

# Dragon Boat Technical Coaching Manual

## Basic Instruction



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## PREFACE

Welcome to the 2003 Technical Coaching manual for Dragon Boat paddling.

This is the third edition of this manual and while there are a number of improvements from previous editions, over 90% of the material remains the same as the 2002 edition. The content will continue to evolve to conform to the Coaching Association of Canada's Competency Based Education Theory (CBET).

You will quickly find out that this manual is not a recipe book for paddling workouts. Instead, this manual will teach you how to design and create your own workouts that are unique to you and prepared for your team's needs. Instead of becoming a "line cook" type of coach, you will become a coaching "chef".

In our attempt to be as complete a coaching education program as possible, we have addressed Dragon Boat paddling as a team sport accessible to people from every corner of our community. Some of these will require different approaches in your coaching. The material we have collected in this manual is used by the following teams;

- Mixed teams (12 men and 8 women),
- Women only,
- Men only,
- Juniors (18 and under),
- Seniors (55 and over),
- Special populations
  - Cancer survivors,
  - Major organ transplant recipients, and
  - Visually impaired individuals.

A good coaching manual and coaching course is never complete. We anticipate that regular updates will be produced to keep your manual as current as possible with the latest Dragon Boat coaching knowledge made available from across Canada. While we have tried to keep the content of the manual fairly simple, we are aware that there will always be questions and clarifications needed by someone, somewhere. If you come across a section that you feel needs more, or less information, please give us some feedback!

Any questions and comments can be directed to Alan [info@EAScoaching.ca](mailto:info@EAScoaching.ca)

## DRAGON BOAT CANADA COACHING CERTIFICATION PROGRAM

In Canada, sport coaching certification programs are often under the umbrella of the National Coaching Certification Program (NCCP). Until Dragon Boat paddling is fully integrated into the Canadian paddling and sports community, this program is designed to dovetail into the NCCP certification process with respect to both coaching levels and the certification process itself.

The newly developed NCCP Competency Based Education Training (CBET) model has three key improvements that are being made to the program include:

- Placing a greater emphasis on coach abilities; certification will be based on a proven ability "DO" versus simply "KNOW"
- A structure for the program that is able to accommodate differences between sports, types of coaches, and environments in which coaches work
- Coach training and certification that is based on the needs of the participants and is as experiential as possible

To facilitate the training and certification of coaches the CBET model recognizes three different coaching routes;

- Community Sport

*NOTE: There is no Community Sport Coaching route for Dragon Boat due to the inherent risks, specialized equipment and costs needed for the sport.*

- Instruction
- Competition

### Community Sport Route

Coaches in this stream often become involved because their children participate in the sport. They are involved on a purely volunteer basis, often on a short-term or transient basis.

Community coaches:

- Foster the love of sport within a fun and safe environment
- Promote participation and encourage participants regardless of ability level
- Foster the acquisition of basic skills through a variety of games/activities
- Coach in recreational or local programs featuring low-level competitions
- Usually coach once or twice a week for an hour or so (this can vary from sport to sport).

The community sport stream **does not** apply to sports wherein:

- There is a significant element of risk inherent to the sport or to the sport environment
- Specialized facilities and/or equipment are required for participation in the sport

- Skill demonstrations are important to promote learning
- A person new to the sport and with no background in it could not realistically be expected to be put in charge of a group of children after one or two days of training

As such, there is no Community Sport Coaching route for Dragon Boat.

### **Instruction Route**

Coaches in this stream are expected to be proficient in the teaching of sport-specific skills, and are often former participants in the sport. They must be able to plan for and manage the risks inherent to the sport and manage and fit the specialized equipment required for participation. Because of these expectations, specialized training is necessary for coaches in this stream, whether they are working with beginner or advanced skill levels. They are therefore not considered community coaches even though they coach in programs offered in the communities.

Instruction coaches:

- Coach in specialized facilities, or in an environment that poses a significant element of risk
- Teach sport-specific skills, and are often required to provide demonstrations of these skills
- Emphasize safety and technical precision in teaching skills
- Coach primarily in a non-competitive, or recreational context
- Coach participants of various proficiency levels and of all ages

At the majority of Dragon Boat clubs, instructional education is the largest coaching resource needed.

### **Beginners**

Goals of participation:	Fun, fitness, fundamentals, skill development primarily
Frequency of participation:	1-2 times per week
Level of competition:	Community or none
Proficiency level:	Getting started in the sport, acquiring basic skills
Age of participants:	Children to adults
Stage in athlete development:	FUNDamentals

### **Intermediate Performers**

Goals of participation:	Fun, fitness, skill development primarily
Frequency of participation:	1-3 times per week
Level of competition:	Community, Regional or none
Proficiency level:	Consolidating basic skills and acquiring advanced skills
Age of participants:	Children to adults

Stage in athlete development: No stage (Working primarily on skills, little emphasis on other areas of athlete development)

### **Advanced Performers**

Goals of participation: Fun, fitness, skill development primarily  
Frequency of participation: 2-4 times per week  
Level of competition: Community, Regional, National or none  
Proficiency level: Consolidating and refining advanced skills  
Age of participants: Children to adults  
Stage in athlete development: No stage (Working primarily on skills, little emphasis on other areas of athlete development)

### **Competition Route**

Coaches in this stream generally have prior coaching experience or are former athletes in the sport. They coach both to improve skill proficiency and to improve performance in competition. They work to develop athletes over the long term, according to the sport's athlete development model.

Competition coaches:

- Provide support to athletes in areas such as technical, physical, tactical and mental preparation
- Coach in competitions as well as in training
- Usually coach three or more times a week
- Coach within a framework of a seasonal or an annual plan

## Introduction

Goals of participation:	Fun, fitness, fundamentals, performance in regional competitions
Frequency of participation:	2-4 times per week for a 3-6 month season
Level of competition:	Regional to provincial/state
Proficiency level:	Consolidating basic skills
Age of participants:	Youth
Stage in athlete development:	Train to train

## Development

Goals of participation:	Performance in provincial and national competitions
Frequency of participation:	3-4 times per week for a 5-9 month season
Level of competition:	Provincial/state to national
Proficiency level:	Refining and varying basic skills, acquiring and consolidating advanced skills
Age of participants:	Youth and young adults
Stage in athlete development:	Train to compete

## High Performance

Goals of participation:	Performance in national and international competitions
Frequency of participation:	5 or more times per week for a 12 month season
Level of competition:	National to international
Proficiency level:	Refining and varying advanced skills
Age of participants:	Young adults and adults
Stage in athlete development:	Compete to win

The process of becoming a certified Dragon Boat coach consists of five steps for each level of coaching from one through five;

1. An NCCP theory course which is common to all sports and addresses basics coaching theory relevant to that level,
2. A sport specific technical course that complements the theory course with minimum overlap,
3. A sport specific practicum of 20 or more hours during which the skills acquired in the theory and technical courses are applied,
4. A competency based exam (short answer and multiple choice) upon completion of the theory and technical components as well as an additional section (longer answer format) after the practicum,
5. Periodic refresher courses will be required every 2 years at the highest level of coaching certification you have accomplished to remain an active coach. Reactivation of a "stale" coaching certification is possible upon completion of the refresher course.

Information in this manual is identified by the level of paddler / coach to whom it is best addressed. Where ever possible, each level builds on material taught at the previous level. The Instruction and High Performance routes will be very similar with main difference occurring in fitness training.

## INTRODUCTION

Dragon Boat paddling presents many new and unique challenges to a coach.

The intent of this manual is to help identify those challenges and suggest ways to make the paddling experience as enjoyable as possible for everyone. When we think of a Dragon Boat team our first thought is the twenty individuals who paddle the boat. What we would like you to do is consider your team as including the following;

- Paddlers,
- Drummer,
- Steersperson,
- Coach,
- Manager,
- Sponsors,
- Family and friends

At the novice paddler level, a coach faces different challenges than with a more advanced or experienced team.

The first and most obvious challenge to a novice coach is getting twenty inexperienced paddlers doing the same stroke, at the same time. Learning an efficient and safe stroke for novice paddlers is where the most satisfaction and largest performance gains are going to come from. For novice paddlers, learning to paddle well technically is where the largest performance gains are going to come from. Proper technique at this level lays the foundation for a solid Performance and High Performance paddling career.

The second challenge to coaching Dragon Boat is the duration of the sport. While there are some long distance dragon boat events, the majority of racing occurs over 250 - 1000 m distances. For the most part, domestic dragon boat events are approximately 500 m in length and last between 2 and 4 minutes. Events of this length fall into a very tricky training category known as "middle distance" or "the mystery zone".

***Other comparable events are the 500 – 1 000 m in canoeing and kayaking, 200 - 400 m in swimming, 800 – 1 600 m in running and 1 000 – 4 000 m in cycling.***

The physical and mental training challenges in preparing a sprint paddler lies not in the easy or hard training needed, but in the integration of the two that is unique to middle distance events.

The first section of this module deals with paddling technique. It is quite extensive and should present a complete picture of the stroke for you to

demonstrate and teach your team. While there are variations on technique, the model we are using is both effective and efficient in racing and training.

The second section of this module presents an overview of physical training theory. This is followed by a brief explanation of the process by which training programs are designed for novice teams. This training process outlined for novice paddlers is also common in the early season training for Performance and High Performance teams. In this section, samples of planning practices and examples of workouts to address the aerobic and muscular conditioning aspects of training are included.

However, before either technique or training theory is dealt with, a brief outline on coaching ethics is presented. Please take the time to become familiar with the principles outline in this section as this is one of the cornerstones to being professional in your coaching attitude.

On that note, enjoy the material we have compiled in this manual.

Alan

Please note that for simplicity, the time values in this manual are given in a notation whereby 30 seconds is written as 0:30, 5 minutes and 30 seconds is written as 5:30 and 1 hour 5 minutes and 30 seconds is written as 1:05:30.

***Terminology you may not be familiar with will come up from time to time. Where ever possible we have defined these terms at the time they are introduced. If for whatever reason a term is used you are unfamiliar with, don't hesitate to look it up in a dictionary!***

## COACHING CODE OF ETHICS

While a discussion on the ethics in coaching is possibly a little heavy to begin with in a coaching manual for novice coaches, it is the best place. Whether you are volunteer coach for a community team or an aspiring National Team coach, learning about coaching ethics will set you upon a firm foundation from which your coaching can be professional in attitude.

This information is offered through Coaches of Canada (COC) and applicable to all sports, individual and teams. It is reproduced from their public website located at <http://www.coachesofcanada.com/Professionals/Ethics.asp>. The footnotes are included at the end of the ethics section.

This section of the COC code of ethics is organized around four ethical principles;

- I. Respect for Participants**
- II. Responsible Coaching**
- III. Integrity in Relationships**
- IV. Honouring Sport**

Each principle is followed by a brief description and a list of ethical standards illustrating how that principle applies to the activities of coaches. These standards are grouped by key words that are an important part of the overall principle.<sup>1</sup>

### **I. Respect for Participants**

The principle of *respect<sup>2</sup> for participants<sup>3</sup>* challenges coaches to act in a manner respectful of the dignity<sup>4</sup> of all participants in sport. Fundamental to this principle is the basic assumption that each person has value and is worthy of respect.

Acting with *respect for participants* means that coaches

- i. do not make some participants more or less worthy<sup>5</sup> as persons than others on the basis of gender, race, place of origin, athletic potential, colour, sexual orientation, religion, political beliefs, socioeconomic status, marital status, age or any other conditions;<sup>6</sup>
- ii. have a responsibility to respect and promote the rights of all participants. This is accomplished by establishing and following procedures for confidentiality (right to privacy); informed participation and shared decision-making (right to self-determination - athletes' rights); and fair and reasonable treatment (right to procedural fairness). Coaches have a special responsibility to respect and promote the rights of participants who are in vulnerable or dependent positions and less able to protect their own rights;

- iii.interact with others in a manner that enables all participants in sport to maintain their dignity; and
- iv.build mutual support among fellow coaches, officials, athletes and their family members.

In being faithful to the principle of *respect for participants*, coaches would adhere to the following ethical standards:

### **Key Words**

### **Ethical Standards**

#### *Respect*

- 1.1 Treat all participants in sport with respect at all times.
- 1.2 Provide feedback to athletes and other participants in a caring manner that is sensitive to their needs, e.g., focus criticism on the performance rather than on the athlete.
- 1.3 Respect the areas of expertise, experience and insights of others in sport by considering carefully their opinions.
- 1.4 Do not engage publicly (e.g., statements, conversations, jokes, presentations, media reports) in demeaning descriptions of others in sport.
- 1.5 Be discreet<sup>2</sup> in non-public conversations about athletes, coaches or other participants in sport.

#### *Rights*

- 1.6 Recognize athletes' right to consult with other coaches and advisors.
- 1.7 Respect athletes as autonomous individuals and refrain from intervening inappropriately in personal affairs that are outside the generally accepted jurisdiction of a coach.

#### *Equity*

- 1.8 Treat all participants equitably within the context of their sporting activities, regardless of gender, race, place of origin, athletic potential, colour, sexual orientation, religion, political beliefs, socioeconomic status and any other condition.
- 1.9 Use language that conveys respect for the dignity of others (e.g., gender-neutral terms) in written and verbal communications.

- 1.10 Do not practice, condone, ignore, facilitate or collaborate with any form of unjust discrimination in sport.
  - 1.11 Act to prevent or correct practices that are unjustly discriminatory.
- Empowerment*<sup>8</sup>
- 1.12 Encourage and facilitate participants' abilities to be responsible for their own behaviour, performance and decisions.
  - 1.13 Respect as much as possible the opinions and wishes of participants when making decisions that affect them.
  - 1.14 Give athletes the opportunity to discuss, contribute to and agree with proposals for training and for performance standards.
- Informed participation*
- 1.15 Provide athletes with the information necessary for them to be meaningfully involved in the decisions that affect them.
  - 1.16 Communicate and cooperate with family<sup>9</sup> members, involving them in appropriate decisions pertaining to an athlete's development.
  - 1.17 Clarify the nature of coaching services to participants, i.e., athletes, parents, family members or significant others.
- Confidentiality*
- 1.18 Determine, in consultation with athletes and others, what information is confidential.
  - 1.19 Keep confidential any information about athletes or others gained through coaching activities and believed to be considered confidential by those persons.
  - 1.20 Share confidential information only with the consent of those requesting confidentiality or in a way that the individual(s) involved cannot be identified.
  - 1.21 Exercise discretion in recording and communicating information to prevent this information from being interpreted or used to the detriment of others.
  - 1.22 Clarify and implement measures to protect confidential information, e.g., restricting access to confidential records.
- Mutual support*
- 1.23 Encourage a climate of mutual support among all participants in sport.

- Extended responsibility* 1.24 Encourage participants to respect one another and to expect respect for their worth as individuals.
- 1.25 Keep informed on current issues related to respect for participants, e.g., gender equity.

## II. Responsible Coaching

The principle of *responsible coaching* carries the basic ethical expectation that the activities of coaches will benefit society in general and participants in particular and will do no harm. Fundamental to the implementation of this principle is the notion of competence - responsible coaching (maximising benefits and minimising risks to participants) is performed by coaches who are "well prepared and current"<sup>10</sup> in their discipline.

In addition, *responsible coaching* means that coaches

- i. act in the best interest of the athlete's development as a whole person;
- ii. recognise the power inherent in the position of coach;
- iii. are aware of their personal values and how these affect their practice as coaches;
- iv. acknowledge the limitations of their discipline; and
- v. accept the responsibility to work with other coaches and professionals in sport.

In being faithful to the principle of *responsible coaching*, coaches would adhere to the following ethical standards:

### Key Words

*Professional training*

### Ethical Standards

- 2.1 Be responsible for achieving a high level of professional competence through appropriate training.
- 2.2 Keep current with relevant information (knowledge), coaching and teaching skills and research through personal learning projects, discussions with colleagues, workshops, courses, conferences, etc. to ensure that coaching services benefit and do not harm others.

- Self knowledge*
- 2.3 Evaluate how personal experiences, attitudes, beliefs, values, socioeconomic status, sexual orientation, individual differences and stresses influence actions as coaches and integrate this awareness into all efforts to benefit and not harm others.
- 2.4 Engage in self-care activities that help to avoid conditions (e.g., burnout, addictions) that could result in impaired judgement and interfere with the ability to benefit and not harm others.
- Beneficence*<sup>11</sup>
- 2.5 Coach in a way that benefits athletes, removes harm and acts consistently for the good of the athlete, keeping in mind that the same training, skills and powers that coaches use to produce benefits for athletes are also capable of producing harm.
- Coaching limits*
- 2.6 Take the limits of knowledge and capacity into account in coaching practice; in particular, do not assume responsibilities if insufficiently prepared for them.
- 2.7 Recognise and accept when it is appropriate to refer athletes to other coaches or sport specialists.
- 2.8 Refrain from working in unsafe or inappropriate situations that significantly compromise the quality of coaching services and the health and safety of athletes.
- Athlete's interest*
- 2.9 Ensure that activities are suitable for the age, experience, ability, and physical and psychological conditions of athletes.
- 2.10 Prepare athletes systematically and progressively, using appropriate time frames and monitoring physical and psychological adjustments.
- 2.11 Refrain from using training methods or techniques that may harm athletes; monitor innovative approaches with care.
- 2.12 Be aware of significant pressures in athletes' lives, e.g., school, family and financial pressures, and coach in a manner that fosters positive life experiences.
- 2.13 Consider athletes' future health and well-being as foremost when making decisions about an injured athlete's ability to continue participating.

- 2.14 Strive to be fully present, physically and mentally, in the performance of coaching duties.
- Safety* 2.15 Ensure that athletes train and perform in suitable and safe settings.
- 2.16 Make athletes aware of their responsibilities for participating safely in sport.
- Sexual relationships* 2.17 Be acutely aware of power in coaching relationships and, therefore, avoid sexual intimacy with athletes, both during coaching and during that period following coaching during when imbalance in power could jeopardise effective decision-making.
- 2.18 Abstain from and refuse to tolerate in others all forms of harassment, including sexual harassment. Sexual harassment includes either or both of the following:
- i. the use of power or authority in an attempt to coerce another person to engage in or tolerate sexual activity. Such uses include explicit or implicit threats of reprisals for noncompliance or promises of reward for compliance.
  - ii. engaging in deliberate or repeated sexually oriented comments, anecdotes, gestures or touching, if such behaviours
    - a. are offensive and unwelcome;
    - b. create an offensive, hostile or intimidating working environment; or
    - c. can be expected to be harmful to the recipient.
- Colleagues* 2.19 Act toward other coaches in a manner characterised by courtesy, good faith and respect.
- 2.20 Collaborate<sup>12</sup> with other coaches and colleagues from related disciplines.
- 2.21 Communicate and cooperate with health practitioners in the diagnosis, treatment and management of athletes' health-related needs.

- 2.22 Use discretion for resolving disputes with colleagues, e.g., deal with differences of opinion constructively on a personal basis and refer more serious disputes to appropriate bodies.
- Extended responsibility* 2.23 Encourage others, when appropriate, to coach responsibly.
- 2.24 Recognise and address harmful personal practices of others in sport, e.g., drug and alcohol addiction, physical and mental abuse, misuse of power.
- 2.25 Assume responsibility for the actions of athletes and other supervised individuals with regard to the principle of *responsible coaching*.

### III. Integrity in Relationships

Integrity means that coaches are expected to be honest, sincere and honourable in their relationships with others. Acting on these values is most possible when coaches possess a high degree of self-awareness and the ability to reflect critically<sup>13</sup> on how their perspectives influence their interactions with others.

In being faithful to the principle of *integrity in relationships*, coaches would adhere to the following ethical standards:

<b>Key Words</b>	<b>Ethical Standards</b>
<i>Honesty</i>	<p>3.1 Explore mutual expectations with athletes in an honest and open manner, giving due consideration to the age and experience of individuals.</p> <p>3.2 Accurately represent personal coaching qualifications, experience, competence and affiliations in spoken and written communications, being careful not to use descriptions or information that could be misinterpreted.</p> <p>3.3 Make athletes and others clearly aware of coaching qualifications and experience.</p> <p>3.4 Notify other coaches when working with those coaches' athletes</p>
<i>Sincerity</i>	<p>3.5 Honour all promises and commitments, both verbal and written.</p> <p>3.6 Act with an enthusiastic and genuine appreciation for sport.</p>
<i>Honour</i>	<p>3.7 Know the support and abide by sport's rules, regulations and standards.</p>

- 3.8 Take credit only for the work and ideas actually done or generated and give credit for work done or ideas contributed by others.
- Conflict of interest* 3.9 Do not exploit any relationship established as a coach to further personal, political or business interests at the expense of the best interests of their athletes or other participants.
- 3.10 Be clear about and avoid abusing relationships (e.g., with athletes, assistants, officials, administrators, board members) and avoid other situations that might present a conflict of interest or reduce the ability to be objective and unbiased in the determination of what might be in the best interests of athletes.
- 3.11 Declare conflicts of interest when they arise and seek to manage them in a manner that respects the best interests of all those involved.
- Self-awareness* 3.12 Evaluate how personal experiences, attitudes, values, social context, individual differences and stresses influence coaching activities and thinking, integrating this awareness into all attempts to be neutral and unbiased in coaching.
- 3.13 Recognise and reveal whether personal views are based on facts, opinions, conjecture, theory, beliefs, etc.
- Extended responsibility* 3.14 Encourage athletes and other participants to develop and maintain integrity in their relationships with others.

#### **IV. Honouring Sport**

The principle of *honouring sport* challenges coaches to recognise, act on and promote the value of sport for individuals and teams and for society in general. *Honouring sport* means that coaches

- i. act on and promote clearly articulated values related to coaching and sport;
- ii. encourage and model honourable intentions and actions in their coaching practice; and
- iii. show high regard for and promote the value of sport in Canadian society and around the world.

In being faithful to the principle of *honouring sport*, coaches would adhere to the following ethical standards:

**Key Words****Ethical Standards**

- Spirit of sport* 4.1 Advocate and model the fundamentally positive aspects of sport, e.g., sporting and human excellence, fair play, honest competition and effort, self-discipline, integrity, personal growth and development, respect for the body, challenge and achievement, the joy of movement, and other positive aspects identified by participants.
- 4.2 Actively seek ways to reduce potentially negative aspects of sport, e.g., winning at all costs, playing to the letter of the rules at the expense of the spirit of the rules, exploiting unfairly competitors' weaknesses, focusing on sport to the harmful exclusion of other aspects of athletes' lives, initiating and supporting potentially harmful training regimes, and other negative aspects identified by participants.
- Respect for the rules* 4.3 Accept both the letter and the spirit of the rules that define and govern sport.
- 4.4 Actively encourage athletes and other participants to uphold the rules of the sport and the spirit of such rules.
- Respect for officials and other coaches* 4.5 Accept the role of officials in ensuring that competitions are conducted fairly and according to established rules.
- 4.6 Refrain from abusive personal attacks on officials and other coaches, especially when talking with the media.
- Drug-free sport* 4.7 Support initiatives that encourage the spirit of sport<sup>14</sup> (see also 4.1, 4.2).
- 4.8 Actively discourage the use of performance-enhancing drugs; support athletes' efforts to be drug-free.
- 4.9 Refrain from encouraging the use of alcohol and tobacco in conjunction with athletic events or victory celebrations at playing sites.
- Positive role model* 4.10 Maintain the highest standards of personal conduct and project a favourable image of the sport and of coaching to athletes, other coaches, officials, spectators, families, the media and the general public.
- 4.11 Project an image of health, cleanliness and functional efficiency in personal habits and appearance, e.g.,

refrain from smoking while coaching, refrain from drinking alcoholic beverages when working with athletes.

- Responsibility to coaching*
- 4.12 Promote and maintain the highest standards of the coaching discipline.
- 4.13 Encourage measures to improve the quality and availability of coaches' professional services.
- 4.14 Encourage measures that promote education, knowledge development and research in the field of coaching.
- 4.15 Develop the coaching profession by exchanging knowledge and experiences with colleagues, athletes and students and by being participants, course facilitators or master course conductors in courses and internships.
- 4.16 Uphold the responsibility to coaching by bringing incompetent or unethical behaviour to the attention of appropriate regulatory committees in a manner consistent with the ethical principles of this code, if informal resolution or correction of the situation is not appropriate or possible.
- Extended*
- 4.17 Encourage athletes and other participants to honour sport *responsibility* on a lifelong basis.

## Footnotes

1. The approach, structure and contents of this code were inspired by the *Canadian Code of Ethics for Psychologists, 1991*. For a detailed guide to this code and how it was developed, see Carole Sinclair and Jean Pettifor, editors, *Companion Manual to the Canadian Code of Ethics for Psychologists, 1991* (Chelsea, Que: Canadian Psychological Association, 1992). Many of the ideas for ethical standards were drawn from numerous other codes. The most significant of these were developed by the Association québécois des entraîneurs professionnels en sport, The British Institute of Sport Coaches and Promotion Plus, Women In Coaching Committee, British Columbia.
2. Respect: consideration of the dignity of others; courteous regard.
3. Participants: those taking part in sport, e.g., athletes and their family members, coaches, officials, volunteers, administrators.
4. Dignity: self-respect; self-worth.
5. Worthy: having worth, value or merit; deserving praise; valuable; noble; estimable; virtuous; legitimate.
6. Condition: a provision or stipulation called for as a requirement for participation or competition; a prerequisite; anything that modifies or restricts the nature of participation.
7. Discreet: prudent; cautious; wary; careful about what one says or does.
8. Empowerment: the act of enabling or state of being enabled.
9. Family: those persons who are identified by an athlete as providing familial support, whether or not they are biologically related.
10. *Integrity Makes True Champions: The Coaching Code of Ethics* (Gloucester, Ont.: Coaching Association of Canada, Canadian Association of National Coaches, 1993).
11. Beneficence: an ideal or principle of conduct that requires us to act in a way that benefits others. Such benefit might take the form of preventing or removing harm, or acting directly to produce a good. The same training, skills and powers coaches use to produce benefits are also capable of producing harm.
12. Collaboration: a process through which parties such as members of an interdisciplinary team (e.g., trainer, psychologist, masseuse, team captain) work together on problems and issues to develop solutions that go beyond their limited visions of what is possible. Collaboration is based on the simple adage that two heads are better than one and that one by itself is not good

enough. See Barbara Gray, *Collaborating: Finding Common Ground for Multiparty Problems*. (London, England: Jossey-Bass Publishers, 1989), 5.

