

Extended learning and valorisation of the sports experience

Mattia Caterina Maietta ^{1*}, Giovanni Tafuri ² and Maria Giovanna Tafuri¹

¹ Pegaso Telematic University; mattiacaterina.maietta@unipegaso.it;
mariagiovanna.tafuri@unipegaso.it;

² University of Naples Parthenope; giovanni.tafuri@uniparthenope.it;

* Correspondence: mattiacaterina.maietta@unipegaso.it

Abstract: This article analyzes the evolution of Dual Careers through the extended learning paradigm, viewing athletic experience as a source of soft skills to be enhanced formally. The focus is on network ecosystems—organizational models connecting universities, federations, and stakeholders via digital technologies. Implementing flexible e-learning, monitoring tools, and hybrid environments breaks down space-time barriers, offering personalized support. The aim is to show how technological innovation and institutional synergy transform the Dual Career into a laboratory of pedagogical innovation. Here, technology enables holistic training, turning sporting experience into professional capital for the global labor market.

Keywords: Dual Career; Network Ecosystems; Extended Learning



Copyright: © 2026 by the authors.
Submitted for possible open access
publication under the terms and
conditions of the Creative Commons
Attribution (CC BY) license
(<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

The concept of the dual career of student-athletes has undergone a profound transformation over the last decade, evolving from a purely organisational issue into a pedagogical and social challenge of primary importance (Stambulova et al., 2015). Whereas in the past the combination of “sport and study” was often interpreted as a conflicting dichotomy, in which success in one seemed to necessarily take resources and time away from the other, today we are witnessing the emergence of an integrated vision. In this new scenario, the athlete is no longer a figure torn between two separate worlds, but the focal point of a unified educational process that draws its lifeblood from the mutual influence between the sports field and the university lecture hall (Bastianon, 2019).

The issue of early dropout, both in sport and academia, is a symptom of the structural rigidity of traditional education systems. High-level athletes often find themselves having to make a premature and painful choice: to sacrifice their competitive career to secure a professional future, or vice versa, with the risk of finding themselves at

the end of their sporting career without skills that are marketable in the labour market. The “EU Guidelines on Dual Careers for Athletes” (European Commission, 2012) have charted the course, urging Member States to create regulatory frameworks and support infrastructures that guarantee the right to education without sacrificing sporting talent. Recently, the Interministerial Decree of 13 November 2025 formalised the *National Dual Career System* in Italy, establishing the mandatory nature of flexible pathways. However, the real challenge lies in moving beyond a purely ‘concessional’ approach, based on exemptions or justifications for absences, in favour of an extended learning model (de Subijana et al., 2015).

Extended learning is based on the idea that sporting experience is not an external interference, but rather a ‘laboratory of informal and non-formal skills’. Resilience, stress management, *goal setting* and the ability to work in a team are strategic assets which, if properly mapped and valued, enrich the student’s academic and professional profile. To put this vision into practice, however, it is necessary to move from isolated management to a network ecosystem approach.

A networked ecosystem for the *Dual Career* implies a dynamic synergy between universities, sports federations, political institutions and the world of work (Guidotti et al., 2015). In this context, technology acts as the indispensable glue, the enabler that allows different times and spaces to be synchronised through the digitalisation of teaching and constant monitoring. This article aims to explore how the construction of such technological ecosystems can not only facilitate the student-athlete’s journey, but also transform the *Dual Career* into a paradigm of innovation for the entire contemporary education system, geared towards the personalisation of knowledge that is increasingly necessary in the knowledge society.

2. Extended Learning

The paradigm of *extended learning* is part of a vision of education that transcends the physical and temporal boundaries of the university classroom to embrace the entire spectrum of an individual’s life experiences. For the student-athlete, this means recognising that the training ground, managing pre-match pressure and coordination within a team are not separate from their intellectual growth, but constitute an integral and living part of it.

As highlighted by Isidori (2015), the *Dual Career* is first and foremost a pedagogical challenge that aims to transform sporting activity into a “skills laboratory”. According to European pedagogical definitions, learning is divided into formal learning, which takes place in academic institutions and leads to a qualification; non-formal learning, which

encompasses all planned activities outside the school system (such as competitive sport); and informal learning, which is represented by experiential learning linked to daily life. The challenge of *the modern Dual Career* lies in building bridges between these three spheres. Elite sport acts as an accelerator for *soft skills*: resilience, stress management and *goal setting* are strategic assets which, if properly mapped (Bortoli et al., 2015), enrich the professional profile.

