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Stakeholders' Perceptions of Undergraduate and Postgraduate Strength and Conditioning Education in the United Kingdom: A Survey Study

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ABSTRACT

The number of strength and conditioning (S&C) degrees in the United Kingdom has grown alongside the discipline's popularity. The design and development of these degrees are influenced by various stakeholders, including S&C association representatives, potential employers, degree representatives, students, and graduates. Prior to this study, the collective perceptions of these stakeholders regarding UK S&C degrees had not been researched. This study filled this gap by reporting on the results of 73 participants who completed a one-time anonymous survey, consisting of six sections: (a) background information, (b) degree endorsement, recognition, and accreditation, (c) course structure, (d) placements, (e) module topics, and (f) further information. Frequency analysis was employed for fixed-response questions and thematic analysis for open-ended questions. Participants valued S&C associations and their role in providing degree endorsements, recognitions, and accreditations as they demonstrate quality assurance and alignment with industry standards. However, they felt that professional qualifications from these associations should be more integrated into degree programmes. Regarding degree content and structure, participants agreed that undergraduate degrees should focus on foundational knowledge (e.g., physiology), while postgraduate degrees should cover specialised S&C content and applied practice (e.g., placements). However, some differences in opinion were observed concerning module topics, with participants lacking interest in research-based modules, despite being common, especially at postgraduate level. Placements were considered very important for gaining authentic practical experience, with most participants recommending they be compulsory. Although, flexibility was recommended for students with existing industry experience. These findings provide valuable and needed insights into current perceptions of UK S&C degrees, which may inform stakeholders decisions and practices, lead to closer alignment between stakeholder groups, and create beneficial changes for UK S&C degrees.

INTRODUCTION

Strength and conditioning (S&C), a sub-discipline of sports science, builds upon the scientific foundations of sports science into applied practice, to develop the performance of athletes and minimise injury risk[1–4]. Growing interest in S&C has led to a rise in related degree programmes offered by higher education (HE) institutes in the United Kingdom (UK)[5–7]. For the 2023–2024 academic year, 20 undergraduate and 29 postgraduate S&C degrees were available in the UK[6]. According to the Higher Education Statistics Agency (HESA), biological and sports-science based subjects are now the UK's 10th most popular subject area[8], substantially contributing to HE institutes' income. Tuition fees for UK S&C undergraduate degrees for the 2024–2025 academic year ranged from £8950–9250 for domestic students and £12,000–16,380 for international students, while postgraduate degrees ranged from £6,531–13,000 for UK students and £6,531–28,100 for international students[6]. Fees for many undergraduate and postgraduate degree courses will increase by ~3% for the 2025–2026 academic year. Given this financial investment, HE institutions are expected to support students in achieving their career aspirations, such as pursuing further education or securing employment[9]. According to the United Kingdom Strength and Conditioning Association (UKSCA), entry-level S&C coaches in the UK, with 0–2 years experience, typically earn a starting salary between £19,000–£25,000[10]. Despite the expanding and diversifying job market for S&C coaches in the UK, concerns remain that the supply of graduates may exceed demand[7].

When S&C degree representatives design new or develop existing programmes, academic and industry guidance should be sought[2,11]. Curriculum development can be supported by seeking input from various stakeholders, including S&C associations, potential employers, other degree representatives working in successful programs, students, and graduates[2,12]. Three main professional associations are recognised within the UK S&C sector: the National Strength and Conditioning Association (NSCA), the UKSCA, and the International Universities Strength and Conditioning Association (IUSCA). Each offers professional qualifications, often essential for working as an S&C coach[13]. Seperately, the NSCA and IUSCA provide recognition and accreditation schemes for UK S&C degrees which may improve the program's reputation[5]. The Chartered Institute for the Management of Sport and Physical Activity (CIMSPA) in collaboration with the UKSCA (hereafter CIMSPA-UKSCA) has established professional standards for S&C coaches/trainers that UK S&C degrees can align with for endorsement[5]. Hereafter, all of which are referred to as accreditations. To gain external accreditation, S&C degrees must adhere to specific frameworks and meet criteria set by these associations. This process helps standardise course design, structure, module topics, assessments, and placements[5,6]. Approximately 85% of undergraduate and 52% of postgraduate UK S&C degrees currently hold some form of accreditation[5]. While accreditation demonstrates alignment with external S&C association standards, no data suggests these accredited courses outperform those without. As the S&C profession continues to evolve and professionalise, external accreditations will likely need to adapt. For example, the NSCA has recently launched the Council on Accreditation of Strength and Conditioning Education (CASCE). This initiative aims to distinguish HE S&C programmes that demonstrate academic rigour and practical excellence through alignment with specific adacemic requirements and a comprehensive peer-reviewed accreditation process[14]. Furthermore, beginning in 2030, US Candidates seeking to become a Certified Strength and Conditioning Specialist (CSCS) under the NSCA will need a degree from a CASCE-accredited programme; this deadline is extended to 2036 for non-US candidates[14].

Understanding the influence and relationship of various stakeholder groups is vital for the continued development of S&C degrees. For example, S&C associations provide industry standards that potential employers use to shape job descriptions and personnel specifications. Higher education institutes then align their degree structure and content with these standards, while students adhere to them throughout their studies, placements, and professional qualifications, to enhance their employability. To get a better sense of a degree's quality and guide improvement, HE institutes collect student feedback through internal surveys and consultations[15,16], as well as the external National Student Survey (NSS)[17]. While student feedback is invaluable, a more complete picture of S&C degrees would emerge from gaining insights from other equally important stakeholders.

To date, no research has explored the collective perceptions of various stakeholders on UK S&C degrees. This study aims to fill this gap, providing

crucial insights into current perceptions that could inform stakeholder decisions and practices. The findings may also encourage closer alignment between stakeholder groups, leading to beneficial changes for UK S&C degrees.

METHODS

Experimental Approach to the Problem

A cross-sectional anonymous online survey with a purposive sampling approach was used to explore the perceptions of different stakeholders concerning UK undergraduate and postgraduate S&C degrees.

Participant Recruitment

Participants were recruited through the author team's professional networks via email invitations and an advertised survey on social media (X, LinkedIn). We also used snowball sampling to broaden our reach, asking participants to share the survey with others meeting the inclusion criteria. The survey remained open from 29/4/24–17/10/24.

A digital invitation letter and the survey's opening page provided details on inclusion criteria, study purpose, aims, time commitment, and confidentiality to support informed consent. The inclusion criteria for participants were: (a) 18 years of age or above; (b) S&C association representative who must be currently or previously employed/appointed by the NSCA, UKSCA, or IUSCA; OR (c) potential employer who must work for an organisation currently or previously looking to employ graduates from UK S&C degrees; OR (d) S&C degree representative who must be currently or previously employed by a HE institute and directly worked in any capacity on a UK S&C degree (e.g., practical demonstrator, lecturer, course director); OR (e) student who must be currently enrolled or have graduated from a UK S&C undergraduate or postgraduate degree within the last five years.

Participants

In total, 73 stakeholders participated in this study, which included S&C association representatives (n = 11, 12.2%), potential employers (n = 12, 13.3%), degree representatives (n = 22, 24.4%), and students/graduates (n = 45, 50% [undergraduate student n = 24 (26.7%), undergraduate graduate n = 2 (2.2%), postgraduate student n = 11 (12.2%), and postgraduate graduate n = 8 (8.9%)]). Note that those meeting the criteria for different stakeholder groups could select more than one response (e.g., S&C association representative and S&C degree representative); therefore, the total value of the data presented above (N = 90) exceeds the total number of participants (N = 73).

Procedure (Survey)

This study used an original survey (see Appendix 1), with questions informed by prior research on UK S&C degrees[5,6]. The survey was developed using the online platform Joint Information Systems Committee (JISC) (jisc.ac.uk, Bristol, England) and assessed against the Checklist for Reporting Results of Internet E-Surveys (CHERRIES)[18] and Checklist for Reporting of Survey Studies (CROSS)[19] (see appendices 2 and 3). Content validity was established using a three-stage process: (a) development – the lead author and final author developed the provisional survey; (b) pilot testing – co-authors internally reviewed the survey; and (c) assessment – three representatives from each stakeholder group (n = 12) reviewed the survey. This led to minor changes in the structure and wording of some questions for clarity and appropriateness. The survey comprised six sections: (a) background information, (b) degree endorsement, recognition, and accreditation, (c) course structure, (d) placements, (e) module topics, and (f) further information. It included 14 fixed-response and 12 open-ended questions. The study received ethical approval from the Birmingham City University Research Ethics Committee and adhered to the Declaration of Helsinki.