13. In coaching, critical reflection questions existing assumptions about the values and practices that govern coaches' actions. The essential component of critical reflection is an attitude based on (i) open-mindedness, i.e., an active predisposition to hear more than one side of an issue; (ii) active inquiry, i.e., asking why things are done the way they are; and (iii) sincerity, i.e., coaches being genuine in their coaching relationships. *HIV/AIDS Education for Nurses: Practice Issues and Curriculum Guidelines* (Ottawa: Canadian Nurses Association, 1992).
14. The Canadian Centre for Drug-Free Sport has designed a major campaign under the theme of the spirit of sport. At the heart of their message is the premise that inherent in sport are all the strengths, values and qualities necessary to overcome the incursion of performance-enhancing drugs. Sport is strong and it gives (or can give) strength to those who participate. This theme embraces the fundamental positive aspects of sport, is non-blaming and non-moralistic and emphasises the positive attributes of sport. Manifest Communications Inc., *Draft Strategy for A National Educational Campaign to Promote Drug-Free Sport in Canada*. (Document prepared for Canadian Centre for Drug-Free Sport, Ottawa, 19 April 1993).

## SAFETY

As a Dragon Boat coach, safety considerations should never be far from your thoughts. Given the many aspect of water safety and the importance of addressing each properly, we urge you to seek professional preparation in each applicable category. The following summaries will make you aware of some common safety concerns for Dragon Boating.

As a coach you should be aware of two main areas of safety; team safety and individual safety. As a coach, you must educate and demonstrate to your team about individual safety and supervise proper team safety

### **Environmental Conditions**

It is important that you keep an eye on the weather and know both local forecasts before your practice and marine forecasts where applicable. These are available from Environment Canada or your respective government agency over the internet, or by phone. Be especially vigilant of wind and wave warnings, electrical storms and below freezing temperatures.

Under environmental safety you can include proper clothing for the ambient and perceived temperature, as well as education and support of the use of sunscreens.

### **Water and Boating Safety**

As one of the individuals responsible for the safety of your crew, you must be aware of maritime law for your waterways. The Safe Boating Guide (a free handbook) is a valuable resource for general reference, particularly when the practice site involves either commercial or recreational waterways as each have numerous regulations and guidelines for safe boating. Please consult the Canadian Coast Guard in your region for more information 1-800-267-6687 or check their website at [www.ccg-gcc.gc.ca](http://www.ccg-gcc.gc.ca).

An excellent preparatory course for Dragon Boat steers people and coaches is the Canadian Coast Guard Pleasure Craft Operators Certification. If there are no Canadian Coast Guard safe boating resources in your area, other options are available on line or through the local Red Cross or Life Saving Society.

Regulations and procedures are an important guide, but nothing replaces common sense and a degree of reasonable caution in certain situations.

It can never be stressed enough how important a personal flotation device (PFD) is on a Dragon Boat. This essential piece of safety equipment is required in the boat by law for each person in the boat, paddlers, drummer, steersperson and coach. In winter paddling conditions and for non swimmers, the PFD should be worn at all times.

One easily overlooked Dragon Boat operation safety issue is the presence of a qualified steersperson at all times. Each crew should have a number of qualified

steers people who can step in to steer as needed. Some clubs in the Vancouver area are requesting that steers people pass basic steering proficiency tests before they are allowed to steer in competitions or under certain environmental conditions or in certain training areas.

### **First Aid**

It is important that Dragon Boat coaches have some knowledge of first aid. Good courses to consider are the St John's Ambulance Basic or Emergency First Aid, and cardio-pulmonary resuscitation (CPR). All of these should be available at local swimming pools or community centers.

### **Water**

The most obvious risk associated with water is drowning and thus the need to respect the PFD regulations with common sense modifying each individual's approach based on swimming ability, temperature, visibility, etc.

It is also important for coaches to be aware of the risks associated with exposure to untreated water. Potential problems range from rashes to infection of wounds (both old and new). At all times, paddlers should be encouraged to practice good personal hygiene and wash both themselves and their paddling gear as soon after paddling as reasonable.

In fresh water paddling venues, paddlers should never be allowed to drink from the water upon which they paddle as there are many water borne parasites and other complications associated with such action. Even if the water is perceived as clean the risks are too great. These risk also extends to personal water bottles that are left in the water slopping around in the bottom of the boat. Keeping the drinking spout of the bottle isolated from potential contaminants is very important. In team sports an excellent rule of thumb is never to share water bottles as one sick team member can rapidly infect an entire team.

### **Injuries**

Injuries among paddlers will happen; there is no question about that. Whether it is a blister or a bruise or a broken bone, obtaining proper treatment is important.

As a coach you will be approached by paddlers who have an ache or pain and are concerned about it. Newer paddlers will be concerned as the feeling is foreign to them and they are unsure if this is normal or not.

With common injuries, a first aid course will often suffice, however sporting injuries are not easy to diagnose. As such, do not hesitate to recommend that the injured paddler seek medical advice.

***Do not try to be the team physician, unless you are a registered medical doctor of course.***

Some common injury sites in paddlers are the following;

- Fingers
- Wrists
- Elbows
- Shoulders
- Back
- Neck
- Hips
- Knees

If your paddlers complain about recurring pain in any of these areas, please refer them to their family physician as soon as possible.

It is also a good idea for newer paddlers, or those who have been sedentary for an extended period of time to get a physical examination and clearance from their family doctor to begin an exercise program.

### **Team Emergency Procedures**

It is important for the coach to develop safety procedures for a variety of scenarios. These procedures should be familiar to the crew and known very well by key safety personnel such as the coach, drummer, steers person and team captain.

Sample Emergency Procedures that should be devised for your practice venue and resources are;

- Medical emergency,
- Equipment malfunction or boat damage,
- Swamped or capsized boat,
- Paddler overboard,
- Other boat in distress,
- Commercial traffic or sail boat threat,
- Hazardous Weather: thunderstorm, high winds, hail, etc.

## THE DRAGON BOAT & CREW

A Dragon Boat is an 18 - 22 person canoe that seats paddlers side by side. The length of a Dragon Boat varies around 48 feet (~16 m). There is a dedicated steersperson at the stern and quite often a drummer in the bow. Among the paddlers there are also many different roles to assign.

Before we go into coaching in any detail, here is a quick overview of the different crew members on your boat.

### Team Captain

This individual is elected by the team to act as their spokesperson and official liaison with the coach, manager and sponsor. To facilitate communication between the team and support staff, the team captain is responsible for contacting the team members with information.

***Very often the feedback from the team is greatly enhanced when it is routed through the team captain. The honesty of feedback is much better as well.***

### Steersperson

The steersperson is the person responsible for the safety of the crew and the boat. It is their job to ensure all safety equipment is on the boat and the boat is water worthy.

***At any time the steersperson can take over boat for safety reasons. This applies to both drummer and the coach. The crew must be absolutely clear on this fact.***

Steering is a skill achieved through practice, just as paddling is, and a good steersperson can win or lose a race for any team. For novice teams, we suggest having a number of steerspersons within the team and rotating through them from practice to practice.

At this level going in a straight line is the number one priority. This is best achieved by having the steersperson learn to use small corrective pushing and pulling strokes as opposed to using the steering oar like a rudder.

***A good steersperson is easily identified by the stable stance they assume and that they always keep their head up and look where they are going.***

### Drummer

Drummers control the boat. For many novice teams it will be the coach who assumes this role and if the drummer says something, the team must be conditioned to respond as a unit.

***The only exception to this is that the steersperson can take over boat at any time for safety reasons.***

The drummer, coaches the crew through the workout, calls technique reminders, and keeps the crew motivated. The toughest job for the drummer is learning what excites and what calms the crew, then using each when appropriate. In some cases a good drummer will know this for each paddler.

***If the coach is not drumming the team, it is essential that the drummer attend as many practices as possible to learn all they can about the team and each individual paddler. This helps significantly on race day.***

## Commands

Some of the common commands heard coming from the drummer or steersperson in Dragon Boats are;

- **"Paddles up"**: ready to paddle, all paddlers with paddles above water ready to enter water
- **"Take it away"**: begin paddling.
- **"Let it run"**: stop paddling and let the boat glide
- **"Hold the boat"**: place paddles in the water and brake the boat to a stop.
- **"Back it down"**: paddle backwards
- **"[front] / [back] Draw [left] / [right] "**: initiates a turn using draw strokes by the designated paddlers
- **"[load] / [unload] from the [front] / [back]"**: to indicate how you want your crew to load the boat.

## Strokes

The strokes set the rate for the rest of the boat. They work as a pair, left and rights with one being dominant for any given workout or piece. Your strokes should be fitter than the average paddler so that they are able to maintain the stroke rate without tiring.

Your strokes also need to be very confident and able to gauge when the boat is working well.

***They should also be able to tune out the incessant requests from the middle of the boat to go faster.***

Having a number of different strokes is always a good idea. This way you can have spares in the case of injuries and absences. If possible try to have a couple of mid-boat strokes in row 5 or 6 to help the backs with timing.

## Fronts

The front seats of the boat are quite tight and better for smaller paddlers. Lighter paddlers with very good timing are best used in this section of the boat as the timing of the rest of the boat comes from here.

**Middles**

The middle seats of the boat are best kept for your taller and stronger paddlers. They will be more comfortable and better able to use the space. Keeping your heaviest paddlers in the middle of the boat also helps with keeping it balanced.

**Backs**

The back seats of the boat are a mixture. Some coaches put their worse paddlers here thinking that they won't interfere too much way back in the boat.

However, putting a poor paddler in the back virtually eliminates him or her given the fact that the water at the back of the boat is moving quite quickly and is very difficult to paddle in. A better solution is to select technically good paddlers for the back.

**Balancing the boat**

When loading and balancing the boat, don't be too exact in seeking to balance the lefts and rights, fronts and backs. Admittedly it is important but don't underestimate balancing paddler strength, moving your drummer over slightly one way or the other, or leaving empty seats.

Play around with different crew set-ups, and if in doubt leave your boat neutral or slightly bow heavy.

**Support team**

Lastly, do not forget to spend time developing a support network for your team. This includes a team manager, team captain and sponsors. Your support network will also include family and friends who wish to get involved. The bigger you can make your team, the easier it will be to reach your goals.

## BASIC PADDLING TECHNIQUE

In preparing this section of the course, it was decided to teach the dragon boat stroke by building the technique out from the paddle. This approach was chosen given that many teams are imitating what they see faster teams doing. However, all too often they imitate what they see the paddler doing, and fail to carry that through to what the paddle is doing.

***Coaching people to paddle better, not just to look like they paddle better is ultimately our goal as coaches.***

While we are teaching the stroke from the paddle back to the paddler, it is important to remember that the main goal of paddling is to make the boat move forward. The movement of the boat is often referred to as **boat run**. For more experienced and faster paddlers, boat run takes on more and more importance.

***For novice paddlers, boat run remains important, but more effort is spent on individual paddling skills as opposed to group paddling skills.***

Traditional Dragon Boat instruction teaches one stroke to novices, another to Performance and another to High Performance crews. Within that, there are more variations on the stroke than there are teams on the water. However, there are a number of basic elements that are essential to a good stroke. An initiative we have taken in our technical instruction is to teach the Dragon Boat stroke in its final form at the Basic Instruction level.

This manual differs slightly from the DBC Coaching Certification Program in this section. While the end result is the same we have chosen to describe the stroke mechanics and important aspects slightly differently and with different emphases.

The technical sections that follow will present the main portions of the stroke with a number of key points (see Table 1). It is important to remember that each paddler will learn at a different rate. You as a coach will need to learn how to correct technical problems in both your boat as a whole and in each paddler as an individual.

***If there is any one overall secret to the paddling stroke it is stability.***

***Without stability you can not transfer power from the paddler to the paddle or to the hull.***

***Without power there will be no hull speed.***

Table 1. The elements of the Dragon Boat stroke.

THE DRAGON BOAT STROKE		
Air time	Water time	Key Movement
Set-up		Rotation & Reach
		Torso stabilizes
Entry		Arm : from shoulder
		Torso stabilizes
Catch		Leg & Hip Drive & Rotation
		Torso & Top Arm stabilizes
Pull		Rotation & Arm
		Torso & Top Arm stabilizes
Exit		Arm & Shoulder
		Torso stabilizes
Recovery		Hip & Rotation & Arm

Tying the technique together is another element, the often ambiguous term timing. With any cyclical activity involving 2 or more individuals, the synchronization of the movements is very important. In some cases more important than the movement itself. After the basic technical description of paddling, a short section will discuss the main elements of timing,

At the end of the manual is a Dragon Boat Trouble Shooting Guide to help you recognize a problem, analyze the potential sources, then present a logical solution.

Lastly, in many Dragon Boat crews paddlers have an assigned side to paddle on. At the Basic Instruction level, specialization on a single side should not be encouraged. In fact, becoming proficient on both sides is more favorable as it will minimize overuse injuries and help balance muscular development. For experienced paddlers, learning to paddle on the "off side" will allow them a possibility to overcome years of accumulated bad habits.

***A good habit to adopt that will encourage bilateral muscle development is to have paddlers alternate sides from one workout to the next.***

***Another option is to warm-down on the opposite side to that used in the workout.***

## BASIC PREPARATION

With many Dragon Boat paddlers, new and old alike, even the most basic ideas can be foreign if they were never taught to begin with. The starting point for every paddler should be a proper seating position and grip on the paddle. Some of the terminology you will need to follow this section is;

- Top hand: the hand on the top of the paddle.
- Bottom hand: the hand lower down on the paddle shaft, just above the blade.
- Outside leg: the leg closest to the gunwale.
- Inside leg: the leg closest to the centre of the boat.

### Grip on paddle

If newer paddlers are shown how to grip the paddle properly on day one, it eliminates a lot of stress and eliminates any potential confusion surrounding what even a moderately inexperienced paddler considers "common knowledge".

1. Bottom hand position (see Figure 1).
  - a. Grip one hand's width 8 – 10 cm above the neck of the paddle.
  - b. Encourage paddlers to have their thumb wrapped around the opposite side from fingers. This reduces wrist and finger injuries.

***Paddlers with smaller hands may not be able to get a hand around their paddle and should be encouraged to get a private paddle and have the shaft narrowed slightly to encourage a better grip.***

- c. Grip should be firm but not tight, with all fingers around shaft.

***Too tight a grip can result in blisters, and too loose a grip, such as holding the paddle like a pencil, can lead to overuse injuries in the wrist and fingers.***

- d. On personal paddles: mark the top of grip zone with a piece of electrician's tape or similar material.

***Some paddlers will build a ridge at this point using either a rubber O-ring covered with a wrap of electrician's tape.***

***An alternative is to build the ridge completely from electrician's tape by wrapping the location once or twice with tape then folding the tape over on itself (sticky side to sticky side) then wrapping the doubled over tape around on it three or more time with the thin edge of the folded tape facing up.***

***When the ridge is built, unfold the tape and securely wrap over it a few times.***

***Some paddlers will continue to wrap the tape down over the entire grip zone. Occasionally building a second ridge under the grip zone is beneficial for paddlers whose hands constantly creep down.***

e. Top hand

- i. Hand loosely placed on top of T-grip with fingers hooked around the front.

***An overly tight grip with the top hand can lead to blisters on the palm of the hand.***

- ii. Thumb loosely hooked under T-grip.
- iii. Top arm will be bent approximately 135 ° at the elbow when reaching over, and the elbow no higher than shoulder height.

***Stronger paddler will be able to extend the elbow closer to the 135 ° extent of the range, newer or less strong paddlers are better off with a slightly more flexed elbow.***



Figure 1. Illustration of top and bottom hand position on the paddle

f. Paddle size (see Figures 2 – 6).

Sizing sporting equipment is a very important part of any activity in which you wish to remain injury free. Dragon Boating is only just seeing an interest in purchasing personal paddles, but this should be encouraged given the low cost (less than \$45 CAN) for basic paddles.

***A well sized paddle will benefit both taller and shorter paddlers for whom the standard length (138 cm or 46 inches) is not appropriate. In both of these groups many injuries can be avoided by properly fitting equipment.***

- i. While sitting in the boat with body in basic seating position, hold the paddle with the *inside hand* just above the blade.

With your gunwale side hand reach over and hold the paddle with an inverted grip immediately above the inside hand. Your thumbs should touch.



Figure 2. Sizing the paddle starting position.

- ii. Rotate the paddle upside down in your bottom hand in its usual position on the shaft, but the paddle is now upside down with the handle over the water.



Figure 3. Setting up the hand position for sizing the paddle.

- iii. With the bottom arm extend parallel to the water, the handle should just touch the water.



Figure 4. Inverting the paddle for sizing.

- iv. If the handle is submerged, the paddle is too long. If the handle does not reach the water the paddle is too short.



Figure 5. Setting up the bottom arm parallel to the water during paddle sizing.

## Seating Position

1. Set hips up square on the seat (see Figure 7).
2. Sit up tall, activating stomach muscles and back muscles to keep back straight.
3. Angled the torso slightly forward from the hips until your chin is located over the mid-thigh region.



Figure 6. The basic seating position.

### ***Do not flex the lumbar or mid-thoracic region of the back***

4. Gunwale leg is extended forward and braced against the seat in front or braced against the bottom of the boat in such a way that you can push through the foot and into your leg (see Figure 8).



Figure 7. The leg drive enabled by a proper seating position.

5. Inside leg is braced for stability against the seat you are sitting or tucked under the seat slightly with the knee pointing forwards but able to pivot in towards centre of boat.
6. Slide against the closest gunwale of the boat, positioning weight on gunwale leg by angling whole torso slightly out of the boat from the hips so that your shoulder joint is out over the water

### ***Do not flex the back to achieve this position***

7. Try to keep your shoulders parallel to the water and the boat as much as possible at all times.

## STROKE MECHANICS

### 1. Rotation

Proper, effective rotation is the most commonly omitted part of the Dragon Boat stroke. When done properly, even the most inflexible paddler can achieve 45 ° of rotation.

- a. Rotation is initiated through the gunwale side leg pushing the hip back and letting the inside knee rotate outward from the body. At the same time, the inside hip rotates forwards.
- b. Rotation extends from hips to lumbar and thoracic vertebrae, but NOT into the neck and head.
- c. Keep head looking straight ahead through paddle shaft or up and across for timing cues.
- d. Gunwale side shoulder should now be leading forward and the inside shoulder angled back.

Rotation is not achieved from rotating the shoulders alone (see Figure 9). However, this is the most common example of rotation seen in Dragon Boat paddling. Look carefully at the hip and shoulder orientation between Figure 9 and Figure 10.



Figure 8. Rotation of the torso without hip movement.

Improper rotation or twisting can result in serious lumber discomfort and increase the risk of lower back injuries.

A true rotation is achieved through the hip and torso acting as a single unit (see Figure 10).

***It is very important that coaches do not stress over rotation as an indication of good paddling. As paddlers become stronger and more flexible, other aspects of their stroke mature and they can rotate more.***



Figure 9. Rotation of the torso with hip movement.

## 2. Reach

The reach is only the arm extending forward along the length of the boat. There is not advantage to be gained from flexing at the waist and overreaching. Overreaching is one of the main contributors to poor boat run.

Overreaching is a common problem and leads to many bad habits. Paddlers who are both exceptionally strong, both physically and technically are able to reach a little further from the waist, but this is only after years of development.

- a. Reach is achieved from the shoulders and arms only (see Figure 11).
- b. Torso position and angle remain unchanged in the boat (See Figure 11).

***This is achieved by way of TORSO STABILITY.***

- c. Top arm extends forward from the elbow by  $\sim 135^\circ$  depending on rotation and reach length to keep paddle close to vertical ( $\sim 65\text{-}80^\circ$ ) for the entry (see Figure 12).



Figure 10. The reach is all arm extension from the shoulders once maximum rotation is achieved. There is neither pivoting forward from the waist nor flexing in the back during the reach or pull.

- d. Arm is relaxed during the reach and the torso is stretched tall from hips to neck.



Figure 11. The top elbow is flexed at  $\sim 135^\circ$  during the reach.

### 3. Entry

This is one of the most critical portion of the paddling stroke. If the entry is not performed correctly, the effectiveness and efficiency of everything that happens after are reduced.

- a. The top arm initiates paddle the entry by pivoting around the shoulder, bottom arm does the same (se Figure 13).

***If there is too much emphasis on driving the top arm down, many novice and experienced paddlers alike inadvertently tense up more than they necessary and actually slow the paddle entry while prematurely initiating the pull phase.***

- b. The angle of entry into the water should be between 65-80° and along the long axis of the paddle. This will vary with reach, rotation, torso height, flexibility, etc.
- c. The paddle travels along path continuous with shaft of paddle, not vertically (see Figure 13).

***The paddle should punch one hole in the water with the tip of the blade and the rest of the blade follows through that hole.***

***An entry that is not along the long axis of the paddle will result in lots of ventilation (air mixing with the water). Ventilation reduces both the efficiency and effectiveness of the stroke.***

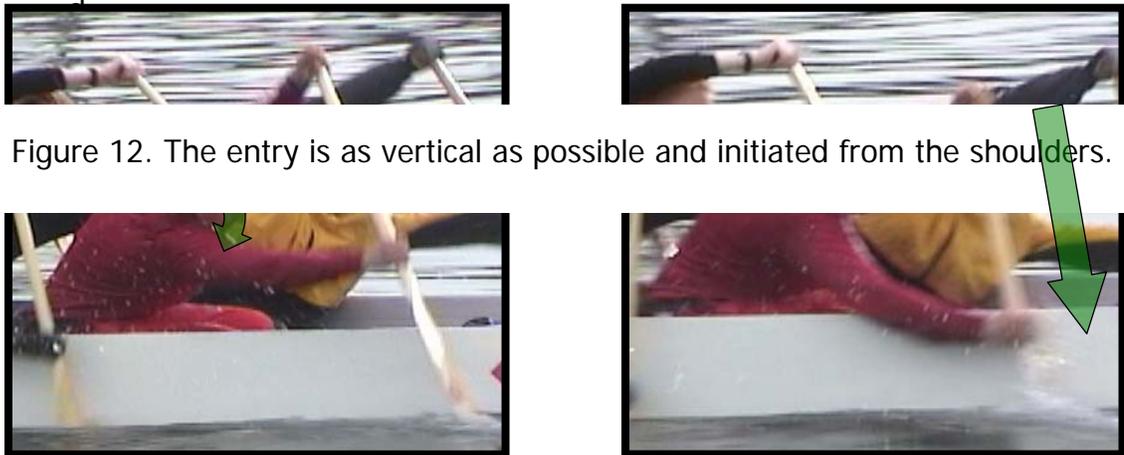


Figure 12. The entry is as vertical as possible and initiated from the shoulders.

There should be minimal torso flexion on the entry.

***Torso flexion on the entry is an indication of overreaching and having the angle of entry too acute (less than 70 °).***

- e. Once blade of paddle is submerged up to neck, top arm drive ceases, stabilizes and the top of the paddle becomes a **HIGH PIVOT POINT**

***The stability of the top arm from shoulder to elbow to hand is very important for the remainder of the stroke up until the exit is initiated.***

***Torso stability continues.***

- f. Once the entry is complete and the blade is fully buried in the water, but before the pull is initiated there is a very, very small pause. In top paddlers this will be less than a few hundredths of a second, but it is still there. In inexperienced paddlers it may be twice to three times as long, but still effective. If this pause is in place the catch and pull will be much more effective.

***Remember the sequence is Enter, Pause and Pull:  
E.P.P.***

#### 4. Catch

The catch is not a part of the stroke per say, but the moment in time between the vertical components of the entry and the horizontal components of the pull.

- a. The catch occurs at the moment immediately after top arm drive ceases, stabilization is begun and the pull is initiated (see Figure 14).

***A good catch is identified by no movement or a dramatic slowing in the paddle speed relative to the hull and paddler for a fraction of a second as the force is transferred from rotation to the paddle.***

***If this is done properly the hull moves past the paddle.***

***This is a crucial point in the stroke and must be emphasized and worked on until understood, not just imitated.***



Figure 13. The catch is the moment in time between the vertical entry and the horizontal pull.

- b. Once the top arm stabilizes, the gunwale leg initiates a push from the knee (as if kicking a ball). The gunwale side foot braces against the bulkhead or deck transferring the push into the outside hip the moves back slightly relative to the inside hip.

***Think of the point of main contact with the hull as being through the gunwale foot, not the seat. This will help understand the rotation***

This hip rotation is transferred into the shoulders and then the bottom arm to paddle.

***To ensure that the initial leg drive and hip – shoulder rotation is transferred to the paddle the bottom arm must remain fully extended and locked in place.***

***The pull is absorbed in the shoulder and wrist only; any elbow flexion will reduce the efficiency and effectiveness of the catch.***

## 5. Pull

If the previous elements of the stroke have been successfully completed, the pull is guaranteed a good degree of success (see Figure 15).

- a. As rotation continues from the catch, it increases in speed and the water pressure on the power face of the paddle increases dramatically.
- b. The pull phase is a rotation about the spine combined with a downward pull with the entire arm from shoulder to wrist. The arm movement is also described as a rotation around the shoulder joint.
- c. The pull on the bottom shoulder matches or slightly exceeds the hull speed to maintain pressure on the blade.

- d. The top arm unit of shoulder, elbow and wrist height should be about equal to top shoulder.
- e. The top hand position (vertical and horizontal) remains stable during first half to two-thirds of the stroke.

***Top arm stability***

- f. Torso position does not change- the rotation is around the long axis of



Figure 14. The pull phase.

the spine.

***Torso stability***

- g. The bottom arm remains extended with minimal elbow flexion during the pull.
- h. The path of the bottom hand is a slight downward arc, where the little finger drops closer to the water by the exit.
- i. Top hand and arm may drop slightly in the last 30 % of the pull and the exit approaches.
- j. Bottom shoulder does not come behind spine and should finish perpendicular to the direction of boat travel (along the long axis of hull).

One element that it is essential to convey to paddlers is the importance of a vertical and square blade through the pull. Many novice paddlers have a twisted blade and never maintain a vertical angle. The reduction in the force per stroke may explain some of the huge margins of victory seen between teams who may otherwise be identical on paper (see Table 2).

