



A lifespan perspective on the dual career of elite male athletes



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ABSTRACT

Objectives: The first aim of this study was to explore how elite male athletes having had a long duration as well as successful sport career perceived the transitional challenges occurring during as well as after their sport career. The second aim was to identify the factors that facilitated or constrained their development at different domains of development (i.e., athletic, psychological, psychosocial, academic/vocational).

Design and method: Participants took part to retrospective semi-structured interviews yielding transcripts that were analyzed using both deductive and inductive analysis.

Results: Qualitative analysis revealed a non-linear path to excellence with many normative as well as non normative transitions from the beginning of the athletic career to the post-career stage. Elements most frequently evoked to describe the course of life during athletic career referred mainly to the athletic domain, but also in a concurrent way to family life, psychosocial relationships as well as educative/vocational domains. These various elements were experienced in turn as factors facilitating as well as constraining the course of life of athletes depending the stage of the career.

Conclusion: This study highlights the importance to adopt a developmental (i.e., from the beginning of the career to the post-career stage) as well as holistic (i.e., athletic, psychological, psychosocial, academic-vocational) perspective when considering the development of talented athletes. It suggests that understanding how elite athletes may experience as well as cope with ups and downs punctuating their athletic career is indivisible from other concurrent domains of life development.

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Introduction

Research on career development in elite sport has received wide attention in recent years (e.g., Stambulova & Ryba, 2013; Wylleman, Alfermann, & Lavalée, 2004). Whereas initial research focused mainly on stages of talent development (e.g., Bloom, 1985; Côté, 1999; Durand-Bush & Salmela, 2002), crisis transitions (e.g., Bar-Eli, 1997; Stambulova, 2000) and sport career termination (e.g., Alfermann, 2000; Taylor & Ogilvie, 1994), recent studies have shown an increased focus on within-career transitions using a holistic lifespan perspective (e.g., Stambulova, Alfermann, Statler, & Côté, 2009; Wylleman & Lavalée, 2004).

Alfermann and Stambulova (2007) define sport career as a multiyear sport activity in which a person engages in order to achieve his or her peak in athletic performance. In his seminal work

on talent development, Bloom (1985) was among the first to describe the sport career as a succession of three critical stages, namely the 'early years' characterized by a process-oriented as well as playful practising and support from parents, the 'middle years' with a more performance achievement orientation and demand of an increasing commitment to sport and the 'late years' when athletes become experts and dedicate most of their lives to sport. These three stages were later coined as the initiation stage, the development stage, and the mastery or perfection stage (e.g., Salmela, 1994; Wylleman, De Knop, Ewing, & Cummings, 2000). Furthermore, in line with research describing retirement from sport as a transitional process (e.g., Lavalée, 2000; Taylor & Ogilvie, 2001), Wylleman and Lavalée (2004) elaborated a developmental model whereby a fourth stage (i.e., the discontinuation stage) was added.

Continued research into athletes' careers (e.g., Stambulova, 2000) also revealed that the sport career could also be described in terms of transitions, that is, moments or events that can be viewed as a turning points and which "results in a change in assumption about oneself and the world and thus requires a

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corresponding change in one's behaviour and relationships" (Schlossberg, 1981, p. 5). Furthermore, within these transitions a distinction could be made between normative transitions that are predictable and that can be anticipated (e.g., transition from junior to senior, sport career retirement) and non normative transitions which are involuntary and result from unplanned important events that take place in an individual's life (e.g., injury, unexpected failure to participate in a major competition) (Wylleman & Lavalée, 2004). For example, Samuel and Tenenbaum (2011) found that most transitions from the route of elite performers were normative and that most significant events within the career were transitions to a higher level, achieving a major accomplishment, or even severe injuries. Whereas the sport career can thus be described in terms of (a mix of) normative and non normative transitions, most studies actually looked into one specific transition (e.g., the junior–senior transition, the sport career retirement) with only a few examining the whole sport career from the initiation stage to the discontinuation stage (e.g., Debois, Ledon, Argiolas, & Rosnet, 2012; Wylleman & Reints, 2010). As athletic success will strongly depend on athletes' ability to cope with these transitional challenges (Alfermann & Stambulova, 2007; Wylleman & Reints, 2010) a clear need remains to gather empirical data on how athletes perceive and are able to cope with these transitions. Furthermore, examining successful sport careers as well as the post-career experience may contribute to a better appreciation of the factors most influential on both sport career success as well as athletic and post-sport career wellbeing.

Important to note is that research revealed that these transitional challenges are perceived by athletes not only to occur in the development of their sport career but also in other domains of development such as at psychological, psychosocial or vocational level. Wylleman and Reints (2010) detailed specific transitional challenges during each stage of athletic development (i.e., initiation, development, mastery, discontinuation) and brought to the fore the interactive relationship between athletes' development at athletic as well as other domains of development (i.e., psychological, psychosocial, academic, vocational and financial) (Wylleman, Reints, & De Knop, 2013). The relevance of these interacting phases occurring at different domains of development were confirmed in a case study on an elite female fencer in which the transitions faced by this athlete all along her sport career were examined (Debois et al., 2012) and which revealed a non-linear path to excellence with ups and downs not only related to athletic development but also to personal, social and academic/vocational development which interacted with her sport career and may have impaired her athletic achievement. These results illustrate the concept of dual career in sport as retained by the scientific community (e.g., Stambulova & Ryba, 2013; Wylleman & Lavalée, 2004) as well as by the European Commission (2012) who define a dual career as encapsulating:

the requirement for athletes to successfully initiate, develop and finalise an elite sporting career as part of a lifelong career, in combination with the pursuit of education and/or work as well as other domains which are of importance at different stages of life, such as taking up a role in society, ensuring a satisfactory income, developing an identity and a partner relationship (p. 6).

This holistic or "whole person" approach appears particularly suited for examining long duration elite sports career (i.e., athletes retired from sport over 30 years old) to better understand how these athletes succeeded to cope with numerous transitions and events they faced in the different domains of their life all along their sport career. As to date only a few studies have adopted a holistic approach for examining the progress of elite athletes'

development during their sport career, a clear need exists to examine successful careers through an efficient model of sport expertise development (e.g., Côté, Baker, & Abernety, 2007) from a holistic perspective (Wylleman & Lavalée, 2004).

