

COMMUNITY SPORT

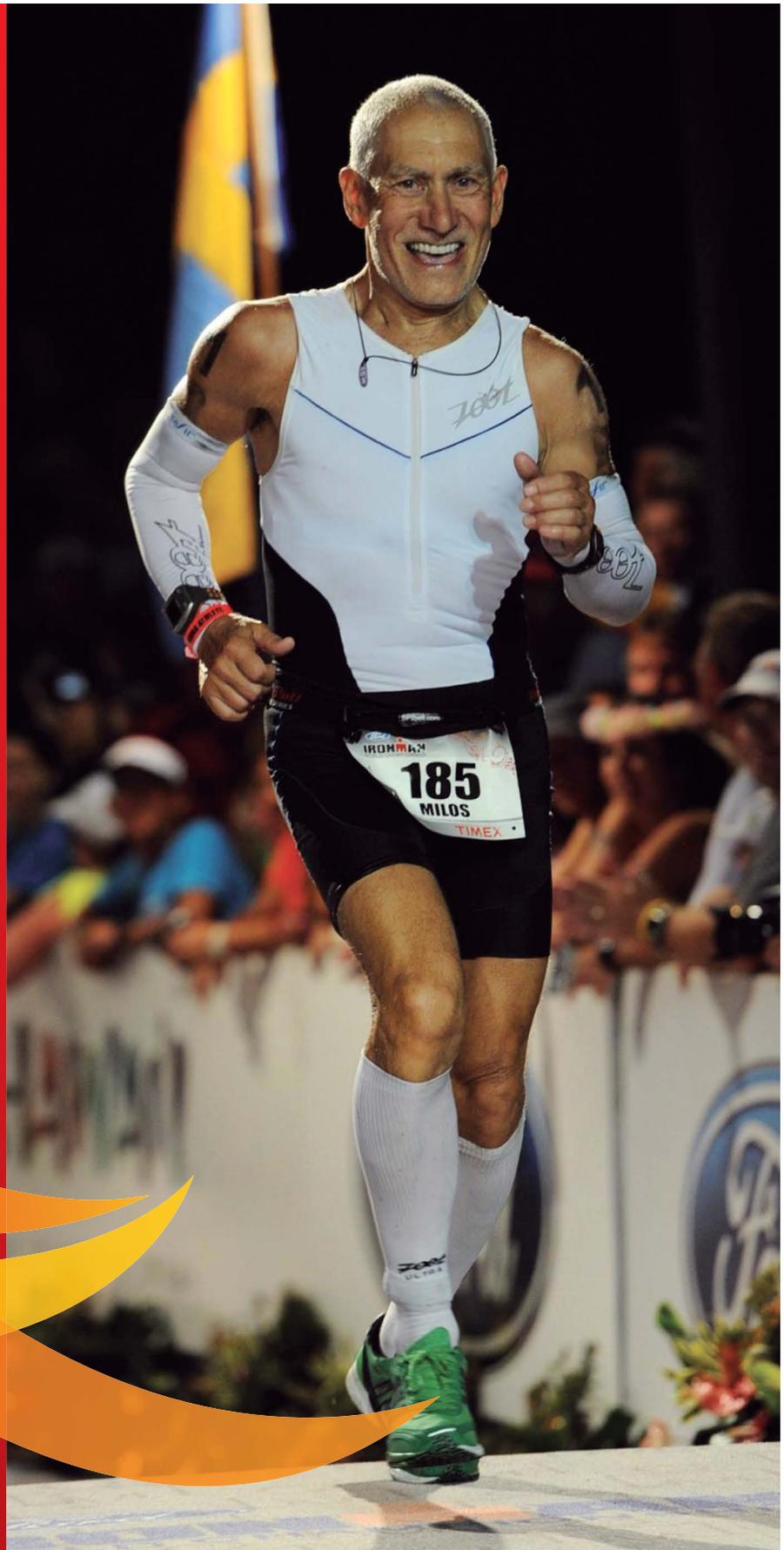
COMPETITION

INSTRUCTION



National  
Coaching  
Certification  
Program

COACHING  
MASTERS  
ATHLETES



# ACKNOWLEDGEMENTS

---

## CONCEPT DESIGN

Cyndie Flett

## MAIN WRITER

Nigel Kemp

## ADVISORY GROUP

Georgina Bellamy

François Gravelle

John Huntley

Nigel Kemp

Volker Nolte

Sherry Richardson

Brad Young

## EDITOR

Louise Wood

## PRODUCTION

Field Day Inc., Lucie LeBel, MATRA • gs Translation Services Inc.



Coaching Association of Canada  
Association canadienne des entraîneurs

Coaching Association of Canada • Coaching Masters Athletes

# FOREWORD



.....

When I played competitive water polo, in the 1980s, there were few if any opportunities for continuing to compete past your mid-twenties. The same was true for many other sports, and masters competitors or participants were few and far between.

But we're all a few years older now, and many of us have stayed active. As a result, participation and competition by masters athletes has increased dramatically in recent years. Far from being a rarity, the masters athlete is today a common sight in many sports. National Masters and World Masters Championships are now the norm in almost every major sport, water polo included!

Because significant participation in masters sport is so new, we are just starting to learn what masters athletes are physically capable of and what motivates them. Coaching masters athletes is therefore essentially a new frontier, and this booklet is the first contribution the Coaching Association of Canada (CAC) is making to that new frontier.

Coaching masters athletes is an exciting opportunity for all coaches to have a positive impact on the lives of adults who want to lead a healthy and active lifestyle. It is also a wonderful opportunity for coaches to have a positive impact on society by encouraging more adults to be more active.

In 2006, I coached a women's water polo team at the 2006 FINA World Masters Championships in Palo Alto, California, and I am looking forward to having an even more positive experience when I coach at the same world championships in Montreal in June 2014.