Table 2. Estimated percent force as a result of poor paddle angle.

		horizontal paddle angle									
		0	5	10	15	20	25	30	35	40	45
vertical paddle angle	0	100%	100%	98%	97%	94%	91%	87%	82%	77%	71%
	5	100%	99%	98%	96%	94%	90%	86%	82%	76%	70%
	10	98%	98%	97%	95%	93%	89%	85%	81%	75%	70%
	15	97%	96%	95%	93%	91%	88%	84%	79%	74%	68%
	20	94%	94%	93%	91%	88%	85%	81%	77%	72%	66%
	25	91%	90%	89%	88%	85%	82%	78%	74%	69%	64%
	30	87%	86%	85%	84%	81%	78%	75%	71%	66%	61%
	35	82%	82%	81%	79%	77%	74%	71%	67%	63%	58%
	40	77%	76%	75%	74%	72%	69%	66%	63%	59%	54%
	45	71%	70%	70%	68%	66%	64%	61%	58%	54%	50%

## 6. Exit

The exit is another difficult part of the stroke. There are two exits common in Dragon Boat, a traditional exit and hybrid dragon boat-flatwater exit.

### Traditional Dragon Boat exit

The traditional exit is easy to learn and helps maintain timing at the exit for Basic Instruction and Performance teams.

- a. The exit is initiated when the paddle reaches the knee.
- b. The blade exits vertically as initiated by the top hand pulling up along the length of paddle shaft.
- c. Bottom elbow flexes on the exit to assist.
- d. The exit should be completed by mid thigh.

## Hybrid exit

The hybrid exit is more difficult to learn but allows for a slightly longer pull and improves hull stability on the exit (see Figure 16).

- a. The exit is initiated between knee and mid-thigh depending on the technical strength, physical strength and hull resistance.
- b. The blade exits to side by externally rotating the whole bottom arm from the shoulder, an internal rotation of the wrist and a slight elbow flexion.
- c. Top hand drops in slightly until the leading edge of the blade breaks the surface and then begins to move up and forward towards the beginning of the entry.
- d. The elbow and wrist continue flexing until the blade is clear of the water and moving forward.
- e. As soon as the blade is clear of the water the bottom arm pushes it forward until rotation and reach are fully completed and the bottom arm is fully extended.
- f. Ideally, the exit should be clean and relaxed
- g. The exit completed between mid-thigh and hip



Figure 15. The hybrid exit demonstrating the top hand dropping slightly into the boat as the bottom wrist and elbow roll in to lift the paddle out of the water.

## 7. Recovery

While the recovery is not seen as a propulsive portion of the stroke, it is crucial in maintaining hull speed between strokes.

- a. As soon as the exit is completed the recovery begins.
- b. The gunwale leg bends slightly at knee to reposition the hips for the next stroke
- c. Inside leg stabilizes to help reposition hips.
- d. The torso rotation should be smooth and fluid with no sudden stops or starts to it.

### ***Maintain torso stability through the recovery***

- e. The shoulders should remain parallel to the water during the recovery.

## 8. Timing

The timing of the stroke is the uniting element that brings all twenty paddlers together as a team. Even if all twenty paddlers have impeccable technique and are the fastest solo paddlers around, if they can't paddle in time, the boat will not move well at all. Within the left and right sides of the boat being in time, there are four other main components to timing;

1. The entries must all occur together and at the same speed,

***Have the paddlers look up to the strokes or mid-strokes for timing cues.***

***Timing cues include visual (top hand position), tactile (boat movement), and auditory (sound of water on blades, drummer's commands, etc.)***

2. The pull must occur together, this can be subdivided down into

- a. The catches occurring at the same time,
- b. The force being applied at the same time,

***Matching the torso movements of the paddlers in front helps with the timing of the pull phase as does paddling with closed eyes and feeling for the pull.***

- c. The pull speed being the same.

***The pull force and pull speed matching up together generates the same power profile per stroke which is important for boat run.***

3. The paddles all exit the water together.
4. The torso, hip, leg and paddle movement on the recovery occur together.

The full paddle stroke is illustrated frames by frame in Appendix A.

## POWER, FORCE & STROKE RATE

The power output of each paddler contributes to the speed of the Dragon Boat. Each paddler's power output is a function of their stroke rate (strokes per minute) and their force per stroke (kg). Too much rate reduces force, too much force reduces rate. There is an optimal balance point for each paddler and crew.

For novices and early season paddling for all other paddlers, it is essential to learn how to paddle with good force at slow stroke rates. As the season progresses increase the rate slowly.

Without learning the basics at low rates, you will not be able to paddle well at higher rates.

***Remember, it is easier to increase rate than force per stroke while racing and fighting fatigue. Consequently, it is wiser to maximize force per stroke early on and keep any increases in rate for later in the race.***

## RACING BASICS

A Dragon Boat event is often run on a very tight schedule and a successful day often begins with communication between manager, coach, team captain and crew. There are two main components to race day, dry land and on water.

### **Dry land**

Through good communication, the logistics of getting the whole team to the correct venue and taking care of many event details becomes quick and easy.

Up to a month ahead of time begin preparing a list of tasks and assigning them to paddlers and any support crew you have available (family, friends, sponsors, etc.). Follow up on the progress of each task in the weeks leading up to the event to ensure they have been completed. Ideally, the tasks should be divided up between all team members to promote the feeling of team work. Some common tasks that require addressing are;

- The start time for the team's first race, and the event schedule.
- Arranging for transportation and parking for all team members. It is important that all team members know exactly where the race site is located and how to get there.
- Locate an easy to find meeting place and set a meeting time based on the team's first race. Many teams choose 1 hour and 30 minutes before to 2 hours before the first race.
  - If tents or indoor meeting areas are not provided at the event, arrange to bring a large tent or something similar for shelter from the sun and rain.
- Arranging for secure storage for equipment while you are racing, either locked in a vehicle nearby or bring a volunteer watch over you're the team's area.
- Assigning team food and water supplies to a few team members. This ensures that there is food and water for everyone. This is very important when full days and weekends of racing are involved.
- Preparing a list of items needed for the event.
  - Personal items include clothing for both paddling and between events, rain gear, warm clothing, personal PFD, paddle, towels, a watch, sunscreen, hats, sun glasses, etc.
  - Team items include a first aid kit, folding chairs, blankets, coolers, etc.
  - Coaching items include a clipboard or similar item for organizing event papers, pens, paper, a stopwatch, binoculars, rain coat and pants, hat, sunglasses, warm jacket and pants

- The coach and manager should each have an event schedule and know where to go for official event updates and questions.
- The coach manager and team captain should decide on when to take the team to the staging area (meeting point for pre-race and pre-loading instructions). The time to report to the staging area may be specifically indicated by the event organizer and followed as closely as possible.
- Some teams will have a brief pre-race meeting before heading off to the staging area. This time can be used to discuss your race plan, technical reminders, etc.
- If you are concerned about inadequate on water warm up, this is addressed by scheduling a dry land team warm up. If this warm up can be aerobic in nature that is ideal. Any last minute intensity is best performed in the boat heading to the start line.

The last dry land task before the crew gets into the boat is staging the crew ready to race. This is the time you ensure each paddler has all their personal paddling gear, including team uniform, PFD, paddle, gloves, glasses, etc. The staging area is also a good time to briefly talk with each paddler about their role in the upcoming race, encourage them, and remind them about technical issues.

In the staging area, line up paddlers as they will be sitting in the boat; lefts and rights, front to back. Your team will be led to the docks by event officials.

On the way to the docks, any additional PFDs and paddles needed by the team are collected from the event supplies. Ensure all event paddles you use are in good shape; no splits in the blade, cracks in the shaft and the T-grips are securely attached. All event PFDs should also be inspected for working zippers, buckles and proper sizing. If any paddlers can not get a properly fitted PFD, notify an event official for help. You may be handed a boat number by an event official. This is usually carried by the drummer and affixed in a holder on the bow of the boat

***On the water, the communication between drummer, steersperson and crew becomes even more important.***

## **On water**

When you load the boat, follow the event officials' instructions. Some will ask to load from the middle, others from the front or back. If possible the drummer and steersperson should get in first to help direct a safe and orderly loading. Don't rush the loading process as it is very easy to slip and sustain an injury at this stage.

***The first paddlers in the boat should begin bailing any extra water out. This usually falls on rows 5 – 6 as the water pools near the middle of the hull. If these rows don't load first, pass the bailers up to them once they are in their seats.***

Once the boat is fully loaded and not moving too much, the drummer should inspect the dragon's head, drum, drum platform and seat to ensure they are well attached and secure. This is a good time to attach the boat number provided by event officials. At the stern, the steersperson should check the dragon's tail, steering oar, steering bracket and steering pins.

When the boat is fully loaded and inspected, wait for the **dock master's** permission to head out onto the course. There is usually a return lane set up along the side of the course, make sure you stay in this lane or you will be risking interfering with a race and a potential disqualification. Once you are clear of the docks, the pre-race warm up can begin.

A well run event will leave you little time to proceed from docks to the start line, but this is usually more than enough time to do a good pre-race warm up. During the warm up the drummer will lead the warm-up from the coach's instructions. At all times, the drummer and steersperson will be looking for other boats, event officials and watching the time until the scheduled start.

The drummer has to watch the time and race schedule to ensure that the crew is warmed up and ready to race in a very short period of time. The team should be in the start area within 3-5 minutes of the start or earlier if instructed to do so by the **on-water referees** or **starter**.

A few suggestions for on water warm up exercises are;

- Timing drills
- Acceleration pieces of 5-10 strokes at race rate and effort
- A step wise increase in intensity from 80 % increasing by 5 % every 10-20 strokes.
- Practice starts by breaking it down a few strokes at a time
- Review the start sequence and race plan
- Practice some relaxation and focus exercises

At on-water referees' command the steersperson will have the boat approach the start area. At this point, the on-water referees will hand the start over to the **starter**.

The steersperson will line the boat up to accommodate for a tide, wind, currents, etc. At this point the steersperson has control over the boat, with feedback from the drummer on position relative to the start line. It is best that for small corrections the steersperson use the back 2 - 4 rows of paddlers to maneuver.

***It is absolutely imperative that all paddlers respond to the commands coming from the drummer and steersperson at this time. Sloppy response time can make the difference between a well lined up boat and one that drifts out of its lane.***

The starter will call the boats to the line and hold them on the line. What this means is that the boat can move forward slowly until it is almost at the start line at which point the starter will instruct the boat to hold.

***Keep in mind that many events do not have just a start line; there is often a start box about 2 m or more in depth. The starter will begin the race when the bows of all boats are in this area.***

***As such, it is possible to be in the start box and have the start called while you are still significantly behind other boats.***

There are a number of things to consider when approaching the start line;

- Don't be first up to the start line. Other boats may be slow getting there, either deliberately or by accident. The end result is the same, they make you wait and increase your risk of drifting.
- Don't be last to the start line. The last boat in is often rushed and can on occasion be behind the line when the race starts.
- Don't get pushy with the starter; a good starter will not let the race begin with any boat over the line. If any boat tries to gain an unfair advantage, they will be called back.

***It is not uncommon that a boat that shows contempt for the start line will be instructed to back down and the race started while they are moving backwards, but still in the start box.***

- Be prepared for the start, it happens fast.

During the race the drummer will constantly communicate with the steersperson. They should work out non-verbal communication strategies so that they can communicate over the noise of the race. This way they can time up calls to the crew and coordinate the execution of the race plan.

***Many Dragon Boat team favour using a series of 5-20 harder strokes they call "power series". We strongly discourage this practice as paddlers will often work harder at the expense of technique. Rather, call "Focus for 10" or something similar to remind paddlers to maintain technique when fatiguing, and very often the boat will pick up speed without tiring the paddles and destroying technique and timing.***

The warm-down is usually quite short and from the finish line directly to the dock. Do this quickly and follow any on-water referees' instructions as well as the dock masters'. Any additional warm-down can be finished on dry land.

## **Dry land**

Back on dry land there are two remaining tasks, a debriefing of the race and any additional warm down.

At the debriefing, review the good and bad points of the race. Remember to stress the positive aspects of the race and suggest solutions to the problems. These points can be stressed again at the next pre-race briefing. Close the debriefing by letting when and where the team meets again.

***If the next meeting time information can be posted in the meeting area, team members can refer to it should they forget or miss the previous meeting.***

The dry land warm down should be light and easy, similar to the pre-race warm up. If the team does this together it helps reinforce the team morale.

***It is important that the coach keep a close watch on paddlers during the warm up and warm down periods. At many events, there is so much activity going on that paddlers who are supposed to be resting between events are often overactive.***

## STARTS

At the Basic Instruction level and this early in the season for any other paddlers, starts are not very important and do not figure in training much. However, they are fun and motivational for all paddlers. We suggest adding starts in for novice paddlers after 5-6 practices and walking through the start sequence a few times each session. Always emphasize doing starts slowly to ensure learning takes place

In race situations, a novice crew, in fact almost any crew will do much better having worked on timing and proper paddling technique as opposed to blazing fast starts. For "race simulation" pieces we recommend that novice teams adopt the start procedure outlined below.

### **Pre-start**

- All attention focused on drummer for commands,
- All paddlers verify their torso position,
- All paddlers verify their leg position for stability and set up for stroke one with gunwale hip forward slightly and leg ready to push hip back,
- Paddle is held in a relaxed position across the legs, bottom hand and blade over the water.

### **"Attention please"**

- Activate abdominal muscles to stabilize torso,
- Rotate top hand up over bottom hand so blade is vertical, perpendicular to water,
- Position whole blade in the water,
- Begin bracing with legs in anticipation of start signal,
- Exhale and hold breath listening for start signal.

### **"Go": Stroke 1**

- Shorter stroke covering only the last ½ of a full stroke.
- There is some rotation, slight elbow flexion and a pronounced leg drive to get a deep, slow and powerful stroke.

### **Stroke 2**

- Shorter stroke covering only the last  $\frac{2}{3}$  of a full stroke.
- There is more rotation, less elbow flexion and a still a definite leg drive in a deep, slow and powerful stroke.
- Stroke rate increases slightly (~ 5 strokes per minute increase).
- Keep speed of initial strokes low: no white water or big boils surfacing anywhere.
- It is common for novice and experienced crews alike to go straight into full length strokes within 5 strokes per minute of racing stroke rate

**Stroke 3**

- The next stroke lengthens some more to the last  $\frac{3}{4}$  of a full stroke, still slow and powerful using a little more rotation. There is no elbow flexion except at exit.
- Stroke rate increases slightly (~ 4-5 strokes per minute increase).

**Stroke 4**

- Full length stroke, but still slow and powerful.
- Stroke rate increases slightly (~ 3-4 strokes per minute increase).

**Stroke 5**

- Full length stroke.
- Stroke rate increases slightly (~ 3-4 strokes per minute increase).

**Stroke 6**

- The last start stroke is a full stroke length, but still slow and powerful.
- Stroke rate remains the same or only a slight increase (~ 1-2 strokes per minute increase).

**Strokes 7-10**

- Three to four transition strokes to increase reach and rotation (drummer calls out, "ready-and-reach" as one word per stroke).
- Settle into race rate and effort quickly after the ready and reach.

**Strokes 11+**

- For novice crews there should be NO sprint strokes. Nine times out of ten, the timing will fall apart and compromise the remainder of the race quite significantly.

***The start is a place to either gain distance on other teams or loose it. If you spend time on working on a good start, you will gain distance. if you rush your start, you will loose a lot of distance very quickly.***

## DRAGON BOAT TROUBLE SHOOTING GUIDE

Despite our best efforts to teach paddlers how to paddle, there will always be problems with learning such a unique series of movements. Problems are grouped in two categories to help arrive at solutions; those observed directly in a paddler and those suggested from boat run.

***As you will discover, the paddler faults and boat run problems are often one and the same. It is the identification of the source of the problem that can be a problem in itself.***

With the drills suggested below, always do them once the boat is moving at a good speed. We suggest you practice a drill for 10-20 strokes then return to "normal paddling", or paddling without a high degree of focus. Some drills will require your paddlers to do more than 30 strokes, but these drills are designed this way.

Do not overload you paddlers with drill after drill after drill without any mental breaks. A good rule of thumb is to spend 15-20 minutes on a certain technical problem before changing focus.

***A word of caution, having individual rows perform drills for extended periods of time without the support of the rest of the boat is irresponsible, not to mention a good way to injure newer paddlers. This should never be used at the Basic Instruction or Performance level.***

### PADDLER OBSERVED PROBLEMS

#### **POOR BASIC BODY POSITION**

1. Think posture and sit with back strait, abdominal muscles activated and back extensors activated, shoulders back and chest forward.
2. Instruct paddlers to be "tall". You can have them visualize being pulled up by a string running the length of their spine or lifted by their ears.
3. Angle torso from hips so that chin is over mid-thigh, this is a rotation around the hips not a flexion of the spine.
4. For paddlers who slouch put a baseball cap on them and pull the brim down low over their eyes and require them to look up sufficiently to see the head of the paddler in front of them

#### **VERTICAL BLADE**

1. If the paddle is angled to far forward have the paddler sit up strait and rotate forward then reach forward without flexing at the torso. Hold the paddle in the bottom hand only and place it in the water without flexing the torso. Repeat this

until the paddler finds an angle at which they can enter the water easily using shoulder rotation only.

2. Begin with the paddle fully buried at the knee. In 5 – 10 cm increments move the paddle forward and exit the water, then enter again in the same place. Pull back, then push forward to the next 5 – 10 cm mark forward and repeat until the torso position, rotation and reach are maximized.
3. At all times check for top hand position during the entry and pull being over the bottom hand. Very often it drops into the boat.

### **BLADE ROTATION**

1. Adjust paddlers grip so that knuckles, wrist and elbow are in flat plane, with wrist offset to outside of paddle shaft.
2. Inspect top hand position, have paddler keep thumb on top hand pointed out along axis of T-grip and directed at 90° to side of boat.

### **REACH AND OVERREACHING**

1. Fix body position / lean angle (nose over mid-thigh)
2. Ensure gunwale side leg forward
3. Reach along gunwale, stretch forward
4. Tap shoulder of person ahead with bottom hand
5. Single arm rotation - dip paddle in where you want to enter the water on the catch. Add top arm to dip.
6. Boxer drill (jab not hook): aim for or past shoulder in front
7. Repeat 4 and stretch another few cm forward

### **ROTATION**

1. Loosen hips: seating position work
2. Hold paddle in bottom hand, rotate through normal range of motion (ROM) 5-10 strokes, paddle 5-10 strokes
3. see Bottom Arm Bends drill 2

### **ENTRY**

1. Have paddlers perform an entry, then immediately release (exit)
2. Have the paddlers perform a double entry (enter, exit immediately, enter again) then pull.

***Watch for proper entry mechanics in the bottom arm and torso on this drill, very often they are forgotten.***

**CATCH**

1. Once the vertical component of the entry is finished drive with gunwale side leg pushing hip back to initiate the rotation.
2. Visualize that the arm from shoulder to wrist is a string (i.e. no elbow), the top arm elbow angle remains fixed (set at 90-135 °, suggest you start at 90° and move outwards as skill, flexibility and strength increase).
3. Have paddlers close their eyes for 10-20 strokes and feel for the catch and resultant boat movement.
4. Use a dock side drill to stabilize the top hand pivot point. Have a second person loosely hold the top of the paddle shaft just under the T-grip and push against the shaft during the pull. Repeat these steps having the second person pull slightly on the paddle just under the T-grip.
5. Progressive drill to teach the feel of the catch:
  - i. Have team do draw strokes at 90° to boat, look for little to no side to side movement in the boat. This indicates all paddlers are applying pressure on their blades at the catch
  - ii. Do a series of 5-10 good draw strokes, then have the paddlers move 1/4 (22.5 °) towards a normal stroke and repeat 5-10 strokes
  - iii. Repeat step b. adding in another quarter rotation towards forward until paddlers re paddling normally
6. Encourage paddlers to enter, pause until they feel the water push on the non-power face of the blade and then pull. This is an excellent way to encourage the Enter-Pause-Pull thinking.

**VERTICAL ASPECT OF PULL**

1. One arm pull. Keep the lower hand on the paddle and pull slowly feeling for the water and how it reacts to the blade.
2. Build on drill 1 by adding in the top hand. Take a few strokes. This will emphasize the importance the top hand has with regards to controlling the blade angle in the water
3. Do 5 strokes trying to keep the paddle as vertical as possible top hand over the water, bottom hand under the top hand.

**LATERAL ASPECT OF PULL**

1. To ensure the paddle tracks back along the length of the boat have the paddler extend the thumb on their bottom hand and drag it along the side of the hull.
2. Keep the top hand over the bottom hand at all times, especially on the entry and exit.

**EXIT**

1. On dry land, have the paddler stand with their back to a wall and place the palm of their bottom hand on the wall. Instruct the paddler to push back on wall moving self forward. This is what they should feel on the exit in the boat.
2. If the paddler is scooping water have them keep their top hand directly above bottom hand.
3. If the paddler is scooping water have them overemphasize a straight bottom arm up to the exit.
4. Traditional Exit
  - a. visualize pulling sword out of scabbard (i.e. along length of shaft)
  - b. focus on initiating exit at knee, pulling out at mid-thigh
5. Hybrid Exit
  - a. initiate outward and upward elbow flexion at mid-thigh
  - b. trace curve of "D" just over surface of water
  - c. Monkey drill: imitate a child's monkey scratching side by flexing your elbow and wrist
  - d. Thumb drill: on the exit extend the thumb on the bottom hand and touch your leg at mid-thigh. As soon as your thumb touches your thigh begin raising your top hand and bringing it forward.

### **RECOVERY**

1. Power stroking drill: on the recovery slow the movement speed down so that it takes either 1 second, 2 seconds or 3 seconds to complete the recovery. Then enter, pull and exit at normal speed. The crew will have to focus very carefully on when the entry occurs.
2. High recovery: Have the paddler drag the blade in a 'D' shape over the surface of the water (stationary first then while paddling).

### **BOTTOM ARM BENDS**

1. Get the paddler to extend their elbow fully by pushing up with upper arm and down with the wrist. Many think about extending lower arm from upper arm, which is unstable, stability begins by the torso and extends outward.

2. Use sections of thin walled corrugated PVC pipe to fix arm in extended position. It is possible to flex slightly, but not without significant effort.

***This drill will cause problems on the exit, but not enough to compromise the rest of the stroke. The paddlers should be able to adapt.***

### **GENERAL TIMING**

1. Have the front half or back half paddle while the other half sits out.

***Those not paddling continue to rotate and use their legs in time with the boat. If this is done with closed eyes it forces the paddlers to feel for the timing.***

2. Repeat drill 1 with left and right side.
3. Repeat drill 1 with front lefts (rights) and back rights (lefts).
4. Front 2 rows only paddle, then add in a row every 5+ strokes.
5. Repeat drill 4, but removing rows from the front after 3-5 rows are paddling i.e. rows 1 through 5, then add row 6 and remove row 1, etc.
6. Repeat drill 4, but in reverse starting with the back two rows.
7. Initiate drive from leg, change timing focus from arms or torso to hips.
8. Instruct paddlers to keep looking up and forward. Periodically, the drummer will signal row numbers and that row has to acknowledge.
9. Have paddlers pause together just prior to entry at full extension (begin with long pause and decrease as timing improves- vary pause duration to keep paddlers alert).
10. Increase rate for 10 strokes, decrease for 10, repeat having crew follow strokes exactly. To begin say "rate up/down in 3-2-1, NOW!", then progress to "rate up/down in 2-1, NOW!", then "rate up/down NOW!"

### **TIMING ENTRY**

1. Power stroking drill: on the recovery slow the movement speed down so that it takes either 1 second, 2 seconds or 3 seconds to complete the recovery. Then enter, pull and exit at normal speed. The crew will have to focus very carefully on when the entry occurs.
2. Have paddlers perform an entry, then immediately release (exit)
3. Have the paddlers perform a double entry (enter, exit immediately, enter again) then pull.

***Watch for proper entry mechanics in the bottom arm and torso on this drill, very often they are forgotten.***

**TIMING FORCE APPLICATION**

1. Begin with paddles fully buried in the water as if ready for the start. Have everyone initiate 1 stroke together. Gradually progress to 2, then 3, etc.
2. Begin with the whole boat paddling and have row 1 ease off on their force per stroke while keeping the stroke rate. Have row two follow a couple of strokes later, then row three. Quickly do this back to the stern. Begin adding rows back in, this time they apply normal or race intensity effort to the stroke. When the next row up is able to feel for where the force is applied they match it and indicate they are "in" by calling out "row 10 in!", "row 9 in!" all the way to the front.
3. Repeat the previous drill from the stern to the bow.
4. Encourage paddlers to enter, pause until they feel the water push on the non-power face of the blade and then pull. This is an excellent way to encourage the Enter-Pause-Pull thinking.

**TIMING EXITS**

1. Have paddlers begin their stroke at the exit and just pull out together with either the traditional or hybrid exit. Gradually lengthen the stroke by 5 – 10

**BOAT RUN PROBLEMS****BOW BOUNCES AT CATCH**

1. see catch drills
2. see reach and overreaching drills
3. see basic body position drills
4. see timing entry drills
5. see timing force application drills

**BOW BOUNCES AT EXIT**

1. see basic body position drills
2. see exit drills
3. see timing force application drills

### **CATEPILLAR IN TIMING**

1. see general timing drills
2. see timing entry drills
3. see timing force application drills
4. see exit drills

### **STERN BOUNCES AT CATCH**

1. see body position drills

### **STERN BOUNCES AT EXIT**

1. see exit drills
2. see exit timing drills

### **SIDE TO SIDE ROLL**

1. see body position drills
2. see general timing drills
3. see timing entry drills
4. see exit timing drills

## PHYSICAL TRAINING THEORY

### Principles of Training

Over the past few decades, the sciences involved in training athletes have been developing at an amazing rate. This evolution has resulted in a slow, but steady, increase in both the fitness and performance demonstrated by top athletes. As a Basic Instruction coach, these discoveries are important to help you understand how to help your paddlers improve.

Recent advances in sport science include;

- The association of heart rate with workload,
- The association of muscular force with speed of movement,
- The identification of the relative contributions of the aerobic and anaerobic energy systems,
- Questionnaires for estimating fatigue levels and other psychological characteristics associated with sport performance,
- Utilization of training intensity zones, and
- Sport specific testing methods.

More recent developments have allowed sport scientists to estimate the contributions of physiological and psychological characteristics such as strength, speed, power and techniques to overall performance. All of this knowledge allows us to prescribe more effective and more efficient training programs to our athletes.

