

Shaping the future: Exploring the Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate sport and exercise science curricula in the United Kingdom

Item Type	Article (Version of Record)
UoW Affiliated Authors	Thomas, Gavin
Full Citation	Kavaliauskas, M., Lord, R. and Thomas, Gavin (2025) Shaping the future: Exploring the Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate sport and exercise science curricula in the United Kingdom. Journal of Hospitality, Leisure, Sport & Tourism Education., 38 (100596). pp. 1-11. ISSN 1473-8376
DOI/ISBN/ISSN	<a href="https://doi.org/10.1016/j.jhlste.2025.100596">https://doi.org/10.1016/j.jhlste.2025.100596</a>
Journal/Publisher	Journal of Hospitality, Leisure, Sport & Tourism Education Elsevier
Rights/Publisher Set Statement	© 2025 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license ( <a href="http://creativecommons.org/licenses/by/4.0/">http://creativecommons.org/licenses/by/4.0/</a> )
License	CC BY 4.0
Link	<a href="https://www.sciencedirect.com/science/article/pii/S1473837625000620">https://www.sciencedirect.com/science/article/pii/S1473837625000620</a>

For more information, please contact [wrapteam@worc.ac.uk](mailto:wrapteam@worc.ac.uk)



Contents lists available at ScienceDirect

# Journal of Hospitality, Leisure, Sport & Tourism Education

journal homepage: [www.elsevier.com/locate/jhlste](http://www.elsevier.com/locate/jhlste)

## Shaping the future: Exploring the Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate sport and exercise science curricula in the United Kingdom

Mykolas Kavaliauskas<sup>a,\*</sup>, Rhiannon Lord<sup>b</sup>, Gavin Thomas<sup>c</sup><sup>a</sup> Division of Sport, Exercise and Health, School of Health and Life Sciences, University of the West of Scotland, Lanarkshire Campus, Stephenson Place, Hamilton International Technology Park, G72 0LH, United Kingdom<sup>b</sup> Department of Health, Sport and Wellbeing, Faculty of Social and Applied Sciences, Abertay University, Bell Street, Dundee, DD1 1HG, United Kingdom<sup>c</sup> School of Sport and Exercise Science, University of Worcester, St John's Campus, Henwick Grove, Worcester, WR2 6AJ, United Kingdom

### ARTICLE INFO

#### Keywords:

Higher education  
Sports science  
Exercise science  
Curricula  
Curriculum design

### ABSTRACT

Despite high popularity, economic and social value of the sport and exercise sciences (SES) courses in the United Kingdom (UK), there has been no attempt to provide an overview of its higher education (HE) provision. Therefore, the aim of this study was two-fold. Firstly, to provide a thorough overview of the curricula of the Chartered Association of Sport and Exercise Sciences (CASES) endorsed undergraduate SES degree programmes in the UK. Secondly, to present a foundation of discussion points and considerations for those shaping and (re)designing sport degree programmes.

Curricula data from 2024 to 2025 were collected from 53 UK universities (44 English, 4 Scottish, 4 Welsh and 1 Northern Irish) offering CASES endorsed SES courses. Due to different degree structures in Scotland (a 4-year BSc (Hons) degree) and the rest of the UK (a 3-year BSc (Hons) degree), the data were summarised and presented separately as 'Scotland' and 'RUK'. A total of 1328 modules were analysed by type (either 'core' or 'optional') and categorised into one of fifteen domains.

The results show that RUK universities were more prescriptive than those in Scotland, with 57 % of all SES modules being core compared to 45 % in Scottish institutions. However, the number of optional modules increased over the years in both systems reflecting the generally flexible structure of the SES degree. The curricula of Scottish and RUK SES degree programmes were predominantly multidisciplinary allowing institutions to tailor content in response to emerging fields and/or staff expertise. These findings have implications for future (re)design of SES degree curricula, not just in the UK but in similar settings. The current challenges curriculum developers face in keeping SES programmes relevant and preparing graduates for the workplace are discussed. Finally, we offer recommendations for overcoming these challenges.

\* Corresponding author. Division of Sport, Exercise and Health, School of Health and Life Sciences, University of the West of Scotland, Lanarkshire Campus, Stephenson Place, Hamilton International Technology Park, G72 0LH, United Kingdom.

E-mail addresses: [Mykolas.Kavaliauskas@uws.ac.uk](mailto:Mykolas.Kavaliauskas@uws.ac.uk) (M. Kavaliauskas), [r.lord@abertay.ac.uk](mailto:r.lord@abertay.ac.uk) (R. Lord), [g.thomas@worc.ac.uk](mailto:g.thomas@worc.ac.uk) (G. Thomas).

<https://doi.org/10.1016/j.jhlste.2025.100596>

Received 27 August 2025; Received in revised form 20 November 2025; Accepted 4 December 2025

Available online 8 December 2025

1473-8376/© 2025 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

Sport and exercise science (SES) is a multidisciplinary field that spans both performance and health contexts, focusing on “the application of scientific principles to the promotion, maintenance, and enhancement of sport and exercise-related behaviours” ([The Chartered Association of Sport and Exercise Sciences, 2025](#)). SES is one of the fastest growing and most popular degree courses in the United Kingdom (UK) ([Complete University Guide, 2025](#)). According to the latest 2026 subject league table, 85/130 (65 %) higher education institutions (HEIs) currently offer undergraduate SES degree programmes. In 2024, there were a total of 74,535 applications to study sports science, and 84 % of applicants received an offer ([Complete University Guide, 2025](#)). This suggests that SES graduates are entering the UK workforce in significant numbers each year.

In fact, an independent report from 2019 assessed the economic impact of SES higher education in the UK, finding that SES courses contribute £3.9 billion in annual income to the UK economy and support nearly 150,000 jobs ([The Physiological Society, 2019](#)). Beyond economic value, the report highlighted additional social benefits, including higher earnings, increased tax revenue, and public sector savings ([The Physiological Society, 2019](#)). These findings underscore the importance of SES education in creating both economic and social value, with universities playing a critical role in training SES graduates to be employable and “work-ready” ([Kemi et al., 2024](#); [Lane and Whyte, 2006](#)).

