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## Motivation toward dual-career of Italian student-athletes enrolled in different university paths

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1 **Motivation toward dual-career of Italian student-athletes enrolled in different university**  
2 **paths.**

3

4 Running head: Motivation toward Dual-career in Italy.

5

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22

**1 Abstract**

2 The present study aimed to investigate motivations for the dual-career of Italian student-athletes  
3 attending different university courses. For this purpose, the Italian Harmonized version of the  
4 Student-athletes' Motivation toward Sports and Academics Questionnaire (SAMSAQ-IT/A) was  
5 administered to 760 Italian student-athletes. Exploratory Factor Analysis (EFA) and Cronbach's  
6 alpha coefficients were applied to test the factor structure and the reliability of the SAMSAQ-IT/A,  
7 respectively. Furthermore, the Confirmatory Factor Analysis (CFA) assessed the fit of the model. A  
8 multivariate approach was applied to verify subgroups effects ( $P \leq 0.05$ ) in relation to gender (i.e.,  
9 female, male), competition level (i.e., elite, sub-elite), type of sport (i.e., individual sport, team  
10 sport, disciplines performed both as individual and team), educational area (i.e., economical/law,  
11 humanistic, mathematics/engineering, medical, movement/sport sciences), and year of attendance  
12 (i.e., Bachelor 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> year, Master degree 1<sup>st</sup> and 2<sup>nd</sup> year, off course). EFA highlighted a three  
13 factor model (i.e., Sport Motivation, SM; Academic Motivation, AM; Dual Career Motivation, CM)  
14 with acceptable reliability estimates (SM=0.93; AM=0.85; CM=0.90) and good CFA indexes.  
15 Furthermore, differences between subgroups were found for gender (SM,  $P=0.02$ ; AM,  $P=0.007$ ),  
16 type of sport (AM,  $P=0.039$ ), competition level (SM,  $P<0.001$ ; CM,  $P=0.004$ ), educational area  
17 (SM,  $P=0.003$ ; AM,  $P=0.001$ ; CM,  $P<0.001$ ), and year of attendance (AM,  $P=0.005$ ; CM,  
18  $P=0.002$ ). In conclusion, SAMSAQ-IT/A demonstrated to be a useful tool and results showed that  
19 Italian student-athletes' motivation for dual-career has to be specifically investigate according to  
20 gender, age, competition level, type of sport, educational area, and year of attendance.

21

22 **Key words:** SAMSAQ-IT/A; validity; athletic career.

23

## 1 **Introduction**

2 Dual career is an emerging research area [1], which represents a crucial area for the European  
3 strategy on sport [2]. However, difficulties in ensuring an adequate holistic development of  
4 European elite and talented athletes continue to persist [3, 4]. In fact, the achievement of the athletic  
5 excellence usually necessitates around 20-30 h<sup>1</sup>week<sup>1</sup> dedicated to sports training and competitions,  
6 whereas the attaining of a satisfactory academic career requires of 30 h<sup>1</sup>week<sup>1</sup> of studying [5]. In  
7 addition, considering that youth athletes start competing around 8 years of age, a minimum of 10-  
8 year experience is required to achieve elite performance, and additional 5-10 years are needed to  
9 compete at the highest level [6]. Thus, talented athletes unavoidably are challenged in linking their  
10 sport and educational careers [7, 8], determining an overlapping of the talent selection with respect  
11 to the higher education [9].

12 Although Northern American and United Arab Emirates student-athletes sport and  
13 educational systems are effectively organized to support student-athletes in achieving their  
14 academic and sport goals, they frequently struggle to meet the requirements for the academic  
15 eligibility due to of a higher motivation toward the athletic success with respect to the academic one  
16 [10–12]. On the contrary, in Europe, the relationships between sport and educational systems are  
17 not still well established [3], favouring talented athletes' sport dropout to prioritize education to  
18 prepare for future job opportunities [13, 14] or to postpone (i.e., >24 years of age) the achievement  
19 of a degree. In this framework, among European countries, Italy was classified [15] into the *laisser-*  
20 *faire*/no formal structure category, which is characterized by the absence of support policies toward  
21 student-athletes' dual career, determining the need of individual negotiations between athletes and  
22 the teaching staff for a flexible academic path. Although several universities have implemented  
23 their dual career structures and/or established agreements with national sports federations [4],  
24 interventions are still restricted to a particular academic/sports environment and involving only a  
25 limited number of elite athletes at national level. Therefore, the European Commission promoted  
26 the establishment of support guidelines for student-athletes' dual career [16] and envisioned a better

1 understanding and monitoring of the career development of elite athletes to provide pertinent and  
2 effective interventions [2]. In particular, a valid and reliable quantitative approach for evaluating  
3 sport and academic orientations by means of a psychological perspective emerged as needful [1,  
4 17]. For this purpose, the knowledge of the student-athletes' motivation in relation to different  
5 individual characteristics (such as gender, type of sport, competition level, educational path, and  
6 year of attendance) could improve the awareness of their sport and academic prospects.

