monitored four times per year in this stage to monitor PHV. In addition, this stage corresponds to the aerobic capacity window, thus a general field test for aerobic power and capacity should be used such as the Leger Test or the Cooper Test. This stage also corresponds with the strength window, thus a general strength test.

Monitoring is aligned with CKC development monitoring schedule and begins to focus on additional sport specific monitoring tools.

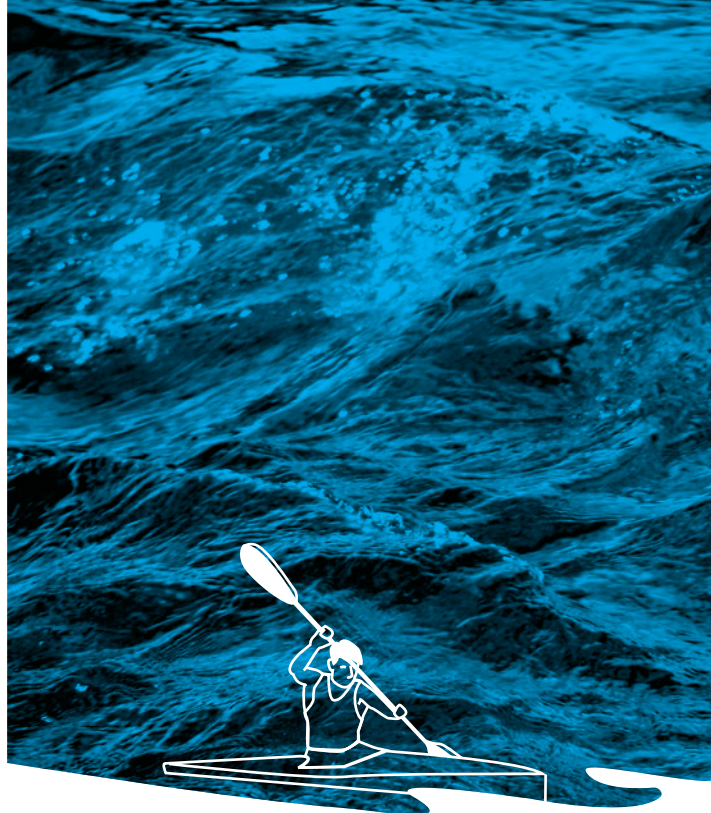
- Standing Height
- Seated Height
- Arm Span
- Weight
- 3RM Bench Press
- 3RM Bench Pull
- Bench Pull Power Profile
- Bench Pull Repeated Power
- 40" Chin-up test
- 1500m Run
- 5km Run
- 300m Swim
- Time Control
 - 6km
 - 2km
 - 1000m
 - 500m 200m
- 4x2km GA1 Lactate test
- 4x1000m Incremental Lactate test
- 4x250m Stroke Distance test

SAFETY

The athlete should be fully aware of the safety requirements of the sport including appropriate equipment and procedures for all kinds of weather conditions. This includes Club, Regional and National policies and regulations.

ANCILLARY CAPACITIES

By the end of this stage athletes should not only be doing proper warm-ups and cool downs, but should also know the reason why they are doing these things. Initiate learning the basics of health and wellness and be responsible for injury prevention and rehab.



Training to Compete

taking responsibility
as athletes & racers

Age: Males 12-16 years; Females 11-15 years

Objectives:

- Further develop and refine sport specific endurance, speed, strength and skills for racing in Olympic distances
- Further develop and refine racing skills including mental preparation, race strategies an ability to handle a variety of conditions and situations

Key Outcomes:

At the end of this stage athletes will:

- Race well under a variety of conditions, maintaining good technique under pressure and fatigue
- Be empowered to understand their role in critical thinking and decision making for their training, performance, equipment, schooling, and social life under the guidance of their coach
- Manage their lifestyle to meet training commitments. Athletes in this stage have completed all the objectives and outcomes from the previous stage and are ready to train at a National Team level. Yet if necessary there should be opportunities for the



athlete to receive remedial support in deficient areas. Athletes are working with their Club coach, National Development Team coach, National Team coach and performance enhancement team. Athletes in this stage are often on the national team and working towards performing at a world class level.

TECHNIQUE

Maintain and refine trained technique as individualized progression continues. Athlete now learns to transfer technique to racing.

TACTICS

Athlete learns a variety of tactics and strategies in training that are applied during competition. Athlete is trained to critically think and make appropriate decisions in utilizing required tactics during competition. Coach and athlete identify tactical deficiencies and are implementing the required adjustments.

EQUIPMENT

All equipment at this point should be personalized and meets national and international standards.

COACHING

At this stage the coach athlete relationship is more of a partnership. Coaches at this level should have completed competition development and are continuing with professional development opportunities and National Team initiatives. Coaches should be participating in on going professional development workshops.

