

Educating the Next Generation in Sport and Exercise Medicine: A Cross-Sectional Survey

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Abstract

Background

Sport and exercise medicine (SEM) is a relatively new specialty, and it is not well incorporated into undergraduate medical education.

Previous studies have highlighted that medical students would benefit from increased teaching on SEM, and that students would like more SEM teaching. The aim of this project is to establish which SEM-related topics are deemed to be most important to incorporate into undergraduate medical education and confirm whether medical students would benefit from increased SEM exposure.

Methods

An online survey was distributed to all members of the British Association of Sport and Exercise Medicine (BASEM) via email, and it was shared on Twitter via BASEM and the research team.

Results

A total of 126 responses were analysed.

The majority of respondents work in SEM, or were interested in pursuing a career in SEM. Musculoskeletal (MSK) examination skills, exercise to prevent and manage disease, and MSK injuries and conditions were deemed to be the most important SEM-related topics to teach medical students. Use of social media and pitchside case were deemed the least important. Respondents thought medical students do not receive enough SEM teaching at medical school and could benefit from increased SEM exposure.

Conclusions

This study supports the opinion that medical students would benefit from increased SEM exposure. This survey is the first to determine how important it is that specific SEM-related topics are taught to medical students. In response to this survey a Delphi study is being conducted in the UK to establish a consensus undergraduate SEM curriculum for medical students.

Background

Sports and Exercise Medicine (SEM) is a recognised specialty with its own higher specialist training programme and increasing numbers of SEM departments are becoming established in the National Health Service (NHS).¹ In keeping with this increased opportunity for SEM in postgraduate training, there is increasing need to develop interest and knowledge among junior clinicians and students.²

For students and junior clinicians interested in SEM there are limited options available to learn more about the speciality, with few resources aimed at this level of training.³ There have been a number of research papers and editorials published in recent years calling for an increase in SEM in the undergraduate medical curriculum.³⁻⁸ However, none report novel data to directly support their conclusions.

The primary objective of this study is to establish which SEM-related topics are deemed most important to be taught as part of undergraduate medical education in the United Kingdom (UK). Secondary objectives include determining how often SEM is taught at medical school and understanding thoughts on whether students would benefit from more SEM teaching.

Methods

An online survey was created using Google Forms (Google Inc. USA). All members of the British Association of Sport and Exercise Medicine (BASEM) were emailed a link to the survey in June 2018.

Participants responded over a three-month period.

The survey was also shared via BASEM's twitter account and by the twitter accounts of the research team (KM and DF). Informed written consent was obtained via a compulsory question at the start of the questionnaire.

This was an internal organisation survey conducted with permission from said organisation.

Due to this, and no identifiable information being collected, ethical approval was not sought.

This is in line with the Declaration of Helsinki on 'Ethical Principles for Medical Research Involving Human Subjects' created by The World Medical Association, Inc.

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Participants were eligible to complete the survey if they were UK medical students or qualified doctors. The questionnaire aimed to explore several elements of SEM teaching to undergraduate level and is given in Appendix 1.

Where appropriate, data were divided into 2 subgroups of juniors (medical students and pre-registrar doctors), and seniors (Consultants, General Practitioners and Registrars) for comparison between groups. In addition, where appropriate seniors were separated into those that worked or trained in SEM or not to establish differences of opinion. Statistical analysis was performed using Microsoft Excel. Where median values are given, they are reported as median and inter-quartile range. Where appropriate, data were assessed for normality using Shapiro-Willcox and the Mann-Whitney U test was used to determine differences between groups. Statistical significance was set at $p < 0.05$.

Results

The survey received 136 responses.

Eight participants were not eligible due to not being a doctor or medical student.

Incomplete surveys (n = 2) were removed, leaving 126 responses.

Consultants made up 34% of participants, 25% were General Practitioners, 10% were registrars, 13% were pre-registrar level doctors, and 19% were medical students.

72% of senior clinicians were working or training in SEM.

69% of juniors were interested in pursuing a career in SEM.

66% of all respondents had an additional degree in SEM.

Importance of SEM-Related Topics

Participants were asked to rank how important it is that various SEM-related topics are included in undergraduate medical education.

The results are given in Table 1.

There were statistical differences between responses from juniors compared with seniors for the topics of nutrition, exercise physiology, working as a team doctor, and pitchside care.

