












Article

The Impact of Dual-Career Support Systems on Perceived Barriers Among European Student-Athletes with Disabilities

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Abstract: The aim of this study was to compare the socio-demographic, sporting characteristics and perceptions of student-athletes with disabilities of perceived barriers according to the state system of dual career support. Two hundred and twelve student-athletes with disabilities from two European countries with state centralisation in dual career-related education competences ($n = 97$) and three European countries with a laissez-faire system ($n = 115$) participated in this research. The perceptions of dual-career student-athletes (EST-SPORT) questionnaire, the exercise benefits/barriers scale (EBBS), and the athletic identity measurement scale (AIMS) were used for data collection. Student-athletes in countries with laissez-faire systems perceived the difficulty of combining family care ($p = 0.024$; $ES = 0.31$), the time required to practice sport ($p = 0.005$; $ES = 0.38$), as well as the limitation of timetables ($p < 0.001$; $ES = 0.52$) and places that make sport practice possible ($p < 0.001$; $ES = 0.73$) as barriers. In conclusion, when a country's educational system does not have structured support systems for dual careers, student-athletes perceive more barriers, regardless of their sporting level.

Keywords: education; European Union; para-sport; athletic identity; sport; state centralisation

1. Introduction

In the context of this study, a dual career is characterized by the integration of an athletic profession with education or employment, allowing athletes to achieve success

in both areas without excessive strain, while safeguarding their educational and career aspirations (Storm & Eske, 2022). In this regard, the European Union acknowledges the significance of dual careers via policies designed to safeguard athletes' educational and career interests, highlighting the necessity of aligning sports with education (Henry, 2013). Along these lines, in 2012, the European Commission published a set of guidelines for member states to promote national dual-career policies (European Commission, 2012). The European Union attaches great importance to improving the education of athletes through university education in order to develop a range of skills and competences that will be useful in their transition to post-sport life (Wylleman & Reints, 2010). The ethical idea behind this interest lies in the fact that the athlete deserves to be helped to integrate positively into the community he/she has previously represented and improved through his/her sporting performance. To this end, numerous studies have shown the successful operation of dual-career models across Europe (Geraniosova & Ronkainen, 2015; Linnér et al., 2020; Morris et al., 2021).

However, despite the efforts made by the European Commission, the support scenario for dual careers in Europe is highly disparate. In this regard, Aquilina and Henry (2010) conducted a study which compared the regulatory frameworks of the 25 member states in sports and academic policy. This study found that while some countries regulated dual careers through the state, which allows dual-career athletes to have a legislative framework to rely on, other countries followed a laissez-faire system or non-formal structures, where there was no state regulation of dual careers at all. In relation to this, previous studies have found that student-athletes in countries with centralised state regulation were more motivated to pursue sport and academic goals than in states with laissez-faire systems, leading to higher drop-out rates from dual careers for student-athletes under this system (Lupo et al., 2015).

Furthermore, several European countries have implemented specific legislation and frameworks to support these careers (Henry, 2013; Morris et al., 2021; Storm & Eske, 2022). For example, Spain and Portugal regulate the adaptation of academic timetables for high-level athletes, including para-athletes, while France promotes agreements between universities and sports federations that facilitate academic flexibility (Hernando Domingo et al., 2024). In contrast, Italian legislation does not generally meet the needs of student-athletes, including those with disabilities (Brustio et al., 2020).

In the same vein, although legislators are increasingly concerned with promoting policies to support the dual careers of disadvantaged groups (Geraniosova & Ronkainen, 2015), most of the experiences observed have been with athletes without any kind of disability, with the exception of some recent research focusing on student-athletes with disabilities (Maciá-Andreu et al., 2023; Vaquero-Cristóbal et al., 2023). On this basis, the dual-career model should evolve to be extended to other sectors of the population, such as athletes with disabilities, in pursuit of greater social inclusion. Values such as sacrifice, persistence, overcoming adversity, and the will to improve are common traits among athletes with disabilities (de Asís Roig, 2017). These qualities can contribute positively to the development of their dual career and to overcoming the usual obstacles they may find as individuals with disabilities.

In this regard, the drop-out or lack of success in dual-career programs is also linked to the obstacles and barriers perceived by their users. In able-bodied athletes, it has been found that barriers can be both external and internal to the athlete (López de Subijana et al., 2015). Among the most relevant external barriers, the lack of flexible structures at institutional level (Fuchs et al., 2021; Rodrigues da Costa et al., 2021), lack of available time (Cosh & Tully, 2014; Stevens et al., 2000), and the incompatibility between the academic and sporting calendars (O'Neil et al., 2021) are the most prominent.

Regarding internal barriers, episodes of high stress may affect the student-athlete's self-perception of the viability of the model (Park et al., 2013), many of them caused by periods of competition or exams (Baron-Thiene & Alfermann, 2015). In addition to the stress, the lack of emotional support from coaches or parents (Guirola Gómez et al., 2018; Kristiansen, 2017) can be obstacles to dual-career development.

In regard of obstacles that particularly affect student-athletes with disabilities, research on this issue is scarce and recent (Maciá-Andreu et al., 2023; Vaquero-Cristóbal et al., 2023). Some studies point to the broad range of barriers perceived by athletes with disabilities (Bailey, 2005), including individual barriers such as physical limitations and self-imposed limits; social barriers such as lack of preparation of technical staff to manage specific needs, and lack of civic sense and empathy towards them; and environmental barriers such as lack of adequate structures for para-sports practice (Martin, 2013). In this context, recent research revealed that student-athletes with disabilities assigned higher significance to obstacles in dual careers compared to their counterparts without disabilities (Vaquero-Cristóbal et al., 2023). This was particularly evident in aspects such as the geographical distances between home, university, and training facilities, the challenges of harmonizing academic and athletic achievements with family responsibilities, and the perception of struggling to strike an optimal balance between study and training commitments.