CAC is proud to be producing its first resource for all of us now coaching and all those who will soon be coaching masters athletes.



**Cyndie Flett**  
*Vice President, Research and Development*  
*Coaching Association of Canada*

# CONTENTS

.....

<b>INTRODUCTION</b>	<b>1</b>
<b>MASTERS SPORT AND MASTERS ATHLETES</b>	<b>2</b>
Masters Sport	2
Masters Athletes	5
A Closer Look	6
<b>GENERAL COACHING GUIDELINES</b>	<b>9</b>
Coaching and Leading Effectively	9
<b>PHYSICAL CHARACTERISTICS</b>	<b>11</b>
Must-Knows about Masters Athletes: Physical Characteristics	12
<b>HEALTH CONDITIONS</b>	<b>14</b>
Must-Knows about Masters Athletes: Health Conditions	15
<b>MASTERS WRAP</b>	<b>19</b>
<b>RESOURCES</b>	<b>20</b>

# INTRODUCTION

---

Masters sport is booming, and more and more masters athletes are seeking coaching guidance as they strive to learn new skills, improve their performance, or compete successfully.

*Coaching Masters Athletes* is an introduction to coaching masters athletes, and it contains basic need-to-know information that will help you get started in this area.

This resource is for any National Coaching Certification Program (NCCP) coach in any NCCP context or sport who wants to know more about coaching masters athletes.

*Coaching Masters Athletes* has six sections:

- *Masters Sport and Masters Athletes* provides an overview of masters sport and masters athletes today.
- *General Coaching Guidelines* presents general information on how to coach masters athletes well.
- *Physical Characteristics* summarizes suggestions for how to plan the physical training of masters athletes.
- *Health Conditions* covers training modifications that age-related health conditions may call for.
- *Masters Wrap* summarizes the key takeaways about coaching masters athletes.
- *Resources* lists key resources you can use to deepen your knowledge of masters athletes and coaching masters athletes.

*Coaching Masters Athletes* is also available online at [www.coach.ca](http://www.coach.ca).



---

Current research indicates **there is no noticeable decline in physical abilities until about the age of 70**, as long as people stay active.

---

# MASTERS SPORT AND MASTERS ATHLETES

---

While masters sport is not new — world championships in both athletics and swimming started in the 1970s, for example — the recent boom in masters sport is new.

This section provides an overview of masters sport and masters athletes: how masters sport started, where masters sport is now, and who today's masters athletes are.

## MASTERS SPORT

As recently as the 1980s, it was very unusual for those over 40 to compete in sport. But all that is changing as Baby Boomers stay active and expect to continue to perform well. More and more older adults are participating or competing in sport, governments at all levels have started to encourage older adults to take part in fitness and sport activities, and age-group competition is the norm in many if not most sports.

---

In 2011, **over 9,800**  
**masters swimmers**  
were **registered with**  
**Masters Swimming**  
**Canada**, and their average  
age was 44.

---



# Masters Sport and Masters Athletes

## HERE ARE SOME IMPORTANT DATES AND EVENTS IN THE EVOLUTION OF MASTERS SPORT:

- 1973: First-ever World Rowing Masters Regatta, Vienna
  - A test event that attracted about 700 entries from 10 countries
  - 2003 version attracted approximately 3,000 rowers from 40 countries
- 1974: Inaugural Canadian National Masters Track and Field Championships, Richmond, British Columbia
- 1975: First World Track and Field Championship for over 40s, Toronto
- 1978: World Senior Aquatic Championship, Etobicoke
  - Attracted over 400 swimmers from 10 countries
- 1979: First Canadian Masters Swimming Championship, Oakville
  - Had 180 competitors
- 1985: First-ever World Masters Games, Toronto
  - Had 8,305 participants in 22 sports
  - Included some 1,600 swimmers, 64 ice hockey teams, and 500 rowers
- 1986: Inaugural World Masters Swimming Championships, Tokyo
- 2005: World Masters Games, Edmonton
  - Attracted 21,600 recreational and elite athletes from 88 countries, including 14,267 competitors from Canada
- 2009: World Masters Games, Sydney, Australia
  - Featured 28 sports and competitors from over 100 countries



Today, **over 50 countries**  
**hold masters sport**  
**events**

# Masters Sport and Masters Athletes

## SPORTS FROM A TO Z...SUMMER AND WINTER...

Masters athletes participate and compete in a wide range of sports, from archery and athletics through water polo and weightlifting. Here, for example, is a list of the sports included in the 2009 World Masters Games:

- Archery
- Athletics
- Badminton
- Baseball
- Basketball
- Beach Volleyball
- Canoe/Kayak
- Cycling
- Diving
- Football
- Golf
- Hockey
- Lawn Bowls
- Netball
- Orienteering
- Rowing
- Rugby Union
- Sailing
- Shooting
- Softball
- Squash
- Surf Lifesaving
- Swimming
- Table Tennis
- Tennis
- Touch Football
- Volleyball
- Water Polo
- Weightlifting

And here's a list of the sports included in the 2011 World Winter Masters Games:

- Alpine Skiing
- Biathlon
- Cross-Country Skiing
- Ice Hockey
- Ski Jumping
- Ski Jumping & Nordic Combined

For their part, the European Masters Games in 2011 featured competition in these sports:

- Archery
- Athletics
- Beach Volley
- Canoe/Kayak
- Clay Target
- Cycling
- Dance Sport
- Fencing
- Futsal (outdoor)
- Golf
- Handball
- Judo
- Karate
- Orienteering
- Rowing
- Sailing
- Taekwondo
- Tennis
- Triathlon
- Weightlifting

For a calendar of competition in masters sports worldwide, check out <http://www.my.calendars.net/mastersevents>, which lists regional, national, and international events for masters in sports from A to Z!