7 To understand the student-athletes' academic and athletic motivations, the original 30-item  
8 Student-athletes' Motivation toward Sports and Academics Questionnaire (SAMSAQ) [11] has  
9 been validated in American student-athletes competing into the Division I of NCAA. The  
10 instrument consists of a three-factor structure, representing motivation toward elite sport (i.e.,  
11 Student Athletic Motivation; SAM), motivation toward academic related tasks (i.e., Academic  
12 Motivation; AM), and motivation to pursue a professional sport career (i.e., Career Athletic  
13 Motivation; CAM), respectively. In particular, the SAM and CAM factors refer to motivations  
14 toward the desire to fulfil the current and perspective sport careers, respectively, whereas AM refers  
15 to motivations to accomplish an academic degree [11]. Findings highlighted that SAMSAQ is a  
16 valuable psychometric tool to monitor American student-athletes' motivations [11, 18, 19], also  
17 highlighting that the two "athletic" motivational factors (i.e., SAM and CAM) were mainly  
18 considered by male student-athletes with respect to female, whereas the opposite picture emerged in  
19 considering the "academic" factor (i.e., AM). However, it has been applied [10, 20] or  
20 recommended [21] in other national contexts. In Europe, student-athletes' motivations were  
21 investigated in different socio-cultural contexts [22 – 26]. In particular, the validity of the original  
22 SAMSAQ has been tested in a sample of female and male Italian student-athletes (i.e., SAMSAQ-  
23 IT) of different competition levels (i.e., county, regional, and national) and enrolled in Italian Sport  
24 Science degree courses [12]. Although the model maintained a three factor-structure (i.e.,  
25 Cronbach's alpha coefficients ranging from 0.70 to 0.84), the factor loadings of each subscale  
26 diverged from the American version. Furthermore, nine items were removed due to low item-to-

1 total correlations, low reliability, and low factor loading, highlighting the potential impact of a  
2 specific socio-cultural system on the factor structure of this psychometric tool. Therefore, an Italian  
3 harmonized version of the SAMSAQ (i.e., SAMSAQ-IT/A) has been developed [23] including 21  
4 items from the original SAMSAQ and 9 rephrased items as substitutes of those eliminated in the  
5 validation study [23]. Also in this case, the tool was administered to Italian student-athletes enrolled  
6 in Sport Science degree courses. In particular, SAMSAQ-IT/A showed a new and reliable structure  
7 which considers four different subscales focused on academic, athletic, athletic career, and sport  
8 career, respectively [23]. However, a limitation of these studies is represented by the enrolment of  
9 subjects in a sport related academic path, which could have affected results. In fact, a different  
10 factor structure could be expected administering the tool to student-athletes attending other  
11 university degree courses which calls for further research in this area.

12 At European level, two studies [25, 26] applied a cross-National approach to investigate  
13 motivations toward the dual-career of English, French, Italian, Portuguese, Swedish, and Slovenian  
14 student-athletes, also in relation to the dual career policy in place. In particular, to provide a  
15 comprehensive picture of student-athletes' living in different European socio-cultural environments,  
16 the SAMSAQ-EU was developed included both the 30 items of the original SAMSAQ and the 9  
17 items of the Italian harmonized version. Although both studies showed a three-factor model with an  
18 academic, a sport, and a career motivation subscale, results confirmed the influence of socio-  
19 cultural contexts in determining the psychometric properties of the SAMSAQ, with factor structures  
20 presenting relevant discrepancies between/among the different versions of the questionnaire.

21 In considering the lack of studies focused on the investigation of motivations of Italian  
22 student-athletes enrolled in heterogeneous university degree courses [22, 23] and need to identify  
23 valid and reliable tools to monitor the student-athletes' dual career path [11], the aims of the present  
24 study were: 1) to validate the SAMSAQ-IT/A in Italian student-athletes enrolled in different  
25 university courses; 2) to verify differences between Italian student-athletes in relation to their  
26 gender, type of sport, competition level, educational area, and year of attendance. In particular, it

1 has been hypothesized that: i) based on previous findings [23], SAMSAQ-IT/A would show a valid  
2 four factor model for the whole sample of Italian student-athletes enrolled in different university  
3 courses; ii) motivation levels toward dual-career would vary in relation to gender (i.e., female,  
4 male), competition level (i.e., sub-elite, elite), type of sport (i.e., individual sport, team sport),  
5 educational area (i.e., economical/law, humanistic, mathematics/engineering, medical,  
6 movement/sport sciences), and year of attendance (i.e., Bachelor 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> year, Master degree 1<sup>st</sup>  
7 and 2<sup>nd</sup> year, off course).

## 8 **Methods**

### 9 *Instrumentation and Procedure*

10 The local Institutional Review Board approved this study to validate the SAMSAQ-IT/A in  
11 Italian student-athletes enrolled in different university courses and to verify differences between  
12 Italian student-athletes in relation to their gender, type of sport, competition level, educational area,  
13 and year of attendance.