Despite the above, no previous studies were found that analysed the barriers faced by student-athletes with disabilities who are pursuing post-compulsory studies, nor have they analysed whether these barriers could depend on the type of regulation offered by the state to the dual career. This is fundamental, because the development of dual careers in this population can not only contribute to their social integration through two important pillars such as sports and education (Thomas & Smith, 2009), but can help improve employability and post-sport stability (Stambulova, 2016).

Therefore, the objectives of this research were (1) to examine the socio-demographic and sporting characteristics of European student-athletes with disabilities, with a focus on those engaged in dual-career pathways primarily in post-compulsory education (including undergraduate, master's, and doctoral levels, as well as students in the final years of compulsory education) and (2) to analyse the perceptions of dual careers, the barriers to sport, and the identities as athletes of European student-athletes with disabilities according to the dual-career support system in each country.

2. Materials and Methods

2.1. Design

The study design was descriptive and cross-sectional, with non-probability convenience sampling. The STROBE statement (Vandenbroucke et al., 2014) was followed for the research design and the development of the manuscript. The study participants gave their consent to participate prior to data collection and were informed of the research objectives and the confidentiality of the data obtained during the study. The institutional ethics committee reviewed and authorized the protocol designed for data collection (code: CE012101), in accordance with the code from the World Medical Association and the Declaration of Helsinki.

2.2. Participants

The sample size was calculated using Rstudio 3.15.0 software (Rstudio Inc., Boston, MA, USA). The significance value was set at $\alpha = 0.05$. The standard deviation (SD) was established considering previous studies (SD = 0.75) (Mateo-Orcajada et al., 2022). With an estimated error (d) of 0.10, the required sample size for a 99% confidence interval (CI) was 212 subjects.

The final sample consisted of 212 student-athletes with a disability from two European countries with state-centred dual-career regulation (Spain and Portugal) ($n = 97$) and three European countries with laissez-faire systems of dual-career regulation (Italy, Ireland, and Romania) ($n = 115$). Regarding the type of disability, most of them had a physical disability ($n = 126, 59.4\%$), followed by visual ($n = 45, 21.2\%$), hearing ($n = 34, 16.0\%$), and, finally, intellectual ($n = 7, 3.3\%$).

The inclusion criteria were as follows: (a) to have a disability according to the legal regulations of the country of origin; (b) to be an athlete federated in a sport modality and active in competition; and (c) to be currently enrolled in pre-university education (post-compulsory non-university studies), a university degree, a university master's degree, or a doctorate.

Although the primary focus of this study is on student-athletes pursuing post-compulsory education, a subset of participants from the final years of compulsory education was included. This decision was made because these students are already engaged in competitive sports at a level that requires balancing academic and athletic commitments, thereby sharing similar dual-career challenges as their counterparts in higher education (Brewer & Movahedazarhouli, 2021).

2.3. Procedure

The perceptions of dual-career student-athletes (ESTPORT) questionnaire (Sánchez-Pato et al., 2016), the exercise benefits/barriers scale (EBBS) (Sechrist et al., 1987) and the athletic identity measurement scale (AIMS) (Vissek et al., 2008) were used for data collection.

The ESTPORT questionnaire is a validated questionnaire used in previous research (Abenza-Cano et al., 2020; Gavala-González et al., 2019; Sánchez-Pato et al., 2016). It allows the measurement of student-athletes' perceptions of their dual careers. The internal consistency of the questionnaire is high, as Cronbach's alpha coefficients are above 0.70, this being the lower limit accepted as reliable (Corbetta, 2007; Sánchez-Pato et al., 2016). This questionnaire is composed of 84 items with different types of response options (Likert scale, multiple choice, and short answer), with most of the questionnaire items using the Likert scale. To obtain information about socio-demographic and contextual variables such as gender, age, sport level, sport situation, study situation, or work situation, questions 1, 2, 6, 7, 8, 9, and 14 were included. Furthermore, to know the importance given to each of the elements of the dual career and the difficulty of reconciling sporting and academic life, questions 16, 17, 18, and 20 were also included. With the aim of discovering the perceived barriers, the scores obtained in items 26 to 37 of the questionnaire were included. These questions used a Likert scale from 1 (strongly disagree) to 5 points (strongly agree). Finally, in addition to those detailed above, the home country, type of disability, and hours per week spent studying and training or competing were included in this research.

The EBBS was developed in response to a need for an instrument to determine the perceptions of individuals concerning the benefits of and barriers to participating in sporting activities. The resulting instrument was tested for internal consistency (Cronbach's alpha = 0.95), the validity of its constructs (variance explained: 65.2%), and test-retest reliability (ICC = 0.89). From this survey, items about the barrier scale were included in the present research. The questions used a four-response Likert-type format with responses ranging from 4 (strongly agree) to 1 (strongly disagree).

Finally, the AIMS was used (Vissek et al., 2008). The AIMS requires participants to respond to seven items designed to assess aspects of athletic identification, with the athlete's role measured on a scale ranging from 1 (strongly disagree) to 7 (strongly agree). These items are grouped into different scales: social identity (items 1 to 3), exclusivity (items 4

and 5), and negative affectivity (items 6 and 7). The scale has shown an internal reliability coefficient of 0.81 (Vissek et al., 2008).

The following centres participated in the data collection: Universidad Católica San Antonio de Murcia (Spain), Università degli Studi di Roma “Foro Italico” (Italy), Instituto Politécnico de Viseu—IPV (Portugal), Universitatea Națională de Educație Fizică și Sport București—UNEFIS (Romania), and the University of Limerick (Ireland). For the distribution of the questionnaire, each university contacted its own sports service to send the questionnaire to all athletes with disabilities belonging to the university, as well as local, regional, and national associations and foundations whose main focus was on athletes with disabilities, and the country’s Paralympic committee. These organisations then circulated the questionnaire by email to all athletes with disabilities in their databases, specifying that the questionnaire should only be completed by those who were currently enrolled in the last years of compulsory education (pre-university education), a university degree, a university master’s degree, or a doctorate.