In line with the continued need to identify the transitional challenges athletes face at different levels of development during as well as after their sport career, a need also exists to examine athletes' ability to cope with such transitions (Lavalée & Wylleman, 2000; Stambulova, 2000). Sinclair and Orlick (1993) distinguished positive transitions whereby athletes did not have any need for specific assistance and crisis transitions where athletes required psychological support. Stambulova (2000) not only described three types of crisis transitions (i.e. age-related, athletic-career related, situation-related) but also specified that the possibility for a crisis transition is higher when athletes change from one sport career stage to next as this transition generally occurs concurrently with other transitions in other domains of life (e.g., biological maturity, academic career). For example, the transition from secondary school to higher education among talented athletes may go hand in hand with increased expectations from parents in the academic domain, increasing training intensity, and significant changes related to puberty in the biological, psychological and psychosocial domains (e.g., Cosh & Tully, 2014; Giacobbi et al., 2004; Newman, Lohman, Myers, & Newman, 2000; Wylleman & Lavalée, 2004). Comparing elite and sub-elite swimmers at different periods of their sport career, Johnson, Tenenbaum, Edmonds, and Castillo (2008) emphasized that "the development of elite athletic performance appears to be highly idiosyncratic and multidimensional" (p. 472) influenced by primary (i.e., training and psychological factors) as well as secondary factors (i.e., socio-cultural factors and context). MacNamara, Button, and Collins (2010a, 2010b) also found that although the pathway to excellence of elite performers was dynamic, non-linear, and individualized (i.e., different routes to reach elite status) it broadly followed the career stages identified by earlier researchers. Finally, also Durand-Bush and Salmela (2002) identified a set of multidimensional factors facilitating the development and maintenance of elite athletic performance including factors related to social environment (i.e., parents, coaches, support staff members), personal factors (i.e., personal characteristics, choice for a dual career) and factors related to athletic commitment (i.e., deliberate practice, mental and organizational skill development strategies). Although providing more insight into athletes' ability to cope with transitional challenges, most studies generally limited their focus to those transitions occurring in the athletic development during the actual sport career (e.g., Johnson et al., 2008; MacNamara et al., 2010a, 2010b) thus excluding gaining insight into athletes' perceptions of transitions at other levels of development or occurring in view of the post-sport career.

In view of these findings, a clear need was identified for further research on elite athletes' development using a developmental and holistic perspective. The current study therefore aimed at identifying elite athletes' perceptions of:

- the transitional challenges occurring during as well as after their sport career,
- the factors that facilitated or constrained their development at different domains of development.

Method

Participants

Using the method of purposeful sampling (Patton, 2002), nine former world-class male athletes were contacted on the basis of

the following set of criteria aimed at increasing the homogeneity among participants: (a) having competed in a late-specialization sport during a minimum of 20 years, (b) having achieved international success in their sport, (c) having discontinued from their sport after the age of 30 and no longer than five years ago and (d) be male. The choice to select only athletes from one gender (i.e. male) was made in order to avoid impairing the level of homogeneity among participants, especially regarding the interaction between socio-familial development and athletic development. For example, male athletes can develop as fathers while carrying on with their athletic career whereas pregnancy for female athletes goes together with an about one year brake in athletic career (e.g., Debois et al., 2012). After having been informed on its aim and procedure, and being asked whether they would be willing to act as participant, all nine athletes agreed to participate in this study.

Participants ($M_{\text{age}} = 37.11$ yrs, $SD = 2.85$) medalled at least once at European, World or Olympic level: five in an individual sport (fencing, karate, shooting, wrestling) and four in a team sport (i.e., basketball, ice hockey, soccer, rugby). They retired completely from sport within the last five years ($M_{\text{years}} = 3.22$; $SD = 1.56$) after an elite sports career spanning on average more than 22 years ($M_{\text{career duration}} = 22.11$, $SD = 2.09$). Six athletes remained in sport (i.e., coaches) as a second career whereas two athletes started a business career and one a career in the police force. The high proportion of athletes remaining in sport is consistent with previous data on elite French athletes (Stambulova, Stephan, & Jäphag, 2007). In order to guarantee anonymity, participants are identified with a coding system (P1 to P9).

Data collection

A two-part semi-structured interview was used to gather in-depth data on participants' perceptions of their entire sport career including the post-sport career period following retirement. Although this method requires participants to provide retrospectively information, and is thus related to specific restrictions such as recall or self-report bias (e.g., Kerr & Dacyshyn, 2000; Patton, 2002), it was favoured as it enables participants to describe their development as (former) elite athlete in an integral manner. The following steps were also taken to reduce the possible restrictions inherent to this method: (a) the use by participants of a visual grid as aid supporting recall and situating the occurrence of specific phases and transitions, (b) the use by the interviewer of a semi-structured interview procedure to enhance the accuracy and richness of athletes recalled experiences, and (c) the possibility for participants to continuously review the information provided. Each participant signed a consent form, was informed that he could end his participation at any time, and that the data would be presented anonymously. Each interview was conducted in a quiet location with one interviewer.

In line with the recommendation to use a holistic lifespan approach (Wylleman & Lavallee, 2004), the first part of the interview was aimed at allowing participants to describe the development of their athletic and post-sport career from both a developmental as well as holistic perspective. A visual chronological grid was used to represent the yearly development of participants' sport career on four domains of development (i.e., athletic, psychological, social, academic/vocational development) from the start until the present related. This method of data collection was inspired by the self-confrontation interview technique used to help participants accurately recall their past experiences (e.g., Sève, Ria, Poizat, Saury, & Durand, 2008). Participants' visual grids reflected for example 'sports played', 'places of training', 'coaches', and 'sport

results' at the level of athletic development, whereas 'educational pathway' and 'educational institute' related to the academic, and 'places of living', 'social network', and 'children' to social development. Fig. 1 provides a sample of one participant's visual grid. Based upon this chronological representation of their athletic and post-sport career, participants were then asked to consider and indicate on this grid the occurrence of events or transitions that influenced their development in these different domains of development. This approach allowed not only to enhance participants' recollection of their athletic and post-sport career from a developmental as well as holistic perspective, but also to increase the quality of the retrospective information participants would provide.

The visual grid was then used as basis for the second part of the interview. In line with research indicating the need to take into account the role of facilitative/debilitative factors in the development of expert performance (e.g., Durand-Bush & Salmela, 2002; MacNamara et al., 2010a, 2010b), participants were asked to indicate on their grids those factors that they perceived to have acted in a facilitative or constraining way on each of the transitions identified during the first part of the interview and as visualized in their grid. Opening questions inviting participants to outline their actual athletic, psychological, psychosocial, academic/vocational standing as well as their plans for the future were designed to ease participants into the interview and to create a frame of reference for the provision of retrospective information. After ending this second part of the semi-structured interview, participants were asked to reflect back and indicate if they would change something in the development they described.

Participants signed a consent form and were informed that the data would be used with respect to anonymity and that they could resign further participation at any time. Each interview lasted on average one and a half hour and was audio-recorded after agreement from each participant.

