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1 Abstract

2 **Research question.** The last decade has seen an increase in empirical research  
3 associated with dual careers in sport, with a particular focus on understanding and developing  
4 individual characteristics which are important to ensure success in sports and education or a  
5 vocation. More recent work has, however, also identified the importance of environmental  
6 factors in ensuring successful dual career outcomes. The aims of the current study, therefore,  
7 are to: (a) identify and classify the different types of dual career development environments  
8 (DCDEs); and (b) provide outlines of the key features of the environments identified.

9 **Research methods.** To achieve these aims, this study adopted the procedure of initial  
10 documentary analysis, interviews with knowledgeable stakeholders, cross case analysis, and  
11 researcher discussions across seven countries in Europe (Belgium, Denmark, Finland,  
12 Slovenia, Spain, Sweden, and United Kingdom).

13 **Results and Findings.** Results highlighted that there are 8 types of DCDEs - (a)  
14 sports friendly schools, (b) elite sport schools / colleges, (c) professional and / or private club  
15 programs, (d) sport friendly universities, (e) combined dual career systems, (f) national sports  
16 programs, (g) defense force programs, and (h) players' union programs with a range of  
17 approaches to supporting dual careers.

18 **Implications.** The research has practical implications in the context of dual career,  
19 through providing a possible framework for developing national taxonomies and, therefore,  
20 identifying DCDE characteristics and gaps in dual career support.

21 *Keywords:* dual careers of athletes, elite sport, talent development, support system,  
22 ecological approach

23 *Word count:* 7585

## 1           **A Taxonomy of Dual Career Development Environments in European Countries**

2           The combination of sporting pursuits alongside education or vocational endeavors  
3 (i.e., a dual career) has been shown to help in coping with adversity, protecting against poor  
4 mental health or burnout, and maintaining perspective for athletes (e.g., Aquilina, 2013;  
5 Cecić Erpič, Wylleman, & Zupančič, 2004; Ekengren, Stambulova, Johnson, & Carlsson,  
6 2018; Pink, Saunders, & Stynes, 2015; Sorkkila, Aunola, & Ryba, 2017). Additionally,  
7 athletes who undertake a dual career are often more prepared for athletic retirement and  
8 experience a more successful transition out of sport in comparison to retired athletes who  
9 followed an exclusively sport pathway (e.g., Knights, Sherry, & Ruddock-Hudson, 2016;  
10 Murphy, Petitpas, & Brewer, 1996; Park, Lavalley, & Tod, 2013; Petitpas & France, 2010;  
11 Stambulova, Franck, & Weibull, 2012; Torregrosa, Ramis, Pallarés, Azócar, & Selva, 2015).  
12 In light of the support for the benefits of undertaking a dual career, within Europe there has  
13 been a significant increase in dual career provision, with programs developed to provide an  
14 integrated dual career pathway for many athletes<sup>1</sup>.

15           Considering the potential benefits of a dual career, there has also been an increase in  
16 academic literature focused on the individual and environmental factors that facilitate dual  
17 careers (see Guidotti, Cortis, & Capranica, 2015; Li & Sum, 2017, Stambulova & Wylleman,  
18 2019). The research findings suggest that the willingness of an environment to accommodate  
19 dual career athletes has been identified as a vital facilitator of dual career management by  
20 several previous studies. For example, large workloads, set schedules, mandatory class  
21 attendance, and a reluctance to allow for any alternative focus are all referenced as major  
22 barriers for engaging in a dual career (López de Subijana, Barriopedro, & Conde, 2015;

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<sup>1</sup> The increased dual career provision has also resulted in this becoming a key focus at a political level, with the European Commission supporting the development and optimization of such delivery via practice guidelines in the area (e.g., European Commission, 2012) and research projects such as, *Be a winner in elite sport and employment before and after athletic retirement* (B-Wiser Consortium, 2019), *Aftermatch - Life Beyond Sport* (2019) and *Gold in Education and Elite Sport* (GEES Consortium, 2016).

