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**Italian student-athletes only need of a more effective daily schedule to support their dual career.**

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### Abstract

**Purpose:** The present study aimed to investigate dual-career issues of Italian student-athletes according to gender, age, type of sport, competition level, university path, and year of attendance variables to highlight their main problems and solutions.

**Methods:** An ad-hoc 24 item questionnaire was administered to 711 academic Italian student-athletes (Mean age=23; SD=4 years). A multivariate was applied for data related to the first 21 (section A), whereas answers from the last 3 items (section B) were only described.

**Results:** For section A items, two factors (factor 2: items 5, 7, 8, 14; Cronbach alpha=0.728; factor 5: items 10, 11; Cronbach alpha=0.78) related to sport participation and education for future job emerged. For both factors, effects emerged between “year of attendance” subcategories (i.e., lower values for “out of course” subgroup), whereas only for factor 5, differences emerged in terms of age (i.e, higher values for younger than older subgroup). For section B, most student-athletes declared to wish schedules of lessons and exams (e.g., higher number of sessions; oral on-line interrogations) for better combining sport and academic requirements.

**Conclusion:** The present study represents a further step to better understand the Italian student-athletes’ daily and weekly limitations and wished solutions related to the combination of sport and academic tasks. Institutional bodies should consider the present findings in case of future policies in supporting dual-career.

*Keywords:* dual career; student-athlete; sport demands; academic demands; European Union policies.

## Introduction

Intensive training and competition levels create several challenges for elite athletes when they aim to support a dual career by combining their sport and educational qualifications [1]. In fact, youth athletes usually start competing around 8 years of age and need a 10-year experience to achieve elite performance, with additional 5–10 years to compete at the highest level [2]. At the same time, students spend around 30 hours per week to achieve an adequate academic career [3]. Therefore, youth elite athletes encounter several difficulties in combining both sport and educational commitments [1, 4], determining crucial limitations at list in one of the two future careers [2].

Northern American and United Arab Emirates sport and educational systems are effectively organized to support student-athletes in achieving their academic and sport goals [5-7]. On the contrary, in Europe, the relationships between sport and educational systems are not still well established [8], favouring talented athletes' sport dropout to prioritize education to prepare for future job opportunities or to postpone (i.e., >24 years of age) the achievement of a degree [9]. In this framework, among European countries, Italy has been classified into the *laissez-faire*/no formal structure category, which is characterized by the absence of support policies toward student-athletes' dual career, determining the need of individual negotiations between athletes and the teaching staff for a flexible academic path [9]. Although several universities have implemented their dual career structures and/or established agreements with national sports federations [10], interventions are still restricted to a particular academic/sports environment, involving only a limited number of elite athletes at national level. Therefore, the European Commission promoted the establishment of supporting guidelines for student-athletes' dual career [11] and encouraged a better understanding and monitoring of the career development of elite athletes to provide pertinent and effective

interventions [12].

The knowledge of issues related to the student-athletes' dual career has been investigated in different European countries, even providing fundamental cross-national information. European student-athletes' motivations and identity were investigated in sports and academics context [13-18]. In particular, motivation levels in Italy is higher in female, in student-athletes who are practicing sport at elite level, enrolling into a sport science area, and attending an academic "in course" year [19]. Moreover, the higher identity scores of the Italian student-athletes were reported by the younger and higher competition level participant subgroups, demonstrating to be highly involved into the student-athlete's role.

Despite the above findings, the implementation of new and original questionnaires, and less studied variables, such as educational area and year of attendance [13-15, 18, 19], could effectively contribute to better understand the student-athletes' dual career aspects, highlighting the main limitations in combining academic and sport demands, and promoting corresponding and effective solutions.

Therefore, the present study aimed to investigate the Italian student-athletes' (i.e., from the University of Torino, Italy) characteristics related to the academic and sport environments in relation to gender, age, type of sport, competition level, educational area and year of attendance.

## **Methods**

### ***Participants***

Although all students enrolled into the University of Torino were contacted by email, their participation had to respond to the following eligibility criteria: i) being enrolled in an academic course at the University of Torino; and ii) currently competing in national sub-elite (i.e., from local to national competition steps within the same season) or elite levels (i.e., from

national to national or international competition steps within the same season) or international level. As consequence, a total of 711 Italian student-athletes (Mean age=23; SD = 4 years) met the inclusion criteria and participated in the study (Table 1).