It is widely recognised that universities can enhance graduate prospects by continually evolving curricula to meet employer demands ([Kemi et al., 2024](#); [Kittel et al., 2023](#)). Recent findings showed that SES graduate prospects is also the main predictor of ranking success in UK university league tables ([Kemi et al., 2024](#)). However, there appears to be large discrepancies between employers and sports graduates, including SES graduates in how they perceive the relative importance of the capabilities and competencies required for employment in the sport sector ([Baker et al., 2017](#)). Recently, concerns have been raised about potential gaps in SES graduates’ knowledge, skills, and attributes. Notably, SES students may not receive sufficient training in statistics and data skills ([McLaren, Dello Iacono, and Weston, 2024](#), pp. 28–29; [Myers et al., 2024](#)), and there is also a need for a stronger emphasis on sociological perspectives in SES studies to support real-world practices ([Lord and Kavaliauskas, 2023](#); [Sullivan & Ali, 2024](#); [Thomas et al., 2024](#)).

Within the critical backdrop of knowledge and skills gaps in graduates, it is important to recognise the recent volatile conditions of UK HEIs ([Fleming, 2021](#); [Scott, 2021](#)) and the constraints this has led to over the past ten years. Arguably, UK HEIs have been chronically under-funded, and are undertaking extensive measures to be efficient in their financial, time and staff resources ([Universities UK, 2025](#)). This is resulting in programmes of study and curricula being reviewed for efficiencies ([Time Higher Education, 2025](#)), and there are increasing pressures of limited resource (space, time and staff) to deliver content. Although these patterns have been present over the past ten years or so, they have been exacerbated by the prolonged effects of the Covid-19 pandemic (see [Watermeyer et al., 2021](#)) and ‘Brexit’ (see [Neville et al., 2024](#)). Consequently, academic staff are continually juggling the competing pressures and demands of preparing industry-ready graduates with decreasing resource. Curricula are important not only for graduate outcomes but also for first year students, particularly given the ongoing challenges around effective support and retention during the transition to higher education ([Timmis, Pexton and Cavallerio, 2022](#)).

To combat the pressures of the volatile HEI environment, meet industry needs and support graduate employment, many universities seek recognition and endorsement from professional organisations. The Chartered Association of Sport and Exercise Sciences (CASES), formerly the British Association of Sport and Exercise Sciences, is the professional body for sport and exercise sciences in the UK ([CASES, 2025](#)). The CASES Undergraduate Endorsement Scheme (CUES) serves as the recognised standard for SES undergraduate degree programmes in the UK, ensuring curricula quality by assessing the knowledge, technical skills, competencies, and practical experience that students gain ([CASES, 2025](#)). While this process promotes uniformity and high standards across HEIs offering CUES endorsed programmes, curricula content may vary by institution. In their application for the CUES, HEIs must demonstrate they are delivering specific knowledge and skills within their curricula, but there is no requirement for a CASES prescribed programme of knowledge to be delivered via specific delivery methods and/or specific assessments of learning to take place. Variation of SES curricula is not unique to UK HEIs. For example, a recent analysis of Australian Exercise and Sport Science degree programmes has highlighted diverse content areas and work-integrated learning opportunities available to the students ([Kittel et al., 2023](#)). Previously, curricula analysis of exercise science programmes in the United States (US) revealed inconsistencies in adherence to professional standards and competencies, particularly in areas such as exercise prescription, testing, and implementation ([Elder, Pujol, and Barnes, 2003](#)).

However, a similar curricula analysis of UK SES programmes is currently unavailable, so it is unclear how it compares to the SES offerings in other countries, something the authors intend to address in the current study. Additionally, the aforementioned concerns cannot be effectively addressed without a clear understanding of the current SES provision in the UK. Therefore, given that curricula design is a predictor of student engagement and is linked to employment outcomes ([Kittel et al., 2023](#); [Levinsson et al., 2024](#)), a comprehensive analysis of the UK SES curricula could offer valuable insights to further improve student engagement and retention, enhance learning, and better prepare graduates for their careers. Therefore, the aim of this study is two-fold. First, we provide a thorough overview of the curricula of the CASES endorsed undergraduate SES degree programmes in the UK, something which is absent from existing literature. Second, in offering our analytical observations of patterns in CASES endorsed SES curricula, we present a foundation of discussion points and considerations for those shaping and (re)designing sport degree programmes, not just in the UK but in similar settings.

## 2. Materials and methods

### 2.1. Search and inclusion/exclusion criteria

This study utilised publicly available information to analyse the curricula structure and content of the undergraduate SES degree programmes in the UK. Specifically, the CASES Course Finder tool was used to identify all programmes endorsed via the CASES Undergraduate Endorsement Scheme (CUES). The CUES is now the recognised standard for all SES degree programmes in the UK and was therefore used as the main inclusion criterion in this study. Degree programmes that offered joint degrees (e.g., BSc (Hons) Sport Science and Coaching) or those with named pathways (e.g., BSc (Hons) Sport and Exercise Science (Strength and Conditioning)) were excluded to maintain greater consistency across course offerings. The final list was then confirmed by cross-referencing it with the CASES endorsed courses published in the most recent BASES Career Guide ([The British Association of Sport and Exercise Science](#)).

### 2.2. Variables collected

In total, there were 53 CASES endorsed courses that were eligible for the data collection and analysis. This represents 62 % of all SES degree programmes in the UK (53 out of 85) ([Complete University Guide, 2025](#)). Using similar methodology to [Kittel et al. \(2023\)](#) and [Sullivan and Ali \(2024\)](#), module names were extracted from each university's official course webpage. Each module was categorised as either a core or optional module, and the year in which the module was offered was noted as per each course webpage. Given that module titles varied slightly across institutions, the two authors (MK and GT) independently developed and then agreed on a list of fifteen domains. The domains were largely based on the CASES accreditation framework for sport and exercise (CASES Sport and Exercise Scientist Accreditation) and were similar to those used in previously published studies ([Kittel et al. 2023](#); [Sullivan & Ali, 2024](#)). The domains and their definitions can be found in [Table 1](#).

### 2.3. Domain mapping process

The two authors independently assigned each module to one of the predefined domains (see [Table 1](#)). Where the module title alone (e.g., ambiguous title) was insufficient to determine domain, publicly available module descriptors and learning outcomes were accessed and consulted. One university course webpage lacked comprehensive module information, and in this case, a Freedom of Information (FOI) request was submitted to the university to obtain the necessary data.

The agreement of terms and intercoder reliability between two authors who are experienced HE lecturers in sport and exercise science was 98.7 %, which is considered an acceptable reliability ([O'Connor & Joffe, 2020](#)). In cases where disagreement occurred, the third author was consulted to reach a consensus. Modules for which no clear domain could be assigned, even after reviewing descriptors and outcomes, were categorised as "Other".