Data Analyses

All surveys were fully completed, and responses were downloaded into a Microsoft Excel Spreadsheet (version 16.96, USA). Frequency analysis was used for fixed-response questions. Open-ended questions were analysed by the lead author using a six-stage thematic analysis process: (a) familiarisation with the data; (b) generating initial codes; (c) searching for themes; (d) reviewing themes; (e) defining and naming themes; and (f) producing the report[20,21]. Hereafter, all co-authors, experienced across stakeholder groups, discussed, reviewed and agreed upon each emerging theme and pattern. A sub-analysis of opinions for individual stakeholder groups was deemed inappropriate due to numerous participants holding multiple roles (e.g., S&C degree postgraduate student and potential employer of S&C degree graduates).

RESULTS

Background Information

The 73 participants included 58 males (79.5%), 14 females (19.2%), and 1 (1.4%) preferring not to say. The average age was 31.0 ± 10.3 years (range: 18–56 years). Most participants resided in England (*n* = 65, 89%), followed by Wales (*n* = 4, 5.5%), Scotland (*n* = 2, 2.7%), and other countries (*n* = 2, 2.7%). Employed participants had been in their current roles for an average of 9.1 ± 5.7 years (range: 0–25 years).

Degree Accreditation

Most participants (*n* = 66, 90.4%) believed it 'was important for UK S&C degrees to hold external accreditations with the NSCA, CIMSPA-UKSCA, or IUSCA. A smaller proportion were 'unsure' (*n* = 5, 6.8%) or responded 'no' (*n* = 2, 2.7%). Explanations for these views are detailed in Table 1.

Similarly, most participants (*n* = 57, 78.1%) felt it 'was important for graduates of UK S&C degrees to pursue professional qualifications with the NSCA, UKSCA, or IUSCA. Fewer were 'unsure' (*n* = 11, 15.1%) or responded 'no' (*n* = 5, 6.8%). Open-ended responses are summarised in Table 2.

Course Structure

Concerning the overarching content of UK S&C undergraduate degrees, participants believed they should 'focus predominantly on S&C topics and include some sports science topics' (*n* = 55, 75.3%). Fewer suggested 'focus predominantly on sports science topics and include some S&C topics' (*n* = 14, 19.2%) or to 'focus explicitly on S&C topics' (*n* = 14, 5.5%). Table 3 provides further details. For UK S&C postgraduate degrees, most participants believed they should 'focus predominantly on S&C topics and include some sports science topics' (*n* = 50, 68.5%), followed by 'focus explicitly on S&C topics' (*n* = 22, 30.1%) and 'focus predominantly on sports science topics and include some S&C topics' (*n* = 1, 1.4%). Open-ended responses are provided in Table 4.

Participants predominantly responded 'yes' (*n* = 45, 61.6%) to non-academic experience entry (i.e., a process is in place for recognising prior learning and achievement obtained through the workplace or experiential means) as a viable pathway into UK S&C postgraduate degrees. Others were 'unsure' (n = 19, 26%) or responded 'no' (*n* = 9, 12.3%). Table 5 summarises the reasons for these opinions.

Most participants were 'unsure' whether UK S&C undergraduate (*n* =37, 50.7%) and postgraduate (*n* = 43, 58.9%) degrees provided value for money. Among those expressing an opinion, believed UK S&C degrees 'do' (undergraduate *n* = 19, 26% and postgraduate *n* = 15, 20.5%) and 'do not' (undergraduate: *n* = 17, 23.3% and postgraduate: *n* = 15, 20.5%) offer value for money. Tables 6 and 7 provide detailed explanations.

Placements

Most participants believed placements should be compulsory on UK S&C degrees (undergraduate: *n* = 57, 78.1% and postgraduate: *n* = 46, 63%). Fewer responded 'no' (undergraduate: *n* = 8, 11% and postgraduate: *n* = 12, 16.4%) and 'unsure' (undergraduate: *n* = 8, 11% and postgraduate: *n* = 15, 20.5%). Tables 8 and 9 summarise these views.

Module Topics

Participants identified the three most important module topic areas for UK S&C undergraduate and postgraduate degrees. These results are presented in Tables 10 and 11, and are compared with the only published data on modules covered within UK S&C degrees[6].

Further Information

Finally, participants offered their perspectives on the future of UK S&C degrees. These responses are summarised in Table 12.

Table 1. Thematic analysis results for why United Kingdom undergraduate and postgraduate strength and conditioning (S&C) degrees should or should not hold external endorsements, recognitions, and accreditations.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Quality assurance/Meets industry standards	49 (48.5%)	*"Accreditation adds two things. First it is a mark of quality, that the programme covers appropriate content at an appropriate level and it is taught and delivered using appropriate methods. Second it offers greater recognition as the accreditation has a higher chance of being known and accepted worldwide than just the degree or University name by itself."*	1, 3
Progression to employment	22 (21.8%)	*"These are the governing bodies of the sector, and thus, we should try to align students as closely as we can to their working models, qualifications, and principles. These are essentially the gate-keepers to progression with the sector, within reason."*	3
Professional qualifications	12 (11.9%)	*"I believe the material covered in those certifications is often included in both UG and PG courses. Therefore, it seems unnecessary to pursue them separately, especially considering the high cost. I only became aware of this after enrolling in undergraduate and potgraduate studies. However, when applying for jobs, I frequently encounter enquiries whether I hold certifications such as ****, **** or ****."*	4
Does not guarantee high-level graduates*	5 (5%)	*"The external recognitions do not guarantee outstanding graduates (that is largely down to the quality of the teaching staff), the recognition should ensure some consistency of educational standards."*	1
Practical experience is more important*	4 (4%)	*"I'd sooner have someone with lots of experience, who is teachable, than someone with less experience or who thinks they know everything, just because they have the quals."*	2
Networking	3 (3%)	*"They also offer support and a great network of coaches to help ensure standards are kept"*	1, 4
Marketing	2 (2%)	*"Universities have seen an explosive of S+C degrees which all are quite different by design but ultimately universities are competing for limited interested candidates. The universities that are more attractive will no doubt recruit more strongly and having an endorsed or accredited course is part of several ways universities can compete."*	1
Feedback for course improvement	2 (2%)	*"Courses that are looking to work with the strength and conditioning industry and their governing bodies are recognising that external standards can help improve their current curriculum."*	3
Certain professional qualifications are unfit for purpose*	2 (2%)	*"I can only speak for the **** accreditation and my interpretation of the ****. The exam structure (****) leaves no stone unturned and the coach has to be proficient all round. I have coworker who have the **** accreditation, who on paper, is as qualified but has not developed the coaching of the WL and Plyos. They have admitted they just wanted the easiest route to be able to call themselves an accredited S&C coach."*	2, 4
Total	101		

*Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 101) exceeds the number of participants (N = 73); (b) * signifies responses that are deemed negative/constructive. ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.*

Table 2. Thematic analysis results as to whether graduates of United Kingdom strength and conditioning (S&C) degrees need to pursue professional qualifications with relevant associations.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Progression to employment	30 (32.6%)	*"As it is a prerequisite to work in S&C roles, you can have a MSc in S&C yet without the **** qual or equivalent, you are still unemployable in most places."*	4
Quality Assurance/Meets industry standards	30 (32.6%)	*"Professional accreditations do provide an industry recognised minimum standard and (theoretically) an unbiased level of competency."*	1
Continued professional development	9 (9.6%)	*"Pursuing/gaining these external accreditation(s) allows for added experience and ensures continued CPD/development during their careers."*	3
Does not equate to high-level coaches*	6 (6.5%)	*"Whether these make the graduate any better at coaching S&C however I'd be doubtful."*	2
Networking	5 (4.3%)	*"I had **** for a few years and now have**** (can only afford one). It's opened a lot of doors, especially coming from a background where I don't know anyone working in professional sport and wasn't an athlete. My network grew a lot and efforts in that became easier."*	4
Certain professional qualifications are unfit for purpose*	4 (4.3%)	*"Many of the current accreditation pathways/assessments are not suitable, in my opinion."*	2, 3
Practical experience is more important*	4 (4.3%)	*"What value does it add most people who work in professional sport have not go accredited status with any of these. The determinate of getting a job in sport is network, experience and time on the ground not if you are an association member."*	2, 4
Should implement professional qualifications within degrees*	4 (4.3%)	*"I feel these should be awarded within the degree programmes where possible otherwise it feels as though the degree programme/process is undermined a little."*	1
Total	92		

*Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 92) exceeds the number of participants (N = 73); (b) * signifies responses that are deemed negative/constructive. ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.*

Table 3. Thematic analysis results for explaining what the general content of United Kingdom undergraduate strength and conditioning (S&C) degrees should cover.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Develop underpinning sports science knowledge	54 (47%)	*"It is not possible to cover S&C content without the underpinning sports science (e.g., physiology, biomechanics, psychology). An S&C coach should be a sport scientist, but a sport scientist is not always an S&C coach."*	4
Develop specialised S&C knowledge	47 (40.9%)	*"The scope of practice for an S&C coach is ever expanding so specific S&C focused modules across all levels of study is important to develop 'fit for purpose' graduates and allow the students to spend enough time on task to develop the key competencies."*	1, 3
Should focus beyond sports science and S&C	10 (8.7%)	*"None of the above, but don't mean not applicable. Programmes need to focus on coaching, social interaction with athletes, and wider demands of the coaching process."*	2, 3
Specialise in S&C at master's degree level	4 (3.5%)	*"Personally, sports and exercise science at undergraduate, and the postgraduate specialisation in S&C would be better."*	2, 4
Total	115		

Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 115) exceeds the number of participants (N = 73). ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.

Table 4. Thematic analysis results for explaining what the general content of United Kingdom postgraduate strength and conditioning (S&C) degrees should cover.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Build on foundational knowledge gained from an undergraduate degree in a more specific S&C context	87 (89.7%)	*"Most will undertake a masters in S&C from a sports science or S&C undergraduate programme. This should stretch and further develop those foundations into more specific and technical knowledge and practice ability."*	4
Should focus on developing broader skill sets and knowledge to improve employability	6 (6.2%)	*"Many organisations employ hybrid roles and thus exposing students to many disciplines and skill-sets is integral for them to become career-ready."*	3
Obtain more research experience	2 (2.1%)	*"Compared to undergraduate programmes, greater emphasis should be put on research methods and the ability to critique research appropriately."*	1, 2, 3
Obtain more work-based S&C experience	2 (2.1%)	*"Include placement hrs like they do in physiotherapy."*	1, 2
Total	97		

Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 97) exceeds the number of participants (N = 73). ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.

Table 5. Thematic analysis results for explaining whether non-academic experience entry should be a viable entry method into United Kingdom postgraduate strength and conditioning (S&C) degrees.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Suitable candidates can come from non-academic routes with relevant experience, knowledge, and skills gained	42 (66.6%)	*"Individuals who have practical experience in a certain field may have already developed a strong foundation of knowledge and skills that are relevant to the S&C field. This means that they may already possess some of the competencies required for entry into the program."*	1, 3
Must meet appropriate equivalency criteria	14 (22.2%)	*"Having a process of recognizing prior learning and achievement obtained through the workplace or other experiential means would also be beneficial for individuals who may not have a traditional academic background, but have gained relevant skills and knowledge through other avenues. It is important to maintain a fair and consistent approach when considering non-academic experience entry and to ensure that the minimum requirements set for acceptance into the program are reasonable and relevant to the S&C field. This would help to ensure that the program maintains its quality and reputation, while also providing opportunities for individuals to pursue their academic interests."*	1, 3
Should complete an associated undergraduate degree	7 (11.1%)	*"Undergraduate programmes provide a base level of knowledge and critical thinking that other routes don't. I feel it's an essential requirement for a postgraduate programme."*	2, 4
Total	63		

Notes: (a) Due to certain participants selecting NA (not applicable) as they were unsure how to answer this question definitively, the total frequency (N = 63) is below the total number of participants (N = 73). ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.

Table 6. Thematic analysis results as to whether United Kingdom undergraduate strength and conditioning (S&C) degrees represent value for money.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Varies dependent on institute, course, and staff	15 (19.7%)	*"Some courses are poor (e.g., little S&C content, taught by non S&C coaches, no accreditation, no work experience and no embedded professional qualifications). Courses with professional qualifications, work experience, and high quality professionally qualified and experienced staff are worth the money."*	3
Fees too high*	12 (15.8%)	*"University fees are too high; no matter the degree."*	4
Work experience	8 (10.5%)	*"It is true that obtaining a strong understanding of the foundational phase and gaining more experience in the field through work can help students get involved in the realm of sports performance. This experience can help students secure a good level of employment after completing their studies. It is also important to note that pursuing an undergraduate degree can provide students with a wide range of knowledge and skills that they can apply in various industries. This can lead to better job opportunities and higher earning potential."*	1, 3
Knowledge and skill development	7 (9.2%)	*"Undergraduate experiences are more than just a qualification. They give you the foundational knowledge and skills to succeed in life, as well as giving you some more specific knowledge on a particular subject area."*	4
Limited contact time on course*	6 (7.9%)	*"I believe courses are overpriced compared to the amount of contact hours."*	4
Value for money	6 (7.9%)	*"When compared to studying abroad absolutely. And most including myself got a student loan for this. For the most part they will not pay this back."*	4
Low paid outcomes*	5 (6.6%)	*"Perhaps the lack of value is the entry level job wages in comparison to most other sectors with graduate schemes."*	3
Increased employment and earning potential	4 (5.3%)	*"The information gained is valuable and allows you to gain future employment and therefore money back."*	4
Financial pressures of universities and need to make profit*	4 (5.3%)	*"The number of hours of delivery are constantly being squeezed to additional agendas for universities, which is forced on them due to a lack of funding and need to generate additional income."*	3
Dependent on student engagement	3 (3.9%)	*"While I do think this is the case - again, this depends on the individual and their engagement."*	2, 3
No guaranteed employment*	3 (3.9%)	*"You are not guaranteed a job in your desired field."*	4
Alternative ways to become an S&C coach*	3 (3.9%)	*"Accreditations can be acquired without this that may enable entry into some roles."*	3
Total	76		

*Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 76) exceeds the number of participants (N = 73); (b) * signifies responses that are deemed negative/constructive. ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.*

Table 7. Thematic analysis results as to whether United Kingdom postgraduate strength and conditioning (S&C) degrees represent value for money.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Varies dependent on institute, course, and staff	12 (16.7%)	*"Across all HE institutions the quality of the course content and delivery is also variable - students should be able to make informed choices about courses so they can ensure value for money."*	3
Fees too high*	11 (15.3%)	*"Postgraduate strength and conditioning courses for international students can range from £16,000 to £29,000, which I find unjustifiable, especially considering the annual fee increases."*	4
Value for money	8 (11.1%)	*"Fees have been fixed since 2017 and in today's money, that would be £12,000. So, if you accept the high rate of inflation in recent years, then arguably it is value for money."*	3
Limited contact time on course*	7 (9.7%)	*"Often I think the contact time on post-grad student is less with an emphasis on independent study more - could argue this makes it poor value for money."*	3
Low paid outcomes*	6 (8.3%)	*"In an industry where renumeration is below the national average and students will likely have to undertake low or unpaid work, this is deeply problematic."*	3
Work experience	6 (8.3%)	*"I believe some UK S&C degree programmes provide good value for money when partnered with relevant internships and industry experience."*	1, 2
Knowledge and skill development	6 (8.3%)	*"Studying for a degree should never be viewed as a transactional process where money = qualification. Studying for UG and PG degrees should give students far more than just a certificate and should genuinely help them develop their philosophies and perspectives on practice and other aspects of their lives."*	1
No guaranteed employment*	5 (6.9%)	*"This creates a frustrating cycle where despite investing substantial amounts of money, students struggle to achieve high grades, secure placements, or obtain employment."*	4
Alternative ways to become an S&C coach*	3 (4.2%)	*"There are alternative pathways available to potential S&C coaches of the future that may better suit their needs in a more cost-effective way."*	1, 3
Increased employment and earning potential	3 (4.2%)	*"Higher potential career earnings."*	2, 4
Financial pressures of universities and need to make profit*	3 (4.2%)	*"Although I understand the financial pressures universities are under."*	3
Dependent on student engagement	2 (2.8%)	*"The 'value for money' of any qualification is dependent on the person doing the qualification and what they go on to do with it."*	1, 3
Total	72		

