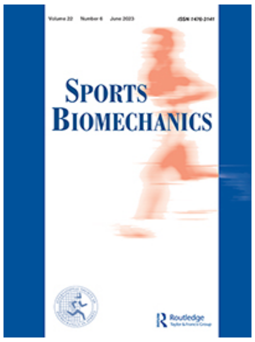

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P.J. Felton

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Factors influencing sports science students' elective biomechanics enrolment decisions

P.J. Felton

School of Science and Technology, Nottingham Trent University, Nottingham, UK

ABSTRACT

The modularisation of sports science curricula allows students to individualise degrees to fit their interests and aspirations via elective modules. The aim of this study was to explore the factors which influence sports science students' elective biomechanics enrolment decisions. A total of 45 students completed an online survey focussing on personal and academic characteristics which may influence enrolment decisions. Significant differences were found for three personal characteristics. Biomechanics module enrolees were more positive in their self-concept of subject ability, had a greater like for their previous subject experience, and displayed a higher agreement in requiring the knowledge for future career aspirations. Although, statistical power was reduced when respondents were categorised into demographic sub-groups, exploratory analysis highlighted self-concept of subject ability may differentiate female students' enrolment, while previous subject experience may distinguish male students' enrolment and academic entry route students' enrolment. Undergraduate sports science core biomechanics modules should consider adopting learning pedagogies which help to increase individual students' self-concept of ability and inspires them to recognise the value of biomechanics in their potential career aspirations.

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Higher education; teaching; pedagogy; undergraduate; modularisation

Introduction

The modularisation of university degree courses has become almost uniform across higher education since its introduction in the late 1980s (Bell & Wade, 1993; Bridges, 2000). Modularised curricula use small units of knowledge to deconstruct subjects into modules which can be re-assembled in numerous permutations to create the whole course. Each module allows for the greater analysis of the disciplinary knowledge in that area, the development of alternative methods of assessment, and improved understanding of the knowledge and its relationship to other disciplines in the field (Williams & Fry, 1994). It also provides opportunities to develop student-centred curriculums by allowing students to elect which modules to study based on their interests and aspirations (Bridges, 2000).

CONTACT P.J. Felton paul.felton@ntu.ac.uk
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Sport science undergraduate degrees commonly adopt a modular approach due to the field comprising three main discipline areas (physiology, psychology, and biomechanics) where student interest varies. To satisfy course learning outcomes compulsory modules are employed to introduce fundamental knowledge in each discipline area. Students can then customise their degree programme by choosing elective modules with this decision reportedly based on their individual interests, personality traits, rates of learning, memory, motivation, and general intellectual ability (Bridges, 2000; Hedges et al., 2014). Although elective module options typically align with the three main disciplines forming the area, student enrolment on elective biomechanics modules is often substantially lower than enrolment on comparable elective physiology and psychology modules. For example, only 11% of eligible Sport Science students at Nottingham Trent University enrolled in the biomechanics module over a two year period (2020 – 2022), with the other 89% enrolling in the elective module in Physiology or Psychology. Despite this, there is currently little understanding on the factors that influence elective biomechanics module enrolment decisions.

Previous research focussing on understanding the factors which influence students' elective decisions have almost exclusively been conducted with respect to elective course decisions rather than module decisions. These factors have been investigated within two categories: personal characteristics which relate to the student's own personal context and needs; and academic characteristics which relate to the course or module (Park et al., 2016). Personal characteristics identified as underpinning course enrolment have included the students' self-concept of ability on the subject (Feather, 1988; Hedges et al., 2014), the necessity of the course to complete a requirement within the program of study (Moogan & Baron, 2003), how the student's social support network view the course (Kerin et al., 1975), and the relevance of the course to their career goals (Hedges et al., 2014). While academic characteristics identified as important to students in the decision making process have included the course content and description, the perceived difficulty of the course, the methods of assessment, and the instructor's style and reputation (Babad & Tayeb, 2003; Babad, 2001; Babad et al., 1999; Hedges et al., 2014; Pass et al., 2012).

Research has also focussed on how student background affects engagement and attainment in UK degrees, with significant interactions identified between gender, ethnicity, and socio-economic class indicators such as course entry route (Jones et al., 2017). One study has investigated the factors influencing elective module decisions holistically rather than with a focus on a particular module or subject area. Students within the Auckland University of Technology Business School placed a higher importance on intrinsic motivations (those driven by internal rewards e.g., self-interest, enjoyment, or satisfaction), with module characteristics and expectation factors viewed as less important (Hedges et al., 2014). The applicability of these findings to elective biomechanics module decisions within sports science courses, however, remains unknown, especially given the difference in the mathematical and physical content between the subject areas.