### 2.4. Data analysis

All data for the academic year 2024–2025 were manually entered into a Microsoft Excel workbook (Microsoft Corporation, Redmond, WA). The workbook captured general information for each degree programme, including the institution name, course title, year of study, module titles, assigned SES domain, and whether each module was classified as core (i.e., compulsory to take) or optional (i.e., electives). Microsoft Excel was used to calculate descriptive statistics, including frequency counts and relative frequencies. To account for different degree structures in Scotland (a 4-year BSc (Hons) degree) and the rest of the UK (a 3-year BSc (Hons) degree), the data were summarised and presented separately as 'Scotland' and 'RUK',<sup>1</sup> respectively. The data analysis was completed in November 2024 and the final spreadsheet, including the categorised modules and relevant programme information, is available in the supplementary materials section.

## 3. Results

### 3.1. Institutional location and student mobility options

Geographically, out of the 53 CUES degree programmes analysed in this study, 44 (83 %) were offered in England, four (8 %) in Wales, four (8 %) in Scotland, and one (2 %) in Northern Ireland. Furthermore, 20/49 (41 %) RUK universities offered a placement year option with no placement years offered at any of the four Scottish universities. A study abroad option was available at 17/49 (35 %) RUK universities and all four (100 %) Scottish universities.

### 3.2. Curricula structure

In total, across the 49 RUK universities there were 1181 modules delivered across all three-degree years. More than half of these

<sup>1</sup> RUK is a commonly used term in the Scottish HEIs to differentiate differences in degree programmes in Scotland compared to the rest of the UK.

**Table 1**

Fifteen domains and their definitions.

Domain	Definition
Biomechanics	Module content that covers the mechanical parameters of human motion.
Physiology	Module content that covers the biological sciences that is concerned with the way that the body responds to exercise and training.
Psychology	Module content that seeks to provide answers to questions about human behaviour in sport and exercise settings.
Multi/Interdisciplinary Studies	Module content that covers two or more disciplines in an integrated fashion from the outset.
Professional Practice	Module that develops practical experience, skills and knowledge related to the sport and exercise science industry.
Research Methods	Module content that covers research methods, including data analysis.
Anatomy	Module content that covers key anatomical structures, systems and functions of the body.
Motor Learning & Control	Module content that covers motor learning, control and skill acquisition.
Nutrition	Module content that covers nutritional strategies to aid performance, health and/or wellbeing.
Sociology	Module content that covers key sociological theories and their applicability to the understanding of sport and exercise.
Academic Skills	Module content that covers strategies and habits that can help learners succeed in an academic setting.
Strength and Conditioning	Module content that covers planning, delivery and review of the physical and physiological preparation.
Physical Activity, Exercise and Health	Modules content that covers various aspects of physical activity, exercise and health in relation to different population groups.
Independent Research Project	Modules that require students to produce a sport or exercise science-based research project.
Other	Any module that does not fit within any of the above domain areas. For example, 'Performance Analysis', 'Physical Education', 'Sports Injuries' etc.

modules were core (57 %, 670) and the remaining modules (511, 43 %) were optional. In the final year of their degree, students had more optional modules (74 %) compared to the first year where only 3 % were optional (Fig. 1).

In total, there were 147 modules across the four CUES degree programmes in Scotland. More than half (55 %, 81) of the modules were optional compared to 45 % (66) of modules that were core. The relative number of optional modules increased from 41 % in the first year to 80 % in the fourth year (Fig. 2).

### 3.3. Curricula content

The highest percentage of all modules in both Scottish (34 %) and RUK (19 %) universities fell within the 'Other' domain (Fig. 3). The next three most common domains differed between Scottish and RUK SES courses, though. Specifically, 'Multi/Interdisciplinary Studies' (12 %), 'Physiology' (10 %) and 'Psychology' (9 %) were the second, third and fourth most common domains in Scottish universities (Fig. 3a). Whereas, in RUK SES courses these were 'Psychology' (13 %), 'Physiology' (12 %) and 'Biomechanics' (11 %), respectively (Fig. 3b). 'Anatomy' and 'Motor Learning and Control' domains were the least common domains in both Scottish and RUK universities (Fig. 3).

Figs. 4 and 5 show the percentage provision of each domain over the course of the degree programme in RUK (a three-year degree) and Scotland (a four-year degree), respectively. The offerings of 'Other' modules within the RUK SES courses increased by 9 % from 14 % in the first year to 23 % in the final year (Fig. 4). That was the largest percentage increase across all domains with the percentage provision of other most common modules (i.e., 'Psychology', 'Physiology' and 'Biomechanics') remaining similar over the three years (Fig. 4). The percentage provision of the least common domains (i.e., 'Anatomy', 'Motor Learning & Control', 'Academic Skills' and 'Sociology') decreased over the three-year period.

In contrast to the RUK universities, there was a greater year-on-year percentage variation within the Scottish SES courses (Fig. 5). For example, the percentage of 'Other' modules, which was the most common domain, varied from as high as 46 % in the second year to 20 % in the third year. Similarly, 21 % of all second-year modules were 'Multi/Interdisciplinary Studies', but then this percentage dropped to 0 % in the final year. Interestingly, the percentage of 'Physiology' modules increased from 7 % in the first year to 16 % in the final year. Whereas the provision of 'Psychology' modules fluctuated from as low as 5 % in the second year to 11 % in the third year. There were no 'Anatomy' specific modules, and the percentage of 'Motor Learning & Control' modules increased from 0 % in the first three years to 2 % in the final year.

## 4. Discussion

The first aim of this paper was to examine the CASES endorsed SES curricula in the UK. This was achieved by analysing a total of 1328 modules from fifty-three HEIs. The second aim was to provide our analytical observations of patterns in the current SES curricula structure and content. The observed patterns were first discussed within the UK context and, where possible, also interpreted in a broader global context.