[Table 1 near here]

### ***Procedure***

The Bioethics Committee of the University of Torino (Turin, Italy Protocol Number 20743) approved this study. The possible participants were contacted by e-mail and informed about the nature of the study (guaranteeing anonymity). The participation in the study was voluntary and confidential, and endorsed by means of a written informed consent. General information, including gender, age, type of sport (i.e., individual sport; team sport), competition level (i.e., elite; sub-elite), educational area (i.e., medical and humanistic area; technical and economical area; sport science area) and year of attendance (i.e., first-intermediate year; last year; out of course) were recorded at the beginning of the study. Participants responding to the above mentioned inclusion criteria were asked to fill in an online ad-hoc 24-item-questionnaire about dual career aspects. In particular, the questionnaire (Supplementary Material 1) was composed of two sections: 21 items with answers expressed according to a Likert scale and progressive categorical answers, section A; and 3 items with open answers, section B. Before the submission of the questionnaire, a large number (n=33) of items was formulated and submitted to the judgment of seven experts to ascertain the pertinence of each item in relation to purpose of the study.

### ***Data Analysis***

Gender, age, type of sport, competition level, educational area, and year of attendance were considered as independent variables to provide a detailed scenario of the results associated to the questionnaire.

For continuous variables data (i.e., items in section A) a principal component analysis was performed to determine the factor structure of the questionnaire, according to the study sample. According to previous studies [14, 18, 20], the items and factors were selected by considering the criteria of factor loadings above 0.40 and eigenvalues above 1.0, and the internal consistency of the factors was examined using Cronbach's Alpha. Values of  $\alpha \geq 0.70$  were considered to be acceptable. Afterward, multivariate analysis of variance (MANOVA) was run to determine eventual differences related to gender, age, type of sport, competition level sub-groups, educational area, and year of attendance for questionnaire components. In case of main effect, analysis of variance (ANOVA) was applied to show eventual differences related to specific factors and variables (also including interactions between different subject subcategories). Bonferroni's post hoc test was applied. Effect size was determined using partial eta squared ( $\eta^2$ ).

The open answers related to section B of the questionnaire have been grouped according to their meaning. The Statistical Package for Social Sciences (SPSS 24.0 for Windows) was used for all statistical analyses, and the statistical significance level was set at  $p < 0.05$ .

## **Results**

### ***Section A of the questionnaire***

The principal component analysis revealed six factors which are able to explain 59.36% of the total variance. However, only two of these factors (i.e., 2 and 5) presented a sufficient level of internal consistency (Cronbach's alpha  $> 0.7$ ) and were considered for subsequent analysis as reported in Table 2.

[Table 2 near here]



The Table 3 shows means and standard deviations of the scores reported for two acceptable factors (Cronbach's alpha > 0.7), in relation to gender, age, type of sport, competition level, educational area and year of attendance subcategories.

The MANOVA outcomes yielded significant effects for age [ $F(2,604) = 4.575$ ; Wilks'  $\Lambda = 0.985$ ; partial  $\eta^2 = 0.015$ ;  $p = 0.011$ ], competition level [ $F(2,604) = 8.336$ ; Wilks'  $\Lambda = 0.973$ ; partial  $\eta^2 = 0.027$ ;  $p < 0.001$ ], educational area [ $F(2,1208) = 3.852$ ; Wilks'  $\Lambda = 0.975$ ; partial  $\eta^2 = 0.013$ ;  $p = 0.004$ ], and year of attendance [ $F(4,1208) = 3.905$ ; Wilks'  $\Lambda = 0.975$ ; partial  $\eta^2 = 0.019$ ;  $p = 0.013$ ]. Univariate ANOVAs showed that “factor 2” component was significantly different in competition level [ $F(1,605) = 15.649$ ; partial  $\eta^2 = 0.025$ ;  $p < 0.001$ ], and educational area [ $F(2,605) = 3.202$ ; partial  $\eta^2 = 0.010$ ;  $p = 0.041$ ], whereas “factor 5” was significantly different in age [ $F(2,605) = 9.021$ ; partial  $\eta^2 = 0.015$ ;  $p = 0.003$ ], educational area [ $F(2,605) = 4.661$ ; partial  $\eta^2 = 0.015$ ;  $p = 0.010$ ] and year of attendance [ $F(2,605) = 5.936$ ; partial  $\eta^2 = 0.019$ ;  $p = 0.003$ ]. Specifically considering “factor 2” component, student-athletes in out of course group reported lower values with respect to those of student-athletes in last [estimated mean difference = -0.643 95% CI (-1.132, -0.441)] and in the first and intermediate [estimated mean difference = -0.612 95% CI (-1.484, -0.842)] year group. Differently for “factor 5”, younger student-athletes presented a higher value compared to older student-athletes [estimated mean difference = 0.626 95% CI (0.153, 1.100)]. Although a main significance was reported for educational areas, no post-hoc effect emerged. Furthermore, student-athletes in out of course group reported lower values compared to student-athletes in last year [estimated mean difference = -0.751 95% CI (-1.481, -0.021)] and in the first and intermediate year group [estimated mean difference = -1.364 95% CI (-2.094, -0.634)].

