ROWING CANADA AVIRON

ATHLETE DEVELOPMENT PATHWAY

DEVELOPING THE WHOLE ATHLETE OVER THE LONG TERM

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RCA'S VISION CANADA IS A LEADING ROWING NATION

Rowing Canada Aviron was one of the first national sport organizations to embrace the Canadian Sport for Life initiative and adopt a sport-specific Long Term Athlete Development program. This approach aligns with Rowing Canada Aviron's purpose to:

INSPIRE,

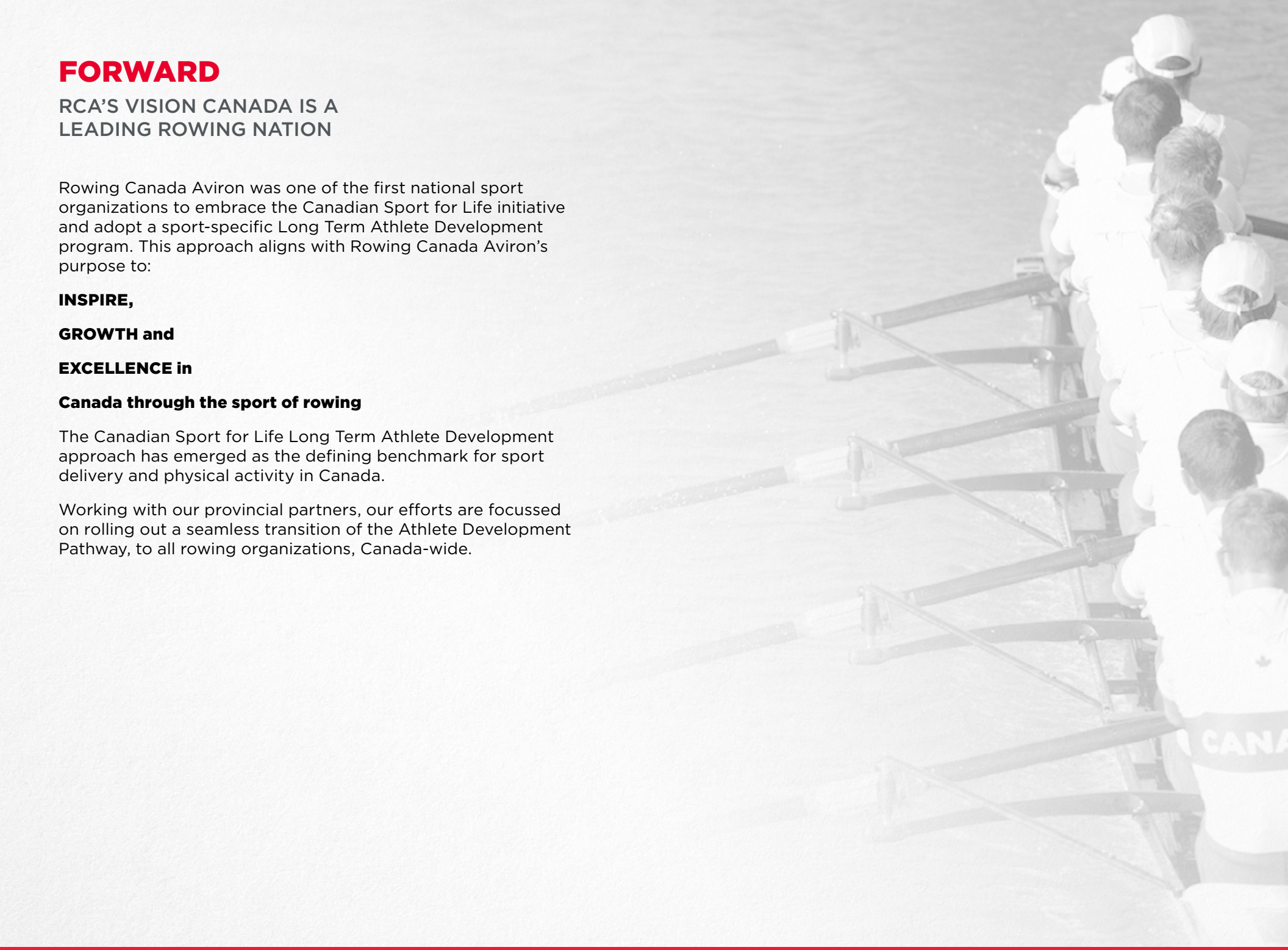
GROWTH and

EXCELLENCE in

Canada through the sport of rowing

The Canadian Sport for Life Long Term Athlete Development approach has emerged as the defining benchmark for sport delivery and physical activity in Canada.

Working with our provincial partners, our efforts are focussed on rolling out a seamless transition of the Athlete Development Pathway, to all rowing organizations, Canada-wide.



ABOUT
THIS DOCUMENT

This document is the successor to An Overview: Long Term Athlete Development Plan for Rowing, 2012 and the RCA Athlete Development Pathway 2015. We have built on the foundations of these earlier documents. We have built on the foundations of this earlier document to further the development of our coaches and ensure that athletes succeed right out of the gates and throughout their career. The Rowing Canada Aviron Athlete Development Pathway supports this education by providing the framework that details the newest innovations in rowing knowledge and sport science to support the whole athlete.

WE WOULD LIKE TO
ACKNOWLEDGE

The successful development of this Athlete Development Pathway is the result of the many long hours our contributors have given of their time, expertise and knowledge. Without this valuable collaboration and teamwork, none of this would be possible. We would like to thank all those involved for their insights, leadership and generosity in helping us build the very best pathway to develop the very best athletes.

ABOUT THIS COACH RESOURCE

At Rowing Canada Aviron, our aim is to provide valuable, educational, and relevant information to our coaches. We make every effort to collate the most up-to-date information related to the development of our athletes.

This document provides:

Essential information to coaches so that they can effectively teach key foundational skills to ALL new athletes.

Approaches that are progressive, so that no matter whether you are teaching a first-time athlete or working with an athlete at the highest level of competition, this resource will meet the needs of athletes wherever they land on the development spectrum.

Practical, step-by-step skill progression to help develop the whole athlete in all four realms; mental, physical, tactical/technical and life skills.

A framework so that coaches can plan training, competition and recovery programs that work best to develop all athletes... whenever they enter the sport.

OUR VISION

WHY ARE WE DOING THIS?

The purpose of this document is to produce an Athlete Development Pathway that is comprehensive and progressive in its approach to developing the WHOLE ATHLETE with a focus on excellence at every point in an athlete's career.

Our goal at Rowing Canada Aviron is to continually strive in advancing our knowledge and innovate to improve our sport. This document will continue to evolve and capture future world leading information that will serve our coaches and clubs to continue in developing excellence in rowing.

ATHLETE DEVELOPMENT PATHWAY

ROWING CANADA AVIRON AND CANADIAN SPORT FOR LIFE

Canadian Sport for Life is Canada's system-wide movement to improve the quality of sport in Canada. It is based on the most current scientific findings integrated with the experiences of world-leading coaches and experts. Rowing Canada Aviron leads the way in adopting and delivering this framework.

At its heart, Canadian Sport for Life's Long Term Athlete Development is designed to enable every person, from youth to senior, to engage in lifelong healthy physical activity and sport, and, for those on the excellence pathway to reach their full potential and deliver peak performance

Rowing's Athlete Development Pathway framework

(figure 1) is divided into three major components:

PHYSICAL LITERACY: Building the Foundation

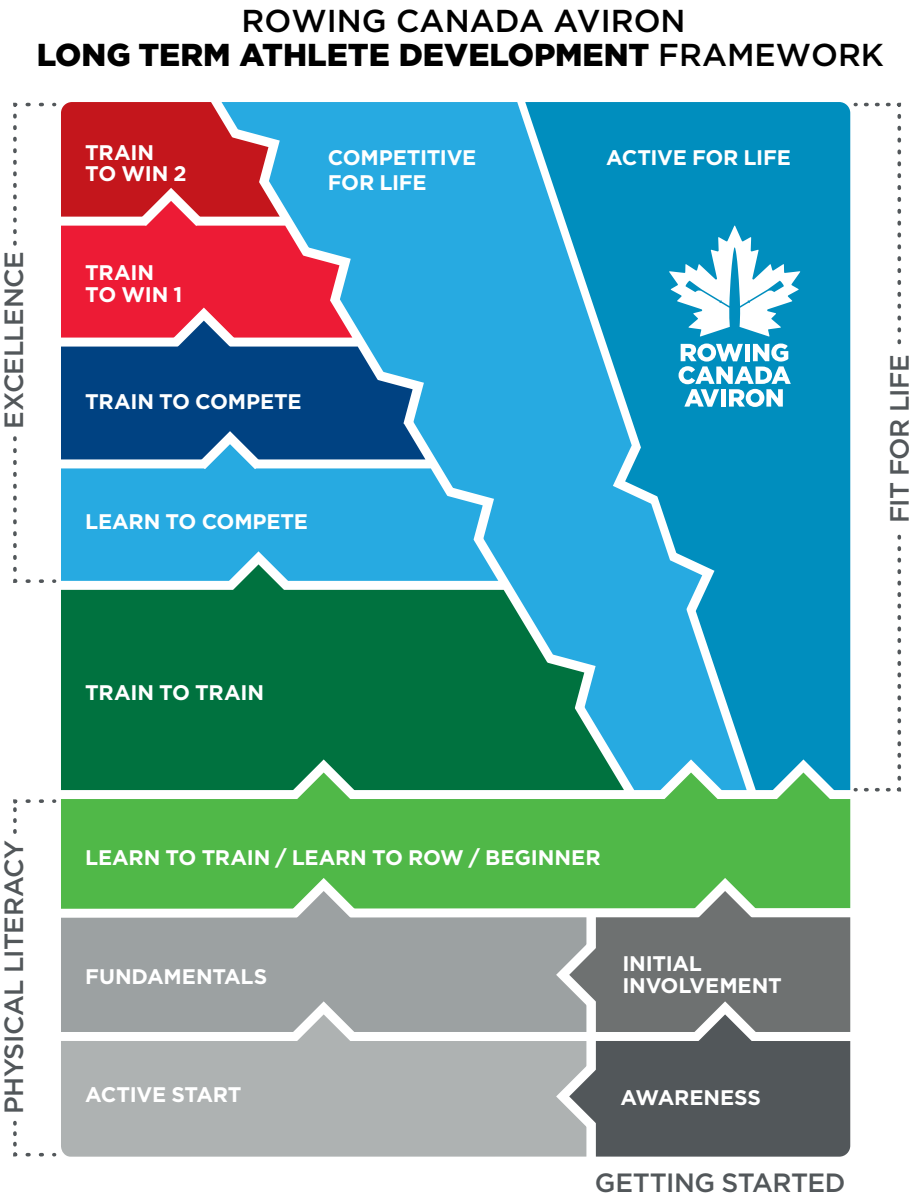
EXCELLENCE: High Performance Sport

FIT FOR LIFE: Competitive and Active for Life

In addition, there are two Getting Started stages; Awareness and Initial Involvement which, while important for all participants, take on additional importance for athletes with a disability, our future para athletes, who may not be aware that rowing opportunities exist.

FIGURE 1 ATHLETE DEVELOPMENT PATHWAY FRAMEWORK

Athletes enter the sport of rowing at a wide range of ages. As such, each athlete's pathway through rowing is unique.



ROWING AND THE EARLY YEARS

Children need to build fundamental movement and sport skills, by participating in a wide variety of physical activity when they are young. A solid foundation of movement skills and physical fitness, known as Physical Literacy (Active Start and FUNdamentals) is critical for athletes in late-specialization sports such as rowing. Getting started in the sport of rowing assumes that athletes have a fundamental baseline of physical literacy.

EARLY-ENTRY/ LATE-ENTRY ATHLETES

While some athletes enter the sport of rowing before the adolescence growth spurt (EARLY-ENTRY), most enter the sport during or after they have reached full adult stature and physiology (LATE-ENTRY).

The key stage for developing the athlete's "engine" is the Train to Train stage. In early-entry athletes, they will be developing their "engine" from within the sport of rowing; however, in late-entry athletes, they have developed their "engine" outside the sport of rowing. As a result:

Coaches might be inclined to "rush" late-entry athletes. Caution must be taken to prevent skill/capacity gaps which could adversely affect an athlete's success.

Late-entry athletes will not fit neatly into one Long Term Athlete Development stage. While they will require some fundamental skills unique to rowing (Learn to Row), where they fit in terms of other capacities will depend on their previous athletic experience, training, and developmental age.

The athletic backgrounds of late-entry athletes can vary. These athletes benefit from training programs that assess their capacities and provide individualized training to compensate for gaps in development.

For athletes with a disability, depending on the nature of the disability, coaches are encouraged to ensure there are no gaps in the athlete's fundamental skills.

MASTERS ATHLETES

Masters athletes thrive either on racing (Competitive for Life), or row for personal health and enjoyment (Active for Life). Masters athletes may have previously been in high-performance rowing, or may have taken up the sport later in life. Those with prior high performance racing experience have likely learned most of what they need to know about the sport, while those who take up the sport in their 20s, 30s, 40s or even later, will benefit from mastering the skills, and developing the capacities, outlined in this document for the Learn to Train and Train to Train stages.

GOLD MEDAL PROFILE AND PODIUM PATHWAY

In addition to identifying the Long Term Athlete Development stage of the athlete, Rowing links its LTAD stages to its Gold Medal Profile and Podium Pathway (figure 2).

The Podium Pathway is a series of results (times) which covers the 8 years prior to planned peak performances by National Team members for World Championship, Olympic or Paralympic Games Gold Medals. The Gold Medal Profile articulates gold medal standards in all of Rowing's performance elements (technical, tactical, strategic, physical, mental and life). The Gold Medal Profile is specific to each event class, ie: Heavyweight Men's Four or Lightweight Women's Double.

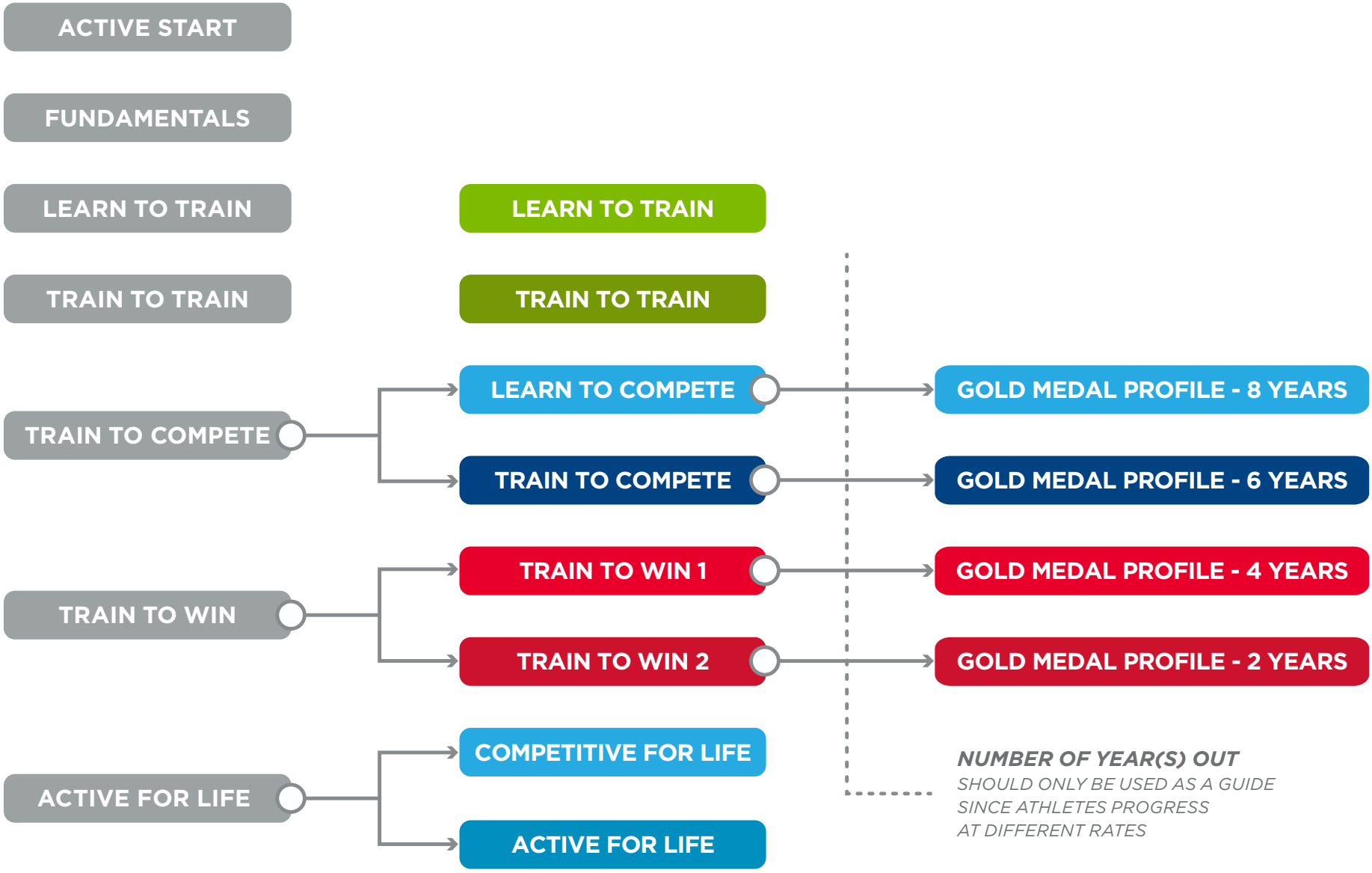
Learn to Compete is identified as the period from 8 years to 6 years out from the Gold Medal Profile, with Train to Compete from 6 years to 4 years away from gold medal performance. Train to Win 1 is 4 years to 2 years from peak performance in the Gold Medal Profile, and Train to Win 2 is the stage indicating the last two years before potential gold medal performance expectations. 'Number of year(s) out' should only be used as a guide since athletes progress at different rates. Critical to athlete development is that athletes achieve each of the performance components in one stage to then have the ability to progress to the next stage.