### 4.1. Curricula structure

SES programmes at RUK universities appeared more prescriptive than those in Scotland, with 57 % of modules classified as core compared to 45 % in Scottish programmes. However, both systems provided an increased flexibility across the degree. In RUK institutions, optional modules increased from 3 % in year one to 74 % in the final year (Fig. 1). Similarly, in Scotland, optional modules increased from 41 % in year one to 80 % in the fourth year (Fig. 2). By comparison, a recent Australian review found that 63 % of

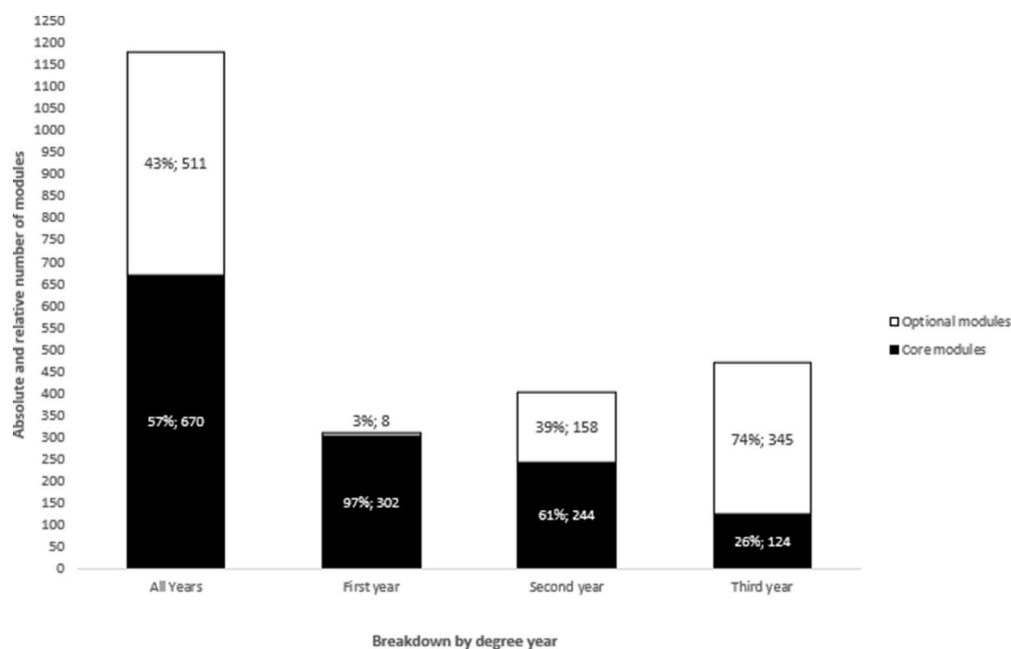


Fig. 1. Absolute and relative number of core and optional sport and exercise science modules by year in the RUK universities.

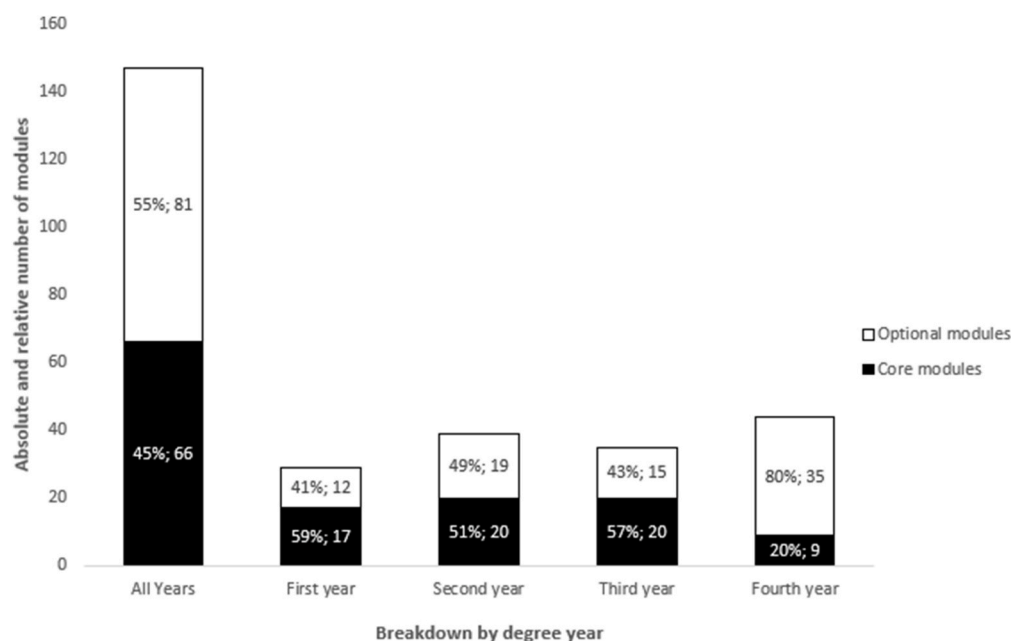


Fig. 2. Absolute and relative number of core and optional sport and exercise science modules by year in the Scottish universities.

Exercise and Sport Science degrees prescribed over 20 core units in a 24-unit degree (i.e.,  $\geq 88\%$ ) (Kittel et al., 2023), suggesting the UK curricula model is more flexible in structure.

This flexibility enables students to tailor their degree pathways to align with personal interests and career goals, which is particularly valuable given the wide range of destinations SES graduates pursue. The report published by the [Physiological Society \(2019\)](#) showed that SES graduates were employed in a wide range of industries six months after leaving HEIs. The top industries in which sports graduates gained employment were 'education and research' (19 %), 'sport, tourism, leisure, and culture' (13 %), and 'retail' (12 %). This shows that SES graduates bring both specialist and generalist skills into the workforce where they are reported to support nearly 150,000 jobs ([The Physiological Society, 2019](#)), reinforcing the importance of curricula that supports graduate

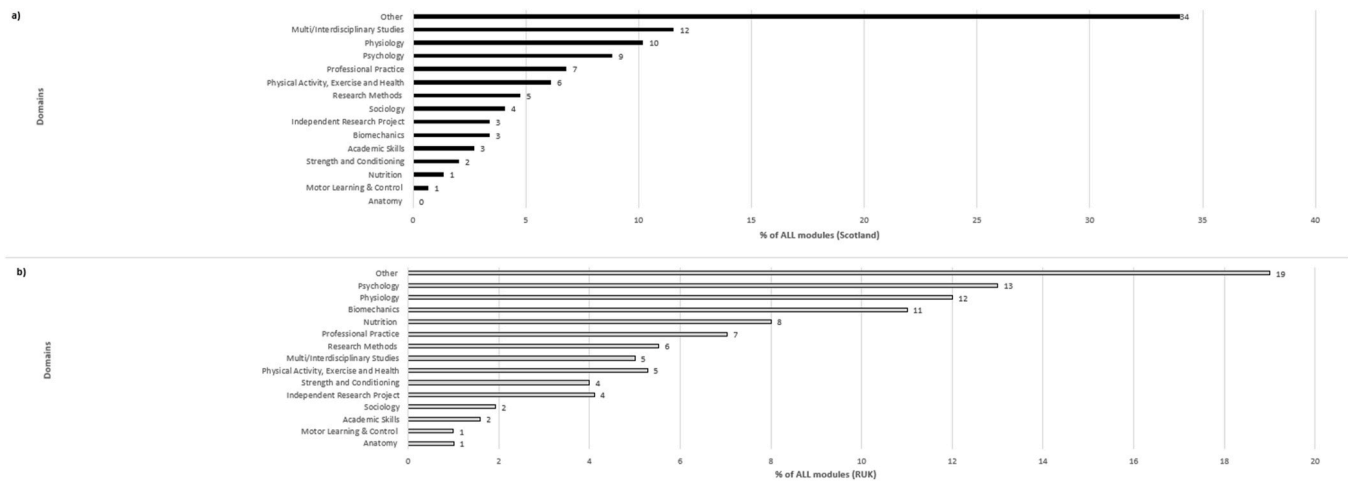


Fig. 3. Domains presented as rounded-up percentage of all modules, ranked from highest to lowest in the Scottish (top panel) and RUK (bottom panel) universities.