At the upper levels, prescription of training programs can become quite complex. However, there are a number of fundamentals that apply to all levels of athletes and should be understood by all coaches. The first of these is the difference between the concepts of *fitness* and *performance*.

### **Fitness**

Fitness represents an athlete's ability to demonstrate the basic requirements for completing the sport in question. Attributes of fitness include aerobic power and capacity, anaerobic power and capacity, muscular strength and power measures, and basic sport skills.

## Performance

Performance, on the other hand, is the athlete's ability to integrate fitness with sport specific competition technique and psychological skills. Time trials and competition results are performance measures.

Fitness aspects of training are best addressed early in a training plan. Focusing on performance is best reserved until competitions are closer.

***As a Basic Instruction coach it is important that you convey this to your paddlers as they will often fixate on the Dragon Boat Festival or some other performance based event in the future as opposed to spending time developing.***

However, it is necessary to evaluate both fitness and performance on an ongoing basis to fully understand a team or individual's strengths and weaknesses so that your training program can address these areas.

### Principles of Training

There are eight principles that are essential to the design of an effective training program (see Table 3). For Basic Instruction level coaches only the first six are important. The last two, maintenance and fatigue will be addressed in the Performance and High Performance modules respectively.

Table 3. Fundamentals Principles of Training.

FUNDAMENTAL PRINCIPLES OF TRAINING
1. Progressive overload
2. Super-compensation
3. Recovery
4. Specificity
5. Frequency
6. Periodization
7. Maintenance
8. Fatigue

#### i) Progressive overload

The principle of progressive overload states that, for athletes to improve they must slowly and methodologically encounter workloads and stresses (physical and mental) that exceed their current abilities. This overload does not necessarily occur on a daily basis, but should span successive days, months and years. Overload will result in fatigue (principle 8), which in turn will trigger

fitness super-compensations (principle 2). If an athlete's abilities (physical, technical, and psychological) are not overloaded, they soon and more improvements occur.

## ii) Super-compensation

The principle of super-compensation is based on the fact that once stressed, an athlete will adapt to be better able to cope with a similar stress at a later date. In order to experience super-compensation, an athlete will pass through a period of fatigue (principle 8), then a period of enhanced fitness once recovery (principle 3) is nearing completion.

## iii) Recovery

The principle of recovery states that for fitness to improve and even be maintained, a period of reduced effort is necessary. The need for recovery is inherent at all levels of training;

- within workouts,
- between workouts,
- between days of training, etc.

By allowing differing amounts of recovery, a program can direct an athlete's preparation towards a specific goal; be it psychological, aerobic, anaerobic or technical.

## iv) Specificity

Specificity is an expression of how close your training is to your competitive requirements.

***Specificity is well illustrated through two individuals who join a novice Dragon Boat crew. One is a very good runner, the other a very good swimmer.***

***The runner, while being as fit as the swimmer, will not be as good a paddler to begin with as he or she will initially lack the specific upper body fitness.***

***The swimmer with more specific upper body fitness will adapt to paddling faster due to the greater degree of similarity in his or her past training.***

***In time, it is possible for the runner's paddling abilities to equal or exceed that of the swimmer.***

For novice paddlers, the specificity of training revolves around learning to paddle properly first, and developing paddling fitness second.

However, paddling is part of a unique group of sports (including swimming, rock climbing, and cross-country skiing) that require unique and unnatural movements. Consequently, only a limited amount of non-specific training will enhance performance and as athletes become more experienced, the benefits of non-specific training are greatly diminished. Thus, the specificity of fitness training increases in importance for the more experienced and elite athletes.

***In other words, to become a better paddler you need to paddle.***

#### **v) Frequency**

The frequency with which an athlete trains is always important. Frequency needs addressing both within and between workouts. Within a workout, frequency is defined by the duration of work and rest intervals. The frequency of workouts in a given day, week, or month will be important in more advanced athletes, not so much with novice paddlers unless fatigue (principle 8) plays a role.

#### **vi) Periodization**

One of the most important aspects of training is the systematic assembly of training into a cohesive unit. Periodization is the process by which a season or year is broken down into a number of phases that address specific training needs or goals. There are two main categories of Periodization, the training phases and the building blocks used group training goals.

#### **Training phases**

##### **a) Preparation Phase**

The preparation phase consists of a series of weeks that systematically address an athlete's strengths and weaknesses (i.e. aerobic, anaerobic, psychological, tactics, technique, power, or muscular conditioning). It is often divided into a ***general preparation phase*** (GPP), during which a broad range of training is prescribed to prepare the athletes for subsequent sport-specific stresses in a ***specific preparation phase*** (SPP). In the SPP, the physical conditioning and training take on a greater sport specific focus. The transition between the general and specific phases should be smooth and gradual. The majority of overload and super-compensation occurs in these phases.

##### **b) Pre-Competition Phase**

The pre-competition phase addresses an athlete's specific preparation (i.e. intensity, technique, psychological, tactical) for the competition phase. The

specificity of training increases over the *SPP* during this time. Frequency of training may increase at this time.

### c) Competition Phase

The competition phase spans a series of target races or events, or even a single event. During this time, reducing fatigue to encourage one last super-compensation is planned as is an increase in sport specificity relating to tactics and psychological preparation. Traditionally in Dragon Boat paddling there is only one competition phase. However, with the increased popularity and availability of events, it is now possible to have two competition phases each with its own pre-competition phase. More advanced Dragon Boat teams are more likely to have multiple competition phases than novice teams.

### d) Transition Phase

The transition phase (also referred to as the off-season) is a period used for recovery (principle 3) or maintenance (principle 7). Ideally, this phase involves a two to three week period where formal training is virtually non-existent. During this time, the athlete is involved in light physical activities other than paddling or passive recovery. Periods longer than this result in a loss of fitness and performance decreases.

At the Basic Instruction level the transition phase can be almost as long as or even longer than all the training phases combined seeing as how long term performance is not always a team priority. However, elite level paddlers should observe a short transition phase as mandatory and crucial to long term development.

### Building blocks

Within the periodization of training phase there is another level of periodization where the days, weeks and months are grouped together to indicate how long the training program focuses on a common goal. There are three such categories; microcycles, macrocycles and mesocycles, each nesting within the other.

1. Microcycles are the smallest units and can last between two and fourteen days in length depending on the training focus and how long it will take to initiate a training response. A common microcycle length for a Basic Instruction or Performance Dragon Boat team is seven days, the same as the common work week.
2. Mesocycles are groups of microcycles commonly lasting between two and six weeks. Within a mesocycle, the microcycles will build from one to the next in difficulty (training hours, training intensity or both) and focus. It is common

to either end or begin a mesocycle with a recovery microcycle of an appropriate length.

3. Macrocycles are groups of mesocycles that cycled through all of the relevant training goals, physical, technical and psychological. Macrocycles are grouped together (or possibly singly) to fill out the training phases. It is important to note that all training goals need not be addressed in each macrocycle. During some phases of training, one or more of the mesocycles may be in a state of maintenance.

## BASIC INSTRUCTION AND EARLY SEASON WORKOUTS

### Training Phases

As was outlined in the previous section, the basic training year is divided into five phases, each with a specific objective. The phases are the general preparation phase (**GPP**), the specific preparation phase (**SPP**), the pre-competition phase (**PCP**), the competition phase (**CP**), and the transition phase (**TP**).

It is important to note early on that while there is a great deal of structure within these phases it is important to allow some room for randomness. There is a risk associated with using the same workout over and over again. Elite paddlers will not respond to a highly repetitive and structured routine or program whereas a novice paddler might continue to improve for some time. Consequently, variety is an essential element of every formal training program, but more so for yearly than seasonal programs. The varied training load will also help prevent any psychological burnout from endless repetition of the same workout, and maintain long term motivation.

However, for inexperienced paddlers almost any systematic training will result in performance and fitness gains.

***Interestingly enough, when an elite level athlete changes coaches or an existing coach adopts a new coaching style, performance and fitness increases are common due to the inherent differences from the old program, regardless if those changes are good or bad.***

The degree of randomness in a training program is modified through slight variations in the duration and intensity of the workouts.

***Caution must be used so that training does not become so randomized that there is no identifiable progression, overload, sport specificity or direction.***

Finding and prescribing this balance takes both knowledge and experience. Within the training program design section of modules two and three, examples of the variety possible within a given workout are further described.

### **Basic Instruction programs and the general preparation phase**

In the general preparation phase, the objective is to prepare the athlete for the sport specific training to follow. Initially, this will require that a training base of aerobic fitness is established.

***Aerobic fitness refers to any efforts than can be sustained for “a long duration”. A two hour paddle at an easy pace or a two hour race both requires aerobic fitness. And, believe it or not, an all out 500 m paddling sprint requires almost as much aerobic fitness as a two hour race. Aerobic fitness plays a big role in all activity that lasts longer than 2 minutes.***

***There two components of aerobic fitness; the heart and lungs, and the specific muscles involved in the activity. Both work together and can not function properly without the support of the other.***

This phase allows muscles, joints, and tendons to be conditioned for the repetitive stresses incurred while training and learning technique. This basic physical conditioning will enhance the athlete's ability to recover between daily or weekly training sessions, during the rest intervals between high intensity interval sessions as well as between races in regattas or festivals.

Typically, the duration of the general preparation phase is quite long (8-12+ weeks), especially for athletes with little systematic training. For more experienced athletes, the general preparation phase will be shorter, acting as a link between the transition phase from the previous year and the specific preparation phase of the current year.

For many novice Dragon Boat teams, there is not enough time to go through both a GPP and a SPP. The result is a compromise, a general preparation with more of an emphasis on paddling skills. This combined GPP/SPP can simply be called a GPP for all intents and purposes.

## **Physical**

This phase marks the beginning point from where all paddlers prepare for the Dragon Boat season. The overall objective of the GPP is to prepare athletes' aerobic fitness to a point where more specific efforts (in both effort level and duration) are possible. This can be done through either specific (i.e. paddling) or non-specific (i.e. running, cycling, rowing or skiing) exercises. It is always a good idea to ensure a minimum of 50% specific training in the GPP.

***Remember: Novice teams may not have this luxury and their GPP will be 100% specific training.***

The pursuit and maintenance of aerobic fitness is a lifetime activity, achieved not only by way of low intensity distance training, but also the judicious use of high intensity efforts or interval training. The **GPP** is also an excellent opportunity to increase muscular strength. Enhanced general muscular strength and injury prevention are cornerstones of the **GPP**. Please refer to the section of the level 2 Performance coaching module for details on strength training.

This phase is very important for all athletes, not just newcomers to the sport. All athletes require time to work on the building blocks of their physical preparation. It is not possible to become an elite level athlete, or any other kind of athlete, without adequate preparation in all aspects of physical fitness. There are no exceptions to this rule, despite what your paddlers may tell you!

***In the Performance and High Performance coaching modules we will discuss these basic building blocks that contribute to the final performance. They are known as energy systems and exist on a continuum ranging from almost exclusively anaerobic to almost exclusively aerobic.***

## **Technical**

For many Canadian paddlers, the **GPP** is a period during which very little paddling specific training is performed. Instead, training modes such as cross-country skiing, swimming, cycling, and running are used extensively to build a strong aerobic base on which the subsequent training can be done. Using alternate modes of training prevents boredom and helps to keep the athlete in a psychologically fresh frame of mind. Not to mention it minimizes the risks of hypothermia and frost bite while training on the water during winter!

When paddling is not possible, use cross-training in sports where there will be as much training specificity benefits as possible. Two of the most beneficial winter time activities for paddlers include swimming and cross-country skiing (both skate technique and classical).

However, due to the complex technical nature paddling, it is important for athletes to spend many hours and even years perfecting technique. This learning process should be begun each year at low speeds (both boat speed at stroke rate) until the basic movement patterns are learned, or re-established. However, once technique at a given stroke rate is acceptable, there should be little hesitation in moving on to faster rates. Thus, once the basics are in place, the athlete can begin to spend time perfecting that same technique at higher intensities and movement speeds. This learning occurs mostly during the **SPP**.

## PLANNING PRACTICES: BASIC PRINCIPLES

The training program you put together for your Dragon Boat team is going to be one of the most important tools you will have all season long. The training program, whether it is only a few words, or a 100 page manuscript, becomes a map to show you where you are now, and where you will be going and all the important places along the way.

When you sit down to plan your training program, there are a number of different levels to your program you have to consider before you can begin. What direction you take with your program design is answered through following a simple set of guidelines that are derived from goal setting and step by step planning.

### Goal setting

What is the main goal or objective of your program?

It is very important that you as a coach facilitate the setting of realistic and achievable goals for your team. Having the team involved in setting their long term goals is ideal. This way they will have a vested interest in the outcome and everyone on the team is aware of where the team is heading and your job as a motivator becomes easier.

***With goal setting, better results are often obtained when the goals aim for an objective that is currently beyond reach, although obtainable with some work and planning. If easily obtainable goals are set for the team, upon obtaining the goal the team will be left with a feeling of having accomplished very little. Conversely, overly ambitious goals can leave teams feeling unfulfilled as well. As with many things, moderation is the key to successful goal setting.***

To reach a long term or seasonal goal, intermediate or short term goals are needed to chart your progress. While paddlers may not see a long term goal getting any closer, with intermediate steps progress becomes more obvious. For example;

A team sets a long term goal of paddling 500 m with perfect timing at a stroke rate of 75 strokes per minute for the target festival in mid June. It is currently February and the team is struggling to maintain 45 strokes per minute over 500 m. Intermediate goals for this team are:

1. mid February 45 strokes per minute without struggling,
2. mid March: 50 strokes per minute without struggling,

3. early April: 55 strokes per minute without struggling,
4. early May: 60 strokes per minute without struggling,
5. late May 65 strokes per minute without struggling,
6. early June 70 strokes per minute without struggling,
7. mid June 75 strokes per minute without struggling,

At the Basic Instruction level, your seasonal goals should be very simple. Other long term goals to consider for a novice team include;

- achieving a certain part of the stroke,
- encouraging more positive communication between paddlers in the boat,
- completing a certain distance or time without stopping,
- working on completing a certain distance in a certain time,
- even something as simple as showing up on time

***Once a goal is set, it is important to be able to evaluate whether it has been achieved or not. As such, well defined or objective goals are much more desirable than ambiguous or subjective goals.***

***An example of an objective goal is paddling 3:15 or faster for 500 m in no wind and no currents or tide. This goal is very clear, easy to measure and well defined as to when it can be achieved.***

***An example of a subjective goal is the commonly chosen goal of "making the final". While this may appear relatively objective, it relies not solely on the team's abilities, but on a number of factors beyond their direct control. The competition, lane selection, opponents in heats and semi-finals, tactics and teamwork are but a few of the factors that you can not control.***

***It is very important for Basic Instruction and elite paddlers alike to be able to receive feedback and evaluate their progress, not just mark a goal as "done".***

Thus, the first level of designing a successful training program is setting goals for the training season, whether only two months long or a four year Olympic plan. No matter the length of the program, advanced planning is what identifies successful programs.

Once you have set your long term and intermediate goals, your planning continues to move to smaller and smaller units of time. Seasonal plan goals are broken down into intermediate goals. Intermediate goals are broken down into

monthly and weekly goals. Finally weekly goals are broken down into daily and individual training session goals.

Once you reach the individual training session level, you can set a number of goals for the practice. These are often set only a short time in advance, keeping in mind your seasonal goals of course. How you select your daily goals often depends on the outcome of the last training session. A good coach will often identify weaknesses from practice to practice and be flexible enough to address these in the next training sessions. An inflexible coach will stick to a predetermined plan regardless of the immediate needs of the paddlers. Inflexibility in coaching is a guaranteed recipe for an unsuccessful season.

At the weekly and daily planning level, the following are examples of common goals;

- Fitness training (aerobic, anaerobic, etc.),
- Technique training (work on exit, entry, etc.),
- Tactical training (starts, pacing, etc.),
- Team building (motivation, problem solving, etc.),
- Associated skills such as flexibility, balance, etc.

As you gain practical coaching experience, you will learn that the time required to achieve certain goals is never absolute. With experience you will be able to assess your team's current state and estimate how long it will take, and how much effort is required to achieve a given goal.

## PLANNING A TRAINING SESSION

Once you have your goal for a given training session, the rest is simple. Keeping the workout simple and following a loose structure will allow your sessions to run smoothly.

Until you develop your own general practice guidelines, the following section outlines the other details you need to fill in before your session is complete.

A well planned training session will always allow for:

1. A **warm-up** time of at least 10 minutes during which time easy paddling and basic technique work are performed. Any stretching and flexibility exercises should be included after the initial warm-up period once the muscles and joints are also warmed up and ready for activity. For an easy aerobic training workout, the warm-up is essentially the first few minutes of the workout. For all types of training sessions, the warm-up is included in the total training time.

*Many Dragon Boat teams use a dry land warm-up routine of aerobics type movements. While this is a great way to get a general warm-up, it is not a substitute for easy paddling. The paddling will allow for shoulders, torso, arms and legs to adjust to the range of motion and forces experienced in paddling that is not always possible on dry land.*

2. Each **training set**. This will include a description of:
  - a) The **required technique and technical focus** for each effort,
  - b) The **number of intervals** required,
  - c) The **duration** of each interval. It is best to use time as a measure of duration rather than distance. Time durations remain constant in all conditions while distances can become reduced, or lengthened as a function of fitness, terrain, weather, equipment, etc.,
  - d) The **exercise intensity** required for each interval using an intensity scale all athletes are familiar with. We use a scale where 100% refers to 100% for that particular duration. Thus the intensity for 1 minute at 100% is harder than 6 minutes at 100%,
  - e) The **required recovery interval** for each effort. We recommend you indicate the Recovery Time required after the completion of the effort as opposed to a repeat time (i.e. use 1:00 minute hard on 2:00 minutes recovery, not 1:00 minute hard every 3:00 minutes).

**Examples**

- **20' 00" at 65 % effort: focus on rotation from the hips, initiating the catch with the legs**
- **3 x 6:00 at 75 % effort on 6:00 recovery at 60 % effort: focus on slow stroke rate (30-40 strokes per minute)**
- **3 x 3:00 at 100 % on 6:00 recovery at 60 %: focus on a solid stable catch**

3. For novice athletes, or novel training exercises, a list of **equipment** might also be advised.
4. **Warm-down** time should also be included in the workout. A minimum of 10 minutes is advisable, while more than 15 are probably unnecessary. As a rule, the last recovery interval from an interval session can be included in the warm-down time, all of which count toward the total exercise time.

When planning a day of training, you should schedule technical and intense efforts prior to less intense, longer duration sessions. The theory being that it is always possible to do volume training while fatigued, but not always possible to do technically good efforts of any intensity while fatigued.

As such, the following order is recommended:

1. Technique training, time trials and testing.
2. High intensity training.
3. Muscular conditioning.
4. Easy aerobic conditioning.

## ENERGY SYSTEMS

A cornerstone to coaching middle distance paddling is the concepts of energy systems. Simply put, energy systems are the different methods your body uses to fuel your muscles during exercise. There are two basic energy systems you need to be aware of at the Basic Instruction level, aerobic and anaerobic.

Aerobic energy is used in sustained longer duration efforts of both high and low intensity, while anaerobic energy is used in very short duration high intensity efforts. From a practical coaching perspective we believe that Basic Instruction coach needs to worry about only one energy system, the aerobic energy system.

*The anaerobic energy system is explored further in the Performance and High Performance coaching modules. At the Basic Instruction level, anaerobic energy exerts a minimal effect on the outcome of your race and your coaching time is better applied to paddling technique and aerobic fitness.*

To read the energy system guideline you will need to become familiar with the following terminology;

- **Heart rate (HR):** As you work harder your heart will beat faster. At a certain effort level you will be working so hard your heart can beat no faster, this is referred to as 100% of your peak heart rate. Peak heart rate is age, gender and background specific, and it is very individual. A common estimate of peak heart rate is to take 220 and subtract your age. i.e. a 35 year old would have a peak heart rate of  $(220 - 35 = 185)$ . However, formulae such as this one are based on exercise that uses more muscle than paddling (such as running or cycling) so the estimate will probably be high.
  - While hard efforts will be at 90-100% of peak heart rate, easy efforts will often be at efforts close to 50-75%. Even small increases in heart rate can result in a much faster onset of fatigue.
  - Peak heart rate can be estimated by what is called an incremental fitness test where the effort is increased in small steps every 15 - 60 seconds until the effort level can no longer be increased. A test such as this should not be performed without prior medical clearance by the paddler's family doctor.
- **Rating of perceived exertion (RPE):** This is a method for estimating effort level based on a scale of some sort. Common scales are 1 to 5, 1 to 10 and 1 to 20. In each case the higher the number the harder the effort. The 1

to 10 scale is easy to apply as you can explain it as a percentage scale where each unit represents 10%.

- **Work to Rest ratio (W:R):** This is a reflection of how much rest time to take between harder efforts. i.e. a 2:1 ratio indicated you take twice as much recovery time as it took to complete the harder effort. A 3:00 effort on 2:1 would require 6:00 (2 x 3:00) recovery at an easier effort (never completely inactive).

## AEROBIC TRAINING

There are two objectives in aerobic training, to increased aerobic power and aerobic capacity. For long distance events such as a 10 000 m paddling race aerobic capacity is important, while for a 1 000 m event aerobic power becomes more important.

**Aerobic capacity** is your body's ability to work for long periods of time (10:00 and longer) and is best trained using low intensity and longer duration continuous training efforts.

**Aerobic power** is critical in your ability to work hard for longer durations (2:00 to 6:00 or longer) and is best trained by high intensity intervals.

For novice Dragon Boat crews, the physical side of training is very simple. **Aerobic capacity** training will produce almost all of the performance increases you need. If there is enough time in your season and your technical training is progressing well, you could consider adding in some longer, higher intensity pieces into your practice (race length pieces) over the last few weeks before you race.

***Be careful though, if your team is still having technical difficulty at this point, higher intensity will not solve technique problems but compound them.***

The following guidelines define each of the aerobic energy systems in terms of how long to train and the effort level needed before you will see appreciable fitness changes.

## AEROBIC THRESHOLD (AET)

**Cycle Length:** 2 - 6 weeks

**Focus:** To increase easy long duration efforts and as a result, the percentage of your high intensity pace you can sustain for long durations. Aerobic mechanisms are slow to adapt as such they must be introduced early in the program

**Target Training Effort:**

1. Long duration (15:00 +) workouts at very easy efforts, 50-65% peak heart rate.
  - i.e. 45:00 AeT easy paddling and technique work

***This intensity is equivalent to closing your mouth and breathing only through your nose. It is very, very easy.***

***Novice crews should not attempt more than three 20-30 minute workouts per week when starting up. Longer durations are possible as the season progresses. A good rule to follow is not to increase the duration by more than 5 % per week.***

**Days of Consecutive Training using this effort level:** short to long (2 to 14 days)

## AEROBIC CAPACITY (AE CAP)

**Cycle Length:** 2 - 6 weeks

**Focus:** To increase the effort level at which technique work is performed for short durations, and as a result, the percentage of your high intensity pace you can sustain for long durations.

**Target Training Effort:**

1. Aerobic capacity efforts can be short (0:30) to quite long (10:00) efforts at 80 % of peak heart rate and above. They are usually on short to medium recovery (1:2 to 1:1) and performed only after warming up thoroughly at your aerobic threshold (AeT).
  - i.e. 6 x 0:30 at 80 % of 500 m race pace on 0:30 recovery, or
  - i.e. 3 x 2:00 at 85% of 500 m race pace on 2:00 recovery, or
  - i.e. 2 x 10:00 at 80% of 10:00 pace on 5:00 recovery.

***As the season progresses, you can slowly increase both the duration and the intensity of your aerobic capacity training. A good rule to follow is not to increase the duration or intensity of the aerobic power work by more than 5 % per week.***

***Novice crew should only do training such as this in the final few weeks before their main goal event.***

***Days of Consecutive Training using this effort level:*** short to medium (1 to 4 days).

## AEROBIC POWER (AE PWR)

***Cycle Length:*** 2 - 4 weeks

***Focus:*** To increase amount work of hard aerobic work possible. This becomes very important when complementing Aerobic Threshold and Aerobic Capacity training.

***Target Training Effort:***

1. Aerobic Power workouts: 1:30 – 6:00 work intervals at near peak heart rates on medium to long recovery (1:1 to 1:3) at 60-80% peak heart rate. Aerobic power workouts are performed only after warming up thoroughly at your aerobic threshold (AeT).
  - i.e. 3 x 3:00 at all out 3:00 pace on 6:00 recovery
2. Broken Aerobic Power workouts: same duration as above but broken into smaller pieces with short recovery breaks inserted. This encourages a higher overall effort and better technique in the workout for more advanced paddlers.
  - i.e. 6 x 1:00 at all out 6:00 effort on 0:30 recovery

***Novice crews should not do aerobic power workouts until after an initial six weeks of aerobic base building has been completed. Even then, once per week or once every two weeks will suffice.***

***Days of Consecutive Training using this effort level:*** short to long (1 to 4 days)

## MUSCULAR CONDITIONING

Strength training is a very misunderstood component of training for sport. One easy way of addressing the initial phobias associated with strength training is to replace "strength training" with "muscular conditioning".

***While this name change may seem like a minor point, it often prevents psychological barriers from springing into place while you explain that in a well administered muscular conditioning program, none of these concerns will be a problem.***

Often strength training is associated with images of bodybuilders and Olympic power lifters. For paddlers, this is not the kind of strength or muscle mass needed for performance. Unfortunately, there are many myths and fears associated with muscular conditioning. Some of the more common complaints are;

- A fear of weight gain,
- A loss of movement speed,
- A reduced range of motion and
- A fear of increased injuries.

For novice paddlers, a muscular conditioning program is often too much to ask. However, if the paddlers are willing, it is a very useful tool to promote injury free paddling and an enhanced quality of life for many individuals new to training.

From a sport specific point of view, a well designed program will prepare an athlete to be stronger, faster, and more powerful. Additional benefits will be obtained through stronger tendons, ligaments and increased joint stability all of which will contribute to reducing the likelihood injuries.

***Muscular endurance is a term commonly used in association with middle distance sports. It is a misleading term that is often interpreted as high muscular strength for long periods of time. This sort of training is not muscular conditioning. It is either aerobic or anaerobic exercise, depending on the duration and the intensity of the efforts, and it is not a substitute for muscular conditioning.***

One of the most important benefits of muscular conditioning is the increased ease with which large amounts of muscle mass can be activated. We have often heard how humans use only a small percentage of their brain's capacity. The same holds true for muscle. Until a muscle has been trained to work maximally, it will seldom be fully activated. This means that it will not be generating maximal

force, speed or power. Muscular conditioning can train the athlete to fully activate almost all muscle fibers at almost any time.