Research focussing on biomechanics teaching within sports science courses has focussed on strategies to overcome sport science students' fear of the mathematical and physics requirements (Docktor & Mestre, 2014; Garceau et al., 2012; McDermott, 1991) which underpin the area (Wallace & Kernozek, 2017). This has included the timing of the mathematical content within the undergraduate curriculum (Hamill, 2007), the effect of different learning approaches versus lecturing on attainment (Keogh et al., 2021; Knudson, 2019; Knudson & Wallace, 2021; Riskowski, 2015), and student perceptions of different learning approaches (Garceau et al., 2012; Keogh et al., 2017; Knudson, 2019; Knudson & Wallace, 2021). Although people avoid tasks that they believe exceed their ability (Bandura, 1977), the assumption that the efficacy of students in mathematics and physics is a factor that underpins students' elective biomechanics module decisions remains unknown.

The knowledge of the factors which influence students' elective module enrolment in biomechanics could enhance learning and teaching quality, develop attainment and future job aspirations, and improve the overall learning environment across the discipline (Hedges et al., 2014). The aim of this study, therefore, is to explore the factors that influence sports science students' elective biomechanics module enrolment decisions. Although the study is predominately exploratory in nature, it is hypothesised that sports science students' self-concept of their subject ability will primarily influence their enrolment decisions. It is further hypothesised that a secondary motivation for students enrolling in elective biomechanics modules is the alignment of the discipline with their future career aspiration requirements.

Methods

Participants

Forty-five sport science students who were eligible to enrol in the final year (third) biomechanics module (from approximately 220) at Nottingham Trent University University (Post-1992 University, Nottingham, U.K) were recruited via email to voluntarily participate pseudo-anonymously in this study. Students' were eligible to enrol in the final (third year) biomechanics module if they had completed the first year biomechanics module and were in the process of completing the second year biomechanics module. Each participant completed an online survey hosted by JISC Online surveys (jisc.ac.uk) within a one-month window (6th April 2021–7th May 2021). This window coincided with the final four weeks of the second year (September to May) prior to the examination period. At the time of the elective module decision, students would have completed 50% of the second year module assessments. Study details were explained to each participant and informed consent was gathered in accordance with guidelines approved by Nottingham Trent University's Research Ethics Committee. No incentives were offered for participation, nor were there any penalties for not participating (researchers were blind to participation).

Survey design

The survey (Appendix A) was specifically designed for this study based on previous research into the factors affecting students' elective course and module decisions and consisted of three parts. The first part gathered demographic information about the participant and consisted of four questions regarding their gender, ethnicity, educational background (entry route into their degree programme: academic or vocational), and whether they had opted to enrol in the biomechanics elective module. The second part of the survey focussed on the participants' personal characteristics which may influence their module decisions. Fourteen statements were designed using a deductive approach based on previous literature to gather information on seven theoretical personal characteristics. The seven characteristics were: their identification with the subject (subject identification); their previous subject experience (subject experience); their self-concept of ability in the subject (self-concept of ability); the importance of the module in their future academic studies or career requirements (problem recognition), their friends' opinions (social network), their friends' elective module decisions (social influence), and the importance of external topics over biomechanics in their future academic studies or career requirements (external influence). The third part of the survey focussed on the academic characteristics of the elective biomechanics module which may influence their decisions. To help students regarding elective module decisions, five minute video presentations on the module content, structure, and assessment style were provided for all elective modules. Six statements were designed using a deductive approach based on this information and previous literature to gather information on five theoretical academic characteristics. These five characteristics were: the structure of the module (module structure); the difficulty of the module (module difficulty); the assessment type (assessment style); the tutor's teaching approach (tutor's approach); and the reputation of the tutor (tutor's reputation). In total there were four demographic questions, and a total of twenty personal and academic characteristic statements.