# Masters Sport and Masters Athletes

## MASTERS ATHLETES

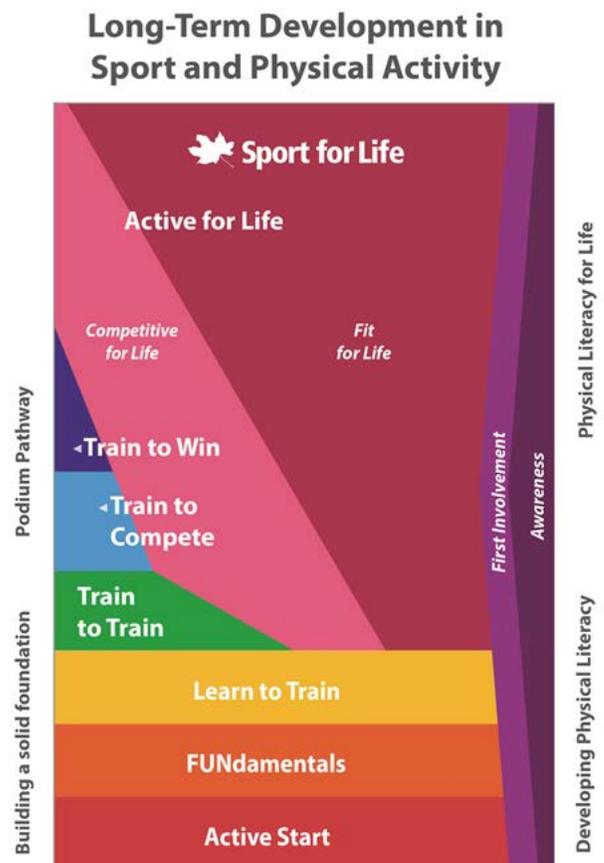
*Masters athletes* means different things to different people. The term is usually used to describe older active individuals — individuals who are more than 35 years old, participate in sports or events specifically designed for older adults, have varying backgrounds in sport, and engage in varying degrees of competition, from the recreational to the more serious minded. For example,

- Many masters swim for fitness or other reasons and don't belong to the sport's formal structure; fewer than 25% compete. Most who train regularly are called fitness swimmers, although their motivations may extend beyond fitness.
- Ringette has Open categories (19 years and over) at the A, B, C, Masters Rec 1, and Masters Rec 2 levels, providing opportunities for recreational competition.
- In masters lawn bowls in Canada, about 70% of participants take part in friendly competition but not tournament play.

But this resource is for coaches of *masters athletes*, and it uses the term *masters athletes* in a slightly narrower sense to refer to those who have decided they want a coach. Athletes with coaches typically prepare to participate rather than jump into events or competitions with no training. Athletes with coaches also typically register their participation, for instance, by joining a club or by competing in tournaments. Therefore, in this resource, *masters athletes* refers to those who 1) meet the age criteria for masters athletes in their sport, 2) have a coach, 3) register their participation, and 4) prepare to participate.

These athletes are seeking to improve their performance or learn a new skill, and they are more likely to acknowledge competition as an element of their experience than the general population of older active individuals. This competition can take a wide range of forms: recreational competition, competition against one's own standards, competition against others, competition for rankings, etc.

The figure below shows where masters athletes fit in the Canadian Sport for Life (CS4L) framework. Canadian Sport for Life aims to improve the quality of sport and physical activity in Canada. CS4L links sport, education, recreation, and health and aligns community, provincial, and national programming.



# Masters Sport and Masters Athletes

## A CLOSER LOOK...

Let's take a closer look at these masters athletes. This information should help you better understand some of the masters athletes you may coach, and it may give you some great ideas about how to motivate older adults to get actively involved in sport!

The boom in masters sport is quite recent, and research on masters athletes is even more recent. Masters athletes themselves often have preconceptions about their performance limits, simply because there has been so little research on older adults who are active. As a result, masters athletes are breaking new ground as they seek to push their own performance barriers or acquire new skills. Many, for instance, want to learn a new sport when they cannot continue with their old sport or because they want to enjoy the specific benefits of the new sport. Similarly, those who conduct research on masters athletes are exploring new territory as they work to discover who these athletes are, what motivates them, and what may or may not limit their performance.

The information on masters athletes in this section should therefore be understood as statements about *what we know now*. Given the increasing involvement of older adults in masters sport, we suspect that we will continue to learn more about these athletes and consequently apply and refine new coaching strategies to optimize their sporting experiences.

## HOW MUCH DO THEY TRAIN?

There is a growing body of research on elite masters sport participants who take part in national or international events. Recent research on masters swimmers and masters track and field athletes by Young and Medic (2011a) shows that these athletes

commit significant amounts of time to their training. For instance, almost 90% of the competitors at the 2009 World Masters Athletics Championships reported that they trained eight or more months of the year, and over half (55%) said they trained year-round.

The same research found that these masters athletes train for an average of 13.5 hours a week during their heavier training periods. Earlier research by Young and others found that national-level and club-level athletes also invest a lot of time in training: 7 to 9 hours a week for masters distance runners, about 10 to 11 hours per week for international masters swimmers, and 6 hours a week for club-level (or regional) masters swimmers.