1 Ryan, 2015; Tshube & Feltz, 2015). Whereas, rearranging exam dates due to competitions,  
2 part-time study, and a holistic club culture which is supportive of life outside of sport enables  
3 dual career athletes to manage sport and academics (Brown, Fletcher, Henry, Borrie, Emmett,  
4 Buzza, & Wombwell, 2015; Tekavc, Wylleman, & Cecić Erpič, 2015; Tshube & Feltz, 2015;  
5 López de Subijana et al., 2015).

6         According to the holistic athletic career model, which outlines the academic, athletic,  
7 psychological, psychosocial, and financial development across the athletic lifespan  
8 (Wylleman, Reints, & De Knop, 2013), dual career athletes will interact with a variety of  
9 environments across their lifespan, such as schools, colleges, universities, sport programs,  
10 and sports clubs (see Debois, Ledon, & Wylleman, 2015). However, the approach to dual  
11 careers and the support provided is not always consistent across institutions or even staff  
12 members within the same institution (Tshube & Feltz, 2015; Brown et al., 2015; Pink, Lonie,  
13 & Saunders, 2018; Pink, Saunders, & Styne 2015; Simons, Bosworth, Fujita, & Jensen,  
14 2007). Aquilina and Henry (2010) categorize European countries based on the national  
15 approach to supporting athletes in higher education settings. Four approaches are outlined:  
16 State-centric regulation, where higher education institutions are regulated by government to  
17 provide adapted support to student-athletes (e.g., Spain); State as sponsor/facilitator, where  
18 government promotes formal agreements to support dual career athletes but this is not legally  
19 regulated (e.g., Belgium); National sporting federations/institutes as intermediary, where  
20 national sporting organizations act on behalf of student-athletes to arrange support (e.g.,  
21 United Kingdom); and *laissez faire*, where there is no formal structure for arrangements and  
22 the individual is required to negotiate these themselves (e.g., Slovenia). This typology  
23 illustrates the diversity in approaches across Europe and how higher education and sporting  
24 environments might interact to support student-athletes. However, the typology does not  
25 consider the variety of environments across the dual career lifespan. For example, it does not

1 explain how schools interact with sporting organizations or governments to support student  
2 athletes.

3           With this in mind, the dual career literature could benefit from further consideration  
4 of environments and initiatives that support individuals across their dual career lifespan. It  
5 would also benefit from understanding the key features of these and how this might impact  
6 the dual career experience. When considering the environments that support dual career  
7 athletes in practice (i.e., dual career development environments, DCDEs), we can identify  
8 institutions such as schools, universities, and sports clubs which host dual career athletes.  
9 However, the complex nature of dual careers means that some institutions might have  
10 multiple, singular or even no dual career support systems in place within them. For example,  
11 a dual career athlete might be embedded within a school, but the school might provide no  
12 program for dual career support. Alternatively, it is common to have one university that has a  
13 sports scholarship, as well as dual career support systems and sports clubs all providing  
14 support for dual career athletes. For the purpose of this study, the focus lies on the  
15 environments that provide support to dual career athletes. DCDEs are defined as purposefully  
16 developed systems that aim to facilitate athletes' investment in combining their competitive  
17 sporting career with education or work, and, therefore include both (sporting and educational  
18 or vocational) career aspects within them.

19           By outlining DCDEs and the key features they have, this would enable researchers  
20 and practitioners in the discipline to identify and explore common characteristics across dual  
21 career provisions and would provide a framework for further, more detailed, exploration of  
22 specific environments. Further, this can mean that areas for optimization and the promotion  
23 of practices that support positive dual career experiences can be identified. In order to do this  
24 and provide a comprehensive understanding of DCDEs and their key features it would first be  
25 beneficial to understand what types of DCDEs exist and what the similarities and differences

1 between DCDEs are. The aims of the current study, therefore, are to: (a) identify and classify  
2 the different types of DCDEs; and (b) provide outlines of the key features of the environment  
3 types identified.

#### 4 **Methods**

5 To identify and classify the different types of DCDEs and provide an outline of the  
6 key features, this study adopted the multiple stage procedure of, first, each country  
7 developing an initial national taxonomy of the DCDEs in their context via documentary  
8 analysis. This initial taxonomy was then validated via interviews with knowledgeable  
9 stakeholders. Second, a cross-case analysis allowed for the development of a taxonomy,  
10 which was validated via expert interviews and researcher discussions across seven countries  
11 in Europe (Belgium, Denmark, Finland, Slovenia, Spain, Sweden, and United Kingdom).