First, the participants completed and signed the informed consent form, where they were informed about the objectives and procedures of the research, and subsequently they completed the questionnaire anonymously and individually, without academic or competitive pressure, and without the presence of their coaches or teachers. The participants did not receive any extra indication or explanation about the purpose of the questionnaire, other than that indicated in the questionnaire itself. The questionnaire was disseminated through the GoogleForms[®] platform, and the participants completed it in 20–30 min (Supplementary File S1). The answers to each of the questions were marked as compulsory in GoogleForms[®] so that all participants completed 100% of the items.

2.4. Statistical Analysis

The normality of the data was initially assessed with the Kolmogorov–Smirnov test, the homogeneity with Levene’s test, and the sphericity with the Mauchly test. All the variables included in the analysis showed a normal distribution, so parametric tests were performed. The descriptive analysis of quantitative variables showed mean values and standard deviations, while frequencies and percentages were calculated for qualitative variables. Student’s t-test for independent samples was performed to establish the existing differences in the score of different items with numerical, continuous, or discrete quantitative scales, depending on the type of education system in the country (state centralisation vs laissez-faire systems). Cohen’s *d* was calculated to establish the effect size (ES) in these cases, defined as small when $d < 0.2$, moderate when $d < 0.8$, and large when $d > 0.8$ (Cohen, 1988). Chi-squared analysis (χ^2) made it possible to establish the differences in the questions with a qualitative, non-numerical, ordinal, or nominal scale, according to the type of education system in the country (state centralisation vs laissez-faire systems). Cramér’s *V* was used for the post hoc comparison of the 2×2 tables, and the contingency coefficient was used in the $2 \times n$ tables, to obtain the statistical values. The maximum expected value was 0.707; $r < 0.3$ indicated a low association; $r < 0.5$ indicated a moderate association; and $r > 0.5$ indicated a high association (Cramér, 1946). The $p < 0.05$ value was established to determine statistical significance.

3. Results

3.1. Socio-Demographic and Sporting Characteristics of European Student-Athletes with Disabilities According to the Type of Dual-Career Support System in the Country

Table 1 shows the descriptive, socio-demographic, and sporting characteristics of both groups of student-athletes. The majority of the participants were male (64.2%), were studying for a university degree (49.5%) or were in pre-graduate training (37.1%), had

a physical disability (59.2%), were not working (75.5%), competed at the national level (40.6%), considered themselves semi-professionals (38.7%), were at the beginning of their sporting careers (55.2%), and their priority was their studies (55.0%).

When differentiating athletes according to the support systems that govern dual careers in their countries, it is noteworthy that the group of student-athletes with state-centralised regulation devoted more hours per week to sports ($p = 0.002$; $ES = 0.41$), had competed at a higher competitive level ($p < 0.001$; $ES = 0.36$), had a higher percentage of professional athletes ($p = 0.007$; $ES = 0.21$), and had a higher percentage of student-athletes than athlete-students ($p = 0.001$; $ES = 0.22$) than in countries with laissez-faire systems (Table 1).

3.2. Perceptions of Dual Careers, Barriers to Sport, and Identities as Athletes of European Student-Athletes with Disabilities According to the Dual-Career Support System in the Country

Table 2 shows the differences in dual-career interference, barriers to dual-career success, benefits and barriers related to sports performance, and identity as an athlete depending on the type of dual-career system in the country. About half of the sample considered that their studies did not interfere with their sports performance (52.8%), nor did their sports performance interfere with their studies (53.3%). The main barriers towards 'achieving a good balance between sporting life and studies' were 'students' timetables are not flexible' (3.26/5), 'the university/educational institution is far from my training centre' (3.15/5), 'I do not have enough university/educational institution support' (3.10/5), and 'the university/educational institution is far from my home' (3.09/5). Regarding the perceived barriers in relation to the practice of sports, these were 'exercise facilities do not have convenient timetables for me' (2.49/4) and 'exercise tires me' (2.42/4). Lastly, regarding identity as an athlete, the highest rated items were 'I have many goals related to sports' (5.54/7) and 'I consider myself an athlete' (5.41/7).

Notably, student-athletes in countries with laissez-faire regulation systems were more likely to perceive 'having to take care of family' ($p = 0.024$; $ES = 0.31$), 'sport took up too much of their time' ($p = 0.005$; $ES = 0.38$), 'exercise facilities do not have convenient timetables for me' ($p < 0.001$; $ES = 0.52$), and 'there are too few places for me to exercise' ($p < 0.001$; $ES = 0.73$) as barriers. In contrast, student-athletes with state-centralised regulation stated to a greater extent that 'exercise takes too much time away from family relationships' ($p < 0.001$; $ES = 0.48$), 'exercise is hard work for me' ($p = 0.042$; $ES = 0.27$), 'I think people in exercise clothes look funny' ($p < 0.001$; $ES = 0.88$), 'I consider myself an athlete' ($p = 0.022$; $ES = 0.31$), 'I have many goals related to sports' ($p = 0.046$; $ES = 0.27$), 'most of my friends are athletes' ($p = 0.008$; $ES = 0.37$), 'sports are the most important part of my life' ($p = 0.013$; $ES = 0.34$), and 'I spend more time thinking about sports than anything else' ($p = 0.015$; $ES = 0.34$) (Table 2).

Table 1. Descriptive, socio-demographic, and sporting characteristics of student-athletes according to the type of dual-career system in the country.