High-level athletes develop a form of ‘practical intelligence’ and mental discipline that often anticipate the demands of the labour market. However, without an extended learning framework, these skills remain invisible to academic assessment systems (López de Subijana et al., 2026). Valuing sporting experience therefore means implementing mechanisms for certifying skills that transform athletic performance into cognitive capital. A key point of the discussion concerns the identification of so-called *soft skills* or transferable skills. Elite sport is, in fact, an accelerator of maturity. Among the most relevant skills, we find: self-regulation, or the ability to manage extreme workloads and maintain focus on long-term goals; resilience and the management of failure; athletes learn at an early age to process defeat as analytical data for future improvement, a fundamental skill in complex problem-solving (Izzicupo et al., 2025). Team dynamics teach the rotation of roles and responsibility towards the collective; we define these as leadership and followership. From the perspective of extended learning, these qualities must not merely be “appreciated” in words, but integrated into study programmes. Some pioneering universities are already experimenting with the creation of a Skills Portfolio where the athlete, supported by a tutor, describes and documents how sporting activity has contributed to the achievement of specific cross-curricular learning objectives. The transition from theory to practice occurs through the recognition of university credits (CFU). This is not a *shortcut* to a degree, but an act of educational justice: if the university aims to educate citizens and professionals, it must recognise that the athlete has already acquired skills ‘in the field’ that other students must learn in simulated contexts.

The integration of these credits requires reflection on the validation of prior learning (VAP). The educational ecosystem must establish joint committees capable of assessing the level of sporting professionalism and translating it into academic terms. In this way, the degree programme becomes truly flexible, capable of adapting to a unique educational background that sees sport not as a limitation, but as a driving force for excellence.

3. Network Ecosystems

If extended learning represents the “what” (the educational content), the network ecosystem constitutes the “how” (the organisational structure). The *Dual Career* cannot be left to the goodwill of individual lecturers or the heroic resilience of student-athletes; it requires a transition from bilateral management models (Student-University) to multi-stakeholder network models. The effectiveness of a dual-career support system is measured by its ability to foster dialogue between worlds that, historically, have spoken different languages. Drawing inspiration from the “Triple Helix” model (Etzkowitz & Leydesdorff), we can identify three fundamental pillars:

1. The Academic Institution, which guarantees the quality of education and teaching flexibility.
2. The Sports System (Federations and Clubs), which manages competitive demands and recognises the value of education for the post-career prospects of its members.
3. The Labour Market and Political Institutions, which create the regulatory framework and opportunities for professional advancement, promoting the ‘athlete profile’ as a resource for business.

The creation of a network ecosystem transforms the *Dual Career initiative* from a bureaucratic burden into a human capital development strategy. The recent CRUI-Ministry of Sport Memorandum of Understanding (2024) sets out the governance framework needed to foster dialogue between these two worlds. A resilient ecosystem relies on stakeholder engagement: from network mentors to “athlete-friendly” businesses. As highlighted by Wylleman & Reints (2010), “the holistic view of an athlete’s career must span their entire lifespan, requiring international standardisation supported by programmes such as *Erasmus+ Sport*”. Within this network, the flow of information must be constant: the university must be aware of the athlete’s competition calendar, just as the federation must be aware of exam periods in order to adjust, where possible, the intensity of training.

A resilient ecosystem is based on the active involvement of stakeholders. It is not merely a matter of signing formal memoranda of understanding, but of establishing operational collaborations. Network Tutors, for example, are hybrid figures who act as an interface between the two worlds, facilitating communication and resolving scheduling conflicts. Also important are “Athlete-Friendly” companies – businesses that, recognising the value of athletes’ *soft skills*, offer flexible internships and targeted work placement programmes. Last but not least, local authorities play a crucial role,

acting as logistical facilitators by providing infrastructure and scholarships linked to sporting and academic merit.

The concept of networking extends beyond national borders. Programmes such as *Erasmus+ Sport* have demonstrated that student-athlete mobility is only possible if there is a network of trust between European universities that mutually recognise *Elite Athlete* status. The standardisation of admission criteria and support services is the challenge of the coming decade: to create a “European Dual Career Area” where student-athletes’ rights are uniform and guaranteed. The complexity of this network, however, would risk creating bureaucratic paralysis if it were not supported by a solid digital infrastructure. This is where the physical ecosystem merges with the technological ecosystem. If the challenge of *the Dual Career* is the gift of ubiquity—being present simultaneously on the competition field and in the classroom—technology represents the functional solution to this paradox.