#### 12 **Sampling Strategy**

13 The seven countries that have been included in the current study were used because of  
14 their significant experience in both researching dual careers and providing dual career support  
15 programs to dual career athletes. Belgium, Denmark, Finland, Slovenia, Spain, Sweden, and  
16 United Kingdom, all not only have national initiatives for dual career provision and have a  
17 large number of dual career programs, they are all active in research within the dual career  
18 area. Equally, however, they also have varying approaches to dual careers, with some focused  
19 more on state-centric regulation programs, where higher education institutions are regulated  
20 by government to provide adapted support to student-athletes (see Sweden) with others  
21 focused more on national sporting federations/institutes programs, where national sporting  
22 organizations act on behalf of student-athletes to arrange support (see United Kingdom). In  
23 drawing conclusions from an information-rich and diverse sample, as we have done in the  
24 current project, we are able to identify the nature of the different DCDEs that are common  
25 across socio-political, cultural contexts within Europe. Purposeful sampling of this kind can

1 facilitate transferability for countries not included in the research (Smith, 2018; Tracey,  
2 2010). This concept of transferability of the research findings to additional contexts occurs  
3 when an individual within a setting, outside of that which has been researched, considers the  
4 findings to also be applicable to their context (Smith, 2018).

## 5 **Data Collection**

6       **Stage 1: National taxonomy.** A research team from each country gathered  
7 background information regarding the national approach to dual careers the environments  
8 where dual careers take place. This data was sourced, first, from publicly available  
9 documents on websites of national elite sports agencies or environments and / or other  
10 relevant sources (e.g., national archives). Second, data were sourced from academic papers  
11 that described dual career support programs within that country. The documents were  
12 thoroughly read by the researchers to increase familiarity with the environments. A deductive  
13 coding approach was then taken, information from the documents was transferred in to a  
14 qualitative standardized table based on pre-defined categories (viz., centralized vs.  
15 decentralized; age group targeted; educational level targeted; sports included; level of state  
16 involvement; support for vocation included; nature and scope of environment; fixed or  
17 flexible provision; source of funding; and dual career provision provided). These qualitative  
18 standardized tables enabled the development of an initial national taxonomy of DCDEs,  
19 which was then used to develop further points of discussion for the interviews in stage 2.

20       **Stage 2: National taxonomy validation.** Following the development of an initial  
21 national taxonomy, each of the seven nations then conducted between 3 and 5 interviews  
22 (lasting 20-60mins long) that focused on developing a greater understanding of the DCDEs in  
23 their country. Participants for the interviews ( $N = 31$ ), specifically from Belgium, Denmark,  
24 Finland, Slovenia, Spain, Sweden, and United Kingdom, were purposefully selected because  
25 they held an understanding of one or more DCDE. This understanding came from their

1 practical role within a sports agency or federation, an educational or vocational institution, or  
2 a career program designed for dual career athletes. The participants had worked within the  
3 dual career area for between 5 and 15 years and all had experience of more than one DCDE.  
4 During the interviews, the qualitative standardized table (that was developed in stage 1)  
5 became the focus of conversation, with interviewees asked to give their comments, thoughts,  
6 and critiques of the context provided. They were also asked, at this stage, if they were aware  
7 of any additional DCDEs within their context (i.e., their country) which had not been  
8 identified in the initial scoping of documentary data and the key features of these  
9 environments.

10 **Stage 3: Cross-case analysis and DCDE taxonomy development.** The results of the  
11 documentary analysis and interviews (stage 1 and 2) were collected via the qualitative  
12 standardized table that helped to facilitate the comprehension of each environment and  
13 enabled comparisons between environments. From these two sources of data the research  
14 team initially identified a total of 57 different DCDEs across the seven countries. These data  
15 subsequently underwent a thematic analysis (see Braun & Clarke, 2006) by the first and  
16 second authors, this time using a deductive coding process to identify patterns in common  
17 and cross-environment features. Nine characteristics including whether or not the DCDE was  
18 centralized versus decentralized, the age group targeted, the educational level targeted, the  
19 sports included, level of state involvement, support for vocation included, nature and scope of  
20 environment, fixed or flexible provision, source of funding, and dual career provision  
21 provided, were used to cluster DCDEs and distinguish categories. A category was formed if  
22 one or more environment held a shared characteristic with another environment. An initial  
23 classification system of 8 DCDE types was then developed according to these characteristics,  
24 with detailed explanations of the key features provided. Each of the DCDE types identified  
25 was then positioned along a timeline according to the holistic athletic career stage, estimated



