

## Exploring Novel Considerations for the Coaching of Masters Athletes

**Bradley W. Young**

University of Ottawa

**Bettina Callary**

Cape Breton University

**Peter C. Niedre**

CanoeKayak Canada

In the new frontier of Masters-level sport, coaching approaches with adult athletes may prove to be quite different than with younger cohorts, and therefore demanding of novel and innovative considerations. This paper draws from emerging perspectives in research on Masters athletes (MAs) and interpretations of broader psycho-social and -pedagogical literature to advance an early roadmap guiding practical strategies for coaches and sport programmers to consider when working with MAs. We explore four content areas that may be particularly relevant for coaches working with adult sportspersons, and for future researchers seeking to confirm where coaching practices with MAs may be highly nuanced. They include: (a) tailoring the sport environment to fulfill adults' involvement opportunities and heighten athlete commitment; (b) helping adult athletes maximize their limited time for doing sport; (c) guiding athletes to use strategies for negotiating age-related decline; and (d) fostering self-determined and engaged learners in the Masters sport context.

**Keywords:** adult sportspersons; sport instruction; motivational coaching; age group differences

Masters athletes (MAs) are generally individuals over 35 years of age who are involved in organized competitive sport, who have some type of formal enrollment or registration in an event/club, and who acknowledge that they engage in some form of preparation (i.e., practice/training) to participate in sport (Young, 2011). Masters sport participation is an interesting phenomenon that needs to be increasingly considered in light of the wave of sporting Baby Boomers, and potential adult sport participants who may follow in their wake (Baker, Horton, & Weir, 2010). A small but increasing number of sport researchers study the psycho-social conditions of participation and performance among middle-aged and older adults, resulting in an emergent body of literature on MAs (see Baker et al., 2010; Young, 2011; Young & Medic, 2012 for reviews) that may be greatly relevant to coaches

and sport programmers. Still, information pertaining to the coaching of MAs and issues relating to adult sport programming are largely under-represented within both applied sport psychology and pedagogy literature.

Coaches have been called "one of the most important influences on athletes' motivation and subsequent performance" (Mageau & Vallerand, 2003, p. 884). However, because coaching research has almost entirely focused on youth, adolescent, and very young adult sport, we do not empirically know the value of coaches' influence on MAs' learning, striving, and performance. One lone study (Medic, Young, Starkes & Weir, 2012) has indicated that having a coach is associated with highly desirable motivational profiles in MAs, such as a greater intrinsic motivation 'to accomplish' (i.e., feeling inherent pleasure when attempting to accomplish different sport activities) and 'to know' (i.e., satisfaction associated with learning, exploring and acquiring new things in sport). Aside from these findings indicating some beneficial associations with having a coach, no research attests to how coaches adapt their craft to the realities/needs of adults, and how such adaptations enrich MAs' experiences.

Applied sport organizations are beginning to sensitize themselves to the new frontier of Masters sport as evidenced by the Coaching Association of Canada's

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Young is with the School of Human Kinetics, University of Ottawa, Ottawa, ON Canada. Callary is with the Department of Community Studies, Sport and Human Kinetics, Cape Breton University, Sydney, NS Canada. Niedre is the Director of Coach and Athlete Development at CanoeKayak Canada, Ottawa, ON Canada. Address author correspondence to Bradley Young at [byoung@uottawa.ca](mailto:byoung@uottawa.ca).

seminal release of a *Coaching Masters Athletes* resource book (CAC, 2013). Like any precursor to coaching curriculum, this resource book is expected to evolve as we learn more about adult athletes. Indeed, the resource book includes physiological, physical, and medical considerations in aged sport (CAC, 2013), but remains aloof regarding the psycho-pedagogical aspects of interacting with MAs. In particular, the resource book asks, "What's different about coaching Masters athletes?" and includes the explicit answer: "Probably not much" (CAC, 2013, p.9). The current authors are unaccepting of this statement; we feel that it is under-stated and not based on evidence-based empirical work, at least in terms of the aforementioned psycho-pedagogical aspects of coaching MAs. In light of this, and considering the absence of coaching studies explicitly examining interactions with Masters, we use this article to offer a guiding roadmap of content areas where the coaching and programming of MAs may turn out to be unique.