FIGURE 2 RELATIONSHIP BETWEEN CANADIAN SPORT FOR LIFE, ROWING'S ADP STAGES AND THE GOLD MEDAL PROFILE/ PODIUM PATHWAY

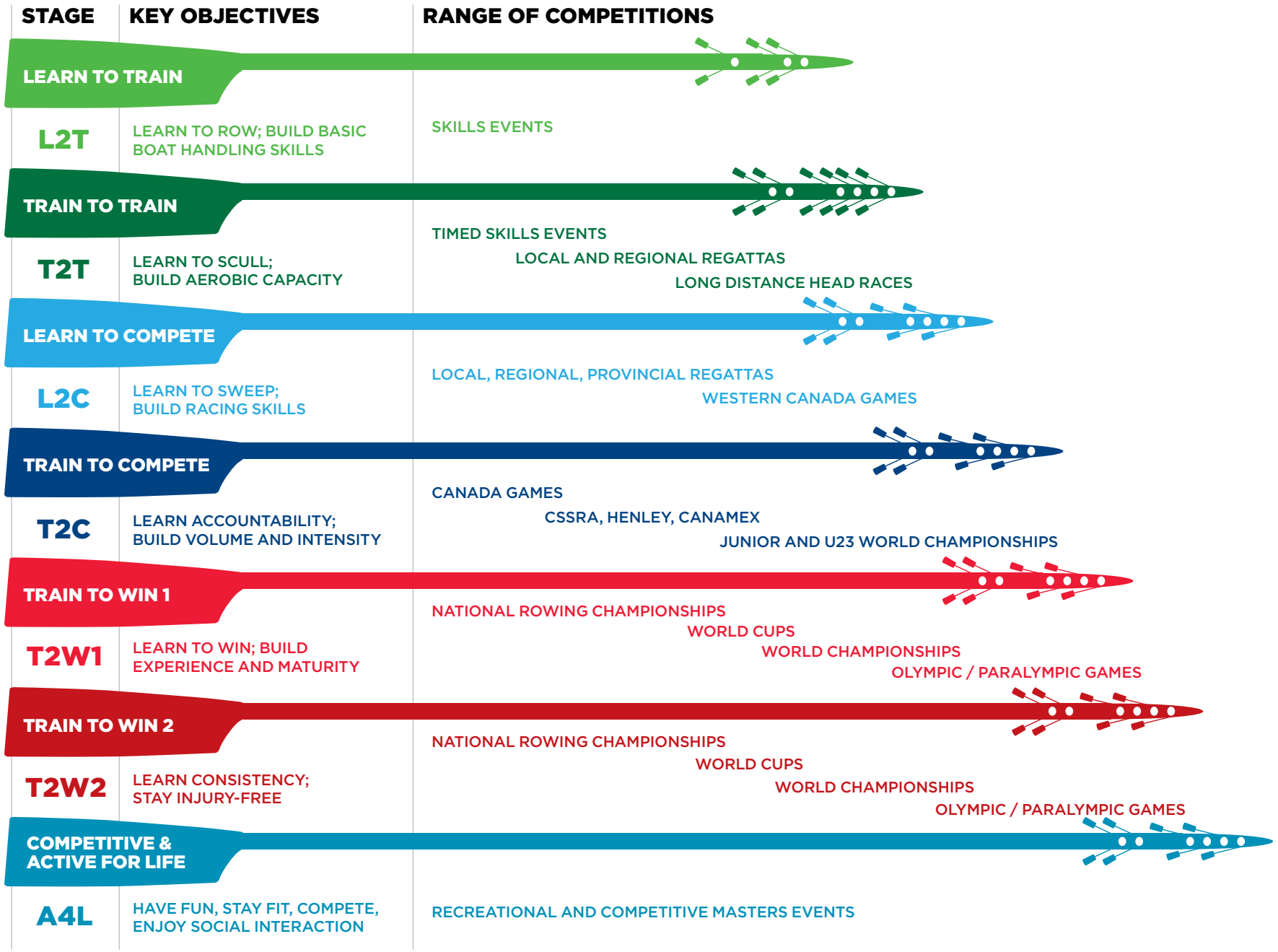
CANADIAN SPORT FOR LIFE
LONG TERM ATHLETE DEVELOPMENT

ROWING CANADA AVIRON
ATHLETE DEVELOPMENT PATHWAY

ROWING CANADA AVIRON
GOLD MEDAL PROFILE / PODIUM PATHWAY



ATHLETE DEVELOPMENT PATHWAY



UNDERSTANDING THE ATHLETE DEVELOPMENT PATHWAY

Stages, Key Objectives and Competition

Figure 3 (see page 10) outlines the relationship between an athlete's stage of development (Learn to Train thru Train to Win 2), the key learning objectives (expressed in general terms) and stage-appropriate competition.

1	Coaches can view the itemized list of skills listed vertically according to importance, moving from foundational skills to more advanced skills. This list encompasses the "WHOLE ATHLETE" approach to building athletes, which are: **PHYSICAL:** Develop overall and rowing-specific endurance, stamina, strength, speed, suppleness and flexibility; **TECHNICAL & TACTICAL:** Develop foundational boat handling, rowing and racing skills; **MENTAL:** Develop goal setting, concentration, visualization and stress management; **LIFE SKILLS:** Develop nutrition foundations, recovery, and competition nutrition.
2	The Pathway provides appendices that help you **assess** and **progress** your athlete along the Pathway.
3	The Pathway provides the key information to build your program!

DELIVERING THE ATHLETE DEVELOPMENT PATHWAY

ROWING CANADA AVIRON
LONG TERM ATHLETE DEVELOPMENT
"WHOLE ATHLETE" APPROACH

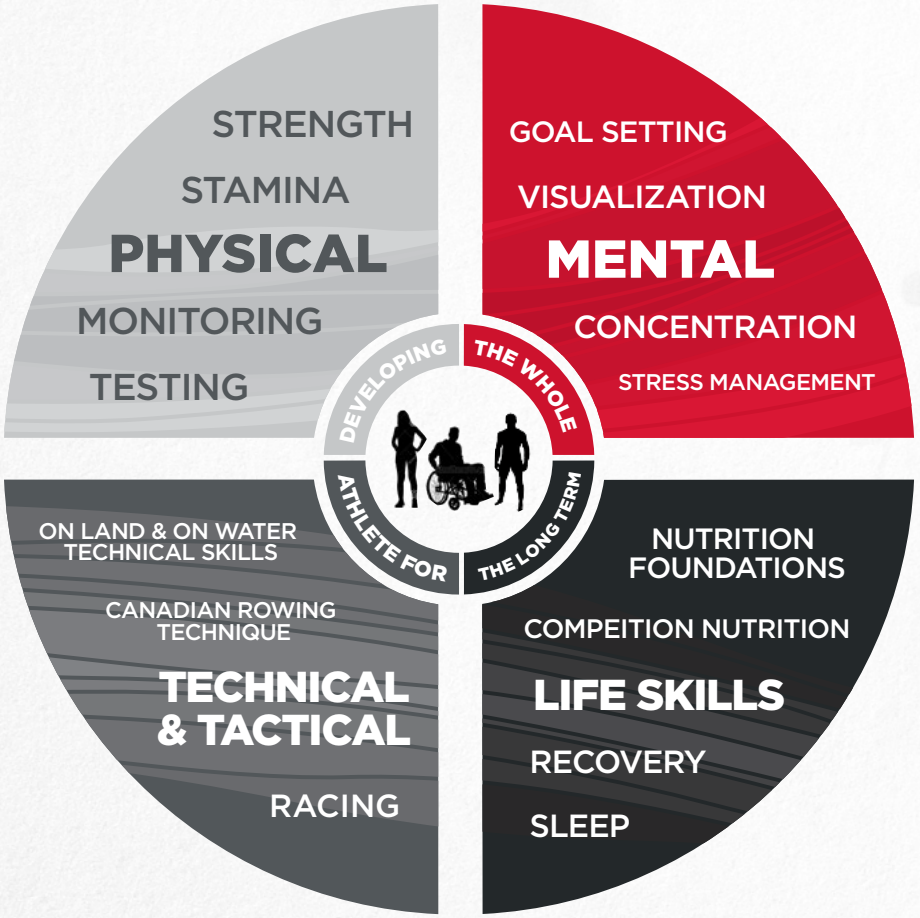


FIGURE 4 ILLUSTRATES THE "WHOLE ATHLETE" APPROACH USED IN THE ATHLETE DEVELOPMENT PATHWAY. THE PATHWAY RECOMMENDS THE OPTIMAL STAGE AT WHICH EACH SKILL/ ATTRIBUTE SHOULD BE INTRODUCED, DEVELOPED, AND MASTERED.

FIGURE 5. SIMPLIFIED ATHLETE DEVELOPMENT PATHWAY - "WHOLE ATHLETE" APPROACH

TECHNICAL & TACTICAL

- SAFETY
- ROWING COMMANDS
- EQUIPMENT
- ON LAND BOAT HANDLING
- ON WATER BOAT HANDLING
- RIGGING

RCA ROWING TECHNIQUE

- BALANCE
- BLADE HANDLING
- SCULLING USE OF HANDS AND GRIP
- SWEEPING USE OF HANDS AND GRIP
- BASIC STROKE SEQUENCE
- POSTURE
- RHYTHM
- RATIO
- STROKE LENGTH
- ENTRY
- DRIVE
- RELEASE
- RECOVERY
- LIGHTWEIGHT ROWING
- COXING
- PARA ROWING CLASSIFICATION
- ERGOMETER

RCA ROWING TACTICAL

- RULES OF RACING
- RACE PLANNING
- RACE PROFILES AND STRATEGY
- RACE WARM UP AND COOL DOWN
- POST RACE RECOVERY
- EQUIPMENT ROWED
- COMPETITION

PHYSICAL

- SPORT MEDICINE
- TRAINING FREQUENCY (ROWING)
- TRAINING FREQUENCY (GENERAL AND STRENGTH)
- TRAINING VOLUME
- TRAINING INTENSITY
- TRAINING MODE
- PERIODIZATION
- STRENGTH EXERCISES

TESTING

- PHYSICAL COMPETENCY
- 10 STROKE PEAK POWER
- 60 SECOND
- 2000M
- 6000M

MONITORING TOOLS

- ATHLETE USE OF SPEED COACH (FOR TRAINING SPEEDS)
- HEART RATE MONITOR
- CATAPULT/SPIN
- IPHONE AND APPLICATIONS
- PEACH SYSTEM
- VIDEO ANALYSIS

MENTAL

- GOAL SETTING
- MOTIVATION
- COMMUNICATION
- VISUALIZATION/ IMAGERY
- RELAXATION
- CONCENTRATION
- FOCUS
- ANXIETY AND STRESS MANAGEMENT
- AROUSAL/ACTIVATION
- SELF-TALK

LIFE SKILLS

- NUTRITION FOUNDATIONS
- RECOVERY
- HYDRATION
- COOKING SKILLS
- GROCERY SHOPPING AND READING LABELS
- BUDGETING AND MENU PLANNING
- COMPETITION NUTRITION
- TRAVEL SUPPLEMENTS
- INJURY PREVENTION AND RECOVERY
- BIOCHEMICAL NUTRITION MARKERS
- SLEEP
- BODY COMPOSITION
- GENDER SPECIFIC-MENSTRUATION
- FEMALE SPECIFIC-DISORDERED EATING
- FEMALE SPECIFIC-TRAINING ENVIRONMENT
- LIGHTWEIGHT SPECIFIC
- HEAVYWEIGHT SPECIFIC

ATHLETE DEVELOPMENT PATHWAY

SPORT TECHNICAL AND TACTICAL SKILLS

For further information, please see CanRow Coach Handbook.

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
ROWING TECHNICAL SKILLS						
SAFETY	Athlete can assess if rowing is safe – equipment and environment; Complete swim test and capsize drill; Knowledge and use of safety on-boat equipment PR1 required by Transport Canada regulations	Athlete is able to assess basic safety features: equipment, temperature, wind, safety support	Athletes can make safety decision for themselves and others	Athletes can make safety decision for themselves and others	Athletes can make safety decision for themselves and others	Athletes can make safety decision for themselves and others
ROWING COMMUNICATION: COMMANDS AND ROWING TERMS	Learn basic rowing communication commands and terms; Learn to give and respond to clear commands from inside and outside the boat	Understand and use all rowing commands and terms	Competent at all rowing communication commands and terms; Competent at all rowing communication skills	Develop advanced technical language that facilitates communication in both training and competition	Develop advanced technical language that facilitates communication in both training and competition	Develop advanced technical language that facilitates communication in both training and competition
EQUIPMENT	Perform basic safety inspection of equipment	Basic boat maintenance: washing hull, slides and oar locks; Reporting wear and damage	Athlete capable of inspecting boat and equipment to make sure it is race ready	Athlete capable of inspecting boat and equipment to make sure it is race ready	Athlete capable of inspecting boat and equipment to make sure it is race ready	Athlete capable of inspecting boat and equipment to make sure it is race ready
ON LAND BOAT HANDLING SKILLS	Learn to: Remove boat and oars from storage racks, carrying, and launching boat into water; Place oars in oarlock; Clean and maintain equipment	Athlete(s) are independent in carrying and launching own (1x) and crew boats	Can perform small boat repairs			

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
ON WATER BOAT HANDLING	Develop basic boat-handling skills, i.e., balancing the boat, turning, backing, steering, stopping, docking; Understands traffic patterns on water	Competent at turning, backing, steering, stopping; Develop comfort in different seat positions (bowing, stroking and following)	Able to back into starting gates; knowledge of RCA Rules of Racing; understands warm up and cool down patterns			
RIGGING	longitudinal (bow and stern) position of foot stretcher; Learning to set oarlock height; Assists with rigging and de-rigginga boat; Assists with loading a boat on a trailer	Learning to measure and adjust oar and inboard length; Sets the longitudinal position of foot stretcher; Can set the oarlock height; Identifies problems with longitudinal oarlock pitch; Identifies problems with foot stretcher angle and height	Identifies rigging problems with foot stretcher, oarlock and oar; Can rig, de-rig and load a boat; Can measure and adjust oarlock height, foot stretcher height and angle; Can measure longitudinal and lateral oarlock pitch; Adjusts longitudinal and lateral pitch with pitch bushings; Learns about blade load	Adjusts all boat parts to individual and environmental conditions	Can assess influence of new rowing equipment regarding individual performance; Tries to improve rigging for performance gain	Can assess influence of new rowing equipment regarding individual performance; Tries to improve rigging for performance gain
TECHNICAL SKILLS AND CANADIAN ROWING TECHNIQUE (see Canadian Rowing Technique Principles)						
CANADIAN ROWING TECHNIQUE	All athletes are taught basic Canadian Rowing Technique principles	All athletes are taught detailed Canadian Rowing Technique principles	Starts to develop sense of different technical requirements for different boat classes	Adjusts individual rowing style to crew and environment	Experiments to optimize individual rowing style	Experiments to optimize individual rowing style
BALANCE	Understand principles of boat balance	Learn strategies to correct balance during rowing strokes	Master strategies to correct and maintain balance in practice and racing	Continue to refine	Continue to refine	Continue to refine
BLADE HANDLING	Learning to place hands/fingers properly on handle, light grip on handles; Learn to feel blade position in oarlock without eye contact	Learn to square at appropriate time in stroke sequence and ensure complete square before blade touches the water; Blade control in all weather conditions	Improve light and precise handling of blades; Improve entry speed; Decrease blade splashes	Continue to refine	Continue to refine	Continue to refine

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
SCULLING USE OF HANDS AND GRIP	Proper grip on sculling blades - in fingers and not overly in palm; Cross over on recovery and drive (left hand leading out and slightly above the right hand); Hands loose and relaxed; Wrist flat on recovery and drive	Continue to refine the hand path profile so that it is PR1 horizontal on both drive and recovery; Continuous movement of hands; Improve hands skills to enter blade to correct depth and correct timing with leg push; Improve clean release of blade	Continue to refine horizontal drive and recovery; Refine hand skills at entry and release. Stabilize hand skills in different boat classes, at high stroke rates and in all weather conditions	Refine hand skills in different boat classes, at high stroke rates and in all weather conditions	Continue to refine; Specialize in one boat class	Continue to refine
SWEEPING USE OF HANDS AND GRIP	Correct hand placement on handle: Grip width (Outside hand at end of handle with baby finger on end of handle; Inside hand one a half hand widths towards button from outside hand), handle relaxed in fingers and not all palm, to ensure wrist can be flat on drive and recovery Inside hands square and feather blade	Continue to refine the hand path profile so that it is horizontal on both drive and recovery; Continuous movement of hands; Improve hands skills to enter blade to correct depth and correct timing with leg push; Improve clean release of blade	Continue to refine horizontal drive and recovery; Refine hand skills at entry and release; Stabilize hand skills in different boat classes, at high stroke rates and in all weather conditions	Refine hand skills in different boat classes, at high stroke rates and in all weather conditions	Continue to refine. Specialize in one boat class	Continue to refine
BASIC STROKE SEQUENCE	Experiencing basic sequence: arms only, then upper body-arms only, then legs-upper body-arms; Experience the effect of body sequencing on the blade movement in water	Sequencing continues to be ingrained to become fluid and continuous; Experience sequencing in variety of situations (e.g. steering)	Continue to refine Experience emphasis of sequencing depending on boat class and environment (e.g. quicker leg drive in fast conditions)			

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
POSTURE (DEFINED PR1 MAINTAINING NEUTRAL SPINE)	Introduce and develop correct body posture. Pelvic rotation, strong core, neutral spine. Posture is defined PR1 a neutral spine	Continue to develop posture through core stability and core strength; Posture in boat emphasized PR1 power application and rate increase Maintain posture during fatigue	Emphasis on length of stroke through good posture	Continue to refine posture Good posture needs to be maintained throughout an athlete's career for both correct technique and injury prevention	Continue to refine posture Good posture needs to be maintained throughout an athlete's career for both correct technique and injury prevention	Continue to refine posture Good posture needs to be maintained throughout an athlete's career for both correct technique and injury prevention
RHYTHM (Defined PR1 synchronicity of stroke timing with boat movement)	Learn to feel body and boat movements	Rhythm introduced PR1 athlete begins to feel boat movement	Learn to keep in time with boat movement to minimize loss of run on recovery	Continue to feel run of boat to maximize boat run; Timing of movement of athlete works with boat movement	Continue to refine rhythm	Continue to refine rhythm
RATIO (Defined PR1 difference between time of drive phase and time of recovery phase)	Introduce concept of controlled recovery	Ratio initially very high (time on recovery much greater than time on drive) Decrease ratio PR1 athlete develops confidence in stroke cycle	Ratio changes PR1 stroke rate changes Application of ratio ingrained in athlete training. Boat speed increases PR1 the stroke rate increases	Develop appropriate ratio at race pace	Continue to refine ratio and adapt to conditions	Continue to refine ratio and adapt to conditions
STROKE LENGTH	Stroke length increases continually at entry PR1 athlete gets more comfortable in boat	Range of motion increased to approximately 90 degrees for sweep rowing and 110 degrees for sculling (range of stroke arc from stroke entry to stroke release)	Stroke length at entry continues to be developed to appropriate length PR1 stroke rate increases	Continue to develop stroke length Measurements made and tracked at this stage	Continue to develop, measure and track stroke length	Continue to develop, measure and track stroke length
ENTRY	Athlete experiences placement of blade into water to time with slide movement - minimize time to accomplish blade entry and coordinate with quick push of legs	Placement of blade to minimize interruption to boat movement; Improve coordination of blade entry with leg push – quick and light; Experience solid pressure of blade in water	Improve quickness of blade pressure in water; Suspension felt between hands and feet; Prepare entry during last part of recovery	Perfect blade entry and feel of 'lock' (grip of water)	Master blade entry in all situations	Continue to refine blade entry