Given the benefits of muscular conditioning, and the importance muscle mass plays in generating paddling speed, it has to be balanced against a couple of factors.

1. How much of an individual's muscle mass is actually used in paddling?
2. How well can the paddler handle the water resistance exerted on the hull that is attributed to their mass?

A relatively easy way to estimate these two factors is summarized in a paddler's strength to weight ratio. This is a reflection of how strong an individual is over any series of exercises relative to their body weight. However, paddlers with a low strength to weight ratio may be so strong that despite their weight they make a significant contribution to the boat speed.

In general, a muscular conditioning program will follow a cyclical pattern. The cycle usually begins with a mesocycle of basic conditioning, with learning lifting technique, discovering individual limits and familiarization with the equipment. This prepares the both the athlete, and their muscles, for the higher intensity work with more resistance or speed that is to come.

Muscular conditioning terminology includes references to sets, repetitions and lifting tempo. The number of sets refers to how many times you will repeat a given number of lifts. The number of times you perform a given lift or exercise in succession without a rest are called repetitions (reps.). The lifting tempo is a guideline for how long a given repetition should last as it is broken down into lifting the weight, pausing, lowering the weight and pausing again.

***An eccentric contraction is one where the muscle is lengthened, such as when you lower a bag onto a table or go down stairs. The resistance provided by the bag or your body weight is lowered. In some common exercises the eccentric contraction occurs when you lower your body from a chin up, or squat down with a weight.***

***An isometric contraction is a muscular contraction that results in no movement. Any time you push against a resistance that is too great for you, or one that results in no movement is isometric.***

***A concentric contraction is one where the muscle shortens. Lifting a bag off a table, or walking up stairs requires a concentric contraction. In strengthening exercises, pulling yourself up into a chin up requires a concentric contraction as does lifting yourself from a squatting to standing position.***

Through modifying the number of sets, reps and the lifting tempo, a muscular conditioning program leads to different results (see Table 4). If each mesocycle is correctly designed, muscular mass can be either unchanged or stimulated by modifying the number of repetitions and sets performed.

A basic general conditioning mesocycle is commonly followed by a strength mesocycle that is intended to increase the amount of force the working musculature can generate. Once this mesocycle is completed, a speed and power mesocycle is introduced to teach the athlete to use that new strength in generating sport specific power (the combination of force and the speed of contraction). When these three mesocycles have been completed, the athlete can either repeat the whole macrocycle (general conditioning, specific strength, power) or focus on the specific strength and power mesocycles again depending on their needs.

Table 4. Muscular conditioning parameters for each mesocycle of a conditioning program.

Mesocycle	LIFTING TEMPO (seconds)				SETS	REPS
	E	I1	C	I2		
<b>General Conditioning</b>	3-6	1-3	2-4	1-3	2-4	8-12
<b>Specific Strength</b>	2-4	1-2	1-3	1-2	4-8	4-6
<b>Speed / Power</b>	<1	<1	Expl.	1-2	6-12	1-4
<b>E:</b> eccentric portion of lift. <b>I1:</b> first isometric portion of lift, between eccentric and concentric portions. <b>C:</b> concentric portion of lift. <b>I2:</b> second isometric portion of lift, between concentric and eccentric portions. <b>Expl.:</b> explosive movement- as fast as possible with given resistance						

The cyclical pattern mentioned above is always in phase with the overall training mesocycle. General muscular conditioning is prescribed during aerobic power and aerobic capacity training, while strength building muscular conditioning is best prescribed during anaerobic training cycles. Speed and power oriented muscular conditioning are assigned during those mesocycles addressing speed and power in regular training.

It is important for coaches and paddlers to understand that most of the changes in strength following the implementation of a muscular conditioning program are primarily due to learning factors rather than physical changes in the muscle. As the novice learns to perform various movements under resistance, the neural

pathways become more efficient, resulting in more muscle use. Sport scientists estimate that untrained people are unable to use much more than approximately 50 % of their available muscle. With strength training this increases eventually approaching over 90 % in very well trained individuals. Changes in the muscle itself take many months to occur and only on extremely demanding and well designed programs.

For most strength training programs to be successful, the athlete will need to do three sessions per week for about 30-60 minutes per session. More sessions are not necessary at this level, although if they are well monitored they will be detrimental. If you are not familiar with the suggested exercises we suggest you consult the fitness centre staff or personal trainers at the facility you use for working out.

It is important to note that the strength, speed, and power obtained from muscular conditioning are very specific to joint velocity, joint angle, and body orientation. Thus, a need for sport specificity in the speed-power mesocycle will probably require the construction or purchase of special equipment that allows the simulation of paddling movements.

### **Plyometrics**

Plyometric exercises are an area of muscular conditioning that is very popular today. These exercises involve sudden explosive movements against resistance, such as jumping off various heights into explosive vertical jumps, some medicine ball work and surgical tubing assisted movements. However, plyometric exercises are very complex and difficult to prescribe. Recent research has demonstrated that the speed, angles, and body position used in plyometric exercise must be the same as those in the sport movement. If these parameters are not precisely imitated, the exercise will hinder the athlete's progress by promoting slower movement across the required range of motion, or faster movement outside of the critical range of motion. To be safe, plyometric exercises should be avoided unless administered by an expert in area.

### **Younger athletes**

One additional consideration is the use of high resistance exercises with pre-pubescent and younger athletes. There is sufficient evidence suggesting that this sort of exercise can be detrimental to growth if improperly administered. As such, it is in the best interest of pre-adolescent athletes to limit muscular conditioning to body weight only exercise. This means that the only resistance they should use is their own body weight or less, no additional weight should be added to their exercises (push-ups, sit-ups, chin-ups, jumping, bounding, etc.). If you as a coach are in concerned, you should consult a sports medicine doctor.

### **Older athletes**

With older athletes, a muscular conditioning program will not only enhance their paddling fitness it is also an excellent investment for a continued quality of life into old age. As our muscles age, they begin to lose strength, elasticity and endurance very quickly after age 50 unless stimulated regularly. Seniors in particular should not be hesitant about including muscular conditioning in their exercise program for paddling. However, it is wise to have each potential senior paddler consult their family physician before beginning such a program, and to start off slowly with low resistances.

### Suggested exercise program

The lists of exercises that follow are divided into two categories, main exercises (see Table 5) and additional exercises (see Table 6). Exercises are selected from each list according to the categories presented under the A through K headings. These headings identify exercises as either pushing or pulling, upper or lower body as well as back and abdominal.

To select how many exercises from each category, use the following chart:

- A. ABDOMINAL CORE EXERCISES: 4 exercises
- B. SHOULDER PROTECTION EXERCISES: 3 exercises
- C. BACK CORE EXERCISES: 2 exercises
- D. UPPER BODY PUSHING EXERCISES I: 2 exercises
- E. UPPER BODY PULLING EXERCISES I: 2 exercises
- F. BALANCE EXERCISES: 2 exercises
- G. LOWER BODY PUSHING EXERCISES I: 1 exercises
- H. LOWER BODY PULLING EXERCISES I: 1 exercises
- I. UPPER BODY PUSHING EXERCISES II: 2 exercises
- J. UPPER BODY PULLING EXERCISES II: 2 exercises
- K. LOWER BODY PUSHING EXERCISES II: 1 exercises

***To ensure some variety in the program which will speed the results, make sure a routine is not developed. Never do the same sequence of exercises twice.***

Table 5 Basic muscular conditioning exercises for paddling.

<b>A</b>	<b>ABDOMINAL CORE EXERCISES (with or without ball)</b>
	crunches
	twisting crunches
	raised leg crunches
	hanging leg raises
	free weight / med. ball rotations
	angled weight / med. ball rotations
	cable rotations
	V-sit crunches
	pike crunches
	back over
<b>B</b>	<b>SHOULDER PROTECTION EXERCISES</b>
	anterior dumbbell / stretch cord raises
	lateral dumbbell / stretch cord raises
	bent elbow dumbbell / stretch cords shoulder rotations
<b>C</b>	<b>BACK CORE EXERCISES</b>
	prone leg/arm raises
	back extensions (with added weight if necessary)
	bent knee dead lifts
<b>D</b>	<b>UPPER BODY PUSHING EXERCISES I</b>
	push ups
	flat bench press (dumbbell )
	flat bench press (straight bar )
	incline bench press (dumbbell )
	incline bench press (straight bar )
	overhead triceps extension (dumbbell )
	Triceps extension with rope
	assisted dips (machine or raised legs)
	dips
<b>E</b>	<b>UPPER BODY PULLING EXERCISES I</b>
	lat pull downs
	single arm lat pull downs
	bench pulls (prone with straight bar)
	bench pulls (prone with dumbbell )
	bench pulls (inclined with lever)
	bench pulls (kneeling on bench with dumbbell )
	standing bent over rowing (straight bar)
	seated rowing
	assisted chin ups
	chin ups

Table 6. Additional muscular conditioning exercises for advanced routines

<b>F</b>	<b>BALANCE EXERCISES</b>
	wobble board hip and squat exercises
	torso rotation on Swiss ball
	postural work & arm rotations on Swiss ball
<b>G</b>	<b>LOWER BODY PUSHING EXERCISES I</b>
	leg press
	split squat (dumbbell s)
	split squat (straight bar)
	parallel squat (dumbbell )
	parallel squat (straight bar)
<b>H</b>	<b>LOWER BODY PULLING EXERCISES I</b>
	hamstring curls
	strait leg dead lifts
	hip adduction
	hip extension
<b>I</b>	<b>UPPER BODY PUSHING EXERCISES II</b>
	overhead triceps extension (straight bar)
	triceps extension with rope
	shoulder press (dumbbell )
	shoulder press (straight bar)
<b>J</b>	<b>UPPER BODY PULLING EXERCISES II</b>
	seated rowing (wide grip)
	seated rowing (narrow grip)
	bicep curls (dumbbell )
	bicep curls (straight bar)
<b>K</b>	<b>LOWER BODY PUSHING EXERCISES II</b>
	quad extensions
	calf raises
	hip abduction
	hip flexion

## CONCLUSION

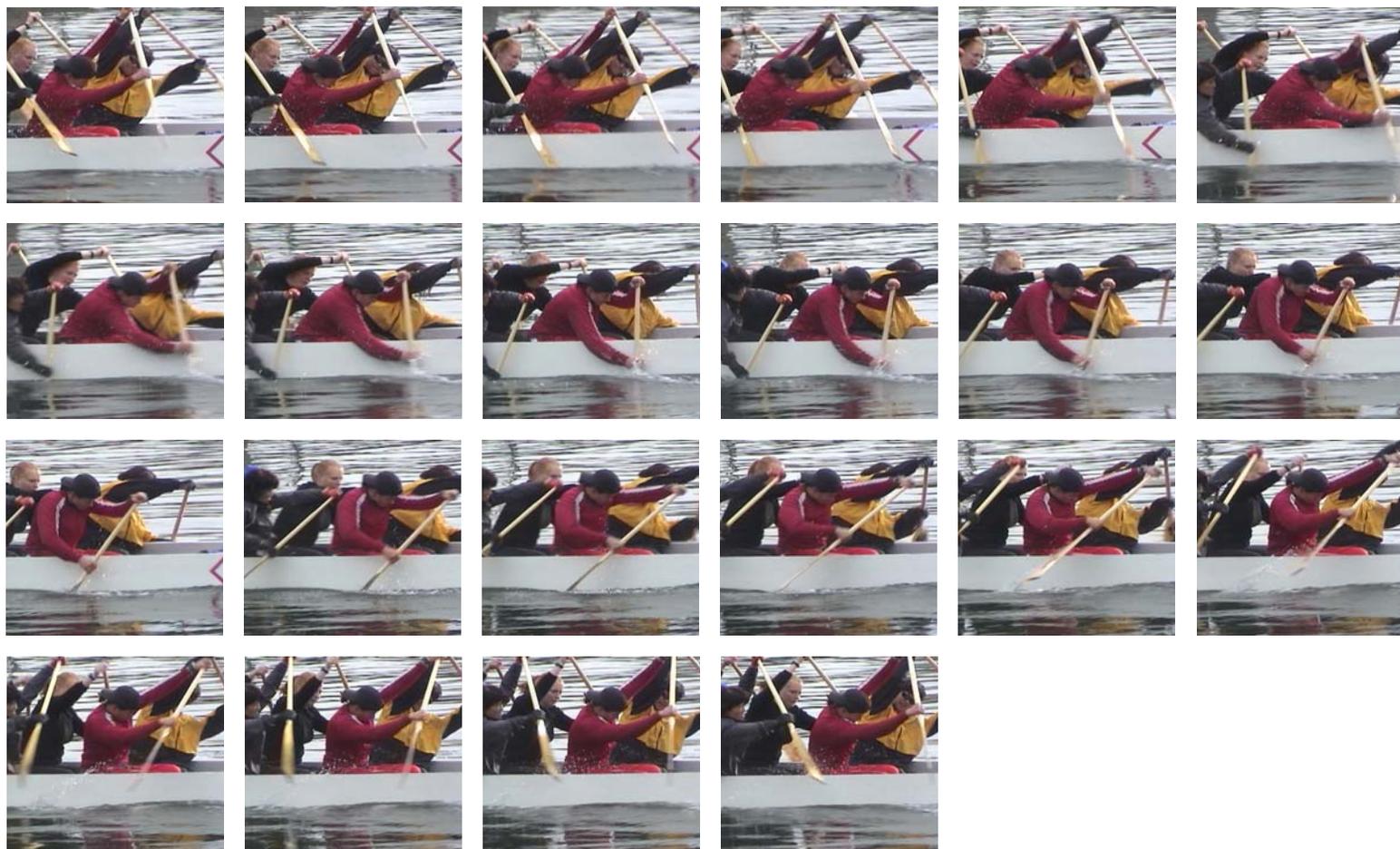
Despite the quantity of information in this manual, coaching a Dragon Boat team is not that difficult. Not all of this information will apply to each team or every paddler. However, be aware that it does take some time to learn how to be a good coach and a lot of patience on both the your, and the team's behalf.

With a little effort, a novice crew can enjoy paddling with a relatively high level of skill within their first season. And if the time is taken to develop a technically sound Dragon Boat stroke, the path to paddling at Performance and High Performance levels is wide open.

Lastly, always remember to smile while you are out paddling and enjoy yourself.

APPENDIX A

The Dragon Boat stroke in frame by frame video capture at 30 Hz (30 frames per second).





## BASIC INSTRUCTOR COACHING ASSIGNMENTS

You have 1 year to complete all assignments.

Please submit all your assignments together to [info@EAScoaching.ca](mailto:info@EAScoaching.ca)

Electronic copies are mandatory and scans of handwritten assignments will not be accepted. Format must include 12 point font or greater

Assignments will be collected, reviewed and some will be archived on our website as a resource for DBC certified coaches

Please use the DBC forms in the next section to log your workouts. These are available electronically from your instructor at [info@EAScoaching.ca](mailto:info@EAScoaching.ca)

### **1. Safety**

---

There are a number of risks to paddlers at your club that you as a club coach can theoretically control.

- Please identify a potentially serious risk,
- Suggest a strategy to minimize this risk, and
- Outline an implementation program.

### **2. Coaching Philosophy & Ethics**

---

What is your coaching philosophy?

- What are your values?
- What are the values of the team(s) you coach?

### **3. Technique**

---

Being able to identify and solve technical problems is a large portion of coaching.

- Please identify a common technical problem.
- Suggest three possible causes for the problems
- Describe a drill that will help the paddler understand and correct the problem

#### **4. Practice Design**

---

A good training program design is more than just paddling time and intensity.

Successful training program design requires that you set specific goals in designing each workout.

- Please prepare two (2) workouts as part of a 10 week novice program with workouts specific goals in each of the following areas;
  - Fitness
  - Psychology/Behaviour
  - Tactics
  - Technique
  - Social
  - Achievement
  - Self-direction
  - Sensation

		<h1>DB coaching planner</h1>	
Coach			
Assistants			
Date & time		Session #	
Duration		Preparation time	
Team		Participant #	
Location			

PLAN			
Equipment needed			
Risk management			
SESSION GOALS			
Fitness	Technique	Tactics	Psychology
Social	Achievement	Sensation	Self-Direction

SCHEDULE		
Item	Duration	Details

# Dragon Boat Technical Coaching Manual

## Performance Module



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NCCP level 3 canoe-kayak coach

**EAS**  
ENGINEERED ATHLETE SERVICES

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## 1 Performance Coaching

The performance coaching content of the Dragon Manual is still under development. However, the following sections will help highlight some of the areas where paddler and crew preparation will change as you prepare for a performance based training plan.

Most of the changes will occur in training program design and content.

## 2 Technical paddling skills

While there are no major changes to paddling technique at the Performance Training level, paddlers at this level should continue to prioritize technical improvements.

Key areas you should focus on are:

- Continue to learn about and develop torso and shoulder girdle stability.
- Encouraging all paddlers to use their legs not only for rotation but also for propulsion.
- Emphasize the importance of a clean controlled entry and its effect on the catch.
- Get exits to be better, cleaner by adopting the hybrid exit presented in the Basic Instruction Basic Instruction module.
- Begin learning about boat run.

### 3 Performance Racing Basics

At the Performance Training level, the race becomes more important to the paddlers as they have put in more effort into preparation. As a coach you will need to address pre-race nervousness more and help the paddlers focus.

Mental preparation strategies taken from sport psychology knowledge will help here. Especially important will be skills in;

- Relaxation,
- Visualization,
- Coping strategies,
- Refocusing.

Follow the pre-race plan for novice crews with some added emphasis on race plan and tactics. The one main addition we suggest is a revisited start procedure.

#### 3.1 Starts

At the Performance Training level, starts begin to take on importance and can figure in pre-competition training.

As with novice crews, do not overemphasize the start. Timing and proper paddling technique are still more important for success than getting to the 100 m buoy first.

***Many teams that win the first half of the race go on to loose the second half, and there are no awards for the fastest to half way!***

##### **Pre-start**

- All attention focused on drummer for commands,
- All paddlers verify their torso position,
- All paddlers verify their leg position for stability and set up for stroke one with gunwale hip forward slightly and leg ready to push hip back,
- Paddle is held in a relaxed position across the legs, bottom hand and blade over the water.

##### **"Attention please"**

- Activate abdominal muscles to stabilize torso,
- Rotate top hand up over bottom hand so blade is vertical, perpendicular to water,
- Position whole blade in the water,
- Begin bracing with legs in anticipation of start signal,
- Exhale and hold breath listening for start signal.

##### **"Go": Stroke 1**

- Shorter stroke covering only the last ½ of a full stroke.

- There is some rotation, slight elbow flexion and a pronounced leg drive to get a deep, slow and powerful stroke.

### Stroke 2

- Shorter stroke covering only the last  $\frac{2}{3}$  of a full stroke.
- There is more rotation, less elbow flexion and a still a definite leg drive in a deep, slow and powerful stroke.
- Stroke rate increases slightly (~ 5 strokes per minute increase).
- Keep speed of initial strokes low: no white water or big boils surfacing anywhere.
- It is common for novice and experienced crews alike to go straight into full length strokes within 5 strokes per minute of racing stroke rate

### Stroke 3

- The next stroke lengthens some more to the last  $\frac{3}{4}$  of a full stroke, still slow and powerful using a little more rotation. There is no elbow flexion except at exit.
- Stroke rate increases slightly (~ 4-5 strokes per minute increase).

### Stroke 4

- Full length stroke, but still slow and powerful.
- Stroke rate increases slightly (~ 3-4 strokes per minute increase).

### Stroke 5

- Full length stroke.
- Stroke rate increases slightly (~ 3-4 strokes per minute increase).

### Stroke 6

- The last start stroke is a full stroke length, but still slow and powerful.
- Stroke rate remains the same or only a slight increase (~ 1-2 strokes per minute increase).

### Strokes 7-9

- Three transition strokes to increase the rate gradually up to sprint speed (if sprints are going to be used, otherwise skip to **strokes 21/31+**).

### Strokes 10-20/30

- At the Performance Training level, you can begin experimenting with sprint strokes. These are slightly faster than normal strokes, but everything else remains the same.

***It is all too common for sprints strokes to ruin a perfectly good start or race plan. So use them with caution.***

***Allow the rate to increase only marginally, and only as high as the paddlers can maintain the timing, force per stroke and most of their range of motion.***

### Strokes 21/31+

- Three transition strokes to increase reach and rotation (drummer calls out, "ready-and-reach" as one word per stroke).
- Settle into race rate and effort quickly after the ready and reach.

## 4 Principles of Training

There are eight principles that are essential to the design of an effective training program (see Table 1). For Basic Instruction level coaches only the first six are important. The last two, maintenance and fatigue will be addressed in the Performance Training and competitive modules respectively.

Table 1. Fundamentals Principles of Training.

FUNDAMENTAL PRINCIPLES OF TRAINING
1. Progressive overload
2. Super-compensation
3. Recovery
4. Specificity
5. Frequency
6. Periodization
7. Maintenance
8. Fatigue

### 4.1 Progressive overload

The principle of progressive overload states that, for athletes to improve they must slowly and methodologically encounter workloads and stresses (physical and mental) that exceed their current abilities. This overload does not necessarily occur on a daily basis, but should span successive days, months and years. Overload will result in fatigue (principle 8), which in turn will trigger fitness super-compensations (principle 2). If an athlete's abilities (physical, technical, and psychological) are not overloaded, they soon and more improvements occur.

### 4.2 Super-compensation

The principle of super-compensation is based on the fact that once stressed, an athlete will adapt to be better able to cope with a similar stress at a later date. In order to experience super-compensation, an athlete will pass through a period of fatigue (principle 8), then a period of enhanced fitness once recovery (principle 3) is nearing completion.

### 4.3 Recovery

The principle of recovery states that for fitness to improve and even be maintained, a period of reduced effort is necessary. The need for recovery is inherent at all levels of training;

- within workouts,
- between workouts,
- between days of training, etc.

By allowing differing amounts of recovery, a program can direct an athlete's preparation towards a specific goal; be it psychological, aerobic, anaerobic or technical.

### 4.4 Specificity

Specificity is an expression of how close your training is to your competitive requirements.

***Specificity is well illustrated through two individuals who join a novice Dragon Boat crew. One is a very good runner, the other a very good swimmer.***

***The runner, while being as fit as the swimmer, will not be as good a paddler to begin with as he or she will initially lack the specific upper body fitness.***

***The swimmer with more specific upper body fitness will adapt to paddling faster due to the greater degree of similarity in his or her past training.***

***In time, it is possible for the runner's paddling abilities to equal or exceed that of the swimmer.***

For novice paddlers, the specificity of training revolves around learning to paddle properly first, and developing paddling fitness second.

However, paddling is part of a unique group of sports (including swimming, rock climbing, and cross-country skiing) that require unique and unnatural movements. Consequently, only a limited amount of non-specific training will enhance performance and as athletes become more experienced, the benefits of non-specific training are greatly diminished. Thus, the specificity of fitness training increases in importance for the more experienced and elite athletes.

***In other words, to become a better paddler you need to paddle.***

## 4.5 Frequency

The frequency with which an athlete trains is always important. Frequency needs addressing both within and between workouts. Within a workout, frequency is defined by the duration of work and rest intervals. The frequency of workouts in a given day, week, or month will be important in more advanced athletes, not so much with novice paddlers unless fatigue (principle 8) plays a role.

## 4.6 Periodization

One of the most important aspects of training is the systematic assembly of training into a cohesive unit. Periodization is the process by which a season or year is broken down into a number of phases that address specific training needs or goals. There are two main categories of Periodization, the training phases and the building blocks used group training goals.

### 4.6.1 Preparation Phase

The preparation phase consists of a series of weeks that systematically address an athlete's strengths and weaknesses (i.e. aerobic, anaerobic, psychological, tactics, technique, power, or muscular conditioning). It is often divided into a **general preparation phase** (GPP), during which a broad range of training is prescribed to prepare the athletes for subsequent sport-specific stresses in a **specific preparation phase** (SPP). In the SPP, the physical conditioning and training take on a greater sport specific focus. The transition between the general and specific phases should be smooth and gradual. The majority of overload and super-compensation occurs in these phases.

### 4.6.2 Pre-Competition Phase

The pre-competition phase addresses an athlete's specific preparation (i.e. intensity, technique, psychological, tactical) for the competition phase. The specificity of training increases over the **SPP** during this time. Frequency of training may increase at this time.

### 4.6.3 Competition Phase

The competition phase spans a series of target races or events, or even a single event. During this time, reducing fatigue to encourage one last super-compensation is planned as is an increase in sport specificity relating to tactics and psychological preparation. Traditionally in Dragon Boat paddling there is only one competition phase. However, with the increased popularity and availability of events, it is now possible to have two competition phases each with its own pre-competition phase. More advanced Dragon Boat teams are more likely to have multiple competition phases than novice teams.

#### 4.6.4 Peak-Taper Phase

This phase is specifically to ensure full preparation for racing. Primarily recovery from training loads and race simulations at the target pace are performed.

#### 4.6.5 Transition Phase

The transition phase (also referred to as the off-season) is a period used for recovery (principle 3) or maintenance (principle 7). Ideally, this phase involves a two to three week period where formal training is virtually non-existent. During this time, the athlete is involved in light physical activities other than paddling or passive recovery. Periods longer than this result in a loss of fitness and performance decreases.

At the novice level the transition phase can be almost as long as or even longer than all the training phases combined seeing as how long term performance is not always a team priority. However, elite level paddlers should observe a short transition phase as mandatory and crucial to long term development.

### 4.7 Building blocks

Within the periodization of training phase there is another level of periodization where the days, weeks and months are grouped together to indicate how long the training program focuses on a common goal. There are three such categories; microcycles, macrocycles and mesocycles, each nesting within the other.

1. Microcycles are the smallest units and can last between two and fourteen days in length depending on the training focus and how long it will take to initiate a training response. A common microcycle length for a Basic Instruction or Performance Training Dragon Boat team is seven days, the same as the common work week.
2. Mesocycles are groups of microcycles commonly lasting between two and six weeks. Within a mesocycle, the microcycles will build from one to the next in difficulty (training hours, training intensity or both) and focus. It is common to either end or begin a mesocycle with a recovery microcycle of an appropriate length.
3. Macrocycles are groups of mesocycles that cycled through all of the relevant training goals, physical, technical and psychological. Macrocycles are grouped together (or possibly singly) to fill out the training phases. It is important to note that all training goals need not be addressed in each macrocycle. During some phases of training, one or more of the mesocycles may be in a state of maintenance.