*Notes: (a) Due to certain participants selecting NA (not applicable) as they were unsure how to answer this question definitively, the total frequency (N = 72) is below the total number of participants (N = 73); (b) * signifies responses that are deemed negative/constructive. ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.*

Table 8. Thematic analysis results as to whether United Kingdom undergraduate strength and conditioning (S&C) degrees should have compulsory placement modules.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Real-world practical experience	38 (30.6%)	*"Gaining real world, practical experience is critical to becoming a competent and successful practitioner."*	2, 3
Additional learning opportunity	20 (16.1%)	*"Whilst it is possible to develop these skills in the university setting, exposure to an environment where a graduate may work or an environment that can upskill their areas of development will facilitate a faster and wider learning experience."*	3
Application of knowledge and skills	18 (14.5%)	*"Application of Theoretical Knowledge in Real-World Settings - Placement modules allow students to apply the theoretical knowledge gained in lectures and labs to real-world strength and conditioning (S&C) environments. This hands-on experience bridges the gap between classroom learning and practical application, ensuring students understand how to implement training principles effectively with athletes and clients."*	1, 2
Increased employment and earning potential	14 (11.3%)	*"Graduates with practical experience are more likely to secure jobs in the competitive S&C field."*	1, 2
Personal and professional development	11 (8.9%)	*"Placements help students develop essential soft skills, such as communication, teamwork, time management, and problem-solving, which are highly valued by employers. These skills complement their technical abilities and prepare them for the demands of the workplace, making them more competitive in the job market."*	1, 2
Should be more expansive*	9 (7.3%)	*"Health related courses such as nursing, paramedic science and so on adopt a 1000hour requirement. Strength and conditioning courses should also be looking for genuine competence rather than a 50-100hrs requirement which we typically see within Universities."*	3
Should be optional, not compulsory*	7 (5.6%)	*"I think they should be an option that is encouraged. But with more mature students on S&C degrees, many are paying bills, parents or have other commitments."*	4
Networking	4 (3.2%)	*"You also build your network in the industry"*	4
Should be offered across broader disciplines*	3 (2.4%)	*"Ultimately this depends on the exit point students choose. Not all will go into S&C, so placements could be tailored to other job opportunities."*	4
Total	124		

*Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 124) exceeds the number of participants (N = 73); (b) * signifies responses that are deemed negative/constructive. ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or Graduate.*

Table 9. Thematic analysis results as to whether United Kingdom postgraduate strength and conditioning (S&C) degrees should have compulsory placement modules.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Real-world practical experience	25 (25.8%)	*"Universities may give students invaluable practical experience in real-world situations by working with local clubs."*	1, 3
Application of knowledge and skills	15 (15.5%)	*"You can 'know' all you want, but until you've applied it or seen it applied, it's useless. Placements are a safe environment in which to practice and make mistakes under supervision."*	2
Should be optional, not compulsory*	15 (15.5%)	*"Depends on type of course. Some focus on experienced coaches they don't need this. Ones that are for top ups (e.g., coming from sport science degrees) then they need this coaching experience."*	3
Personal and professional development	14 (14.4%)	*"It's not just about transferring academic knowledge; it's also about immersing oneself in the culture and understanding the dynamics of coach-athlete relationships, among other factors."*	4
Increased employment and earning potential	11 (11.3%)	*"I did not complete placements during my degree programmes and heavily suffered the consequences of needing to gain voluntary or very minimally paid experience before even being considered for a job in sport. The few peers who did complete placements alongside all got jobs immediately."*	4
Additional learning opportunity	10 (10.3%)	*"Placement modules provide opportunities for students to practise key coaching techniques, such as programme design, delivering feedback, and monitoring athlete progress. This ensures they are not only knowledgeable but also competent and confident in leading S&C sessions."*	1, 2
Should be more expansive*	5 (5.2%)	*"Postgraduate S&C degree programmes ought to run for eighteen months, with the last two months devoted to hands-on training at local performance academies or sports clubs."*	1, 3
Networking	2 (2.1%)	*"Begins the networking process."*	3
Total	97		

*Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 97) exceeds the number of participants (N = 73); (b) * signifies responses that are deemed negative/constructive. ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate.*

Table 10. Participants response to the three most important module topics that should be covered on United Kingdom strength and conditioning (S&C) undergraduate degrees.

Module Topic	Undergraduate (Present Study)	Undergraduate (Weldon et al.)6	Percentile Difference
S&C	41 (21.2%)	55 (12.9%)	8.3
Anatomy/Physiology	34 (17.6%)	59 (13.8%)	3.8
Biomechanics/Movement analysis	21 (10.9%)	47 (11%)	-0.1
Coaching/Teaching	21 (10.9%)	20 (4.7%)	6.2
Programme monitoring/Design	17 (8.8%)	11 (2.6%)	6.2
Injuries	14 (7.3%)	25 (5.8%)	1.5
Testing/Data analysis	11 (5.7%)	10 (2.3%)	3.4
Research	7 (3.6%)	47 (11%)	-7.4
Nutrition	6 (3.1%)	27 (6.3%)	-3.2
Sports science	5 (2.6%)	11 (2.6%)	0
Energy systems	4 (2.1%)	5 (1.2%)	0.9
Academic/Professional	3 (1.6%)	43 (10%)	-8.4
Psychology	3 (1.6%)	21 (4.9%)	-3.3
Population specific	2 (1%)	11 (2.6%)	-1.6
Motor learning and control	2 (1%)	3 (0.7%)	0.3
Health/Fitness	1 (0.5%)	17 (4%)	-3.5
Sociology	1 (0.5%)	4 (0.9%)	-0.4
Performance analysis	0	8 (1.9%)	-1.9
Business	0	3 (0.7%)	-0.7
Multi-Topic	NA	1 (0.2%)	NA
Total	193	428	

Notes: (a) Due to certain participants providing less than the three requested module topics, the overall frequency (N = 193) is below that of the expected frequency (N = 219 [73 x 3]); Module topics are based on and compared with those reported by Weldon et al6, which is the only published data available for modules covered across UK S&C degrees.

Table 11. Participants response to the three most important module topics that should be covered on United Kingdom strength and conditioning (S&C) postgraduate degrees.

Module Topic	Undergraduate (Present Study)	Undergraduate (Weldon et al.)6	Percentile Difference
S&C	34 (19.9%)	34 (16.4%)	3.5
Biomechanics/Movement analysis	20 (11.7%)	9 (4.3%)	7.4
Coaching/Teaching	19 (11.1%)	8 (3.9%)	7.2
Anatomy/Physiology	15 (8.8%)	11 (5.3%)	3.5
Program monitoring/Design	13 (7.6%)	14 (6.8%)	0.8
Injuries	12 (7%)	7 (3.4%)	3.6
Research	11 (6.4%)	51 (24.6%)	-18.2
Testing/Data analysis	11 (6.4%)	6 (2.9%)	3.5
Nutrition	10 (5.8%)	4 (1.9%)	3.9
Sports science	6 (3.5%)	4 (1.9%)	1.6
Energy systems	6 (3.5%)	3 (1.4%)	2.1
Academic/Professional	3 (1.8%)	31 (15%)	-13.2
Population specific	3 (1.8%)	6 (2.9%)	-1.1
Psychology	3 (1.8%)	1 (0.5%)	1.3
Motor learning and control	2 (1.2%)	4 (1.9%)	-0.7
Sociology	1 (0.6%)	5 (2.4%)	-1.8
Business	1 (0.6%)	2 (1%)	-0.4
Health/Fitness	1 (0.6%)	0	0.6
Performance analysis	0	0	0
Multi-Topic	NA	7 (3.4%)	NA
Total	171	207	

Notes: (a) Due to certain participants providing less than the three requested module topics, the overall frequency (N = 171) is below that of the expected frequency (N = 219 [73 x 3]); Module topics are based on and compared with those reported by Weldon and colleagues 6, which is the only published data available for modules covered across UK S&C degrees.