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
DRIVE	Emphasis on good posture; Learn proper sequence of legs-trunk-arms; Feel propulsion during whole drive phase	Emphasis on sequencing and smoothness of movement. Improve power output at different stroke rates. Focus on long powerful strokes Keep hands and body working horizontally (minimize any vertical movements)	Refine horizontal movement, sequencing and smoothness while increasing propulsion. Experience proper technique in different boat classes at different stroke rates and intensities	Maximize propulsion in all boat classes, intensities and stroke rates Review Document: Tier performance improvement in Rate and Speed Assessment Report from NextGen Monitoring Camps	Master drive in all situations.	Continue to refine
RELEASE	Emphasis on good posture. Experience proper hand movements to release blade from water without loss of boat speed Legs remain fully extended with knees down, while release movement is done by arms and trunk	Experience clean release of blades at different stroke rates and in different weather conditions	Refine clean release of blades at all stroke rates and all weather conditions	Continue to refine clean release of blades at all stroke rates and all weather conditions	Master release in all situations	Continue to refine
RECOVERY	Proper sequence: hands-trunk-legs Blades carried at proper height off water Hands stay on level path Square blade completely before catch position	Smooth movement of hands, trunk and legs with hands Emphasis on horizontal hand path, relaxation and balance Experience relaxed motions at all stroke rates and weather conditions. Boat travels a long way between strokes . Minimal disruption on boat speed	Emphasis on smooth recovery actions to maximize hull run during recovery Refine horizontal hand path, relaxation and balance at all stroke rates and in different weather conditions Minimize time to square blade completely before catch	Maximize boat run through horizontal hand path, relaxation and balance in all stroke rates and weather conditions Relaxed motions support reach for maximum stroke length	Master recovery in all situations Use recovery PR1 method to maximize boat speed	Continue to refine
LIGHTWEIGHT ROWING (Weight knowledge)	Understands heavyweight and lightweight categories	Begins discussion with coaches on appropriateness of future consideration for lightweight or open categories	Discuss with and direct athlete towards appropriate weight categories Understand Canadian Rules of Racing apply for domestic weights	Decision to row lightweight or heavyweight Canadian Rules of Racing apply for domestic weights	Assess individual crew combined competition weight Determine a specific (safe) nutrition plan and routine to achieve race weight FISA weight categories apply	Assess individual crew combined competition weight Determine a specific (safe) nutrition plan and routine to achieve race weight FISA weight categories apply

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
COXING	Coxing in sculling boats-coxed quads or coxed eights Understand all rowing terms and communication commands Understand all boathouse safety regulations and water traffic patterns Lead and manage boat transfer from racks to dock and return to racks Learn basic steering rules (i.e. steering when oars in water) and understands training flow patterns	Coxing in sculling boats-coxed quads or coxed eights Develop communication commands and rowing terms in practice regularly Learn about coxswain equipment usage (coxbox, etc.) Learn basic steering rules (i.e. steering when oars in water)	Coxing in sweep boats, 2+, 4+, 8+ Carry small toolkit with appropriate tools to repair equipment on land and on water Learn complex steering systems Develop advanced communication for technical cues Learn to steer in buoyed course Learning about coxswain weight classes	Advance communication for tactical race situations and assist in preparing race plans for all race profiles and race situations (i.e.. rowing ahead or from behind) Prepared in all practice and race warm-ups Advanced steering skills Can manage own weight before race day and on race day	National Level coxswain Multi skilled in video analysis and working with coach on technical improvements Competent at all levels of communication, both pre-race and race delivery Competent in psychological and lifestyle skills Physically fit and refine weigh in protocol leading up to and on race day	National Level coxswain Multi skilled in video analysis and working with coach on technical improvements Competent at all levels of communication, both pre-race and race delivery Competent in psychological and lifestyle skills Physically fit and refine weigh in protocol leading up to and on race day
PARA ROWING CLASSIFICATIONS INFORMATION	Discuss with athlete the different classifications involved in para rowing (PR1, PR2, PR3) Perform initial athlete classification for correct para rowing sport class	By end of T2T athlete should have received Provisional Classification See appendix 6		Athlete obtains Permanent Classification at first International		
ERGOMETER	Ensuring same Canadian Rowing Technique instructions Emphasize to keep handle finishing at or below 2nd rib at finish					

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
TACTICAL SKILLS						
RULES OF RACING PARA (difference in classification and strapping rules)	Introduce athletes to the basic rules, format and commands of racing by incorporating them into training sessions Understand role of the umpire is not to steer a crew but if necessary direct a crew to avoid interfering with another crew or avoid hitting an obstacle Responsibility of the athlete is to keep a lookout for where they are going – especially when training Learn basic start commands: polling the crews, "Attention" "Go"	Learn basic rules of racing Know safety and courtesy rules: stop when ordered Do not cross finish line after end of race to go back up course when race is still in progress Understand concept of yellow card infraction and how it can be applied For head racing: some knowledge of lateral buoy system	Understand the penalties that can be applied: Reprimand, Yellow Card, Exclusion; Disqualification		Understand impact of direction on rhythm, duration of racing, pacing strategies etc. understanding consequence of placing and advancement in unfair conditions (FISA Committee hPR1 adverse weather condition rules for lane placements)	Understand impact of direction on rhythm, duration of racing, pacing strategies etc. understanding consequence of placing and advancement in unfair conditions (FISA Committee hPR1 adverse weather condition rules for lane placements)
RACE PLANNING (PACING, STARTS AND FINISH SPRINTS)	Learn how to build speed from static position	Rehearse short stroke starts with ½, ¾ and full pressure Learn good stroke rate for middle of race using good length and power per stroke	Rehearse short stroke starts with ½ ¾ and full pressure Learn good stroke rate for middle of race using good length	Understanding even pacing. Knowledge of model speeds Developing max boat speeds and sprinting skills	Understanding even pacing. Knowledge of model speeds Developing max boat speeds and sprinting skills and technical efficiency for energy conservation	Comprehensive knowledge of your opponents weakness, strengths and racing profiles
RACE PROFILES AND STRATEGY (Learner to High Level)	Learning balance, hand skills and sequence and timing first	Length, power per stroke before rate	Effect of stroke rate vs length and power, learn effective starts	Using plans, race structure, race interval pacing in practice	Using Gold Medal Standard model speeds and GPS feedback to understand pacing Development of sprinting skills	Refinement of racing profile with changing conditions
RACE WARM UP AND COOL DOWN	Dynamic warm-up plus on water warm-up	Dynamic warm-up plus on water warm-up	Developing race warm-up routine Active recovery	Fully developed warm-up and cool-down	Standardized National Training Centre warm-up and cool-down for Heavyweight women/men, Lightweight women/men	Understanding oppenents tactics, developing composure/efficiency under pressure

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
POST-RACE RECOVERY	N/A	Active recovery: Movement	Active recovery: Movement	Active recovery Water immersion Compression garments Massage	Standardized National Training Centre warm-up and cool-down for Heavyweight and, Lightweight women and men	Standardized National Training Centre warm-up and cool-down for Heavyweight and, Lightweight women and men
EQUIPMENT ROWED (LTA most equipment same PR1 able bodied - pontoons and strapping differences)	1x, 2x (recreational, touring, racing shells) (PR1, PR2, athletes in 1x's)	1x, 2x, 4x (PR1, PR2, athletes in 1x's)	Proficient in 1x, 2x, 4x, - Learn to sweep both sides and develop proficiency in 2-, 4-, 8+ (PR1, PR2, athletes in 1x's)	Start to specialize in a particular boat class and seat (sculling and sweep) (PR1, PR2, athletes in 1x's)	All top level training and racing boats in all boat classes Introduce all athletes to Paralympic boat classes PR3, TA 2x, PR1 1X	Equipment to provide competitive advantage
COMPETITION	Incorporate skills events/obstacles into training Informal skills events at the end of Learn to Row or seasonal camps Incorporate short (under 100 m) sprints into training sessions at appropriate stroke rate depending on skill level	Timed skill events, long distance (head) races Incorporate short sprint races (100 m) into training sessions Local and regional regattas Race in a variety of sculling boats (1x, 2x, 4x)	Local, regional, provincial regattas Time trials and seat racing Focus on 2000m racing and long distance (head) races Incorporate racing and race simulations into training Provincial and national ergometer testing-multi-sport games such PR1 Canada Summer Games, WCSG	CSSRA, Henley, CANAMEX, Junior and U23 World Championships Competitive pieces, time trials, and race simulations are a regular part of training Focus on 2000 m racing and long distance (head) races Continued participation and ranking in National NextGen Testing and Monitoring Strategy	NRC's international competitions (World Cup, World Championships, Olympic/Paralympic Games) Competitive pieces, time trials, race simulations are a regular part of training Focus on 2000m racing, long distance (head) races National ergometer testing	PR1, PR2, PR3

ATHLETE DEVELOPMENT PATHWAY

PHYSICAL CAPACITY SKILLS

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
PHYSICAL CAPACITY DEVELOPMENT						
SPORT MEDICINE	Include medical information in participant registration PR1 part of Club Emergency Plan; collect health number, allergies and medical considerations If participants are minors - obtain permission to authorize emergency medical procedures until parent/guardian can do so	Collect information on previous medical or surgical history, supplement use, and any current injuries and treatment See Appendix 1	Collect information on previous medical or surgical history, supplement use, and any current injuries and treatment See Appendix 1	Collect information on previous medical or surgical history, supplement use, and any current injuries and treatment See Appendix 1	Rowing Canada Aviron pre-participation medical questionnaire and Rowing Canada Aviron Medical Screen	Rowing Canada Aviron pre-participation medical questionnaire and Rowing Canada Aviron Medical Screen
TRAINING FREQUENCY PER WEEK: ROWING / ERGOMETER	2 – 4 Sessions	3 -5 Sessions	5 – 7 Sessions	6 – 10 Sessions See Appendix 2A and 2B	10 – 18 Sessions	10 – 18 Sessions
TRAINING FREQUENCY PER WEEK: OTHER	1-2 sessions general sport (e.g. Gymnastics, Soccer etc.) incl. core/ flexibility	1-2 sessions general sport (e.g. Swimming, Hockey etc.) incl. core/ flexibility 0-2 Strength training sessions	2-3 Strength training sessions 1-2 Cross Training Sessions	2-4 Strength Training Sessions. 2-4 Cross Training Sessions. See Appendix 2A and 2B	2-3 Strength training sessions 1-2 Core/flexibility session	2-3 Strength training sessions 1-2 Core/flexibility session
TRAINING VOLUME PER WEEK: (HRS)	On water: Focus is on technique On land: 2-4 hrs age specific physical training	On water: 6-8 hours Cross training: 2-3 hours Strength training: 0-2 Sessions	On water: 8-10 hours Cross Training: 2-4 hours Strength Training: 2-3 hours	On Water: 9-15 hours Cross Training 4-9 hours Strength Training 2-5 hours See appendix 2A and 2B	18-28 Hrs per week 120-200 km per week	18-28 Hrs per week 120-200 km per week
TRAINING INTENSITY	C6, C4, C1 See Appendix 3	C6, C4, C1 See Appendix 3	C6, C5, C4, C1 See Appendix 3	All categories See Appendix 3	All categories See Appendix 3	All categories See Appendix 3

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
TRAINING MODE (Rowing specific to Cross-training)	Rowing specific to general training: 40% to 60% On water: Skill acquisition and introduction to light and fluent movements with very short bouts of high intensity when technique is established On land: Different sports to train basic physical abilities (e.g. running for endurance; Gymnastics great for strength development / flexibility)	Rowing specific to general training: 50% to 50% Introduction of rowing specific training (age appropriate) and racing Focus remains on range of motion and stability in non-rowing patterns reinforcing flexibility	Rowing specific to general training: 60% to 40% Transition from skill and mobility training to system development Technique before load	Rowing specific to general training: 60% to 40% Expand system development	Rowing specific to general training: 70% to 30% Focus on individual physiological development based on test results General training substitutes: Examples are cycling, running, x-country skiing	Rowing specific to general training: 70% to 30% Maximizing individual physiological abilities General training substitutes: Examples are cycling, running, x-country skiing
PERIODIZATION	None	Single periodization	Single periodization	Double periodization	Dependent on objectives	Dependent on objectives
STRENGTH EXERCISES	Movement competency focus Body weight exercises only Gymnastics	Introduce fundamental Strength and Conditioning movements with low load - Squat, Deadlift, Push, Pulls and Core	Progression of weights / loads in line with Physical competency Technique before load	Progression of weights / loads in line with Physical competency Technique before load	Individualized weight program inc. Olympic lifts, Squat, Deadlift, Push, Pulls and Core. 1-3RM for athletes level 3+ on Physical Competency See Appendix 4	Individualized weight program inc. Olympic lifts, Squat, Deadlift, Push, Pulls and Core. 1-3RM for athletes level 3+ on Physical Competency See Appendix 4
TESTING						
PHYSICAL COMPETENCY (Test only 2-3 times per year to assess strengths and weaknesses and develop strength and conditioning program)	Not at this stage	Appendix 4	Appendix 4	Appendix 4	Appendix 4 1-3 RM strength test supervised in weightroom session	Appendix 4 1-3 RM strength test supervised in weightroom session

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
10 STROKE PEAK (power test Protocol for test is part of the RADAR athlete monitoring document)	Not at this stage	Introduction to this test: Stroke rate limits and low drag factor Promotes concept of long powerful strokes Only when technique and posture are established; depending on athletes' age	Athletes should focus on ongoing continual improvement – see proposed target sheets for ages Appendices 5A, 5B, 5C, 5D	Athletes should focus on ongoing continual improvement – see proposed target sheets for ages Appendices 5A, 5B, 5C, 5D	Athletes should focus on ongoing continual improvement – see proposed target sheets for ages Appendices 5A, 5B, 5C, 5D	Athletes should focus on ongoing continual improvement – see proposed target sheets for ages Appendices 5A, 5B, 5C, 5D
60 SECOND (Anaerobic Wingate Test Protocol for test is part of the RADAR athlete monitoring document)	Only when technique and posture are established; depending on athletes' age	Introduction to this test: Stroke rate limits and low drag factor depending on age of athletes	Target levels Appendices 5A, 5B, 5C, 5D	Target levels Appendices 5A, 5B, 5C, 5D	Target levels Appendices 5A, 5B, 5C, 5D	Target levels Appendices 5A, 5B, 5C, 5D
2000M TEST	Not at this stage	Monthly pacing erg can be introduced at this stage Focus should be on lower rates and long powerful strokes	Athletes should focus on continual improvement Monthly pacing erg – Learn to pace body of race while increasing speed in last 500m * Should be integrated in an existing workout Appendices 5A, 5B, 5C, 5D	Athletes should focus on continual improvement Monthly pacing erg – Learn to pace body of race while increasing speed in last 500m * Should be integrated in an existing workout Appendices 5A, 5B, 5C, 5D	Athletes should focus on continual improvement Appendices 5A, 5B, 5C, 5D	Athletes should focus on continual improvement Appendices 5A, 5B, 5C, 5D
6000M TEST	Not at this stage	Introduction to test when technique and physical abilities are appropriate and posture and technique adequate	Athletes should focus on continual improvement Test becomes part of physical assessment Appendices 5A, 5B, 5C, 5D	Athletes should focus on continual improvement Regular use of test PR1 part of physical assessment Appendices 5A, 5B, 5C, 5D	Athletes should focus on continual improvement Appendices 5A, 5B, 5C, 5D	Athletes should focus on continual improvement Appendices 5A, 5B, 5C, 5D
MONITORING TOOLS						
USE OF COX BOX	Not appropriate	Voice amplification and ensuring basic commands are heard	Voice amplification – extension of coaching, technical cues and race strategies / plan and simple timing of workouts	Voice amplification and simple timing of workouts	Voice amplification and simple timing of workouts	Use Cox Box and upload information for athletes/coach to view/discuss

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
COACH USE OF HIGH SPEED COACH (IMPELLER / GPS / XL1-4 to monitor training speeds)	Not appropriate	Not appropriate	Monitoring of boat speeds and stroke rates in real time Multiple athletes progress at once	Monitoring of boat speeds and stroke rates in real time Multiple athletes progress at once Downloading information into other software programs for simple race analysis programs (i.e. Training peaks, NK software)	Monitoring of boat speeds and stroke rates in real time Multiple athletes progress at once Downloading information into other software programs for simple race analysis programs (i.e. Training peaks, NK software)	Monitoring of boat speeds and stroke rates in real time Multiple athletes progress at once Downloading information into other software programs for simple race analysis programs (i.e. Training peaks, NK software)
ATHLETE USE OF SPEED COACH (IMPELLER / GPS / XL1-4 to monitor training speeds)	Athletes at earlier stages may not achieve model speeds, but should begin gaining awareness of speeds and working to increase over time	Monitor distance per stroke Focus on sending the boat a long way between strokes Athletes shoud understand the concept of Accelerating the Boat from catch to finish Athletes at earlier stages may not achieve model speeds, but should begin gaining awareness of speeds and working to increase over time	Monitor distance per stroke Focus on sending the boat a long way between strokes Athletes shoud understand the concept of Accelerating the Boat from catch to finish Used to assess boat speed and stroke rate Ensure that PR1 the Stroke rate increases the speed of the boat also increases Use of model speeds at various rates and training Categories Appendices group 7	Used to assess boat speed and stroke rate Ensure that PR1 the Stroke rate increases the speed of the boat also increases Use of model speeds at various rates and training Categories Appendices group 7	Use of model speeds at various rates and training Categories Appendices group 7	Use of model speeds at various rates and training Categories Appendices group 7
HEART RATE MONITOR	Not appropriate	Use in training for categories of intensity	Use in training for categories of intensity	Use in training for categories of intensity	Use in training for categories of intensity	Use in training for categories of intensity
CATAPULT SYSTEMS / SPIN SYSTEM (tool gives speed, rate pitch, yaw, acceleration of the boat)	Not appropriate	Not appropriate	Not appropriate	Regular use to help monitor training, racing, race analysis	Regular use to help monitor training, racing, race analysis	Use in training for categories of intensity
SMART PHONE AND APPS	Not appropriate	Basic use of video analysis	Basic use of video analysis	Upload apps to replace speed coach, video analysis	Upload apps to replace speed coach, video analysis	Regular use to help monitor training, racing, race analysis

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
PEACH SYSTEM	Not appropriate	Not appropriate	Not appropriate	Velocity, length, force / time curve measuring	Velocity, length, force / time curve measuring	Upload apps to replace speed coach, video analysis
VIDEO ANALYSIS (most effective tool to deliver feedback)	Not appropriate	Utilize	Utilize	Use it and upload information for athletes/coach to view / discuss	Use it and upload information for athletes/coach to view / discuss	Velocity, length, force / time curve measuring