Data analysis

The interviews were transcribed verbatim resulting in 345 single-spaced typed pages. The interview transcripts were independently coded by the first two authors into meaningful pieces of information (i.e., units of meaning) according to the purpose of the study. Meaning units could be a word, sentence or phrase containing one idea. A comparison among the investigators' encoding was made by dividing the number of congruencies among the investigators by the number of pieces of raw data that were encoded (Thomas & Nelson, 1996) and showed 68.21% agreement. Both first two authors compared and discussed the remaining codes until consensus was reached. Data were then imported into QSR.N6 (2002).

The data allowed the identification of four broad stages (i.e., access to high level sport, elite sport, end of sports career, post-career stages) occurring throughout the four domains of development. These stages related strongly to the stages of talent development identified in previous research (e.g., Bloom, 1985; Wylleman & Lavallee, 2004). Finally, two third-order factors (i.e., perceived facilitating versus perceived constraining factors in the course of life) were deductively categorized including lower categories (e.g., entering the national training centre, injury, paternity). The third author could be considered a "disinterested-peer" (Lincoln & Guba, 1985, p. 308) checking the relevance of the categorization process. Data credibility (Sparkes, 1998) was strengthened via (a) participants' review of their transcript before analysis to verify and amend any data they felt did not accurately reflect their intended communications (Miles & Huberman, 1994); (b)

Age	...	25	26	27	28	29	30	31	32	33	34	...	
Place of Living	...	Close to Paris 1		Close to Paris 2		Close to Paris 3		Close to Paris 4				...	
Living context	...	Flat 1		Flat 2		Flat 3		Flat 4				...	
Social network	...	Peers in training center		Peers in training center + non-sport peers								...	
Relationship	...	Partner 1		Single	Partner 1 + child		Single	Partner 2 (wedding)			Marital partner + child	...	
Educational pathway	...			Coach education (1st level)		Tutorial classes	Coach education (high level)					...	
Diploma	...				Diploma				Competitive examination			...	
Educational institute	...	National Sport Training Center										...	
Professional pathway	...							High level sport coaching missions			National coach	...	
Financial resources	...	Club/federation/city fundings						Coach salary				...	
	...				Sponsors							...	
Sport	...	Main sport										...	
Place of training	...	National Sport Training Center										...	
Coaches	...	Coach 1 + Coach 2	Coach 3	Coach 3 + Coach 1	Coach 3 + Coach 1 + Coach 4		Coach 3 + Coach 1					...	
Category	...	Senior										...	
Level	...	Elite										...	
Best results*	...	1 E + 5 OG	3 W	2 E + 2 W	1 E	3 E + 2 OG		Select. E+W	5 W	7 OG		...	
Extra-sport	...							Event marketing business				...	
Health	...	Injury (8 m)				Chronic injury				Intestinal problem		...	
	...								Injury			...	

*Nota : E=European Championship ; W=World Championship ; OG=Olympic Games ; Number = Reached place.

Fig. 1. Sample of P9's visual grid from his first OG's participation to his first post-career year.

investigators' triangulation (i.e., independent coding of the data, comparison, discussion until a consensus was reached); and (c) an expert researcher in qualitative methods who checked the categorization process.

Results

The results presented will first report on the data from the analysis of the visual grid used by participants to describe the development of their athletic and post-sport career using a developmental as well as holistic perspective. This will be followed by a description of the factors identified by participants as having facilitated or constrained their development in four specific domains (i.e., athletic, psychological, psychosocial, academic/vocational) during four stages (i.e., stage of access to high-level competitive sport; stage of elite-level competition; stage of discontinuing the sport career; post-sport career stage). Finally, to detail participants' development throughout their athletic and post-sport career from a holistic perspective, each of the four career stages will be discussed. Using quotes from participants' interviews, a more detailed description will be provided of the context and/or content of the factors perceived by participants to have influenced their development in one and each of the four domains.

Perceived development of the athletic and post-sport career

Analysis of the chronological representation of the development of their athletic and post-sport career revealed that these athletes started in their sport, on average, at the age of 11.44 years ($SD = 4.09$) and accessed high-level competitive sport on average at the age of 16.78 years ($SD = 2.22$) that lasted on average 4.33 years

($SD = 1.50$). The mastery stage, during which they started to compete at elite level, started on average at the age of 21.11 years ($SD = 3.06$) and lasted on average 10.60 years ($SD = 2.46$) until they retired. This stage of retirement, with an average duration of two years ($M_{\text{years}} = 2.11$; $SD = 1.69$), transited finally at the average age of 33.78 years ($SD = 2.28$) into their post-sport career stage. Participants had been retired elite athletes for on average 3.22 years ($SD = 1.56$).

Using this developmental perspective of their athletic and post-sport career as visual baseline, participants indicated in this grid the occurrence of events that influenced their athletic, psychological, psychosocial, and academic/vocational development. Athletes identified a total of 61 transitions throughout their athletic and post-sport career: 49 at athletic level, eight at academic/vocational level and four at psychological and psychosocial level. The transitions in athletic development were related to (a) selections and/or results achieved ($n = 21$), (b) changes in structure and/or organization of training regime ($n = 11$), (c) injuries ($n = 7$), (d) selections and/or results not achieved ($n = 4$), (e) investments made into elite sport ($n = 3$) and (f) an unforced and planned athletic retirement ($n = 2$). Academic/vocational-related transitions referred to (a) investments made into an academic career ($n = 3$), (b) achieving academic success ($n = 3$) and (c) investments made into a vocational career ($n = 3$). Finally, the transitions perceived to occur in their psychological and psychosocial development were related to (a) starting a (marital) relationship ($n = 2$) and (b) parenthood ($n = 2$). Inter-individual differences were noted with regard to the moment of occurrence of transitions during the sport career (e.g., marriage occurred for some early in their sport career, for others later; academic success was achieved by some at the beginning of the mastery stage, by others in the final year of their sport career).

Factors of influence in four domains of development

The content analyses of the interview transcripts yielded 1066 meaning units (MU) related to the factors identified by participants as having facilitated or constrained their development in the four domains of development during the four stages.

Of these factors (cf. Table 1):

- 63.0% was categorized as factors perceived by athletes as having facilitated their development and 37.0% as constraining factors;
- 25.2% was related to the stage of access to high-level sport, 48.3% to the stage of elite-level competition, 8.4% to the stage of discontinuing the sport career and 18.1% to the post-sport career stage;
- an average of 38.2% over all four stages referred to athletes' development at athletic level, 5.6% at psychological level, 28.9% at psychosocial level and 27.3% at academic/vocational level.

Results reveal that in general 6 out of 10 factors (63.0%) identified by the participants were perceived to have facilitated rather than constrained their development throughout their athletic and post-sport career.

Taking into account their chronological occurrence (i.e., per stage), a majority (48.3%) of factors was perceived by the athletes to be related to the stage of elite-level competition. In fact, the distribution of facilitative versus constraining factors remains fairly stable across the four stages: during the stage of access to high-level sport, 67.6% were perceived to have been facilitative, 61.7% during the stage of elite-level competition, 57.3% during the stage of discontinuation and 62.7% during the post-sport career stage.