14 All participants to the study were contacted by e-mail, providing information regarding the  
15 aim of the study, asking them to provide their consent to participate in the study before responding  
16 to an on-line questionnaire. In particular, participants were ensured that there were no right or  
17 wrong answers. The anonymous nature of the responses and the possibility for participants to  
18 interrupt their participation at any time were also provided, and respondents fully agreed to take part  
19 to the survey only after submitting the entire questionnaire at end of the web procedure. No  
20 compensation or tangible incentive was provided to participants for filling in the questionnaire.

21 According to a previous study on the motivations of student-athletes enrolled in Sport  
22 Science degree courses [23], participants individually completed the 30-item SAMSAQ-IT/A,  
23 indicating their level of agreement (i.e., from a minimum of 1 - strongly disagree, to a maximum of  
24 6 - strongly agree) with the statements. General information (i.e., gender, type of discipline,  
25 competition level, educational path, and year of attendance) were also collected at the beginning of  
26 the survey.

## 1 ***Participants***

2 To participate in the study, the following inclusion criteria for student-athletes were considered: 1)  
3 being enrolled in a University course at the University of Torino; and 2) currently competing at sub-  
4 elite (i.e., from local to national competitions within the current sports season) or elite (i.e., from  
5 national to international competitions within the current sports season) levels. Student-athletes  
6 competing at lower levels than the above reported were not included in the experimental sample.

## 7 ***Data Analysis***

8 To verify the applicability of the four-factor model of the SAMSAQ-IT/A [23] for Italian university  
9 student-athletes attending different university courses, an Exploratory Factor Analysis (e.g., EFA;  
10 Principal Component Extraction; Varimax Rotation with Kaiser's normalization) was performed in  
11 two main stages: i) the initial testing of the proposed four-factor model of the SAMSAQ-IT/A  
12 version, which was validated on Italian student-athletes' exclusively enrolled in movement and  
13 sport science courses [23]; ii) in case the four-factor model was not confirmed, the testing of  
14 different solutions (e.g., three-factorial or two-factorial models) was planned. In line to the literature  
15 [27], the EFA was applied according to the following criteria: i) if an item loaded on a single factor,  
16 only values  $\geq 0.40$  were taken into account; and ii) if an item loaded on two factors, a 0.32 threshold  
17 of acceptability was set for both values. Furthermore, a subject to item ratio  $\geq 10:1$  was established  
18 as appropriate for EFA interpretation [27].

19 To evaluate the internal consistency of each SAMSAQ-IT/A subscale, reliability estimates  
20 (Cronbach's alpha coefficients) were computed, considering a Cronbach's alpha coefficient  $\geq 0.7$   
21 acceptable for internal consistency [28].

22 To evaluate the fit of the factorial structure emerged with the EFA, a Confirmatory Factor  
23 Analysis (e.g., CFA; Maximum-Likelihood) was applied, considering the following eight fit  
24 indexes [29] including chi-square, chi-square ratio ( $\chi^2/df$ ), three incremental indexes (Comparative  
25 Fit Index (CFI); Normed Fit Index (NFI); Tucker-Lewis Index (TLI), Goodness of Fit Index (GFI),  
26 Root Mean Square Error of Approximation (RMSEA), and  $P$  of close fit. According to the literature

1 [30, 31], cut-off values for good fit were considered:  $\leq 0.05$  for RMSEA with not significant  $P$  of  
 2 close fit ( $P > 0.05$ ),  $\geq 0.95$  for incremental indices,  $\geq 0.91$  for GFI, and  $\geq 2$  for chi-square ratio.

3 Gender (i.e., female, male), type of discipline (i.e., individual sport, team sport), competition  
 4 levels (i.e., sub elite, elite); educational area (economical/law, humanistic,  
 5 mathematics/engineering, medical, movement/sport sciences), and year of attendance (i.e., Bachelor  
 6 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> year, Master degree 1<sup>st</sup> and 2<sup>nd</sup> year, off course) were considered independent variables  
 7 to provide a detailed scenario of the Italian university student-athletes' motivations.

8 Items loading on two factors were considered in calculating scores for both factors [11]. All  
 9 data related to the above mentioned independent variables were classified according to the sum of  
 10 the motivation scores (i.e., SMS) related to each SAMSAQ-IT/A factor, and to the percentage score  
 11 (i.e., SMS%) based on the following formula:  $\text{SMS} \times 100 / (\text{number of items related to the}$   
 12  $\text{SAMSAQ-IT/A factor} \times 6$ , which is the highest score for each item). Eventual differences between  
 13 the SMS values related to each factor appertaining to student-athletes of different gender, types of  
 14 discipline, competition level, educational area, and year of attendance categories were calculated by  
 15 means of separate Kruskal and Wallis tests. Then, in case of differences in relation to independent  
 16 variables consisting of more than two subgroups (e.g., type of sport, year of attendance), separate  
 17 Mann-Whitney U tests were performed. Finally, to provide a meaningful analysis for comparisons  
 18 from small groups, the *phi* effect sizes (ES) between groups were also calculated, considering 0.1,  
 19 0.3, 0.5 as small, medium, and large effect sizes, respectively [32]. Statistical analyses were  
 20 conducted using SPSS (21.0; SPSS, Inc., Chicago, IL) and AMOS<sup>TM</sup> 21.0, and the criterion for  
 21 significance was set at  $P \leq 0.05$ .