COMPETITION

As athletes develop through this stage, they are training to compete at the national championships, Canada Cup, Canada Games, National Team Trials, Junior World Championships and international competitions associated with the national under 23 programs. To reflect their personal development within this stage, the coach and athlete select the appropriate number of minor competitions for "Modelling" their race plans in order to have the best possible performances during major competitions. Toward the end of this stage, athletes should be participating in 2-3 major competitions



per year which includes National Team Trials and international competitions. To foster athlete development through this stage of CKC's LTAD the Junior Division of the National Championships is for under 21 athletes in the singles competition. The Canada Games would also become a competition for athletes at the mid-point of this stage (21 years).

MENTAL PREPARATION

By this stage, hopefully the athlete has developed all the skills mentioned in the learn to compete stage, and now he/she should be continually refining these skills and developing the 'correct level of intensity' for within the demands of the sport (this latter piece is the final piece of the puzzle, and again, not an easy one.).

NUTRITION

Athletes should be working with a nutritionist to identify any deficiencies and make the required adjustments.

MONITORING

Athletes in this stage require more specialized monitoring due to the higher physical demands associated with higher levels of training. Athletes should be receiving annual physicals and regular blood analysis as part of the monitoring process outlined by the team physician and exercise physiology team. Athletes should be receiving sport specific aerobic power and capacity as well as anaerobic power and capacity tests as part of the monitoring process throughout the year. Sport specific strength testing should be done as part of the yearly testing outlined by the team physician and performance enhancement team. The results of the testing should be used to make individualized training recommendations for each athlete to help improve performance.

Monitoring is aligned with CKC development monitoring schedule and begins to focus on additional sport specific monitoring tools.

- Standing Height
- Seated Height
- Arm Span
- Weight
- 3RM Bench Press
- 3RM Bench Pull
- Bench Pull Power Profile
- Bench Pull Repeated Power
- 40" Chin-up test
- 1500m Run
- 5km Run

- 300m Swim
- Time Control
 - 6km
 - 2km
 - 1000m
 - 500m 200m
- 4x2km GA1 Lactate test
- 4x1000m Incremental Lactate test
- 4x250m Stroke distance test

SAFETY

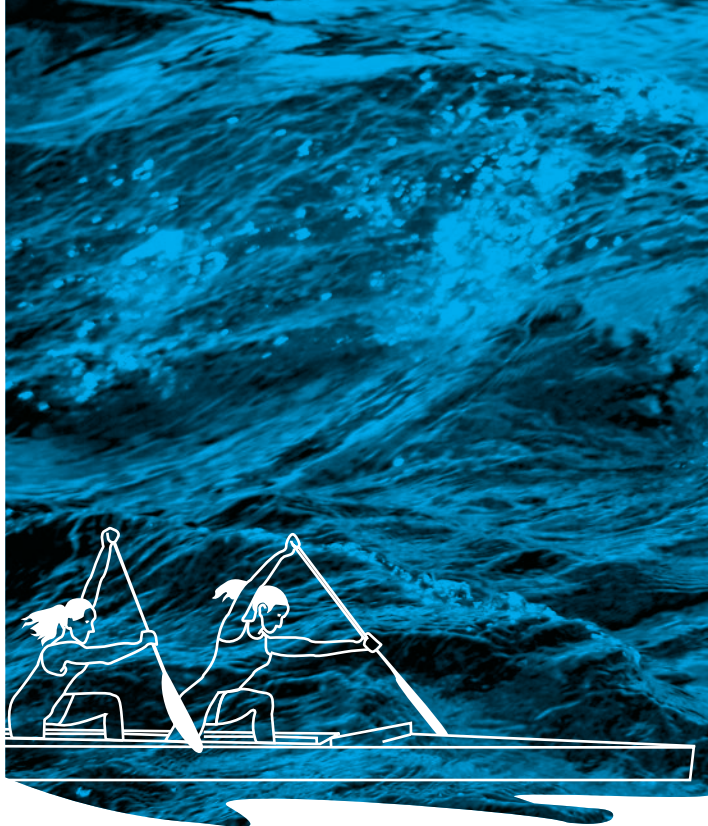
Athletes abide by seasonal and local regulations in their training (apply to all stages).

ANCILLARY CAPACITIES

Identify any deficiencies and make the required adjustments.

TRAINING

As athletes move through this stage they should be participating in an increased number of centralized training camps culminating in the athlete spending most of the competitive season with the respective National Team discipline coach, National Team development coach or provincial/regional team coach. Training should be designed by the Club coach and monitored by the National Team discipline coaches, National Team development coach or provincial/regional team coach. National discipline coaches, National Team development coach and/or provincial/regional team coach should be establishing guidelines and monitoring technical, tactical, physiological and psychological expectations for their respective athletes.