New discourse is needed about the psycho-pedagogical and psycho-social nuances of working in the Masters athletic context. We respectfully submit that the present paper is innovative, but only if it motivates coaches and coaching researchers to start thinking about how one might coach MAs differently, because we do not presently have a coherent framework that tells us. Based on our knowledge of pertinent (but not necessarily coaching) bodies of literature, we aim to suggest content areas that practitioners may wish to consider when addressing how to adapt their practice to MAs, with these content areas also representing possible areas for future coaching research. Our goal is to challenge readers to consider parallel bodies of literature that illustrate unique realities of MAs that may specifically come to bear on coaching practice with adults, and to encourage readers to join the dialogue. Our conception of innovation is not one cemented in a yet-firmly-established repertoire of evidence-based coaching strategies, rather the innovation relates to our 'guiding roadmap' of content areas we tender for readers to consider. Future research, which should also be informed by practitioners in the field, may confirm, refute, or alter the search for specific "best practice" strategies with this roadmap in mind.

To develop a guiding roadmap, the authors of this paper vetted literature through different lenses on the coaching of Masters sport. These perspectives reflected our varied roles in research (e.g., one of us examines social psychology of MAs, another focuses on coaches' development from a lifelong learning perspective) and applied practice streams of sport science (e.g., one of us serves as director of coach and athlete development at a national sport organization). The literature from which we derived our introspections borrowed heavily from research related to motivation and the psychology of MAs' sporting experiences, our appraisal of topics in sport and exercise psychology that we believe pertain to realities of Masters' sport training, as well as literature pertaining to adult learning in nonsport settings. Due to the fact that the large majority of research on MAs

relates to individual and not team sports, the current discussion reflects an individual sport bias. As a group, we felt prepared to suggest that, if one were looking for particularly nuanced coaching practices for MAs, one begin by examining four content areas: 1) building involvement opportunities into the sport environment; 2) helping athletes maximize their limited time for doing sport; 3) guiding athletes to use strategies for negotiating age-related decline; 4) fostering self-determined and engaged learners in the Masters sport context. In subsequent sections, we discuss these areas and, where possible, we suggest practical considerations for how coaches and programmers can better motivate, organize training and competition with adults, while helping MAs navigate psychological barriers that may compromise their experience.

## Building Involvement Opportunities Into the Sport Environment

It is important that Masters sport provides an enriched athletic experience such that participants seek to continue involvement over time. Coaches and sport programmers have an instrumental role promoting athletes' commitment, and research on commitment models may influence strategic approaches. Commitment research has investigated the key individual and social factors that facilitate the resolve of currently-active MAs to continue and to persevere in sport (e.g., Casper, Gray, & Stellino, 2007; Medic, Starkes, Young, & Weir, 2006; Young & Medic, 2011b). Findings repeatedly show that the major reason for sustained commitment is that adult sportspersons perceive the act of doing their sport, and features of the sport environment, to be inherently enjoyable. Therefore, coaches should ensure through their programming that MAs regularly experience positive emotions and fun. Enjoyment is however an affective and rather difficult concept for coaches to define and consider when designing their training and competitive program. A better question may be: What are the *involvement opportunities* that coaches may include in their programming that heighten athlete enjoyment, which may in turn be associated with sustained participation?

Young and Medic (2011a) specifically asked MAs to judge involvement opportunities that they perceive as arising only from continued participation in sport that they would not be able to find elsewhere in their lives. Results (Table 1) from participants at the 2009 World Masters Athletics Championship ( $n = 389$ ) and swimmers at the 2008 FINA World Masters Aquatics Championships ( $n = 424$ ) illustrate parallels between the two sports.

Findings illustrate many of the perceived benefits or attractive opportunities that MAs hold as important. We can discern, firstly, how participants strongly view their activity as an opportunity to improve health and fitness, with perceived benefits also relating to doing something exciting and having an enjoyable time. Secondly, social affiliation is undeniably a salient motive, but it is only

**Table 1** Masters Athletes' and Swimmers' Judgments of the Most Important Involvement Opportunities Pertaining to Their Sport

Involvement Opportunity	Masters track and field athletes reporting 'very true for me'	Masters swimmers mean values out of 5*
To improve health and fitness	72.7%	4.85
To have a good time and enjoy myself	65.4%	4.38
To improve physical skills	54.5%	4.49
To do something exciting	52.6%	4.40
To achieve competitive goals	51.5%	4.06
To delay the effects of aging	47.8%	4.01
To travel through sport	46.8%	4.20
To relieve stress	38.6%	4.08
To be with friends	26.8%	4.03

Note. \* Mean values for swimmers were out of 5, with 5 meaning that participants reported the involvement item as 'very true for me'. Table has been translated and modified from Young and Medic (2011a, p.52).

one important involvement opportunity amongst a host of others, and not the primary/exclusive focus of many athletes. Thirdly, athletes judge the opportunity to improve their physical skills, as well as testing their physical skills in competition highly.