1 age markers, and educational/vocational level (Wylleman et al., 2013) they primarily  
2 targeted. This resulted in an initial cross-case DCDE taxonomy of dual career provision.

3       **Stage 4: DCDE taxonomy validation.** The developed classification system and  
4 DCDE taxonomy then underwent validation via two phases, an expert discussion and  
5 individual interviews with dual career experts, to determine comprehensiveness and  
6 relevance. The expert discussion involved between 2-3 individuals from the seven countries  
7 included in this study. The expert discussion participants included practitioners ( $N = 4$ ) and  
8 researchers ( $N = 13$ ) who had significant experience within the area of dual careers, in some  
9 cases over 20 years' experience (summarized in Table 1), and had been involved in stage 1  
10 and 2. The purpose of the discussion group was to confirm the comprehensiveness of the  
11 DCDE taxonomy based upon the seven countries represented, with specific focus on DCDE  
12 types and the key features of each. This stage was important to ensure that the detail and  
13 comprehension of the national context had not been lost in developing a classification system  
14 and taxonomy that extends across the seven contexts. The individual interviewees ( $N = 4$ ) in  
15 this instance were, additional experts in dual career provision, with significant experience (5+  
16 years) within sports agencies or federations, educational or vocational institutions, and/or  
17 career programs designed for dual career athletes (summarized in Table 1). These validation  
18 interviews were carried out with the focus of the interviews being the DCDE taxonomy, the  
19 overarching DCDE characteristics identified, and the career stages that the DCDEs target.  
20 Since the members of the discussion group had been part of stage 1 and 2, the purpose of the  
21 individual interviews was confirming the comprehension of the taxonomy outside of the  
22 research group. Minor adjustments that arose from these discussions and interviews were  
23 then made (e.g., adjustments to the career stages that an environment may target), before a  
24 final taxonomy was created.



1 programs. Some of these DCDEs are stand-alone environments in their own right, (e.g., elite  
2 sports schools, where the student athlete is supported by the school in their sport and  
3 education), whereas, some of the systems would be required to coordinate their support with  
4 other institutions or organizations (e.g., student athletes in a university might be supported by  
5 both a sport friendly university program and a sport club program). Furthermore, some  
6 environments might also engage with a combined dual career system to facilitate the  
7 coordination between sport and study. The 8 types of DCDEs were found in each country to  
8 different proportions: sports friendly schools and elite sport schools / colleges were found in  
9 all seven countries; sport friendly universities were found in six of the seven countries;  
10 professional and / or private club programs, combined dual career systems, and national  
11 sports programs were found in three countries; whereas, defense forces programs, and  
12 players' union programs were found in just two countries.

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13 Insert Table 2 about here

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14  
15 Collectively, the environments that were identified cover a range of dual careers and  
16 have a range of overarching features. What distinguishes one category from another are the  
17 decisions which have been made regarding the specific features of the provision they provide.  
18 Specifically, decisions that have been made about: (a) the athletic career stage the support is  
19 intended for, (b) the nature and scope of the environment, (c) the sports they support, (d) the  
20 educational level or vocation targeted, (e) the support provided (f) whether or not the  
21 environment is part of a centralized or decentralized system, and (g) whether or not there is  
22 state involvement in the system.

### 23 **Athletic Career Stage**

24 Figure 1 identifies the career stage that DCDEs provide support for, based upon  
25 Wylleman and colleagues (2013) model of career development. Data highlights that the

1 majority of programs support athletes through development and mastery phases of their  
2 athletic development. Some programs do provide support at the latter end of the initiation  
3 stage, but the formal support for a dual career via elite sport schools / colleges or sport  
4 friendly schools / colleges, even at this stage, is often reserved for athletes who have been  
5 identified as talented and with the potential to be successful at the elite level in the future.  
6 Although DCDEs do not provide specific support at the discontinuation / post-sport stage,  
7 many do provide support to athletes to prepare them for this phase via appropriate education  
8 and signposting of athletes to suitable opportunities.