## 4.8 Training Phases

As was outlined in the previous section, the basic training year is divided into five phases, each with a specific objective. The phases are the general preparation phase (**GPP**), the specific preparation phase (**SPP**), the pre-competition phase (**PCP**), the competition phase (**CP**), and the transition phase (**TP**).

It is important to note early on that while there is a great deal of structure within these phases it is important to allow some room for randomness. There is a risk associated with using the same workout over and over again. Elite paddlers will not respond to a highly repetitive and structured routine or program whereas a novice paddler might continue to improve for some time. Consequently, variety is an essential element of every formal training program, but more so for yearly than seasonal programs. The varied training load will also help prevent any psychological burnout from endless repetition of the same workout, and maintain long term motivation.

However, for inexperienced paddlers almost any systematic training will result in performance and fitness gains.

***Interestingly enough, when an elite level athlete changes coaches or an existing coach adopts a new coaching style, performance and fitness increases are common due to the inherent differences from the old program, regardless if those changes are good or bad.***

The degree of randomness in a training program is modified through slight variations in the duration and intensity of the workouts.

***Caution must be used so that training does not become so randomized that there is no identifiable progression, overload, sport specificity or direction.***

Finding and prescribing this balance takes both knowledge and experience. Within the training program design section of modules two and three, examples of the variety possible within a given workout are further described.

### 4.8.1 Performance Training programs and the general preparation phase

One of the Principles of Training explored in Basic Instruction was Periodization. There were five main training phases. At the Performance Training level, physical training during the year is divided into those same five phases, each with a specific objective and one new phase specific to competition performance. Similar to the novice plan, the phases are the general preparation phase (GPP), the specific preparation phase (SPP), the pre-competition phase (PCP), the competition phase (CP), **the peak-taper phase (PTP)**, and the transition phase (TP).

At the Basic Instruction level there was little time to properly develop the GPP or the SPP. Ideally, at the Performance Training level you will have a little more time to do this. It is possible that pre-competitive and competitive phases can also be included.

The following section updates the different phases for the increased training load and paddling skill. At times terminology will be used that is explained in the **Physical Training Theory** section

## 4.9 General preparation phase

In the GPP, the objective is to prepare the athlete for the sport specific training to follow. Initially, this will require that an aerobic base is prepared. This phase will allow muscles, joints, and tendons to be conditioned for the repetitive stresses of training. The aerobic conditioning will enhance the athlete's ability to recover between training sessions and during the rest intervals of high intensity, interval sessions.

Typically, the duration of the general preparation phase is quite long (8-12+ weeks), especially for paddlers with few years of training. For more mature athletes (i.e. those with greater training age), the general preparation phase will be shorter, acting as a link between the transition phase from the previous year and the specific preparation phase of the current year.

### 4.9.1 Physical

The overall objective of the GPP in paddling is to prepare athletes for intense workloads. This is done through either specific (i.e. paddling) or non-specific (i.e. running, cycling, rowing or swimming) exercises. It is always a good idea to ensure a minimum of 50% specific training load in the GPP.

***At the Performance Training level you will find more paddlers cross-train, and some will be using paddling to cross-train for another sport. Don't frustrate yourself trying to convert these paddlers, just work with them the best you can, this is still a Performance Training level of paddling.***

The GPP is also an excellent opportunity to increase muscular conditioning. This includes general muscular strength, speed, power and injury prevention.

This phase is very important for all athletes, not just new comers to the sport. All athletes require time working on the individual energy systems that will contribute to the final performance.

### 4.9.2 Technical

For many athletes, the general preparation phase is a period during which very little sport specific training is performed. Instead, training modes such as swimming, cycling, and running are used extensively to build a strong base on which the paddling training can be done. Using alternate modes of training prevents boredom and helps to keep the athlete in a psychologically fresh frame of mind. As the training age and devotion to paddling increase, sport-specific training is incorporated more and more into the GPP.

Due to the complex technical nature of paddling, it is important for athletes to spend many years perfecting technique. This learning process should be begun each year at low speeds until the basic movement patterns are learned or re-established. Consequently, interval training at low stroke rates is helpful in keeping the speed of movement low while intensity is increased. However, once technique is acceptable, there should be little hesitation in allowing faster movement stroke rates and hull speeds.

***Unlike novice paddlers who are encourage to spend time on technique alone, Performance Training level paddlers will begin learning about higher intensity efforts in training.***

Thus, once the basics are in place, the athlete can begin to spend time perfecting that same technique at higher intensities and movement speeds. This learning occurs mostly during the specific preparation phase that follows.

## 4.10 Specific preparation phase

The specific preparation phase represents the core of the training program, where the athletes are conditioning for the specific stresses that will be imposed by competition. It is in this phase that the bulk of loading (intensity and volume) is prescribed. When planning the training program, it is important to remember that certain aspects of the preparation require more time to take effect and should be addressed at this time. Specifically, aerobic training, which account for >50% of a middle distance paddler's performance, are among the slowest training adaptations that will occur.

### 4.10.1 Physical

During the SPP the training should be weighted towards sport specific activities. Ideally, more than 60% of the athlete's training should be specific. This means on-water training as soon as possible. However, marathon canoes, sprint canoes and kayaks or outriggers are acceptable alternatives. Activities such as running, cycling, swimming, rowing and cross-country skiing take on a secondary role in this phase.

Specifically, the physical training should continue to build the aerobic fitness begun in the GPP, as well as the anaerobic fitness, speed and power of the athlete. The most important point to remember in this phase is that the sport specificity of training is paramount. This does not mean that there is more integration of the energy systems just yet. It is still too early to begin competition specific preparation and the time spent on economy training will address those needs until the pre-competition phase begins.

#### 4.10.2 Technical

The specific preparation phase is a time to refine paddling technique. During this phase the paddlers train at higher stroke rates, hull speeds and intensities to develop proper racing technique. This is also the time to develop an efficient technique that will not break down with fatigue.

### 4.11 Pre-competition phase

In the pre-competition phase, the athlete should complete the transition between non-specific and specific training in all aspects of their preparation. Ideally, sport specific training should comprise over 80% of the hours completed, with all intensity work being paddling specific. Other important shifts that occur in this phase are found in the focus of the muscular conditioning, the intensity and the economy of motion.

#### 4.11.1 Physical

In the muscular conditioning, strength, power, and speed exercises begin to dominate the training. Hypertrophy becomes a secondary priority, and can even be removed from many programs at this time.

Intensity sessions begin to focus more on durations that are common to competition. As the competition phase approaches, anaerobic preparation should increase significantly.

#### 4.11.2 Technical

**Economy of Motion** and technique sessions should also begin to replicate race pace specific preparation. Fartlek type intervals with recovery taking place at higher intensities than earlier in the season can simulate the need for race specificity adequately early in the phase. At the latter stages of the phase, time trial and races also begin to figure prominently in the weekly schedules.

Preparation for starts, race tactics and pacing begin to play a more important role. However, fitness and technique changes will continue over the next few weeks into the competition phase which is where the race specific preparation is refined.

## 4.12 Competition phase

The competition phase is usually devoted to maintaining all aspects of the athlete's fitness and honing performance. The most important aspects of preparation in this phase are reinforcing performance with the existing technique, economy of motion and a fine tuning of anaerobic fitness, speed and power. During this phase, no further increases in aerobic fitness are attempted due to the risk of fatigue. Speed and power training are beneficial so long as the athlete has the ability to maintain technique at such the intended speeds.

### 4.12.1 Physical

The importance of muscular conditioning is negligible in this phase, the intensity of competitions and sport specific training are sufficient to maintain strength and power for a few weeks. In longer competition phases (greater than three weeks), maintenance strength sessions should be scheduled twice per week, with no more than four days between sessions.

Long competition seasons (greater than six weeks) can be broken up with periodic rebuilding phases. Ideally, for approximately every 6-8 weeks of competition, two weeks of training that de-emphasize performance should be prescribed.

### 4.12.2 Technical

During the competition phase, technical work is focused exclusively on feedback at race intensity and in race situations.

***At this time technical feedback is done over approximately 500 m distance at race pace. This is where the paddlers need to know what needs working on, not in 10-15 minute long easy efforts.***

## 4.13 Peak-taper phase

The taper and peak phase is probably the most confusing and challenging aspect of a paddler's preparation. When it comes to preparing an entire team it is even more difficult.

***If the proper exercise is not prescribed, an entire season of preparation can be compromised. However, the rewards of a properly designed peak and taper can assist an athlete in performing up to, and beyond, previously observed performances.***

The peak-taper cycle incorporates a wide variety of workouts, giving the appearance to many coaches, that the normal rules of exercise prescription have been suspended. In the peak-taper, a solid overload-super compensation phase boosts the athlete's energy systems to new highs.

In a good peak-taper all of the energy systems and technical skills needed in competition are carefully prepared in parallel, not separately. What this means, is that those energy systems that will not conflict with each other (i.e. aerobic power and anaerobic capacity, or short term anaerobic power and ATP-PC) are worked on together in preparation for competition where everything is needed.

The real essence of a peak-taper phase is any further fitness training is suspended and paddling performance takes precedence. This includes final technical perfection, tactical lessons, full psychological preparation, and lots of recovery time. It is in this phase that pacing work becomes more important. The economy of motion training becomes very important and learning to accept the current fitness level for racing is developed.

***When a team is rested and fit, they can be misled as to what their limits are and a realistic pacing strategy can be ignored in favor of the unknown. More often than not, the unknown leads to disappointment and below average performance.***

***As a coach it is your job to be the voice of reason.***

At this level we will introduce what is known as a minor peak-taper cycle. This is involves a 12-14 day overload followed by a single week of reduced volume. The minor peak can be repeated a number of times in a yearly program, as long as there is sufficient time (4-5 weeks between target races) to train again.

#### 4.14 Transition phase

Traditionally called the "off-season", transition is the phase that occurs between the end of the competition phase and the beginning of the next general preparation phase. While the primary focus during transition is recovery, athletes should pursue easy aerobic training every two to three days. Non-specific training is strongly encouraged for all activities.

## 5 Physical Training Theory

For novice Dragon Boat crews, we learnt that the physical side of training was encompassed by **Aerobic capacity** training. At the Performance Training level **aerobic** power and **anaerobic** power are explored and introduced to the training regime.

This section explores the new additions to your coaching repertoire and defines each one in a clear and logical way.

*Remember, when we discuss physical training it is important to communicate clearly to one another, as well as to our athletes. One area that is full of confusing terms and poor communication is that describing training.*

With the inclusion of higher intensity training it is important to define a few rules.

The first is to identify what happens in the recovery interval. The most natural and common reaction is to stop and rest while doing no exercise. This is called **passive recovery**. Unfortunately, while this feels nice it does not promote recovery. To enhance recovery urge your team to keep moving at a reasonable pace with good technique and recovery will be much faster, allowing you to keep the quality of training higher. This is called **active recovery**.

The second rule for including higher intensity training is to focus on **quality** efforts, not **quantity**. If you follow the work to rest ratios outlined in the following section, quality is assured. If you don't follow the guidelines, you will get nothing but fatigue.

The third rule is to remember that speed can be compared with an addictive drug. Too much of high intensity training will kill your performance. Use it wisely

### 5.1 Aerobic training

As in the Basic Instruction module, there are two objectives in aerobic training, to increased aerobic power and aerobic capacity. For middle distance events aerobic power is important for racing, while aerobic capacity is important for being able to train for aerobic power.

Often referred to as endurance training, aerobic conditioning leads to a number of physiological adaptations and provides opportunities for technical skill improvements. High intensity aerobic training increases aerobic power, peak heart rate and lower intensity speed. For the most part, increases in an athlete's training volume are associated with low intensity distance training

The aerobic training efforts fall along a continuum that ranges from long slow distance to high intensity aerobic power efforts. Each point on this continuum provides an important function to competition preparation.

To overload anaerobic training, you can add in 1:00 per week or 5 % per week, whichever is greater. A good starting volume is a total of 6:00 of hard anaerobic efforts per session.

***This could be 3 x 2:00 on week one, then 4 x 1:45 on week two or 3 x 2:20.***

As a general rule aerobic conditioning once begun must be maintained every 7 – 10 days or your paddlers will begin to lose the training benefits. A short maintenance session within another workout will serve to maintain fitness.

### 5.1.1 Aerobic Threshold

Approximately <50 – 70 % peak HR and used for recovery intervals, regular distance training and early season technique work.

### 5.1.2 Economy of Motion

These are sport specific efforts and performed at speeds approaching race pace. Often called tempo work, economy of motion (ECON) pieces are a merger of fitness, technique and tactics and performance will fluctuate quite a bit until the competition phase arrives, defining race pace better.

### 5.1.3 Aerobic Capacity

These efforts are 2:00 – 10:00 in duration and done on short recovery intervals (4:3 to 1:1 work to rest ratios). They are very similar to tempo workouts with the exception that they are performed as close to peak effort as possible and maintaining the required pace is difficult, hence the shorter durations.

### 5.1.4 Fartlek

Fartlek sessions are workouts where the duration of the intensity intervals range (randomly) from 1:30 – 6:00. The recovery duration can match those of aerobic power or aerobic capacity intervals. The intensity of the recovery varies from easy to anaerobic threshold. Fartlek workouts are well suited for inclusion in the specific preparation, pre-competition, competition and peak-taper mesocycles.

### 5.1.5 Aerobic Time Trials

These are single effort over a variety of durations between 1:30 and 6:00 to estimate aerobic power and over 10:00 to estimate aerobic capacity. Any effort of 2:00 or longer will use more than 50 % aerobic energy sources.

### 5.1.6 Aerobic Power

Intensity work in this range will provide a stimulus to increase peak aerobic power. This stimulus will be directed to both the central (cardiovascular) and peripheral (muscular) components of peak aerobic power. It is essential that the athlete train in this zone to enhance and increase peak aerobic power. Maximal effort intervals ranging from 1:30 – 6:00 in duration with long recovery intervals (1:1 to 1:2 work to rest ratios) will provide an adequate stimulus for adaptations.

***The efforts should all be of high quality, with little to no performance decrease (1-2%).***

## 5.2 Anaerobic Conditioning

As with aerobic conditioning, there are two aspects to anaerobic conditioning, anaerobic power and anaerobic capacity. Although there is cross-over between training zones, each of these parameters tends to be associated with different types and intensities of exercise. Listed below are the training zones that predominantly stress the anaerobic energy system.

To overload anaerobic training, you can add in 0:30 to 1:00 per week or 5 % per week, whichever is greater. A good starting volume is a total of 3:00 of hard anaerobic efforts per session.

***This could be 6 x 0:30 on week one, then 7 - 8 x 0:30 on week two or 5 - 6 x 0:40.***

As a general rule anaerobic conditioning once begun must be maintained every 7 – 10 days or your paddlers will begin to lose the training benefits. A short maintenance session within another workout will serve to maintain anaerobic fitness.

### 5.2.1 Fartlek

This form of training uses intervals of varying duration at a number of different recovery intensities from easy to anaerobic threshold. Fartlek workouts are well suited for inclusion in the specific preparation and pre-competition phases as well as taper mesocycles.

### 5.2.2 Time Trials

These are single efforts over a variety of durations from 0:20 to 2:00. Time trials in this duration will require that more than 50 % of the required energy be derived from anaerobic sources.

### 5.2.3 Anaerobic Power

These short duration, 0:20 – 1:30 intervals require a long recovery intervals (1:4 to 1:8 work to rest ratios) to ensure that the anaerobic energy system is fully recovered and able to produce energy as efficiently as possible on each successive repeat.

*The efforts should all be of high quality, with little to no performance decrease (1-2%).*

## 5.3 Power Conditioning

Power is the product of speed and the level of muscular effort. Thus, an increase in power can be accomplished by improving speed of movement or by increasing the muscular force. Power conditioning is designed to address both of these elements. It focuses on the PC or alactic anaerobic system.

### 5.3.1 Power (short sprints)

Similar to the longer anaerobic, these last only 0:03 – 0:07 and use a very long passive recovery interval (1:10+). A very good mental focus is very important to get the desired training effect. As such this work should be accomplished while the athlete is well rested.

To overload power training, you can add in 10 % per week. A good starting volume is a total of 1:00 of sprints per session.

*This could be 6 x 0:10 on week one, then 7 x 0:10 on week two or 14 x 0:05.*

As a general rule power conditioning once begun must be maintained every 7 days or your paddlers will begin to lose the training benefits. A short maintenance session within another workout will serve to maintain power.

## 6 Aerobic Training

The aerobic training remains essentially unchanged from the Basic Instruction module. The only new for of training is Tempo, or Economy of Motion training where the paddlers learn to become more efficient at a certain race pace. This is only useful in teams that have been doing aerobic power training for 6-8 weeks.

### 6.1 Aerobic Threshold (AeT)

**Cycle Length:** 2 - 6 weeks

**Focus:** To increase easy long duration efforts and as a result, the percentage of your high intensity pace you can sustain for long durations. Aerobic mechanisms are slow to adapt as such they must be introduced early in the program

**Target Training Effort:**

1. Long duration (15:00 +) workouts at very easy efforts, 50-65% peak heart rate.
  - i.e. 45:00 AeT easy paddling and technique work

***This intensity is equivalent to closing your mouth and breathing only through your nose. It is very, very easy.***

***Novice crews should not attempt more than three 20-30 minute workouts per week when starting up. Longer durations are possible as the season progresses. A good rule to follow is not to increase the duration by more than 5 % per week.***

***Days of Consecutive Training using this effort level:*** short to long (2 to 14 days).

## 6.2 Aerobic Capacity (Ae Cap)

**Cycle Length:** 2 - 6 weeks

**Focus:** To increase the effort level at which technique work is performed for short durations, and as a result, the percentage of your high intensity pace you can sustain for long durations.

**Target Training Effort:**

1. Aerobic capacity efforts can be short (0:30) to quite long (10:00) efforts at 80 % of peak heart rate and above. They are usually on short to medium recovery (1:2 to 1:1) and performed only after warming up thoroughly at your aerobic threshold (AeT).
  - i.e. 6 x 0:30 at 80 % of 500 m race pace on 0:30 recovery, or
  - i.e. 3 x 2:00 at 85% of 500 m race pace on 2:00 recovery, or
  - i.e. 2 x 10:00 at 80% of 10:00 pace on 5:00 recovery.

***As the season progresses, you can slowly increase both the duration and the intensity of your aerobic capacity training. A good rule to follow is not to increase the duration or intensity of the aerobic power work by more than 5 % per week.***

***Novice crew should only do training such as this in the final few weeks before their main goal event.***

***Days of Consecutive Training using this effort level:*** short to medium (1 to 4 days).

### 6.3 Aerobic Power (Ae Pwr)

**Cycle Length:** 2 - 4 weeks

**Focus:** To increase amount work of hard aerobic work possible. This becomes very important when complementing Aerobic Threshold and Aerobic Capacity training.

**Target Training Effort:**

1. Aerobic Power workouts: 1:30 – 6:00 work intervals at near peak heart rates on medium to long recovery (1:1 to 1:3) at 60-80% peak heart rate. Aerobic power workouts are performed only after warming up thoroughly at your aerobic threshold (AeT).
  - i.e. 3 x 3:00 at all out 3:00 pace on 6:00 recovery
2. Broken Aerobic Power workouts: same duration as above but broken into smaller pieces with short recovery breaks inserted. This encourages a higher overall effort and better technique in the workout for more advanced paddlers.
  - i.e. 6 x 1:00 at all out 6:00 effort on 0:30 recovery

***Novice crews should not do aerobic power workouts until after an initial six weeks of aerobic base building has been completed. Even then, once per week or once every two weeks will suffice.***

***Days of Consecutive Training using this effort level:*** short to long (1 to 4 days)

## 6.4 Economy of Motion (Econ)

**Cycle Length:** 2-3 weeks

**Focus:** Economy of motion is a combination of fitness and skill, as demonstrated in performance. Consequently, with any changes in skill and fitness, economy of motion needs training. Therefore, economy training is necessary throughout the season especially after fitness or skill building phases in the pre-competition and competition phases.

**Target Training Effort:**

1. Economy of Motion workouts: 0:30 to 3:00 at sustainable (90 - 95% maximum effort) pace for the target duration, as well as longer 6:00 – 60:00 paced efforts (80-95% maximum effort) on short to medium recovery (4:3 to 1:1),
2. Recovery effort is at ~ Aerobic Threshold (AeT),
3. Maintenance of other energy systems as required.

**Days of Consecutive Training using this effort level:** short to medium (2 to 8 days)

## 7 Anaerobic Training

Anaerobic training is any short high intensity work that causes very rapid fatigue and loss of performance. There are two objectives in anaerobic training, to increase absolute power output, and to increase the duration those high power outputs can be sustained. At this level of training, we shall address only the first of these concerns, the production of high levels of anaerobic power

### 7.1 Anaerobic Power (An Pwr)

**Cycle Length:** 1 - 2 weeks

**Focus:** During this phase, high intensity training efforts are prioritized. Volume is reduced to next to nothing to protect fatigue susceptible muscle. Long recovery times and short microcycles aid in preventing fatigue build up that can compromise technical skill that is essential for these efforts to be sport specific.

**Target Training Effort:**

1. Anaerobic Power workouts: 0:20 – 1:30 at peak effort on long recovery (1:4 to 1:6),
2. Maintenance of other energy systems as required.

**Days of Consecutive Training using this effort level:** short to medium (2 to 4 days).

## 8 Power Training

Similar to anaerobic training, power training consists of very short high intensity work that causes very rapid fatigue and loss of performance.

### 8.1 Power (Pwr)

***Cycle Length:*** 2 days to 1 week

***Focus:*** During this phase, high intensity training efforts are prioritized. Volume is removed from the program to ensure peak efforts are not compromised by any fatigue.

***Target Training Effort:***

1. Power workouts: 0:03 – 0:10 at peak effort on long recovery (1:10+),
2. Maintenance of other energy systems as required.

***Days of Consecutive Training using this effort level:*** short to medium (2 to 4 days)

## 9 Muscular conditioning

Strength training is a very misunderstood component of training for sport. One easy way of addressing the initial phobias associated with strength training is to replace “strength training” with “muscular conditioning”.

***While this name change may seem like a minor point, it often prevents psychological barriers from springing into place while you explain that in a well administered muscular conditioning program, none of these concerns will be a problem.***

Often strength training is associated with images of bodybuilders and Olympic power lifters. For paddlers, this is not the kind of strength or muscle mass needed for performance. Unfortunately, there are many myths and fears associated with muscular conditioning. Some of the more common complaints are;

- A fear of weight gain,
- A loss of movement speed,
- A reduced range of motion and
- A fear of increased injuries.

For Basic Instruction and Performance Training paddlers, a muscular conditioning program is often too much to ask. However, if the paddlers are willing, it is a very useful tool to promote injury free paddling and an enhanced quality of life for many individuals new to training.

From a sport specific point of view, a well designed program will prepare an athlete to be stronger, faster, and more powerful. Additional benefits will be obtained through stronger tendons, ligaments and increased joint stability all of which will contribute to reducing the likelihood injuries.

***Muscular endurance is a term commonly used in association with middle distance sports. It is a misleading term that is often interpreted as high muscular strength for long periods of time. This sort of training is not muscular conditioning. It is either aerobic or anaerobic exercise, depending on the duration and the intensity of the efforts, and it is not a substitute for muscular conditioning.***

One of the most important benefits of muscular conditioning is the increased ease with which large amounts of muscle mass can be activated. We have often heard how humans use only a small percentage of their brain's capacity. The same holds true for muscle. Until a muscle has been trained to work maximally, it will seldom be fully activated. This means that it will not be generating maximal force, speed or power. Muscular conditioning can train the athlete to fully activate almost all muscle fibers at almost any time.

Given the benefits of muscular conditioning, and the importance muscle mass plays in generating paddling speed, it has to be balanced against a couple of factors.

1. How much of an individual's muscle mass is actually used in paddling?
2. How well can the paddler handle the water resistance exerted on the hull that is attributed to their mass?

A relatively easy way to estimate these two factors is summarized in a paddler's strength to weight ratio. This is a reflection of how strong an individual is over any series of exercises relative to their body weight. However, paddlers with a low strength to weight ratio may be so strong that despite their weight they make a significant contribution to the boat speed.

In general, a muscular conditioning program will follow a cyclical pattern. The cycle usually begins with a mesocycle of basic conditioning, with learning lifting technique, discovering individual limits and familiarization with the equipment. This prepares the both the athlete, and their muscles, for the higher intensity work with more resistance or speed that is to come.

Muscular conditioning terminology includes references to sets, repetitions and lifting tempo. The number of sets refers to how many times you will repeat a given number of lifts. The number of times you perform a given lift or exercise in succession without a rest are called repetitions (reps.). The lifting tempo is a guideline for how long a given repetition should last as it is broken down into lifting the weight, pausing, lowering the weight and pausing again.

***An eccentric contraction is one where the muscle is lengthened, such a when you lower a bag onto a table or go down stairs. The resistance provided by the bag or your body weight is lowered. In some common exercises the eccentric contraction occurs when you lower your body from a chin up, or squat down with a weight.***

***An isometric contraction is a muscular contraction that results in no movement. Any time you push against a resistance that is too great for you, or one that results in no movement is isometric.***

***A concentric contraction is one where the muscle shortens. Lifting a bag off a table, or walking up stairs requires a concentric contraction. In strengthening exercises, pulling yourself up into a chin up requires a concentric contraction as does lifting yourself from a squatting to standing position.***

Through modifying the number of sets, reps and the lifting tempo, a muscular conditioning program leads to different results (see Table 4). If each mesocycle is

correctly designed, muscular mass can be either unchanged or stimulated by modifying the number of repetitions and sets performed.

A basic general conditioning mesocycle is commonly followed by a strength mesocycle that is intended to increase the amount of force the working musculature can generate. Once this mesocycle is completed, a speed and power mesocycle is introduced to teach the athlete to use that new strength in generating sport specific power (the combination of force and the speed of contraction). When these three mesocycles have been completed, the athlete can either repeat the whole macrocycle (general conditioning, specific strength, power) or focus on the specific strength and power mesocycles again depending on their needs.