At least nine opportunities are highly reported in Table 1, which underscores the heterogeneity of beneficial opportunities in the adult sport context. Acknowledging such variability is important because literature has at times denied the wide opportunities afforded to Masters participants. At times, literature has over-portrayed the social aspect of Masters sport (e.g., McIntyre, Coleman, Boag, & Cuskelley, 1992), while (perhaps because of ageist norms that minimize competitive expectations for aging adults) neglecting the salience of attractive competitive opportunities (Dionigi, 2008; Horton, 2010). Moreover, the discourse around Masters sport has traditionally been of active aging, health and fitness (Young, 2011), with little mention of opportunities for older people to learn new things in a technical skill acquisition environment. This is strikingly different, for example, than guidelines for positive youth development (Fraser-Thomas, Côté, & Deakin, 2005), which stipulate that sport participants be in a learning environment that demands attention to learning tasks, which escalate in complexity and challenge over time. The variability of highly-ranked opportunities in Table 1 shows however that MAs may be attracted to similarly broad motives for sport as their younger counterparts (e.g., Ewing & Seefeldt, 2002).

Motivation research generally holds that people will be more inclined to join and commit to a physical activity program if they feel personal motives are being highly satisfied in the activity context (Weiss & Amorose, 2008), and if a greater number of involvement opportunities cater to their personal interests (Vallerand & Young, 2013). Thus, coaches of MAs can optimally cater to the most

participants by taking advantage of heterogeneous opportunities by building diverse opportunities into activities in the training setting, in terms of how they establish club environments and design schedules for games/events. To foster MAs' commitment, coaches can aim to incorporate more diverse involvement opportunities that MAs find attractive, by:

- Building sufficient activities that tap into competitive motives into their program. Competition ranks amongst other involvement opportunities like health and fitness gains, and these competitive striving opportunities do register equally highly, if not more highly, than opportunities for social affiliation (also see Medic, Starkes, Young, Weir, & Gajnorio, 2005). Coaches should therefore determine how each individual athlete approaches competition (e.g., for personal bests, beating others, age-group rankings, earning awards)—this information can inform how competitions are structured (a public dual, a private time trial, etc.) and the criteria used to judge competitive successes or failures.
- Balancing activities that satisfy athletes' preferences for social motives/fellowship, with occasions that equally afford competitive achievement and personal challenge;
- Balancing program elements that promote health and fitness, with an equivalent emphasis on skill learning opportunities;
- Instituting program elements that celebrate the opportunity to delay the effects of aging (e.g., using sport to feel invigorated and youthful; see Summers, Machin, & Sargent, 1983);
- Advertising and offering occasions whereby adult sport competitions invite athletes to travel and tour new places (Hritz & Ramos, 2008).

- Conducting a formal/informal “audit” of athletes’ involvement preferences when adopting a new group of athletes, as well as formatively over time.

## Helping Athletes Maximize Their Limited Time for Doing Sport

Heightening athletes’ involvement opportunities and commitment to sport, however, does not guarantee that they will be capable of sustaining a sporting lifestyle. Psychology literature from domains of physical activity broadly describes how many barriers (e.g., not enough time, cost, injury, weather, etc.; e.g., Lees, Clark, Nigg, & Newman, 2005), some of which are genuine, others that are perceived, serve to constrain adults’ routines of physical activity, including sport (Cardenas, Henderson, & Wilson, 2009; Young, Medic, Cameron, Theberge, & Latham, 2009). Based on an appraisal of this literature as it pertains to MAs, we have identified barriers related to the perception that one does not have enough free time to do sport, and related to the prospect of age-decline, which may discourage adults from staying involved. With respect to these barriers, we advance preliminary strategies for how coaches could design sport programs tailored for MAs in ways that help to reduce these barriers to adults’ sport participation.

Consider the case of Linda, mother of two, who is a tax accountant, working a regular 9–5 job with heavier work-loads in March and April. Due to competing demands in life, Linda, like many MAs, generally has challenges “fitting training” into a busy schedule that affords little disposable leisure time, and this is especially so as she is juggling work, childcare, or other familial responsibilities. For example, it would not be sensible to plan heavy training cycles during March/April, during peak responsibilities of the work year. This sensitivity contradicts traditional planning for competitive adolescents in summer sports, which prescribes heavy volumes of base building through March–April. Furthermore, Linda may not have the same luxury to travel to as many competitions as younger athletes, nor will she be able to sustain a competition season drawn out across many months. Finally, Linda wants her children to be physically active, and often foregoes her own training to deliver her children to their activities. Linda, who, like many other MAs who work in a professional capacity (Hastings, Kurth, & Meyer, 1989), requires a *training plan that reflects personalized life demands*.