### 9 **Nature and Scope of the Environment**

10 Figure 1 also highlights the nature and scope of the environment identified as either,  
11 (a) a sport-led system (i.e., the athlete is based in a sport environment that offers education or  
12 support for an education / vocation; e.g., professional and / or private clubs, national sports  
13 programs, and players' union programs.), (b) an education-led or vocation-led system (i.e.,  
14 the athlete is based in an education / vocation environment which offers support for sport and  
15 performance; e.g., sports friendly schools, sport friendly universities, and defense forces  
16 programs), or (c) a combined dual career development environment (i.e., an organization or  
17 institution that works in tandem with both sport and education / vocational providers to  
18 deliver an all-round support package to the individual undertaking the dual career; e.g., elite  
19 sports schools / colleges, and combined dual career systems). Combined dual career programs  
20 can ensure that the support being provided does envelop all elements of the dual career  
21 process. Contrastingly, a sport-, education-, or vocation-led system often relies upon the  
22 understanding and empathy to dual careers by the other institution (i.e., an education  
23 institution in the case of a sport-led program and vice-versa). For example, in a sport-led  
24 system, if there is a lack of awareness of athletes undertaking dual careers by academic staff,

1 support provided may be less effective. Communication channels between sporting,  
2 educational and vocational institutions, therefore, are crucial.

### 3 **Sports Supported**

4 From the classification system, it has been identified that DCDEs support anywhere  
5 between one sport and multiple sports (e.g., one environment supported 73 different sports).  
6 Programs which support one sport are usually designed as specialized centers, typically with  
7 specialized coaching, sport science, and other provisions given to athletes, in addition to  
8 education or vocational support, in their pursuit of excellence. DCDEs with multiple sports  
9 may or may not have specialized coaching available on site. There is often the sharing of  
10 other resources including sport science support (e.g., performance lifestyle advisors may  
11 work with athletes across multiple sports). Multiple sport-based programs do, however, also  
12 give athletes opportunities to interact and learn from each other about the development of  
13 excellence in respective sports.

### 14 **Education or Vocation Targeted**

15 The classification system, Table 2, identified that a vast majority of DCDEs are  
16 designed to support individuals as they embark on a dual career in sport and education. The  
17 support for dual careers in sport and education is provided from International Standard  
18 Classification of Education (ISCED) level 2 to 7 (primary school to higher degree; e.g., PhD  
19 level). At vocational levels, the majority of support provided to athletes, through professional  
20 and / or private club programs, national sports programs, or players' union programs, is in the  
21 form of education about the possibilities and opportunities for vocational pursuits. To a  
22 lesser extent, flexibility is provided by some organizations to support vocation and sport  
23 pursuits in tandem, but there is often no interaction between the environments concerned,  
24 meaning the athlete is still responsible for many elements of their dual career. Specific  
25 vocations, which have supported dual careers, include those incorporated within the armed

1 forces (e.g., combat roles, engineering roles, medical roles, and human resources or finance  
2 roles) with some programs providing support for the combination of these career pathways  
3 and elite sport careers.

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4 Insert Figure 1 about here

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## 6 **Support Provided**

7 Across environments, the support provided varied from basic financial or sport  
8 science support through to full support, including financial, academic and sport flexibility,  
9 and sport science support. Even within environments, support for athletes could be either  
10 fixed (i.e., all athletes received the same support) or flexible (i.e., individual athletes  
11 receiving different levels of funding, coaching support, and academic flexibility depending  
12 on their situation and context). Decisions about what support to provide were usually  
13 dependent upon the amount of funding available, strategic priorities, and athlete potential.  
14 For example, in some sport-friendly universities, there is significant funding invested by the  
15 university due to dual careers being a strategic priority. This means they are able to provide  
16 greater and more diverse support to dual career athletes in comparison to other universities  
17 which may not see this as a priority.