ATHLETE DEVELOPMENT PATHWAY

MENTAL (SPORTS PSYCHOLOGY) SKILLS

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
MENTAL/PSYCHOLOGICAL SKILLS						
PSYCHOLOGICAL SKILLS TRAINING	What are mental skills? The benefits of mental preparation for sport performance	Incorporate mental skills into daily training Use goal setting, imagery, and relaxation (body awareness)	Self-assess mental skills Set goals for individualized mental preparation	Self-assess mental skills Set goals for individualized mental preparation Evaluate progress through self-reflection and debriefing Work effectively with a Mental Performance Consultant	An active participant in development of a yearly mental skills plan Goals around individual competition schedules	An active participant in development of a yearly mental skills plan Goals around individual competition schedules

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
GOAL SETTING	Understands different types of goals in sport: outcome, performance, and process goals	Ability to follow individualized, coach-guided goal targets for daily training	With coach-guidance, athlete demonstrates ability to set clear outcome, performance, and process goals Goals set for training and competition	With coach-guidance, athlete demonstrates ability to set clear outcome, performance, and process goals Goals set for training and competition Can evaluate goal progress Adapt and refine goals on an ongoing basis	Athlete-lead season goal planning for all phases of training and competition Goals focus on achieving personal bests and consistent performances at International level Access to education and support to develop transition from sport goals	Athlete self-assessment of goal progress Strives for continued improvement in all arePR1 (e.g. physiologically, technically, tactically and mentally) Goals focus on achieving personal bests and consistent performances at International level or remaining at the top Transition from sport goals to post-sport goals
MOTIVATION	Athlete demonstrates enjoyment of sport Self-motivated to participate	Athlete demonstrates enjoyment of sport Self-motivated to train on a regular basis	Athlete demonstrates enjoyment of sport Self-motivated to train and compete	Athlete demonstrates enjoyment of sport Self-motivated to train and compete Works to motivate teammates	Athlete demonstrates enjoyment of sport Self-motivated to train, compete, and to be his/her best Works to motivate team mates	Athlete demonstrates enjoyment of sport Self-motivated to train, compete and be his/her best Motivates team mates by words and example
COMMUNICATION SKILLS	Athlete can: understand explanations and rationale for each skill Coach can: acknowledge athletes experiences, perceptions, thoughts and feelings	Athlete can communicate positively with teammates A manner that demonstrates fair play, teamwork, and sportsmanship	Team goals are in place to contribute to a positive team environment Athlete access to education on mental skills with a Mental Performance Consultant Practice of post-race debriefing for lessons learned (individually and team)	Practice of more formal debriefing strategies between coaches, athletes, and support staff Educational team sessions on mental preparation Individual consultation with MPC Clear coach communication on purpose behind training sessions	Athlete hPR1 strategies to communicate needs with coaches, teammates and Integrated Support Team Education on communicating with and handling demands of media in place Social media training Professionalism/role modeling training	Athlete hPR1 strategies to communicate needs with coaches, teammates and Integrated Support Team Education on communicating with and handling demands of media in place Social media training Professionalism/role modeling training Positive team building and dynamics are in place

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
IMAGERY	Athlete access basic imagery skills (e.g. puppet string holding an athlete's back for rowing posture) Use of drawing, painting, or simple journaling to recreate sport skills away from the water	Practice basic imagery scripts Imagery skills like sculling, boat handling, and routines of water and boat safety Reinforce imagery skills and build confidence	Imagery to complement, supplement and integrate into physical practice Development of more personalized imagery scripts Increased controllability and vividness	Imagery to rehearse strategy, strengthen neuro-muscular connections (e.g. good posture, sculling technique), Imagery to maintain skills while injured, Imagery for mental preparation for racing	Continued use of imagery to see, feel and practice race strategy and racing scenarios Imagery to improve concentration, control emotional responses, cope with pain and injury	Continued use of imagery for race strategy and belief/ confidence in ability to win Imagery to improve concentration, control emotional responses, cope with pain and injury
RELAXATION	Able to differentiate between relaxation and tension Practice relaxation and body awareness exercises	Understand simple breathing techniques Self-monitor muscular tension Link proper breathing to relaxed muscles, and a calm, focused mind Awareness of breathing at rest, and varying training intensities	Can implement various relaxation techniques Relaxation techniques to physically and mentally recover from daily training and life stressors	Use of relaxation skills to recover, relax tense muscles and manage stress Education on mindfulness training and links to performance	Ability to practice a variety of relaxation skills Individualized relaxation skills for recovery (physical, mental, and emotional) Skills for overall stress-management	Variety of relaxation skills Individualized relaxation skills for recovery (physical, mental, and emotional) Skills for overall stress-management
CONCENTRATION (FOCUS/REFOCUS)	Follow and focus on 1-2 instructional cues at a time Use simple focus cue words to try again after successes and mistakes	Connections with training focus and performance focus Identify types of focus each type of training requires to get most out of oneself	Can implement focused pre-competition warm-up routines and cue words, Distraction control strategies (use of planning forms may be helpful) for training and competition	Individualized pre-competition routines, focus and distraction control plans for competition Continued connection with training goals and competition readiness to improve commitment and focus	Focus to sustain optimal training, and daily mental focus and discipline Use of a variety of individualized concentration strategies for training, competition, setbacks, and injuries Focus on simple cues for each critical phase of the competition	Focus to sustain optimal training, and daily mental focus and discipline Use of a variety of individualized concentration strategies for training, competition, setbacks, and injuries Focus on simple cues for each critical phase of the competition

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
ANXIETY AND STRESS MANAGEMENT	Education in basic arousal control (relaxation/activation) and imagery techniques to deal with pressure or nervousness and Awareness on how to handle pressure with positive self-talk Focus on effort over results	Implement individual strategies to manage fear, pressure, and stress Personalized pre-competition routines, competition focus plans and self-talk strategies	Refinement of pre-determined competitive routines and plans Can normalize, accept and regulate emotions such PR1 anxiety and fear	Refinement of pre-determined competitive routines and plans Can normalize, accept and regulate emotions such PR1 anxiety and fear	Management of pressure Continued practice of accepting and/or regulating thoughts, emotions and physical sensations prior to competition High self-awareness of reactions and ability to regulate emotions Adaptability to varying pressure environments	Management of pressure Continued practice of accepting and/or regulating thoughts, emotions and physical sensations prior to competition High self-awareness of reactions and ability to regulate emotions Adaptability to varying pressure environments
AROUSAL-ACTIVATION MANAGEMENT	Understanding difference and connections between physical and mental arousal/activation for optimal performance	Awareness of individual responses to demands, pressure, nervousness Education on "normalization" of bodily responses to stress Education: when is it important to be "up"/"activated" vs. calm and relaxed	Individual practice of optimal activation for competition or hard training days Self-monitoring through journaling of emotional, physical, mental fatigue Self-regulation of responses to stress	Refine pre-training and pre-race routines Optimally focused for the physical/mental requirements of the day Regular monitoring to manage performance anxieties, pre-performance emotions, feelings, and behaviors Home and travel strategies in place	Continued development of high self-awareness of bodily needs in relation to performance and recovery	Effective self-monitoring Effective use of previous years recordings and journaling
POSITIVE SELF TALK AND BELIEF	Awareness of thoughts that may arise in different situations Knowledge of strategies to develop positive thinking Reflect on positives: What did I do well? What can I improve on? What wPR1 most fun?	Practice basic cue words to stay positive Practice perception-shifting (e.g. butterflies flying in formation)	Awareness of how thoughts connect to bodily behaviors and physical performance Individual awareness of most motivating and positive thoughts Ability to reframe thoughts when needed or "park it"/"tree it" for later	Recognize, reframe, and perform through any negative self-talk	Ability to and perform through negatives, to reframe when necessary Keep a positive perspective through successes and failures	Continued practice and performing through negatives Ability to reframe when necessary Keep a positive perspective through successes and failures
WORKING IN A TEAM	Understand that rowing is a team effort and that cooperation is required for success	Understand that there are both leaders and followers - on shore and in the boat	Develop opportunities for both leadership and to follow the lead of others Develop leadership skills	Take greater responsibility for own training and the training of crew-mates Determine comfort with taking leadership role	Formalize leadership roles in training and racing Develop conflict management strategies to ensure conflict-free racing	Formalize leadership roles in training and racing Develop conflict management strategies to ensure conflict-free racing

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
CONFLICT MANAGEMENT AND RESOLUTION	Understand that conflict is a normal part of group activity	Develop basic understanding of causes of conflict and simple ways to reduce conflict	Develop basic understanding of causes of conflict and simple ways to reduce conflict	Develop formal strategies for identifying and dealing with conflicts before they become toxic	Develop formal strategies for identifying and dealing with conflicts before they become toxic	Have well established and accepted process for managing conflicts

ATHLETE DEVELOPMENT PATHWAY

LIFE (SPORT PSYCHOLOGY) SKILLS

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
LIFESTYLE SKILLS						
NUTRITION FOUNDATIONS (For best results, athletes should have access to sport nutrition support at all times, but particularly at the L2C, T2C and T2W stages)	Provide education on: Key macronutrients and micronutrients and their food sources for health and performance Adolescent nutritional needs Portion sizes and plate distribution Food intake recording to identify nutrition gaps	Macronutrient for daily training based on workout intensity and in relation to body weight Education on specific macronutrient content in food choices Information on food quantity, quality and timing Nutrient monitoring through regular food records to determine nutritional needs and identify nutrient gaps	Continue food records throughout the Yearly Training Plan Monitor food records and refer individuals to a Sport Dietitian if needed Be aware of disordered eating patterns with appropriate referral to nutrition professional and/or mental performance professional	Continue to collect food records throughout the Yearly Training Plan Provide education on nutrition demands during altitude training	Athletes should have well trialed and tolerated periodized nutrition plan in place based on the Yearly Training Plan Sports Nutrition support available to assist with testing and monitoring food records, dietary patterns and concerns and energy balance throughout the YT	Athletes should have well trialed and tolerated periodized nutrition plan in place based on the Yearly Training Plan Sports Nutrition support available to assist with testing and monitoring food records, dietary patterns and concerns and energy balance throughout the YT

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
RECOVERY	Introduce concept of recovery nutrition post-training Focus on timing of meals/snacks around training, and goals for nutrient composition of each meal/snack Provide examples of high quality food choices for recovery	Through monitoring food records, focus on athletes' recovery nutrition strategies in relation to body weight Review recovery timing and quantity in relation to athlete's training schedule Provide examples of recovery food choices including a breakdown of macronutrient content Where are appropriate provide education on impact of alcohol consumption on recovery	Athletes have developed an individual recovery plan which hPR1 been trialed and is well tolerated Athlete is able to adjust recovery needs depending on their training volume/ intensity and schedule	Athletes have developed an individual recovery plan which hPR1 been trialed and is well tolerated Athlete is able to adjust recovery needs depending on their training volume/ intensity and schedule	All athletes have a well-tested and trialed nutrition recovery plan which they adjust depending on demands of travel, training and competition	All athletes have a well-tested and trialed nutrition recovery plan which they adjust depending on demands of travel, training and competition
HYDRATION	Screen athlete's fluid consumption and choices through the day Introduce basic hydration concepts for health and performance, including hydration needs around training Understand importance of appropriate fluid choices (sports drinks vs. water; pop/energy drinks, etc.)	Based on athlete's food records and training schedule, monitor fluid consumption PR1 well PR1 fluid and electrolyte losses with training Introduce hydration monitoring techniques through monitoring urine colour Provide education on impact of alcohol and excessive caffeine consumption on hydration status	Develop training and competition hydration plan based on environmental conditions (temperature, humidity, etc.) Introduce hydration testing protocols (Urine specific gravity (USG) weight changes/fluid volume) and determine individual hydration needs	Teach athletes to self-assess their hydration status using USG monitoring Develop individual hydration plans that are trialed and adjusted dependent on training, competition schedule, and environmental conditions	Athletes monitor hydration status USG, weight changes and fluid consumption Well tested hydration plan for training and competition in place with athlete able to adjust hydration PR1 needed for high performance	Athletes confident in monitoring hydration using USG, weight changes and fluid consumption Well tested hydration plan for training and competition in place with athlete able to adjust hydration PR1 needed for optimal performance

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
COOKING SKILLS AND FOOD PREPARATION	Athletes and their support networks learn basic cooking skills including: kitchen safety, knife skills and recipe reading - with focus on simple, quick, inexpensive and fun meals/snacks Encourage athletes to become more involved in meal preparation at home	Continue to develop athletes' cooking skills and begin to focus on food preparation for training and recovery Determine athlete's cooking-equipment needs	Upgrade athlete's cooking skills to provide high quality nutrition based on training and recovery needs and competition requirements Based on individual Yearly Training Plan, focus cooking and food preparation skills on nutrition for high volume training, recovery and competition Develop "on the road" and hotel cooking/ nutrition skills	Based on individual's Yearly Training Plan, focus on food preparation for high volume training, body composition changes, competition nutrition and travel needs Athletes able to prepare high quality food on the road, in hotel rooms and with minimal tools or ingredients For international travel, athletes focus on food choices available in target countries	Based on individual Yearly Training Plans, focus on food preparation for high volume training, body composition changes, and international travel and competition	Based on individual Yearly Training Plans, focus on food preparation for high volume training, body composition changes, and international travel and competition
GROCERY SHOPPING AND READING LABELS	Provide basic grocery shopping and label reading skills to athletes and support networks Athletes able to determine better and poorer food choices while grocery shopping Focus on cereals, sport bars and cereal/ granola bars	Athletes visit grocery store with dietitian (can be organized through most major grocery chains) Reinforce label reading	With assistance, organize grocery store tours focuses on shopping for training and competition (including regattPR1 locally PR1 well PR1 away from home)	Athletes should be competent and confident in grocery shopping and label reading at home and while on the road	Athletes should have good menu planning and budgeting skills and have access to professional dietitian/ nutrition support both nationally and internationally	Athletes should have good menu planning and budgeting skills and have access to professional dietitian/ nutrition support both nationally and internationally

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
BUDGETING AND MENU PLANNING	Develop strategies for athlete and their support networks to undertake food/menu budgeting (collecting coupons, reading price per until/weight, comparing prices of the same product, etc.) Provide athletes with basic menu planning strategies	Athletes take responsibility for planning and prep of their recovery snacks/ meals around training Athletes develop food/menu budget Link menu planning to energy expenditure in training Assist athletes with menu planning by providing and reviewing menu templates for athletes planning meals/snacks through the week and to build grocery lists	Athletes take responsibility for planning and preparation of their menu/meals with planning assistance PR1 required Monitor, and PR1 needed support, athletes moving away from home Support menu planning for travel	Athletes should have good menu planning and budgeting skills and have access to professional dietitian/ nutrition support both nationally and internationally	Athletes should have good menu planning and budgeting skills and have access to professional dietitian/ nutrition support both nationally and internationally	Athletes should have good menu planning and budgeting skills and have access to professional dietitian/ nutrition support both nationally and internationally
COMPETITION NUTRITION	Not applicable	Basic Nutrition education for regattas See CAN ROW Coaches Handbook	Ensure the athletes are adequately fueled for competition and can manage gastrointestinal (GI) tolerance Athletes develop and trial nutrition plans for single and multi-day regatta's	Monitor athlete's competition nutrition planning and implementation to determine optimum strategy	Athletes develop and use sound nutrition plus well trialed and tolerated nutrition plans for competition	Athletes develop and use sound nutrition plus well trialed and tolerated nutrition plans for competition
TRAVEL	Not applicable	Not applicable	Educate athletes on nutrition challenges and strategies when traveling, including meal / snack planning and preparation on the road and restaurant / buffet eating	Provide additional education on: the environment, food availability, food choices and food safety where traveling Athletes plan nutrition during international travel	Athletes should have well trialed individual strategies in place for travel nutrition developed with support from a Sport Dietitian if required Investigate what staple foods are available at target destinations, and if necessary arrange for required foods to be shipped to sites of international competitions	Athletes should have well trialed individual strategies in place for travel nutrition developed with support from a Sport Dietitian if required Investigate what staple foods are available at target destinations, and if necessary arrange for required foods to be shipped to sites of international competitions

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
SUPPLEMENTS	Focus on choosing high quality foods and building good, sound nutrition foundations Encourage no supplements up to the age of 18 years old	Basic education around safety of supplements and prohibited substances Learn which supplements are useful for what duration and type of activity Discuss health related supplements (Vitamin/Minerals) with Sports Dietitian, physician or physiologist Supplements generally NOT recommended	Education by Sport Dietitian, physician or physiologist expanded to include: The Canadian Anti-Doping Program and World Anti-Doping Code Doping control process List of banned substance, supplement safety and third party testing	Discuss supplement safety and doping testing during and out of competition Review WADA prohibited supplement list and informed choice, NSF safe supplements and app0roriate third-party tested supplements Discuss ergogenic aids that may be beneficial for performance in athletes Work with physiologist or sports dietitian to trial, test and implement specific supplement protocols		
INJURY PREVENTION AND RECOVERY (nutrition)	Emphasis the importance of meeting nutrition foundations for injury prevention	Discuss nutrition strategies around injury prevention Have expert provide information on essential nutrients to consume (or limit) along with meal timing, to assist with injury recovery/ healing Focus on optimizing food choices	Discuss key recommendations around essential nutrients for healing focusing on optimizing food choices before supplementation is considered	Discuss nutrition strategies around injury prevention and recovery Discuss key recommendations around essential nutrients for healing. Nutrition policy for healing developed Introduce the use of specific supplements including leucine, omega 3 fatty acids, creatine, calcium, etc. to assist with healing	In collaboration with medical team and sport dietitian athletes should be following excellent nutrition strategies around injury prevention and recovery along with illness prevention	In collaboration with medical team and sport dietitian athletes should be following excellent nutrition strategies around injury prevention and recovery along with illness prevention

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
BIOCHEMICAL NUTRITION MARKERS	Not applicable	With medical support discuss key nutrition markers for monitoring Based on results, athletes may need to be referred to physician or a Sport Dietitian	Continue monitoring key nutrition markers Encourage base line screening, for CBC, ferritin, B12, Vitamin D Based on results, athletes may need to be referred to physician or Sport Dietitian	Led by medical or nutrition expertise, plan regular monitoring of nutrition markers throughout the Yearly Training Plan, especially prior to key competitions	Athletes should have regular blood work screening through the Yearly Training Plan, including pre-season, mid-season and during the competition season Depending on results, assistance and support may be needed from medical professional and Sport Nutritionist	Athletes should have regular blood work screening through the Yearly Training Plan, including pre-season, mid-season and during the competition season Depending on results, assistance and support may be needed from medical professional and Sport Nutritionist
BODY COMPOSITION	Not applicable	Not applicable	Where appropriate, body composition may be tracked using appropriate and consistent measuring tools (e.g. ISAK anthropometry, Air Displacement Plethysmography, Dual X-ray Absorbiomentry)	Track body composition using an appropriate and consistent measuring tool (e.g. ISAK anthropometry, Air Displacement Plethysmography, Dual X-ray Absorbiomentry) Time body composition measures throughout the Yearly Training Plan (pre-season, preparatory-phase and pre-competition) Athlete's referred to Sport Dietitian for assessment, education and support to help with body composition goals	Track body composition using an appropriate and consistent measuring tool (e.g. ISAK anthropometry, Air Displacement Plethysmography, Dual X-ray Absorbiomentry) Time body composition measures throughout the Yearly Training Plan (pre-season, preparatory-phase and pre-competition) Athlete's referred to Sport Dietitian for assessment, education and support to help with body composition goals	Track body composition using an appropriate and consistent measuring tool (e.g. ISAK anthropometry, Air Displacement Plethysmography, Dual X-ray Absorbiomentry) Time body composition measures throughout the Yearly Training Plan (pre-season, preparatory-phase and pre-competition) Athlete's referred to Sport Dietitian for assessment, education and support to help with body composition goals
DISORDERED EATING AND EATING DISORDERS	Focus on healthy eating habits, energy balance and healthy body image Raise awareness of disordered eating, and eating disorders among athletes and coaches Educate on signs and symptoms of disordered eating and eating disorders Coaches understand their role PR1 potential triggers of disordered eating (undue focus on athletes' weight) Know where outside professional support can be obtained (e.g. eating disorder clinics) Develop strategies to identify disordered eating and eating disorders in athletes along with treatment and recovery strategies					