Research shows that on average, individual-sport MAs attend five competitions per year, and structure their training around one or two major competitions (Medic, 2010). Further, the in-season weekly training amounts of MAs generally range from 5 to 11 hours, with lower levels corresponding to regional-level and highest amounts relating to international-level athletes. Whereas coaches of younger athletes (e.g., 16–20 yrs) will typically require athletes to attend many practices (e.g., five

per week) where coaching interactions happen on-site, coaches of MAs are not afforded the same possibility because of time constraints in adults’ lives. Coaches and programmers, however, can play a role in helping adult sportspersons alleviate the barrier of “not enough time”.

Coaches can consider various strategies, such as:

- Scheduling on-site practices based on the actual amount of time for which coach and athletes absolutely require exchanges (e.g., twice weekly). For coaches of individual endurance sports, adult athletes may do nontechnical work off-site on their own, whether that is recovery work, base training or cross-training on their own.
- Planning practices/competition schedules according to athletes’ schedules and providing proper advice, so that available time for sport activity is used strategically. This may entail getting athletes to consider getting training done at lunch hour during work days, during the commute to work or to other recreational activities. For example, active commuting either by bicycle, or self-propelled means with young children in tow (e.g., using a running stroller) may be solutions to fitting training into busy days.
- Coaching athletes in terms of how to schedule their training into a day. Coaches may recommend that their athletes train at the same time each day, and/or early in the day, if possible. Literature suggests that people who keep the same scheduled time timeslot for physical activity protected each day are successfully able to initiate their activity in a more automated or habitual way (Lox, Martin, & Petruzzello, 2003; Maddux, 1993). Moreover, if training is scheduled early in a day, it may be completed more regularly because an early timeslot remains somewhat “risk-free” from competing demands and unanticipated responsibilities that may arise later in the day.
- Exploring the use of social media tools and on-line training logs (e.g., winningstats.com, ilog.ca, Trainingpeaks.com, etc.) that enable exchanges with athletes, while allowing MAs to train off-site. United States Masters Swimming (Butcher, 2011) recommends increasing access to fitness logs and on-line workouts to ensure a greater number of renewing members.
- Being sensitive to when they plan cycles for their MAs’ heavy training loads and competition schedules. MAs have personal/professional responsibilities that are sometimes unpredictable in terms of their demands; however, MAs’ duties outside of sport can at other times be anticipated and planned for by the coach. Coaches may want to personalize approaches to annual periodization plans (e.g., the intensity and durations of phases may need to be more flexible) and competition schedules, depending on what an adult’s schedule permits.

Sport programmers (many of whom may also be coaches at the Masters level) may wish to consider preliminary research indicating that some adult athletes feel they would be more regularly active if they were able to do sport more frequently with their children (Young et al., 2009). Typically, sport programming for adults is mutually exclusive from programming for one's children; as a consequence, parents who cannot coparticipate or participate at the same venue in parallel with their children will choose their child's sport over their own and forfeit their own activity (Jorgensen & Bowker, 2013). While this is an admirable quality of parenting, perhaps club directors and coaches could brainstorm options where parents and children either play or train together, or be active at the same time, but separately, at the same venue. In a six lane pool, for example, if four lanes are allocated for kids' age-group swim practice, why are we not programming the remaining two lanes for their parents at the same time?

## Guiding Athletes to Use Strategies for Negotiating Age-Related Decline

Like younger serious-minded competitors, many MAs have a drive to feel competent in competition (Medic et al., 2005; Young, 2011). Among the many attributions that MAs make for their competitive outcomes (Hanrahan & Gross, 2005), MAs may invoke 'aging' to explain their performance. The prospect of competitive age-decline (e.g., athlete saying "I cannot perform as I used to") is a reality for almost all middle-aged and older athletes, which may discourage some, even threatening their continued involvement.

Several useful strategies may make age-related decline less poignant or threatening, particularly in sports with standardized events and objective performance measures (e.g., canoe/kayak, athletics, rowing, swimming). Age-graded tables represent a tool to focus athletes on performance markers irrespective of age. For example, World Masters Athletics Tables (Grubb, 2010) and US Masters Swimming Times Ratings (Stevenson, 2007) allow athletes: 1) to correct their actual performance for expected rates of age-decline based on their age (i.e., what would today's performance mark equate to if it had been achieved in the years before age decline?); and 2) to determine how their performance mark compares (often as a percentile rank) to the world-record for people of comparable age. Age-graded tables also enable comparisons across ages, for example, contrasting the age-corrected times for a 54 and a 50-year old.