## 18 **Centralized versus Decentralized**

19 Across the taxonomy, DCDEs were identified as being either centralized (i.e., all  
20 support for dual career was provided on site at the same place) or decentralized (i.e., support  
21 may be provided across multiple facilities, with expert support for a particular area of  
22 athletes' dual careers in each). Centralized systems ensure that the dual career athletes do not  
23 have to travel between sport and education or vocational environments, meaning they have  
24 more time to dedicate to their endeavors. However, in some instances, it also meant that the  
25 support being provided was not as appropriate as it might be if individuals are involved in a

1 decentralized system (e.g., coaching provision at the centralized environment may not be as  
2 high-quality as at venues which provide specific support from elite coaches). Additionally,  
3 with the appropriate support, the dual career athletes were able to develop the skills to  
4 manage their careers independently, as opposed to becoming passive receivers of support.  
5 With decentralized systems, although there may be difficulties with travelling between  
6 environments (it was identified that athletes can travel over 2 hours daily in some instances),  
7 the support for education and sport development may be more appropriate and individualized,  
8 with specialists in each domain providing the required support for athletes.

### 9 **State Involvement**

10 As categorised by Aquilina and Henry (2010), national approaches to dual career can  
11 include: (a) state-centric provision, backed by legislation (e.g., Spain), (b) the state as a  
12 facilitator, fostering formal agreements between educational and sporting bodies (e.g.,  
13 Belgium, Denmark, Finland or Sweden), (c) national federations / sports institutes as  
14 facilitator / mediator, engaging directly in negotiation with educational bodies on behalf of  
15 the individual athlete (e.g., United Kingdom), and (d) a ‘laissez faire’ approach, where there  
16 are no formal structures in place (e.g., Slovenia). The level of state involvement impacts how  
17 the environment functions. To expand, some programs that are state funded, have clear  
18 metrics by which the environment (and consequently athletes) are judged (e.g., medal tallies  
19 at international competitions) and, which, impacts the support provided to dual career  
20 athletes. Contrastingly, programs that were able to make their own decisions around their  
21 measures for success, they may be able to fund support provision which align to their values  
22 and beliefs (e.g., reaching potential in academics).

### 23 **Discussion**

24 The current study increases the research knowledge of dual career environments and  
25 achieved the aims of: (a) identify and classify the different types of DCDEs by providing a

1 taxonomy of DCDEs across seven countries in Europe and providing real world examples;  
2 and (b) outlining the key features of these DCDEs. Results highlighted that there are eight  
3 types of DCDEs found in different proportions across the seven countries. Some types (e.g.,  
4 sports friendly schools and elite sport schools) were found in all seven countries, whereas,  
5 other types (e.g., combined dual career systems and defense force programs) were only found  
6 in two countries. Results also indicated that, within each DCDE, decisions have been made  
7 about: (a) the career stage the support is intended for (b) the nature and scope of the  
8 environment, (c) the sports they support, (d) the educational level or vocation targeted, (e) the  
9 support provided (f) whether or not the environment is part of a centralized or decentralized  
10 system, and (g) whether or not there is state involvement in the system. Collectively, these  
11 results provide a meaningful framework for identifying, comparing, and a more in-depth  
12 understanding the diverse environments that support dual career athletes' development.

13 Previous work (e.g., Aquilina & Henry, 2010; Henry, 2013) has identified different  
14 national approaches taken to supporting dual careers in higher education. The current study,  
15 through the lenses of the holistic athletic career model (Wylleman et al., 2013), extends this  
16 work by providing an overview of the current types of DCDEs present across seven countries  
17 in Europe, focusing on the entire dual career pathway (from school-age to vocation), the  
18 specific features of each environment, and the key decisions which have been made when the  
19 environments have been developed. For example, the current work highlights different  
20 approaches to funding the programs via state/sport federation involvement and the level of  
21 support provided to dual career athletes. Further, the current study illustrated, not only the  
22 variations between nations, but the variations in approaches within nations. For example,  
23 depending on the sporting and educational stage of the athlete, different DCDE types might  
24 support the needs of dual career athletes.