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
ILLNESS PREVENTION AND RECOVERY (NUTRITION)	Emphasis the importance of consistently meeting nutrition foundations and choosing high quality foods Safe and smart hygiene: hand washing, not sharing water bottles or utensils	Discuss nutrition strategies around illness prevention, focusing on carbohydrate consumption during training and hydration along with consistently optimizing nutrition foundations from high quality foods before supplementation is discussed	Continue discussion on nutrition strategies for illness prevention Continue emphasizing high quality foods including those rich in antioxidants and to help with immune function	Acute nutrition strategies implemented to prevent and manage illnesses Introduce the use of specific tested supplements that may help with illness recovery and prevention including probiotics, vitamin C, zinc, glutamine, etc. Important to seek medical advice if illness persists and antibiotics are needed	Athletes should be following individual nutrition strategies around illness prevention Acute nutrition strategies implemented to prevent and manage illnesses to be discussed and implemented (ex/ immunity packs for travel) Lead by medical and Sport Dietitian Important to seek medical advice if illness persists and antibiotics are needed	
INFECTION/ ILLNESS PREVENTION (Medical)	Basic hand-washing hygiene	Develop skills around communicable disease prevention - and reduction of harm from alcohol, unsafe sexual practices, and illegal and prescription drug mis-use	Ensure vaccinations and other prophylaxis actions against illness are current Build awareness of blister prevention and care Understand safe-sex practices	Ensure vaccinations and other prophylaxis actions against illness are current Build awareness of blister prevention and care Understand safe-sex practices	Develop international travel guidelines and strategies, particularly with respect to food intake and intestinal issues Consult with international health clinic sufficiently ahead of international travel to build immunity from required vaccinations and overcome any short-term vaccination after effects (sore arm etc.)	
SLEEP Note: Provide referral to medical sleep specialist and/or mental performance professional if problems identified	Ensure adequate sleep: 9 to 9.5 hours per night	Monitor athletes' sleep including: nightly quantity quality, habits before going to bed, and napping habits (if applicable) Manage sleep; including external and internal environmental factors, napping and specific do's and don'ts	Develop sleep strategies around competition and travel	Develop specific jet-lag rest and sleep strategies including sleep/nap patterns, light and dark exposure, meal/snack patterns and other (melatonin) strategies	Sleep management well developed and a high priority, particularly around jet lag and international competitions	Sleep management well developed and a high priority, particularly around jet lag and international competitions
SEX SPECIFIC: MENSTRUATION	Not applicable	For female athletes, screen menstrual history and current status Athlete monitor their menstruation and concerns are referred to appropriate medical support	Female athlete monitor menstruation If there are concerns with menstrual status (ex/Oligomenorrhea/ Amenorrhea) athlete referred to appropriate medical support	Female athlete monitor menstruation If there are concerns with menstrual status (ex/Oligomenorrhea/ Amenorrhea) athlete referred to appropriate medical support	Female athlete monitor menstruation If there are concerns with menstrual status (ex/Oligomenorrhea/ Amenorrhea) athlete referred to appropriate medical support	Female athlete monitor menstruation If there are concerns with menstrual status (ex/Oligomenorrhea/ Amenorrhea) athlete referred to appropriate medical support

	LEARN TO TRAIN	TRAIN TO TRAIN	LEARN TO COMPETE	TRAIN TO COMPETE	TRAIN TO WIN 1	TRAIN TO WIN 2
GENDER SPECIFIC ISSUES: TRAINING ENVIRONMENT	Build a training environment that creates a climate of acceptance and social connection, since this is the cornerstone for a rewarding and lasting female engagement Include regular use of role models (more senior athletes) to demonstrate how progress can be made					
LIGHTWEIGHT SPECIFIC	Not applicable	Not applicable	Athletes understand safe making-weight strategies Refer lightweight athletes to a Sport Dietitian for more individual education and strategies to making weight	Athlete assisted to make healthy decision about weight category in which to row. Refer lightweight athletes to a Sport Dietitian for more individual education and strategies to making weight	Athletes develop strategies to assist with healthy approaches to making weight based on their Yearly Training Plan Counseling and support provided by Sport Dietitian if required	Athletes develop strategies to assist with healthy approaches to making weight based on their Yearly Training Plan Counseling and support provided by Sport Dietitian if required
HEAVYWEIGHT SPECIFIC	Not applicable	Review safe and healthy weight gain strategies focusing on a food-first strategy plus a well-designed resistance training program	Review safe weight gain strategies using foods specific strategies and if necessary supplements Counseling and support provided by Sport Dietitian	Review safe weight gain strategies using foods specific strategies and if necessary supplements Counseling and support provided by Sport Dietitian if required	Athletes develop strategies to assist with gaining appropriate weight based on their Yearly Training Plan Counseling and support may be needed if strategies are not appropriate or the athlete is struggling to gain weight	Athletes develop strategies to assist with gaining appropriate weight based on their Yearly Training Plan Counseling and support may be needed if strategies are not appropriate or the athlete is struggling to gain weight
DOPING CONTROL	Not applicable	Understand that PR1 competitor you may be subject to doping control procedures	Understand your obligations and rights in doping control	Have practiced doping control procedures and carry required documentation at all regattas: including Therapeutic Use Exemptions, prescriptions and athlete biological passport if appropriate Take only Rowing Canada Aviron approved supplements	Be fully aware of doping control procedures for in and out of competition testing Comply with all anti-doping requirements while at the same time vigorously defending your own and team-mates rights Do not sign off on improperly collected samples	Be fully aware of doping control procedures for in and out of competition testing Comply with all anti-doping requirements while at the same time vigorously defending your own and team-mates rights Do not sign off on improperly collected samples

Athlete Name:		***Rowing Canada Aviron Annual Medical Screen***		
Date of Birth :	DD/MM/YYYY	Health Card info:	Province	Card # :
Previous Medical or Surgical History:				
Current Injuries and treatment:	** should you require extra room, please use back of page**			

ROWING CANADA AVIRON

The above named athlete concents to share results of medical screen with RCA Medical Team

Name of Parent: PLEASE PRINT

Signature of athlete: _____ Date: DD/MM/YYY Signature of Parent: IF ATHLETE IS UNDER THE LEGAL AGE OF CONCENT

The following section is to be completed by the Athletes Physician.

Medications (name and dose)	

General Exam

Height (CM)		H & N		Neuro		Chest				Skin	
Weight (KG)											

Cardiac Auscultation

Rate		Rhythm	

MSK Including L - Spine

Murmer	Systolic	Y	N	Comment:
	Diastolic	Y	N	Comment:
	Systolic Click	Y	N	Comment:
Blood preasure:				Comment:
Pulses	Radial	Y	N	Comment:
	Femoral	Y	N	Comment:

lectrocadiogram (ECG) (mandatory dated post 2015)

	Abnormalities	Y	N
Comment	TO BE COMPLETED EVERY 3 YEARS UNTIL 22 THEN EVERY 5 YEARS AFTER		

FISA Cardiac screening questionnaire completed and reviewed by Physician	Y	N

Marfan Stigmata (Circle any that apply)

Kyphosoliosis / High Arched palate / Pectus exctus excavatum / arachnodactyly / Arm span > Height / Hyperlaxity / Myopia / Aortic Insufficiency

By signing below the Physician certifies that the athlete named above is fit to participate in an intense training camp and competition with Rowing Canada Aviron. This athlete has no known Cardiac abnormalities or contrainidications to the sport of rowing.

Office Stamp

Physician Name:

Phone: Fax:

Date: Signature: _____

APPENDIX 1

U19 PERIODIZATION	
TRAINING PHASES	**TRAINING VOLUME PER WEEK**
Preparation Period 1	5 - 7 On-water OR erg sessions per week (9 - 13 hours) 2 - 3 Cross training sessions per week (4 - 6 hours) 2 - 4 Strength and conditioning sessions per week (2 - 4 hours) TOTAL HOURS = 15 - 23 hours per week
Preparation Period 2	
Preparation Period 3	
Pre Competition	
Competition	
Transition Period	
50 WEEKS PER YEAR	

APPENDIX 2A

NATIONAL TEAM SQUAD TRAINING (HOURS/WEEK)

CATEGORY	NAME	OTHER NAME	MONTH	OCT–JAN	FEB–MAR	APR	MAY-JUL	AUG	SEPT
			PHASE	PREPERATION 1	PREPERATION 2	PREPERATION 3	PRE CPMPETION	COMPETITION	TRANSITION
C1	Overspeed	Anaerobic Capacity Training				1	1	1	
C2	Race Speed	Oxygen Transport Training		1	1	1-2	2	1-2	
C3	Short Endurance	Anaerobic Threshold Training		1	2	2	4	3	1
C4	Middle Endurance	Oxygen Utilisation Training		3	3	5	3	4	2
C5	Long Endurance	Basic Oxygen Utilisation Training		5	5	4	3	4	3
C6	Recovery / Long Endurance	Recovery / Fuel Utilisation Training		6	6	5	4	5	7
Regatta							1 - 3		
Strength and Conditioning				2 - 4	2 - 4	2 - 3	1 - 3	1 - 3	2
ATEG				18-20	19-22	20-22	19-23	19-22	15

APPENDIX 2A

U23 PERIODIZATION

TRAINING PHASES	TRAINING VOLUME PER WEEK
Preparation Period 1	6 - 10 On-water OR erg sessions per week (12 - 15 hours) 2 - 4 Cross training sessions per week (6 - 8 hours) 2 - 4 Strength and conditioning sessions per week (3 - 5 hours) TOTAL HOURS = 21 - 28 hours per week
Preparation Period 2	
Preparation Period 3	
Pre Competition	
Competition	
Transition Period	
50 WEEKS PER YEAR	

APPENDIX 2B

NATIONAL TEAM SQUAD TRAINING (HOURS/WEEK)

CATEGORY	NAME	OTHER NAME	MONTH	OCT–JAN	FEB–MAR	APR	MAY-JUL	AUG	SEPT
			PHASE	PREPERATION 1	PREPERATION 2	PREPERATION 3	PRE CPMPETION	COMPETITION	TRANSITION
C1	Overspeed	Anaerobic Capacity Training				1	1	1	
C2	Race Speed	Oxygen Transport Training			1	1	1		
C3	Short Endurance	Anaerobic Threshold Training		1	1	1 - 2	2	1 - 2	
C4	Middle Endurance	Oxygen Utilisation Training		1	1	2	4	2	1
C5	Long Endurance	Basic Oxygen Utilisation Training		4	4	6	4	6	4
C6	Recovery / Long Endurance	Recovery / Fuel Utilisation Training		6	6	5	4	5	4
Regatta				6	7	6	5	6	8
Strength and Conditioning				2 - 4	2 - 4	2 - 3	1 - 3	1 - 3	2
Hours per week				21 - 23	22 - 24	23 - 26	23 - 28	22 - 26	20

APPENDIX 2B

THE SYSTEM OF TRAINING INTENSITY CATEGORIES

INTENSITY CATEGORY	APPROX. HEART RATE RANGE	DURATION ONE PIECE [min]	RATIO Work : Rest	GOALS OF THE TRAINING INTENSITY	PRACTICAL EXAMPLES (SR = Stroke Rate)	LACTATE LEVEL [mmol/l]
I	max. HR i.e. 180 - 200	0.5 - 1.5	1:4 1:5	ANAEROBIC CAPACITY - Transportation = Development of Cardiopulmonary System - Ability + Feeling of Start/Spurt - Aggression	- 1-6 x 500 m (with start) - Interval training (short pieces) SERIES OF 30-60 STROKES OR: SERIES OF 1-2 min SR: > RACE-SR	> 10
II	max. HR i.e. 180 - 200	2 - 7	1:2 1:3	RACE ENDURANCE - Transportation = Development of Cardiopulmonary System - Race Speed Feeling - Race Attitude/Plan	- Race over 1500 - 2000m - 6 x 2 min - 3 x 1000 m - 5 x 750 m SR: RACE-SR	8 - 14
III	max. HR i.e. 180 - 200	6 - 10	2:2 1:2	DEVELOPMENT OF AEROBIC CAPACITY - Strength Endurance - Tactics - Technique	- 4 x 7 min - 3 x 2.000 m constant speed - 5 x 5 min strength-endurance water SR: 2 - 4 less than race-SR	5 - 8
IV	165 - 175	10 - 45	4:1	ANAEROBIC THRESHOLD - Development of Aerobic Capacity - Efficiency - Strength Endurance	- 2 x 20 min with SR-change - 3 x 5 km time-control - 10 km head-race -3 x 12 min strength endurance water SR: 3 - 6 less than race-SR	~ 4
V	150 - 165	30- 90		BASIC ENDURANCE UTILIZATION OF AEROBIC CAPACITY - Maintenance - Technique	- 30 - 90 min steady state SR: 10 - 12 less than race-SR	~ 3
VI	135 - 150	> 45		- Utilization of Aerobic Capacity - Regeneration - Maintenance - Technique	- 45 - 120 min STEADY STATE AT LOW INTENSITY SR: 18 - 24 / min	< 2

APPENDIX 3

(FROM: V. NOLTE/A.MORROW/B.RICHARDSON/A.ROAF)

Strength and Erg Targets

			Open Weight Men				Lightweight Men			Open Weight Women				Lightweight Women		
			Junior	Under 21	Under 23	Senior	Under 21	Under 23	Senior	Junior	Under 21	Under 23	Senior	Under 21	Under 23	Senior
Laboratory Targets	Sum of 8 Skinfold (mm)	Healthy Performance Range (min)	n/a							n/a						
		Healthy Performance Range (max)	n/a							n/a						
	2mmol/L Power (W)	Aspirational	220	255	290	330	220	250	300	165	185	205	235	150	180	215
	4mmol/L Power (W)	Aspirational	270	315	360	390	250	300	370	195	215	245	275	190	220	255
	VO2peak (L/min)	Aspirational	n/a	6.20	6.50	6.80	5.65	6.00	6.20	n/a	4.30	4.50	4.80	3.80	4.00	4.20
		Lower Expectation	n/a	5.90	6.20	6.50	5.30	5.65	6.00	n/a	4.10	4.30	4.50	3.50	3.80	4.00
Ergometer Targets (mm:ss.s, W)	Drag Factor	Mandatory	120		130		120			110				110		
	Peak Power (W)	Aspirational	983	1025	1069	1125	899	932	963	654	678	703	735	588	607	624
		Carding Standard	910	963	1004	1047	847	881	917	602	642	665	690	558	578	598
	60 second (W)	Aspirational	672	700	730	769	614	637	658	446	463	480	502	401	414	426
		Carding Standard	622	658	686	715	579	602	627	411	438	455	471	381	395	409
	2000m (mm:ss.s)	Aspirational	06:03.5	05:58.5	05:53.5	05:47.5	06:14.5	06:10.0	06:06.0	06:56.5	06:51.5	06:46.5	06:40.5	07:11.5	07:07.0	07:03.0
		Carding Standard	06:13.0	06:06.0	06:01.0	05:56.0	06:22.0	06:17.0	06:12.0	07:08.0	06:59.0	06:54.0	06:49.0	07:19.0	07:14.0	07:09.0
	2000m (W)	Aspirational	466	486	507	534	426	442	457	310	321	333	349	279	288	296
		Carding Standard	432	457	476	496	402	418	435	286	305	316	327	265	274	283
	6000m (mm:ss.s)	Aspirational	19:27.5	19:12.5	18:57.5	18:42.5	20:07.5	19:55.0	19:45.0	22:22.5	22:07.5	21:52.5	21:37.5	22:57.5	22:42.5	22:27.5
		Carding Standard	19:56.0	19:35.0	19:20.0	19:05.0	20:30.0	20:15.0	20:00.0	22:57.0	22:30.0	22:15.0	22:00.0	23:20.0	23:05.0	22:50.0
	6000m (W)	Aspirational	380	395	411	428	344	354	363	250	259	267	277	231	239	247
		Carding Standard	354	373	387	403	325	337	350	232	246	254	263	220	228	235
Biomechanic Target	Stroke Length (deg)	Sweep				88°-90°			86°-88°				>90°			>106°
		Scull				108°-110°			106°-108°				>110°			
	Catch Angle (deg)	Sweep				-59° 3 1°			-57° 3 1°				-57° 3 1°			-63° 3 1°
		Scull				-69° 3 1°			-67° 3 1°				-67° 3 1°			
	Finish Angle (deg)	Sweep				33° 3 1°			33° 3 1°				33° 3 1°			43° 3 1°
		Scull				43° 3 1°			43° 3 1°				43° 3 1°			
	Catch/Finish Slip (deg)	Sweep				4° / 6°			4° / 6°				4° / 6°			4° / 6°
		Scull				4° / 6°			4° / 6°				4° / 6°			
S&C Ta	30kg Trapbar Jump (Peak m/s)	Same load all groups	Technical Focus (Force Development)	2.80	2.97	3.22	2.79	2.91	3.07	Technical Focus (Force Development)	2.47	2.62	2.85	2.35	2.57	2.72
	Heavy Trapbar Jump (Peak m/s)	(60kg LWW, 75kg OWW/LWM, 90kg OWM)		1.74	1.85	2.01	1.84	1.92	2.02		1.67	1.78	1.94	1.63	1.71	1.8
	Clean (1RM)	National Team Standard		90	94	102	80	84	89		66	69	75	56	58	62.5
	Deadlift (1RM)	National Team Standard		165	171	180	153	157	164		119	123	130	97	100	105
	Front Squat (1RM)	National Team Standard		96	103	114	82	86	95		79	84	94	69	72	80
	Bench Pull (1RM)	National Team Standard		83	89	98	72	75	82		63	68	75	54	56	62
	Bench Press (1RM)	National Team Standard		92	97	104	84	86	92		53	55	60	45	46	50