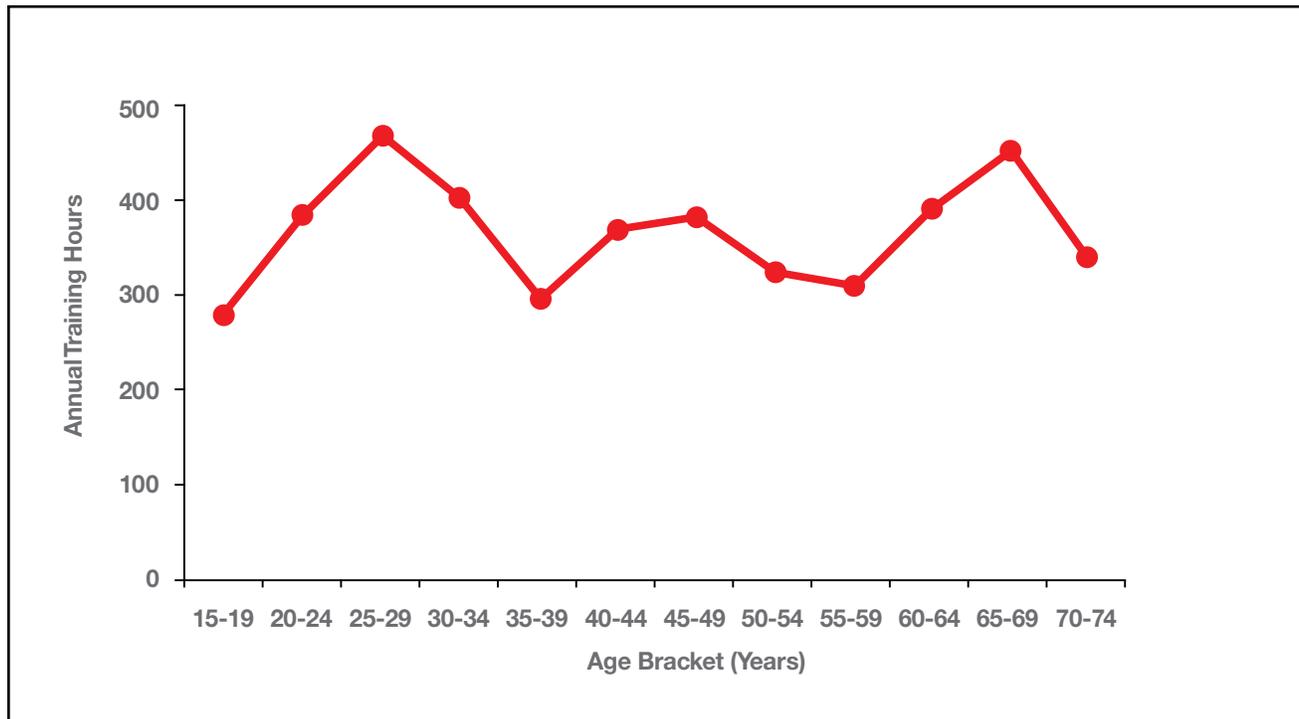
Some of the more elite masters athletes have also been continuously involved in their sport for many years. While they may not dedicate as many hours to training as they did in their 20s or 30s and there is considerable variation over the years, national- or international-level masters track and field athletes of every age have a serious commitment to training and performance. Though less data is currently available on recreationally competitive participants and team sport participants, these training amounts tell us that coaches should be aware that serious-minded masters athletes are prepared to devote significant amounts of time to their training.

About **25% of registered competitive rowers** in Canada are masters



# Masters Sport and Masters Athletes

*Cross-sectional Data for Annual Amounts of Training by North American National and International-Level Track and Field Athletes Averaged for Each Five-year Bracket across the Lifespan*



Source: Young and Medic, 2011a.

## WHAT MOTIVATES THEM?

Many believe that older athletes participate in sport largely for social reasons, but this is not always so. For example, over half of the masters runners, throwers, and swimmers recently interviewed cited love of the sport and the desire for personal challenge and achievement as reasons for participating in sport. Health and fitness reasons also mattered, but social reasons and extrinsic rewards were less important motivators. Only 27% of runners indicated that fellowship was a motivator for them, although this factor is likely a key motivator for many masters, including throwers and swimmers.

Overall, emerging research tells us that a variety of motives draw people to masters sport. The importance of these motives — opportunities to master skills, opportunities to compete in a healthy manner, opportunities to gain fitness, and opportunities to socialize — will therefore vary from athlete to athlete. So don't focus exclusively on emotions in your coaching, and remember that masters athletes are often motivated to compete and to learn new ways of performing techniques and skills in their sport.

# Masters Sport and Masters Athletes

MASTERS ATHLETES' MOTIVES TO CONTINUE TRAINING AND COMPETING				
1 <sup>st</sup> Order Themes	Runners	Throwers	Swimmers	2 <sup>nd</sup> Order Themes
	% of Sample	% of Sample	% of Sample	
Enjoyment/satisfaction experienced in sport	50.0%	61.1%	54.5%	Enjoyment of the Sport
Personal challenge and achievement	59.9%	50.0%	51.0%	Opportunity to Test Skills
Opportunity to compete	42.2%	22.2%	39.9%	
Fitness	43.6%	38.9%	65.7%	Health and Fitness
Health	37.2%	27.8%	44.8%	
Lifestyle preference	11.6%	11.1%	7.0%	
Physical appearance	7.6%	8.3%	8.4%	
Fellowship of other MAs	27.3%	38.9%	53.1%	Social Reasons
Peer comparison	16.9%	5.6%	4.2%	
Peer recognition	5.2%	5.6%	.7%	
Role modelling	9.3%	5.6%	2.1%	
Travel opportunities	5.8%	2.8%	5.6%	
Breaking normative records	12.8%	5.6%	7.0%	Extrinsic Rewards
Medals	7.6%	8.3%	2.1%	

Source: Young and Medic, 2011a. Note: MAs = masters athletes

Like younger athletes, masters athletes draw support and encouragement for their involvement in sport from a number of sources. For participants at the 2009 World Masters Athletics Championships, the most influential individuals are their spouse or life partner, their training partners, their children, and their peers in the sport community. For World Masters Swimming Championship participants, the greatest influences are their spouse or life partner, their children, their training partners, and a health professional (e.g., a physician, athletic therapist, or physiotherapist) (Young and Medic, 2011b).