Training to Win

racing fast and racing
fast consistently

Objectives:

- Refine individual training, technique and racing skills so athletes have the greatest potential to win
- Maintain or where possible, improve technical, physical, racing and ancillary capacities

Key Outcomes:

At the end of this stage athletes will produce:

- Podium performances by winning medals at World Championships and Olympic Games
- Athletes will continue to race consistently at the podium level for more than one quadrennial cycle. Athletes at this stage are national team members at the peak of their careers who have previous experience in World or Olympic finals. They are working closely with their personal coach, National Team coach, and performance enhancement team. All relevant performance capacities have been met and training programs are refined to address their individual strengths and weaknesses. Most athletes do not medal until the end of this stage.



TECHNIQUE

Refine and reinforce technical excellence.

TACTICS

Identify competition strategies to ensure the greatest potential for podium performances. This includes refinements to raceplans, and performance management.

EQUIPMENT

Athletes and CKC should be working with equipment manufacturers to customize equipment for optimal performance.

COACHING

At this stage the coach athlete relationship is more of a partnership in conjunction with national team coaches. Coaches are NCCP High Performance certified (NCCP 4 and/or 5) and participating in on going professional development workshops.

TRAINING

Athletes in this stage have made a full time commitment to year round training. Athletes are involved in National Team training camps scheduled throughout the year (functional centralization). Fall training and "at home" training periods should be designed by the Club coach in consultation with the National Team discipline coach. National discipline coaches should be establishing technical, tactical physiological and psychological expectations for their respective athletes.

COMPETITION

The competition schedule for train to win athletes should be constructed with the goal of achieving optimal performance at World Championships and Olympic Games. This means scheduling an appropriate number of selection/international competitions as a lead-up to the major competition.

NUTRITION

Athletes, coaches and the team should be working with a nutritionist to identify any deficiencies and make the required adjustments.

MONITORING

Athletes in this stage require more specialized monitoring due to the higher physical demands associated with the higher levels of training. Athletes should be receiving annual physicals and regular blood work as part of the monitoring process outlined by the team physician and exercise physiology team. In addition, athletes should be receiving sport specific aerobic power and capacity as well as anaerobic power and capacity tests as part of the monitoring process throughout the year. Sport specific strength testing should also be done as part of the yearly testing outlined by the team physician and performance enhancement team. The results of the testing should be used to make individualized training recommendations for each athlete to help improve performance.

SAFETY

The inherent dangers of international competition.

ANCILLARY CAPACITIES

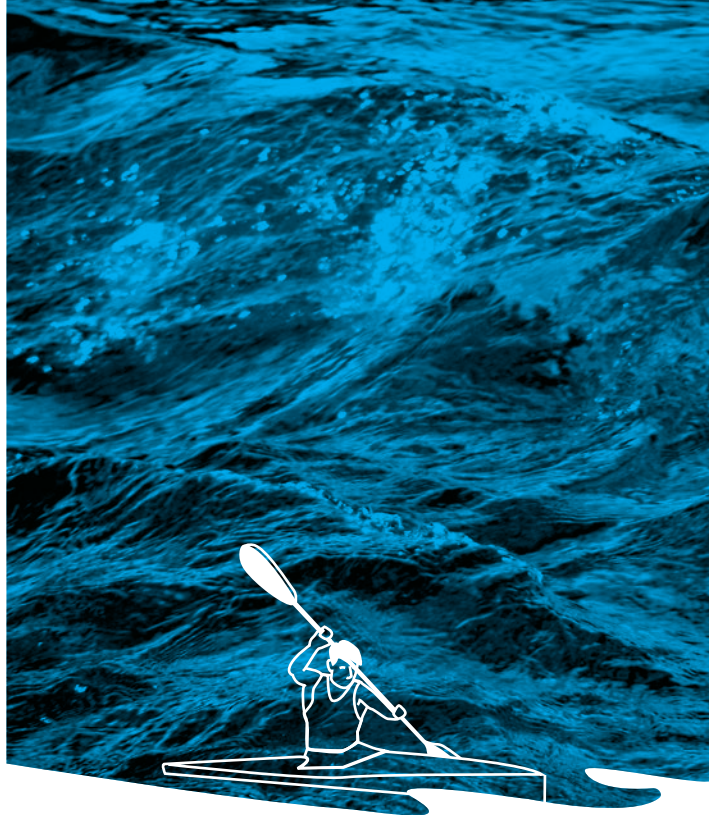
Identify any deficiencies and make the required adjustments. Communication is critical between the athlete and the performance team. Athletes are considered as leaders at this stage.