## 22 **Results**

23 Six-hundred-sixteen ( $22 \pm 1$  yrs; 18 yrs old,  $n=1$ , 19 yrs old,  $n=23$ , 20 yrs old,  $n=126$ , 21 yrs old,  
 24  $n=140$ , 22 yrs old,  $n=117$ , 23 yrs old,  $n=103$ , 24 yrs old,  $n=97$ ) Italian student-athletes of the  
 25 University of Torino met the inclusion criteria and volunteered for the study (table I).

26 -----



1 range=0.1-0.2), effects emerged between student-athletes enrolled in economical/law and  
 2 humanistic ( $P=0.005$ ,  $ES=0.1$ ), medical ( $P<0.001$ ,  $ES=0.2$ ), and movement/sport ( $P=0.002$ ,  
 3  $ES=0.2$ ) educational areas. Finally, for CM ( $P=0.005$ ,  $ES$  range=0.1-0.3), differences emerged  
 4 between student-athletes enrolled in the economical/law educational area with respect to those of  
 5 medical ( $P=0.005$ ,  $ES=0.1$ ), movement/sport ( $P<0.001$ ,  $ES=0.3$ ), and mathematics/engineering  
 6 ( $P=0.011$ ,  $ES=0.1$ ) counterparts.

7 Regarding year of attendance, differences emerged for AM ( $P<0.001$ ,  $ES$  range=0.2-0.4)  
 8 due to lower scores accounted for “off course” student-athletes with respect to their Bachelor 1<sup>st</sup>  
 9 year ( $P=0.005$ ,  $ES=0.3$ ) and Master 1<sup>st</sup> ( $P<0.001$ ,  $ES=0.4$ ) and 2<sup>nd</sup> years ( $P=0.016$ ,  $ES=0.3$ )  
 10 counterparts, as well as higher scores of Master 1<sup>st</sup> year with respect to those of Bachelor 2<sup>nd</sup>  
 11 ( $P<0.001$ ,  $ES=0.3$ ) and 3<sup>rd</sup> years ( $P=0.001$ ,  $ES=0.3$ ), and Master 1<sup>st</sup> year ( $P=0.016$ ,  $ES=0.2$ ).

12 -----  
 13 Insert Table III near here  
 14 -----

## 15 Discussion

16 This study represents the first approach to investigate the motivation towards dual career in Italian  
 17 student-athletes enrolled in different university courses, showing a valid and reliable SAMSAQ-  
 18 IT/A model, suitable for this particular population, including sport, academic and career motivation  
 19 subscales. However, the first hypothesis related to an expected equality between the current model  
 20 and the one validated in student-athletes enrolled in Sport Science degree courses [22] can be  
 21 rejected. In addition, the second hypothesis for which motivation can be influenced by the observed  
 22 variables (i.e., gender, competition level, type of sport, educational area, and year of attendance)  
 23 can be partially confirmed because motivation levels toward dual-career resulted influenced by each  
 24 one with exception of type of sport variable.

25 Concerning the first hypothesis, the SAMSAQ-IT/A administered to Italian student-athletes  
 26 enrolled in a variety of university courses reported a different model (three factors) with respect to

1 that (four factors) of Italian student-athletes exclusively attending Sport Science degree courses  
2 [23]. In particular, SM and AM are maintained in both models, also in accordance with the factor  
3 structure emerged in previous studies [10, 11, 22, 23, 25]. Conversely, in the study of Guidotti and  
4 Capranica [23], which adopted for the first time a harmonized version of the SAMSAQ for Italian  
5 student-athletes (SAMSAQ-IT/A) the career motivation consisted of two subscales, differentiating  
6 the motivation toward a sport career as an athlete (CMA) and the one as a sport operator (CMSO).  
7 This result could be explained by the characteristics of the investigated sample (e.g., Sport Science  
8 student-athletes), which could be motivated toward a sport career not only through the sport  
9 practice but also in considering their academic enrolment. Differently, in the present analysis the  
10 career motivation subscale represents a wider career prospect, in which sport and academic/work  
11 career aspects are jointly.