# GENERAL COACHING GUIDELINES

---

As a coach in the NCCP, you already know a lot about how to coach athletes.

Whether you coach younger age-group athletes or masters athletes, a key consideration is the individual and what they need to get the most out of the sporting experience. Research has shown that there are adult-oriented considerations when coaching this cohort that can help to enhance the quality of sport experiences for Masters athletes (Callary, Young, & Rathwell, 2021). In particular,

- They have different physical characteristics than younger athletes, and they may need to train some of these characteristics differently than younger athletes.
- They are more likely than younger athletes to have certain health conditions, such as osteoarthritis, and their training may need to be adjusted accordingly.
- They are less likely to respond well to “command” styles of coaching and generally have a greater need to have input into coaching decisions.

See the sections [Physical Characteristics](#) and [Health Conditions](#) for must-know information on the physical characteristics and health conditions of masters athletes, as well as their implications for you as a coach.

Here are some general tips to keep in mind as you coach all your athletes, masters and non-masters alike.

## COACHING AND LEADING EFFECTIVELY

1. *Plan proactively* — Develop progressive plans for training and competition, and prepare for the unexpected. Whatever the length of your program (a few weeks, a full season, a year, etc.), you need to plan proactively.
2. *Create a positive training environment* — Create positive situations that stimulate athletes’ enthusiasm and competitive desire. Your own commitment and enthusiasm will help promote a positive culture of fun and hard work.

Consider giving adults more choice in their training, providing meaningful rationales for their training, and asking them for their opinions when planning workouts, setting goals, and organizing the practice environment (e.g., drill design).

It’s also important to learn to take athletes’ perspectives on issues related to training into account, e.g., acknowledging difficulties in completing training or fatigue due to other responsibilities. Helping athletes see how their sport activities relate to other goals and valued activities in their lives is also a key coaching task; for instance, point out how they are sport role models for others and how they can spend more active time with others through sport.

Taken together, these strategies — offering choice, providing rationales, demonstrating understanding, and facilitating meaning — all help promote self-determined and autonomous athletes.

# General Coaching Guidelines

---

3. *Facilitate goal-setting* — Work with athletes to help them define their long- and short-term goals. Ideally, you and your athletes will also set intermediate and dream goals.
4. *Build athletes' confidence* — Use a broad range of coaching behaviours to help athletes become more confident. For example, encourage athletes to believe they can achieve their goals, as athletes typically perform in line with their coach's expectations. In addition, model self-confidence about your own coaching skills so your athletes can see and emulate that confidence.
5. *Teach skills effectively* — Develop athletes' technical and physical skills. To do this well, you need to communicate in a manner that works for the individual athlete.
6. *Respect individual differences* — Take each athlete's individual preferences and needs into account. This involves taking physical differences, motivational differences, age group, health status, team roles, etc., into account.
7. *Establish a positive rapport with each athlete* — Develop positive personal relationships with each athlete. Respect and understanding play key roles in this aspect of coaching effectively.

**Coaching masters** athletes well is **a key aspect** of **changing** society's **views of aging** and the athletic potential of older adults

---

Just like younger athletes, many masters athletes find **striving to improve** their performance as satisfying as actually improving their performance

---

# PHYSICAL CHARACTERISTICS

---

The table on the following pages summarizes must-know information about the physical characteristics of masters athletes. The table also contains suggestions for how to modify training to take these characteristics into account so you can coach masters athletes well.



# Physical Characteristics

## MUST-KNOWS ABOUT MASTERS ATHLETES: PHYSICAL CHARACTERISTICS

Physical Characteristic	As people age...	Which means you need to advise masters athletes to...
Cardiovascular function	<ul style="list-style-type: none"> <li>Maximal heart rate and stroke volume decrease</li> </ul>	<ul style="list-style-type: none"> <li>Exercise energetically to offset the decrease as much as possible</li> </ul>
Flexibility	<ul style="list-style-type: none"> <li>Flexibility <i>may</i> decrease, but it need not, as inactivity probably contributes more to loss of flexibility than aging does</li> <li>Loss of flexibility is individual and joint-specific</li> </ul>	<ul style="list-style-type: none"> <li>Maintain or improve their flexibility by:               <ul style="list-style-type: none"> <li>Working on their flexibility year-round</li> <li>Using dynamic stretches during the warm-up</li> <li>Using static stretches in the cool-down, when the muscles are warm</li> <li>Using stretching exercises that are specific to their sport and individual needs</li> </ul> </li> </ul>
Lactate threshold	<ul style="list-style-type: none"> <li>They can maintain high lactate thresholds</li> <li>The lactate thresholds of masters athletes are significantly higher than those of people who are sedentary</li> </ul>	<ul style="list-style-type: none"> <li>Train to keep their lactate threshold high, and use the high threshold to compensate for a lower <math>VO_2</math> max — just as younger athletes do</li> </ul>
Maximal aerobic capacity	<ul style="list-style-type: none"> <li>Their <math>VO_2</math> max <i>may</i> decrease</li> <li>Current research suggests that decreases in many physical characteristics may be more the result of disuse than of aging</li> </ul>	<ul style="list-style-type: none"> <li>Include high-intensity work in their training to temper any decrease in <math>VO_2</math> max</li> <li>Do low-intensity, longer endurance work</li> <li>Manage their weight, as weight gain can reduce aerobic capacity</li> <li>Avoid lengthy interruptions in training, as being sedentary is far more damaging to health and fitness than getting older!</li> </ul>