APPENDIX 4

RCA ERG POGRESSION TABLE - MEN

PEAK POWER

	AGE	15	16	17	18	19	20	21	22	23	24+
1	Split	1:12.7	1:12.1	1:11.4	1:10.9	1:10.4	1:09.9	1:09.4	1:08.9	1:08.3	1:07.8
	Watts	910	936	963	983	1004	1025	1047	1069	1101	1125
2	Split	1:13.4	1:12.7	1:12.1	1:11.4	1:10.9	1:10.4	1:09.9	1:09.4	1:08.9	1:08.3
	Watts	885	910	936	963	983	1004	1025	1047	1069	1101
3	Split	01:14.3	01:13.4	01:12.7	01:12.1	01:11.4	01:10.9	01:10.4	01:09.9	01:09.4	01:08.9
	Watts	854	885	910	936	963	983	1004	1025	1047	1069
4	Split	1:15.2	1:14.3	1:13.4	1:12.7	1:12.1	1:11.4	1:10.9	1:10.4	1:09.9	1:09.4
	Watts	824	854	885	910	936	963	983	1004	1025	1047
5	Split	01:16.1	01:15.2	01:14.3	01:13.4	01:12.7	01:12.1	01:11.4	01:10.9	01:10.4	01:09.9
	Watts	796	824	854	885	910	936	963	983	1004	1025
6	Split	1:16.9	1:16.1	1:15.2	1:14.3	1:13.4	1:12.7	1:12.1	1:11.4	1:10.9	1:10.4
	Watts	769	796	824	854	885	910	936	963	983	1004

APPENDIX 5A

1 MINUTE

	AGE	15	16	17	18	19	20	21	22	23	24+
1	Meters	363.2	366.7	370.2	372.7	375.3	377.9	380.6	383.3	387.1	389.9
	Split	1:22.6	1:21.8	1:21.0	1:20.5	1:19.9	1:19.4	1:18.8	1:18.3	1:17.5	1:16.9
	Watts	622	639	658	672	686	700	715	730	752	769
2	Meters	359.9	363.2	366.7	370.2	372.7	375.3	377.9	380.6	383.3	387.1
	Split	1:23.4	1:22.6	1:21.8	1:21.0	1:20.5	1:19.9	1:19.4	1:18.8	1:18.3	1:17.5
	Watts	604	622	639	658	672	686	700	715	730	752
3	Meters	355.6	359.9	363.2	366.7	370.2	372.7	375.3	377.9	380.6	383.3
	Split	01:24.4	01:23.4	01:22.6	01:21.8	01:21.0	01:20.5	01:19.9	01:19.4	01:18.8	01:18.3
	Watts	583	604	622	639	658	672	686	700	715	730
4	Meters	351.5	355.6	359.9	363.2	366.7	370.2	372.7	375.3	377.9	380.6
	Split	1:25.4	1:24.4	1:23.4	1:22.6	1:21.8	1:21.0	1:20.5	1:19.9	1:19.4	1:18.8
	Watts	563	583	604	622	639	658	672	686	700	715
5	Meters	347.4	351.5	355.6	359.9	363.2	366.7	370.2	372.7	375.3	377.9
	Split	01:26.4	01:25.4	01:24.4	01:23.4	01:22.6	01:21.8	01:21.0	01:20.5	01:19.9	01:19.4
	Watts	544	563	583	604	622	639	658	672	686	700
6	Meters	343.4	347.4	351.5	355.6	359.9	363.2	366.7	370.2	372.7	375.3
	Split	1:27.4	1:26.4	1:25.4	1:24.4	1:23.4	1:22.6	1:21.8	1:21.0	1:20.5	1:19.9
	Watts	525	544	563	583	604	622	639	658	672	686

APPENDIX 5A

2000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT			05:58.1		05:47.0						05:35.8
1	Time	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5	05:56.0	05:53.5	05:50.0	05:47.5
	Split	1:33.3	1:32.4	1:31.5	1:30.9	1:30.3	1:29.6	1:29.0	1:28.4	1:27.5	1:26.9
	Watts	432	444	457	466	476	486	496	507	522	534
2	Time	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5	05:56.0	05:53.5	05:50.0
	Split	1:34.1	1:33.3	1:32.4	1:31.5	1:30.9	1:30.3	1:29.6	1:29.0	1:28.4	1:27.5
	Watts	420	432	444	457	466	476	486	496	507	522
3	Time	06:21.0	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5	05:56.0	05:53.5
	Split	1:35.3	1:34.1	1:33.3	1:32.4	1:31.5	1:30.9	1:30.3	1:29.6	1:29.0	1:28.4
	Watts	405	420	432	444	457	466	476	486	496	507
4	Time	06:25.5	06:21.0	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5	05:56.0
	Split	1:36.4	1:35.3	1:34.1	1:33.3	1:32.4	1:31.5	1:30.9	1:30.3	1:29.6	1:29.0
	Watts	391	405	420	432	444	457	466	476	486	496
5	Time	06:30.0	06:25.5	06:21.0	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5
	Split	1:37.5	1:36.4	1:35.3	1:34.1	1:33.3	1:32.4	1:31.5	1:30.9	1:30.3	1:29.6
	Watts	378	391	405	420	432	444	457	466	476	486
6	Time	06:34.5	06:30.0	06:25.5	06:21.0	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0
	Split	1:38.6	1:37.5	1:36.4	1:35.3	1:34.1	1:33.3	1:32.4	1:31.5	1:30.9	1:30.3
	Watts	365	378	391	405	420	432	444	457	466	476

6000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT			19:25.1		18:56.8						18:03.1
1	Time	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5	19:05.0	18:57.5	18:50.0	18:42.5
	Split	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1	1:35.4	1:34.8	1:34.2	1:33.6
	Watts	354	363	373	380	387	395	403	411	419	428
2	Time	20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5	19:05.0	18:57.5	18:50.0
	Split	1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1	1:35.4	1:34.8	1:34.2
	Watts	344	354	363	373	380	387	395	403	411	419
3	Time	20:20.0	20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5	19:05.0	18:57.5
	Split	1:41.7	1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1	1:35.4	1:34.8
	Watts	333	344	354	363	373	380	387	395	403	411
4	Time	20:33.5	20:20.0	20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5	19:05.0
	Split	1:42.8	1:41.7	1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1	1:35.4
	Watts	322	333	344	354	363	373	380	387	395	403
5	Time	20:47.0	20:33.5	20:20.0	20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5
	Split	1:43.9	1:42.8	1:41.7	1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1
	Watts	312	322	333	344	354	363	373	380	387	395
6	Time	21:00.5	20:47.0	20:33.5	20:20.0	20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0
	Split	1:45.1	1:43.9	1:42.8	1:41.7	1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7
	Watts	302	312	322	333	344	354	363	373	380	387

RCA ERG POGRESSION TABLE - LWT MEN

PEAK POWER

	AGE	15	16	17	18	19	20	21	22	23	24+
1	Split				1:14.0	1:13.5	1:13.0	1:12.5	1:12.2	1:11.8	1:11.4
	Watts				864	881	899	917	932	947	963
2	Split				1:14.5	1:14.0	1:13.5	1:13.0	1:12.5	1:12.2	1:11.8
	Watts				847	864	881	899	917	932	947
3	Split				01:15.5	01:14.5	01:14.0	01:13.5	01:13.0	01:12.5	01:12.2
	Watts				815	847	864	881	899	917	932
4	Split				1:16.6	1:15.5	1:14.5	1:14.0	1:13.5	1:13.0	1:12.5
	Watts				778	815	847	864	881	899	917
5	Split				01:17.8	01:16.6	01:15.5	01:14.5	01:14.0	01:13.5	01:13.0
	Watts				743	778	815	847	864	881	899
6	Split				1:19.0	1:17.8	1:16.6	1:15.5	1:14.5	1:14.0	1:13.5
	Watts				711	743	778	815	847	864	881

APPENDIX 5B

1 MINUTE

	AGE	15	16	17	18	19	20	21	22	23	24+
1	Meters				357.0	359.4	361.8	364.2	366.2	368.2	370.2
	Split				1:24.0	1:23.5	1:22.9	1:22.4	1:21.9	1:21.5	1:21.0
	Watts				590	602	614	627	637	647	658
2	Meters				354.7	357.0	359.4	361.8	364.2	366.2	368.2
	Split				1:24.6	1:24.0	1:23.5	1:22.9	1:22.4	1:21.9	1:21.5
	Watts				579	590	602	614	627	637	647
3	Meters				350.1	354.7	357.0	359.4	361.8	364.2	366.2
	Split				01:25.7	01:24.6	01:24.0	01:23.5	01:22.9	01:22.4	01:21.9
	Watts				557	579	590	602	614	627	637
4	Meters				344.7	350.1	354.7	357.0	359.4	361.8	364.2
	Split				1:27.0	1:25.7	1:24.6	1:24.0	1:23.5	1:22.9	1:22.4
	Watts				531	557	579	590	602	614	627
5	Meters				339.6	344.7	350.1	354.7	357.0	359.4	361.8
	Split				01:28.3	01:27.0	01:25.7	01:24.6	01:24.0	01:23.5	01:22.9
	Watts				508	531	557	579	590	602	614
6	Meters				334.5	339.6	344.7	350.1	354.7	357.0	359.4
	Split				1:29.7	1:28.3	1:27.0	1:25.7	1:24.6	1:24.0	1:23.5
	Watts				486	508	531	557	579	590	602

APPENDIX 5B

2000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT					05:47.0						05:56.7
1	Time				06:19.5	06:17.0	06:14.5	06:12.0	06:10.0	06:08.0	06:06.0
	Split				1:34.9	1:34.3	1:33.6	1:33.0	1:32.5	1:32.0	1:31.5
	Watts				410	418	426	435	442	449	457
2	Time				06:22.0	06:19.5	06:17.0	06:14.5	06:12.0	06:10.0	06:08.0
	Split				1:35.5	1:34.9	1:34.3	1:33.6	1:33.0	1:32.5	1:32.0
	Watts				402	410	418	426	435	442	449
3	Time				06:27.0	06:22.0	06:19.5	06:17.0	06:14.5	06:12.0	06:10.0
	Split				1:36.8	1:35.5	1:34.9	1:34.3	1:33.6	1:33.0	1:32.5
	Watts				386	402	410	418	426	435	442
4	Time				06:33.0	06:27.0	06:22.0	06:19.5	06:17.0	06:14.5	06:12.0
	Split				1:38.3	1:36.8	1:35.5	1:34.9	1:34.3	1:33.6	1:33.0
	Watts				369	386	402	410	418	426	435
5	Time				06:39.0	06:33.0	06:27.0	06:22.0	06:19.5	06:17.0	06:14.5
	Split				1:39.8	1:38.3	1:36.8	1:35.5	1:34.9	1:34.3	1:33.6
	Watts				353	369	386	402	410	418	426
6	Time				06:45.0	06:39.0	06:33.0	06:27.0	06:22.0	06:19.5	06:17.0
	Split				1:41.3	1:39.8	1:38.3	1:36.8	1:35.5	1:34.9	1:34.3
	Watts				337	353	369	386	402	410	418

6000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT					18:56.8						18:03.1
1	Time				19:27.5	19:20.0	19:12.5	19:05.0	18:57.5	18:50.0	18:42.5
	Split				1:37.3	1:36.7	1:36.1	1:35.4	1:34.8	1:34.2	1:33.6
	Watts				380	387	395	403	411	419	428
2	Time				19:35.0	19:27.5	19:20.0	19:12.5	19:05.0	18:57.5	18:50.0
	Split				1:37.9	1:37.3	1:36.7	1:36.1	1:35.4	1:34.8	1:34.2
	Watts				373	380	387	395	403	411	419
3	Time				19:45.5	19:35.0	19:27.5	19:20.0	19:12.5	19:05.0	18:57.5
	Split				1:38.8	1:37.9	1:37.3	1:36.7	1:36.1	1:35.4	1:34.8
	Watts				363	373	380	387	395	403	411
4	Time				19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5	19:05.0
	Split				1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1	1:35.4
	Watts				354	363	373	380	387	395	403
5	Time				20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0	19:12.5
	Split				1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7	1:36.1
	Watts				344	354	363	373	380	387	395
6	Time				20:20.0	20:06.5	19:56.0	19:45.5	19:35.0	19:27.5	19:20.0
	Split				1:41.7	1:40.6	1:39.7	1:38.8	1:37.9	1:37.3	1:36.7
	Watts				333	344	354	363	373	380	387

RCA ERG POGRESSION TABLE - WOMEN

PEAK POWER

	AGE	15	16	17	18	19	20	21	22	23	24+
1	Split	1:23.5	1:22.4	1:21.7	1:21.2	1:20.7	1:20.2	1:19.8	1:19.3	1:18.6	1:18.1
	Watts	602	626	642	654	665	678	690	703	721	735
2	Split	1:24.8	1:23.5	1:22.4	1:21.7	1:21.2	1:20.7	1:20.2	1:19.8	1:19.3	1:18.6
	Watts	574	602	626	642	654	665	678	690	703	721
3	Split	01:26.2	01:24.8	01:23.5	01:22.4	01:21.7	01:21.2	01:20.7	01:20.2	01:19.8	01:19.3
	Watts	547	574	602	626	642	654	665	678	690	703
4	Split	1:27.6	1:26.2	1:24.8	1:23.5	1:22.4	1:21.7	1:21.2	1:20.7	1:20.2	1:19.8
	Watts	522	547	574	602	626	642	654	665	678	690
5	Split	01:28.9	01:27.6	01:26.2	01:24.8	01:23.5	01:22.4	01:21.7	01:21.2	01:20.7	01:20.2
	Watts	498	522	547	574	602	626	642	654	665	678
6	Split	1:30.3	1:28.9	1:27.6	1:26.2	1:24.8	1:23.5	1:22.4	1:21.7	1:21.2	1:20.7
	Watts	476	498	522	547	574	602	626	642	654	665

APPENDIX 5C

1 MINUTE

	AGE	15	16	17	18	19	20	21	22	23	24+
1	Meters	316.6	320.7	323.4	325.3	327.3	329.2	331.3	333.3	336.2	338.3
	Split	1:34.8	1:33.6	1:32.8	1:32.2	1:31.7	1:31.1	1:30.6	1:30.0	1:29.2	1:28.7
	Watts	411	428	438	446	455	463	471	480	493	502
2	Meters	311.5	316.6	320.7	323.4	325.3	327.3	329.2	331.3	333.3	336.2
	Split	1:36.3	1:34.8	1:33.6	1:32.8	1:32.2	1:31.7	1:31.1	1:30.6	1:30.0	1:29.2
	Watts	392	411	428	438	446	455	463	471	480	493
3	Meters	306.5	311.5	316.6	320.7	323.4	325.3	327.3	329.2	331.3	333.3
	Split	01:37.9	01:36.3	01:34.8	01:33.6	01:32.8	01:32.2	01:31.7	01:31.1	01:30.6	01:30.0
	Watts	374	392	411	428	438	446	455	463	471	480
4	Meters	301.8	306.5	311.5	316.6	320.7	323.4	325.3	327.3	329.2	331.3
	Split	1:39.4	1:37.9	1:36.3	1:34.8	1:33.6	1:32.8	1:32.2	1:31.7	1:31.1	1:30.6
	Watts	356	374	392	411	428	438	446	455	463	471
5	Meters	297.1	301.8	306.5	311.5	316.6	320.7	323.4	325.3	327.3	329.2
	Split	01:41.0	01:39.4	01:37.9	01:36.3	01:34.8	01:33.6	01:32.8	01:32.2	01:31.7	01:31.1
	Watts	340	356	374	392	411	428	438	446	455	463
6	Meters	292.6	297.1	301.8	306.5	311.5	316.6	320.7	323.4	325.3	327.3
	Split	1:42.5	1:41.0	1:39.4	1:37.9	1:36.3	1:34.8	1:33.6	1:32.8	1:32.2	1:31.7
	Watts	325	340	356	374	392	411	428	438	446	455

APPENDIX 5C

2000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT			06:46.1		06:28.3						06:22.8
1	Time	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5	06:49.0	06:46.5	06:43.0	06:40.5
	Split	1:47.0	1:45.6	1:44.8	1:44.1	1:43.5	1:42.9	1:42.3	1:41.6	1:40.8	1:40.1
	Watts	286	297	305	310	316	321	327	333	342	349
2	Time	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5	06:49.0	06:46.5	06:43.0
	Split	1:48.8	1:47.0	1:45.6	1:44.8	1:44.1	1:43.5	1:42.9	1:42.3	1:41.6	1:40.8
	Watts	272	286	297	305	310	316	321	327	333	342
3	Time	07:22.0	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5	06:49.0	06:46.5
	Split	1:50.5	1:48.8	1:47.0	1:45.6	1:44.8	1:44.1	1:43.5	1:42.9	1:42.3	1:41.6
	Watts	259	272	286	297	305	310	316	321	327	333
4	Time	07:29.0	07:22.0	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5	06:49.0
	Split	1:52.3	1:50.5	1:48.8	1:47.0	1:45.6	1:44.8	1:44.1	1:43.5	1:42.9	1:42.3
	Watts	247	259	272	286	297	305	310	316	321	327
5	Time	07:36.0	07:29.0	07:22.0	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5
	Split	1:54.0	1:52.3	1:50.5	1:48.8	1:47.0	1:45.6	1:44.8	1:44.1	1:43.5	1:42.9
	Watts	236	247	259	272	286	297	305	310	316	321
6	Time	07:43.0	07:36.0	07:29.0	07:22.0	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0
	Split	1:55.8	1:54.0	1:52.3	1:50.5	1:48.8	1:47.0	1:45.6	1:44.8	1:44.1	1:43.5
	Watts	226	236	247	259	272	286	297	305	310	316

6000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT			21:58.1		21:14.7						20:17.7
1	Time	22:57.0	22:40.5	22:30.0	22:22.5	22:15.0	22:07.5	22:00.0	21:52.5	21:45.0	21:37.5
	Split	1:54.8	1:53.4	1:52.5	1:51.9	1:51.3	1:50.6	1:50.0	1:49.4	1:48.8	1:48.1
	Watts	232	240	246	250	254	259	263	267	272	277
2	Time	23:18.0	22:57.0	22:40.5	22:30.0	22:22.5	22:15.0	22:07.5	22:00.0	21:52.5	21:45.0
	Split	1:56.5	1:54.8	1:53.4	1:52.5	1:51.9	1:51.3	1:50.6	1:50.0	1:49.4	1:48.8
	Watts	221	232	240	246	250	254	259	263	267	272
3	Time	23:39.0	23:18.0	22:57.0	22:40.5	22:30.0	22:22.5	22:15.0	22:07.5	22:00.0	21:52.5
	Split	1:58.3	1:56.5	1:54.8	1:53.4	1:52.5	1:51.9	1:51.3	1:50.6	1:50.0	1:49.4
	Watts	212	221	232	240	246	250	254	259	263	267
4	Time	24:00.0	23:39.0	23:18.0	22:57.0	22:40.5	22:30.0	22:22.5	22:15.0	22:07.5	22:00.0
	Split	2:00.0	1:58.3	1:56.5	1:54.8	1:53.4	1:52.5	1:51.9	1:51.3	1:50.6	1:50.0
	Watts	203	212	221	232	240	246	250	254	259	263
5	Time	24:21.0	24:00.0	23:39.0	23:18.0	22:57.0	22:40.5	22:30.0	22:22.5	22:15.0	22:07.5
	Split	2:01.8	2:00.0	1:58.3	1:56.5	1:54.8	1:53.4	1:52.5	1:51.9	1:51.3	1:50.6
	Watts	194	203	212	221	232	240	246	250	254	259
6	Time	24:42.0	24:21.0	24:00.0	23:39.0	23:18.0	22:57.0	22:40.5	22:30.0	22:22.5	22:15.0
	Split	2:03.5	2:01.8	2:00.0	1:58.3	1:56.5	1:54.8	1:53.4	1:52.5	1:51.9	1:51.3
	Watts	186	194	203	212	221	232	240	246	250	254