12 Comparing the factorial structure of the present study with that of the previous SAMSAQ-  
13 IT/A model [23], 6 full, 14 partial, and 10 no correspondences emerged. In particular, the main  
14 finding is that all the items loaded in the CMA (item 8, 20, 22, 27) in the study of Guidotti and  
15 Capranica [23] did not pertain to the career motivation sphere in the present study, loading to the  
16 SM factor. This result suggests that athletic achievements are related to the current sport  
17 motivational sphere, being an athletic career limited in time with respect to the life course.  
18 Conversely, the CM subscale emerging in the present study included items related to academic  
19 (item 22) and sport (items 3-7, 10, 24, 28, 29) career aspects, whereas others are related to specific  
20 academic (items 4, 5, 11) and sport (items 9, 13, 15, 17, 19, 26) aspects. In fact, efforts required for  
21 the academic training and achievements are foreseen to be fundamental to increase the possibilities  
22 of future employment. This result is also substantiated by the limited item factor loading solely on  
23 the AM factor (item 1 only), suggesting that the outcomes of the academic path are perceived to be  
24 strongly connected with the future career development and prospects. Furthermore, the commitment  
25 toward sports performance is perceived to be crucial for current (i.e., as an athlete) and future (i.e.,  
26 general) career development. This result is in line with previous literature [33–35] reporting the

1 crucial role of non-formal and informal learning within the sport environment, which has been  
2 proved to contribute to the development of life skills and capacities that could be relevant for future  
3 workers. In particular, non-formal learning encompasses capabilities acquired through different  
4 types of educational providers (e.g., public and private, in and outside the formal education system),  
5 whereas informal learning is represented by daily activities/experiences [36, 37]. Actually,  
6 independently from the formal learning process provided by an academic path, through their sports  
7 involvement athletes develop several life skills (e.g., goal-setting, emotional control, self-esteem,  
8 self-knowledge, problem solving, goal attainment, teamwork, skill development, and a hard work  
9 ethic), which could support them in achieving specific working/educational goals [33–35]. To  
10 summarize, these results substantiated the validity of the SAMSAQ-IT/A as a psychometric tool to  
11 investigate student-athletes' dual career motivations. However, confirming previous literature [10,  
12 20, 22, 23, 25, 26], social-cultural systems are crucial in influencing the factor structure of the  
13 instrument, determining different models suitable for different student-athletes populations.

14         Independently of the national social and policy supports for dual career, Italian student-  
15 athletes' sport, academic and career motivational scores resulted quite similar to those of American  
16 [11], United Arab Emirates [10], and other European [25] student-athletes. In particular, similarities  
17 emerged with the latter study, where higher, intermediate, and lower values were reported for CM,  
18 SM, and AM scores, respectively. Nevertheless, despite only Italian student-athletes were recruited  
19 in the present study, differences emerged for all observed variables (i.e., gender, competition level,  
20 type of sport, educational area, and year of attendance).

21         In considering the reduced opportunities to pursue professional athletic careers [38–42],  
22 female student-athletes were expected to have higher academic motivation and lower career athletic  
23 motivation scores [11, 19]. Although in the previous studies on SAMSAQ [10, 11, 22, 23, 25, 26]  
24 no difference emerged in relation to gender for any factors, the findings of the present study seems  
25 to confirm the above mentioned expectations. In fact, female Italian student-athletes reported higher  
26 AM scores with respect to their males counterparts, suggesting that the general Italian development

1 of women's sport is not able to minimize the gender effect in sports. Therefore, examining issues  
2 about the relationship between motivation and student-athletes appears as highly necessity.

3 In line to previous studies [22, 23, 25], no effect emerged between student-athletes  
4 performing heterogeneous type of sports. Therefore, this result confirms that the training and  
5 competition schedules of different sports are not characterized by dissimilar degrees of flexibility,  
6 allowing a better or worst optimization of time to study. Nevertheless, a previous study focused on  
7 the Italian and Slovenian motivation [26] highlighted the opposite picture, and speculated that  
8 Italian sport system is strongly relies on military sport organisation which mainly supports athletes  
9 involved in individual sports, determining a reduction of AM level for the latter subjects. In  
10 particular, in that study [26], it was highlighted to explain the higher AM of the student-athletes  
11 practicing team sports that, despite these disciplines are the most practised in Italy and also include  
12 a professional level [43], players can only rely on financial support during their competitive life,  
13 thus perceiving a degree as vital to ensure their future career.

14 In terms of competition levels, as expected, SM factor showed the most solid finding in  
15 relation to both level of significance and ES value, highlighting that student-athletes' competing at  
16 elite level demonstrated to be plainly more motivated towards sport than sub-elite counterparts  
17 (SMS% differences=9%). Although this result was expected and totally coherent to previous studies  
18 [22, 23, 25], the higher elite student-athletes' CM with respect to that of sub-elite counterparts is  
19 quite surprising, despite already reported in a couple of previous studies [22, 25]. According to  
20 Lupo et al. [25] it could be speculated that European student-athletes living in countries lacking  
21 dual career structures (e.g., as Italy) would show a high career motivation as reaction to the limited  
22 policy actions/interventions toward a sustainable combination of elite sports and education, as well  
23 as a smooth transition from sport to the labor market.