Table 12. Participants response to what they believe the future of United Kingdom strength and conditioning (S&C) degrees looks like.

Theme	Frequency (%)	Example Response	Stakeholder Group(s)^
Improved practical experience	29 (25.4%)	"Degree programs in the field of Strength and Conditioning in the UK should prioritize integrating practical experience into their curricula. This shift towards experiential learning will enable students to apply theoretical knowledge in real-world scenarios, thus better preparing them for the demands of the industry."	1, 3
Modules topics adapting to future industry needs	17 (14.9%)	"As the field of S&C evolves, there will be an increased need for professionals skilled in technology and interdisciplinary practices. Graduates must be proficient in performance analysis tools, understand the importance of nutrition and psychology in training, and be capable of leveraging data analytics for athlete development."	1, 3
Broader knowledge and application of S&C	12 (10.5%)	"S&C is not all elite individuals or athletic development with the young, it pervades into corporate wellness and health."	4
Transparency with students on employment competition and salary potential	9 (7.9%)	"The industry would benefit from clear salary brackets and recommendations - similar to that provided by the ****. This would provide individual considering a career in S&C and looking into degree programmes with a clear insight for potential earnings."	3
Development of soft skills	8 (7%)	"The industry needs people who know how to think not what to think. There are any number of graduates who know a lot about S&C and probably have great experience, but the ones that are employable are so because of who they are not what they know. That is, someone who is prepared to work hard, resiliant, a good team player and a good leader (these two are often taken for granted because everyone in the space has been involved in sport, which people think makes them good in a team/as a leader, but this simply isn't the case for everyone), and can critically appraise their own and others work, providing and receiving feedback. As an employer, we expect a certain level of skill and education, but actually we can teach graduates a lot of the specifics on the job, what is harder to teach are these softer skills."	2
Embedded professional qualifications	7 (6.1%)	"Better alignment with vocational S&C qualifications and university degrees. There seems to be limited recognition for the learning at undergraduate and post-graduate with the vocational awards often then regarded as an additional requirement."	3
Degree accreditation	7 (6.1%)	"These programs need to seek accreditation from reputable organizations. Accreditation not only enhances the program's status but also ensures that the education provided aligns with the highest industry standards."	1, 3
Peer and industry collaboration/ Support	7 (6.1%)	"Greater collaborations with NGB's. If education is really going to move the needle, it needs to better jump into bed with organisations like the UK Sports Institute, Premier League, RFU, ECB, LTA, etc. Some institutions are doing this and doing it for specific disciplines (i.e., not just S&C), but stronger links with high-value organisations is probably needed to ensure that curriculums address the skillsets required to do the job."	3

Increased quality and reduced quantity of courses	6 (5.3%)	"I would like to think that standards of programmes remain high, and that lesser programmes that simply apply a standalone S&C module on top of a shell module designed programme (e.g., Sports and Exercise Sciences programme) become few and far between."	1
Varied modes of course delivery	4 (3.5%)	"I think hybrid or accelerated degrees will be the way forward allowing people to focus more intensely on the discipline over 2 years (using all three semesters). Just after discussions with interns and other S&C coaches and lecturers at conferences and event."	4
Broader knowledge of the multi-disciplinary team	4 (3.5%)	"Preparing students for the technological advancements and interdisciplinary requirements of the S&C industry will ensure that graduates are not only competent but also highly sought after for their comprehensive skill set and professional readiness."	1, 3
Internationalisation of courses/Professional qualifications	2 (1.8%)	"Greater international recruitment that presents certain challenges to delivery (e.g., language barriers, learning support, etc)."	1, 3
Increased diversity	2 (1.8%)	"Idealistically, the domain requires far more diversity in teachers and students. This often means that practices are inherently biased to strength development, rather than holistic athletic conditioning."	2, 3
Total	114		

Notes: (a) Participants' responses may have contributed to various themes; therefore, the total frequency (N = 114) exceeds the number of participants (N = 73). ^Stakeholder group: 1) Strength and conditioning association representative, 2) Potential employer, 3) Degree representative, 4) Student or graduate..

DISCUSSION

This study is the first to comprehensively examine stakeholders' perceptions of UK undergraduate and postgraduate S&C degrees. This discussion will address each section of the survey systematically.

Degree Endorsement, Recognition, and Accreditation

Most participants (90.4%) agreed that UK S&C degrees should hold accreditation from relevant S&C associations (i.e., NSCA, CIMSPA-UKSCA, or IUSCA). Refer to work by Weldon and colleagues for a summary of each accreditation[5]. Accreditation involves a systematic evaluation of a degree against established criteria and standards[22], implying the degree's alignment with industry needs[2] and its ability to equip graduates with necessary knowledge and skills[22]. Open-ended responses support this, with key themes being "quality assurance/meeting industry standards" (48.5%) and "progression to employment" (21.8%). In 2024, 85% of undergraduate and 52% of postgraduate UK S&C degrees were accredited by S&C associations[5], however, it's unclear if this number has changed over time, which is likely influenced by the introduction of new programmes and discontinuation of others.

Beyond formal education, most participants (78.1%) also stressed the importance of graduates pursuing professional qualifications from the NSCA (e.g., CSCS), UKSCA (e.g., Accredited Strength and Conditioning Coach [ASCC]), or IUSCA (e.g., Accredited International Strength and Conditioning Practitioner [aISCP]). Similar to degree accreditation, the most common theme from open-ended responses was "quality assurance/meeting industry standards" (32.6%). Themes from Tables 1 and 12 suggest that UK S&C degree programmes could better integrate or align with these professional qualifications, ensuring graduates obtain them upon or soon after graduation. This would ideally support graduates' "progression to employment" (32.6%), identified as the second most common theme. Indeed, research indicates that professional qualifications are often a prerequisite in S&C job descriptions, with 76% of roles stating this as essential[13]. Furthermore, surveys of S&C coaches in elite sports show a high prevalence of professional qualifications (e.g., CSCS and ASCC) in cricket (73%)[23], soccer (65%)[24], and rugby union (56%)[25].

Course Structure

Participants generally agreed that UK undergraduate (75.3%) and postgraduate (68.5%) S&C degrees should 'focus predominantly on S&C topics while including some sports science topics'. However, open-ended responses revealed a slightly greater emphasis on 'developing underpinning sports science knowledge' (47%) than 'specialised S&C knowledge' (41%) (see Tables 3 and 4). This inconsistency may stem from the challenge of clearly defining and differentiating sports science and S&C. Some suggest that S&C education should prioritise coaching sciences given its focus on sports performance versus exercise science, which is more health-related[2]. Nevertheless, sports science provides the scientific foundation that S&C coaches translate into applied practice to enhance athletic performance and reduce injuries[1,3,4]. As noted in Tables 3 and 11, "an S&C coach should be a sport scientist, but a sport scientist is not always an S&C coach" whilst "lesser programmes that simply apply a standalone S&C module on top of a shell module designed programme (e.g., Sports and Exercise Sciences programme) become few and far between". This highlights the importance of sports science as long as it does not dilute the specialised practice of S&C, a common criticism[2]. Expert opinions suggest that the increasing interest and professionalisation of S&C have led to a gradual rise in coaching-science focused S&C degrees, which effectively prepare students for the industry[2]. These degrees should focus on judgement and decision-making across domains like 'who', 'what', 'how', 'context', 'self' and 'coaching practice'[26,27]. The content of UK S&C degrees is partly shaped by S&C associations, whose accreditation criteria define what programmes should cover[5]. Interestingly, only 5.5% of participants believed undergraduate S&C degrees should 'focus explicitly on S&C topics', which increased to 30.1% for postgraduate degrees. This aligns with the most common theme for postgraduate S&C degrees 'building on foundational knowledge gained from an undergraduate degree in a more specific S&C context'. Research also supports gaining general (sports science) knowledge at undergraduate level and specialising (S&C) at postgraduate level[2,6], offering valuable insights for degree programme design.