The number of statements for each characteristic was kept to a minimum to reduce response bias associated with boredom, and increase validity, however, four characteristics (subject identification, subject experience, self-concept of ability, and module structure) did encompass multiple statements. For each statement, a five-point Likert scale was adopted to elicit the strength of a participants' agreement, defined as follows: 1 = disagree; 2 = tend to disagree; 3 = neither disagree nor agree; 4 = tend to agree; 5 = agree. Each statement was kept as simple and short as possible and random statements were inverted from positive to negative to improve the validity of responses (Nunnally, 1978).

Data processing

All data were downloaded and imported into SPSS v.26 (IBM, USA) for processing and statistical analysis. Likert scales were determined for the twelve personal and academic characteristics that the statements were designed to assess (Table 1). For the eight characteristics which were assessed using a singular statement (problem recognition, social network, social influence, external influence, module difficulty, assessment style, tutor's approach, and tutor's reputation), the Likert scale for the associated statement was used. For the characteristics encompassing multiple statements (subject identification, subject experience, self-concept of ability, and module structure), a Likert scale was determined by calculating the intra-subject medians across the relevant statements. To confirm the appropriateness of combining multiple statements to derive these characteristics, the dimensionality of the new scale was analysed using exploratory factor analysis and the internal consistency using Cronbach's alpha (Cronbach, 1951). For all four characteristics (subject identification, subject experience, self-concept of ability, and

Table 1. The twelve personal and academic characteristics determined from the twenty statements within the survey.

Characteristic	Statements used	Bartlett's test of sphericity	Kaiser-Meyer-Olkin index test	Factor Loadings	Cronbach's alpha
personal					
subject identification	I was interested in biomechanics before university	$\chi^2 = 50.2$ ($p < 0.001$)	0.731	0.561	0.762
	Biomechanics should be core in the final year			0.825	
	Biomechanics should be optional in the second year			0.853	
	I would still not choose biomechanics if there were no constraints on options			0.817	
subject experience	I liked the first-year biomechanics module	$\chi^2 = 45.8$ ($p < 0.001$)	0.679	0.892	0.807
	I didn't enjoy the second-year biomechanics module			0.868	
	I miss more sessions than I attend in biomechanics			0.789	
self-concept of ability	I am good at biomechanics	$\chi^2 = 10.3$ ($p < 0.016$)	0.564	0.809	0.512
	I struggle with the mathematical nature of biomechanics			0.575	
	I am better at another subject in the option block			0.752	
problem recognition	Biomechanics is important in my future career choice and/or final year project				
social influence	My friends do not like biomechanics				
social network	Choosing similar modules to my friends is important				
external influence	I have been encouraged to focus on other topics over biomechanics				
academic					
module structure	I like only having one tutor on the module	$\chi^2 = 5.8$ ($p < 0.016$)	0.500	0.824	0.524
	I have looked at how the module is structured			0.824	
module difficulty	Biomechanics is more challenging than other modules				
assessment style	I prefer modules with exams compared to coursework				
tutor's approach	The tutors' style, feedback and concepts help me learn				
tutor's reputation	The tutors' reputation impacted my decision				

module structure) Bartlett's test of sphericity was significant (acceptance level: $p < 0.05$) and Kaiser-Meyer-Olkin index test was above the appropriate level set at 0.5. Examining the factor structure using the main component method (Scree test and factor loadings with an inclusion criterion ≥0.3) confirmed unidimensionality. The internal consistency was also considered satisfactory for all four new scales (Table 1) since there is no general level where alpha becomes acceptable (Schmitt, 1996), and previous values of $0.45 < \alpha < 0.98$ have been described as satisfactory (Taber, 2018).

Statistical analysis

Independent sample median tests were used to compare the differences in personal and academic characteristics between enrolees (E) and non-enrolees (NE). Secondly, due to the exploratory nature of this study, independent sample median tests were also used to explore the differences in personal and academic characteristics between enrolees and non-enrolees within each demographic sub-group (e.g., gender, ethnicity, academic background). All results were reported as median [interquartile range] with an alpha value of 0.05 used to determine significance. An alpha level correction due to multiple comparisons was not applied due to the exploratory nature of the analysis (Sinclair et al., 2013).

Results

Demographic

The 45 participants consisted of 11 choosing to enrol in the biomechanics elective module and 34 opting not to (Table 2). The sample ratio of 24% choosing to enrol in the module was slightly above the course ratio of 16%. There was a relatively even gender split amongst the participants (Table 2), however the large skew in female enrolees compared to males (73% vs 27%) is the reverse of the module gender enrolment ratio (males: 74% vs females: 26%). A skew in the academic entry route was also observed between participants (academic entry route: 64% vs vocational entry route: 36%; Table 2). Finally, a heavy ethnical bias in participants was seen (Table 2) which aligns with the overall module ethnicity ratios.