	Total Sample (Mean ± SD)	Student-Athletes with State-Centralised Regulation (Mean ± SD)	Student-Athletes in Laissez-Faire Systems (Mean ± SD)	t	p	Mean Dif.	95% ICC		ES
							LCI	UCI	
Age (years)	24.53 ± 8.05	23.95 ± 6.05	25.03 ± 9.41	−0.970	0.333	−1.07 ± 1.11	−3.267	1.112	0.14
Hours per week work	30.79 ± 15.15	33.65 ± 17.21	28.77 ± 13.52	1.016	0.316	4.87 ± 4.80	−4.836	14.588	0.31
Hours per week study	26.09 ± 16.27	25.70 ± 17.54	26.43 ± 15.08	−0.321	0.749	−0.73 ± 2.28	−5.241	3.774	0.04
Hours per week sport	14.53 ± 17.02	18.39 ± 23.46	11.28 ± 7.04	3.088	0.002	7.10 ± 2.30	2.569	11.639	0.41
	Total Sample (n [%])	Student-Athletes with State-Centralised Regulation (n [%])	Student-Athletes in Laissez-Faire Systems (n [%])	p	χ ²	ES			
Gender	Men: 136 (64.2%)	Men: 62 (63.9%)	Men: 74 (64.3%)	0.948	0.004	0.00			
	Women: 76 (35.8%)	Women: 35 (36.1%)	Women: 41 (35.7%)						
Studies	Pre-grade: 73 (34.6%)	Pre-grade: 36 (37.1%)	Pre-grade: 37 (32.5%)	0.148	5.348	0.16			
	Grade: 98 (46.4%)	Grade: 48 (49.5%)	Grade: 50 (43.9%)						
	Master: 35 (16.6%)	Master: 10 (10.3%)	Master: 25 (21.9%)						
	Doctorate: 5 (2.4%)	Doctorate: 3 (3.1%)	Doctorate: 2 (1.8%)						
Type of disability	Hearing: 34 (16.1%)	Hearing: 17 (17.5%)	Hearing: 17 (14.9%)	0.366	3.170	0.12			
	Visual: 45 (21.3%)	Visual: 20 (20.6%)	Visual: 25 (21.9%)						
	Physical: 125 (59.2%)	Physical: 59 (60.8%)	Physical: 66 (57.9%)						
	Intellectual: 7 (3.3%)	Intellectual: 1 (1.0%)	Intellectual: 6 (5.3%)						
Do you work?	Yes: 52 (24.5%)	Yes: 21 (21.6%)	Yes: 31 (27%)	0.371	0.801	0.61			
	No: 160 (75.5%)	No: 76 (78.4%)	No: 84 (73%)						

Table 1. Cont.

	Total Sample (Mean ± SD)	Student-Athletes with State-Centralised Regulation (Mean ± SD)	Student-Athletes in Laissez-Faire Systems (Mean ± SD)	t	p	Mean Dif.	95% ICC		ES
							LCI	UCI	
Highest competitive level	Regional: 8 (3.8%)	Regional: 1 (1.0%)	Regional: 7 (6.1%)	<0.001	26.888	0.36			
	National: 86 (40.6%)	National: 34 (35.1%)	National: 52 (45.2%)						
	Europe: 24 (11.3%)	Europe: 3 (3.1%)	Europe: 21 (18.3%)						
	World: 50 (23.6%)	World: 30 (30.9%)	World: 20 (17.4%)						
	PG: 44 (20.8%)	PG: 29 (29.9%)	PG: 15 (13.0%)						
Self- consideration as an athlete	Amateur: 74 (34.9%)	Amateur: 26 (26.8%)	Amateur: 48 (41.7%)	0.007	9.802	0.21			
	Semi-professional: 82 (38.7%)	Semi-professional: 36 (37.1%)	Semi-professional: 46 (40%)						
	Professional: 56 (26.4%)	Professional: 35 (36.1%)	Professional: 21 (18.3%)						
Sporting moment	At the beginning: 116 (55.2%)	At the beginning: 50 (52.1%)	At the beginning: 66 (57.9%)	0.658	0.837	0.06			
	At the highest level: 70 (33.3%)	At the highest level: 35 (36.5%)	At the highest level: 35 (30.7%)						
	At the end of career: 24 (11.4%)	At the end of career: 11 (11.5%)	At the end of career: 13 (11.4%)						
Self- consideration in the dual career	Student-athlete: 91 (45.0%)	Student-athlete: 55 (56.7%)	Student-athlete: 36 (34.3%)	0.001	10.234	0.22			
	Athlete-student: 111 (55.0%)	Athlete-student: 42 (43.3%)	Athlete-student: 69 (65.7%)						

LCI: Lower Confidence Interval; UCI: Upper Confidence Interval; PG: Paralympics Games.

Table 2. Differences in dual-career interferences, barriers to dual-career success, benefits and barriers related to sports practice, and identity as athletes according to the type of dual-career system in the country.