The digital transformation of universities, accelerated by global events over the last five years, has established learning models that now form the backbone of support for student-athletes. Overcoming the constraint of physical co-presence is the first technological pillar guaranteed by E-learning 4.0 platforms. According to the 2025/2026 Ministerial Technical Annex (MIM 2026), universities must ensure that at least 25% of teaching for high-level athletes is delivered online.

However, the evolved *Dual Career* approach is not satisfied with a simple repository of materials (PDFs or recorded video lessons); modern ecosystems adopt advanced Learning Management System (LMS) platforms, characterised by: Micro-learning consisting of content broken down into short units that can be accessed “on-the-go” during travel, at training camps or in downtime between training sessions); tools that maintain high student engagement even in conditions of physical fatigue, transforming study into an active process, such as Gamification. Furthermore, the entire training programme must be accessible via smartphones and tablets with the same effectiveness as a desktop computer, i.e. multi-device accessibility.

Cutting-edge innovation lies in the use of data, specifically Learning Analytics and Artificial Intelligence. As analysed by Saqib et al. (2023), AI enables “adaptive teaching” capable of adjusting the study load according to peaks in competitive performance. Learning Analytics allow academic tutors to monitor the student-athlete’s level of participation and success in real time. Through Artificial Intelligence (AI) algorithms, it is in fact possible to prevent burnout; by cross-referencing sports workload data (provided by club wearables) with academic workload data, the system can flag early signs of overload, suggesting a readjustment of the study plan. AI can suggest ‘tailored’ study pathways, adapting the release of content to coincide with peaks in sporting performance (for example, by delaying the assignment of complex tasks during the week

of a world final). The technology also breaks down the barriers of physical and laboratory-based distance.

The integration of Virtual and Augmented Reality (VR/AR) environments allows student-athletes to participate in practical workshops or group sessions even if they are physically on the other side of the world. These “digital twins” of the classroom ensure that the athlete does not miss out on the social aspect of university life, which is fundamental for peer interaction and personal growth. Finally, a technological aspect that is often underestimated but crucial for network ecosystems is blockchain.

This technology can be used to create secure, tamper-proof digital “Skills Passports”. In these, both academic (formal) credits and certifications of *soft skills* acquired in a sporting context (non-formal) are recorded in a single ledger, facilitating the international recognition of qualifications and experience gained in cross-border contexts. The introduction of Artificial Intelligence into *Dual Career* ecosystems marks the transition from the concept of a “host platform” to that of an “intelligent tutor”. Generative and predictive AI operates on three critical levels for the student-athlete, such as Adaptive Scheduling; these are systems based on constrained optimisation algorithms that can cross-reference academic deadlines with training loads and away fixtures in real time.

If an athlete is in a period of intense competition (e.g. the play-offs or a World Cup), the AI can automatically adjust the distribution of the study load, suggesting postponed deadlines or bringing forward preparatory materials during periods of reduced athletic training (De Mutiis et al., 2025). This is not merely a digital diary, but a computational engine that assesses the athlete’s probability of success based on remaining cognitive time. The AI also intervenes when the student-athlete frequently operates in mobile contexts (bus or plane journeys, waiting times between sessions). In this scenario, AI can act as a content transformer: it can convert a two-hour video lecture into a fifteen-minute summary podcast focused on key concepts, or generate concept maps and instant self-assessment tests based on study materials.

This enables granular learning, whilst also optimising the short time slots typical of an athlete’s day. One of AI’s most significant contributions is its ability to identify behavioural patterns that precede *dropout*. By analysing variables such as a decline in interaction on the platform, a deterioration in performance in mid-term tests and an increase in competitive intensity, AI can send preventive alerts to human tutors, enabling proactive intervention: a ‘pedagogical rescue manoeuvre’ that may take the form of a support meeting or a temporary adjustment to the study plan, preventing performance-related stress from becoming unsustainable. The integration between the network ecosystem and AI extends to connectivity with wearable devices. Biometric data (sleep quality, heart rate variability – HRV, estimated cortisol levels) collected for

sporting purposes can be shared, in accordance with privacy regulations and with the athlete's consent, with the educational system. If the data indicate a state of high neural fatigue (*overreaching*), the AI may recommend postponing study sessions with a high cognitive load, suggesting light revision activities instead (Messina et al., 2024).