# Physical Characteristics

## MUST-KNOWS ABOUT MASTERS ATHLETES: PHYSICAL CHARACTERISTICS

Physical Characteristic	As people age...	Which means you need to advise masters athletes to...
Muscular strength	<ul style="list-style-type: none"> <li>• Strength <i>may</i> decrease, and muscle mass <i>may</i> decline</li> <li>• They may lose both slow-twitch muscle fibres, which are responsible for aerobic activity, and fast-twitch (type II) muscle fibres, which are more associated with anaerobic activity</li> <li>• They may lose relatively more fast-twitch fibre</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on intensity and duration in their training — it lessens the impact of aging on decreases in strength</li> <li>• Maintain high levels of physical activity, as it lessens both the amount of muscle mass lost and keeps the balance between slow- and fast-twitch fibres more stable</li> <li>• Do strength work, especially if they have been inactive or are returning to activity</li> </ul>
Nutritional requirements	<ul style="list-style-type: none"> <li>• Their energy needs may decline, mainly because of reduced muscle and activity levels</li> <li>• They may need more protein</li> </ul>	<ul style="list-style-type: none"> <li>• Match energy intake to energy requirements</li> <li>• Aim for 60% carbohydrate, 25% fat, and 15% protein</li> <li>• Get enough protein</li> </ul>
Recovery	<ul style="list-style-type: none"> <li>• They <i>may</i> need more recovery time between training sessions</li> </ul>	<ul style="list-style-type: none"> <li>• Pay careful attention to how well they recover, and adjust their training accordingly</li> </ul>

This **study contradicts** the common observation **that muscle mass and strength decline as a function of aging alone**. Instead, these declines may signal the effect of chronic disuse rather than muscle aging.

(Wroblewski et al., 2011)

# HEALTH CONDITIONS

---

As people age, certain health conditions are more likely to be present. Far from meaning that the masters athlete should become sedentary, the presence of these conditions simply means that masters athletes may need to modify their activity. Physical activity can often mitigate or reverse the effects of health conditions, and so it plays a central role in the management of many health conditions.

The table on the following pages provides must-know information on the main health conditions older adults may experience. The table also lists the implications of these conditions for athletes' training.



---

The health conditions described on the following pages are more likely to be present in older athletes. But this doesn't mean they ARE present. **It's your job as a coach to find out the health history of your masters athletes**, just as you would with younger athletes.

---

# Health Conditions

## MUST-KNOWS ABOUT MASTERS ATHLETES: HEALTH CONDITIONS

This health condition...	Involves...	And has these implications for training...
Alzheimer's disease	<ul style="list-style-type: none"> <li>Progressive degeneration of the brain, which in turn seriously harms thinking and memory</li> </ul>	<ul style="list-style-type: none"> <li>Training has many benefits for those in the early to moderate stages of Alzheimer's:               <ul style="list-style-type: none"> <li>- Dramatic gains in physical fitness, mood, and pride</li> <li>- Maintenance of language function</li> <li>- Slower than typical decline in mental status</li> </ul> </li> <li>Implementing a physical activity program is challenging, as problems arising from physical and mental decline, behavioural changes, and caregiver cooperation must be addressed</li> </ul>
Asthma	<ul style="list-style-type: none"> <li>Chronic inflammation of the airway, with symptoms such as shortness of breath, tightness in the chest, coughing, and wheezing</li> <li>For many with asthma, reduced breathing capacity during and after exercise; this is known as exercise-induced asthma</li> </ul>	<ul style="list-style-type: none"> <li>Exercise is beneficial but must be tailored to individual needs</li> <li>Exercise intensity must be appropriate and can be determined via heart rate monitoring and ratings of perceived exertion</li> <li>Those with exercise-induced asthmas should <b>never</b> be without their inhaler</li> <li>Caution is essential when exercising in the cold, as cold air can trigger an asthma attack</li> </ul>
Chronic obstructive pulmonary disease	<ul style="list-style-type: none"> <li>Long-term lung disease such as chronic bronchitis and emphysema (usually caused by smoking)</li> <li>Symptoms such as shortness of breath, increased mucus, and coughing</li> </ul>	<ul style="list-style-type: none"> <li>Exercise is an indispensable treatment for both bronchitis and emphysema</li> <li>The goal of exercise programs should be to improve breathing efficiency and the ability to exercise</li> <li>Activities of consistent intensity are appropriate</li> <li>Warm-ups and cool-downs help athletes avoid breathing difficulties</li> </ul>
Coronary heart disease (CHD)	<ul style="list-style-type: none"> <li>The narrowing of one or more coronary arteries</li> </ul>	<ul style="list-style-type: none"> <li>Activities permitted run the gamut from very limited activity to regular daily activities</li> <li>Cardiac rehabilitation programs under medical supervision are appropriate for individuals with advanced CHD</li> <li>Those with known CHD should avoid high-intensity exercise</li> <li>Coaches must know the signs for stopping athletes from exercising, including chest pain, arrhythmias, and breathlessness</li> <li>Exercise programs should have longer warm-ups, which might expose discomfort or dizziness before higher intensity activity occurs</li> </ul>