	Total Sample (n [%])	Student-Athletes with State-Centralised Regulation (n [%])	Student-Athletes in Laissez-Faire Systems (n [%])	<i>p</i>	χ^2	ES			
Interference of studies on performance	Yes: 100 (47.2%) No: 112 (52.8%)	Yes: 52 (53.6%) No: 45 (46.4%)	Yes: 48 (41.7%) No: 67 (58.3%)	0.085	2.975	0.12			
Performance interference on studies	Yes: 99 (46.7%) No: 113 (53.3%)	Yes: 49 (50.5%) No: 48 (49.5%)	Yes: 50 (43.5%) No: 65 (56.5%)	0.306	1.047	0.70			
	Total Sample (Mean \pm SD)	Student-Athletes with State-Centralised Regulation (Mean \pm SD)	Student-Athletes in Laissez-Faire Systems (Mean \pm SD)	<i>t</i>	<i>p</i>	Mean dif.	95% ICC		ES
							LCI	UCI	
Difficulty in reconciling sports and studies (scale: 1 to 5)	3.22 \pm 0.91	3.34 \pm 0.89	3.12 \pm 0.92	1.735	0.084	0.22 \pm 0.12	−0.030	0.464	0.24
The university/educational institution is far from my home	3.09 \pm 1.35	3.07 \pm 1.45	3.11 \pm 1.26	−0.220	0.826	−0.04 \pm 0.18	−0.407	0.326	0.03
The university/educational institution is far from my training centre	3.15 \pm 1.34	3.13 \pm 1.49	3.17 \pm 1.21	−0.168	0.867	−0.03 \pm 0.18	−0.397	0.335	0.03
Barriers to achieving a good balance between sporting life and studies (scale: 1 to 5)									
I find myself unable to balance study and training time	2.61 \pm 1.32	2.59 \pm 1.34	2.63 \pm 1.32	−0.209	0.834	−0.04 \pm 0.18	−0.400	0.323	0.03
My current job does not allow me to study enough	2.58 \pm 1.40	2.57 \pm 1.33	2.60 \pm 1.51	−0.152	0.879	−0.03 \pm 0.22	−0.461	0.395	0.02
I have to take care of my family	2.19 \pm 1.33	1.97 \pm 1.21	2.38 \pm 1.40	−2.278	0.024	−0.41 \pm 0.18	−0.771	−0.056	0.31
I am usually tired	2.97 \pm 1.29	2.91 \pm 1.35	3.02 \pm 1.24	−0.619	0.537	−0.11 \pm 0.18	−0.461	0.241	0.08
I lose the rhythm of the academic year	2.09 \pm 1.28	2.91 \pm 1.36	2.89 \pm 1.22	0.075	0.940	0.01 \pm 0.18	−0.338	0.365	0.01
I lose touch with my classmates	2.78 \pm 1.34	2.74 \pm 1.40	2.82 \pm 1.29	−0.396	0.693	−0.07 \pm 0.19	−0.440	0.293	0.06
The cost of education is high	2.61 \pm 1.40	2.56 \pm 1.41	2.66 \pm 1.39	−0.540	0.590	−0.10 \pm 0.19	−0.485	0.276	0.07
I do not have enough university/educational institution support	3.10 \pm 1.38	3.04 \pm 1.35	3.15 \pm 1.42	−0.557	0.578	−0.11 \pm 0.19	−0.484	0.271	0.08
Students' timetables are not flexible	3.26 \pm 1.34	3.25 \pm 1.36	3.28 \pm 1.33	−0.166	0.868	−0.03 \pm 0.19	−0.396	0.334	0.02
Training timetables are not flexible	2.85 \pm 1.36	2.72 \pm 1.43	3.03 \pm 1.26	−1.461	0.146	−0.31 \pm 0.21	−0.717	0.107	0.23

Table 2. Cont.

		Total Sample (n [%])	Student-Athletes with State-Centralised Regulation (n [%])	Student-Athletes in Laissez-Faire Systems (n [%])	<i>p</i>	χ^2	ES			
Exercise benefits/barriers scale (scale: 1 to 4)	Exercising takes too much of my time	2.18 ± 0.89	2.36 ± 0.97	2.02 ± 0.80	2.820	0.005	0.34 ± 0.12	0.103	0.583	0.38
	Exercise tires me	2.42 ± 0.95	2.48 ± 0.96	2.37 ± 0.96	0.837	0.404	0.11 ± 0.13	−0.150	0.371	0.11
	Places for me to exercise are too far away	2.26 ± 0.96	2.21 ± 0.92	2.31 ± 0.99	−0.809	0.419	−0.11 ± 0.13	−0.367	0.153	0.10
	I am too embarrassed to exercise	1.43 ± 0.81	1.43 ± 0.88	1.43 ± 0.76	0.061	0.951	0.01 ± 0.11	−0.215	0.229	0.00
	It costs too much to exercise	1.79 ± 0.85	1.79 ± 0.88	1.79 ± 0.83	0.037	0.971	0.00 ± 0.12	−0.227	0.236	0.00
	Exercise facilities do not have convenient timetables for me	2.49 ± 1.11	2.79 ± 1.05	2.23 ± 1.10	3.758	<0.001	0.56 ± 0.15	0.266	0.852	0.52
	I am fatigued by exercise	1.91 ± 0.92	2.03 ± 0.80	1.80 ± 1.01	1.823	0.070	0.23 ± 0.13	−0.019	0.481	0.25
	My spouse (or significant other) does not encourage exercising	1.40 ± 0.74	1.45 ± 0.87	1.36 ± 0.63	0.930	0.353	0.10 ± 0.10	−0.108	0.301	0.12
	Exercise takes too much time from family relationships	2.01 ± 0.97	2.28 ± 1.02	1.78 ± 0.88	3.810	<0.001	0.50 ± 0.13	0.239	0.752	0.52
	I think people in exercise clothes look funny	2.38 ± 1.09	2.86 ± 1.02	1.98 ± 0.98	6.334	<0.001	0.87 ± 0.14	0.601	1.145	0.88
	My family members do not encourage me to exercise	1.44 ± 0.82	1.51 ± 0.93	1.39 ± 0.72	1.050	0.295	0.12 ± 0.11	−0.105	0.343	0.14
	Exercise takes too much time from my family responsibilities	1.88 ± 0.91	2.11 ± 0.99	1.68 ± 0.79	3.563	<0.001	0.44 ± 0.12	0.194	0.676	0.48
	Exercise is hard work for me	2.01 ± 0.93	2.15 ± 0.92	1.90 ± 0.92	2.044	0.042	0.26 ± 0.13	0.009	0.509	0.27
	There are too few places for me to exercise	2.24 ± 1.12	1.82 ± 0.97	2.59 ± 1.13	−5.240	<0.001	−0.77 ± 0.15	−1.057	−0.479	0.73
Athletic identity measurement scale (scale: 1 to 7)	I consider myself an athlete	5.41 ± 1.67	5.69 ± 1.67	5.17 ± 1.64	2.304	0.022	0.53 ± 0.23	0.076	0.975	0.31
	I have many goals related to sport	5.54 ± 1.72	5.79 ± 1.76	5.32 ± 1.66	2.008	0.046	0.47 ± 0.24	0.009	0.936	0.27
	Most of my friends are athletes	4.36 ± 1.77	4.71 ± 1.73	4.06 ± 1.76	2.698	0.008	0.65 ± 0.24	0.175	1.126	0.37
	Sports are the most important part of my life	5.09 ± 1.72	5.41 ± 1.68	4.83 ± 1.71	2.508	0.013	0.59 ± 0.23	0.125	1.047	0.34
	I spend more time thinking about sports than anything else	4.52 ± 1.84	4.86 ± 1.89	4.24 ± 1.76	2.441	0.015	0.61 ± 0.25	0.118	1.107	0.34
	I feel bad about myself when I do poorly in sports	4.84 ± 1.79	4.81 ± 2.01	4.86 ± 1.61	−0.182	0.856	−0.05 ± 0.25	−0.536	0.445	0.03
	I would be very depressed if I were injured and could not compete in sports	5.18 ± 1.85	5.03 ± 1.94	5.30 ± 1.78	−1.069	0.286	−0.27 ± 0.26	−0.778	0.231	0.14