1           As highlighted, the results of the current study enable researchers and practitioners to  
2 gain a clearer understanding of the current support gaps in the dual career lifespan. To  
3 illustrate, there exists a limited number of environments that target three areas of the dual  
4 career lifespan: the early initiation stage of the sporting career, the vocational level, and the  
5 post-sport career or discontinuation stage. Specifically, the results have highlighted that  
6 support for dual career athletes is most commonly instigated from ISCED level 2 onwards.  
7 From this age, elite sport schools and sports friendly schools provide support for athletes  
8 deemed talented and as having potential to be successful elite athletes. Some early  
9 specialization sports (e.g., gymnastics), however, may promote the pursuit of sport from the  
10 age of 3-5, which overlaps with early school age (i.e., ISCED level 1). The European  
11 Guidelines for dual careers (European commission, 2012) states the importance of “setting up  
12 specific opportunities for early specialization sports in the school education system” (p. 22).  
13 The current study highlights a lack of movement on this guideline from the seven countries  
14 sampled in this study. In light of the current findings and considering the risks of early  
15 specialization sports, it is crucial that the young individuals are still supported in their sport,  
16 academic, and psychological development, and this is an area for consideration in future  
17 research and applied work.

18           Further, results identified that there is a lack of environments which target the  
19 combination of dual careers at the vocational level, with the only examples of vocation-led  
20 programs, in this study, being defense forces programs. A number of sport-led environments  
21 supported athletes in a vocation, but there tended not to be communication or formal  
22 arrangements with the vocational organizations and, therefore, the dual career athlete was left  
23 to manage the demands of their vocational domain. Additionally, although vocation-led  
24 environments do allow athletes to train alongside pursuing a career, the lack of support from  
25 organizations other than those which are military based, does mean other athletes may be

1 missing out on the opportunity to combine high-level sport with a vocation. Ultimately these  
2 barriers could mean that aspiring athletes are forced to make a decision about whether or not  
3 to carry on competing (perhaps full-time) or move into a full-time job. The lack of  
4 environments is also mirrored by the lack of research on the combination of sport and a  
5 vocation (Stambulova & Wylleman, 2019). Hence, the expansion of vocational environments  
6 that provide support for athletes and the understanding of the factors that impact the  
7 effectiveness of these from a research perspective will help ensure that more athletes are  
8 supported more effectively to pursue this type of dual career moving forward.

9         Finally, although some programs do support athletes' retirement, the support often  
10 ceased soon after the end of an athletic career (i.e., 6 months to 2 years after). The transition  
11 out of sport and into a post-sport career is commonly problematic for athletes (see Park et al.,  
12 2013; Wylleman, 2019) and, although taking part in a dual career is designed to support this,  
13 by providing additional skills that athletes can use in retirement, there can still be a series of  
14 emotional and psychological challenges which can create difficult processes (Park et al.,  
15 2013). Research has associated several mental health concerns with poor athletic retirement  
16 (Cecić Erpič et al., 2004; Knights et al., 2016; Torregrossa et al., 2015). Therefore, the  
17 extension of appropriate support (e.g., sport psychology and performance lifestyle) into the  
18 discontinuation stage to support and protect athletes from these mental health concerns is an  
19 area DCDEs could target to ensure continued support for athletes.

20         Results of the current study further extend previous understanding of environments  
21 that support dual careers by also highlighting the need to consider whether the DCDE is an  
22 education-, vocation-, sport-based or combined program and the ways this may influence the  
23 support provided. If the program is a sport-, education- or vocation-based system, this  
24 taxonomy highlights the need to ensure that all key stakeholders are informed about the  
25 provisions and how this may influence their education or sport respectively. In combined

1 systems, although this need is reduced, there is still a need to ensure that all stakeholders are  
2 engaged and supportive of the environment being created. As has been highlighted in  
3 previous work (e.g., Aquilina, 2013; Brown et al., 2015; Debois et al., 2015; Wylleman et al.,  
4 2013), continual and effective support is crucial for athlete development - in the current  
5 context, this also extends to ensuring roles within the DCDE are clear. Understanding, how  
6 DCDEs may be funded and the extensive differences in provision that can and is being  
7 provided by DCDEs across Europe enables those individuals who are involved in decision-  
8 making about provision to have greater knowledge of the areas they could provide additional  
9 or better support.