# Health Conditions

## MUST-KNOWS ABOUT MASTERS ATHLETES: HEALTH CONDITIONS

This health condition...	Involves...	And has these implications for training...
Diabetes	<ul style="list-style-type: none"> <li>• High levels of sugar in the blood</li> <li>• With type 1 diabetes, the pancreas does not produce insulin at all, so glucose builds up in the bloodstream</li> <li>• With type 2 diabetes, the pancreas does not produce enough insulin or the body does not properly use the insulin it produces</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise is an essential part of treating both forms of diabetes:               <ul style="list-style-type: none"> <li>- Daily exercise helps maintain the balance between insulin production and caloric intake</li> <li>- It can significantly lower blood-sugar levels</li> </ul> </li> <li>• Maintaining safe blood-sugar levels is vital:               <ul style="list-style-type: none"> <li>- Monitor blood-sugar levels carefully when changing exercise intensity and duration</li> <li>- Exercise can make hyperglycemia (high blood glucose) worse, and so caution is essential</li> <li>- Hypoglycemia (low blood glucose) is more problematic, as exercise can trigger an insulin reaction; rapidly absorbed carbohydrates such as gel packs must <b>always</b> be on hand</li> </ul> </li> </ul>
Hypertension	<ul style="list-style-type: none"> <li>• A rise in systolic or diastolic blood pressure above normal levels (&lt;120/80mmHG)</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise, often combined with medication, can help reduce high blood pressure</li> <li>• Exercise is considered problematic if blood pressure fluctuates</li> <li>• Athletes need to develop blood-pressure-monitoring skills and learn how to gauge exercise intensity (ratings of perceived exertion, for example)</li> <li>• Athletes should cool down extensively, as it helps lower heart rate and blood pressure to pre-exercise levels</li> </ul>
Osteoarthritis	<ul style="list-style-type: none"> <li>• The breakdown of cartilage; this is the most common form of arthritis</li> <li>• Any joint but usually affects the hips, knees, hands, and spine</li> <li>• Pain, stiffness, and decreased range of motion</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise helps reduce pain and prevents further joint damage</li> <li>• Exercise can help those with osteoarthritis maintain a healthy weight, which puts less strain on the joints</li> <li>• Strengthening exercises improve muscle strength, and strong muscles provide support and protection for the joints affected by arthritis</li> <li>• Range-of-motion exercises help maintain or restore normal joint movement and relieve stiffness</li> <li>• Low-impact exercises such as walking and swimming avoid unnecessary strain on the joints while maintaining strength and flexibility</li> </ul>

# Health Conditions

## MUST-KNOWS ABOUT MASTERS ATHLETES: HEALTH CONDITIONS

This health condition...	Involves...	And has these implications for training...
Osteoporosis	<ul style="list-style-type: none"> <li>• Low bone mass, deterioration of bone tissue, increased bone fragility, and increased risk of broken bones, particularly those of the hip, spine, and wrist</li> <li>• No symptoms for bone loss</li> </ul>	<ul style="list-style-type: none"> <li>• Physical activity can help reduce the risk of osteoporosis and assist in its treatment, as it:               <ul style="list-style-type: none"> <li>- Helps build and maintain healthy bones</li> <li>- Improves muscle strength, posture, balance, and coordination</li> <li>- Reduces the risk of falls and broken bones</li> </ul> </li> <li>• Weight-bearing activities such as physician-approved resistance training are the most appropriate form of activity</li> <li>• Aquatic activities and flexibility programs are <b>not</b> weight-bearing exercise</li> </ul>
Parkinson's disease	<ul style="list-style-type: none"> <li>• A progressive disorder that affects nerve cells in the part of the brain controlling muscle movement</li> <li>• Symptoms such as tremors, rigidity, and slow movements</li> <li>• An inability to readjust the body's centre of gravity, which can lead to falling</li> </ul>	<ul style="list-style-type: none"> <li>• Regular exercise is extremely important for those with Parkinson's disease, as it can improve mobility, balance, range of motion, and emotional well-being</li> <li>• Any physical activity, including walking, swimming, or gardening, is considered beneficial</li> <li>• Strategies to prevent falls must be part of any exercise program</li> </ul>
Pregnancy	<ul style="list-style-type: none"> <li>• An increase in blood volume of almost 50%</li> <li>• Dilutional anemia in the second trimester, but homeostatic balance by the third trimester</li> <li>• An increase in stroke volume, cardiac output (heart rate x stroke volume), and resting heart rate</li> <li>• Changes in the chest wall that facilitate increased oxygen transport and utilization</li> </ul>	<ul style="list-style-type: none"> <li>• Recommendations for exercise should be reviewed with pregnant athletes</li> <li>• Moderate exercise for 30 minutes or more per day on most days is recommended:               <ul style="list-style-type: none"> <li>- Aerobic activity helps prevent acidosis and hypoxia in the pregnant athlete</li> <li>- Regular exercise assists placental growth, musculoskeletal and cardiovascular fitness, and sleep quality; it also helps prevent excessive weight gain and helps decrease back pain</li> </ul> </li> <li>• Pregnant athletes should NOT:               <ul style="list-style-type: none"> <li>- Exercise when tired</li> <li>- Exercise to exhaustion</li> <li>- Perform protracted anaerobic exercise — it can cause acidosis and hypoxia in the pregnant athlete</li> </ul> </li> </ul>

# Health Conditions

.....

## MUST-KNOWS ABOUT MASTERS ATHLETES: HEALTH CONDITIONS

This health condition...	Involves...	And has these implications for training...
Pregnancy (continued)	See “Involves” text on page 17 for content.	<ul style="list-style-type: none"> <li>• Pregnant athletes should stop exercising immediately if ANY of the following warning signs occur:               <ul style="list-style-type: none"> <li>- Headache</li> <li>- Chest pain</li> <li>- Muscle weakness</li> <li>- Calf pain or swelling</li> <li>- Vaginal bleeding</li> <li>- Fainting before exertion</li> <li>- Pre-term labour</li> <li>- Decreased fetal movement</li> <li>- Amniotic fluid leakage</li> </ul> </li> <li>• The return to pre-pregnancy exercise levels should be progressive and based on individual capacities</li> <li>• Exercising after pregnancy can help the athlete lose weight and is associated with a lower risk of postpartum depression</li> </ul>
Stroke	<ul style="list-style-type: none"> <li>• Sudden loss of circulation in the brain</li> </ul>	<ul style="list-style-type: none"> <li>• Exercise should have the goal of maximizing recovery, as well as maintaining and improving fitness and mobility</li> <li>• Resistance training, starting with body-weight exercises, stretching, and balance and mobility exercises are all useful in fitness and rehabilitation programs</li> </ul>

# MASTERS WRAP



.....