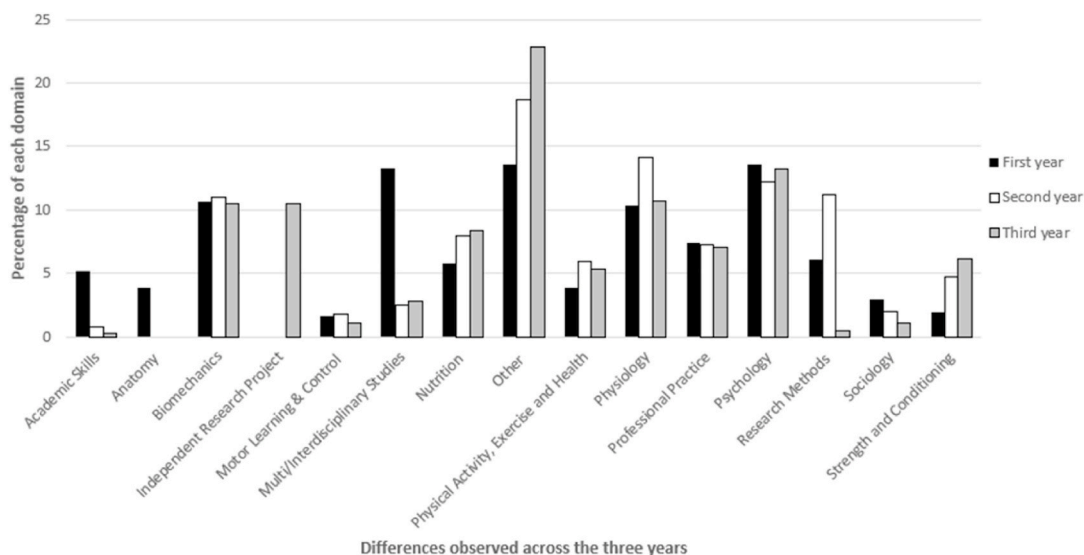


Fig. 4. Domains as a percentage of total modules per year across all three years of the RUK SES programmes.

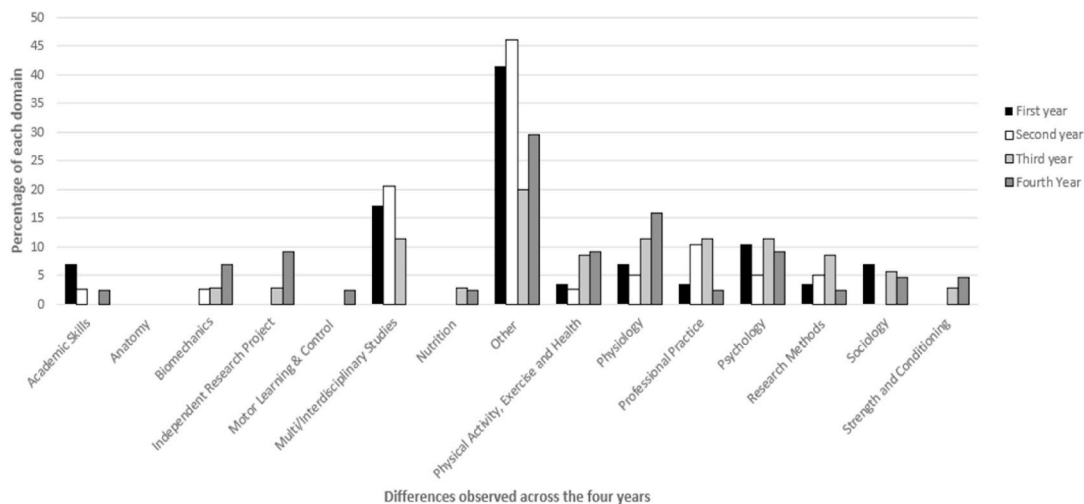


Fig. 5. Domains as a percentage of total modules per year across all four years of the Scottish SES programmes.

versatility. The UK-wide Graduate Outcomes 2022/23 data, published by the Higher Education Statistics Agency (HESA), show that 44 % of biological and sport sciences graduates from undergraduate degree programmes were in full-time employment 15 months after graduating, while 12 % were in part-time employment (HESA, 2025).

Optional modules allow students to explore diverse topics and develop specialised expertise, helping prepare them for postgraduate study or careers within and outside of sport sector. For example, fourteen percent of biological and sport sciences graduates enter full-time further study, while an additional 13 % combine further study with employment (HESA, 2025). Anecdotally, final-year undergraduate students enjoy having the option to choose their own modules which has been shown to contribute to learner satisfaction, specifically in adult learners (Barua & Lockee, 2024). The demand for flexibility in course designs, structure and delivery is as high as ever especially post-Covid-19 (Barua & Lockee, 2024). Arguably, HEIs need to adapt to the changing and shifting needs of an increasingly diverse student population, but it comes with potential trade-offs (Barua & Lockee, 2024). The feasibility of delivering these diverse and flexible SES courses is becoming increasingly challenging from the financial, staff and resources perspective (Universities UK, 2025). Consequently, universities are trying to remove these optional modules to improve efficiency because offering a high number of optional modules places logistical and financial pressure on institutions already navigating sector-wide budget constraints and staffing challenges. Using a restaurant analogy, universities increasingly aim to offer a limited selection of well-designed and high-quality modules rather than offering too many choices on the academic menu.