10 From an applied implications perspective, the current work gives private and public  
11 organizations responsible for sport, education, or vocation an overview of a number of areas  
12 which need to be considered when developing DCDEs. Specifically, it gives a framework  
13 whereby management and practitioners can consider the features they wish to include in their  
14 environment (see table 2). The current work also allows sport governing bodies (and other  
15 organizations) a basis upon which to understand their current context and identify areas for  
16 development in relation to dual careers. For example, governing bodies can use the current  
17 framework to develop a national, sport-specific framework as a way to evaluate the types and  
18 numbers of appropriate (to their sport) environments which currently support their talent  
19 pathway. In doing so, they may identify areas and types of environments which are lacking or  
20 could be introduced in their current talent development systems, giving a greater number of  
21 athletes better support in their pursuit of excellence in sport and education or vocation. In  
22 doing this, organizations may also evaluate and identify current practice and where this may  
23 need to be adapted - for instance where there is a plethora of sport friendly schools supporting  
24 athletes, but no sport (or dual) based programs which more readily combine sport and  
25 education / vocational pursuits.

1           To extend the current work, there are a number of areas which future research may  
2 wish to focus on which will help to extend knowledge and understanding of dual career  
3 environments, their key features and their effectiveness. This research provides a basis for  
4 future investigation and a framework for each type of environment highlighted. Firstly, the  
5 current study is limited to a sample of seven countries. While these countries were  
6 purposively sampled to provide a diverse sample of approaches, investigation of contexts  
7 outside of this, e.g., other European countries and countries throughout the world, could  
8 expand our understanding further. Although this study gives an overall understanding of the  
9 European context, a number of countries across the world (e.g., America and Australia) are  
10 facilitative of dual careers and a taxonomy of these countries could identify further  
11 environments not highlighted in this study, advancing knowledge. Additionally, although the  
12 taxonomy gives a general understanding of the state of DCDEs, not all categories or types of  
13 DCDEs are present in every country investigated and, therefore, the taxonomy is not specific  
14 to all national contexts. It is suggested that future research to develop national taxonomies  
15 following the same model and classification system would provide a clearer understanding of  
16 national contexts and allow relevant stakeholders to understand the context within which they  
17 are working.

18           Further, detailed (longitudinal) descriptions of each of the different types of DCDEs,  
19 exploring the key features of environments, will also help expand knowledge in the area and  
20 allow practitioners and researchers to extrapolate and transfer knowledge to their own  
21 contexts. Specifically, while this research increases the awareness of the multiple types of  
22 environments that exist to support dual careers, it is unclear which environments, or the key  
23 characteristics of environments, that are the most effective in supporting individuals in their  
24 athletic, academic, and personal development. To understand this, further research is required  
25 that establishes key criteria or features that deem environments as effective (or ineffective) in

1 supporting athletes and allows meaningful comparisons between environments. Future  
2 research may also wish to, when considering specific sports, research the impact of athletic  
3 development stages that come with early or late specialization sports (i.e., early specialization  
4 sports commence at age 3, whereas late specialization sports can commence as late as age 19)  
5 and the impact this can have on the types of DCDE needed to support the talent pathway.  
6 Finally, a measurement or monitoring tool to evaluate environments' effectiveness and  
7 provide guidelines to improve provisions could improve dual career support in practice.

## 8 Conclusion

9 In conclusion, the current study built upon previous literature by highlighting the  
10 main types of DCDEs present across Europe, establishing a system for classifying DCDEs,  
11 and identifying the key considerations that are made in this context. This study advances  
12 research through considering the variety of environments that support dual career athletes.  
13 Results highlighted that there are a number of different considerations for DCDEs when  
14 supporting athletes, and that there are a number of different approaches to providing dual  
15 career support. This work is an important basis for future research, with in-depth studies of  
16 environments and the development of monitoring tools or guidelines for DCDEs identified as  
17 important next steps. The research also has practical implications in the context of dual  
18 career, through providing a possible framework for developing national taxonomies and,  
19 therefore, identifying DCDE characteristics and gaps in dual career support.

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