Table 1. Muscular conditioning parameters for each mesocycle of a conditioning program.

Mesocycle	LIFTING TEMPO (seconds)				SETS	REPS
	E	I1	C	I2		
<b>General Conditioning</b>	3-6	1-3	2-4	1-3	2-4	8-12
<b>Specific Strength</b>	2-4	1-2	1-3	1-2	4-8	4-6
<b>Speed / Power</b>	<1	<1	Expl.	1-2	6-12	1-4

**E:** eccentric portion of lift.  
**I1:** first isometric portion of lift, between eccentric and concentric portions.  
**C:** concentric portion of lift.  
**I2:** second isometric portion of lift, between concentric and eccentric portions.  
**Expl.:** explosive movement- as fast as possible with given resistance

The cyclical pattern mentioned above is always in phase with the overall training mesocycle. General muscular conditioning is prescribed during aerobic power and aerobic capacity training, while strength building muscular conditioning is best prescribed during anaerobic training cycles. Speed and power oriented muscular conditioning are assigned during those mesocycles addressing speed and power in regular training.

It is important for coaches and paddlers to understand that most of the changes in strength following the implementation of a muscular conditioning program are primarily due to learning factors rather than physical changes in the muscle. As the novice learns to perform various movements under resistance, the neural pathways become more efficient, resulting in more muscle use. Sport scientists estimate that untrained people are unable to use much more than approximately 50 % of their available muscle. With strength training this increases eventually approaching over

90 % in very well trained individuals. Changes in the muscle itself take many months to occur and only on extremely demanding and well designed programs.

For most strength training programs to be successful, the athlete will need to do three sessions per week for about 30-60 minutes per session. More sessions are not necessary at this level, although if they are well monitored they will be detrimental. If you are not familiar with the suggested exercises we suggest you consult the fitness centre staff or personal trainers at the facility you use for working out.

It is important to note that the strength, speed, and power obtained from muscular conditioning are very specific to joint velocity, joint angle, and body orientation. Thus, a need for sport specificity in the speed-power mesocycle will probably require the construction or purchase of special equipment that allows the simulation of paddling movements.

## 9.1 Plyometrics

Plyometric exercises are an area of muscular conditioning that is very popular today. These exercises involve sudden explosive movements against resistance, such as jumping off various heights into explosive vertical jumps, some medicine ball work and surgical tubing assisted movements. However, plyometric exercises are very complex and difficult to prescribe. Recent research has demonstrated that the speed, angles, and body position used in plyometric exercise must be the same as those in the sport movement. If these parameters are not precisely imitated, the exercise will hinder the athlete's progress by promoting slower movement across the required range of motion, or faster movement outside of the critical range of motion. To be safe, plyometric exercises should be avoided unless administered by an expert in area.

## 9.2 Younger athletes

One additional consideration is the use of high resistance exercises with pre-pubescent and younger athletes. There is sufficient evidence suggesting that this sort of exercise can be detrimental to growth if improperly administered. As such, it is in the best interest of pre-adolescent athletes to limit muscular conditioning to body weight only exercise. This means that the only resistance they should use is their own body weight or less, no additional weight should be added to their exercises (push-ups, sit-ups, chin-ups, jumping, bounding, etc.). If you as a coach are in concerned, you should consult a sports medicine doctor.

### 9.3 Older athletes

With older athletes, a muscular conditioning program will not only enhance their paddling fitness it is also an excellent investment for a continued quality of life into old age. As our muscles age, they begin to lose strength, elasticity and endurance very quickly after age 50 unless stimulated regularly. Seniors in particular should not be hesitant about including muscular conditioning in their exercise program for paddling. However, it is wise to have each potential senior paddler consult their family physician before beginning such a program, and to start off slowly with low resistances.

### 9.4 Suggested Muscular Conditioning Exercises

The lists of exercises that follow are divided into two categories, main exercises (see Table 5) and additional exercises (see Table 6). Exercises are selected from each list according to the categories presented under the A through K headings. These headings identify exercises as either pushing or pulling, upper or lower body as well as back and abdominal.

To select how many exercises from each category, use the following chart:

- A. ABDOMINAL CORE EXERCISES: 4 exercises
- B. SHOULDER PROTECTION EXERCISES: 3 exercises
- C. BACK CORE EXERCISES: 2 exercises
- D. UPPER BODY PUSHING EXERCISES I: 2 exercises
- E. UPPER BODY PULLING EXERCISES I: 2 exercises
- F. BALANCE EXERCISES: 2 exercises
- G. LOWER BODY PUSHING EXERCISES I: 1 exercises
- H. LOWER BODY PULLING EXERCISES I: 1 exercises
- I. UPPER BODY PUSHING EXERCISES II: 2 exercises
- J. UPPER BODY PULLING EXERCISES II: 2 exercises
- K. LOWER BODY PUSHING EXERCISES II: 1 exercises

***To ensure some variety in the program which will speed the results, make sure a routine is not developed. Never do the same sequence of exercises twice.***

Table 2 Basic muscular conditioning exercises for paddling.

<b>A</b>	<b>ABDOMINAL CORE EXERCISES (with or without ball)</b>
	crunches
	twisting crunches
	raised leg crunches
	hanging leg raises
	free weight / med. ball rotations
	angled weight / med. ball rotations
	cable rotations
	V-sit crunches
	pike crunches
	back over
<b>B</b>	<b>SHOULDER PROTECTION EXERCISES</b>
	anterior dumbbell / stretch cord raises
	lateral dumbbell / stretch cord raises
	bent elbow dumbbell / stretch cords shoulder rotations
<b>C</b>	<b>BACK CORE EXERCISES</b>
	prone leg/arm raises
	back extensions (with added weight if necessary)
	bent knee dead lifts
<b>D</b>	<b>UPPER BODY PUSHING EXERCISES I</b>
	push ups
	flat bench press (dumbbell )
	flat bench press (straight bar )
	incline bench press (dumbbell )
	incline bench press (straight bar )
	overhead triceps extension (dumbbell )
	Triceps extension with rope
	assisted dips (machine or raised legs)
	dips
<b>E</b>	<b>UPPER BODY PULLING EXERCISES I</b>
	lat pull downs
	single arm lat pull downs
	bench pulls (prone with straight bar)
	bench pulls (prone with dumbbell )
	bench pulls (inclined with lever)
	bench pulls (kneeling on bench with dumbbell )
	standing bent over rowing (straight bar)
	seated rowing
	assisted chin ups
	chin ups

Table 3. Additional muscular conditioning exercises for advanced routines

<b>F</b>	<b>BALANCE EXERCISES</b>
	wobble board hip and squat exercises
	torso rotation on Swiss ball
	postural work & arm rotations on Swiss ball
<b>G</b>	<b>LOWER BODY PUSHING EXERCISES I</b>
	leg press
	split squat (dumbbell s)
	split squat (straight bar)
	parallel squat (dumbbell )
	parallel squat (straight bar)
<b>H</b>	<b>LOWER BODY PULLING EXERCISES I</b>
	hamstring curls
	strait leg dead lifts
	hip adduction
	hip extension
<b>I</b>	<b>UPPER BODY PUSHING EXERCISES II</b>
	overhead triceps extension (straight bar)
	triceps extension with rope
	shoulder press (dumbbell )
	shoulder press (straight bar)
<b>J</b>	<b>UPPER BODY PULLING EXERCISES II</b>
	seated rowing (wide grip)
	seated rowing (narrow grip)
	bicep curls (dumbbell )
	bicep curls (straight bar)
<b>K</b>	<b>LOWER BODY PUSHING EXERCISES II</b>
	quad extensions
	calf raises
	hip abduction
	hip flexion

## 10 Seasonal Workouts

### 10.1 Training Program Evaluation

Many coaching manuals will give you a recipe to follow, this much intensity per week for this time of the year, this much for another week at another time. As we mentioned earlier, this is not a recipe book and statistical summaries of hours and intensities are great for the statistically normal person. This does not promote skilled coaching. The ability to assess what your paddlers need and adapt your training program to suit those needs is the next skill to learn.

#### 10.1.1 Athlete Assessment

Prior to prescribing any training for an athlete, a coach must assess the needs of each individual or group with whom they work. There are four main categories that should be considered in the evaluation:

1. Training age: Knowledge of training age is important for two reasons. First, it tells the coach how much stress the paddler's body and mind are able to withstand. Second, it tells the coach how much stress the paddler's body and mind will need for continued improvement.
2. Performance: How much skill as a paddler does the athlete being evaluated demonstrate? A paddler's performance can be subdivided into three additional areas: technique, fitness and experience specific. A weakness in any of these three areas can compromise competition performance.
3. Fitness: Does the paddler being evaluated have the physiological preparation necessary to compete? Important areas to consider are aerobic, anaerobic and general muscular conditioning.

There are two main objectives in evaluating the preparation of athletes: fitness and performance. The information obtained in the assessment is very important at the beginning of the season as it has a direct influence on the training programs you prescribe. At the Performance Training level there is only one type of program to deal with, a seasonal one.

### 10.2 Seasonal Programs

A seasonal program is the smallest division of prescribed training. At the Performance Training level it is the most common form of training program encountered. This form of program has little to no long term specific fitness goals. It is best used for younger athletes, less experienced athletes (lower training age) or true "Performance Training" athletes as defined at the beginning of this module.

It is important to realize that with a seasonal program most of the sport specific fitness gains will be lost during the off-season. As such, there is little opportunity for aerobic fitness growth or long term goal development.

## 10.3 Testing

In order to evaluate a training program's effectiveness, it is necessary to estimate an athlete's fitness and performance. While a competition is ideal for this purpose, it is not always practical. Consequently, indirect estimates of performance must be obtained through testing.

Athlete testing is systematically conducted at 4 to 6 week intervals to associate any changes in the testing parameters with the training that has been undertaken.

In all testing situations, it is important to remember that comparisons between athletes and testing dates are only valid when the conditions under which the tests were performed were similar (equipment, altitude, weather, etc.).

### 10.3.1 Direct evaluations

The easiest way to perform direct evaluations is through time controls. These are simulated races performed on an individual basis. Marathon canoes, outrigger canoes or even Olympic canoes are all acceptable tools for evaluating paddling performance.

***If small boats are not available to you, an estimate of team performance in a Dragon Boat will do. However, individual estimates are much more revealing and allow you to profile your team better.***

Ideally two distances should be selected, one shorter (200 - 500 m) and one longer (1 500 - 5 000 m). This will allow you to estimate both anaerobic and aerobic fitness adaptations to your training program

### 10.3.2 Indirect evaluations

Indirect testing can take a number of forms. One of the more popular methods is to use a paddling ergometer. This device is essentially a dry land paddling machine. Time controls similar to those used on the water would be performed and the results interpreted in a similar way.

Another way to indirectly evaluate fitness is using a battery of tests. The Canadian Canoeing Association uses a series of tests they call FitDex. This series includes 2 minutes of each bench press, bench pulls and chin-ups, along with a 300 m swim. Over the years, their data has shown that better paddlers score well on all these tests.

## 11 Planning Performance Practices

All the aspects of planning a practice remain unchanged. The only update needed at the Performance Training level is the following table describing the hierarchy of training modes when planning workouts in a cycle.

1. Technique training, time trials and testing.
2. Sport specific interval training;
  - a) Power,
  - b) Anaerobic power,
  - c) Aerobic power,
  - d) Aerobic capacity,
  - e) Economy of motion.
3. Muscular conditioning.
4. Easy aerobic conditioning.

## **12 Conclusion**

The difference in coaching knowledge between Basic Instruction and Performance is not that large. However, the practical experience needed to implement this knowledge will take time.

Designing, refining and adapting a training program is not an easy task, but the rewards of doing it well are worth while.

# Dragon Boat Technical Coaching Manual

## High Performance Module



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## 1 High Performance Coaching

The High Performance coaching content of the Dragon Manual is still under development. However, the following sections will help highlight some of the areas where paddler and crew preparation will change as you prepare for a performance based training plan.

Most of the changes will occur in tactics, psychology and training program design.

## 2 Technical paddling skills

At the High Performance level, paddlers should have minimized any technical flaws in their stroke to be considered for inclusion in the team. Of utmost importance at this level is leg and hip work, as well as smooth rhythmical movements. All of these contribute to boat run

Key areas you should be focusing on are:

- Increase team boat skills on timing and blend,
- Increased individual small boat skills in kayak, C-boat, or outrigger,
- Increased distance per stroke,
- Increased stroke rate while maintaining distance per stroke,
- Requiring that all paddlers to use their legs and hips not only for rotation but also for propulsion,
- Perfecting a smooth paddling stroke while maximizing stability in the torso and shoulder girdle,
- Continue to emphasize importance of catch and square blade,
- Increase stroke length through increased reach with the top arm as allowed by shoulder strength,
- Introduction of slight forward flexion from the hips on entry as long as rotation can be maintained as the prime movement on the pull and boat run is not compromised,
- Develop the ability to maintain all aspects of timing at high rates.

### 3 Race Plan

At the High Performance level having a race plan is essential. It will differ significantly from a Performance Training and Basic Instruction race plan (start, maintain pace, finish). At the High Performance level the start becomes very important, and thus the need to return to race pace after the start is equally important. While physiologically there are no other distinct parts of the race, psychologically there are the traditionally used power pieces, and the finish.

The importance of the power series and finish will differ depending on whether the crew is racing for a personal best time or are racing tactically. When racing for a best time, the start, power series and finish are all technically oriented. when racing tactically, whether to win without pushing the team to their limits or to race into a specific lane for the final, the start, power series and finish can also be time determining.

#### 3.1 Start

At the High Performance level, starts acquire a new level of importance and are an essential component in the pre-competition phase of training.

##### **Pre-start**

- All attention focused on drummer for commands,
- All paddlers verify their torso position,
- All paddlers verify their leg position for stability and set up for stroke one with gunwale hip forward slightly and leg ready to push hip back,
- Paddle is held in a relaxed position across the legs, bottom hand and blade over the water.

##### **"Attention please"**

- Activate abdominal muscles to stabilize torso,
- Exhale all air from lungs to increase torso stability,
- Rotate hips and shoulders forward slightly (half rotation),
- Rotate top hand up over bottom hand so blade is vertical, perpendicular to water,
- Position whole blade in the water,
- Begin bracing with legs in anticipation of start signal,
- Empty thoughts and listen for start signal.

##### **"Go": Stroke 1**

- Shorter stroke covering only the last ½ of a full stroke,
- Explode with fast powerful torso rotation,

- Arm pull is strong with slight elbow flexion and a pronounced leg drive to get a deep, slow and powerful stroke.

### **Stroke 2**

- Shorter stroke covering only the last 2/3 of a full stroke.
- There is more rotation, less elbow flexion and a still a definite leg drive in a deep, slow and powerful stroke.
- Stroke rate increases slightly (~ 5 strokes per minute increase).
- Keep speed of initial strokes low: no white water or big boils surfacing anywhere.
- It is common for novice and experienced crews alike to go straight into full length strokes within 5 strokes per minute of racing stroke rate

### **Stroke 3**

- The next stroke lengthens some more to the last  $\frac{3}{4}$  of a full stroke, still slow and powerful using a little more rotation. There is no elbow flexion except at exit.
- Stroke rate increases slightly (~ 4-5 strokes per minute increase).

### **Option A: Stroke 4 - 6 / 8**

- For crews with less powerful starts who need a few more strokes to get up to pre-sprint speed,
- Headwinds, against the current or tide,
- Full length stroke, but still slow and powerful,
- Stroke rate increases slightly (~ 3-4 strokes per minute increase).

### **Option B: Stroke 4-6**

- For crews with strong powerful starts that can get the boat up to speed quickly,
- Tailwinds, with the current or tide,
- Transition strokes to sprint strokes,
- Increase rate progressively over the three strokes to full sprint rate

### **Strokes 7/9 - 20/30**

- Full sprint strokes.
- A High Performance team should be able to go directly into sprint strokes with minimal transition. This is mostly a focus issue among the team to maintain the timing.

- Sprint strokes at this level are fast and can approach 90 + strokes per minute.
- Aside from the rate, everything else remains the same; length, amount of rotation, force per stroke.

***It is all too common for sprints strokes to ruin a perfectly good start or race plan. So use them with caution.***

***Allow the rate to increase only marginally, and only as high as the paddlers can maintain the timing, force per stroke and most of their range of motion.***

### Strokes 21/31+

- Three transition strokes to increase reach and rotation (drummer calls out, "ready-and-reach" as one word per stroke).
- Settle into race rate and effort quickly after the ready and reach.

## 3.2 Race Body

### 3.2.1 Power series

Power series have long been a part of dragon boat racing. However, the functions of power pieces in a race are often misunderstood. Common perceptions of the power pieces are that they are used to increase boat speed. In reality, a well trained team working hard will not be able to increase their power output or speed above their ideal race pace, unless they are already below that pace.

What usually happens on power pieces is stroke rate increases and overall force per stroke decreases. While overall power output may remain the same or slightly higher, it will decrease more often than not. A very strong crew may be able to increase power transiently (<5-10 seconds), but unless they know themselves very well and are running a tactical race at less than full power, they too will perform below par.

Power series can be used as a refocusing point for paddlers to remember what they are doing. In this case, power pieces will increase power output a small amount, most likely on account of technical refinements

## 3.3 Finish

Similar to power pieces, the finish is also misunderstood for Dragon Boat racers, for all the same reasons. If anything, calling a finish encourages paddlers to exhaust themselves and maintain the highest effort level possible.

It is very important that you decide at what point a finish will be called to ensure nobody misjudges the effort and goes too fast, too soon. Nothing is worse than pulling ahead and then dying only a few meters from the finish and getting passed on account of a mistimed finish.

### 3.4 Training principles

At this point we will introduce the last two principles of training, maintenance and fatigue

### 3.5 Maintenance

The ability to maintain fitness and performance between training bouts is essential for top athletic performance. Modified and reduced workouts administered at the appropriate time will allow an athlete to maintain performance levels with minimal training.

### 3.6 Fatigue

While not a principle of training in itself, fatigue is a consequence of all training programs. However, chronic fatigue or overtraining is more often attributed to poorly designed or poorly monitored programs. Overtraining is defined as a chronic and long term decrease in both performance and fitness that requires a long time to overcome. The causes and symptoms of overtraining are often interwoven so tightly that identifying causal relationships is nearly impossible. It is known that hormonal imbalances, accentuated muscular fatigue, and psychological distress are almost all observed in the initial stages of overtraining.

Table 1 Signs and Symptoms of Serious Fatigue

- |  |   |
|--|---|
| •loss of appetite                                | •loss of ability to concentrate   |
| •rapid weight loss                               | •generalized headaches  |
| •low grade fever                                 | •reduced injury repair rate   |
| •generalized weakness                            | •increased soft tissue injuries   |
| •frequent mood swings                            | •decreased quality and amount of sleep  |
| •prolonged fatigue (24 hrs.) after easy exercise | •light sensitivity, forgetfulness, irritability, confusion, difficulty thinking, inability to concentrate, depression |
| •sore throat                                     |   |
| •painful lymph nodes in neck region              |   |
| •sore muscles or migratory joint pains           |   |

There are many signs and symptoms suggestive of overtraining that are easily identified in an athlete. Many of these symptoms can be identified using simple daily questionnaires for the "at risk" athletes or those undergoing strenuous training (see attached Form in Appendix A).

To help determine the cause of any overtraining that develops. Having the athletes record their training, paddling and non-paddling alike will be of great assistance. Appendix B contains a sample training log. While it is not a simple log, it does require the paddler to be aware of what kind of training they do on any given day.

## 4 Program design

At the High Performance level, you will have to evaluate your athletes and decide whether they need a seasonal or yearly training program. Most teams will be able to work from a seasonal program running from January to August. More advanced and High Performance teams, such as those looking towards National Championships and World Championship spots, will need a yearly program.

### 4.1 Athlete Assessment

Prior to prescribing any training for an athlete, a coach must assess the needs of each individual or group with whom they work. There are four main categories that should be considered in the evaluation:

1. Training age: Knowledge of training age is important for two reasons. First, it tells the coach how much stress the paddler's body and mind are able to withstand. Second, it tells the coach how much stress the paddler's body and mind will need for continued improvement.
2. Performance: How much skill as a paddler does the athlete being evaluated demonstrate? A paddler's performance can be subdivided into three additional areas: technique, fitness and experience specific. A weakness in any of these three areas can compromise competition performance.
3. Fitness: Does the paddler being evaluated have the physiological preparation necessary to compete? Important areas to consider are aerobic, anaerobic and general muscular conditioning.

There are two main objectives in evaluating the preparation of athletes: fitness and performance. The information obtained in the assessment is very important at the beginning of the season as it has a direct influence on the training programs you prescribe.

### 4.2 Seasonal Programs

A seasonal program is the smallest division of prescribed training. At the Performance Training level it is the most common form of training program encountered. This form of program has little to no long term specific fitness goals. It is best used for younger athletes, less experienced athletes (lower training age) or Performance Training athletes.

It is important to realize that with a seasonal program most of the sport specific fitness gains will be lost during the off-season. As such, there is little opportunity for aerobic fitness growth.

### 4.3 Yearly Programs

A yearly program is the next level in training program design. Yearly plans are a relatively common form of training program. Unless both athlete and coach have

set longer term (multi-year) goals, the longest training program structure they can work with is the yearly program.

For most athletes, a yearly program is the best training option. It allows for yearly gains as well as preparation from which longer term plans can be laid, without the need for long term commitment.

## 5 Training Phases

Physical training during the year is divided into six phases each with a specific objective. The phases are the general preparation phase (GPP), the specific preparation phase (SPP), the pre-competition phase (PCP), the competition phase (CP), the peak-taper phase (PTP), and the transition phase (TP).

### 5.1 General preparation phase

In the GPP, the objective is to prepare the athlete for the sport specific training to follow. Initially, this will require that an aerobic base is prepared. This phase will allow muscles, joints, and tendons to be conditioned for the repetitive stresses of training. The aerobic conditioning will enhance the athlete's ability to recover between training sessions and during the rest intervals of high intensity, interval sessions.

Typically, the duration of the general preparation phase is quite long (8-12+ weeks), especially for paddlers with few years of training. For more mature athletes (i.e. those with greater training age), the general preparation phase will be shorter, acting as a link between the transition phase from the previous year and the specific preparation phase of the current year.

#### 5.1.1 Physical

The overall objective of the GPP in paddling is to prepare athletes to perform intense workloads. This can be done through either specific (i.e. paddling) or non-specific (i.e. running, cycling, rowing or swimming) exercises. It is always a good idea to ensure a minimum of 20% specific training load in the GPP.

The GPP is also an excellent opportunity to increase muscular function. This includes general muscular strength, injury prevention.

This phase is very important for all athletes, not just new comers to the sport. All athletes require time working on the individual energy systems that will contribute to the final performance.

#### 5.1.2 Technical

For many athletes, the general preparation phase is a period during which very little sport specific training is performed. Instead, training modes such as

swimming, cycling, and running are used extensively to build a strong base on which the paddling training can be done. Using alternate modes of training prevents boredom and helps to keep the athlete in a psychologically fresh frame of mind. As the training age and devotion to paddling increase, sport-specific training is incorporated more and more into the GPP.

Due to the complex technical nature of paddling, it is important for athletes to spend many years perfecting technique. This learning process should be begun each year at low speeds until the basic movement patterns are learned or re-established. Consequently, interval training at low stroke rates is helpful in keeping the speed of movement low while intensity is increased. However, once technique is acceptable, there should be little hesitation in allowing faster movement speeds. Thus, once the basics are in place, the athlete can begin to spend time perfecting that same technique at higher intensities and movement speeds. This learning occurs mostly during the specific preparation phase that follows.

## 5.2 Specific preparation phase

The specific preparation phase represents the core of the training program, where the athletes are conditioning for the specific stresses that will be imposed by competition. It is in this phase that the bulk of loading (intensity and volume) is prescribed. When planning the training program, it is important to remember that certain aspects of the preparation require more time to take effect and should be addressed at this time. Specifically, aerobic functions, which account for >50% of a middle distance paddler's performance, are among the slowest training adaptations that will occur.

### 5.2.1 Physical

During the SPP the training should be weighted towards sport specific activities. Ideally, more than 60% of the athlete's training should be specific. This means on-water training as soon as possible. However, marathon, sprint canoe and kayak or outrigger are acceptable alternatives. Activities such as running, cycling, swimming, rowing and skiing take on secondary importance in this phase.

Specifically, the physical training should continue to build the aerobic fitness begun in the GPP, as well as the anaerobic fitness, speed and power of the athlete. The most important point to remember in this phase is that the sport specificity of training is paramount. This does not mean that there is more integration of the energy systems just yet. It is still too early to begin competition specific preparation and the time spent on economy training will address those needs until the pre-competition phase begins.

### 5.2.2 Technical

The specific preparation phase is a time to refine paddling technique. Athletes train at higher speeds (and intensities) to develop a proper racing technique. Ideally this will be an efficient technique that will not break down with fatigue.

### 5.3 Pre-competition phase

In the pre-competition phase, the athlete should complete the transition between non-specific and specific training in all aspects of their preparation. Ideally, sport specific training should comprise over 80% of the hours completed, with all intensity work being specific. Other important shifts that occur in this phase are found in the focus of the muscular conditioning, the intensity and the economy of motion.

In the muscular conditioning, strength, power, and speed exercises begin to dominate the training. Hypertrophy becomes a secondary priority, and can even be removed from many programs at this time. It is even advisable that links between resistance exercises and specific training be attempted (i.e. starts).

Intensity sessions begin to focus more on durations that are common to competition. As the competition phase approaches, anaerobic preparation should increase significantly.

Economy of motion and technique sessions should also begin to replicate race pace specific preparation. Fartlek type intervals with recovery taking place at higher intensities than earlier in the season can simulate the need for race specificity adequately early in the phase. At the latter stages of the phase, time trial and races also begin to figure prominently in the weekly schedules.

### 5.4 Competition phase

The competition phase is usually devoted to maintaining all aspects of the athlete's fitness and honing performance. The most important aspects of preparation in this phase are reinforcing performance with the existing technique, economy of motion and a fine tuning of anaerobic fitness, speed and power. During this phase, no further increases in base fitness are attempted due to the risk of fatigue. Speed and power training are beneficial so long as the athlete has the ability to maintain technique at such speeds.