RCA ERG POGRESSION TABLE - LWT WOMEN

PEAK POWER		AGE	15	16	17	18	19	20	21	22	23	24+
	1	Split				1:25.1	1:24.6	1:24.1	1:23.7	1:23.3	1:22.9	1:22.5
		Watts				568	578	588	598	607	615	624
	2	Split				1:25.6	1:25.1	1:24.6	1:24.1	1:23.7	1:23.3	1:22.9
		Watts				558	568	578	588	598	607	615
	3	Split				01:26.3	01:25.6	01:25.1	01:24.6	01:24.1	01:23.7	01:23.3
		Watts				545	558	568	578	588	598	607
	4	Split				1:27.4	1:26.3	1:25.6	1:25.1	1:24.6	1:24.1	1:23.7
		Watts				525	545	558	568	578	588	598
	5	Split				01:28.7	01:27.4	01:26.3	01:25.6	01:25.1	01:24.6	01:24.1
		Watts				501	525	545	558	568	578	588
	6	Split				1:30.1	1:28.7	1:27.4	1:26.3	1:25.6	1:25.1	1:24.6
		Watts				479	501	525	545	558	568	578

APPENDIX 5D

1 MINUTE		AGE	15	16	17	18	19	20	21	22	23	24+
	1	Meters				310.4	312.2	314.0	315.8	317.3	318.8	320.3
		Split				1:36.7	1:36.1	1:35.5	1:35.0	1:34.5	1:34.1	1:33.7
		Watts				388	395	401	409	414	420	426
	2	Meters				308.6	310.4	312.2	314.0	315.8	317.3	318.8
		Split				1:37.2	1:36.7	1:36.1	1:35.5	1:35.0	1:34.5	1:34.1
		Watts				381	388	395	401	409	414	420
	3	Meters				306.2	308.6	310.4	312.2	314.0	315.8	317.3
		Split				01:38.0	01:37.2	01:36.7	01:36.1	01:35.5	01:35.0	01:34.5
		Watts				372	381	388	395	401	409	414
	4	Meters				302.4	306.2	308.6	310.4	312.2	314.0	315.8
		Split				1:39.2	1:38.0	1:37.2	1:36.7	1:36.1	1:35.5	1:35.0
		Watts				359	372	381	388	395	401	409
	5	Meters				297.8	302.4	306.2	308.6	310.4	312.2	314.0
		Split				01:40.7	01:39.2	01:38.0	01:37.2	01:36.7	01:36.1	01:35.5
		Watts				342	359	372	381	388	395	401
	6	Meters				293.3	297.8	302.4	306.2	308.6	310.4	312.2
		Split				1:42.3	1:40.7	1:39.2	1:38.0	1:37.2	1:36.7	1:36.1
		Watts				327	342	359	372	381	388	395

APPENDIX 5D

2000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT									06:53.0		
1	Time				07:16.5	07:14.0	07:11.5	07:09.0	07:07.0	07:05.0	07:03.0
	Split				1:49.1	1:48.5	1:47.9	1:47.3	1:46.8	1:46.3	1:45.8
	Watts				269	274	279	284	288	292	296
2	Time				07:19.0	07:16.5	07:14.0	07:11.5	07:09.0	07:07.0	07:05.0
	Split				1:49.8	1:49.1	1:48.5	1:47.9	1:47.3	1:46.8	1:46.3
	Watts				265	269	274	279	284	288	292
3	Time				07:22.5	07:19.0	07:16.5	07:14.0	07:11.5	07:09.0	07:07.0
	Split				1:50.6	1:49.8	1:49.1	1:48.5	1:47.9	1:47.3	1:46.8
	Watts				259	265	269	274	279	284	288
4	Time				07:28.0	07:22.5	07:19.0	07:16.5	07:14.0	07:11.5	07:09.0
	Split				1:52.0	1:50.6	1:49.8	1:49.1	1:48.5	1:47.9	1:47.3
	Watts				249	259	265	269	274	279	284
5	Time				07:35.0	07:28.0	07:22.5	07:19.0	07:16.5	07:14.0	07:11.5
	Split				1:53.8	1:52.0	1:50.6	1:49.8	1:49.1	1:48.5	1:47.9
	Watts				238	249	259	265	269	274	279
6	Time				07:42.0	07:35.0	07:28.0	07:22.5	07:19.0	07:16.5	07:14.0
	Split				1:55.5	1:53.8	1:52.0	1:50.6	1:49.8	1:49.1	1:48.5
	Watts				227	238	249	259	265	269	274

APPENDIX 5D

6000 METERS

	AGE	15	16	17	18	19	20	21	22	23	24+
WBT					23:06.8						21:56.7
1	Time				23:12.5	23:05.0	22:57.5	22:50.0	22:42.5	22:35.0	22:27.5
	Split				1:56.1	1:55.4	1:54.8	1:54.2	1:53.6	1:52.9	1:52.3
	Watts				224	228	231	235	239	243	247
2	Time				23:20.0	23:12.5	23:05.0	22:57.5	22:50.0	22:42.5	22:35.0
	Split				1:56.7	1:56.1	1:55.4	1:54.8	1:54.2	1:53.6	1:52.9
	Watts				220	224	228	231	235	239	243
3	Time				23:30.5	23:20.0	23:12.5	23:05.0	22:57.5	22:50.0	22:42.5
	Split				1:57.6	1:56.7	1:56.1	1:55.4	1:54.8	1:54.2	1:53.6
	Watts				216	220	224	228	231	235	239
4	Time				23:47.0	23:30.5	23:20.0	23:12.5	23:05.0	22:57.5	22:50.0
	Split				1:58.9	1:57.6	1:56.7	1:56.1	1:55.4	1:54.8	1:54.2
	Watts				208	216	220	224	228	231	235
5	Time				24:08.0	23:47.0	23:30.5	23:20.0	23:12.5	23:05.0	22:57.5
	Split				2:00.7	1:58.9	1:57.6	1:56.7	1:56.1	1:55.4	1:54.8
	Watts				199	208	216	220	224	228	231
6	Time				24:29.0	24:08.0	23:47.0	23:30.5	23:20.0	23:12.5	23:05.0
	Split				2:02.4	2:00.7	1:58.9	1:57.6	1:56.7	1:56.1	1:55.4
	Watts				191	199	208	216	220	224	228

APPENDIX 5D

RCA HUB TARGETS

ACHIEVE HUB MINIMUM 2K OR 6K ERG STANDARDS, BASED ON RCA'S AGE APPROPRIATE ERG TARGETS.

2000m HUB Minimum Erg Standard		AGE	15	16	17	18	19	20	21	22	23	24+
	Open Men	Time	06:25.5	06:21.0	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5	05:56.0
		Split	01:36.4	01:35.3	01:34.1	01:33.3	01:32.4	01:31.5	01:30.9	01:30.3	01:29.6	01:29.0
		Wats	391	405	420	432	444	457	466	476	486	496
	LWT Men	Time	06:52.0	06:45.0	06:39.0	06:33.0	06:27.0	06:22.0	06:19.5	06:17.0	06:14.5	06:12.0
		Split	01:43.0	01:41.3	01:39.8	01:38.3	01:36.8	01:35.5	01:34.9	01:34.3	01:33.6	01:33.0
		Wats	320	337	353	369	386	402	410	418	426	435
	Open Women	Time	07:29.0	07:22.0	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5	06:49.0
		Split	01:52.3	01:50.5	01:48.8	01:47.0	01:45.6	01:44.8	01:44.1	01:43.5	01:42.9	01:42.3
		Wats	247	259	272	286	297	305	310	316	321	327
	LWT Women	Time	07:49.0	07:42.0	07:35.0	07:28.0	07:22.5	07:19.0	07:16.5	07:14.0	07:11.5	07:09.0
		Split	01:57.3	01:55.5	01:53.8	01:52.0	01:50.6	01:49.8	01:49.1	01:48.5	01:47.9	01:47.3
		Wats	217	227	238	249	259	265	269	274	279	284

APPENDIX 5

2000m HUB Minimum Erg Standard		AGE	15	16	17	18	19	20	21	22	23	24+
	Open Men	Time	06:25.5	06:21.0	06:16.5	06:13.0	06:09.5	06:06.0	06:03.5	06:01.0	05:58.5	05:56.0
		Split	01:36.4	01:35.3	01:34.1	01:33.3	01:32.4	01:31.5	01:30.9	01:30.3	01:29.6	01:29.0
		Wats	391	405	420	432	444	457	466	476	486	496
	LWT Men	Time	06:52.0	06:45.0	06:39.0	06:33.0	06:27.0	06:22.0	06:19.5	06:17.0	06:14.5	06:12.0
		Split	01:43.0	01:41.3	01:39.8	01:38.3	01:36.8	01:35.5	01:34.9	01:34.3	01:33.6	01:33.0
		Wats	320	337	353	369	386	402	410	418	426	435
	Open Women	Time	07:29.0	07:22.0	07:15.0	07:08.0	07:02.5	06:59.0	06:56.5	06:54.0	06:51.5	06:49.0
		Split	01:52.3	01:50.5	01:48.8	01:47.0	01:45.6	01:44.8	01:44.1	01:43.5	01:42.9	01:42.3
		Wats	247	259	272	286	297	305	310	316	321	327
	LWT Women	Time	07:49.0	07:42.0	07:35.0	07:28.0	07:22.5	07:19.0	07:16.5	07:14.0	07:11.5	07:09.0
		Split	01:57.3	01:55.5	01:53.8	01:52.0	01:50.6	01:49.8	01:49.1	01:48.5	01:47.9	01:47.3
		Wats	217	227	238	249	259	265	269	274	279	284

APPENDIX 5

ROWING CANADA AVIRON

PARA ROWING CLASSIFICATION

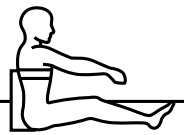
Do you know someone who may be interested in para-rowing?

Rowing Canada Aviron offers opportunities for athletes with physical and visual impairments to train and compete. Para athletes can compete in 3 rowing classifications depending on their specific impairment. For more information, please contact Kayla Cornale at **kcornale@rowingcanada.org.**

PR1

PARA ROWING 1

Formerly known as arms & shoulders



For athletes with spinal cord injury, cerebral palsy, brain injury or stroke; is a wheelchair user; seating: upright fixed

Rowers use arms and shoulders and are unable to use trunk, or legs to push a sliding seat.

PR2

PARA ROWING 2

Formerly known as trunk and arms

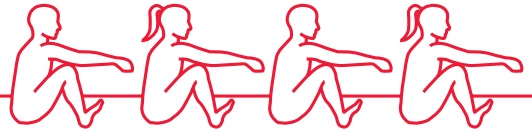
For athletes with limb loss/deficiency (double above knee), muscle strength loss in both legs, cerebral palsy, brain injury or stroke which affects both legs or one side of body. Seating: fixed

Rowers use trunk and arms and are unable to use their legs to push a sliding seat. Strapping around the legs provides stability.

PR3

PARA ROWING 3

Formerly known as legs, trunk and arms



For athletes with limb loss, muscle strength loss, cerebral palsy, brain injury, stroke, ms, visual impairment. Seating: sliding seat

Rowers use legs, trunk and arms and can push a sliding seat.

Programme national de certification des entraîneurs — National Coaching Certification Program

ROWING CANADA AVIRON

APPENDIX 6

RECOMMENDED TRAINING SPEEDS FOR DEVELOPING HP ATHLETES

MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>44	1:14.8	4:59.3	107%
	C2	37-38	1:20.0	5:20.2	100%
	C3	34-35	1:22.5	5:30.1	97%
	C4	27-29	1:28.9	5:55.8	90%
	C5	22-23	1:35.3	6:21.2	84%
	C6	18-19	1:40.1	6:40.3	80%
4-	C1	>43	1:20.2	5:20.7	107%
	C2	37-38	1:25.8	5:43.1	100%
	C3	34-35	1:28.4	5:53.7	97%
	C4	27-29	1:35.3	6:21.2	90%
	C5	22-23	1:42.1	6:48.5	84%
	C6	18-19	1:47.2	7:08.9	80%
2-	C1	>43	1:27.0	5:48.1	107%
	C2	36-37	1:33.1	6:12.5	100%
	C3	33-34	1:36.0	6:24.0	97%
	C4	27-29	1:43.5	6:53.9	90%
	C5	22-23	1:50.9	7:23.5	84%
	C6	18-19	1:56.4	7:45.6	80%
1X	C1	>42	1:32.1	6:08.6	107%
	C2	36-37	1:38.6	6:34.4	100%
	C3	33-34	1:41.6	6:46.6	97%
	C4	27-29	1:49.6	7:18.2	90%
	C5	21-22	1:57.4	7:49.5	84%
	C6	18-19	2:03.3	8:13.0	80%
2X	C1	>43	1:24.6	5:38.3	107%
	C2	36-37	1:30.5	6:02.0	100%
	C3	33-34	1:33.3	6:13.2	97%
	C4	27-29	1:40.6	6:42.2	90%
	C5	22-23	1:47.7	7:11.0	84%
	C6	18-19	1:53.1	7:32.5	80%
4X	C1	>44	1:18.0	5:12.1	107%
	C2	37-38	1:23.5	5:34.0	100%
	C3	34-35	1:26.1	5:44.3	97%
	C4	27-29	1:32.8	6:11.1	90%
	C5	22-23	1:39.4	6:37.6	84%
	C6	19-20	1:44.4	6:57.5	80%

WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>43	1:22.5	5:29.9	107%
	C2	37-38	1:28.3	5:53.0	100%
	C3	35-36	1:31.0	6:03.9	97%
	C4	27-29	1:38.1	6:32.2	90%
	C5	22-24	1:45.1	7:00.2	84%
	C6	18-19	1:50.3	7:21.3	80%
4-	C1	>43	1:29.2	5:56.7	107%
	C2	34-36	1:35.4	6:21.7	100%
	C3	33-34	1:38.4	6:33.5	97%
	C4	27-29	1:46.0	7:04.1	90%
	C5	21-23	1:53.6	7:34.4	84%
	C6	18-19	1:59.3	7:57.1	80%
2-	C1	>43	1:35.9	6:23.6	107%
	C2	35-37	1:42.6	6:50.5	100%
	C3	34-35	1:45.8	7:03.2	97%
	C4	27-29	1:54.0	7:36.1	90%
	C5	22-24	2:02.2	8:08.7	84%
	C6	18-19	2:08.3	8:33.1	80%
1X	C1	>42	1:40.8	6:43.4	107%
	C2	34-36	1:47.9	7:11.6	100%
	C3	33-34	1:51.2	7:24.9	97%
	C4	27-29	1:59.9	7:59.6	90%
	C5	21-23	2:08.5	8:33.8	84%
	C6	18-19	2:14.9	8:59.5	80%
2X	C1	>43	1:33.2	6:13.0	107%
	C2	35-37	1:39.8	6:39.1	100%
	C3	33-35	1:42.9	6:51.4	97%
	C4	27-29	1:50.9	7:23.4	90%
	C5	21-23	1:58.8	7:55.1	84%
	C6	18-19	2:04.7	8:18.9	80%
4X	C1	>43	1:26.3	5:45.1	107%
	C2	36-38	1:32.3	6:09.3	100%
	C3	34-35	1:35.2	6:20.7	97%
	C4	27-29	1:42.6	6:50.3	90%
	C5	22-24	1:49.9	7:19.6	84%
	C6	18-19	1:55.4	7:41.6	80%

RECOMMENDED TRAINING SPEEDS FOR DEVELOPING HP ATHLETES

LWT MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>44	1:16.4	5:05.6	107%
	C2	37-38	1:21.8	5:27.0	100%
	C3	34-35	1:24.3	5:37.1	97%
	C4	27-29	1:30.8	6:03.3	90%
	C5	22-23	1:37.3	6:29.3	84%
	C6	18-19	1:42.2	6:48.7	80%
4-	C1	>43	1:21.1	5:24.3	107%
	C2	37-38	1:26.8	5:47.0	100%
	C3	34-35	1:29.4	5:57.7	97%
	C4	27-29	1:36.4	6:25.6	90%
	C5	22-23	1:43.3	6:53.1	84%
	C6	18-19	1:48.4	7:13.7	80%
2-	C1	>43	1:28.3	5:53.3	107%
	C2	36-37	1:34.5	6:18.0	100%
	C3	33-34	1:37.4	6:29.7	97%
	C4	27-29	1:45.0	7:00.0	90%
	C5	22-23	1:52.5	7:30.0	84%
	C6	18-19	1:58.1	7:52.5	80%
1X	C1	>42	1:33.6	6:14.3	107%
	C2	36-37	1:40.1	6:40.5	100%
	C3	33-34	1:43.2	6:52.9	97%
	C4	27-29	1:51.3	7:25.0	90%
	C5	21-22	1:59.2	7:56.8	84%
	C6	18-19	2:05.2	8:20.6	80%
2X	C1	>43	1:26.0	5:44.1	107%
	C2	36-37	1:32.0	6:08.2	100%
	C3	33-34	1:34.9	6:19.6	97%
	C4	27-29	1:42.3	6:49.1	90%
	C5	22-23	1:49.6	7:18.3	84%
	C6	18-19	1:55.1	7:40.3	80%
4X	C1	>44	1:20.0	5:19.9	107%
	C2	37-38	1:25.6	5:42.3	100%
	C3	34-35	1:28.2	5:52.9	97%
	C4	27-29	1:35.1	6:20.3	90%
	C5	22-23	1:41.9	6:47.5	84%
	C6	19-20	1:47.0	7:07.9	80%

LWT WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
1X	C1	>41	1:43.0	6:52.0	107%
	C2	34-35	1:50.2	7:20.8	100%
	C3	32-34	1:53.6	7:34.4	97%
	C4	27-29	2:02.4	8:09.8	90%
	C5	21-23	2:11.2	8:44.8	84%
	C6	18-19	2:17.7	9:11.0	80%
2X	C1	>43	1:35.3	6:21.1	107%
	C2	35-37	1:42.0	6:47.8	100%
	C3	33-35	1:45.1	7:00.4	97%
	C4	27-29	1:53.3	7:33.1	90%
	C5	21-23	2:01.4	8:05.5	84%
	C6	18-19	2:07.4	8:29.8	80%
4X	C1	>43	1:28.7	5:54.7	107%
	C2	34-36	1:34.9	6:19.5	100%
	C3	33-34	1:37.8	6:31.2	97%
	C4	27-29	1:45.4	7:01.7	90%
	C5	21-23	1:52.9	7:31.8	84%
	C6	18-19	1:58.6	7:54.4	80%