In this way, the technology achieves genuine psychophysical integration, treating the athlete as an indivisible biological and cognitive unit. Whilst artificial intelligence and digital platforms form the backbone of the system, personalisation is the vital principle that ensures the student-athlete does not feel like a mere cog in the machine. The key figure in this process is the dedicated Tutor or Mentor, a systemic mediator who, as described by Maulini (2018), manages scheduling conflicts and offers motivational support. Unlike the traditional academic tutor, the *Dual Career* tutor acts as a 'knowledge broker' and a mediator of conflicts between the demands of the faculty and those of the sports federation.

The athlete experiences emotional cycles linked to sporting results (injuries, defeats, peaks in form). The tutor must be able to interpret these states to calibrate academic commitment, providing motivational support. Athletes often struggle to manage standard administrative deadlines; the tutor acts as a facilitator for access to "on-demand exam" protocols or for splitting academic years (the so-called part-time regime). Personalisation concerns not only *when* one studies, but also *how*.

The bespoke approach involves the creation of an Individual Learning Plan (ILP). This document, co-designed by the student, tutor and coach, defines the periods of the year when the academic workload may be at its peak and alternative assessment methods, such as replacing in-person written exams with oral exams via web conference or applied research projects that link the field of study to sporting practice (e.g. a thesis in biomechanics for an engineer who practises athletics). Personalisation culminates in the institution's ability to map career capital.

This approach also allows for the management of critical phases, such as injuries or drops in form, following Stambulova's (2020) career development models. It is not just a matter of completing exams, but of preparing for *life after sport*, the so-called 'second half' of an athlete's life (Linnér et al., 2026). The most advanced network ecosystems offer specific *career counselling* services, which help athletes translate their competitive experience into a language understandable to the corporate world, transforming sporting successes into certified professional credentials.

4. Conclusions

Despite clear technological and regulatory developments, the consolidation of *Dual Career* ecosystems still faces significant cultural barriers. Within academic institutions, a conservative view sometimes persists, interpreting educational flexibility as a reduction in scientific rigour. Overcoming this prejudice requires raising awareness among teaching staff, so that student-athletes are perceived not as ‘privileged’ individuals, but as bringing added value and visibility to the institution itself. At school and academic level, important initiatives have been undertaken to promote and disseminate best practices in dual-career support programmes, which enshrine the recognition of the fundamental values of sport and health and also help prevent early school leaving or the abandonment of sporting careers. (Maietta et al., 2024). A crucial challenge for the coming years concerns the sustainability of network models. Many support projects currently depend on temporary European funding (such as *Erasmus+ Sport* calls for proposals). The transition to permanent ecosystems requires universities and sports clubs to make structural investments in dedicated professionals, such as tutors and *learning analytics* experts.

Only robust and financially autonomous governance can guarantee the long-term continuity of services, ensuring that support for athletes does not end with the closure of a research grant. The future scenario sees the student-athlete as an ambassador of resilience. In an increasingly fluid and digital labour market, the athlete’s ability to balance excellence in performance with continuous learning becomes a model for the entire student population.

Dual Career ecosystems thus function as laboratories for pedagogical innovation, whose outcomes (asynchronous learning, AI tutors, recognition of *soft skills*) can be extended to all working students or those facing vulnerable circumstances or requiring flexibility. The analysis conducted highlights how the *Dual Career* has ceased to be a purely logistical matter and has become a testing ground for the university of the future.

The integration of extended learning and digital transformation has demonstrated that it is possible to reconcile sporting excellence with academic success, provided that isolated approaches are abandoned in favour of collaborative network ecosystems.

Technology, and in particular Artificial Intelligence, does not act as a substitute for human interaction, but as an enabler that finally makes teaching ‘tailor-made’. In conclusion, valuing the sporting experience means recognising that talent is a multidimensional resource: supporting student-athletes today means shaping the informed leaders of tomorrow, capable of combining discipline, technical expertise and strategic vision in an increasingly interconnected world.