The importance of muscular conditioning is negligible in this phase, the intensity of competitions and sport specific training are sufficient to maintain strength and power for a few weeks. In longer competition phases (greater than three weeks), maintenance strength sessions should be scheduled twice per week, with no more than four days between sessions.

Long competition seasons (greater than six weeks) can be broken up with periodic rebuilding phases. Ideally, for approximately every 6-8 weeks of competition, two weeks of training that de-emphasize performance should be prescribed.

## 5.5 Peak-Taper phase

The taper and peak phase is probably the most confusing and challenging aspect of an athlete's preparation. If the proper exercise is not prescribed, an entire season of preparation can be compromised. However, the rewards of a properly designed peak and taper can assist an athlete in performing up to, and beyond, previously observed performances.

The peak-taper cycle incorporates a wide variety of workouts, giving the appearance to many coaches, that the normal rules of exercise prescription have been suspended. In the peak-taper, a solid overload-super compensation phase boosts the athlete's energy systems to new highs. Ideally, the final stages of the peak-taper ensure that those energy and neuromuscular systems that are essential to competition are no longer being worked on in isolation but as compatible units. What this means, is that those energy systems that will not conflict with each other (i.e. aerobic power and anaerobic capacity, or short term anaerobic power and ATP-PC) are worked on together in preparation for competition where everything is needed.

The real essence of a peak-taper phase is that the fitness level of the athlete is deemed adequate and performance receives full attention. This includes final technical perfection, tactical lessons, full psychological preparation, and superior recovery. It is in this phase that pacing work becomes more important. The economy of motion training that was maintained throughout the year becomes very important as learning to race within the levels of the present fitness are explored and defined.

### 5.5.1 Minor Peak-Taper (3 week)

This is the same as the peak taper described in Level 2. A minor peak-taper involves a 12-14 day overload followed by a single week of reduced volume. The minor peak can be repeated a number of times in a yearly program, as long as there is sufficient time (4-5 weeks between peak efforts) to train again.

### 5.5.2 Major Peak-Taper (6 week)

A major peak requires a collective effort by all involved. It is tough on the athlete both physically and mentally. This peak-taper scenario involves a three week build up in volume and intensity followed by a three week drop in volume. During the three week build up, the increases in volume are usually linear and will almost exceed the highest weekly (or daily) averages experienced by the athlete

that season. While overall volume increases, the percentage of each component stays almost the same.

In the taper portion of the peak-taper, there are two approaches. The classical taper involves a linear decrease in volume while maintaining elevated intensity. Recently, an alternate method shows more promising performance enhancement. This method involves an exponential drop in volume while maintaining the intensity hours at the same level as those of the last high volume week. However, a crucial element is that the intensity sessions are split into more frequent, shorter duration sessions between which the athlete is able to adequately recover. It is important to maintain the number of workouts per week (or day) as close as possible to that prescribed in the build up phase.

### 5.5.3 Transition phase

Traditionally called the “off-season”, transition is the phase that occurs between the end of the competition phase and the beginning of the next general preparation phase. While the primary focus during transition is recovery, athletes should pursue easy aerobic training every two to three days. Non-specific training is strongly encouraged for all activities.

## 6 Training Cycles

Training can be responsible for increasing a number of physiological measures, including peak aerobic power, anaerobic threshold, tolerance for metabolic acidosis, ATP-PC stores, economy of motion, peak power production, and the speed-strength-power complex. The desired training effect is obtained by manipulating the duration of the work and rest intervals, the effort required in both of these intervals, and the total duration spent at the prescribed intensity. Once a coach understands the effects of the different types of workouts, designing a training program becomes much easier and more effective. The knowledgeable prescription of training to remedy weaknesses and improve strengths, and improves the odds of success.

In the prescription of training, the specificity of the exercise intensity is crucial. Consequently, knowledge of the approximate energy requirements of the sport is important (see Table 2).

Table 2. Illustration of the approximate percent energy contributed by each system to constant effort exercise of varying durations.

TIME	ATP-PC		ANAEROBIC		AEROBIC	
	MIN	MAX	MIN	MAX	MIN	MAX
0:30	78	98	2	20	1	2
1:00	25	80	15	65	2	20
<b>2:00</b>	<b>10</b>	<b>30</b>	<b>55</b>	<b>65</b>	<b>5</b>	<b>40</b>
<b>4:00</b>	<b>7</b>	<b>20</b>	<b>40</b>	<b>55</b>	<b>25</b>	<b>60</b>
8:00	4	15	30	40	65	83
15:00	3	10	20	30	70	90
30:00	1	2	5	15	85	95

Working within these guidelines, we can assign approximate training volumes to address each of the components of training. Aerobic training can be dealt with through both easy training hours and longer (2:00 to 6:00) maximal and supra-maximal intervals. Economy of motion training, though a much slower process than aerobic conditioning, can be addressed through similar techniques. However, since it is a combination of good technique and muscular efficiency, sport specificity is a fundamental requirement. Finally, the anaerobic training will consist of intervals of 0:30 to 1:30 at supra-maximal efforts.

With a properly structured training program, much of the aerobic and technical paddling can be incorporated into the intensity sessions as active recovery, warm-up and warm-down. Thus, the number of intensity session the athlete will

complete in a season may be quite a bit higher than previously accepted, but the total volume of intensity training will remain about the same. Outlined below are the cycles into which the training program is divided so that the principle of overload can be applied with little fear of over-training.

### 6.1 Microcycles

A microcycle is a period of 2 to 14 days with a common training focus. During this time, one primary energy system will be emphasized in the training. The microcycle will consist of a number of hard and easy days of training followed by a period of recovery. In the course of a microcycle, the athlete will experience overload within a given day and across the duration of the cycle.

Special microcycles are inserted at the end or beginning of mesocycles to provide recovery, thus allowing super-compensation from the overload experienced earlier. Table 3 outlines the ratios of work to rest days for common workout types.

Table 3. Chart detailing ratios of easy to hard (training) days to easy (recovery) days depending on the focus of the microcycle.

TRAINING DAYS	RECOVERY DAYS					
	AEROBIC		ANAEROBIC		SPEED	POWER
	CAPACITY	POWER	CAPACITY	POWER		
1	1	1	1	1	1	1
2	1	1-2	1-2	2	1	1
3	1-2	1-2	1-2	2	1-2	1-2
4	1-2	2	2	2-3	1-2	1-2
5	1-2	2-3	2-3		2	2
6	2				2	2
5	2					
6	2-3					

### 6.2 Mesocycles

Mesocycles are groups of microcycles that have a common training focus. Over the course of a mesocycle, the athlete will experience overload on a larger scale than during the microcycle. Traditionally, overload during a mesocycle is applied by increasing the load in each successive microcycle as the mesocycle progresses towards another recovery microcycle.

### 6.3 Macrocycles

When a program has cycled through the required aerobic, anaerobic and speed/power mesocycles, these form a block of mesocycles termed a **macrocycle**. Macrocycles are then grouped together (or singly) to fill out the training phases. It is important to note that all three systems need not necessarily be addressed in each macrocycle. During some phases of training, one or more of the mesocycles may be in a state of maintenance.

## 7 Testing

Testing High Performance teams becomes more important as the main goal of the team is to win. While the main goal of testing is to evaluate a training program, High Performance team testing is also used to select who paddles and who is a spare.

Consequently, there must be individual assessments of paddling ability both from a fitness and performance perspective.

***At the High Performance level, coaches must develop the tools to identify “paddling chameleons”. These are paddlers who look like they are working as hard as everyone else, but doing nothing to move the boat forward.***

More subjective tests, such as technique evaluation may also be introduced. However, the criteria must be clearly defined as to what is expected from the paddler in any subjective test.

When you use testing to select a team ensure your criteria for inclusion or exclusion are clearly stated. While being as objective as possible is ideal, there must always be an element of subjectivity in any team selection procedure.

Some criteria used for team selection can include;

- Attendance at practice,
- Time control performance,
- Paddling technique compatibility with dominant stroke on team,
- Strength tests, such as FitDex or a strength to weight measure,
- Versatility and adaptability; being able to paddle left or right, front or back are all desirable qualities.

## **8 Planning High Performance Practices**

All the aspects of planning a practice remain unchanged. The only update needed at the Performance Training level is the following table describing the hierarchy of training modes when planning workouts in a cycle.

1. Technique training, time trials and testing.
2. Sport specific interval training;
  - a) Speed,
  - b) Anaerobic power,
  - c) Aerobic power,
  - d) Economy of motion,
  - e) Aerobic capacity intervals,
  - f) Anaerobic capacity.
3. Non-specific interval training (same order as above)
4. Muscular conditioning.
5. Easy aerobic conditioning.

## 9 Physical Training Theory

When preparing the training for a High Performance team, there are a few new types of training to introduce. These are listed below along with the summaries from Level 2.

### 9.1 Aerobic training

As in the Levels 1 & 2 modules, there are two objectives in aerobic training, to increased aerobic power and aerobic capacity. For middle distance events aerobic power is important for racing, while aerobic capacity is important for being able to train for aerobic power.

Often referred to as endurance training, aerobic conditioning leads to a number of physiological adaptations and provides opportunities for technical skill improvements. High intensity aerobic training increases aerobic power, peak heart rate and lower intensity speed. For the most part, increases in an athlete's training volume are associated with low intensity distance training

The aerobic training efforts fall along a continuum that ranges from long slow distance to high intensity aerobic power efforts. Each point on this continuum provides an important function to competition preparation.

To overload anaerobic training, you can add in 1:00 per week or 5 % per week, whichever is greater. A good starting volume is a total of 6:00 of hard anaerobic efforts per session.

***This could be 3 x 2:00 on week one, then 4 x 1:45 on week two or 3 x 2:20.***

As a general rule aerobic conditioning once begun must be maintained every 7 – 10 days or your paddlers will begin to loose the training benefits. A short maintenance session within another workout will serve to maintain fitness.

#### 9.1.1 Aerobic Threshold

Approximately <50 – 70 % peak HR and used for recovery intervals, regular distance training and early season technique work.

#### 9.1.2 Economy of Motion

These are sport specific efforts and performed at speeds approaching race pace. Often called tempo work, economy of motion (ECON) pieces are a merger of fitness, technique and tactics and performance will fluctuate quite a bit until the competition phase arrives, defining race pace better.

### 9.1.3 Aerobic Capacity

These efforts are 2:00 – 10:00 in duration and done on short recovery intervals (4:3 to 1:1 work to rest ratios). They are very similar to **tempo** workouts with the exception that they are performed as close to peak effort as possible and maintaining the required pace is difficult, hence the shorter durations.

### 9.1.4 Fartlek

Fartlek sessions are workouts where the duration of the intensity intervals range (randomly) from 1:30 – 6:00. The recovery duration can match those of **aerobic power** or **aerobic capacity** intervals. The intensity of the recovery varies from easy to **anaerobic threshold**. Fartlek workouts are well suited for inclusion in the specific preparation, pre-competition, competition and peak-taper mesocycles.

### 9.1.5 Aerobic Time Trials

These are single effort over a variety of durations between 1:30 and 6:00 to estimate aerobic power and over 10:00 to estimate aerobic capacity. Any effort of 2:00 or longer will use more than 50 % aerobic energy sources.

### 9.1.6 Aerobic Power

Intensity work in this range will provide a stimulus to increase peak aerobic power. This stimulus will be directed to both the central (cardiovascular) and peripheral (muscular) components of peak aerobic power. It is essential that the athlete train in this zone to enhance and increase peak aerobic power. Maximal effort intervals ranging from 1:30 – 6:00 in duration with long recovery intervals (1:1 to 1:2 work to rest ratios) will provide an adequate stimulus for adaptations.

*The efforts should all be of high quality, with little to no performance decrease (1-2%).*

## 9.2 Anaerobic Conditioning

As with aerobic conditioning, there are two aspects to anaerobic conditioning, anaerobic power and anaerobic capacity. Although there is cross-over between training zones, each of these parameters tends to be associated with different types and intensities of exercise. Listed below are the training zones that predominantly stress the anaerobic energy system.

To overload anaerobic training, you can add in 0:30 to 1:00 per week or 5 % per week, whichever is greater. A good starting volume is a total of 3:00 of hard anaerobic efforts per session.

***This could be 6 x 0:30 on week one, then 7 - 8 x 0:30 on week two or 5 - 6 x 0:40.***

As a general rule anaerobic conditioning once begun must be maintained every 7 – 10 days or your paddlers will begin to lose the training benefits. A short maintenance session within another workout will serve to maintain anaerobic fitness.

### 9.2.1 Anaerobic Capacity

These high intensity efforts last 0:20 – 1:30 and are performed on short recovery intervals (1:1 to 1:3 work to rest ratios). This format results in increasing muscular acidosis with each successive interval and the resulting adaptation increases the athlete's ability to maintain high intensity efforts for longer durations.

### 9.2.2 Fartlek

This form of training uses intervals of varying duration at a number of different recovery intensities from easy to anaerobic threshold. Fartlek workouts are well suited for inclusion in the specific preparation and pre-competition phases as well as taper mesocycles.

### 9.2.3 Time Trials

These are single efforts over a variety of durations from 0:20 to 2:00. Time trials in this duration will require that more than 50 % of the required energy be derived from anaerobic sources.

### 9.2.4 Anaerobic Power

These short duration, 0:20 – 1:30 intervals require a long recovery intervals (1:4 to 1:8 work to rest ratios) to ensure that the anaerobic energy system is fully recovered and able to produce energy as efficiently as possible on each successive repeat.

***The efforts should all be of high quality, with little to no performance decrease (1-2%).***

## 9.3 Power Conditioning

Power is the product of speed and the level of muscular effort. Thus, an increase in power can be accomplished by improving speed of movement or by increasing the muscular force. Power conditioning is designed to address both of these elements. It focuses on the PC or alactic anaerobic system.

### 9.3.1 Power (short sprints)

Similar to the longer anaerobic, these last only 0:03 – 0:07 and use a very long passive recovery interval (1:10+). A very good mental focus is very important to get the desired training effect. As such this work should be accomplished while the athlete is well rested.

To overload power training, you can add in 10 % per week. A good starting volume is a total of 1:00 of sprints per session.

***This could be 6 x 0:10 on week one, then 7 x 0:10 on week two or 14 x 0:05.***

As a general rule power conditioning once begun must be maintained every 7 days or your paddlers will begin to lose the training benefits. A short maintenance session within another workout will serve to maintain power.

## 9.4 Flexibility

Flexibility is a difficult section to address as there are two opposing theories regarding its utility. The more widely practiced approach is to stretch specific muscle groups often (daily or twice daily), ensuring that all muscles, tendons and ligaments are supple at all times. Stretching is encouraged after workouts and before intense efforts to avoid straining muscles. Flexibility conditioning is encouraged after an easy aerobic warm-up period of 10:00 – 15:00 during which time range of motion has been gradually increased.

The less common approach practices no specific stretching exercises, but supports using an easy sport specific warm-up of at least 10:00 – 20:00 before every workout. During this time, the range of motion is gradually increased and the effort levels increased. This allows muscle temperature time to rise prior to demanding efforts, thus preventing any damage to soft tissues that are unprepared for strenuous efforts.

## 10 Aerobic Training

The aerobic training remains essentially unchanged from the Basic Instruction module. The only new for of training is Tempo, or Economy of Motion training where the paddlers learn to become more efficient at a certain race pace. This is only useful in teams that have been doing aerobic power training for 6-8 weeks.

### 10.1 Aerobic Threshold (AeT)

**Cycle Length:** 2 - 6 weeks

**Focus:** To increase easy long duration efforts and as a result, the percentage of your high intensity pace you can sustain for long durations. Aerobic mechanisms are slow to adapt as such they must be introduced early in the program

**Target Training Effort:**

1. Long duration (15:00 +) workouts at very easy efforts, 50-65% peak heart rate.
  - i.e. 45:00 AeT easy paddling and technique work

***This intensity is equivalent to closing your mouth and breathing only through your nose. It is very, very easy.***

***Novice crews should not attempt more than three 20-30 minute workouts per week when starting up. Longer durations are possible as the season progresses. A good rule to follow is not to increase the duration by more than 5 % per week.***

***Days of Consecutive Training using this effort level:*** short to long (2 to 14 days).

## 10.2 Aerobic Capacity (Ae Cap)

**Cycle Length:** 2 - 6 weeks

**Focus:** To increase the effort level at which technique work is performed for short durations, and as a result, the percentage of your high intensity pace you can sustain for long durations.

**Target Training Effort:**

1. Aerobic capacity efforts can be short (0:30) to quite long (10:00) efforts at 80 % of peak heart rate and above. They are usually on short to medium recovery (1:2 to 1:1) and performed only after warming up thoroughly at your aerobic threshold (AeT).
  - i.e. 6 x 0:30 at 80 % of 500 m race pace on 0:30 recovery, or
  - i.e. 3 x 2:00 at 85% of 500 m race pace on 2:00 recovery, or
  - i.e. 2 x 10:00 at 80% of 10:00 pace on 5:00 recovery.

***As the season progresses, you can slowly increase both the duration and the intensity of your aerobic capacity training. A good rule to follow is not to increase the duration or intensity of the aerobic power work by more than 5 % per week.***

***Novice crew should only do training such as this in the final few weeks before their main goal event.***

***Days of Consecutive Training using this effort level:*** short to medium (1 to 4 days).

### 10.3 Aerobic Power (Ae Pwr)

**Cycle Length:** 2 - 4 weeks

**Focus:** To increase amount work of hard aerobic work possible. This becomes very important when complementing Aerobic Threshold and Aerobic Capacity training.

**Target Training Effort:**

1. Aerobic Power workouts: 1:30 – 6:00 work intervals at near peak heart rates on medium to long recovery (1:1 to 1:3) at 60-80% peak heart rate. Aerobic power workouts are performed only after warming up thoroughly at your aerobic threshold (AeT).
  - i.e. 3 x 3:00 at all out 3:00 pace on 6:00 recovery
2. Broken Aerobic Power workouts: same duration as above but broken into smaller pieces with short recovery breaks inserted. This encourages a higher overall effort and better technique in the workout for more advanced paddlers.
  - i.e. 6 x 1:00 at all out 6:00 effort on 0:30 recovery

***Novice crews should not do aerobic power workouts until after an initial six weeks of aerobic base building has been completed. Even then, once per week or once every two weeks will suffice.***

***Days of Consecutive Training using this effort level:*** short to long (1 to 4 days)

## 10.4 Economy of Motion (Econ)

**Cycle Length:** 2-3 weeks

**Focus:** Economy of motion is a combination of fitness and skill, as demonstrated in performance. Consequently, with any changes in skill and fitness, economy of motion needs training. Therefore, economy training is necessary throughout the season especially after fitness or skill building phases in the pre-competition and competition phases.

**Target Training Effort:**

1. Economy of Motion workouts: 0:30 to 3:00 at sustainable (90 - 95% maximum effort) pace for the target duration, as well as longer 6:00 – 60:00 paced efforts (80-95% maximum effort) on short to medium recovery (4:3 to 1:1),
2. Recovery effort is at ~ Aerobic Threshold (AeT),
3. Maintenance of other energy systems as required.

**Days of Consecutive Training using this effort level:** short to medium (2 to 8 days)

## 11 Anaerobic Training

Anaerobic training is any short high intensity work that causes very rapid fatigue and loss of performance. There are two objectives in anaerobic training, to increase absolute power output, and to increase the duration those high power outputs can be sustained. At this level of training, we shall address only the first of these concerns, the production of high levels of anaerobic power

### 11.1 Anaerobic Power (An Pwr)

***Cycle Length:*** 1 - 2 weeks

***Focus:*** During this phase, high intensity training efforts are prioritized. Volume is reduced to next to nothing to protect fatigue susceptible muscle. Long recovery times and short microcycles aid in preventing fatigue build up that can compromise technical skill that is essential for these efforts to be sport specific.

***Target Training Effort:***

1. Anaerobic Power workouts: 0:20 – 1:30 at peak effort on long recovery (1:4 to 1:6),
2. Maintenance of other energy systems as required.

***Days of Consecutive Training using this effort level:*** short to medium (2 to 4 days).

## 11.2 Anaerobic Capacity (An Cap):

***Cycle Length:*** 2-3 weeks

***Focus:*** During this phase, the high intensity training is prioritized. Volume is reduced to next to nothing to protect the fatigue susceptible fast twitch muscle fibers. The recovery between intervals is reduced to maximize the acidosis that will lead to increased metabolic fatigue. The short cycles aid in preventing any chronic fatigue build up that can compromise the technical skill that is essential for these efforts to be sport specific.

***Target Training Effort:***

1. Anaerobic Capacity workouts: 0:20 – 1:00 at peak effort on medium to short recovery (2:1 to 1:2),
2. Maintenance of other energy systems as required.

***Days of Consecutive Training using this effort level:*** short (2 to 4 days)

## 12 Power Training

Similar to anaerobic training, power training consists of very short high intensity work that causes very rapid fatigue and loss of performance.

At the High Performance level resistors can be added to the boat to increase the load experienced during such workouts to stimulate increased sport specific strength and power.

A simple resistor for a Dragon Boat consists of a length of garden hose looped around the bow once. For added resistance a second loop can be added, then a third.

***Do not use overly large resistor too soon. Tires and buckets can be used at much more advanced levels, for 3<sup>rd</sup> year High Performance teams and over.***

### 12.1 Power (Pwr)

***Cycle Length:*** 2 days to 1 week

***Focus:*** During this phase, high intensity training efforts are prioritized. Volume is removed from the program to ensure peak efforts are not compromised by any fatigue.

***Target Training Effort:***

1. Power workouts: 0:03 – 0:10 at peak effort on long recovery (1:10+),
2. Maintenance of other energy systems as required.

***Days of Consecutive Training using this effort level:*** short to medium (2 to 4 days).

## 12.2 Speed

### ***Cycle Length: 1-2 weeks***

***Focus:*** To emphasize speed development, the higher intensity training must be completed prior to any volume training. As with anaerobic training, this is to minimize any fatigue to fast twitch muscle fibers. Speed adaptations will come quickly, even during a single workout. Persistence, on any given day, week, and season is what will make the difference, even for those "self-dedicated" non-sprinters.

### ***Target Training Effort:***

1. Speed workouts: < 0:15 at peak effort on very long recovery (1:8+). It is essential to keep movement speed high for the entire duration,
2. Maintenance of other energy systems as required.

***Days of Consecutive Training using this effort level:*** short (2 to 3 days)

## **13 Muscular Conditioning**

A High Performance Dragon Boat team should include muscular conditioning as a part of their training. At the Basic Instruction and Performance Training level it was optional. The injury prevention benefits alone will enhance the quality of training and longevity of each paddler's career.

In a yearly program, there is plenty of time to cycle through general conditioning, strength, speed and power phases. The complete muscular strength and resilience present in well prepared athletes will be evident in their training.

At this level Olympic lifts, such as the clean and jerk, or snatch can be very beneficial. These lifts, when learned properly can be invaluable in teaching movement sequencing and the importance of core stability.

## **14 Conclusion**

Coaching a High Performance team properly is a 24 hour a day, 7 days per week commitment. You expect this from the team, they expect this from you. Just be careful not to burn yourself out, this is a common problem with coaches who need more work on time management.

There is a lot of planning necessary to ensure success and with the tools we have prepared for you in this series of manuals, you should be able to realize that success.

Good Luck.



### Appendix A: Sample Monitoring Guide for Over Training

	Monday				Tuesday				Wednesday				Thursday				Friday				Saturday				Sunday											
Waking heart rate																																				
Sleep (hours)																																				
Sleep Quality	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Dizziness	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Body Mass (kg)																																				
Minor (past 24 hrs.)																																				
Muscle soreness	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Training Effort	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Moodiness	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

**WAKING HEART RATE**

1. 30 s lying HR
2. standing peak HR ~15-20 s
3. 3-5 minute steady state HR

**HOURS OF SLEEP + NAPS**

**SLEEP QUALITY**

1. uninterrupted, not requiring more
2. interrupted, not requiring more
3. interrupted, requiring more
4. interrupted, feeling terrible

**POSTURAL DIZZINESS**

1. no dizziness
2. some dizziness, but disappears within 2 seconds
3. marked dizziness, need to lie down again

**MINOR SYMPTOMS IN PAST 24 HRS.**

1. BODY MASS IN KG EACH MORNING
2. stomach aches, nausea or vomiting
3. painful lymph nodes in neck/axillary region
4. generalized weakness
5. skeletal muscle discomfort
6. prolonged fatigue (24 hrs. or more) after easy exercise
7. generalized headaches
8. migratory joint pain

9. various neuropsychological symptoms (photophobia, forgetfulness, irritability, confusion, difficulty thinking, inability to concentrate, depression)
10. sleep disorders
11. loss of appetite
12. low grade fever (37.5 to 38.6 ° C)
13. sore throat or cough

**MUSCLE STIFFNESS RECORD**

1. no muscle stiffness or pain
2. mild muscle stiffness and pain, not affecting workouts
3. moderate muscle stiffness and pain, able to complete workout with difficulty
4. severe muscle stiffness and pain, unable to complete workout

**TRAINING EFFORT FOR SESSION**

1. felt good for entire workout
2. neither hard nor easy, felt good during some parts of workout
3. somewhat difficult, felt a little tired
4. very difficult, had difficulty completing the workout

**GENERAL MOODINESS RATING**

1. good mood
2. mild moodiness, feeling down or sad only at times
3. moderate moodiness, feeling down or sad most times
4. severe moodiness, feeling down or sad at all times

**TRAINING DETAILS**

1. duration of each training session in hours
2. type of exercise
3. duration of both work and recovery intervals effort required as percentage of maximal effort for given duration

## Appendix B: Sample Training Log

NAME  
DATE  
WEEK

PHASE  
MESOCYCLE FOCUS

		CONTINUOUS				INTERVAL				MUSCULAR CONDITIONING				LOAD	VOLUME									
		AE CAP	ITT	RACE	TEMPO	AE CAP	AE PWR	AN CAP	AN PWR	SPEED	POWER	ECON	GEN	HYPERT	STR	SPEED	POWER	SETS	REPS	TEMPO	W:R			
MICRO-	MESO-																							
		Monday	AM																					
			PM																					
		Tuesday	AM																					
			PM																					
		Wednesday	AM																					
			PM																					
		Thursday	AM																					
			PM																					
		Friday	AM																					
			PM																					
		Saturday	AM																					
			PM																					
		Sunday	AM																					
			PM																					
		WEEK																						