MENTAL PREPARATION

Attention to detail in the training and performance environment by the athlete the coach and the team (managing distractions).



“LTAD is about giving every paddler the chance to achieve their ambitions and realize their dreams”



Active for Life



Age: Any age

Objectives:

- Continue to be physically active in paddling and/or other sports and activities
- Continue to be involved in the paddling community, as an athlete, coach, official or in other capacities

Key Outcomes:

Health, well-being, and fun. The goal of this stage is to keep paddlers involved in the sport for life. Some people enter this stage from the competitive scene, while others may never have been competitive paddlers and just enjoy the recreational and fitness aspects of this sport. Regardless, athletes in this stage are valuable to Clubs to fill out crew boats, to act as coaches, and to be volunteers. Divisions may benefit from people in this stage as well by turning them into officials and volunteers on boards. Paddlers in this stage should be recognized as athletes and as leaders and resources for our sport.

TECHNIQUE

Develop or refine technique based on individualized goals.

TACTICS

Develop or refine tactics based on individualized goals.

EQUIPMENT

Equipment should be matched to athlete's ability level and goals.

Beginner athletes should use beginner equipment and more advanced athletes can progress into racing style boats and personalized equipment.

COACHING

At this stage the coaches should be ELCC certified and able to communicate effectively with an adult population. In general, the coach will act as a teacher and an advisor to the athletes.

TRAINING

Training at this stage should be adapted to the athlete's individual goals. Consideration should be given for the athlete's age and past sporting experience when prescribing exercise.

COMPETITION

Athletes at this stage should compete in skill appropriate regattas at the Divisional level. Consequently, Divisions should be encouraged to remember the value of these athletes and create appropriate regattas when determining their regatta schedules. CANMAS is an excellent example of a regatta that creates the opportunity for everyone to race at every age and skill level. Although fun competition can be a positive aspect to development in this stage it is not required to reap the rewards of an active life.

MENTAL PREPARATION

Athletes should be encouraged to enjoy the benefits of physical activity and a healthy lifestyle.

NUTRITION

Athletes should be following the guidelines set out in the Canada Food Guide for Healthy Eating.

MONITORING

It is suggested that athletes at this stage consult their physician before starting a new physical activity program. In addition, Clubs should be encouraged to do some kind of pre-screening before prescribing exercise to this population.

SAFETY

Athletes should be made aware that there are inherent dangers associated with all sport, and it is everyone's responsibility to minimize those dangers. Swimming ability should be assessed and PFD's should be worn by those who are not competent swimmers.

ANCILLARY CAPACITIES

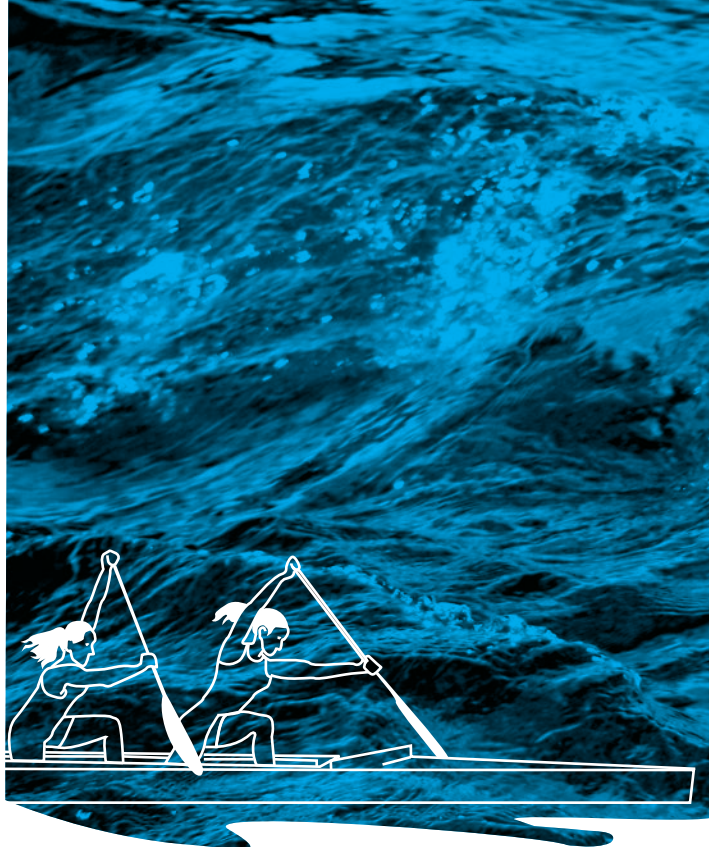
Many athletes in this category may be new to physical activity therefore; they should be instructed about the benefits of regular physical activity, proper warm-up and cool down, stretching, proper hydration and nutrition.