When considered from a holistic perspective (i.e., per level of development), most factors, as was already noted, are perceived to have influenced in first instance participant's athletic development (with an average of 38.2% over all four stages), followed by their development at psychosocial level (28.9%), at academic/vocational level (27.3%) and finally at psychological level (5.6%). If we then consider the cumulated percentage of facilitating and constraining factors for each level throughout the four career stages, then the strongest influence was perceived to occur at athletic level during the stage of discontinuing the sport career (51.7%), followed by the academic/vocational level during the post-athletic level (43.5%), and both athletic levels during the first two stages (38.3% and 39.8% respectively). The importance of the development at athletic level is confirmed when considering only individual percentages: four of the top five factors are related to participants' development at athletic level – facilitating during the first three stages (30.8%, 26.2%, and 24.7% respectively) and constraining in the third stage (27.0%) – and one factor at academic/vocational level during the post-sport career stage (27.5%).

The content analysis of the interviews also revealed that the participants perceived their athletic development to have been influenced by three major factors, namely athletic significant results' (207 MU), 'athletic commitment in their sport career' (118 MU), and 'training conditions' (78 MU). During their psychological development, factors included 'perceived life balance' (47 MU), 'autonomy' (17 MU), 'maturity' (3 MU), and 'opening onto the world' (3 MU). Throughout their psychosocial development these included the factors 'partner' (82 MU), 'coach' (71 MU), 'peers' (46 MU), 'parents' (45 MU) and 'children' (22 MU), whereas at academic/vocational level participants referred to 'commitment' (115 MU), 'fulfillment' (76 MU) and 'adjustments' (76 MU).

Table 1

Frequency of MU and number (N) of participants in relation to perceived facilitating versus constraining factors during four career stages and at four levels development.

	Facilitating factors		Constraining factors		Sub-total per level
	Number MU	% MU	Number MU	% MU	
Career stage and domain of development					
Access to high-level sport (269 MU-25.2%)					
Athletic	30.8	9	7.5	8	38.3
Psychological	10.4	6	0.0	0	10.4
Psychosocial	22.7	9	12.6	9	35.3
Academic/vocational	3.7	7	12.3	8	16.0
Sub-total	67.6		32.4		
Elite-level competition (515 MU-48.3%)					
Athletic	26.2	9	13.6	9	39.8
Psychological	3.9	9	2.4	5	6.3
Psychosocial	15.9	9	13.0	9	28.9
Academic/vocational	15.7	9	9.3	8	25.0
Sub-total	61.7		38.3		
Discontinuing the sport career (89 MU-8.4%)					
Athletic	24.7	7	27.0	7	51.7
Psychological	1.1	2	0.0	0	1.1
Psychosocial	10.1	4	12.3	5	22.4
Academic/vocational	21.4	6	3.4	2	24.8
Sub-total	57.3		42.7		
Post-sport career (193 MU-18.1%)					
Athletic	9.8	8	13.0	7	22.8
Psychological	4.7	4	0.0	0	4.7
Psychosocial	20.7	9	8.3	6	29.0
Academic/vocational	27.5	9	16.0	6	43.5
Sub-total	62.7		37.3		

Holistic perspective on athletic and post-sport career development

To detail participants' development throughout their athletic and post-sport career from a holistic perspective, each of the four career stages will be discussed in more detail. Using quotes from different participants, a further description will be provided of the context and/or content of factors perceived by participants to have influenced their development in one and each of the four domains.

Stage of access to high-level sport

Six out of the nine participants first engaged in various sports up until the age of 14–15 years and then progressively specialized in the sport where they experienced not only more pleasure but also perceived themselves as being more talented. For example, one participant first participated in tennis and soccer before specializing in soccer, whereas another participant chose to continue in fencing after having been involved in skiing, track and field and fencing.

The progress made at athletic level differed from regular improvement (“I improved crescendo my performance level, following the usual path from regional to national then international level.” – P3) for five athletes to fast improvement for four athletes (“When I entered the training centre I played directly with the third-year group.” – P7). However, independent of speed of progress, their first victories in significant competitions (i.e., national event) triggered a motivation to become (even) more involved by way of an ambitious sport career plan as illustrated by participant 5:

I never thought before to commit myself in an elite sport career and I didn't expect to win the title at that national championship for youths. But, as I won rather easily, it acted as a trigger. I began to take sport more seriously.

In this period, the influence of the coach who led the athlete to access high-level sport, is described as a facilitative factor (“My first coach had a very good influence on me, just as well inside as outside of sport. He was a model for me, he showed me the way of life. He instilled the desire in me.” – P5). Eight participants also pointed to the role their parents played in this period. Whereas parents' logistic as well as affective support is mentioned by five athletes (e.g., “My parents were my first supporters. They helped me a lot, driving me everywhere, supporting me after competition whatever the results.” – P3), three other participants perceived a lack of parental support due to a lack of interest in sport or due to a disagreement with their child about the sport they chose as was the case for P4: “My parents did not support me at all. They came only once to a competition. When I decided to enter a sport training centre, they told me to manage on my own.”.

In-between the ages of 17–20, eight athletes had the opportunity to enter a national sport training centre or a high-

level club. This transition was experienced as both facilitating and constraining: facilitating as it led to improved training facilities as well as to a greater perceived autonomy (“I was very closed to my family. Entering the training centre helped me to become more independent, self-governing.” – P9); and constraining due to changes in their psychosocial (i.e., feeling of uprooted from their family) and/or academic development (e.g., difficulties in reconciling sport and education) as voiced by this participant:

My sport imposed on me the choice I made for education. I was interested in another subject of study but I would have had to leave the training centre, and that would not have been consistent with my sport career plan (P3).

Finally, an increase in athletic commitment was perceived as both facilitative and constraining as illustrated by participant 4:

When entered the training centre, I went up to 20 hours of training per week. It was a strong change of intensity and I was very pleased to discover many things and to improve myself but in the same time, it was very hard.

Globally, participants experienced a feeling of balanced rhythm of life and wellbeing during this stage of access to high-level sport, especially during the period preceding the entry in elite sport training centre (e.g., “It was a smooth rhythm of life. I experienced pleasure, I was carefree. I just had to care about myself, doing my sport, going out. It was a very pleasant life.” (P9)).

Stage of elite-level competition

Related to the stage of elite-level competition, participants' verbalizations induced a distinction between two specific types of sport career experiences, namely (a) progress of athletic achievement (i.e., successful athletic performances) and (b) lack of progress of athletic achievement.