[Table 3 near here]

Finally, a significant effect emerged for the interaction between gender, type of sport, and competitive level [ $F(2,604) = 3.255$ ; Wilks'  $\Lambda = 0.989$ ; partial  $\eta^2 = 0.011$ ;  $p = 0.039$ ] reporting a significance only in the “factor 2” [ $F(1,646) = 5.937$ ; partial  $\eta^2 = 0.015$   $p = 0.015$ ]. Specifically for female athletes performing individual sports, post-hoc analysis showed higher values for sub-elite participants with respect to elite counterparts [estimated mean difference = 0.875 95% CI (0.366, 1.383)]. Moreover, a significant effect emerged for the interaction between age, type of sport, level of competition, and educational area only in the “factor 2” component [ $F(1,646) = 4.578$ ; partial  $\eta^2 = 0.00$ ;  $p = 0.008$ ]. Specifically, for younger athletes performing individual sports at elite level, post-hoc analysis showed lower values in participants enrolled in technical and economical area in comparison with participants studying in sport science educational area [estimated mean difference = -2.235 95% CI (-3.718, -0.753)]. Finally, for younger athletes performing individual sports and engaged in sport science studies, sub elite participants presented higher values than elite counterparts [estimated mean difference = 1.146 95% CI (0.469, 1.823)].

### ***Section B of the questionnaire***

One hundred and one participants (14.2 % of total sample) replied to the open answer “Indicate potential improvements in the organization of your sports and university engagements”. The student-athletes highlighted the need of specific hours to dedicate to lessons and sport trainings for taking advantage of the time and getting the best. Additionally, the participants would like to remove the compulsory attendance for some lessons and to have the possibility to know in advance the dates of the exams or extra calls for the exams. Finally, they requested the possibility to increase the number of scholarships for facilitating the dual-career.

Sixty five participants (9.1% of total sample) replied to the open answer “Indicate potential improvements of dual career programs needed for student-athletes in your sporting environment”. The student-athletes underlined the importance of flexibility of sport training (e.g. adequacy of the sport training to university life; exoneration from training for exams), as well of supports for a dialogue among the institutions and sports federations. Moreover, in term of services some student-athletes would like to have sports facilities near the university or the possibility of smart transport from university to training camp.

Finally, 76 participants (10.7 % of total sample) reported an answer in the item “Indicate possible improvements of dual career programs needed for student-athletes in your university”. Most student-athletes would like to benefit from flexibility of academic lessons (e.g. no compulsory attendance; no lessons in later afternoon). Moreover, some student-athletes suggested the opportunity to study by means of e-learning platforms, tutors for educational support, as well as to obtain greater time flexibility, a greater number of examination sessions, and scholarships for sporting merits.