“A Canadian Sport for Families, Communities and Champions”

CanoeKayak Canada



Conclusion

This document is the first step in developing LTAD for canoe/kayak in Alberta. It provides an overview of LTAD, defines the principles on which LTAD is based, outlines the framework of the stages and the key aims and elements of each stage, and highlights some of the practical implications for the Canadian Canoe/Kayak system. It has been an opportunity for us to assess how we do our business to ensure that all our participants have a positive and 'life-building' experience through their involvement with paddling. Whether a person is a Master, an Olympian or a Peewee, a consistent and well understood LTAD will allow all CKC members to be part of a positive sport environment.



Glossary of Terms

ABC's

Agility, balance, coordination and speed

CPK's

Catching, passing, kicking and striking with a body part

KGB's

Kinaesthetic sense, gliding, buoyancy, striking with an implement

Major competition

Any competition that is the main focus of training for the year. The major competition may change depending on which developmental stage the athlete is in and usually involves peaking.

Minor competition

Smaller competitions where athletes can practice their race plans and race day routines against most of the top competitors in their discipline. Usually involves some rest and or taper before the competition, but does not involve a major peak.

Lead in competition

Small competition where athletes can practice their race plans and race day routines.

Ancillary capacities

All the various other factors that can play a role in athlete preparation (warm-up, cool down, stretching, social, taper, nutrition).

Functional Centralization

Flexible network of competition and training initiatives allowing coaches and athletes to optimize training and performance.

Modeling

Practicing race plans and competition scenarios

Peak Height Velocity (PHV)

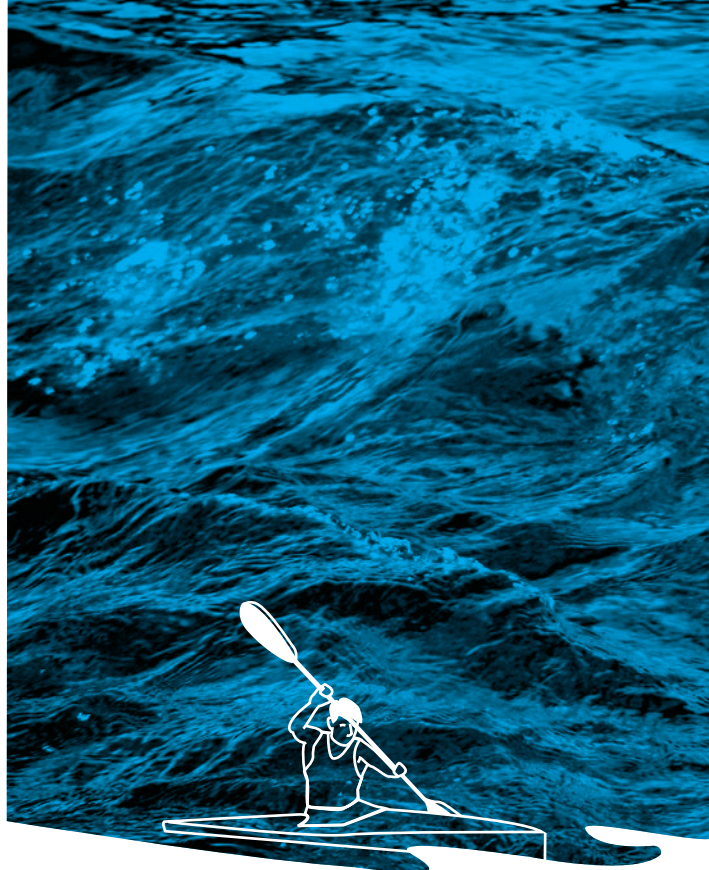
The maximum rate of growth in stature during the growth spurt





“Per aquas ad
fraternitatem - Through
the waters to friendship”

Calgary Canoe Club



Appendix

CanoeKayak Canada Testing Protocols

As with any exercise testing attention to safety and good organization is paramount. Ensure the equipment is in good order and the ratio of athletes to coaches/supervisors is appropriate. As the athletes are being asked to perform maximally careful observation during and following each test is required. In some gym based testing spotters will be required. Also ensure all subjects/athletes fill in the necessary waivers and informed consents.

The explanation of the results from these tests appears in a separate document entitled "CKC Explanation of Testing Results". An excel sheet with record sheet and calculation sheet is also available entitled "CKC Str and Power record sheet".

This document explains how to perform the: 1500m Run; Bench Pull Power profile; Bench Pull Repeated Power test; Maximum strength Bench Press/Pull; 40" Pull ups.

Warm Up

Any testing should be preceded by an appropriate dynamic warm up. This should be a minimum of 15-20 minutes and include an 8-10 minute cardiovascular component and 7-10 minute period of dynamic movements and stretching culminating in some more challenging and explosive types of movements. Some examples are provided in Appendix A.