Most participants (61.6%) supported 'non-academic experience entry' as a viable pathway into UK S&C postgraduate degrees, with fewer being 'unsure' (26%) or 'against it' (12.3%). There is limited research on the performance and outcomes of individuals entering postgraduate degrees via non-academic routes, making it difficult to determine the plausibility of these views. However, open-ended responses suggest 'suitable candidates from non-academic routes with relevant experience, knowledge, and skills' (66.6%) exist, provided they 'meet appropriate equivalency criteria' (22.2%). Conversely, some argue that 'an associated undergraduate degree' (11.1%) is essential as it "provides a base level of knowledge and critical thinking that other routes don't" (excerpt from Table 5). This suggests a reversal of the typical work-based learning model, where practical experience may inform theory[28–30].

Participants were largely 'uncertain' whether UK S&C degrees provide value for money (undergraduate: 50.7% and postgraduate: 58.9%). Open-ended responses indicated that value for money was primarily determined by 'the institute, course, and staff' (19.7%), with comments like "courses with professional qualifications, work experience, and high-quality professionally qualified and experienced staff are worth the money" (excerpt from Table 6). Others felt 'fees are too high' (15.8%) "no matter the degree" (excerpt from Table 6), suggesting this isn't unique to S&C degrees. Recent literature suggests that students prioritise whether their course, staff, and university help them achieve their aspirations[9], which are often linked to employment and higher earning potential[31]. Positively, a report on the labour market value of HE qualifications indicates degree holders can earn up to 25% more than those without; though this varies by university and discipline[32].

Placements

A placement is commonly an assessed part of an S&C degree, often lasting from months to a year, where students apply theoretical knowledge to real-world scenarios[29]. Most participants in this study viewed compulsory placements on UK S&C degrees positively (undergraduate: 78.1% and postgraduate: 63%). The benefits of placements are well documented[28,29]. Open-ended responses highlighted 'real-world practical experience' (25.8%) as the most common benefit, aligning with the definition above. Interestingly, some participants (15.5%) felt placements 'should not be compulsory'. An excerpt from Table 9 stated, "experienced coaches they don't need this. Ones that are for top ups (e.g., coming from sport science degrees) then they need this coaching experience". This point has

been raised in discussions about postgraduate S&C degree development, suggesting the need to cater for new students requiring practical experience and those already in the industry seeking academic experience[2]. Students undertaking placements are more likely to gain employment and higher salaries[33]. This is further supported by open-ended responses in Tables 8 and 9, where 11.3% of participants believed compulsory placements lead to 'increased employment and earning potential', with one suggesting "graduates with practical experience are more likely to secure jobs in the competitive S&C field". Promisingly, S&C internship/placement data shows that 44% result in employment with the host organisation[29].

Module Topics

Participants identified the most important module topics for UK S&C degrees were 'S&C' (undergraduate: 21.2% and postgraduate: 19.9%), 'anatomy/physiology' (undergraduate: 17.6% and postgraduate: 8.8%), 'biomechanics/movement analysis' (undergraduate: 10.9% and postgraduate: 11.7%), and 'coaching/teaching' (undergraduate: 10.9% and postgraduate: 11.1%) (see Tables 10 and 11). There were minimal differences in the ranking of module topics between undergraduate and postgraduate levels, suggesting that foundational knowledge on given topics is developed at undergraduate and advanced at postgraduate levels. This aligns with the prominent themes in Tables 3 and 4 concerning general content, which advocated for 'developing underpinning sports science knowledge' (47%) at undergraduate level and then 'building on foundational knowledge gained from an undergraduate degree in a more specific S&C context' (89.7%) at postgraduate level. These module topics generally coincide with those currently delivered in UK S&C undergraduate degrees, except for 'coaching/teaching'. This area was more desired by stakeholders in this study than what is currently offered (percentile difference at undergraduate: 6.2% and postgraduate: 7.2%)[6], suggesting HE institutes could increase such modules. Research on effective S&C coaching behaviours, as perceived by athletes, highlights the value of high-level coaching and teaching skills, including interpersonal skills and intra-personal knowledge, while fostering trust, relatedness, and respect[34]. 'Development of soft skills' (6.9%) also emerged as a theme in Table 12 regarding the future development of UK S&C degrees. An excerpt from this theme stated, "the industry needs people who know how to think not what to think. As an employer, we expect a certain level of skill and education, but actually we can teach graduates a lot of the specifics on the job, what is harder to teach are these softer skills".

Other module topics showing discrepancies between this study's findings and current UK S&C degree offerings include 'research' (percentile difference at undergraduate: -7.4% and postgraduate: -18.2%) and 'academic/professional' (percentile difference at undergraduate: -8.4% and postgraduate: -13.2%). Despite 'research' being the third most common undergraduate subject (11%) and most common postgraduate subject (24.6%), stakeholders showed limited interest. This is unexpected given the broad benefits of research, such as developing critical thinking and communication skills for students (which are highly desirable for employment) and supporting faculty/institute research agendas[35–37]. One could argue the appropriateness of traditional research projects for S&C students, perhaps favouring practice-based research (e.g., case studies)[36]. The infrequent mention of 'academic/professional' topics (undergraduate: 1.6% and postgraduate: 1.8%) was equally surprising, especially considering the strong support for compulsory placements. Recent literature highlights that employers increasingly seek soft and alternative skills gained from placements, such as networking, mentoring, and practical experience[36]. Therefore, excluding such module topics within S&C degrees should be evaluated, and the possible advantages and disadvantages considered.

Further Information

Participants shared their views on the future of UK S&C degrees (see Table 12). The most common theme was 'improved practical experience' (25.4%), with one excerpt stating, "degree programs in the field of Strength and Conditioning in the UK should prioritize integrating practical experience into their curricula. This shift towards experiential learning will enable students to apply theoretical knowledge in real-world scenarios, thus better preparing them for the demands of the industry". This aligns with other findings in the study. The second most common theme was 'module topics adapting to future industry needs' (14.9%), with participants highlighting the need for graduates to be interdisciplinary, possessing knowledge and skills in "technology", "data analytics", "performance analysis", "nutrition", and "psychology". Research suggests S&C coaches in sport are increasingly adopting transdisciplinary

approaches, integrating knowledge from various disciplines to address complex problems[23]. For example, S&C coaches in elite cricket revealed they are increasingly expected to contribute to field-based and technical sessions, blending S&C and sports coaching responsibilities[23]. Across the HE sector, there's a recognised need for updated teaching methods, content, and the cohesive use of technology for pedagogical improvements[38]. However, the papers published by Weldon and colleagues[5,6], including the present study, represent the first comprehensive assessment of UK S&C degrees, and a starting point for identifying necessary improvements. Other themes from Table 12 related to S&C associations (i.e., NSCA, UKSCA, and IUSCA), including 'degree accreditation' and 'embedded professional qualifications'. The positive view of degree accreditation aligns with the findings presented in Table 2, suggesting that continued collaboration between S&C associations and HE institutions is important. More constructively, there was a call for professional qualifications to be more closely aligned with or embedded into UK S&C degrees, rather than being an additional requirement, commitment, and cost.

LIMITATIONS

This study includes the following limitations:

1. To maximise sample size, we limited the survey's length, which restricted the range and depth of data obtained.
2. While the survey used mostly closed questions for each response, potentially limiting response depth, most questions allowed participants to provide open-ended remarks. Future research could use interview-based methods (e.g., focus groups) for more comprehensive insights.
3. No registration was required, ensuring anonymity and aiming to increase participation. Although we checked for duplicate surveys, we cannot definitively rule out multiple completions by the same participant.
4. We considered various forms of survey bias (e.g., sampling, response, non-response, and acquiescence) and used CHERRIES and CROSS checklists (see Appendix 2 and 3) to minimise bias and ensure appropriate methods were used.
5. Most participants were from England, potentially limiting the generalisability of our findings to Scotland, Wales, and Northern Ireland. However, this reflects the larger proportion of S&C degrees offered in England.
6. A sample size of 73 does not represent the entire population of UK S&C degree stakeholders. Therefore, generalisability of results should be approached with caution.
7. We did not conduct sub-analyses of opinions for individual stakeholder groups because many participants held multiple roles (e.g., S&C degree postgraduate student and potential employer). This has limited insights into our analysis and may have unintentionally skewed some data towards larger sample groups (e.g., students and graduates, who made up 50%).