## **Discussion**

This study represents a new way of monitoring the dual career of student-athletes, highlighting the main aspects, limitations, and wished solutions in combining academic and sport careers. The main finding of the provided questionnaires consists in the identification of two significant factors, which can be termed: “Sport” (i.e., factor 2 within the applied statistical analysis on the “section A” of the questionnaire) and “Education for future job” (i.e., “factor 5”). In fact, “factor 2” was related to sport participation and involvement (e.g., Do you feel that, because of your sports, your study engagement is suffering a decline?; Do you think that your sport implication is negatively influencing your results in the study?), whereas “factor 5” was particularly oriented to education aspects related to future job (e.g.,

Do you think that your university path is effectively preparing you to enter the work-market after the bachelor/master degree?; How do you consider your future working potentiality after the bachelor/master degree?).

Some differences related to the items of these two factors emerged between subject subcategories, highlighting how “dual career” issues should be specifically contextualized even for large participations and restricted contests. In fact, for both factors, out of course student-athletes reported lower values especially with respect to last year counterparts, highlighting how studying performances can be associable with the sport involvement. However, for similar student-athletes’ subcategories classified in a previous study [18], no effect emerged in terms of sport and career motivations, contrasting eventual associations between the two analyses. Differently, similar trends with another study on student-athletes’ identity [18] emerged for the “Education for future job” factor and the age subcategories, for which positive answers emerged especially for younger subjects with respect to older counterparts. At the same time, no coherent trend emerged with the student-athletes’ motivation, which reported similar values in different socio-cultural circumstances [15, 19, 21].

For the last three optional and open items related to wished solutions for academic, sport, and dual career issues (section B), student-athletes mainly highlighted the importance of practical purposes, which could be characterized by low-cost actions. In fact, despite e-learning platforms or individual tutoring could determine substantial costs, the promotion of joint actions between sport and academic institutional bodies could be rather complex and difficult to perform, better arranged schedule of lessons (e.g. only during morning) and sessions of exams (e.g., higher number of sessions; session fixed during arranged dates; oral on-line interrogation at agreed dates) need of only a better academic organization without any

additional costs. In other words, the flexibility (and not the reduction) of the academic demands could represent the first step to support student-athletes in dual-career. As consequence, a better academic scenario could favour student-athletes' approaches to their tasks, potentially improving motivation and self-efficacy.

Although the present study has the merit to have considered participants from different educational areas, the recruitment of student-athletes coming from only one Italian university could represent a limitation. In addition, an unbalanced recruitment of participants in relation to age (reduced number of >24 years old participants with respect to the younger counterpart), type of sport (more individual than team athletes), competition level (mostly sub elite student-athletes), educational path (limited "sport science area" subgroup), and year of attendance (limited "out of course" subgroup) could limit the generalization of findings. Finally, the most part of the questionnaire has been considered to structure a model, which actually consists of only two factors and six items, thus explaining a reduced portion of the whole analysis. Therefore, future studies have encouraged recruiting student-athletes from other Italian and European universities to make the findings showed in this study as more reliable and useful for the knowledge about dual career.

## **Conclusions**

The present study provided useful information about dual career, thus representing a further step to better understand the Italian student-athletes' daily and weekly demands, difficulties, and wished solutions related to the combination of sport and academic tasks, in line with the European Union Guidelines on dual-careers [11].

The most part of items showed that younger (i.e.,  $\leq 24$  years old) and in course (i.e., first and intermediate, and last year of attendance) participants seem to be more involved into the student-athlete role, contributing to better define previous trends emerged about

motivation [15, 19, 21] and identity [18]. Finally, Italian student-athletes highlighted that better schedules of lessons and exams could represent the most crucial solutions to effectively combine sport and academic demands. Therefore, future studies could directly investigate the outcomes of educational actions exclusively dedicated to student-athletes, such as restricted schedule of lessons (i.e., only during mornings, without long periods in between), higher number of exam sessions (i.e., one each couple of months), or alternative type of evaluations (i.e., on-line interrogations).

**Conflict of interest**

The authors declare no conflict of interest.

**Ethical approval**

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent**

Written informed consent was obtained from all individual participants included in the study.