Recommended Order

Junior

AM 3RM Pull, 3RM Press, Bench Pull Power, 40" Pull ups

PM (or different day) 1500m Run

Senior and U23

AM 3RM Bench Pull, 5 min break, 3RM Bench Press, Bench Pull Power, 5 min break, Pull Repeated Power

PM (or different day) 1500m Run, +3km Run (for 1000m athletes, may be a different day also)

1500m run (and 3km run for 1000m athletes)

The run would be ideally performed on a track or in good weather conditions if performed outside. Care should be taken to ensure that the distance run is as close to 1500m as possible and recorded if not. Small groups should be selected in accordance with ability to encourage competitive efforts. Total time is recorded.

Maximum Strength (low speed-strength)

Predicted 1RM (1RM to 6RM)

The aim is to measure the maximum weight that can be lifted for 1-3 repetitions (1-3RM) or if the athlete is under 16 or unfamiliar (1 year or less) with resistance training a six repetition maximum. Following an appropriate dynamic warm up three sets of the exercise should be performed. The weight including bar weight is recorded along with the completed number of repetitions provided a repetition maximum was obtained. An incomplete repetition is judged to occur when the athlete is unable to perform through the full range of motion or is unable to use proper form.

Proper form:

An attempt should be made to perform these exercises with the best form possible. Individual flexibility difference may limit some range of motion but in the most part the following points should be adhered to.

Bench Press

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement of the bar is to be vertical from arm extension (elbows not locked) to within 2cm of the chest at the nipple level. Bar should remain parallel to the floor.
3. Head, back and butt are to remain in contact with the bench, Feet are to remain in contact with the floor. A step may be used for the feet in order to keep the feet flat and keep a knee angle close to 90 deg.

Bench Pull

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement is to be initiated from the upper back, once the bar is unracked, and a moment of pause is completed at full arm extension.
3. Motion of the bar is to be vertical from full arm extension with the bar remaining parallel to the floor
4. A completed repetition is when the bar comes in contact with the frame of the bench pull bench. The bench depth of the Samson high prone row bench is 12cm from the chest. This may or may not result in a sound so close attention should be paid in

observing. If a Samson bench is not available tester discretion can occur on how close bar can come to frame to qualify as a completed repetition.

- Legs should remain straight and together, no advantage is to be gained by "worming" or "fish-tailing" with the body prior to the lift.

Table 1 - Repetition Maximum Warm Up Sets

	3RM	6RM
1st warm up set	1 x 8 @ 12 RM	1 x 10 with bar
3-5 min break		
2nd warm up set	1 x 5 @ 8 RM	1 x 8 @ 12 RM
5 min break		
3rd warm up set	1 x 3 @ 5 RM	1 x 6 @ 10 RM
5 min break		
1st attempt		
5 min break		
2nd and final attempt		

Recommended equipment

Flat bench with rack, 20kg Men's barbell (outside diameter of 28mm), and selection of weight plates allowing 5kg increments.

Allowable equipment

15kg Women's barbell (outside diameter of 25mm), for Jr athletes with smaller hands who may struggle to grip a regular bar.

The Samson high prone row bench is recommended for the bench pull. www.samsonequipment.com/Product-Detail.html?item_id=44&sku=100A

MAXIMAL POWER (HIGH SPEED-STRENGTH)

Bench Pull Power profile

This is an assessment of "raw" power in an easily controlled non-specific setting. The aim is acquire the peak power through a progressive increase in load challenges. Following an appropriate dynamic warm-up females will begin with 30 Kg's (including the bar) and increase by 5 Kg's until the peak power drops by 40 watts or greater. Males will begin at 50 Kg's (including the bar) and increase by 10 Kg's until the peak powers drops 40 watts or less. For younger athletes and athletes who are not yet strong you may wish to start at 20kg (just the bar). The beginning loads and increments can be adjusted based on your group and guidelines are suggested in table 2. The weight, including bar weight, is recorded as well as the peak power and peak velocity for each load.

Bench Pull Power Profile Technique

- Use a closed pronated grip slightly wider than shoulder width apart
- Movement is to be initiated from the upper back, once the bar is unracked and a moment of pause is completed at full arm extension
- Motion of the bar is to be vertical from full arm extension with the bar remaining parallel to the floor. The bar must travel upwards from the start. No dropping of the bar quickly to engage the SSC.
- A completed repetition is when the bar comes within 1cm of contact with the frame of the bench pull bench. The bench depth of the Samson high prone row bench is 12cm from the chest. This may or may not result in a sound so close attention should be paid in observing.