References

- Allegato Tecnico Ministeriale (2025/2026). *Progetto Studente-Atleta di alto livello*.
<https://www.mim.gov.it/anno-scolastico-2025-2026>
- Bastianon, S. (2019). *La doppia Carriera degli atleti: Una sfida culturale vincente*. Torino: Giappichelli.
- Bortoli, L., Vitali, F., Tommasini, A., Robazza, C. (2015). *Insegnare life skills attraverso l'attività sportiva*. Giornale italiano di psicologia dello sport. 22. 3-11
- CRUI (2024). *Protocollo d'intesa MUR-Ministero dello Sport per la promozione della Dual Career*. <https://sport.governo.it>
- De Mutiis, E., Cesaretti, L., Palma, F., Pavone Salafia, P., & Amatori, G. (2025). Intelligenza Artificiale e dinamiche inclusive: un ecosistema educativo adattivo per la personalizzazione dell'apprendimento. *ITALIAN JOURNAL OF SPECIAL EDUCATION FOR INCLUSION*, 13(1), 69-81.
- de Subijana, C. L., Barriopedro, M., & Conde, E. (2015). Supporting dual career in Spain: Elite athletes' barriers to study. *Psychology of sport and exercise*, 21, 57-64.
- Decreto Interministeriale (Nov 13, 2025). *Sistema Nazionale per la Dual Career degli Atleti*. <https://ilsole24ore.com>
- EU Project "More Than Gold" (2021-2024). *Linee guida per le istituzioni di istruzione superiore sull'uso di risorse digitali per la Dual Career*. <https://dualcareer.eu>
- European Commission (2012). *EU Guidelines on Dual Careers of Athletes*.
- Guidotti, F., & Capranica, L. (2013). *Le motivazioni verso sport e istruzione degli studenti-atleti*. In "Lo sport degli Europei", Franco Angeli.
- Guidotti, F., Cortis, C., & Capranica, L. (2015). Dual career of European studentathletes: a systematic literature review. *Kinesiologia Slovenica*, 21(3).
- Isidori, E. (2015). *The dual career of student athletes: a pedagogical challenge*. CCD - Cultura, Ciencia y Deporte.
- Izzicupo, P., Serafini, S., Prestanti, I., Fusco, A., Abalasei, B. A., Alonso del Hierro, T., ... & Capranica, L. (2025). A study on the implementation of dual career at European higher education institutions: the student-athletes' and experts' views. *Frontiers in Sports and Active Living*, 7, 1507951.
- Linnér, L., Stambulova, N., Ivarsson, A., Franck, A., & Lindahl, K. (2026). In pursuit of dual career excellence: factors associated to satisfaction of Swedish University student-athletes. *International Journal of Sport and Exercise Psychology*, 24(1), 121-135.
- López de Subijana, C., Checa, I., & Yukhymenko-Lescroart, M. A. (2026). Assessing dual career identity: Validation of the Spanish academic and athletic identity scale. *International Journal of Sports Science & Coaching*, 17479541251411196.
- Maietta, M.C., & Martiniello, L. (2024). Valore educativo dello sport: promozione dell'attività motoria. *Formazione & Insegnamento*, 22, 7120.
- Maulini, C. (2018). *Il counselling educativo nella dual career degli atleti-studenti*. International Journal of Sports Humanities.
- Messina, S., Gaggioli, C., & Panciroli, C. (2024). Apprendere ed insegnare nell'era degli ecosistemi digitali intelligenti: pratiche didattiche e nuove piste di ricerca. *Media Education*, 15(1), 81-90.
- Migliorati, M., & Maulini, C. (2018). *Il talento sportivo come sfida pedagogica*. Formazione e Insegnamento..
- Saqib, H., Al-Hashmi, S. H., Mazhar, H. M., & Syed Imran, A. K. (2023). Chatbot in E-learning. *SHS Web of Conferences*, 156, 1-6.

- Stambulova, N. B. (2000/2020). *Athletes' crises: a developmental perspective*. International Journal of Sport Psychology, ISSN 0047-0767, Vol. 31, no 4, p. 584-601
- Stambulova, N. B., Engström, C., Franck, A., Linnér, L., & Lindahl, K. (2015). Searching for an optimal balance: Dual career experiences of Swedish adolescent athletes. *Psychology of Sport and Exercise*, 21, 4-14.
- Wylleman, P., & Reints, A. (2010). *A lifespan perspective on the career of talented and elite athletes*. Scand J Med Sci Sports; 20 Suppl 2:88-94.