LCI: Lower Confidence Interval; UCI: Upper Confidence Interval.

4. Discussion

The first objective was to discover the socio-demographic and sporting characteristics of European student-athletes with disabilities according to the type of dual-career support system in each country. Previous studies have shown that there are major differences in the motivation with which student-athletes approach dual careers in relation to the national support system, it being lower in countries with *laissez-faire* systems (Lupo et al., 2015). The lack of supportive policy systems may be a direct determinant of success in the development of dual-career models (Hong et al., 2022). It has been demonstrated that countries with centralised regulation enable the development of supportive dual-career environments for able-bodied athletes (Henry, 2013). This is due to factors such as the existence of supportive holistic cultures (Pink et al., 2015), access to expert counselling (Storm et al., 2021), or the creation of sport-friendly educational structures (Morris et al., 2021). In the case of athletes with disabilities, this research has shown a beneficial impact of state regulations on the number of hours spent in sport, a higher competitive level achieved, and a higher percentage of professional para-athletes. Traditionally, increased hours among high-level athletes with disabilities have been linked to benefits such as psychological improvements and increased self-esteem (Levy, 1991), two positive elements that have also been linked to the effects of dual careers (Stambulova & Wylleman, 2019), hence the impact on this type of population could be doubly beneficial.

Regarding the level of sport achieved, a higher competitive status and degree of professionalisation is strongly linked to sporting and academic success in student-athletes (Mateo-Orcajada et al., 2022). Given that a higher degree of professionalisation and sporting level implies a better economic position in athletes with disabilities (Niedbalski, 2015, 2020), a dual career could contribute positively to achieving autonomy in the post-sporting life of these subjects, considering that financial uncertainty is one of the main concerns of para-athletes when they face retirement (Bundon et al., 2018).

A remarkable result of this study was that able-bodied student-athletes under state-centralised national regulation regimes assigned a higher value to their identity as students than as athletes. This is noteworthy given that a strong athletic identity is a common constant among able-bodied student-athletes (López de Subijana et al., 2015). The prioritisation of the student identity over the athlete identity in para-athletes could be due to a lower level of acceptance of their athletic potential in relation to their able-bodied counterparts (McDougall et al., 2015). This would be linked to the widespread belief among athletes with disabilities that they will not have the same financial support opportunities as those athletes without a disability (Fagher et al., 2023). This could help to reinforce dual-career programmes among those with disabilities as a means of achieving financial autonomy and ensuring good standards in post-sporting life, increasing social inclusion.

The second objective of the present research was to analyse perceptions of dual careers, barriers to sport, and the identities as athletes of European student-athletes with disabilities according to the dual-career support system in each country. In this sense, this research found that the barriers perceived by student-athletes with disabilities coincided to a large extent with those detected in the dual careers of able-bodied athletes, highlighting the lack of available time and the lack of flexible structures (López de Subijana et al., 2015). Furthermore, with regard to previous research focusing on the barriers perceived by student-athletes with disabilities, the results coincide with previous studies concerning the difficulty of reconciling study and training time and travel distances (Vaquero-Cristóbal et al., 2023).

With respect to identity, this dimension is understood as the perception that an individual has of himself/herself based on the link he/she has created with the sport he/she has played and the degree of importance of this dimension with respect to the other areas

of life (Pallarés et al., 2011). It was found that the majority of the sample prioritised their academic careers over their sporting careers. This differs from what has been found in previous studies, where high level athletes without disabilities put their sporting identity before their academic identity (Gavala-González et al., 2019), except in the confinement phase of COVID-19 in 2020, where for the first time a prioritisation of studies over sport was observed (Abenza-Cano et al., 2020). This finding could be linked to the high cost of sports equipment in para-sports and the low financial reward derived from competition (McLoughlin et al., 2017), which lead to athletes with disabilities seeing a non-sporting career as a more viable option for the development of a stable and sustainable life in the long term. Not surprisingly, in this research, most of the participants wanted to continue with their dual careers, granting importance to both the academic and sporting aspects of their careers.