## 4.2. Curricula content

Analysis of curricula content revealed ‘Other’ as the most common domain in both Scottish (34 %) and RUK (19 %) SES programmes (Fig. 3). It is perhaps unsurprising because this broad domain includes modules such as performance analysis, sports injuries, and coaching-related topics that do not align neatly with the biophysical or behavioural sciences. The prominence of this domain highlights the inherently multidisciplinary nature of SES curricula, and the flexibility institutions have to tailor content around emerging areas and/or staff expertise. The integrative characteristics of SES degrees is often framed as a strength. The SES discipline spans performance, health, and wellbeing, and the ability to cross disciplinary boundaries is seen as critical to its sustainability in HE (Gill, 2007). There has been a recent call to embrace inter- and trans-disciplinary approach by adopting a biopsychosocial framework in SES educational curricula (McGawley, 2024). Such an approach would encourage the training and development of SES students as ‘jacks of all trades’, which can often be more beneficial than producing highly specialised graduates, especially when many SES graduates develop careers in a wide range of occupations (McGawley, 2024; Minten and Forsyth, 2014).

It is, therefore, encouraging to see that 5 % of all RUK modules and even higher percentage of all Scottish modules (12 %) were categorised as ‘Multi/Interdisciplinary’ (Fig. 3). However, it is important to point out that this alone does not guarantee meaningful integration of diverse epistemologies or critical perspectives (Sullivan & Ali, 2024). Without intentional design, such categories risk being superficial. For example, it appears that most multi- and inter-disciplinary modules are delivered at the start of SES degree programmes (see Fig. 4 for RUK and Fig. 5 for Scotland). Thus, the ‘out of the way early’ approach is unlikely to be sufficient for teaching how multiple disciplines interact and work collaboratively.

An integrated approach that encompasses various research methods and philosophical positions should also be adopted and clearly reflected in research methods modules. Whilst the exact content of research methods modules at an individual HEI was not analysed in this study, the total percentage of ‘Research Methods’ domain in RUK and Scotland programmes was 6 % and 5 %, respectively (Fig. 3). In terms of distribution over the programme years, the highest percentage of research methods content was delivered in the year prior to the final year, specifically to support students with their dissertation research projects (Figs. 4 and 5). The same trend was observed in Australian Exercise and Sport Science programmes, where the percentage of ‘Research Methods and Data Analysis’ units was drastically reduced in the final year (Kittel et al., 2023). However, the effectiveness of traditional research methods modules and statistical education in the UK undergraduate SES degree programmes has been recently questioned (Myers et al., 2024). Subsequently, McLaren, Dello Iacono, and Weston (2024) issued a call to action for HEIs to collaborate more closely with industry partners and academic colleagues from other disciplines (e.g., data science) to ensure graduates develop strong data literacy skills.

Beyond the ‘Other’ domain, the most common modules in RUK programmes were ‘Psychology’ (13 %), ‘Physiology’ (12 %), and ‘Biomechanics’ (11 %) (Fig. 3b). These findings align closely with CASES’ definition of SES, which emphasises “the application of scientific principles to sport and exercise through biomechanics, physiology, and psychology, or interdisciplinary approaches” (CASES, 2025). These core domains were also common in Scottish programmes (Fig. 3a), albeit with more variation across years (Fig. 5).

Surprisingly, certain domains were notably underrepresented. For example, ‘Anatomy’, ‘Motor Learning & Control’, ‘Academic Skills’, and ‘Sociology’ consistently ranked among the least frequent, each representing  $\leq 2$  % of modules in RUK programmes. Moreover, the provision of these less common domains tended to decline as the degrees progressed (Fig. 4), raising questions about whether foundational and critical skills are being sufficiently reinforced over time. In Scottish programmes, ‘Anatomy’ was entirely absent with ‘Nutrition’ (1 %) and ‘Motor Learning & Control’ (1 %) being the other two least popular domains. There was only a small increase in the provision of ‘Nutrition’ and ‘Motor Learning & Control’ over the four years of undergraduate degree (Fig. 5). It is possible, though, that some of the lesser common domains are integrated and taught, at least to some degree, within other domains. For example, anatomy is commonly integrated within biomechanics modules.

The above patterns are consistent with international trends. Kittel et al. (2023) reported that Exercise Physiology and Biomechanics were core units in 100 % of Australian programmes, with Exercise and Sport Psychology, and Exercise Prescription also widely taught. In Canada, Sullivan and Ali (2024) found that biophysical content dominated kinesiology curricula, while sociocultural studies made up just 9 % of modules, with some institutions omitting them entirely. The marginalisation of sociology and critical theory in the present study echoes these findings and supports ongoing calls for more meaningful integration of contextual and sociocultural content in SES education (Thomas et al., 2024) including more specialist areas such as strength and conditioning (Lord and Kavaliauskas, 2024). This is particularly important given current sociopolitical debates in the Global North, including the US and the UK, which have shaped public discussions about minority groups involved in sport. Sociocultural studies are often linked with topics such as equality, diversity and inclusion, including gender, race, ethnicity, sexuality and social class, reflecting sociology’s interest in how power structures influence sporting environments. At times, recent public debates have limited rather than supported open discussion on these issues. For example, recent political directives in the UK and US will have vast consequences for transgender people’s use of public spaces and services. Specifically, in April 2025 the UK Supreme Court ruled that the term ‘sex’ within the Equality Act (2010) refers to biological sex and therefore a woman is a biological woman or girl, born female; and a man is a biological man or boy, born male (Equality and Human Rights Commission, 2025).

Sociocultural studies also address wider themes relevant to contemporary sport, such as sustainability, climate change, athlete and coach welfare, ethics and doping, which are increasingly important for graduate employment. SES graduates therefore need to be prepared to engage critically with such topics using evidence-based approaches rather than relying on dominant public narratives. Recent calls and efforts to decolonise SES curricula, aimed at diversifying teaching content and promoting inclusive practices, indicate progress in the field (Runswick et al., 2022). However, a scoping review by Burgess et al. (2025) revealed that there is currently very little published pedagogical research specifically focused on diversity and inclusion within SES. This highlights a significant gap that must be addressed to inform teaching and learning practices as well as curricula design.

Work-integrated learning, such as placements and internships offers a vital opportunity for SES students to apply theoretical knowledge in a real-world setting whilst also developing key “soft skills”, such as communication, self-confidence and interpersonal skills (Kittel et al., 2023; Malone, 2017). 41 % of RUK universities embed a placement year (i.e., sandwich degree) into their SES courses with no placement years offered at any of the four Scottish universities. In terms of other work-related opportunities, 7 % of all modules were related to ‘Professional Practice’ in both Scottish and RUK Universities (Fig. 3). However, this percentage was more consistent across the 3-year RUK degree (Fig. 4) compared to highly variable professional practice opportunities over the course of 4-year degrees in Scotland (Fig. 5). It is important to note that this study only reports the overall percentage of ‘Professional Practice’ domain in SES programmes without specifying whether students were required to complete a set number of hours for work experience, placement, or internship. In contrast, Kittel et al. (2023) clearly reported that the mean number of work-integrated learning hours across twenty-four Australian HEIs was 177 with a range from 140 to 300 h. To maximise its impact and help students better understand the key requirements before entering the workforce, work-integrated learning (i.e., work experience, work placement and volunteering opportunities) should be widely embedded throughout curricula (Baker et al., 2017). This is especially important given a wide difference in opinion between employers and sports graduates regarding the importance of various capabilities and competencies as highlighted in a large-scale study (Baker et al., 2017).