- Legs should remain straight and together, no advantage is to be gained by "worming" or "fish-tailing" with the body prior to the lift.
- Neck should remain in a comfortable neutral position (avoid hyperextension). Forehead may stay in contact with the bench pad (if bench design allows).
- The athlete must stop the movement of the bar in the position noted in point 3 after unracking to discouraging swinging.
- Two attempts at each load are allowed. A small break and racking is allowed if needed. There is 5 minutes of rest between loads

Recommended equipment

Flat bench with rack, 20kg Men's barbell, outside diameter of 28mm, and selection of weight plates allowing 5kg increments.

Allowable equipment

15kg Women's barbell outside diameter of 25mm, for Jr athletes with smaller hands who may struggle to grip a regular bar.

The Samson high prone row bench is recommended for the bench pull.

Table 2 - Typical load progression for bench pull profile

	Jr female, (+Sr Dev female)	Female Sr	Jr Male	Male Sr
Load 1	20 kg	30 kg	30 kg	50 kg
Load 2	25 kg	35 kg	40 kg	60 kg
Load 3	30 kg	40 kg	50 kg	70 kg
Load 4	35 kg	45 kg	60 kg	80 kg
Load 5	40 kg	50 kg	70 kg	90 kg
Load 6	45 kg	55 kg	80 kg	100 kg

BENCH PULL REPEATED POWER TEST

Sometimes referred to as "power endurance" this test is a measure of how well peak power can be maintained over repeated repetitions. Having a good ability to produce power over a few repetitions is indicative of accelerating the boat up to top speed. Being able to sustain a high percentage of peak power over a series of repetitions is indicative of sustaining the top speed of the boat. The load used is indicated below in figures 2 and 3. These loads have come from two years of data collection and are aligned with specific objectives for each group.

At present the MK 200m and MC 200m athletes perform 15 reps at 30reps per minute the objective is to produce the maximum peak power on every repetition (as judged by the sum of the peak power of each repetition, it is best not to pace). WK performs 30 reps at 30reps per minute with the objective of producing maximum power on each repetition. MC 1000m and MK 1000m perform 60 reps at 30reps per minute with the objective of producing the maximum amount of work over the 2 minutes, as judged by the sum of the average power for each rep (this may require some pacing). Appendix B includes an example log sheet; of note is that for the 1000m groups both Peak and Average power for each rep is recorded.

BENCH PULL REPEATED POWER TEST TECHNIQUE

1. Use a closed pronated grip slightly wider than shoulder width apart
2. Movement is to be initiated from the upper back, once the bar is unracked.
3. Motion of the bar is to be vertical from full arm extension with the bar remaining parallel to the floor. The bar must travel upwards from the start. No "pre-load mini rep" of the bar quickly to engage the SSC.
4. A completed repetition is when the bar comes in contact with the frame of the bench pull bench. The bench depth of the Samson high prone row bench is 12cm from the chest. This may or may not result in a sound so close attention should be paid in observing.
5. Legs should remain straight and together, no advantage is to be gained by "worming" or "fish-tailing" with the body prior to the lift.
6. The bar is to move as fast/explosively as possible. Some recoil of the upper-body may occur but should be judged as normal based on the load and force generated. No preloading is to occur.
7. A timer begins the clock upon the first movement of the bar after unracking the bar and then proceeds to call "go" every 2 seconds until the maximum repetitions have been completed or the athlete is unable to keep with the pace.
8. The 200m and WK athlete is encouraged to explode (move the bar as quickly as possible) from the first repetition and every repetition thereafter. The review includes how many repetitions were completed at 90% peak power and 80% peak power. It may be advantageous to remind the athlete of this to discourage pacing.
 - a. The 1000m athlete is reminded that the objective for them is the most amount of work over the 2min, this may require some pacing.
9. The athlete must stop the movement of the bar in the position noted in point 3 after unracking to discouraging swinging.

Recommended equipment

Flat bench with rack, 20kg Men's barbell, (outside diameter of 28mm), and selection of weight plates allowing 5kg increments.

Allowable equipment

15kg Women's barbell (outside diameter of 25mm), for Jr athletes with smaller hands who may struggle to grip a regular bar.

The Samson high prone row bench is recommended for the bench pull.

	C1000m	C1000m	C200m	K200m	WK
Load (% of peak power load)	80%	80%	100%	100%	100%
Duration (30 reps/min)	2min	2min	30sec	30sec	60sec
Max Reps	60	60	15	15	15

Figure 2

Load and duration for the repeat power bench pull test. Note: Jr's are not required to do this test but where possible may do it.