A significant finding was that the majority of the student-athletes surveyed had a physical disability. This is in line with other studies that have found that the physically impaired were the majority of the total university student population with disabilities, followed by those who are visually and hearing impaired (Pudaruth et al., 2017). This could be because people with physical disabilities do not present limitations at the intellectual level or in the capture and transmission of information, and these aspects are more limiting for academic performance (Maciá-Andreu et al., 2023; Pudaruth et al., 2017). In this study, the intellectual disability subgroup—although representing only 3.3% of the sample—encompasses a range of conditions as defined by national regulations, which may vary from mild to moderate impairments. These conditions often involve challenges in academic processing and social integration that differ from those experienced by individuals with specific learning disorders such as dyslexia or dyscalculia (Brewer & Movahedazarhouli, 2021). Furthermore, while athletes with hearing impairments generally have access to the same training facilities as their able-bodied peers, they frequently encounter communication barriers and limited access to specialized support services in academic settings (Fagher et al., 2023). These nuances highlight the importance of recognizing and addressing the distinct needs within the heterogeneous population of student-athletes with disabilities.

About para-sports, there is a greater offer for the physically impaired, as is the case with athletics in the Paralympic Games, where the categories for athletes with physical disability are greater than for the rest of the disabled population (World Para Athletics, 2020; World Para Swimming, 2023). Along the same lines, there are eight eligible physical impairments in the Paralympic Games classifications, while in the case of intellectual and visual impairment there is only one category (International Paralympic Committee, 2019). This gives an idea of the differences in the volume of athletes participating in a Paralympic Games according to the type of disability. Therefore, it could be that people with physical disabilities have more opportunities to participate and progress both in dual careers and para-sports than people with other disabilities. However, because a greater severity of the disability limits the individual's chances of pursuing a sporting career (Hammond & Jeanes, 2018; Patatas et al., 2022), this modulating factor should be considered in future research to confirm the results of the present study.

On the other hand, the present research found that there was no clear trend among student-athletes with disabilities as to whether their studies interfered with sporting performance or vice versa. However, they did indicate that they had some difficulty in reconciling sports and studies, with this being a prominent difficulty. This is in line with the problems experienced by non-impaired student-athletes, whose demands include better management of effective training and study time (Cosh & Tully, 2015). Poor time management can lead to a feeling of inadequacy that has a negative impact on sports performance and academic results (Papanikolaou et al., 2003). In this respect, the lack of time available to develop a

dual career with guarantees is a problem that affects almost half of student-athletes (Stevens et al., 2000).

Another barrier identified in the study was the absence of institutional/ university support or lack of flexibility in the timetables of sport/training centres. The lack of flexible structures at both university and sporting levels to accommodate the successful progress of student-athletes' sporting and academic lives has been identified as a priority concern within dual careers (Brustio et al., 2020; Rodrigues da Costa et al., 2021). In the case of people with disabilities, the absence of supportive structures is in itself an obstacle they face in their daily lives (Hong, 2015). Several studies have shown that adapting the academic calendar to the competition environment helps students in their yearly scheduling and improves their performance (Pink et al., 2018). These adaptations must therefore be taken into account in the design of adapted dual-career models.

Another barrier detected was the distance between the university or educational centre and the training centre. This barrier is an almost non-existent concern in the scientific literature on dual careers of able-bodied student-athletes. However, the present study establishes that a greater distance between study and training centre is a barrier to adapted dual careers. When analysing the results of the present research, it must be taken into consideration that most of the included population had a physical disability (almost 60%) and that mobility difficulties have previously been identified as a handicap in people with physical disabilities, especially when undertaking university studies (Tandy & Meacham, 2009). In this respect, online education has been described as a tool that can contribute to greater inclusiveness of students with physical disabilities by limiting barriers relating to mobility and access (Renes, 2015). In the same vein, remote education was positively valued by student-athletes without disabilities by saving time on travel and allowing a better organisation of their time (Abenza-Cano et al., 2020). However, this online teaching model might not be as beneficial for student-athletes with intellectual, visual, or auditory disabilities, as they may need special adaptations to access the content and be able to actively participate in the activities (Cooper, 2021). As a result, distance education could optimise dual-career models for student-athletes with physical disabilities, but it is not so clear that this is the solution for other types of disabilities since they necessitate appropriate adjustments according to the type and degree of disability that are rarely addressed in the depth that this requires (Cooper, 2021; Smith, 2021).

Moreover, given that not all political systems established by different countries are equally conducive to the success of dual careers (Aquilina & Henry, 2010; Henry, 2013), the second objective of the present research was to analyse whether the type of educational system of support for dual careers promoted by each country influenced the perception of student-athletes with disabilities. The present research compared two very different ways of developing dual careers, with logistical support from the entities involved, whose maximum representation was the centralisation within the state of the measures to be carried out to promote the success of dual careers, and laissez-faire systems where the athlete usually negotiates unilaterally the form of support with the academic entity, without a regulatory framework to adhere to (Lupo et al., 2015). Significant differences were found between the two groups for variables relating to their sporting performance. More specifically, it was found that in state-centralised systems, athletes had competed at a higher competitive level, considered themselves to be professional athletes in a higher percentage and student-athletes rather than athlete-students, and were able to dedicate more hours per week to sports. In line with the findings of this study, previous research has indicated that, in state-centralised models, student-athletes not only have a higher competitive level, but also show a higher motivation towards sports and academics than in laissez-faire countries (Lupo et al., 2015). In the same vein, previous studies have shown that

in countries with a greater awareness of dual-career support, there are higher expectations for athletes to develop a sporting and academic career to achieve a fuller development, with support structures being established to achieve this aim (Ryba et al., 2015). Furthermore, in countries with a laissez-faire model, a significant drop-out of athletes from studies is observed, especially in the first years of university (Guidotti et al., 2013). This could be due to the absence of strong social support and the lack of dual-career development environments, which are key factors affecting the student-athlete's commitment to sports and studies (Morris et al., 2021). In the population with disabilities, this type of support is especially necessary, as it has been shown to have tangible benefits for the psycho-social development of the athlete in his or her sporting career (Swanson et al., 2008) and in improving their academic performance (Lombardi et al., 2016).