Personal characteristics

Significant differences were found in four personal characteristics: self-concept of ability, problem-recognition, social network, and subject experience (Table 3 and Figure 1).

Students enrolling in the biomechanics elective module had a positive view of their ability in the subject contrary to non-enrolees (self-concept of ability: E: 4 [3–4] vs. NE: 2 [1–3], $p < 0.001$; Table 3 and Figure 1(a)). The individual statements used to create the self-concept of ability characteristic highlighted the differences between enrolees and non-enrolees. Enrolees were more positive in their biomechanical ability (E: 4 [3–4] vs.

Table 2. Demographic frequencies for the whole sample and based on enrolment.

	all	enrollees	non-enrollees
Participants	45	11	34
Gender			
female	24	8	16
male	21	3	18
other	0	0	0
Ethnicity			
White	40	10	30
Mixed	0	0	0
Asian (or Asian British)	2	1	1
Black (or Black British)	3	0	3
Arab	0	0	0
Other	0	0	0
Entry route			
A-Levels	29	6	23
BTEC	14	4	10
Other	2	1	1

Table 3. Personal and academic characteristics descriptive statistics (median [IQR]) for the whole sample and based on enrolment.

	all	enrollees	non-enrollees
personal characteristics			
subject identification	2.0 [1.0–3.5]	3.0 [2.0–4.0]	2.0 [1.0–3.0]
subject experience	3.0 [2.0–4.0]	***4.0 [3.0–5.0]***	***2.5 [2.0–3.25]***
self-concept of ability	2.0 [1.0–3.0]	***4.0 [3.0–4.0]***	***2.0 [1.0–3.0]***
problem recognition	3.0 [1.0–4.0]	***4.0 [3.0–5.0]***	***2.0 [1.0–3.0]***
social influence	2.0 [1.5–3.0]	2.0 [1.0–2.0]	2.0 [3.0–3.0]
social network	1.0 [1.0–2.0]	***2.0 [1.0–2.0]***	***1.0 [1.0–2.0]***
external influence	3.0 [3.0–5.0]	4.0 [3.0–5.0]	3.0 [2.75–5.0]
academic characteristics			
module structure	3.0 [3.0–3.5]	3.0 [3.0–4.0]	3.0 [3.0–3.5]
module difficulty	2.0 [1.0–2.0]	2.0 [1.0–3.0]	2.0 [1.0–2.0]
assessment style	4.0 [3.0–5.0]	5.0 [3.0–5.0]	4.0 [3.0–5.0]
tutor's approach	3.0 [2.0–4.0]	4.0 [3.0–5.0]	3.0 [2.0–4.0]
tutor's reputation	4.0 [3.0–5.0]	5.0 [3.0–5.0]	4.0 [3.0–5.0]

*bold italic represents significant difference ($p < 0.05$).

NE: 2 [1–3], $p = 0.021$) and were more favourable to biomechanics over other elective subject modules (E: 3 [3–5] vs. NE: 1 [1–2], $p < 0.001$). There was no difference, however, in how the participants viewed their mathematical ability (E: 3 [2–5] vs. NE: 2 [1–4], $p = 0.944$). Self-concept of ability was also found to polarise the enrolment decision in female students when exploring the demographic sub-groups (E: 4 [3–4.75] vs. NE: 2 [1–3], $p = 0.007$).

Students enrolling in the module also highlighted that their decision was influenced based on the requirement of the module's content for their future objectives. Enrolees agreed that biomechanics was important for their future career aspirations or final year project opposite to non-enrolees (problem-recognition: E: 4 [3–5] vs. NE: 2 [1–3], $p = 0.044$; Table 3 and Figure 1(b)).

The level of impact students' social networks had on the enrolment decision was also found to differ (social network: E: 2 [1–2] vs. NE: 1 [1–2], $p = 0.028$; Table 3 and Figure 1(c)). Non-enrolees reported a stronger disagreement that enrolling on similar modules to their friends (social network) was important compared to enrolees. However, as this study aimed to identify differences between enrolees and non-enrolees, and both groups reported an average disagreement, this factor was not considered further.