CONCLUSION

As the first comprehensive investigation into stakeholders' perceptions of UK S&C degrees, this study provides valuable information for all stakeholders, informing future educational provision, delivery, and practice. Overall, our findings present a positive view of UK S&C degrees and highlight areas for future improvement.

The work of S&C associations is highly valued, particularly their role in providing external accreditation, which supports UK S&C degrees to demonstrate they meet quality assurance and align with industry standards. Similar importance was placed on graduates obtaining professional qualifications to enhance employability. However, suggestions emerged that these professional qualifications could be further embedded into UK S&C degrees, rather than being an additional requirement. Participants generally believed course content should focus predominantly on S&C topics, alongside other relevant areas like biomechanics/movement analysis, coaching/teaching. However, disparities were observed between stakeholder preferences and currently delivered modules. For example, while HE institutes heavily emphasise research, stakeholders showed less interest. Nevertheless, the importance of skills gained from research-related modules and their workplace transferability should be acknowledged. There was general consensus that undergraduate degrees build foundational knowledge, with postgraduate studies focusing on greater specialisation in S&C and applied practice. For postgraduate degrees, participants felt non-academic experience entry should be a viable route for suitable candidates, provided they meet appropriate equivalency criteria. Placements were deemed crucial for providing real-world practical

experience and should be compulsory, particularly at undergraduate level. For postgraduate students, less emphasis on compulsory placements was suggested, accounting for those with existing industry experience. Stakeholders were uncertain whether UK S&C degrees offered value for money, suggesting it likely depends on the institute, course, and staff. Recommendations for the future development of UK S&C degrees largely centred on enhancing practical experience and ensuring course content adapts to future industry needs.

PRACTICAL APPLICATION

These findings offer stakeholders insights into the collective perceptions of UK S&C degrees, enabling informed decisions about their future direction and practice. For example, S&C associations may critically review degree accreditation frameworks and criteria; potential employers may revise job descriptions for graduate-level roles; and degree representatives may pursue degree accreditation or revise module offerings.

FUTURE RESEARCH

This paper is the third in a four-part series, following 'Undergraduate and postgraduate S&C course accreditations in the UK'[5] and 'Undergraduate and postgraduate S&C courses in the UK: A report study'[6]. The final and fourth paper will offer recommendations for developing UK undergraduate and postgraduate S&C courses. We plan to repeat these studies periodically (e.g., every three to five years) to monitor longitudinal changes. Future research could also replicate these methods for other disciplines (e.g., sports therapy) and countries (e.g., the United States of America), to gain a broader understanding of sports-based subjects across the HE sector.

CONFLICTS OF INTEREST

The authors report no conflicts of interest.

FUNDING

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ETHICAL APPROVAL

The study received ethical approval from the Birmingham City University Research Ethics Committee and adhered to the Declaration of Helsinki.

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APPENDIX

Appendix 1

Survey Titled: Stakeholders Perceptions of Undergraduate and Postgraduate Strength and Conditioning Education in the United Kingdom

- Refers to questions with multiple-choice answers
- Refers to questions with single-choice answers

Informed Consent

Q1. Do you agree to partake in this study?
- Agree
- Disagree

A) Background Information

Q2. Age? (must be over 18 years old)

Q3. Sex?
- Male
- Female
- Prefer not to say

Q4. Which country are you currently based?
- England
- Scotland
- Wales
- Northern Ireland
- Other

Q5. What are your main roles?
- S&C association representative
- Potential employer of S&C graduates
- S&C degree representative
- S&C degree student (undergraduate)
- S&C degree student (postgraduate)
- S&C degree graduate (undergraduate)
- S&C degree graduate (postgraduate)

Q6. How many years have you been in this role?

B) Degree Endorsement, Recognition, and Accreditation

Q7. Do you feel it is important for UK S&C degrees to hold external endorsements, recognitions, or accreditations with the NSCA, CIMSPA-UKSCA, or IUSCA?
- Yes
- No
- Unsure

Q8. Explain your answer for the previous question. Or put 'NA' if not applicable.

Q9. Do you feel it is important for graduates of UK S&C degrees to pursue professional qualifications with the NSCA, UKSCA, or IUSCA?
- Yes
- No
- Unsure

Q10. Explain your answer for the previous question. Or put 'NA' if not applicable.

C) Course Structure

Q11. Do you feel UK S&C undergraduate degrees should...
- Focus explicitly on S&C topics
- Focus predominantly on S&C topics and include some sports science topics
- Focus predominantly on sports science topics and include some S&C topics

Q12. Explain your answer for the previous question. Or put 'NA' if not applicable.

Q13. Do you feel UK S&C postgraduate degrees should...
- Focus explicitly on S&C topics
- Focus predominantly on S&C topics and include some sports science topics
- Focus predominantly on sports science topics and include some S&C topics

Q14. Explain your answer for the previous question. Or put 'NA' if not applicable.

Q15. Do you feel non-academic experience entry (i.e., recognising prior learning and achievement obtained through the workplace or other experiential means) should be a viable entry into a UK S&C postgraduate degree?
- Yes
- No
- Unsure

Q16. Explain your answer for the previous question. Or put 'NA' if not applicable.

Q17. The median cost of UK S&C undergraduate degrees are £9,250 for UK students and £14,900 for international students. Do you think courses provide value for money? Note: Scottish students may be exempt from such fees.
- Yes
- No
- Unsure

Q18. Explain your answer for the previous question. Or put 'NA' if not applicable.

Q19. The median cost of UK S&C postgraduate degrees are £9,000 for UK students and £16,000 for international students. Do you think courses provide value for money? Note: Scottish students may be exempt from such fees.
- Yes
- No
- Unsure

Q20. Explain your answer for the previous question. Or put 'NA' if not applicable.

D) Placements

Q21. Should placement modules be compulsory for UK S&C undergraduate degrees?
- Yes
- No
- Unsure

Q22. Explain your answer for the previous question. Or put 'NA' if not applicable.

Q23. Should placement modules be compulsory for UK S&C postgraduate degrees?
- Yes
- No
- Unsure

Q24. Explain your answer for the previous question. Or put 'NA' if not applicable.

E) Module Topics

Q25. What do you consider to be the three MOST important module topics that should be covered on UK S&C un-

dergraduate degrees?

Q26. What do you consider to be the three MOST important module topics that should be covered on UK S&C post-graduate degrees?

F) Further Information
What do you believe the future of UK S&C degrees looks like?

You may consider...
- Things currently being done well
- Things currently need improving
- Changing landscape of higher education
- Future industry needs

Appendix 2

Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Item Category	Checklist Item	Explanation
Design	Describe survey design	A cross-sectional anonymous online survey with a purposive sampling approach was used to explore the perceptions of different stakeholders concerning UK undergraduate and postgraduate S&C degrees.
IRB (Institutional Review Board) approval and informed consent process	IRB approval	Yes.
	Informed consent	A digital invitation letter and the survey's opening page provided details on inclusion criteria, study purpose, aims, time commitment, and confidentiality to support informed consent.
	Data protection	The survey collected data anonymously using online survey platform Joint Information Systems Committee (JISC) (jisc.ac.uk, Bristol, England). Details of the participants were limited to their non-identifying demographic information (e.g., age, sex). Participants were reminded in the participant information sheet and prior to providing consent to refrain from disclosing any identifiable information within this survey, which would lead to their survey possibly being deleted and excluded from this study. All data collected for this study is password protected on each respective platform (e.g., JISC) and digital device used (e.g., laptop). Only members of the research team have access to data obtained and will be shared via password protected means. All data will be handled in compliance with the Data Protection Act 2018.
Development and pre-testing	Development and testing	This study used an original survey (see Appendix 1), with questions informed by prior research on UK S&C degrees[5,6]. The survey was developed using the online platform Joint Information Systems Committee (JISC) (jisc.ac.uk, Bristol, England) and assessed against the Checklist for Reporting Results of Internet E-Surveys (CHERRIES)[18] and Checklist for Reporting of Survey Studies (CROSS)[19] (see appendices 2 and 3). Content validity was established using a three-stage process: (a) development – the lead author and final author developed the provisional survey; (b) pilot testing – co-authors internally reviewed the survey; and (c) assessment – three representatives from each stakeholder group (n = 12) reviewed the survey. This led to minor changes in the structure and wording of some questions for clarity and appropriateness.
Recruitment process and description of the sample having access to the questionnaire	Open survey versus closed survey	Open survey.
	Contact mode	Web-based contact
	Advertising the survey	Participants were recruited through the author team's professional networks via email invitations and an advertised survey on social media (X, LinkedIn). We also used snowball sampling to broaden our reach, asking participants to share the survey with others meeting the inclusion criteria.