Masters-aged individual sports are often organized in five-year age brackets under the assumption that they provide a more level competitive field within each age bracket. There is great value in the 5-year brackets; however, they may not be resolving age-related competitive inequities entirely, nor ensuring continuous competitive participation. Participants are staying away from competitive events

when they enter later stages of an age-bracket (years 4 and 5 of any bracket), because they are conscious of age-related factors that disadvantage them competitively compared with younger peers (years 1 and 2) in their same age bracket (e.g., Medic, Starkes, Weir, Young, & Grove, 2009; Medic, Young, & Grove, 2013). Findings have been replicated in athletics, swimming, and triathlon. Overall, competitive participation flags late in an age-group, with this pattern beginning as early as 40–44 years, being significant in both genders, but stronger in males. Starting with participants in constituent year 5 of a 5-year bracket (e.g., age 54 in the 50–54 bracket), Medic, Young and Medic (2010) longitudinally tracked these individuals' participation at the same event when they entered the next bracket (subsequent year 1) and beyond. When people "aged up" from constituent year 5 into constituent year 1, 70% of prior participants return to compete; however, by constituent year 3, participation levels drop significantly (53%), as they do again by the subsequent year 5, where 47% of the original participants sustain participation. Researchers suggested that this may be because year 5 participants have particular difficulties identifying quality motives for competitive participation compared with participants in years 1 and 2.

In light of the aforementioned information, several coaching strategies might be considered to encourage adult athletes to interpret personally-relevant competitive outcomes to facilitate their continued activity:

- Coaches can invite their MAs to regularly use age-graded tables to judge performances that have been corrected for age. This may be encouraging as it enables MAs to always improve relative to their own age-corrected times year after year, and to set goals toward this end.
- Coaches can encourage their MAs to be somewhat "amnesic" so that they do not fruitlessly compare their uncorrected (for age) performance markers to those in the distant past.
- Coaches can reliably derive baseline performance athletic measures (e.g., using time trials, early season competitions, standardized tests), and then employ these present-season measures in goal setting exercises with athletes. Athletes will thereby be focused on seasonal bests rather than personal bests, and coaches may strategically insert the same "marker workout" (e.g., 6 × 1000 m on 2 min recovery) in consecutive meso-cycles, so that athletes have opportunities to judge personal progression within a season.
- Coaches may need to start planning MAs' preparation around a 5-year cycle, with athletes understanding that their peak year corresponds with their anticipated entry into the next age bracket. This might enable an athlete in constituent year 4 or 5 to better frame poorer placing in their age group, because they can take solace in mastering other aspects of

their athletic dossier and building a solid base with the anticipatory knowledge that they will be ready to peak when they age up. Planning for a 5-year cycle, therefore, may help to fix MAs on long-term sport goals which may protect them from motivational doldrums in years 4 and 5.

When large participation numbers warrant it, sport programmers/organizers may try out new options such as 3-year competitive age brackets, to reduce perceptions of competitive disadvantage among athletes in later years of a bracket. One final notion is that sport programmers might encourage lifelong sport participants to try out new sports in adulthood that differ from one's primary sport in youth (e.g., a former Nordic skier trying out Masters triathlon). New sports offer involvement opportunities to learn new techniques, to develop new physical skills, to immerse oneself in a new sport culture, and to establish new habits of goal-striving behavior. The "sampling" of new sports would afford participants a motivating "learning curve" especially when middle-aged and older adults acquire new competencies and fairly immediately improve their performances in a new domain (Rathwell & Young, 2013). If sport programmers are able to attract new members who have no prior experience in a particular sport, through appropriate programming and competition opportunities (e.g., adult novice leagues), age-related performance decline would be less concerning because athletes would be more focused on building their repertoire rather than stemming prospective decline.

### **Fostering Self-Determined and Engaged Learners in the Masters Sport Context**

Psycho-pedagogy literature reveals that coaches can positively influence the motivational climate depending on the exchanges they have with athletes, how they convey information to athletes about success/rewards and how they arrange the training environment (Duda & Balaguer, 2007; Mageau & Vallerand, 2003; Treasure & Roberts, 1995). In particular, coaches have a role to play in fostering self-determined and autonomous learners in the training environment (Pelletier, Fortier, Vallerand, & Brière, 2001). Almost all of what we know about the influence of coaching on self-determined motivation relates to much younger cohorts; no research has examined such associations with MAs. However, cultivating self-determined sporting behaviours may be critical regardless of athletes' age because such conditions are likely associated with well-being, enjoyment, better sport performance, an overall enriched sport experience, as well as persistence (Pelletier et al., 2001; Ryan & Deci, 2000).