24 For the year of attendance variable, differences emerged only for AM, where out of course  
25 student-athletes resulted less motivated than others attending the first year of Bachelor and Master  
26 degree, and the second year of Master degree, speculating that the latter subjects are mainly focused

1 on studying with a point of view orientated to future prospective related to career with respect the  
2 counterparts, who are “out of course” probably for a inability to effectively develop both sport and  
3 academic tasks, only privileging the sport tasks. **In particular, among these, the student-athletes**  
4 **attending the first year of Master degree resulted as the most academically motivated, probably**  
5 **because of the strong decision to improve their educational curriculum after the obtaining of the**  
6 **Bachelor degree.**

7 As already remarked, this study represents the first approach to investigate student-athletes’  
8 motivations also in relation to the enrolment in different educational degree courses. As expected,  
9 the highest SM emerged for student-athletes enrolled into the sport science area with respect to all  
10 the other educational domains (SMS% differences=5-7%), highlighting a higher motivational  
11 predilection both towards the study and the practice of sport. Considering AM and CM, the  
12 economical/law student-athletes reported the lowest scores. This result could mirror the Italian  
13 occupational trends [14], which accounted the lowest employment rate for the economical/law  
14 (34%) compared to the humanistic, medical, movement/sport sciences, and engineering areas (from  
15 a minimum of 57% to a maximum of 96%). Thus, better career prospects could determine higher  
16 motivations toward academic commitments and career developments, whereas higher  
17 unemployment expectations could determine the opposite trend.

18 Although the present study has the merit to have recruited Italian student-athletes from  
19 different educational areas, the involvement of only one university could represent a limitation.  
20 Furthermore, an unbalanced recruitment of participants in relation to type of sport (limited  
21 “individual and team” subgroup), competition level (mostly sub elite student-athletes), educational  
22 path (limited “movement and sport science” subgroup), and year of attendance (limited “out of  
23 course” subgroup) could limit the generalization of findings. Nevertheless, differently from  
24 previous studies on European [25] and Italian [22, 23, 26] student-athletes’ motivations, the good  
25 subject to item ratio emerged for the present study (ratio: 20.5) represents a crucial aspect for the  
26 statistical interpretation [27, 29], minimizing the risk of item misclassification and errors.

1           Therefore, this study could represent an important step to better understand the Italian  
2 student-athletes objectives and difficulties in combining sport and academic tasks, in line with the  
3 proposals of the EU Guidelines on Dual-careers [16]. In line to the present work, future studies  
4 focused on the use of the SAMSAQ-IT/A tool are strongly encouraged with the recommendations  
5 of: i) maintaining a high number of participants coming from heterogeneous educational paths; ii)  
6 supporting the involvement of universities situated in different region of Italy (i.e., North, Centre,  
7 South); and iii) balancing the distribution of participants in the experimental subgroups.

## 8 **Conclusions**

9 The findings of the present study indicate that the motivations of Italian student-athletes enrolled in  
10 different educational areas have to be investigated by means of a valid and reliable psychometric  
11 tool, suitable for the target cultural context [23]. In fact, previous studies highlighted that the  
12 translated version of SAMSAQ was not satisfactory to adequately analyse sport and academic  
13 motivations of Italian [22] and United Arab Emirates [10] student-athletes. In addition, in higher  
14 education, the differences of policy supports toward the dual career of European elite athletes  
15 determined several discrepancies in the various SAMSAQ models [25], which were also  
16 substantiated when countries appertaining to the same policy category were considered [26].  
17 Finally, in the present study a different factor structure emerged with respect to that validated on a  
18 more homogeneous student-athletes sample [23].

19           Although constructive prospective and considerations about dual career motivations of  
20 talented and elite student-athletes could be implemented by further research, the huge scenario  
21 emerged about Italian student-athletes in this study could represents the first step for political  
22 proposals which are able to concretely support dual career. In particular, the findings related to  
23 competition level (high motivation in elite athletes) and year of attendance (high motivation in “in  
24 course” students) could be rationally considered as useful criteria of selection to recruit the best  
25 motivated student-athletes and offer effective educational processes in supporting of dual career.  
26 Practically, interventions such as e-learning and tutoring programs, as well as individualized lecture

1 and exam schedules, could represent the best solutions for combining dual career of the most  
2 motivated student-athletes, which could substantially benefit by these educational policies.

3 Therefore, in conclusion, it can be assumed that the present and previous studies on student-  
4 athletes' motivations provide progresses on the knowledge of the Italian dual career scenario, and  
5 encouragements of coherent practical interventions which will have to be monitored in terms of  
6 effectiveness.

7

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9

10 **Ethical approval:** “All procedures performed in studies involving human participants were in  
11 accordance with the ethical standards of the institutional and/or national research committee and  
12 with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.”

13

14 **Informed consent:** “Informed consent was obtained from all individual participants included in the  
15 study.”