Student's view of their previous subject experience was also identified to differentiate the enrolment decision. Enrolees agreed that they had enjoyed their previous experiences of biomechanics on the course contrasting with non-enrolees (subject experience: E: 4 [3–5] vs. NE: 2.5 [2–3.25], $p = 0.037$; Table 3 and Figure 1(d)). The statements used to determine the previous subject experience characteristic revealed non-enrolees disliked the first-year (E: 4 [3–5] vs. NE: 2 [2–3.25], $p = 0.009$) and second-year (E: 4 [3–5] vs. NE: 2 [1–3], $p = 0.030$) modules, while enrolees held the opposite view. Previous subject experience was also found to divide the enrolment decision in male students (E: 4 [4–5] vs. NE: 3 [2–4], $p = 0.042$). As well as the enrolment decision in academic entry route students (E: 4.5 [4–5] vs. NE: 2 [2–4], $p = 0.004$) when exploring the demographic sub-groups.

No differences were observed in the other three personal characteristics: subject identification, social influence, and external influence (Table 3). All students' indicated

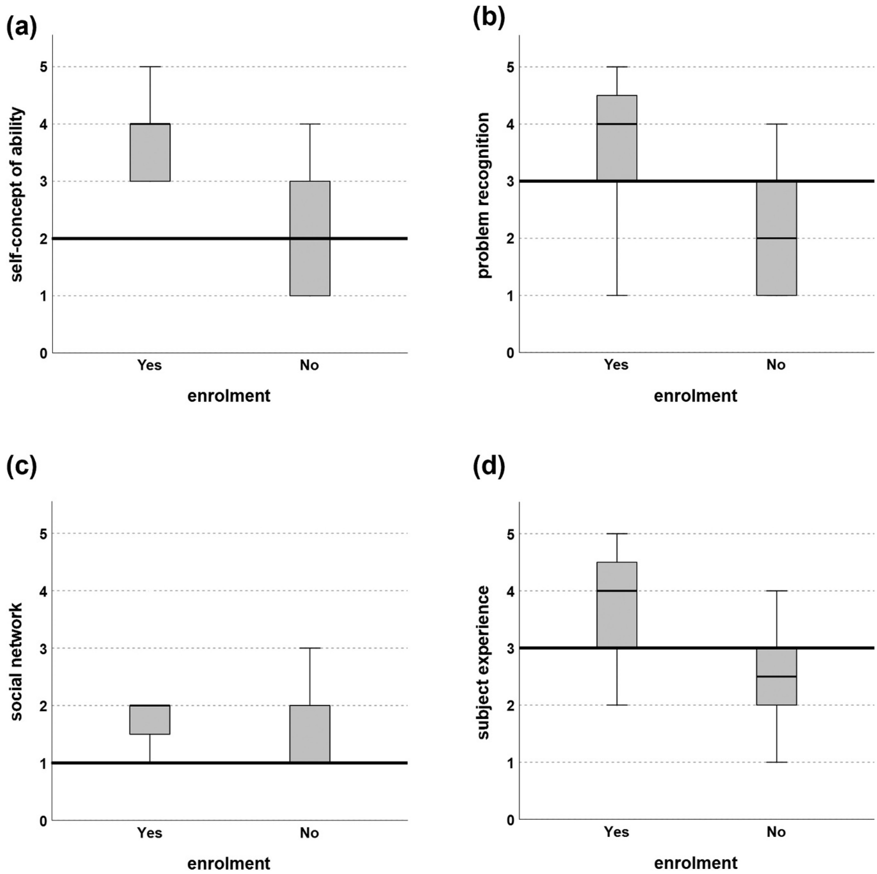

Figure 1. Comparative box and whisker plots highlighting the distribution of responses reported between enrolees and non-enrolees for: (a) self-concept of ability in biomechanics (1 – bad to 5 – good); (b) importance of biomechanics in future career (1 – not important to 5 – important); (c) importance of enrolling on similar modules to friends (1 – not important to 5 – important); (d) previous experience of the subject on the course (1 – dislike to 5 – like). Solid horizontal black line represents the sample median. Boxes represent midrange of the data between the upper and lower quartiles. Whiskers represent the maximum and minimum values. Solid horizontal black line within the boxes represents the group median.

a general disagreement that they held an interest in the subject prior to university and that it should be more prevalent within the course (subject identification). The students' responses also highlighted a common agreement that they thought their friends disliked biomechanics (social influence). While there was no agreement or disagreement to suggest students' were influenced externally either to choose biomechanics or avoid it to focus on other topics (external influence).