In each case, juniors deemed them to be more important than seniors.

Table 1

Participants were asked to rank how important it is that each topic is included in undergraduate education. 1 = not important at all, 10 = very important. P value given for comparing responses from juniors, with responses from seniors. Statistically significant p values are in bold.

| Topic | Median (IQR) | Median (IQR) for juniors | Median (IQR) for seniors | P value |
|---|--------------|--------------------------|--------------------------|---------|
| Musculoskeletal Examination Skills | 10 (10 - 9) | 10 (10 - 9) | 10 (10 - 9) | 0.934 |
| Exercise to prevent and manage disease | 10 (10 - 9) | 10 (10 - 9) | 10 (10 - 9) | 0.465 |
| MSK injuries and conditions | 9 (10 - 8) | 8 (10 - 8) | 9 (10 - 8) | 0.516 |
| Nutrition | 8 (9 - 6) | 8 (10 - 6) | 7 (9 - 6) | 0.024 |
| Rehabilitation | 8 (9 - 6) | 8 (9 - 6) | 7 (9 - 6) | 0.126 |
| Exercise Physiology | 7 (8 - 6) | 8 (9 - 6) | 7 (8 - 5) | 0.005 |
| SEM in specialist groups (eg disability, women, older athletes, children) | 7 (8 - 5) | 7 (8 - 5) | 7 (8 - 5) | 0.151 |
| Biomechanics | 6 (8 - 5) | 7 (8 - 4) | 6 (8 - 5) | 0.624 |
| Drugs in Sport | 5 (7 - 4) | 6 (8 - 4) | 5 (7 - 3) | 0.346 |
| Sport Psychology | 5 (7 - 3) | 6 (8 - 4) | 5 (6 - 3) | 0.065 |
| Working as a Team Doctor | 5 (7 - 2) | 6 (8 - 3) | 4 (6 - 2) | 0.004 |
| Sports Ethics and Law | 5 (6 - 3) | 5 (7 - 3) | 5 (6 - 2) | 0.338 |
| Pitchside Care | 5 (6 - 2.25) | 5.5 (8 - 3) | 5 (6 - 2) | 0.016 |
| Use of Social Media | 5 (6 - 2) | 5 (6 - 2) | 4.5 (6 - 1) | 0.181 |

Thoughts on Amount of SEM Teaching

All juniors were asked how often they had been exposed to SEM during medical school. The majority had either never been exposed to SEM during medical school (60%) or had been exposed to it 1-2 times a year (37%). The remaining 3% were exposed to SEM 1-2 times a month.

Figure 1 shows the results given when participants were asked whether medical students receive enough teaching on SEM. The median score for seniors was 2(3 – 1) and for juniors was 1(2 – 1). There was a statistically significant difference between the two groups ($p = 0.004$). There was no statistically significant difference between those seniors working or training in SEM and those that are not ($p > 0.05$).

Figure 2 shows that participants think students would benefit from increased teaching or resources on SEM at medical school. There was no statistically significant difference in opinion between juniors and seniors ($p = 0.908$). Senior clinicians thought it was important for all medical students to have increased teaching or resources on SEM (median of 9 (7–10)), as well as those specific medical students interested in pursuing SEM (median of 10 (8–10)). There was a statistically significant difference between those seniors working or training in SEM and those that are not, with those working in SEM believing more strongly that medical students would benefit from increased SEM teaching or resources. The median for SEM professionals was 9(10 – 8) and the median for non-SEM professionals was 8(10 – 7) ($p = 0.005$).

Discussion

The most relevant SEM-related topics

The key findings of this study are that MSK examination skills, exercise to prevent and manage disease, and MSK injuries and conditions are deemed to be the most important SEM-related topics to teach to undergraduates. Social media use and pitchside care were deemed the least important. This survey is the first to determine how important it is that specific SEM-related topics are taught to medical students. The findings of this study are important because they will determine how best we move forward in terms of the education we provide to undergraduate level.

The majority of research thus far around incorporating SEM into medical curricula has been focused on exercise medicine.¹² Aside from exercise medicine, as far as the research team is aware, there are no SEM-focused resources aimed at the level of medical students. In addition, there is no SEM syllabus for medical students and new clinicians outlining what SEM they should know for their level in training.