16

1 References

- 2 1. Guidotti F, Cortis C, Capranica L (2015) Dual career of European student-athletes: a  
3 systematic literature review. *Kinesiol Slovenica* 21(3):5–20
- 4 2. European Commission (2014) Report from the commission to the European Parliament, the  
5 Council, the European Economic and Social Committee and the Committee of the Regions  
6 on the implementation of the European Union Work Plan for Sport 2011-2014. Retrieved  
7 from [http://eur-](http://eur-lex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:52014DC0022&from=EN)  
8 [lex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:52014DC0022&from=EN](http://eur-lex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:52014DC0022&from=EN)
- 9 3. Amsterdam University of Applied Science, Birch Consultants, the Talented Athlete  
10 Scholarship Scheme, the Vrije Universiteit Brussel, & the European Student as Athlete  
11 network (2016). Study on the minimum quality requirements for dual career services.  
12 Executive summary. Retrieved from [http://bookshop.europa.eu/en/study-onthe-minimum-](http://bookshop.europa.eu/en/study-onthe-minimum-quality-requirements-for-dual-career-services-pbNC0216013/)  
13 [quality-requirements-for-dual-career-services-pbNC0216013/](http://bookshop.europa.eu/en/study-onthe-minimum-quality-requirements-for-dual-career-services-pbNC0216013/)
- 14 4. Capranica, L., Guidotti, F. (2016). Qualifications/Dual careers in sports. Retrieved from  
15 <http://www.europarl.europa.eu/supporting-analyses>
- 16 5. Aquilina D (2013) A study of the relationship between elite athletes educational  
17 development and sporting performance. *IJHS* 30:374–392
- 18 6. Ericsson KA (2006) The influence of experience and deliberate practice on the development  
19 of superior expert performance. In: Ericsson KA, Charness N, Feltovich P, Hoffman RR  
20 (eds) *Cambridge handbook of expertise and expert performance*. Cambridge University  
21 Press, Cambridge, UK, pp 685–706
- 22 7. Capranica L, Millard-Stafford ML (2011) Youth sport specialization: how to manage  
23 competition and training? *IJSPP* 6:572–579
- 24 8. Conzelmann A, Nagel S (2003) Professional careers of the German Olympic athletes. *IRSS*  
25 38:259–280

- 1 9. Wylleman P, Reints A (2010) A lifespan perspective on the career of talented and elite  
2 athletes: perspectives on high-intensity sports. *Scand J Med Sci Sports* 20:88–94
- 3 10. Fortes PC, Rodrigues G, Tchantchane A (2010) Investigation of academic and athletic  
4 motivation on academic performance among university students. *IJTEF* 1:367–372
- 5 11. Gaston-Gayles JL (2005) The factor structure and reliability of the Student Athlete’s  
6 Motivation toward Sports and Academics Questionnaire (SAMSAQ). *J Coll Student Dev*  
7 46:317–327
- 8 12. Simons HD, Van Rheenen D, Covington MV (1999) Academic motivation and the student  
9 athlete. *J Coll Student Dev* 40:151–162
- 10 13. Amara M, Aquilina D, Henry I, PMP Consultants (2004) Education of Elite Young  
11 Sportspersons in Europe. Retrieved from:  
12 [http://ec.europa.eu/sport/library/documents/c3/pmp-study-dualcareer\\_en.pdf](http://ec.europa.eu/sport/library/documents/c3/pmp-study-dualcareer_en.pdf)
- 13 14. Istituto Nazionale di Statistica-ISTAT (2007) La pratica sportiva in Italia. Retrieved from:  
14 [http://www3.istat.it/salastampa/comunicati/non\\_calendario/20070620\\_00](http://www3.istat.it/salastampa/comunicati/non_calendario/20070620_00)
- 15 15. Aquilina D, Henry I (2010) Elite athletes and university education in Europe: a review of  
16 policy and practice in higher education in the European Union Member States. *Int J Sport*  
17 *Policy* 2(1):25–47
- 18 16. European Commission (2012) Guidelines on dual careers of athletes recommended policy  
19 actions in support of dual careers in high-performance sport. Retrieved from:  
20 <http://ec.europa.eu/sport/library/documents/c3/dual-career-guidelines-final.pdf>
- 21 17. Stambulova N, Stephan Y, Japhag U (2007) Athletic retirement: a cross-national  
22 comparison of Elite French and Swedish athletes. *Psychol Sport Exerc* 8:101–118
- 23 18. Weathington BL, Alexander AC, Rodebaugh LL (2010) Coaching influences on student-  
24 athlete motivation, stress, and skill. *AIJ* 2(2):1–18
- 25 19. Sherry M, Zeller K (2014) Gender and motivation: A study of the athletic and academic  
26 motivations of Division I female college basketball players. *WS* 43:73–92