As reflected in Table 2, two out of three MUs referred to progress of athletic achievement compared to one third of MUs referring to lack of progress. When considering progress of athletic achievement in more detail, then most of the factors were perceived to have influenced the course of participants' life in a facilitative way (72.4%) especially when related to their athletic (30.5%), psychosocial (19.6%) and academic/vocational development (18.4%). Most factors perceived as constraining were related to their psychosocial development (11.3%). On the other hand, when considering lack of progress of athletic achievement, most factors were perceived by the participants to have constrained the course of their life (58.4%) especially in relation to their athletic (30.9%) and psychosocial development (16.3%). Most factors perceived as facilitating were related to the athletic (18.0%) and academic/vocational development (10.7%).

Table 2
Frequency of MU during the stage of elite-level competition in relation to athletes' perceptions of progress of athletic achievement and perceived facilitating versus constraining factors in the course of life.

	Progress of athletic achievement		Lack of athletic achievement	
	Number MU	% MU	Number MU	% MU
	337	65.4	178	34.6
Domain of development	Facilitating factors (% MU)	Constraining factors (% MU)	Facilitating factors (% MU)	Constraining factors (% MU)
Athletic	30.5	4.4	18.0	30.9
Psychological	3.9	3.0	3.9	1.1
Psychosocial	19.6	11.3	9.0	16.3
Academic/vocational	18.4	8.9	10.7	10.1
Sub-total per category	72.4	27.6	41.6	58.4

It should be noted that factors perceived as facilitating the course of life during athletic progress were dissimilar to factors perceived as facilitating periods of lack of athletic achievement. For example, pleasure experienced in daily training was considered a factor facilitating the course of life during lack of progress periods while failure to get a selection for the World championship was perceived as being constraining.

Progress in athletic achievement. Participants refer to three factors perceived to have facilitated the course of their life when making athletic progress namely significant results, athletic commitment and training conditions.

The factor significant results refer to four specific events:

- (a) athletic results (e.g., “After having successively won the European then the World title, I felt having reached a new step in my career and I felt mentally ten times stronger.” – P6);
- (b) athletic status (e.g., “When I was captain of the national team, I experienced well-being, I felt proud. It was a period of social recognition.” – P3);
- (c) athletic experiences (e.g., “It was my first qualification for the Olympic Games. Even if I didn’t perform very well, it was a good athletic season and a rich Olympic experience.” – P1);
- (d) athletic maturity (e.g., “Two years after my entry in the training centre, I knew better how to train well, how much effort to expend, how to recover better. It is all these factors that made me feel much better.” – P6);

Athletic commitment referred to being professional (e.g., “We were training 4 to 5 hours per day, being away for 2 months per year to training camps, competing all year long. In this period, I felt very more professional. I invested a lot in sport.” – P2) and fitted with a strong motivation to go achieving their athletic ambitions as illustrated by this participant:

My plan had always been to become Olympic champion. I saw the title but I failed to reach it, gaining only the silver medal. It showed me the way to work for four more years. I wouldn’t have continued if I had won. But not having won gave sense to the four following years. When one has a childhood dream and just misses it, going for it again and trying to win the Olympic title is the only aim (P6).

Training conditions referred to the quality of material and human support put at athletes’ disposal (e.g., “I never had to search for something this way and that. I had everything at hand, all means and support services.” – P6).

With regard to their psychosocial development, athletes experienced a good relationship with their coach and emphasized the trust he gave them (e.g., “With this coach, keywords were ‘friendship’ and ‘giving trust’. He knew very well how to pass key messages on for giving us self-confidence” – P3). Their social network consisted mainly of peers belonging to their training group (e.g., “We were always together during training as well as during social life. It was a very closed network. We experienced a strong friendship. It was a fine human experience.” – P5). Family life was experienced in various ways. Quality of life with their partner was described as facilitating by five participants (e.g., “I was committed in my sport but I also did a lot of things with my partner. It was great as I was both qualified for the Games and living with my partner. It was a dual project.” – P1) as well as constraining by five participants describing a break in their relationship due to factors related to their sport career (e.g., “A reason for our breaking up was my sport career because she asked me to terminate it. That was hard for me but I decided to break off our relationship.” – P3). It

should be noted that two participants described the quality of life with their partner as facilitative and constraining in turn, depending on the period of life. Becoming father was experienced as a facilitating factor both for the course of life (i.e., personal blooming) and for the sport career as it led the athlete to gain maturity, responsibility, as well as a stronger ability to put his athletic endeavours in perspective as voiced by this participant:

When my daughter was born, I did not do anything solely for myself no more. I did them also for my daughter. I did not want to be away from home for nothing. Each day had to be beneficial. Becoming father gave me an additional motivation to perform (P6).

It should also be noted that not being (fully) available for family life was also perceived as constraining by participants:

During the Olympic year, I have been at home for about only 80 days. Of course, it was a good year but I didn’t see a lot my wife and my son. He started to walk for the first time while I wasn’t there. He began to say “Daddy”, I wasn’t there. When I came back from the Olympics, he didn’t want to come to me during 4 hours. It was hard! (P4).

Finally, regarding their academic/vocational development, most athletes were granted opportunities to facilitate their dual career project enabling them to organize their education/vocation around their sport requirements. It was perceived as contributing to making progress in their athletic achievements as well as to building a normative social identity (“e.g., I experienced passing the exam as a form of social achievement. I succeeded to manage both the Olympic experience as well as the experience of social achievement.” – P4). On the other hand, the dual career project was experienced as more constraining during periods including a major sport event (e.g., Olympic Games). When required, most participants decided to prioritize their sport (e.g., “The Olympic year coincided with the final exams of my academic career. I decided to go to class but to postpone my exams until the following year.” – P1). One participant, favourite for a gold Olympic medal, tried but failed to reconcile both goals (e.g., “I wanted to pass my exam. It was as important as getting a medal at the Olympic Games. I stressed a lot for that exam but I succeeded. For me, that was worth as an Olympic gold medal.” – P9) as he only reached the 7th place during the Olympic Games the following two months.

Lack of athletic achievement. All participants described at least one period during their elite-level competition stage where they faced a levelling-off or brake in the progress of athletic achievement. Each participant reported at least one period of lack of athletic achievement due to a major injury. Other periods were associated to:

- (a) a lack of progress despite strong commitment as illustrated by this participant:
I was training hard but without the expected results. I felt that the qualification for the Olympic Games was getting away from me. I experienced pressure and I had not been able to face that pressure even if I knew that it was surmountable (P4).
- (b) a difficulty to adapt to a sport career transition (i.e., transition from junior to senior in an individual sport, a change of club in a team sport);
- (c) a decision to prioritize (for a certain period) their academic development.

Most athletes also related their lack of progress to constraining factors in their psychosocial development, more particularly to (some) disagreement or even conflict with their coach (e.g., a lack of sharing responsibility by the coach for poor performances) or the staff of the elite sport governing body (e.g., change of coach without players' consent, lack of clarity of content or implementation of national team selection rules).