Within self-determination theory (Pelletier et al., 2001; Ryan & Deci, 2000), even initially extrinsic motives (i.e., pursuing a behavior as a means to some other distinct end) can be internalized and integrated to

become very self-determined behaviours (i.e., identified regulation). This can occur when a person freely chooses their activities, attaches personal value and meaning to their actions, and feels that their behaviours are coherent with other aspects of their self. In exploring a few examples of identified regulation from the broader literature on MAs, sport is used as a means for adults to obtain other ends, yet the nature of such extrinsic motivation appears functional and self-determined in nature. For example, Young and Medic (2011b) discussed how serious-minded adult athletes may be guided by identified regulations to self-present as models for their own children (e.g., with respect to work ethic, working toward goals). In addition, Stevenson (2002) showed the importance that adults attach to how their Masters sport identity is seen by others, and how positively motivating this seemingly extrinsic motive can be. Finally, research shows that an intrinsic motivation to gain knowledge about one's sport is a self-determined motivational characteristic of many MAs (Medic, Starkes, Young, & Weir, 2005). In light of this research on self-determination theory, coaches can:

- Use teachable moments to encourage athletes to reflect on the personal meaning and value of their sport behaviours. For instance, when athletes struggle with motivation, coaches might ask athletes to consider how much their investment of time/energy in sport means to them, and direct them to recognize how this investment is aligned with other goals and valued aspects of their lives (e.g., do they value the example they set for their kids?).
- Recognize poignant opportunities to cultivate greater self-determination in their MAs, by encouraging MAs to recognize how their efforts are a testament to their active sport identity, and celebrating how much they value their efforts to help redefine what is possible for people as they get older.
- Prepare to meet athletes' needs for information. Coaches will likely interact with adults that actively seek information and who have a greater need for cognition with respect to training. For example, coaches can prepare to provide rationale for their training prescriptions, such as explaining the goal of workouts or justifying why athletes are doing novel variations of practice elements, and should be ready to link these explanations to MAs' prior experiences.

Aligned with self-determination is a body of literature on adult learning in nonsport settings indicating that pedagogical styles should become more divergent or self-guided among adults, with greater focus on personally meaningful analyses of experience, and problem-focused approaches (see Merriam, Caffarella, & Baumgartner, 2007). Conditions that recognize the importance of individuals to freely choose learning activities are empowering and autonomy-supportive. Instructional strategies that associate current activities with adults' prior experiences are more intellectually stimulating, build on existing

attributes of an adult's self-concept, thereby heightening engagement. Considering self-guided adult learning pedagogy in relation to sport:

- Coaches can frequently offer choice, encourage input and initiative. To promote more engaged learners, coaches can more frequently ask MAs' opinions when planning workouts or organizing drills, or invite them to choose which segments to execute during workouts.
- Coaches may encourage athletes to identify personal goals for different practice segments, support their athletes as they seek their own ways to self-correct errors in technique, and afford athletes opportunities to develop their own race strategies.

## Conclusion

Considering the dearth of studies that have addressed sport pedagogy issues in MAs, our aim was to merge findings from broader psycho-social research on MAs with applied perspectives, and to advance several areas where coaching approaches may be particularly unique with respect to adult sportspersons. We chose not to expand upon all possible psycho-social topics, nor did we address team sports. We described four content areas that might be considered by practitioners in relation to popular individual Masters sports. To summarize, we feel it is critical for practitioners to build varied involvement opportunities into how they coach and program the sport environment. Practitioners will need to consider strategies to help MAs maximize their limited free time to do sport. We propose that coaches have a role in guiding athletes to use strategies for negotiating the prospect of age-related decline. Finally, we submit that coaches have a role in fostering self-determined and engaged learners in the Masters sport context.

These four content areas may serve as an early 'roadmap' for coaching practice, but also as an orienting blueprint for coaching researchers as well. More innovative and nuanced strategies for Masters coaching and programming will arise if researchers explore, problematize and scrutinize, and better exact the coaching needs and nuances of MAs. Future research will likely cause the proposed map to evolve. Furthermore, knowledge exchanges in which practitioners on the front-lines of Masters sport inform the agenda of sport pedagogy researchers will be integral for populating this map, and determining more specific areas for evidence-based practice.

## References

Baker, J., Horton, S., Weir, P.L. (2010). *The masters athlete: Understanding the role of sport and exercise in optimizing aging*. London: Routledge.

Butcher, R. (2011). *2011 Summer update to U.S. Masters Swimming Board of Directors*. U.S. Masters Swimming.