On the other hand, it is worth noting that student-athletes in both countries with state-centralised systems perceived that those sports took too much time away from family relationships. The importance of family support has been highlighted in previous studies as a key aspect for the success of dual-career programmes (Knight et al., 2018). The family not only provides emotional support, counselling, and understanding (Miró et al., 2018), but also represent an important source of financial support when paying for their university studies and for financing sports careers (González Fernández & Torregrosa, 2009; Li & Sum, 2017). In this respect, for student-athletes with disabilities, family support is an even more significant factor given the high cost of sports equipment for para-sports (Buts et al., 2011).

In countries with laissez-faire models, on the other hand, this issue is perceived differently, as athletes see caring for their families as an obligation that takes time away from their studies, as well as from their sporting activities. This fact may be related to the lack of financial and structural support from the state, which would imply that athlete-students with disabilities would have to take on a more responsible role in their household finances, having to prioritise this over a dual career (Buts et al., 2011). In addition to this, disabled athletes usually have a low socio-economic level, due to the lack of sponsors, scholarships, and specific grants (McLoughlin et al., 2017; Schmitt & Mazo, 2021) added to the expenses generated in the acquisition of para-sports equipment (Buts et al., 2011) or the costs of transporting such equipment to competitions (Reina-Vaillo, 2018). So it is possible that the lack of support for the achievement of balance in dual careers, especially in countries under the laissez-faire model, makes them prioritise their studies over sports, and that they perceive more barriers to sports practice, as academic study is a way to obtain a better financial situation in the future compared to the income derived from sports practice (Fuchs et al., 2021).

The findings of the present research can help to guide policies that seek to protect the education and sport rights of persons with disabilities in the quest to end the existing discrimination and promote a real support system to help student-athletes achieve dual-career success. The lack of homogenisation of dual-career support programmes in the EU and, subsequently, the lack of ad hoc policies for those with disabilities should be taken into account by policy makers in order to generate enhanced environments and legal frameworks that reinforce the tacit support for para-athletes that contributes to their social inclusion. In this respect, the results of this research highlight the importance of establishing specific policies in countries that do not have regulations in relation to the dual careers of student-athletes, mainly on issues related to family reconciliation, reduction of unnecessary time to facilitate sport practice, availability of adequate timetables, and provision of suitable sports facilities and spaces for practice.

It is worth noting that this is the first study to analyse the perception of dual careers, barriers to sport, and identity as athletes of European student-athletes with disabilities according to states' dual-career support policy systems. However, this study is not without

limitations. A first limitation of this research is the lack of unification in the regulations between the different countries with regard to the legal criteria for establishing that each subject has a disability and the systems for classifying them, although in all cases the criterion followed was that the person had obtained the disability according to the regulations of the country in which he or she lived.

In addition, a second limitation is that the lack of unification in the classification of disabilities among the different countries made it impossible to establish common criteria to assess the severity of disability for each participant. This is an issue that should be considered in future studies, as it may be modulating the barriers experienced by student-athletes.

A third limitation of the present research was that the specific type of disability presented by each participant was not taken into account in the present analysis, but rather their general classification. This was because the focus of the present research was not to differentiate between types of disability. However, given that the type of disability could be a modulator of the perception of barriers by student-athletes with disabilities (Maciá-Andreu et al., 2023), this is an important question to be addressed in the future.

Finally, the fourth limitation of the study is the predominance of male participants (64.2%). Institutional and federation data indicate that male athletes with disabilities outnumber female athletes with disabilities in high-performance settings, mirroring our sample's gender ratio (Fagher et al., 2023; Pudaruth et al., 2017). This discrepancy may stem from broader societal factors, such as lower female participation in competitive para-sports or less visibility of female para-athletes. Our findings underscore the importance of creating more targeted initiatives to foster female participation in both sport and higher education among individuals with disabilities.

In terms of future research suggestions, given the differences in the sporting success achieved by athletes in countries with a centralised dual-career support system and who identify better with their role as both students and athletes, it would be necessary to carry out studies analysing the influence of specific political actions in *laissez-faire* countries on the promotion of dual careers. Likewise, the role of federations, clubs, sponsors, or grants in the development of dual careers could be interesting topics of study to take into account for a deeper understanding of this topic. Furthermore, the type of disability may also be modulating the perception of barriers to dual-career success (Maciá-Andreu et al., 2023). More specifically, previous studies have focused on the difficulty of students with intellectual disabilities to succeed in post-compulsory studies (Brewer & Movahedazarhouli, 2021), an issue that can be confirmed by the lower number of participants belonging to this category in the present research; and the difficulties that athletes with hearing disabilities have in continuing their sports practice, as this type of disability is not considered as a categorizable disability for the Paralympic Games (International Paralympic Committee, 2019), which leaves them outside those specific programmes aimed at supporting Paralympic student-athletes (Comité Paralímpico Español, 2023). So future research should carry out specific political action plans to monitor athletes/students in general, and specifically with auditory or intellectual disabilities, so that the lack of adaptations to the dual-career system does not lead to them abandoning either of the two aspects.

5. Conclusions

In conclusion, the majority of student-athletes with disabilities encountered difficulties in achieving success in dual careers, citing timetables, travel distances, the lack of support at the university/educational institution, and the accumulated fatigue of trying to combine performance in these two areas as the main barriers. In addition, when a country's educational system does not have structured dual-career support systems, student-athletes attain a lower level of sporting achievement, dedicate less time to sports, identify less as athletes,

and perceive more barriers related to time and the availability of sports facilities; whereas athletes from countries with structured dual-career support systems are more aware of the family sacrifices they need to make to achieve success in their dual careers.

Supplementary Materials: Supplementary File S1: Questionnaire: https://docs.google.com/forms/d/1NNvBIppRuip6lI_BK47D9ligRiPE2jr2OVvw1WNifnc/edit (accessed on 6 March 2025).

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