Factors facilitating the course of life were mainly linked to participants' athletic development, and more specifically to their athletic commitment in training and the pleasure it brought them (e.g., "I felt a well-being in training. I got kicks out of training, even if I was worthless in competition." – P1). Athletic commitment related to their will to persist in the face of difficulties, achieving the expected athletic performances or in view of recovering to their best level of performance after injury (e.g., "I could not assess the amount of effort I invested to come back but it was with a very strong commitment. As I wanted so much to regain my best level I decided to hire a personal physical trainer." – P8). Injured athletes also appreciated opportunities to get away for a while from training and competition (e.g., "A friend of my brother invited me to learn to play golf. I enjoyed it because it gave me an opportunity to get a breather, to do something else, to relax. It was a fine experience." – P9). Finally, most injured athletes made the most of their down-time by making more time for other activities such as academic commitment or family life (e.g., "Well-being was being 100% with my family. Thank goodness there was the family because in sport it was really hard!" – P7; "I was hopeless in sport but I got married!" – P1).

Stage of discontinuing the sport career

Most athletes decided to plan the discontinuation of their sport career during moments when they experienced feelings of psychological and/or physical saturation, as voiced by this participant:

It was getting more and more difficult to get up for training, to feel the good tension for competition, to go fully again for selection. It was hard. I had no more the wish. I wanted to stop (P6).

Other reasons such as (the first signs of) performance decline, younger athletes becoming stronger than them in competition, or the age-gap with other athletes in the team (e.g., "I was the senior in the group and there was a gap regarding interests. I was closer to the coach than to the athletes and, because of that, I felt more and more alone, isolated from the others." – P6) also led athletes to plan their sport career discontinuation.

Disagreement with the coach was also perceived as having influenced the decision to discontinue:

There was no more communication between the staff and athletes. I did not want to submit myself to rules they wanted to impose on us. At the same time, I did not want to contravene. For that reason, I planned my career termination (P4).

Once they had planned their sport career discontinuation, most athletes experienced their athletic commitment in fact as a facilitative factor as illustrated by this participant: "I remember the last year of my career. I was psychologically prepared to stop and I appreciated each training, each competition. I appreciated each moment telling to myself that it was my final season." (P2). They also experienced fulfilment with their academic or vocational development which facilitated their decision to discontinue their sport career as they felt (a) a strong interest for their current (i.e. post-sport career) job (e.g., "I enjoyed my job. It helped me to decide to terminate my sport career instead of waiting to be

compelled to do it." – P2), (b) a wish to transit from athlete to coach position (e.g., "I had the wish to become coach and I took one year to become well involved with the job." – P9), (c) an opportunity for a specific job (e.g., "In our sport, the staff changes each four years after each Olympic Games. There was an opportunity for me to get the job as national coach just after the Games. I did not want to miss that opportunity." – P6) or, (d) an opportunity to get a diploma after having had interrupted their academic development in favour of a full commitment to their sport career.

The post-sport career stage

Participants especially related factors of their vocational and psychosocial development to this post-sport career stage. Vocationally, six participants are currently sport coaches, two have their own private enterprise and one is in the police force. This vocational development was driven by (a) a great drive for a new adventure, (b) an easy transfer of skills and attitude from elite sport to their new post-sport career (e.g., "The energy and commitment I put into sport, I use them now advantageously in my business. The values of sport can be translated to business life, like teamwork, respect for each other, modesty, the professional challenges I set myself." – P7) and, (c) a strong integration into their vocational development (e.g., "I have now a job which is very interesting at the beginning of a new career, within a hierarchical system that respects me, my responsibilities and my autonomy." – P4).

The problems reported during this stage differ depending participants' vocational development. The major challenge for those who are now coaches is linked to the rhythm of life demanded by their job and to the permanent pressure felt to go with the job as illustrated by this participant:

The most negative are the amount and type of hours I need to put in which are not similar to other workers. The rhythm is crazy. Although you're not an athlete anymore, you still need a perfect physical condition to cope with the permanent pressure coming at you from everywhere (P3).

Those engaged in a job outside of sport describe especially the major challenge of adapting to a social environment that is very different to that of elite sport:

In my daily relationships, I only see guys in costumes, guys who do not make me laugh. You must always fight for your position. In sport, when you're good, you're given a contract. In business, you must always pay attention. The relationships you have are not always as nice or healthy. In sport, there's mutual respect. In business, once money is involved, people change (P3).

Regarding their psychosocial development, all participants report the opportunities provided to them to invest more into their (marital) relationship and/or their children and thus develop their family life. Six participants mentioned the pleasure of having a larger social network as expressed by this participant:

I was part of a system with the social life of an athlete, always doing the same things with the same persons. Now I have time for my friends, I know what's happening outside of sport. I become part of a new social network and that's a great feeling (P4).

The major constraining factors during the post-sport career stage were related to finding a balance between family and professional life, and for three of them, the challenge of finding their place within their family as exemplified with this quote:

During my sport career I was often away. This meant that we needed to find each other again, to redefine our roles: who's taking care of the kid, who does what in the household. Seeing each other now every day has put for a while a burden on our relationship. Afterwards this got better (P4).

Finally, the post-sport career stage was perceived to be facilitated by (a) the feeling of having accomplished in sport what participants wanted to accomplish at the level of athletic achievements and at personal level, (b) the feeling of well-being from ending high-intensity training, (c) remaining involved at lower level of intensity in their own or in other sports, and (d) the feeling of developing towards a life more fitting to society norms. The constraining factors related to athletic level included (a) the losses incurred due to discontinuing their sport career (i.e., not being involved in competitions anymore, break in their relationships with other athletes, loss of status as champion), (b) physical problems following from their sport career for four participants, and (c) the lack of physical exercise for three of them.

Discussion

Using a holistic perspective, the present study aimed at identifying former elite athletes' perceptions of their development throughout their athletic and post-sport career as well as those factors the participants perceived as facilitating or constraining their development. The chronological grid, visualizing the framework of each athlete's life, displayed sport career stages from the initiation in sport to the career termination similar to those traditionally described in research on career development (e.g., Bloom, 1985; Wylleman & Lavalée, 2004). It can be noted that in this study carried on sports with late maturity, the majority of athletes had at the beginning a multi-sport activity until the age of 13–14 years after which they specialized progressively into their main sport, the choice being operated on the basis of significant results on the one hand, and on the pleasure found in this main sport on the other hand. These results do not only relate to Côté and Hay (2002) who brought to the fore the importance of improvement as well as pleasure for persisting in a high level sport commitment but also put into question the need for an early specialization through deliberate practice, in particular in sports with late maturity (Côté et al., 2007; Côté, Lidor, & Hackfort, 2009; Johnson et al., 2008).