Retrieved March 26, 2013 from: [http://www.usms.org/admin/update\\_2011\\_Q2.pdf](http://www.usms.org/admin/update_2011_Q2.pdf)

CAC (Coaching Association of Canada). (2013). *Coaching masters athletes: National Coaching Certification Program resource book*. Ottawa, ON. Retrieved February 14, 2013 from: [http://www.coach.ca/files/Coaching\\_Master\\_Athletes\\_FINAL\\_EN.pdf](http://www.coach.ca/files/Coaching_Master_Athletes_FINAL_EN.pdf)

Cardenas, D., Henderson, K., Wilson, B. (2009). Physical activity and seniors games participation: Benefits, constraints and behaviours. *Journal of Aging and Physical Activity* 17:135–153. [PubMed](#)

Casper, J.M., Gray, D.P., Stellino, M.B. (2007). A sport commitment model perspective on adult tennis players' participation frequency and purchase intention. *Sport Management Review* 10:253–278. [doi:10.1016/S1441-3523\(07\)70014-1](doi:10.1016/S1441-3523(07)70014-1)

Dionigi, R.A. (2008). *Competing for life: Older people, sport and ageing*. Saarbrücken, Germany: Verlag Dr. Müller.

Duda, J.L., Balaguer, I. (2007). The coach created motivational climate. In S. Jowett & D. Lavallée (Eds.), *Social psychology of sport* (pp. 117–130). Champaign, IL: Human Kinetics.

Ewing, M.E., Seefeldt, V.D. (2002). Patterns of participation in American agency-sponsored youth sports. In F.L. Smoll & R.E. Smith (Eds.), *Children and youth sport: A bio-psychological perspective* (pp. 39–56). Dubuque, IA: Kendall/Hunt.

Fraser-Thomas, J., Côté, J., Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. *Physical Education and Sport Pedagogy* 10:19–40. <doi:10.1080/1740898042000334890>

Grubb, H. (2010). *World Masters Athletics age-grading calculator*. Retrieved March 27, 2013 from: <http://www.howardgrubb.co.uk/athletics/wmalookup06.html>

Hanrahan, S. J., Gross, J. B. (2005). Attributions and goal orientations in masters athletes: Performance versus outcome. *Revista de Psicología del Deporte* 14:43–56.

Hastings, D.W., Kurth, S.B., Meyer, J. (1989). Competitive swimming careers through the life course. *Sociology of Sport Journal* 6:278–284.

Horton, S. (2010). Masters athletes as role models? Combating stereotypes of aging. In J. Baker, S. Horton, & P. Weir (Eds.), *The masters athlete: Understanding the role of sport and exercise in optimizing aging* (pp.122–136). New York: Routledge.

Hritz, N.M., Ramos, W.D. (2008). To travel or to compete: Motives of Masters swimmers. *International Journal of Aquatic Research & Education* 2:298–312.

Jorgensen, C., Bowker, A. (2013). Active children, inactive children: The impact of children's sports participation on parents' physical activity. *Proceedings of Annual Meeting of the Canadian Psychological Association*, Quebec City, QC.

Lees, F., Clark, P., Nigg, C., Newman, P. (2005). Barriers to exercise behaviour among older adults: A focus group study. *Journal of Aging and Physical Activity* 13:23–33. [PubMed](#)

Lox, C. Martin, K., & Petruzzello, S. (2003). *The psychology of exercise: Integrating theory and practice*. Scottsdale, AZ: Holcomb Hathaway.

Maddux, J.E. (1993). Social cognitive models of health and exercise behaviour: An introduction and review of conceptual issues. *Journal of Applied Sport Psychology* 5:116–140. <doi:10.1080/10413209308411310>

Mageau, G., Vallerand, R.J. (2003). The coach-athlete relationship: A motivational model. *Journal of Sports Sciences* 21:883–904. [PubMed doi:10.1080/0264041031000140374](https://doi.org/10.1080/0264041031000140374)

McIntyre, N., Coleman, D., Boag, A., Cuskelly, G. (1992). Understanding Masters sports participation: Involvement, motives and benefits. *ACHPER National Journal* 138:4–8.

Medic, N. (2010). Dream it, live it, love it: The research evidence. In McGrath, D. (Ed.), *50 athletes over 50 teach us to live a strong, healthy, life: Tools, insights, and inspirations for living spectacularly* (pp. 163–176). Denver, CO: Wise Media Group.

Medic, N., Starkes, J. L., Weir, P. L., Young, B. W., Grove, J.R. (2009). Gender, age, and sport differences in the relative age effect among USA Masters swimming and track and field athletes. *Journal of Sports Sciences* 27:1535–1544. [PubMed doi:10.1080/02640410903127630](https://doi.org/10.1080/02640410903127630)

Medic, N., Starkes, J.L., Young, B.W., Weir, P.L. (2005). Motivational differences of Masters athletes participating in various track events. *Proceedings for the Meeting of the Canadian Society for Psychomotor Learning & Sport Psychology (CSPLSP)*, St. Catharines, ON.

Medic, N., Starkes, J.L., Young, B.W., Weir, P.L. (2006). Testing the Sport Commitment Model with Masters runners. *Journal of Sport & Exercise Psychology* 28:S132.