Academic characteristics

No significant differences between elective biomechanics module enrolees and non-enrolees were found across the five academic characteristics: module structure, module difficulty, assessment style, tutor's approach, and tutor's reputation (Table 3). There was general agreement that students' preferred modules with coursework rather than exams (assessment style), while there was a general disagreement that biomechanics is more challenging than other modules (Table 3). Interestingly, both enrolees and non-enrolees agreed that the tutor's reputation impacted their enrolment decision (Table 3). Although it is not clear whether this impact was positive or negative on either group, it may indicate that the tutor's reputation could have impacted the enrolment decision. No agreement or disagreement was found regarding the module's structure or the tutor's teaching approach (Table 3).

Discussion and implications

Personal characteristics

Self-concept of subject ability

The main hypothesis was that the primary influence on sports science students' elective module decision would be their self-concept of subject ability. The findings of this study support this hypothesis (Table 3, Figure 1) with module enrolees having a greater self-concept of ability in biomechanics compared to non-enrolees. This aligns with previous pedagogic research investigating enrolment decisions on science-based majors (Betz & Hackett, 1983) and university level humanities, social sciences, or physical sciences courses (Feather, 1988). Students' self-concept of subject ability has previously been associated with the valuation of their mathematical, language, and domain knowledge (Anthony, 2000; Feather, 1988; Hall & Ponton, 2005). A further factor that has been shown to influence students' self-concept of subject ability is gender. It has been highlighted that on average males report higher self-efficacy and place more value on mathematical subjects than females (Betz & Hackett, 1983; Feather, 1988; Knudson, 2019). In addition, an attainment gap is known to exist between genders in STEM (Science, Technology, Engineering, and Mathematics) related subjects and is often well publicised (Card & Payne, 2021). This may result in a scenario where females undervalue their self-concept of subject-ability and explain why this characteristic differentiated the enrolment decision of female students in this study.

Despite students' self-concept of ability in biomechanics differentiating the enrolment decision, there was no evidence that students' self-concept of ability in mathematics was a factor in the enrolment decision. This may be a consequence of biomechanics pedagogy within sports science courses focussing on strategies to overcome students' fear of the mathematical and physics requirements (Docktor & Mestre, 2014; Garceau et al., 2012; McDermott, 1991) which underpin the area (Wallace & Kernozek, 2017). Recommendations have included compulsory biomechanics modules focussing less on the mathematical processes and more on aiding students to understand the important concepts (Hamill, 2007). Although this approach may allow students studying introductory biomechanics modules with lower levels of mathematical competency to attain sufficient knowledge to pass, it could result in incomplete domain knowledge and a lack of mathematical subject awareness and competency. The alternative approach is to introduce these mathematical processes earlier during compulsory biomechanics modules. This, however, risks losing student engagement and subsequent non-enrolment on elective modules due to avoidance techniques (Bandura, 1977). Although previous research has hypothetically proposed applying self-efficacy theory constructs to increase students' self-concept of ability in biomechanics (Wallace & Kernozek, 2017), more research is required to understand the effect of different pedagogic approaches and instructor styles on students' self-concept of ability in biomechanics.

Problem recognition

The second hypothesis suggested that sports science students' elective module decision would also be motivated by their future career aspirations. This was also supported by the findings of this study (Table 3, Figure 1) with students enrolling on the elective sports science biomechanics module recognising the importance of the module in their future career choice or final year dissertations. This finding aligns with previous research investigating elective course decisions in the Florida college system (Park et al., 2016). It has previously been suggested that emphasising the relevance of biomechanical content to future career applications may increase the perception of applicability of the subject (Wallace & Kernozek, 2017). This may increase students' awareness regarding the importance of biomechanics within applied sports' science roles, increase student interest in biomechanics, and lead to increased enrolment on elective biomechanics modules. A potential strategy to implement this may include highlighting the multi-discipline nature of biomechanics in sports science roles, inviting applied practitioners to discuss their use of biomechanics, and creating real-world problem-based learning activities.