#### 4.3. (Re)shaping future SES curricula

This study provides only a snapshot of the CASES endorsed SES curricula in the 2024–2025 academic year. Future analyses should therefore include all SES degree programmes in the UK and examine not only module provision but also teaching methods, pedagogical approaches, assessment strategies, and graduate outcomes. It is important to recognise that knowledge and skill development and application can also occur through a variety of assessment practices and work-based learning, something that was not examined in this study. Nevertheless, based on the findings several key considerations are put forward:

First, an open dialogue between key stakeholders (CASES, universities, employers, and students) is needed to ensure that SES curricula remain both academically rigorous and vocationally relevant for the 21st century. The continued growth and popularity of SES degrees depend on producing graduates who are not only “work-ready” but also critically aware of the broader sociocultural challenges facing sport and exercise. Evidence suggests discrepancies between what is taught in SES programmes and the skills that key stakeholders perceive as valuable, with employers and graduates often holding different views on the capabilities required for successful employment in the sector (Baker et al., 2017; Kittel et al., 2023; Sullivan & Ali, 2024). Committees, advisory groups, and panels already bring stakeholders together to address these discrepancies. However, the success and speed of implementing changes depend on actively and regularly sharing best practices, key outcomes, and discussion points.

Second, it is recommended work-integrated learning should be embedded more systematically throughout SES programmes. Placements, internships, and professional practice modules provide vital opportunities for students to apply theoretical knowledge in real-world contexts while also developing transferable skills such as communication, leadership, and adaptability (Board et al., 2014; Malone, 2017; Pye et al., 2013). Given the persistent skills gap between graduate expectations and employer requirements (Baker et al., 2017), a sector-wide commitment to structured placement provision would strengthen the alignment between education and employment. The existing CASES position stands on graduate internships (Pye et al., 2013) and curriculum-based work placements in SES (Board et al., 2014) provide valuable good practice recommendations for all stakeholders. Once again, these guidelines should be regularly reviewed and updated to ensure alignment between SES curricular and employability requirements.

Third, the findings highlight underrepresentation of certain domains, particularly research methods, statistical literacy, and sociological perspectives. Addressing these gaps requires more than simply increasing the number of modules; it calls for innovative approaches to teaching data analysis, entrepreneurship, and critical theory in ways that reflect the realities of the sport and exercise sector (González-Serrano, Moreno and Hervás, 2021; McLaren, Dello Iacono and Weston, 2024, pp. 28–29; Thomas et al., 2024). For instance, cross-module applied projects may help students integrate knowledge from different domains/subjects and develop interdisciplinary skills by applying concepts in real-world contexts. Furthermore, embedding entrepreneurship in SES education has been identified as a promising strategy for enhancing employability and preparing graduates for industries beyond traditional sport science roles (González-Serrano, Moreno and Hervás, 2021). This may also enhance graduate versatility, equipping students for careers both inside and outside the SES industry.

Finally, transparency and collaboration are essential. Universities and professional bodies should proactively share data on graduate destinations, programme innovations, and implementation challenges in accessible ways. This could include publishing annual reports on graduate employment trends, hosting employer-led workshops and openly sharing examples of successful teaching and learning innovations. By doing so, institutions can highlight examples of best practice and at the same time cultivate a culture of collective responsibility for shaping the future of SES education (Board et al., 2014; Pye et al., 2013).

## 5. Conclusion

This paper represents the first systematic overview of CASES endorsed undergraduate SES curricula in the United Kingdom. The analysis demonstrates both the strengths of the current model, such as flexibility and multidisciplinary, and areas requiring further attention, including the better integration of research methods, entrepreneurial skills, and sociocultural perspectives.

As higher education in the UK continues to face financial and structural pressures, it is vital that SES curricula evolve in ways that balance disciplinary depth, interdisciplinary breadth, and student choice. The challenge for CASES and its stakeholders extends beyond safeguarding existing standards; it also requires actively guiding how curricula adapt to the demands of a rapidly changing sport and

exercise landscape. By opening dialogue across stakeholders, embedding work-integrated learning, strengthening underrepresented domains, and committing to transparent sharing of graduate outcomes, the SES community can ensure that graduates are employable and fully prepared to critically engage with the future of sport and exercise in society.

### CRedit authorship contribution statement

**Mykolas Kavaliauskas:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Rhiannon Lord:** Writing – review & editing, Methodology, Conceptualization. **Gavin Thomas:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Data curation, Conceptualization.

### Declaration of competing interest

The authors have no conflicts of interest to declare.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jhlste.2025.100596>.