Masters sport is booming. And while coaching masters athletes is probably not *that different* from coaching other athletes, there are some things you need to do or take into account when coaching masters athletes:

- Always have athletes, especially older athletes and those who are currently inactive, get medical clearance to participate before agreeing to coach them.
- Designing programs for older athletes is essentially a partnership between athlete and coach. If the athlete has an underlying health condition, the athlete's doctor may be involved in the partnership.
- They have different physical characteristics than younger athletes, and they may need to train some of these characteristics differently than younger athletes.
- They are more likely than younger athletes to have certain health conditions, such as osteoarthritis, and their training may need to be adjusted accordingly.
- Always tailor your coaching to your masters athletes' background. For instance, focus on motivation and current physical condition with those who've always been active, develop a return to activity protocol for those returning to activity, and follow the guidance in the section *Health Conditions* when athletes have health conditions.

Coaching masters athletes is an exciting opportunity, a new frontier in Canadian sport and society. Enjoy your journey!

# RESOURCES

.....

J. Baker, S. Horton, and P. Weir.

*The Masters Athlete: Understanding the Role of Sport and Exercise in Optimizing Aging.*

• London: Routledge. 2009.

Richard Benyo.

*Running Past 50.*

• Champaign, IL: Human Kinetics. 1998.

Lee Bergquist.

*Second Wind: The Rise of the Ageless Athlete.*

• Champaign, IL: Human Kinetics. 2009.

Callary, B., Young, B. W., & Rathwell, S.

*Coaching Masters Athlete: Advancing Research & Practice in Adult Sport.*

• Routledge. 2021.

Rylee A. Dionigi.

*Competing for Life: Older People, Sport and Ageing.*

• Saarbrücken, Germany: VDM Publishing. 2008.

Joe Friel.

*Cycling Past 50.*

• Champaign, IL: Human Kinetics. 1998.

Don McGrath.

*50 Athletes over 50 Teach Us to Live a Strong, Healthy Life.*

• Denver: Wise Media Group. 2010.

Nikola Medic, Bradley W. Young, Janet L. Starks, and Patricia L. Weir.

*Influence of the Coach on Masters Athletes' Motivational Regulations for Sport.*

• *International Journal of Coaching Science*, 6, 65-79, 2012.

Mark W. Niedfeldt, M.D.

*Managing Hypertension in Athletes and Physically Active Patients.*

• *American Family Physician*, 66, 445-52, 457-8. 2002.

Peter Reaburn.

*The Masters Athlete.*

• [www.mastersathlete.com.au](http://www.mastersathlete.com.au).

Roger Robinson.

*Ideas on Training and Racing after 70.*

• *On the Run*, October 2010, 5-8.

Roger Robinson.

*Keeping the Fire of Youth: New Ideas for Older Runners.*

• *Running Times*, February/March 2012, 42-46.



# Resources

.....

Waneen Spirduso, Karen Francis, and Priscilla MacRae.

*Physical Dimensions of Aging.*

- Second Edition. Champaign, IL: Human Kinetics. 2004.

Tony Trabert and Ronald Witchey.

*Tennis Past 50.*

- Champaign, IL: Human Kinetics. 2002.

Wayne L. Westcott and Thomas R. Baechle.

*Strength Training Past 50.* 2<sup>nd</sup> Ed.

- Champaign, IL: Human Kinetics. 2007.

P. Wroblewski, F. Amati, M. A. Smiley, B. Goodpaster, and V. Wright.

*Chronic Exercise Preserves Lean Muscle Mass in Masters Athletes.*

- *The Physician and Sportsmedicine.* 39(3). 2011.

Bradley W. Young.

*How Research on Motives, Social Support and Barriers Informs Efforts to Build Masters Sport.*

- PowerPoint presentation at Canadian Sport for Life Conference. 2010. [<http://www.canadiansportforlife.ca/resources/how-research-motives-social-support-and-barriers-informs-efforts-build-masters-sport>]

Bradley W. Young and Nikola Medic.

*Veteraaniurheilijat: tutkimuksia merkittävästä panostuksesta, motivaatiosta ja mahdollisuuksista [Masters Athletes: Studies on Remarkable Investment, Motives, and Opportunities].*

- In Finnish Veterans' Athletic Association (Eds.), *Erlainen tapa vanheta [Different Ways of Aging in Sport]* (pp. 45-58). Lappeenranta, Finland: KS-Paino. 2011a.

Bradley W. Young and Nikola Medic.

*Examining Social Influences on the Sport Commitment of Masters Swimmers.*

- *Psychology of Sport and Exercise*, 12, 168-175. 2011b.

Bradley W. Young, Nikola Medic, Patricia L. Weir, and Janet L. Starkes.

*Explaining Performance in Elite Middle-aged Runners: Contributions from Age, Ongoing and Past Training Factors.*

- *Journal of Sport and Exercise Psychology*, 30, 1-20. 2008.

Bradley W. Young, Patricia L. Weir, Nikola Medic, and Janet L. Starkes.

*Does Lifelong Training Temper Age-Related Decline in Sport Performance? Interpreting Differences between Cross-sectional and Longitudinal Data.*

- *Experimental Aging Research*, 34, 1-22. 2008.

Tracy Zaslów and Sharon Hame.

*The Pregnant Athlete.*

- *Sports Medicine Update*, March/April 2007.