Subject experience

This study highlighted that students' previous subject experience also influenced their module enrolment decisions (Table 3, Figure 1). Enrolees highlighted that they enjoyed their previous subject experience while the opposite was true for non-enrolees. Although the underlying factors linked to previous subjective experiences were not investigated in this study, there may be a correlation between students' subject ability and their previous subject experiences (Wallace & Kernozek, 2017). This may explain why this characteristic differentiated the enrolment decision of male students in this study. As previously discussed, males tend to report higher self-efficacy and place more value on mathematical subjects than females (Betz & Hackett, 1983; Feather, 1988; Knudson, 2019). It is possible, that their actual ability is lower than their self-concept of ability. Since people do not like tasks which exceed their ability (Bandura, 1977), this may influence their previous experiences with the subject and their enrolment decision. Following on from this, previous subject experience also was observed to distinguish between enrolment status for academic entry route students. Academic entry route students may be less prepared for the practical learning pedagogies adopted in sports science biomechanics modules due to their previous academic experiences. This potentially polarises academic entry route students based on their enjoyment of this learning approach and influences their elective biomechanics module decision. Instructors should take into consideration students' previous learning experiences when designing sports science biomechanics sessions use pedagogies which are inclusive for all students.

Academic characteristics

This study failed to identify any academic characteristics linked to elective biomechanics module enrolment decisions. The general agreement, however, that the tutors reputation influenced students' decisions potentially highlights a contrary impact. For enrolees, the tutors reputation may positively impact their decision, while for non-enrolees it may negatively impact their decision. While the elements of the tutors reputation which may influence this decision were not investigated within this study, recognising the tutors role within the creation of the learning environment is important.

Student learning has been found to be correlated with student enjoyment (Putwain et al., 2018). The personal characteristic regarding previous subject experience may pseudo represent academic characteristics linked to students' learning or enjoyment of the pedagogic approach. Previous pedagogic research in biomechanics has focussed on investigating the factors (Hsieh & Knudson, 2008; Hsieh et al., 2012) and learning approaches (Keogh et al., 2021; Knudson, 2019; Knudson & Wallace, 2021; Riskowski, 2015) associated with student learning. This has led to recommendations that active learning pedagogies should be implemented into biomechanics teaching within sports science courses due to reports of increased student attainment compared to traditional lecturing techniques (Freeman et al., 2014). Students, however, can be resistive of active learning approaches, particularly group-based activities (Knudson, 2019) which may magnify students' anxieties regarding their self-concept of ability and displaying this in front of their peers. Therefore, although increased student learning has been associated with active learning approaches on-average within a cohort of students, this finding may not be reflective of the relationship for an individual. The implementation of active learning pedagogies therefore still has challenges to overcome regarding inclusivity. Future investigations should continue to investigate how to develop inclusive learning environments and understand how differing personal characteristics affect student learning for sports science students in biomechanics.

Limitations

There are some limitations of the study. Firstly, all the participants were recruited from a single year and university (post-1992, East Midlands, U.K). The findings, therefore, could also be affected by a sample bias based on the number of respondents and institutional specific academic characteristics. In addition, the sample population was heavily skewed by ethnicity with the majority of respondents identifying as white (89%), and from an academic entry route (64%). The difference in response rate within these demographics could be due to student engagement which has been shown to vary with ethnicity and socioeconomic status (Jones et al., 2017). This may influence the results of this study compared to a wider multi-institutional sample of sports science students. Future studies should aim to investigate the factors limiting students' elective module decisions across a large and wider sample of universities. Secondly, although the number of participants who completed the survey was sufficient, statistical power was reduced when respondents were categorised into groups. This should be taken into consideration when applying the findings. Finally, an adjustment to the alpha level due to multiple comparisons was not applied since it increases the incidence of Type 2 errors, which have previously been proposed to be a more substantial threat to exploratory analyses than Type 1 errors (Sinclair et al., 2013). Adopting this approach, however, requires the findings to be considered cautiously as an increased risk of Type 1 errors occurring remains.

Conclusion

Three personal characteristics were found to influence sports science students' decisions on the enrolment of the elective biomechanics module. Biomechanics module enrolees were more positive in their self-concept of subject ability, perceived more positive previous subject experience, and displayed a higher agreement in requiring the knowledge for future career aspirations. Demographic differences showed that self-concept of subject ability differentiatedfemale enrolment, and previous subject experience distinguished both male enrolment and academic entry route enrolment. In the future, undergraduate core biomechanics modules should consider adopting learning pedagogies to increase individual students' self-concept of ability and to recognise the value of biomechanics in their potential career aspirations.

Disclosure statement

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