Medic, N., Starkes, J.L., Young, B.W., Weir, P.L., Gajnorio, A. (2005). Masters athletes' motivation to train and compete: First order themes. *Proceedings of the World Congress of International Society of Sport Psychology*, Sydney, Australia.

Medic, N., Young, B.W., Grove, J.R. (2013). Perceptions of five-year competitive categories: Model of how relative age influences competitiveness in masters sport. *Journal of Sports Sciences & Medicine* 12:724–729. [PubMed doi:10.1080/02640414.2010.520726](https://doi.org/10.1080/02640414.2010.520726)

Medic, N., Young, B.W., Starkes, J.L., Weir, P.L. (2012). Relationships between having a coach and Masters athletes' motivational regulations for sport and achievement goal orientations. *International Journal of Coaching Science* 6:65–79.

Merriam, S.B., Caffarella, R.S., Baumgartner, L.M. (2007). *Learning in adulthood: A comprehensive guide* (3<sup>rd</sup> edn). Hoboken, NJ: John Wiley.

Pelletier, L.G., Fortier, M.S., Vallerand, R.J., Brière, N.M. (2001). Associations between autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion* 25:279–306. [doi:10.1023/A:1014805132406](https://doi.org/10.1023/A:1014805132406)

Rathwell, S., Young, B.W. (2013). A case study of commitment and compensation: Examining a 52 year old masters athlete. *Proceedings for the Meeting of the CSPLSP*, Kelowna, BC.

Ryan, R.M., Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *The American Psychologist* 55:68–78. [PubMed doi:10.1037/0003-066X.55.1.68](https://doi.org/10.1037/0003-066X.55.1.68)

Stevenson, C.L. (2002). Seeking identities: Toward an understanding of the athletic careers of masters swimmers. *International Review for the Sociology of Sport* 37:131–146. [doi:10.1177/1012690202037002001](https://doi.org/10.1177/1012690202037002001)

Stevenson, C. (2007). *USMS Times Ratings*. Retrieved March 26, 2013 from: [http://www.vaswim.org/record\\_curves/Time\\_Ratings.shtml](http://www.vaswim.org/record_curves/Time_Ratings.shtml)

Summers, J.J., Machin, V.J., Sargent, G.I. (1983). Psychosocial factors related to marathon running. *Journal of Sport Psychology* 5:314–331.

Treasure, D.C., Roberts, G.C. (1995). Applications of achievement goal theory to physical education. *Quest* 47:475–489. [doi:10.1080/00336297.1995.10484170](https://doi.org/10.1080/00336297.1995.10484170)

Vallerand, J.R., Young, B.W. (2013). Predicting physical activity commitment, adherence slips and lapses: The motivational drivers of adult sportspersons and exercisers. *Proceedings for Eastern Canadian Symposium for Sport & Exercise Psychology*, St. Catharines, ON.

Weiss, M.R., Amorose, A.J. (2008). Motivational orientations and sport behavior. In T.S. Horn (Ed.), *Advances in sport psychology* (3<sup>rd</sup> edn) (pp. 115–156). Champaign, IL: Human Kinetics.

Young, B.W. (2011). Psycho-social perspectives on the motivation and commitment of Masters athletes. In N. Holt & M. Talbot (Eds.), *Lifelong engagement in sport and physical activity* (pp. 125–138). London: Routledge & ICSSPE.

Young, B.W., Medic, N. (2011a). Veteraaniurheilijat: tutkimuksia merkittävästä panostuksesta, motivaatiosta ja mahdollisuksista [Masters athletes: Studies on remarkable investments, motives, and opportunities]. In Finnish Veterans' Athletic Association (Eds.), *Erilainen tapa vanheta [Different ways of aging in sport]* (pp. 45–58). Lappeenranta, Finland: KS-Paino.

Young, B.W., Medic, N. (2011b). Examining social influences on the sport commitment of Masters swimmers. *Psychology of Sport and Exercise* 12:168–175. [doi:10.1016/j.psychsport.2010.09.004](https://doi.org/10.1016/j.psychsport.2010.09.004)

Young, B.W., Medic, N. (2012). Expert masters sport performers: Perspectives on age-related processes, skill retention mechanisms, and motives. In S. Murphy (Ed.), *Oxford handbook on sport and performance psychology* (pp. 493–512). New York: Oxford University Press.

Young, B.W., Medic, N., Cameron, S., Theberge, I., Latham, C. (2009). Exploring perceived barriers to sport involvement amongst Ontario Senior Games participants. *Proceedings for the Meeting of the CSPLSP*, Toronto, ON.