- 1 20. Park S., Hong S., Lee M. (2015). Validation of the student athletes' motivation towards  
 2 sports and academics questionnaire to Korean student-athletes. *J Exerc Rehabil* 11(4):220-  
 3 227
- 4 21. Turkmen M (2013) Investigation of the Relationship between Academic and Sport  
 5 Motivation Orientations. *Middle-East J Sci Res* 16(7):1008-1014
- 6 22. Guidotti F, Minganti C, Cortis C, Piacentini MF, Tessitore A, Capranica L (2013)  
 7 Validation of the Italian version of the student athletes' motivation toward sport and  
 8 academics questionnaire. *Sport Sci Health* 9(2):51–58
- 9 23. Guidotti F, Capranica L (2013) Le motivazioni verso sport, istruzione e carriera sportiva  
 10 degli studenti-atleti italiani. In: Pioletti AM, Porro N (eds) *Lo sport degli Europei*. Edizioni  
 11 Franco Angeli, Milan, Italy, pp 104–120
- 12 24. López de Subijana C, Barriopedro MI, Sanz I (2015) Dual career motivation and athletic  
 13 identity on elite athletes. *Rev Psicol Dep* 24(1):55–57
- 14 25. Lupo C, Guidotti F, Goncalves CE, Moreira L, Doupona Topic M, Bellardini H, Tonkonogi M,  
 15 Allen C, Capranica L (2015) Motivation Toward Dual-Career of European Student-Athletes.  
 16 *Eur J Sport Sci* 15:151–160
- 17 26. Lupo C, Tessitore A, Capranica L, Rauter S, Doupona Topic M (2012) Motivation for a dual-  
 18 career: Italian and Slovenian student-athletes. *Kinesiol Slovenica* 18:47–56
- 19 27. Costello A, Osborne J (2005) Best practices in exploratory factor analysis: four  
 20 recommendations for getting the most from your analysis. *PARE* 10:1–9
- 21 28. O'Donoghue P. (2012). *Statistics for sport and exercise studies: An introduction*. Routledge,  
 22 Abingdon, UK.
- 23 29. Jackson DL, Gillaspay JA Jr, Purc-Stephenson R (2009) Reporting practices in confirmatory  
 24 factor analysis: an overview and some recommendations. *Psychol Meth* 14:6–23
- 25 30. Hu L, Bentler PM (1999) Cutoff criteria for fit indexes in covariance structure analysis:  
 26 Conventional criteria versus new alternatives. *Struct Equ Modeling* 6:1–55.

- 1 31. Netemeyer RG, Bearden WO, Sharma S (2003) *Scaling procedures: Issues and applications*.  
2 Sage, Thousand Oaks, CA.
- 3 32. Huck SW. *Reading statistics and research* (2000). Addison-Wesley Longman, New York, NY,  
4 pp 628–629
- 5 33. Goudas M (2010) Prologue: a review of life skills teaching in sport and physical education.  
6 *Hellenic J Psychol*, 7:241–258
- 7 34. Gould D, Carson S (2008) Life skills development through sport: current status and future  
8 directions. *Int Rev Sport Exerc Psychol*, 1:58–78
- 9 35. Holt NL, Tamminen KA, Tink LN, Black DE (2009) An interpretive analysis of life skills  
10 associated with sport participation. *Qualitative Res Sport Exerc*, 1:160–175
- 11 36. EOSE (2011) The lifelong learning strategy for the sport and active leisure sector (7 step  
12 model). Retrieved from:  
13 [http://eose.org/wpcontent/uploads/2014/03/P4\\_LLLSport\\_Strategy\\_Final.pdf](http://eose.org/wpcontent/uploads/2014/03/P4_LLLSport_Strategy_Final.pdf)
- 14 37. EU Expert Group Education and Training in Sport (2013) *State of Play: Inclusion of Sport*  
15 *Qualifications in NQF's*, Retrieved from: [http://ec.europa.eu/sport/library/documents/xg-ets-](http://ec.europa.eu/sport/library/documents/xg-ets-201209-final-rpt.pdf)  
16 [201209-final-rpt.pdf](http://ec.europa.eu/sport/library/documents/xg-ets-201209-final-rpt.pdf)
- 17 38. Guidotti F, Capranica L (2013). *Management sportivo femminile e carriera universitaria*  
18 *nelle scienze motorie: la condizione attuale, le opinioni delle manager e delle docenti*  
19 *universitarie e le nuove proposte (Female sport management and academic career in sport*  
20 *sciences: Present condition, women sport managers' and university professors' opinions and*  
21 *perspectives)*. *Rivista Trimestrale di Scienza dell'Amministrazione*, 1:85–104
- 22 39. International Olympic Committee (2004) *Women and sport progress report: A review of the*  
23 *IOC policy and activities to promote women in and through sport. Third World Conference*  
24 *on Women and Sport. Marrakech, Morocco*
- 25 40. International Olympic Committee (2012) *The Los Angeles Declaration*. Retrieved from:  
26 [http://www.olympic.org/Documents/Commissions\\_PDFfiles/women\\_and\\_sport/Los-](http://www.olympic.org/Documents/Commissions_PDFfiles/women_and_sport/Los-)

1 Angeles-Declaration-2012.pdf

2 41. International Working Group on Women and Sport (2012). The Sydney scoreboard. Retrieved  
3 from: <http://www.sydneyscoreboard.com/>

4 42. Pfister, G (2010) Women in sport – gender relations and future perspectives. Sport in  
5 Society, 13:234–248

6 43. CONI Servizi SpA (2010) Art. 37 Permessi retribuiti, 2° contratto collettivo nazionale di  
7 lavoro del personale non dirigente della CONI Servizi SpA e delle federazioni sportive  
8 nazionali. Retrieved from  
9 [http://coniservizi.coni.it/images/atrasparente/personale/CCNL\\_non\\_dirigenti.pdf](http://coniservizi.coni.it/images/atrasparente/personale/CCNL_non_dirigenti.pdf)