### References

- Baker, C., Loughren, E. A., Dickson, T., Goudas, M., Crone, D., Kudlacek, M., et al. (2017). Sports graduate capabilities and competencies: A comparison of graduate and employer perceptions in six EU countries. *European Journal for Sport and Society*, 14(2), 95–116.
- Barua, L., & Lockee, B. B. (2024). A review of strategies to incorporate flexibility in higher education course designs. *Discover Education*, 3(1), 127.
- Board, L., Caldwell, E., Doggart, L., Knowles, Z., Pye, M., & Twist, C. (2014). The BASES position stand on curriculum-based work placements in sport and exercise sciences. *The Sport and Exercise Scientist (Summer)*, 6–8.
- Burgess, K. E., Bradley, E., Dray, K., Powell, S., & Runswick, O. (2025). The state of research in teaching and learning in sport and exercise science: A scoping review. *Journal of Hospitality, Leisure, Sports and Tourism Education*, 37, Article 100573.
- Complete University Guide. (2025a). Top ten most popular courses in the UK 2025. Available at: <https://www.thecompleteuniversityguide.co.uk/student-advice/what-to-study/top-ten-most-popular-courses-in-the-uk>.
- Complete University Guide. (2025b). Sports science subject league table. Available at: <https://www.thecompleteuniversityguide.co.uk/league-tables/rankings/sports-science>.
- Elder, C. L., Pujol, T. J., & Barnes, J. T. (2003). An analysis of undergraduate exercise science programs: An exercise science curriculum survey. *The Journal of Strength & Conditioning Research*, 17(3), 536–540.
- Equality and Human Rights Commission. (2025). *EHRC Statement on Supreme Court ruling in For Women Scotland v Scottish Ministers*. Available at: <https://www.equalityhumanrights.com/ehrc-statement-supreme-court-ruling-women-scotland-v-scottish-ministers>.
- Fleming, P. (2021). *Dark academia: How universities die*. Pluto Books.
- Gill, D. L. (2007). Integration: The key to sustaining kinesiology in higher education. *Quest*, 59(3), 269–286.
- González-Serrano, M. H., Moreno, F. C., & Hervás, J. C. (2021). Sport management education through an entrepreneurial perspective: Analysing its impact on Spanish sports science students. *International Journal of Management in Education*, 19(1), Article 100271.
- HESA. (2025). Graduate Outcomes 2022/23: Summary statistics. Available at: <https://www.hesa.ac.uk/news/17-07-2025/sb272-higher-education-graduate-outcomes-statistics/study>.
- Kemi, O. J., Penpraze, V., Scobie, N., & MacFarlane, N. G. (2024). Graduate prospects explain undergraduate program standing in university league sports science tables. *Advances in Physiology Education*, 48(2), 330–337.
- Kittel, A., Stevens, C. J., Lindsay, R., Spittle, S., & Spittle, M. (2023). An overview of Australian exercise and sport science degrees. *Frontiers in Education*, 8, Article 1125259.
- Lane, A. M., & Whyte, G. P. (2006). From education to application: Sport and exercise sciences courses in the preparation of applied sport scientists. *Journal of Hospitality, Leisure, Sports and Tourism Education*, 5(2), 89–93.
- Levinsson, H., Nilsson, A., Mårtensson, K., & Persson, S. D. (2024). Course design as a stronger predictor of student evaluation of quality and student engagement than teacher ratings. *Higher Education*, 1–17.
- Lord, R., & Kavaliauskas, M. (2023). Sociological tools for improving women's representation and experiences in strength and conditioning coaching. *Strength and Conditioning Journal*, 45(1), 40–48.
- Malone, J. J. (2017). Sport science internships for learning: A critical view. *Advances in Physiology Education*, 41(4), 569–571.
- McGawley, K. (2024). A biopsychosocial framework for sport science: “A Jack of All Trades Is Oftentimes Better Than a Master of One”. *International Journal of Sports Physiology and Performance*, 19(7), 621–622.
- McLaren, S., Dello Iacono, A., & Weston, M. (2024). Teaching data skills to pay the bills. *The sport and exercise scientist (Autumn)*.
- Minten, S., & Forsyth, J. (2014). The careers of sports graduates: Implications for employability strategies in higher education sports courses. *Journal of Hospitality, Leisure, Sports and Tourism Education*, 15, 94–102.
- Myers, T. D., Abt, G., McErlain-Naylor, S., & Tidmarsh, G. (2024). We teach what we learn: Statistical education in UK undergraduate sport and exercise science programmes. In *Poster presented at the royal statistical society's UK conference on teaching statistics, Manchester, UK*.
- Neville, R., Rowe, F., & Singleton, A. (2024). Unraveling the Brexit–COVID-19 nexus: Assessing the decline of EU student applications into UK universities. *Data & Policy*, 6, e45.
- O'Connor, C., & Joffe, H. (2020). Intercode reliability in qualitative research: Debates and practical guidelines. *International Journal of Qualitative Methods*, 19, Article 1609406919899220.
- Pye, M., Hitchings, C., Doggart, L., Close, G., & Board, L. (2013). The BASES position stand on graduate internships. *The Sport and Exercise Scientist (Summer)*, 1–3.
- Runswick, O., Hashmi, S., Waerker, J., & Twumasi, R. (2022). Reflections on decolonisation and enhancing inclusion in undergraduate teaching of sport and exercise psychology. *Sport & Exercise Psychology Review*, 17(2), 46–55.
- Scott, T. (2021). Impact of government policies and international students on UK university economic stability. *International Education Studies*, 14(5), 1–7.
- Sullivan, E. K., & Ali, A. E. (2024). Are kinesiology programs oppressive? A content analysis of Canadian university kinesiology curricula and websites. *Sport, Education and Society*, 29(6), 712–725.

- The British Association of Sport and Exercise Science. A guide to careers in sport and exercise science 2024. Available at: [https://www.cases.org.uk/spage-resources-career\\_guide.html](https://www.cases.org.uk/spage-resources-career_guide.html).
- The Chartered Association of Sport and Exercise Sciences. (2025). About sport and exercise science. Available at: [https://www.cases.org.uk/spage-about\\_us-about\\_sport\\_\\_exercise\\_science.html](https://www.cases.org.uk/spage-about_us-about_sport__exercise_science.html).
- The Chartered Association of Sport and Exercise Sciences. CASES sport and exercise scientist accreditation. Available at: [https://www.cases.org.uk/sspage-professional\\_development-accreditation\\_and\\_endorsement-cases\\_accreditation.html](https://www.cases.org.uk/sspage-professional_development-accreditation_and_endorsement-cases_accreditation.html).
- The Physiological Society. (2019). Sport and exercise science education: Impact on the UK economy report. Available at: <https://www.physoc.org/policy/research-and-teaching-landscape/sport-exercise-science-education-impact-on-the-uk-economy/>.
- Thomas, G., Kavaliauskas, M., Molnár, G., & Lord, R. (2024). Towards sport and exercise science education informed by sociology. *The Sport and Exercise Scientist (Summer)*, 32–34.
- Times Higher Education. (2025). Student choice at risk as almost half of universities cut courses. News 6th May 2025 <https://www.timeshighereducation.com/news/student-choice-risk-almost-half-universities-cut-courses>.
- Timmis, M. A., Pexton, S., & Cavallerio, F. (2022). Student transition into higher education: Time for a rethink within the subject of sport and exercise science?. In *Frontiers in education* (Vol. 7) Frontiers Media SA, Article 1049672.
- Universities, U. K. (2025). Universities grip financial crisis – But at what cost to the nation? Universities UK Media release. Last updated Tuesday 27th May 2025. Available at: <https://www.universitiesuk.ac.uk/what-we-do/creating-voice-our-members/media-releases/universities-grip-financial-crisis-what>.
- Watermeyer, R., Shankar, K., Crick, T., Knight, C., McGaughey, F., Hardman, J., et al. (2021). 'Pandemia': A reckoning of UK universities' corporate response to COVID-19 and its academic fallout. *British Journal of Sociology of Education*, 42(5–6), 651–666.