Our results reflect some singularities with regard to the development of the path to excellence. First, with reference to the “10-year rule” for achieving expertise (e.g., Ericsson, Krampe, & Tesch-Römer, 1993), an important variation existed between athletes in this study with regard to the number of years required to reach the peak of their sport career, namely in-between seven (shooting) to ten years (fencing) after having started with their main sport. Second, inter-individual differences were also found with regard to the start and the duration of the stages of athletic development: five athletes were detected quite early as being talented and showed fast performance improvement towards the elite stage, whereas four showed a slower progress. Furthermore, the elite stage with a duration of in-between eight to eighteen years, does not reflect a continued progression in athletic results. In fact, this stage of development is characterized by an alternation between periods of athletic achievement (i.e., results showing progress) and periods of decreasing or brake in performance (e.g., due to injury, failing to achieve the set expectations). This wave-like progress towards excellence has also been observed in other studies (e.g., Abbott, Button, Pepping, & Collins, 2005; MacNamara et al., 2010b; Ollis, MacPherson, & Collins, 2006).

In the present study, three typical transitions were recurrently described by participants as having had a strong effect on the dynamics of the development of their athletic career, namely injury, sport results, and entry into an elite sport training centre.

Although the occurrence of injuries may be seen as a transition generally faced by athletes (e.g., Samuel & Tenenbaum, 2011), it is important to note that their occurrence in this study was reported to be related to (a) dedicating more time to non-athletic aspects of their life (e.g., family, education, new activities) and (b) doubling efforts during the rehabilitation phase for recovering to their best level. All athletes experienced during the course of their career, generally time during the elite stage, at least once an ‘invalidating’ injury. Several athletes also mentioned to have learned from their injury to the advantage of their sport career (e.g., more rigour with the training) as well as to the course of their life (e.g., awareness of the importance of a dual career). The description of transitions related to injury is a typical illustration of the importance to take into account in research as well as in the accompaniment of athletic path to excellence the whole components of life according not to a cumulative but to an integrated and developmental approach (Wylleman & Lavalée, 2004).

Sport results were related not only to athletic career development in terms of performance improvement (i.e. athletic results) but also to the social recognition they gave rise to (i.e., athletic status) as well as to the positive impact they had on personal development (i.e., experiences, maturity). The described transfer of attitudes and social competences from athletic experience to vocational experience in the post-sport career stage illustrates the close interactive link between athletic development and other domains of development (i.e., psychological, psychosocial, vocational) as put forward by Wylleman and Lavalée (2004).

The transition of entry into an elite sport training centre may reflect a cultural characteristic of French elite sport whereby, from the 1970s onwards, prospect and elite athletes were systematically brought together in national training centres emphasizing a dual career approach (Debois & Leseur, 2013). Entry in such a national training centre requires athletes to adapt concurrently to new training loads and conditions of practice (e.g., new coach), social changes (i.e., building a new social network), as well as to changes in their academic development (e.g., starting university studies). Using a holistic perspective (Wylleman & Lavalée, 2004) future research should focus on this transition in order to examine how athletes are able to cope (or not) with the multiple transitional challenges (i.e., athletic, psychological, social, academic).

In view of dual careers of elite athletes, the current study showed that all athletes combined their athletic career with an academic or a vocational career: seven athletes reconciled throughout their entire athletic career the pursuit of sporting excellence with an academic/vocational path as well as with a social life with spouse and/or family; two athletes performing in a professional sport (i.e., ice hockey, soccer), although initially stopping early, re-started their studies at the end of their sport career. These two athletes, who actually started early a relationship with a partner, also experienced early paternity. The manner in which participants perceived how they ‘nourished’ their athletic (and post-sport) career through the different components of their life (e.g. psychological, psychosocial, academic/vocational) leads to the hypothesis that this group of athletes developed a harmonious passion for their sport (i.e., high involvement in sport but without excluding other domains of life) (Vallerand et al., 2003, 2006) enabling them to face ups and downs throughout their dual careers.

Besides elements related to the sport domain, participants also referred to facilitating as well as to constraining factors in their psychosocial and academic/vocational development which had, depending upon the stage of development, influenced their sport

career. At psychosocial level, the first coach was reported as being a significant actor in the way the athlete reached sportingly and humanly top level. The quality of the relation with the coach was also perceived as a key factor to success during the elite stage. On the other hand, it is important to note that most phases where athletic achievement did not progress (e.g., poor unexpected results) were described as having been preceded by a period of disagreement with amongst others the coach (or the staff of the sport federation). A second group of significant others included athletes' parents which were described by most athletes as supportive to their sport career (e.g., [Durand-Bush & Salmela, 2002](#)). Nevertheless, three athletes described a lack of support, or even a constraining parental impact on their athletic project. Both types of parental behaviour have been reported to occur not only during the career to, but also the career at elite level (e.g., [Wylleman, De Knop, Verdet, & Cecic-Erpic, 2006](#)). Lastly, the most fragile balance during the elite stage existed between family life and the project of the sport career. The time spent for training and travel was perceived to be to the detriment of being available for, and present with the family, especially during the elite stage. That led for more than half of athletes to breaking up their relationship during this period compared with approximately twenty per cent in the general same-aged population. Finally, the family turned out to be a strong support to athletes during the periods of lack of athletic achievement.

With regard to their dual careers, athletes experienced the combination of sport and study during the access to the high level stage on the one hand as an opportunity to plan their vocational future; on the other hand as a constraint, especially when athletes experienced (a) a high load in the combination of sport and studies without enough support from the university to manage their academic schedule and study load and (b) dissatisfaction due to opting for an academic study programme in view of the study and exam flexibilities rather in view of a vocational future. These results expand those from previous research (e.g., [Giacobbi et al., 2004](#); [Wylleman & Reints, 2010](#)). The two athletes who, during the access to high-level stage, were already in the phase of professional integration both experienced this as constraint in particular due to the perceived gap between their sport status (i.e., recognition of a high potential) and their professional status (i.e., beginner without qualification). A dual career focused on integrating an educative study programme at the beginning of the sport career appeared to be more favoured than a combination with a vocational career as this was perceived as providing less flexibility ([Wylleman & Reints, 2010](#)).

Whereas during the elite stage a dual sport-study career was perceived as a factor facilitating the course of life (e.g., due to the satisfaction of academic success), this combination became less manageable during periods with major competitions (e.g. the Olympic Games) with chances for medalling. In fact, Canadian athletes who had won at least two gold medals at the Olympic Games and at World Championships, were reported to have stopped their studies during the pre-Olympic year to focus fully on the Olympic Games ([Durand-Bush & Salmela, 2002](#)). It is clear that more research is required into how elite athletes are able to cope with, and should be supported in their combination of elite sport and study when faced with for example World championships or Olympic Games.