Load at Peak Power	80%	Practical Load
Kg	Kg	Kg
30	24	25
35	28	30
40	32	30
45	36	35
50	40	40
55	44	45
60	48	50
65	52	50
70	56	55
75	60	60
80	64	65
85	68	70

Figure 3

Load for repeated power pull for 1000m athletes. The practical load represents the load that should be used. For example if peak power occurs at 60kg from the profile test then 50kg should be used for the 2min repeat for that athlete.

STRENGTH ENDURANCE

40" maximum pull ups (Junior only)

The maximum number of pull ups performed in 40 seconds, overhand grip, no swinging is allowed. Once the athlete touches the ground the test is finished.

Sample Dynamic Warm Up 3

(es = each side)

General Aerobic	Reps	Time(s)
Bike or jog 5-10 minutes		
Inhibition (optional) - Foam Rolling and Stretching		
Glutes		
Hip Flexors		20-30
Lats		20-30
Chest		20-30
Note: Stretches are to be held for 1-3 seconds at a time only.		
Mobility	Reps	Time(s)
Lying hip rotation, with feet in the air	6 es	
Lying hip rotation, with feet on the ground	6 es	
Bent over straight arm rotation	12	
Arm circles, bit to small, small to big		30
Movement Prep 10-15 m		
Skip with arm swing, sideways	2	
Low shuffle with arm swing	2	
Butt kick every 3 steps, knees up	1	
High knee every 3 steps	1	
Inch worm to down-dog, pause, repeat	1	
1/4 squat, to quad stretch and reach	1	

Lateral March, feet to knee	1	
Lateral Skip	1	
Inverted Hamstring to reach (superman)	1	
Sumo squat, transition to lunge (stay low)	1	
Butt kick every step, knee up	1	
Fast march 1/2 shin (low knee march)	1	
High knee every step	1	
Neural Prep - Agility Ladder	Reps	Time(s)
R/L dissociation facing ladder	2 es	
Fwd/Back 2 foot hops in and out	2 es	
Both in both out (hop-split)	3	
2 inch hops, traveling sideways	3	
Fast band ext. rotation (band pull aparts)	2x15	
Rotational med ball wall toss from hip	2x15 es	

Sample Dynamic Warm Up 4

(es = each side)

General Aerobic	Reps	Time(s)
Bike or jog 5-10 minutes		
Inhibition (optional) - Foam Rolling and Stretching		
Glutes		20-30
Hip Flexors		20-30
Lats		20-30
Chest		20-30
Note: Stretches are to be held for 1-3 seconds at a time only.		
Mobility	Reps	Time(s)
Lying hip rotation, with feet in the air	6 es	
Lying hip rotation, with feet on the ground	6 es	
Bent over straight arm rotation	12	
Arm circles, bit to small, small to big		30
Movement Prep 10-20 m	Reps	Time(s)
Skip with arm swing, sideways	2	
Low shuffle with arm swing	2	
Butt kick every 3 steps, knees up	1	
High knee every 3 steps	1	
Inch worm to down-dog, pause, repeat	1	
1/4 squat, to quad stretch and reach	1	
Lateral March, feet to knee	1	
Lateral Skip x2	1	
Inverted Hamstring to reach (superman)	1	
Sumo squat, transition to lunge (stay low)	1	
Carioca with high knee	1	
Quick step Carioca	1	
Neural Prep - Ladder	Reps	Time(s)
R/L dissociation facing ladder	2 es	
Fwd/Back 2 foot hops in and out	2 es	
Scissors	3	
2 inch hops, traveling sideways	3	
Fast band ext. rotation (band pull aparts)	2x15	
Fast med ball chest pass	2x15	

Guidelines for GA1 Check

PURPOSE

To assess the speed and effectiveness of paddling at a low metabolic load and provide in practice feedback on appropriate intensity.

ATHLETE OBJECTIVE

To paddle well at a low metabolic load.

FEEDBACK

Speed and stroke rate at the top end of GA1 (associated with a blood lactate concentration of 3.0 mmol/L)

There are a number of ways to achieve the above, most commonly they include the following

- Recording of wind speed and direction
- Multiple reps at GA1 each one being at least 5min, 10-12min is usual and ideal
- 4 x 2km (out and back) is common
- Time for known measured distance, stroke rate, RPE and heart rate are recorded at the completion of each rep along with a capillary blood sample from the ear lobe.

FEEDBACK

- After each rep the physiologist and coach quickly work together to provide the most meaningful feedback
- The objective is to paddle effectively at 3.0 mmol/L, if the blood lactate level is higher than this then the athlete must slow down by either reducing stroke rate or power per stroke (distance per stroke). If the value is lower the athlete must speed up by either increasing rate or power per stroke (distance per stroke).
- Whether the athlete adjusts rate or distance per stroke is decided by the coach based on the goals they have for that athlete. Keeping in mind the subtle differences in abilities each athlete will bring.



Active for life.