RECOMMENDED TRAINING SPEEDS FOR DEVELOPING HP ATHLETES

U23 MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>44	1:17.0	5:07.9	104%
	C2	37-38	1:22.5	5:30.1	97%
	C3	34-35	1:25.2	5:40.6	94%
	C4	27-29	1:32.0	6:08.0	87%
	C5	22-23	1:38.8	6:35.3	81%
	C6	18-19	1:44.0	6:55.8	77%
4-	C1	>43	1:22.5	5:29.9	104%
	C2	37-38	1:28.4	5:53.7	97%
	C3	34-35	1:31.3	6:05.0	94%
	C4	27-29	1:38.6	6:34.4	87%
	C5	22-23	1:45.9	7:03.6	81%
	C6	18-19	1:51.4	7:25.6	77%
4+	C1	>43	1:26.3	5:45.2	104%
	C2	36-37	1:32.5	6:10.1	97%
	C3	33-34	1:35.5	6:21.9	94%
	C4	27-29	1:43.1	6:52.6	87%
	C5	22-23	1:50.8	7:23.2	81%
	C6	18-19	1:56.5	7:46.2	77%
2-	C1	>43	1:29.5	5:58.2	104%
	C2	36-37	1:36.0	6:24.0	97%
	C3	33-34	1:39.1	6:36.3	94%
	C4	27-29	1:47.0	7:08.2	87%
	C5	22-23	1:55.0	7:39.9	81%
	C6	18-19	2:00.9	8:03.8	77%

U23 WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>43	1:24.9	5:39.4	104%
	C2	37-38	1:31.0	6:03.9	97%
	C3	35-36	1:33.9	6:15.5	94%
	C4	27-29	1:41.4	6:45.7	87%
	C5	22-24	1:49.0	7:15.8	81%
	C6	18-19	1:54.6	7:38.4	77%
4-	C1	>43	1:31.8	6:07.0	104%
	C2	34-36	1:38.4	6:33.5	97%
	C3	33-34	1:41.5	6:46.1	94%
	C4	27-29	1:49.7	7:18.7	87%
	C5	21-23	1:57.8	7:51.2	81%
	C6	18-19	2:03.9	8:15.7	77%
2-	C1	>43	1:38.7	6:34.7	104%
	C2	35-37	1:45.8	7:03.2	97%
	C3	34-35	1:49.2	7:16.7	94%
	C4	27-29	1:58.0	7:51.8	87%
	C5	22-24	2:06.7	8:26.8	81%
	C6	18-19	2:13.3	8:53.1	77%

U23 MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
1X	C1	>42	1:34.8	6:19.2	104%
	C2	36-37	1:41.6	6:46.6	97%
	C3	33-34	1:44.9	6:59.6	94%
	C4	27-29	1:53.3	7:33.3	87%
	C5	21-22	2:01.7	8:06.9	81%
	C6	18-19	2:08.1	8:32.2	77%
2X	C1	>43	1:27.0	5:48.1	104%
	C2	36-37	1:33.3	6:13.2	97%
	C3	33-34	1:36.3	6:25.1	94%
	C4	27-29	1:44.0	6:56.1	87%
	C5	22-23	1:51.7	7:26.9	81%
	C6	18-19	1:57.5	7:50.1	77%
4X	C1	>44	1:20.3	5:21.2	104%
	C2	37-38	1:26.1	5:44.3	97%
	C3	34-35	1:28.8	5:55.3	94%
	C4	27-29	1:36.0	6:23.9	87%
	C5	22-23	1:43.1	6:52.3	81%
	C6	19-20	1:48.4	7:13.8	77%

U23 WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
1X	C1	>42	1:43.8	6:55.0	104%
	C2	34-36	1:51.2	7:24.9	97%
	C3	33-34	1:54.8	7:39.1	94%
	C4	27-29	2:04.0	8:16.1	87%
	C5	21-23	2:13.2	8:52.8	81%
	C6	18-19	2:20.1	9:20.5	77%
2X	C1	>43	1:35.9	6:23.8	104%
	C2	35-37	1:42.9	6:51.4	97%
	C3	33-35	1:46.1	7:04.6	94%
	C4	27-29	1:54.7	7:38.7	87%
	C5	21-23	2:03.2	8:12.7	81%
	C6	18-19	2:09.6	8:38.3	77%
4X	C1	>43	1:28.8	5:55.1	104%
	C2	36-38	1:35.2	6:20.7	97%
	C3	34-35	1:38.2	6:32.9	94%
	C4	27-29	1:46.1	7:04.5	87%
	C5	22-24	1:54.0	7:35.9	81%
	C6	18-19	1:59.9	7:59.6	77%

RECOMMENDED TRAINING SPEEDS FOR DEVELOPING HP ATHLETES

U23 LWT MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
4-	C1	>43	1:23.4	5:33.7	104%
	C2	37-38	1:29.4	5:57.7	97%
	C3	34-35	1:32.3	6:09.1	94%
	C4	27-29	1:39.7	6:38.9	87%
	C5	22-23	1:47.1	7:08.4	81%
	C6	18-19	1:52.7	7:30.6	77%
2-	C1	>43	1:30.9	6:03.5	104%
	C2	36-37	1:37.4	6:29.7	97%
	C3	33-34	1:40.5	6:42.1	94%
	C4	27-29	1:48.6	7:14.5	87%
	C5	22-23	1:56.7	7:46.7	81%
	C6	18-19	2:02.7	8:10.9	77%
1X	C1	>42	1:36.3	6:25.1	104%
	C2	36-37	1:43.2	6:52.9	97%
	C3	33-34	1:46.5	7:06.1	94%
	C4	27-29	1:55.1	7:40.3	87%
	C5	21-22	2:03.6	8:14.4	81%
	C6	18-19	2:10.0	8:40.1	77%
2X	C1	>43	1:28.5	5:54.0	104%
	C2	36-37	1:34.9	6:19.6	97%
	C3	33-34	1:37.9	6:31.7	94%
	C4	27-29	1:45.8	7:03.2	87%
	C5	22-23	1:53.6	7:34.6	81%
	C6	18-19	1:59.5	7:58.2	77%
4X	C1	>44	1:22.3	5:29.1	104%
	C2	37-38	1:28.2	5:52.9	97%
	C3	34-35	1:31.0	6:04.1	94%
	C4	27-29	1:38.4	6:33.4	87%
	C5	22-23	1:45.6	7:02.6	81%
	C6	19-20	1:51.1	7:24.5	77%

U23 LWT WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
1X	C1	>41	1:46.0	7:03.8	104%
	C2	34-35	1:53.6	7:34.4	97%
	C3	32-34	1:57.2	7:48.9	94%
	C4	27-29	2:06.7	8:26.7	87%
	C5	21-23	2:16.0	9:04.2	81%
	C6	18-19	2:23.1	9:32.5	77%
2X	C1	>43	1:38.0	6:32.1	104%
	C2	35-37	1:45.1	7:00.4	97%
	C3	33-35	1:48.5	7:13.8	94%
	C4	27-29	1:57.2	7:48.7	87%
	C5	21-23	2:05.9	8:23.5	81%
	C6	18-19	2:12.4	8:49.6	77%
4X	C1	>43	1:31.2	6:04.9	104%
	C2	34-36	1:37.8	6:31.2	97%
	C3	33-34	1:40.9	6:43.7	94%
	C4	27-29	1:49.1	7:16.2	87%
	C5	21-23	1:57.1	7:48.5	81%
	C6	18-19	2:03.2	8:12.9	77%

RECOMMENDED TRAINING SPEEDS FOR DEVELOPING HP ATHLETES

JR MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>44	1:19.3	5:17.0	101%
	C2	37-38	1:25.2	5:40.6	94%
	C3	34-35	1:28.0	5:51.9	91%
	C4	27-29	1:35.3	6:21.2	84%
	C5	22-23	1:42.6	6:50.5	78%
	C6	18-19	1:48.2	7:12.7	74%
4-	C1	>43	1:24.9	5:39.7	101%
	C2	37-38	1:31.3	6:05.0	94%
	C3	34-35	1:34.3	6:17.0	91%
	C4	27-29	1:42.1	6:48.5	84%
	C5	22-23	1:50.0	7:19.9	78%
	C6	18-19	1:55.9	7:43.6	74%
4+	C1	>43	1:28.9	5:55.4	101%
	C2	36-37	1:35.5	6:21.9	94%
	C3	33-34	1:38.6	6:34.5	91%
	C4	27-29	1:46.8	7:07.3	84%
	C5	22-23	1:55.1	7:40.2	78%
	C6	18-19	2:01.3	8:05.1	74%
2-	C1	>43	1:32.2	6:08.8	101%
	C2	36-37	1:39.1	6:36.3	94%
	C3	33-34	1:42.3	6:49.3	91%
	C4	27-29	1:50.9	7:23.5	84%
	C5	22-23	1:59.4	7:57.6	78%
	C6	18-19	2:05.8	8:23.4	74%

JR WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
8+	C1	>43	1:27.4	5:49.5	101%
	C2	37-38	1:33.9	6:15.5	94%
	C3	35-36	1:37.0	6:27.9	91%
	C4	27-29	1:45.1	7:00.2	84%
	C5	22-24	1:53.1	7:32.6	78%
	C6	18-19	1:59.3	7:57.0	74%
4-	C1	>43	1:34.5	6:17.9	101%
	C2	34-36	1:41.5	6:46.1	94%
	C3	33-34	1:44.9	6:59.5	91%
	C4	27-29	1:53.6	7:34.4	84%
	C5	21-23	2:02.3	8:09.4	78%
	C6	18-19	2:09.0	8:35.8	74%
2-	C1	>43	1:41.6	6:46.4	101%
	C2	35-37	1:49.2	7:16.7	94%
	C3	34-35	1:52.8	7:31.1	91%
	C4	27-29	2:02.2	8:08.7	84%
	C5	22-24	2:11.6	8:46.3	78%
	C6	18-19	2:18.7	9:14.7	74%

JR MEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
1X	C1	>42	1:37.6	6:30.5	101%
	C2	36-37	1:44.9	6:59.6	94%
	C3	33-34	1:48.4	7:13.4	91%
	C4	27-29	1:57.4	7:49.5	84%
	C5	21-22	2:06.4	8:25.6	78%
	C6	18-19	2:13.2	8:53.0	74%
2X	C1	>43	1:29.6	5:58.4	101%
	C2	36-37	1:36.3	6:25.1	94%
	C3	33-34	1:39.5	6:37.8	91%
	C4	27-29	1:47.7	7:11.0	84%
	C5	22-23	1:56.0	7:44.1	78%
	C6	18-19	2:02.3	8:09.2	74%
4X	C1	>44	1:22.7	5:30.7	101%
	C2	37-38	1:28.8	5:55.3	94%
	C3	34-35	1:31.8	6:07.0	91%
	C4	27-29	1:39.4	6:37.6	84%
	C5	22-23	1:47.1	7:08.2	78%
	C6	19-20	1:52.8	7:31.4	74%

JR WOMEN

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
1X	C1	>42	1:46.8	7:07.3	101%
	C2	34-36	1:54.8	7:39.1	94%
	C3	33-34	1:58.6	7:54.3	91%
	C4	27-29	2:08.5	8:33.8	84%
	C5	21-23	2:18.3	9:13.3	78%
	C6	18-19	2:25.8	9:43.2	74%
2X	C1	>43	1:38.8	6:35.1	101%
	C2	35-37	1:46.1	7:04.6	94%
	C3	33-35	1:49.6	7:18.6	91%
	C4	27-29	1:58.8	7:55.1	84%
	C5	21-23	2:07.9	8:31.7	78%
	C6	18-19	2:14.8	8:59.3	74%
4X	C1	>43	1:31.4	6:05.6	101%
	C2	36-38	1:38.2	6:32.9	94%
	C3	34-35	1:41.5	6:45.8	91%
	C4	27-29	1:49.9	7:19.6	84%
	C5	22-24	1:58.4	7:53.5	78%
	C6	18-19	2:04.8	8:19.1	74%

APPENDIX 7

ALL MEN 1x

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
JR MEN					
1X	C1	>42	1:37.0	6:28.1	101%
	C2	36-37	1:44.3	6:57.0	94%
	C3	33-34	1:47.7	7:10.8	91%
	C4	27-29	1:56.7	7:46.7	84%
	C5	21-22	2:05.6	8:22.6	78%
	C6	18-19	2:12.4	8:49.7	74%4X
U23 MEN					
1X	C1	>42	1:34.2	6:16.9	104%
	C2	36-37	1:41.0	6:44.1	97%
	C3	33-34	1:44.3	6:57.0	94%
	C4	27-29	1:52.6	7:30.6	87%
	C5	21-22	2:01.0	8:04.0	81%
	C6	18-19	2:07.3	8:29.1	77%
MEN					
1X	C1	>42	1:31.6	6:06.4	107%
	C2	36-37	1:38.0	6:32.0	100%
	C3	33-34	1:41.0	6:44.1	97%
	C4	27-29	1:48.9	7:15.6	90%
	C5	21-22	1:56.7	7:46.7	84%
	C6	18-19	2:02.5	8:10.0	80%
U23 LWT MEN					
1X	C1	>42	1:35.7	6:22.7	104%
	C2	36-37	1:42.6	6:50.3	97%
	C3	33-34	1:45.9	7:03.4	94%
	C4	27-29	1:54.4	7:37.5	87%
	C5	21-22	2:02.8	8:11.4	81%
	C6	18-19	2:09.2	8:36.9	77%
LWT MEN					
1X	C1	>42	1:33.0	6:12.0	107%
	C2	36-37	1:39.5	6:38.0	100%
	C3	33-34	1:42.6	6:50.3	97%
	C4	27-29	1:50.6	7:22.2	90%
	C5	21-22	1:58.5	7:53.8	84%
	C6	18-19	2:04.4	8:17.5	80%

APPENDIX 7

ALL MEN 2-

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
JR MEN					
2-	C1	>43	1:31.8	6:07.3	101%
	C2	36-37	1:38.7	6:34.7	94%
	C3	33-34	1:41.9	6:47.7	91%
	C4	27-29	1:50.4	7:21.7	84%
	C5	22-23	1:58.9	7:55.6	78%
	C6	18-19	2:05.3	8:21.4	74%
U23 MEN					
2-	C1	>43	1:29.2	5:56.7	104%
	C2	36-37	1:35.6	6:22.5	97%
	C3	33-34	1:38.7	6:34.7	94%
	C4	27-29	1:46.6	7:06.4	87%
	C5	22-23	1:54.5	7:38.0	81%
	C6	18-19	2:00.5	8:01.8	77%
MEN					
2-	C1	>43	1:26.7	5:46.7	107%
	C2	36-37	1:32.7	6:11.0	100%
	C3	33-34	1:35.6	6:22.5	97%
	C4	27-29	1:43.1	6:52.2	90%
	C5	22-23	1:50.4	7:21.7	84%
	C6	18-19	1:55.9	7:43.7	80%
U23 LWT MEN					
2-	C1	>43	1:30.9	6:03.5	104%
	C2	36-37	1:37.4	6:29.7	97%
	C3	33-34	1:40.5	6:42.1	94%
	C4	27-29	1:48.6	7:14.5	87%
	C5	22-23	1:56.7	7:46.7	81%
	C6	18-19	2:02.7	8:10.9	77%
LWT MEN					
2-	C1	>43	1:28.3	5:53.3	107%
	C2	36-37	1:34.5	6:18.0	100%
	C3	33-34	1:37.4	6:29.7	97%
	C4	27-29	1:45.0	7:00.0	90%
	C5	22-23	1:52.5	7:30.0	84%
	C6	18-19	1:58.1	7:52.5	80%

APPENDIX 7

ALL WOMEN 1x

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
JR WOMEN					
1X	C1	>42	1:46.4	7:05.7	101%
	C2	34-36	1:54.4	7:37.4	94%
	C3	33-34	1:58.1	7:52.5	91%
	C4	27-29	2:08.0	8:31.9	84%
	C5	21-23	2:17.8	9:11.3	78%
	C6	18-19	2:25.3	9:41.1	74%
U23 WOMEN					
1X	C1	>42	1:43.4	6:53.5	104%
	C2	34-36	1:50.8	7:23.3	97%
	C3	33-34	1:54.4	7:37.4	94%
	C4	27-29	2:03.6	8:14.3	87%
	C5	21-23	2:12.7	8:50.9	81%
	C6	18-19	2:19.6	9:18.4	77%
WOMEN					
1X	C1	>42	1:40.5	6:41.9	107%
	C2	34-36	1:47.5	7:10.0	100%
	C3	33-34	1:50.8	7:23.3	97%
	C4	27-29	1:59.4	7:57.8	90%
	C5	21-23	2:08.0	8:31.9	84%
	C6	18-19	2:14.4	8:57.5	80%
U23 LWT WOMEN					
1X	C1	>41	1:44.6	6:58.3	104%
	C2	34-35	1:52.1	7:28.5	97%
	C3	32-34	1:55.7	7:42.8	94%
	C4	27-29	2:05.0	8:20.0	87%
	C5	21-23	2:14.3	8:57.0	81%
	C6	18-19	2:21.2	9:24.9	77%
LWT WOMEN					
1X	C1	>41	1:41.6	6:46.5	107%
	C2	34-35	1:48.8	7:15.0	100%
	C3	32-34	1:52.1	7:28.5	97%
	C4	27-29	2:00.8	8:03.3	90%
	C5	21-23	2:09.5	8:37.9	84%
	C6	18-19	2:15.9	9:03.7	80%

APPENDIX 7

ALL WOMEN 2-

Boat Class	Training Zone	Stroke Rate	Time 500m	Time 2000m	% of Sr GMS
JR WOMEN					
2-	C1	>43	1:41.7	6:46.9	101%
	C2	35-37	1:49.3	7:17.2	94%
	C3	34-35	1:52.9	7:31.6	91%
	C4	27-29	2:02.3	8:09.3	84%
	C5	22-24	2:11.7	8:46.9	78%
	C6	18-19	2:18.9	9:15.4	74%
U23 WOMEN					
2-	C1	>43	1:38.8	6:35.2	104%
	C2	35-37	1:45.9	7:03.7	97%
	C3	34-35	1:49.3	7:17.2	94%
	C4	27-29	1:58.1	7:52.4	87%
	C5	22-24	2:06.9	8:27.4	81%
C6	18-19	2:13.4	8:53.8	77%	
	WOMEN				
2-	C1	>43	1:36.0	6:24.1	107%
	C2	35-37	1:42.8	6:51.0	100%
	C3	34-35	1:45.9	7:03.7	97%
	C4	27-29	1:54.2	7:36.7	90%
	C5	22-24	2:02.3	8:09.3	84%
	C6	18-19	2:08.4	8:33.7	80%