Survey administration	Web/E-mail	The survey was completed and data stored using online survey platform Joint Information Systems Committee (JISC) (jisc.ac.uk, Bristol, England).
	Context	
	Mandatory/voluntary	Voluntary
	Incentives	NA
	Time/Date	The survey remained open from 29/4/24–17/10/24.
	Randomization of items or questionnaires	Non-randomised.
	Adaptive questioning	Non-adapted questions.
	Number of Items	The survey included 14 fixed-response and 12 open-ended questions.
	Number of screens (pages)	Eight pages
	Completeness check	All questions were mandatory to proceed and complete the survey.
	Review step	Participants could review and change answers through using the toggle back button.
Response rates	Unique site visitor	NA
	View rate (Ratio of unique survey visitors/unique site visitors)	NA
	Participation rate (Ratio of unique visitors who agreed to participate/unique first survey page visitors)	NA
	Completion rate (Ratio of users who finished the survey/users who agreed to participate)	NA
Preventing multiple entries from the same individual	Cookies used	NA
	IP check	NA
	Log file analysis	NA
	Registration	NA
Analysis	Handling of incomplete questionnaires	There were no incomplete questionnaires.
	Questionnaires submitted with an atypical timestamp	Participants had no time restrictions to complete the survey.
	Statistical correction	NA

Appendix 3

Checklist for Reporting of Survey Studies (CROSS)

Section/topic	Item	Item description	Completed	Notes
Title and abstract				
Title and abstract	1a	State the word "survey" along with a commonly used term in title or abstract to introduce the study's design.	Yes	
	1b	Provide an informative summary in the abstract, covering background, objectives, methods, findings/results, interpretation/discussion, and conclusions.	Yes	
Introduction				
Background	2	Provide a background about the rationale of study, what has been previously done, and why this survey is needed.	Yes	
Purpose/aim	3	Identify specific purposes, aims, goals, or objectives of the study.	Yes	
Methods				
Study design	4	Specify the study design in the methods section with a commonly used term (e.g., cross-sectional or longitudinal).	Yes	
	5a	Describe the questionnaire (e.g., number of sections, number of questions, number and names of instruments used).	Yes	
Data collection methods	5b	Describe all questionnaire instruments that were used in the survey to measure particular concepts. Report target population, reported validity and reliability information, scoring/classification procedure, and reference links (if any).	Yes	
	5c	Provide information on pretesting of the questionnaire, if performed (in the article or in an online supplement). Report the method of pretesting, number of times questionnaire was pre-tested, number and demographics of participants used for pretesting, and the level of similarity of demographics between pre-testing participants and sample population.	Yes	
	5d	Questionnaire if possible, should be fully provided (in the article, or as appendices or as an online supplement).	Yes	

Sample characteristics	6a	Describe the study population (i.e., background, locations, eligibility criteria for participant inclusion in survey, exclusion criteria).	Yes	
	6b	Describe the sampling techniques used (e.g., single stage or multistage sampling, simple random sampling, stratified sampling, cluster sampling, convenience sampling). Specify the locations of sample participants whenever clustered sampling was applied.	Yes	
	6c	Provide information on sample size, along with details of sample size calculation.	Yes	However, sample size not calculated
	6d	Describe how representative the sample is of the study population (or target population if possible), particularly for population-based surveys.	Yes	However, the generalisability of results were considered a limitation due to only providing a sample of the total population for this study topic.
Survey administration	7a	Provide information on modes of questionnaire administration, including the type and number of contacts, the location where the survey was conducted (e.g., outpatient room or by use of online tools, such as SurveyMonkey).	Yes	
	7b	Provide information of survey's time frame, such as periods of recruitment, exposure, and follow-up days.	Yes	
	7c	Provide information on the entry process: –>For non-web-based surveys, provide approaches to minimize human error in data entry. –>For web-based surveys, provide approaches to prevent "multiple participation" of participants.	No	The survey was open and did not require registration. This was to ensure no identifiable information was obtained and to increase participant completion rate. Results were analysed to ensure no replicated surveys were received. However, it cannot be ruled out that a participant may have completed the survey more than once.
Study preparation	8	Describe any preparation process before conducting the survey (e.g., interviewers' training process, advertising the survey).	Yes	
Ethical considerations	9a	Provide information on ethical approval for the survey if obtained, including informed consent, institutional review board [IRB] approval, Helsinki declaration, and good clinical practice [GCP] declaration (as appropriate).	Yes	
	9b	Provide information about survey anonymity and confidentiality and describe what mechanisms were used to protect unauthorized access.	Yes	

Statistical analysis	10a	Describe statistical methods and analytical approach. Report the statistical software that was used for data analysis.	Yes	
	10b	Report any modification of variables used in the analysis, along with reference (if available).	NA	Modifications were not conducted.
	10c	Report details about how missing data was handled. Include rate of missing items, missing data mechanism (i.e., missing completely at random [MCAR], missing at random [MAR] or missing not at random [MNAR]) and methods used to deal with missing data (e.g., multiple imputation).	NA	All surveys were fully completed.
	10d	State how non-response error was addressed.	NA	All surveys were fully completed.
	10e	For longitudinal surveys, state how loss to follow-up was addressed.	NA	The survey was cross-sectional.
	10f	Indicate whether any methods such as weighting of items or propensity scores have been used to adjust for non-representativeness of the sample.	NA	Such methods were not used.
	10g	Describe any sensitivity analysis conducted.	NA	Such methods were not used.
Results				
Respondent characteristics	11a	Report numbers of individuals at each stage of the study. Consider using a flow diagram, if possible.	NA	This was not needed.
	11b	Provide reasons for non-participation at each stage, if possible.	NA	All surveys were fully completed.
	11c	Report response rate, present the definition of response rate or the formula used to calculate response rate.	NA	
	11d	Provide information to define how unique visitors are determined. Report number of unique visitors along with relevant proportions (e.g., view proportion, participation proportion, completion proportion).	NA	This was not monitored nor reported.
Descriptive results	12	Provide characteristics of study participants, as well as information on potential confounders and assessed outcomes.	Yes	

Main findings	13a	Give unadjusted estimates and, if applicable, confounder-adjusted estimates along with 95% confidence intervals and p-values.	Yes	
	13b	For multivariable analysis, provide information on the model building process, model fit statistics, and model assumptions (as appropriate).	NA	Such methods were not used.
	13c	Provide details about any sensitivity analysis performed. If there are considerable amounts of missing data, report sensitivity analyses comparing the results of complete cases with that of the imputed dataset (if possible).	NA	Such methods were not used.
Discussion				
Limitations	14	Discuss the limitations of the study, considering sources of potential biases and imprecisions, such as non-representativeness of sample, study design, important uncontrolled confounders.	Yes	
Interpretations	15	Give a cautious overall interpretation of results, based on potential biases and imprecisions and suggest areas for future research.	Yes	
Generalizability	16	Discuss the external validity of the results.	Yes	
Other sections				
Role of funding source	17	State whether any funding organization has had any roles in the survey's design, implementation, and analysis.	Yes	
Conflict of interest	18	Declare any potential conflict of interest.	Yes	
Acknowledgements	19	Provide names of organizations/persons that are acknowledged along with their contribution to the research.	Yes	However, no journal requirements to disclose the contributions of each author. Although this is presented in the content validity process.