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**Table 1.**

Demographic characteristics of the Italian student-athletes participating in the study

<b>Variables</b>		<b>n</b>	<b>%</b>
Participants		760	100
Gender	Female	355	50
	Male	356	50
Age	≤ 24 years	577	81
	> 24 years	134	19
Type of sport	Individual	437	62
	Team	274	38
Competition level	Sub-elite	484	68
	Elite	227	32
Educational area	Medical and humanistic area	333	47
	Technical and economical area	302	42
	Movement and sport area	76	11
Year of attendance	First year	294	41
	Intermediate and final years	335	47
	Out of course	82	12

**Table 2.**

Frequencies of occurrence (*p* value; effect size) of the Italian student-athletes in relation to the observed dual career aspects (i.e., questionnaire "A"; questions 1-8), in relation to gender, age ( $\leq 24$  years,  $> 24$  years), type of Sport (individual, team), competition Level (elite, sub-elite), educational area (i.e., medical and humanistic area, technical and economical area, movement and sport area), and year of attendance (i.e., first-intermediate year, last year, out of course) factors.

#	Answ er	Gender		Age		Type of Sport		Competition level		Educational area			Year of attendance		
		Female	Mal e	$\leq 24$ years	$> 24$ years	Individu al	Tea m	Sub elite	Elit e	Medical and humanistic area	Technical and economical area	Movement and sport area	First and intermediate year	Last year	Out of course
1	A	295	285	470	110	350	230	423* ( $\leq 0.001; 0.05$ )	157	274	246	60	278	236	66
	B	60	71	107	24	87	44	61* (0.012; 0.1)	70	59	56	16	57	58	16
2	A	350	349	568	131	429	270	477	222	328	296	75	332	286	81
	B	5	7	9	3	8	4	7	5	5	6	1	8	3	1
3	A	300* (0.03; 0.1)	250	446	104	361* (0.044; 0.1)	189	392	158	277	219	54	271	215	64
	B	48* (0.004; 0.03)	81	105	24	46* ( $\leq 0.001; 0.05$ )	83	73* (0.005; 0.2)	56	47	64	18	51	63	15
	C	5* (0.001; 0.06)	22	21	6	25* (0.001; 0.6)	2	18	9	9	15	3	11	13	3
	D	2	3	5	0	5	0	1* (0.021; 1.0)	4	0	4	1	2	3	0
4	A	337	335	547	152	413	259	452	220	316	283	73	316	275	81
	B	18	21	30	9	24	15	32	7	17	19	3	19	19	1

5	A	37	46	69	14	45	38	76* ( $\leq 0.001; 0.05$ )	7	36	44	3	36	41	6
	B	228	222	372	78	281	169	282* ( $0.014; 0.1$ )	168	226 <sup>‡</sup> ( $0.009; 0.2$ )	192	32	205	186	59
	C	19	23	32	10	25	17	33	9	17	16	9	21	15	6
	D	33	38	52	19	47	24	48	23	23 <sup>‡</sup> ( $\leq 0.001; 0.9$ )	21 <sup>‡</sup> ( $\leq 0.001; 0.9$ )	27	35	29	7
	E	38	27	52	13	39	26	45	20	31	29	5	38	23	4

Table 3. Mean and standard deviation of the sum of the item scores of the Italian student-athletes' reported for "Factor 2" (i.e., items 5, 7 8, 14) and "Factor 5" (i.e., items 10, 11), emerged as consistent (Cronbach's alpha > 0.7) in the analysis of section "A", and in relation to each subject subcategory.

		Component	
		Factor 2 (AU)	Factor 5 (AU)
Gender	Female	13.18±2.59	5.69±1.98
	Male	12.87±2.58	5.93±1.88
Age	≤24 years	13.01±2.58	5.95±1.86
	>24 years	13.11±2.63	5.21±2.11*
Type of Sport	Individual	13.28±2.50	5.78±2.01
	Team	12.48±2.70	5.86±1.8
Competition level	Sub elite	12.90±2.63	5.88±1.9
	Elite	13.23±2.51	5.66±2
Educational area	Medical and humanistic area	13.18±2.60	5.82±2.04
	Technical and economical area	12.87±2.57	5.87±1.8
	Sport science area	12.96±2.59	5.53±1.96
Year of attendance	First and intermediate year	13.12±2.64 <sup>¥</sup>	5.75±1.86 <sup>¥</sup>
	Last year	13.11±2.51 <sup>¥</sup>	6.11±1.86 <sup>¥</sup>
	Out of course	12.35±2.65	4.79±2.11

Notes: \*difference with respect to the other counterpart subgroup; <sup>¥</sup> difference with respect to "Out of course".