Those athletes who experienced a professional integration during the elite stage of their sport career on the one hand appreciated this as a successful sequence to their academic career, while on the other hand faced also the need for schedules compatible with their sporting constraints. Finally, whereas some athletes found a good personal balance with a part-time professional activity, others decided after a while upon a complete

detachment from their professional activity. These results suggest that in the combination of an elite sport and a professional career there is also a need for individually finding the best compromise between sporting requirements and athletes' needs or preferences in their development in other domains of life. Although several initiatives ([Stambulova & Ryba, 2013](#)), have been developed in order to support this type of dual career (e.g., IOC Athlete Career Program; Australian Athlete Career and Education Program; French Path to Excellence in Sport), a need remains to study in more detail the individual differences and needs existing amongst elite athletes facing such a combination.

Participants' narratives revealed that they experienced several transitions from the beginning of the sport career up until the post-sport career stage. Nearly seventy eight per cent of transitions were normative in nature (e.g., scores, selections, entry in a training centre, success in academic examination) and is comparable to other studies (e.g., [Samuel & Tenenbaum, 2011](#)). A majority (85%) of these normative transitions was perceived as positive transitions as they were negotiated effectively without any particular assistance ([Sinclair & Orlick, 1993](#)). The transitions perceived as most delicate to negotiate were related to changes in athletes' lifestyle (i.e., change of training centre, change of academic level, entry in couple life). The non normative transitions (22%) (e.g., injury, no selection, family event) were for more than half associated with periods of decreasing in performance or periods described as constraining and requiring the support of a third person (e.g., psychologist, spouse, parents) and thus perceived as difficult to negotiate, or even weakening (e.g., [Stambulova, 2000](#); [Wylleman & Lavalée, 2004](#)). Taking into account the impact of these transitions, further research should focus on identifying the competences and support required by athletes to be prepared to cope with not only those (foreseeable) normative transitions, but especially also those non normative transitions so that they are able to maintain the progress of their development on the way to sporting excellence.

Regarding the discontinuation of the sport career, results revealed a planning and a decision process based upon multiple factors congruent with the literature (e.g., [Alfermann & Stambulova, 2007](#); [Fernandez, Stephan, & Fourquereau, 2006](#); [Taylor & Ogilvie, 2001](#)). Participants expressed in particular a feeling of physical as well as psychological athletic saturation, as well as a feeling of increasing marginalization related to the age gap which separated them from the next generation(s) of elite athletes. Sacrifices made in their family life also became gradually heavier to cope with. Two characteristics of the post-career stage as described in previous studies (e.g., [Stephan, Bilard, Ninot, & Delignières, 2003](#)) were also identified in this study, namely (a) experience missing the emotions related to competitions and the training group and (b) a period of perceived destabilization linked to the involvement in new activities, a difficulty to find one's place within the family and, for some participants, difficulties related to a professional integration. On the other hand, career termination appeared to be facilitated thanks to: (a) a feeling of a self achievement regarding their sport career (i.e., achieved successes), (b) the awareness of having well prepared their post-career transition during the sport career through academic/vocational development and, (c) the expectations to be able to switch at once towards other priorities in life (i.e., family, social network, vocational career). Participants described a process of transfer of their athletic experiences into the process of investing and organizing their professional commitment. They also evoked a dynamic of vocational career plan in the same way as they planned their sport career. These results illustrate, in the decision to terminate the sport career as well as in the process of adjustment to the sport career discontinuation, the interactive nature of athletic, psychological, psychosocial and vocational domains of athletes'

development as described in the lifespan model from Wylleman and Lavallee (2004).

Limitations and further research

Due to limitations inherent in its sample and methodology, the results of the present study are limited in their generalizability. First, only nine athletes participated in the study. Even if representative for successful and persistent elite athletes, future research should include a wider group of athletes with characteristics similar to these of the participants in this study. Second, the results are only relevant within the framework of the characteristics of the athletes who participated in this study (e.g., male, French). Third, as a retrospective method has also its limitations (e.g., recall bias) (Kerr & Dacshyn, 2000), a longitudinal approach could be more appropriate although at the same time less conceivable as it would presume that the researchers would be able to predict from the beginning of their sport career who would be successful athletes. Nevertheless, a good compromise could be to resort to a survey such as the Transition Monitoring Survey (TMS) (Stambulova, Franck, & Weibull, 2012) for regularly assessing athletes (e.g., once a year) from their arrival at the national sport training centre until the end of their career.

Complementing the suggestions already provided, future research could focus on the three main categories of transitions experienced by all participants (i.e. athletics results, entry in an elite training centre, injury) and compare the competences and support of athletes who succeeded in negotiating them with athletes who encountered difficulty with these transitional challenges (i.e., crisis transition). This could contribute to a better comprehension of the dynamics of adaptation to transitions in elite sport. Furthermore, the way in which female elite athletes are able to reconcile their psychological, psychosocial and academic/vocational development with their athletic development in long duration sport careers should be studied. Considering the duration of elite sport careers, whereby more and more athletes terminate their sport career after the age of 30 (e.g., 22.34% of contestants at London 2012 OGs were aged 30 years or more), research should also be focused on female elite athletes' decision-making process with regard to their sport career and motherhood as well as on the way in which 'mother-athletes' manage to reconcile motherhood and elite sport. Finally, as the present study revealed the importance of family (i.e., spouse, children), especially during the elite and discontinuation stages, attention should be paid to the way in which elite athletes build, develop and maintain relationships with a partner and/or as spouse or as parent within their own family.

Conclusion and applied implications

Results from the present study emphasize the need to take a developmental and holistic perspective in order to gain the required detailed insight into the – normative as well as non normative – transitions elite athletes will face and have to cope with throughout as well as after their sport careers. Using this perspective, this study also sheds light (for this sample of elite athletes) on the possible avenues for and extent to which support services, which take into account not only the athletic domain but also the interaction with other components of elite athletes' life (e.g., psychological, psychosocial, academic/vocational levels), may assist individual athletes to cope with the specific requirements inherent to their sport and post-sport careers.

The duration of elite sport careers, as revealed in this study, also invites the reflection whether the concept of dual career should not only be seen in the light of ensuring athletes' future after terminating their career, but also as a means to stimulate the

development of a harmonious identity by way of taking all different aspects relevant to athletes' development. In fact, results from the present study in which participants were selected on the basis of both a successful and a long duration sport career, showed no one having been exclusively focused on his athletic project. This result suggests that a path associating athletes' development in all domains of development may facilitate successful maintenance in top sport. In that way, the present study brought to the fore how non-athletic components of life (i.e., psychosocial, academic, vocational) may act as a support to athletes, especially during periods of decrease or brake of performance achievement. The concept of dual career may thus be considered and become a true and full part of the pursuit to sporting excellence in which individualized follow-up takes into account each athlete's differences (e.g., degree of maturity) and requirements.

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