Being an SEM doctor- more than being pitchside

The difference of opinion between juniors and senior clinicians in the topics of working as a team doctor and pitchside care is of particular interest.

It is a controversial topic within the SEM community that SEM doctors only work with elite athletes and sports teams, and the importance of highlighting that SEM is much more broad than this has been highlighted previously.^{3,13} Anecdotally, the authors acknowledge that the MSK medicine and exercise medicine aspects of SEM are often over-looked by those with limited experience of the specialty. Arguably these are the aspects of SEM that can best be utilised in a number of different specialties throughout the NHS. It may therefore be valuable for students and new clinicians to have some knowledge of SEM that will be valuable in a variety of different clinical settings.

The benefits of more SEM education

The survey findings suggest that students and clinicians of all grades are of the opinion that medical students would benefit from having more exposure to SEM during medical school, an opinion expressed previously.¹⁴⁻¹⁶ However, there is limited data supporting this theory, which is an important finding of this study.

In addition, this study found that seniors believe increased SEM teaching would be beneficial for all students, not just those interested in pursuing a career in SEM.

There are potentially several reasons for this. Firstly, the lack of exposure to SEM results in a lack of awareness of what is involved in SEM, including its place in health service provision.¹⁷ A lack of awareness of the specialty of SEM has been demonstrated among the medical profession.^{18,19} This may mean that SEM NHS services are not being utilised due to lack of awareness of these services existing, resulting in patients not benefitting from referrals to SEM departments.

Secondly, inactivity is a significant risk factor for disability and death and to combat this as a society promoting physical activity as a form of medicine is of paramount importance.²⁰ If we are encouraging more people to be active, it follows that more people will suffer from sports-related injuries. We need our doctors of the future to be prepared and confident to deal with the MSK injuries that will potentially increase as a result of this. Furthermore, aspects of the SEM curriculum are applicable in many parts of medicine.²¹ For example, both exercise and musculoskeletal medicine are relevant in General Practice, whilst exercise physiology is important in Anaesthetics.

Strengths and Limitations

This survey is the first to determine how important it is that specific SEM-related topics are taught to medical students. Views were collated from individuals in a variety of stages in their career in order to compare differences between sub-groups.

A limitation of this study is that most participants have an existing interest in SEM.

The majority of participants were working in, or interested in working in, SEM and therefore are potentially biased towards feeling more SEM exposure would be of benefit.

Further research should aim to gain opinions of non-SEM doctors, and students and juniors not interested in pursuing SEM, to establish how applicable SEM skills and knowledge is to the wider medical profession.

Furthermore, as the survey was shared on social media, a response rate cannot be calculated.

Conclusions

This study has found that MSK examination skills, exercise to prevent and manage disease, and MSK injuries and conditions were deemed the most important SEM-related topics to include in medical student education. Use of social media, pitchside case, sports ethics and law, and working as a team doctor were

deemed the least important SEM-related topics for undergraduate education. Respondents thought medical students do not receive enough SEM teaching at medical school and could benefit from increased SEM teaching/resources, which supports previous research findings. In response to the findings of this survey, a Delphi study is being undertaken to further clarify an SEM undergraduate syllabus. In addition, educational SEM & musculoskeletal resources have been created specifically aimed for the level of medical students and junior clinicians.

Declarations

Ethics approval and consent to participate: This was an internal organisation survey conducted with permission from said organisation. Due to this, and no identifiable information being collected, ethical approval was not sought. This is in line with the Declaration of Helsinki on 'Ethical Principles for Medical Research Involving Human Subjects' created by The World Medical Association, Inc. Informed written consent was obtained via a compulsory question at the start of the questionnaire, and all participants were over the age of 18. All **methods were carried out in accordance with relevant guidelines and regulations.**

Consent for publication: Not required.

Availability of data and materials: Data will be made available on request to the corresponding author.

Competing interests: KM and DV are on the BASEM Executive Board. All authors (KM, DF and DV) are BASEM members.

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Authors' Contributors: KM and DF conceived the design of the study, contributed to the collection of the data, and both performed statistical analysis of the data. All authors (KM, DF and DV) contributed to the manuscript writing and approved the final version.

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Abbreviations

BASEM- British Association of Sport and Exercise Medicine

NHS- National Health Service

MSK- musculoskeletal

SEM- sport and exercise medicine

UK- United Kingdom

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Figures

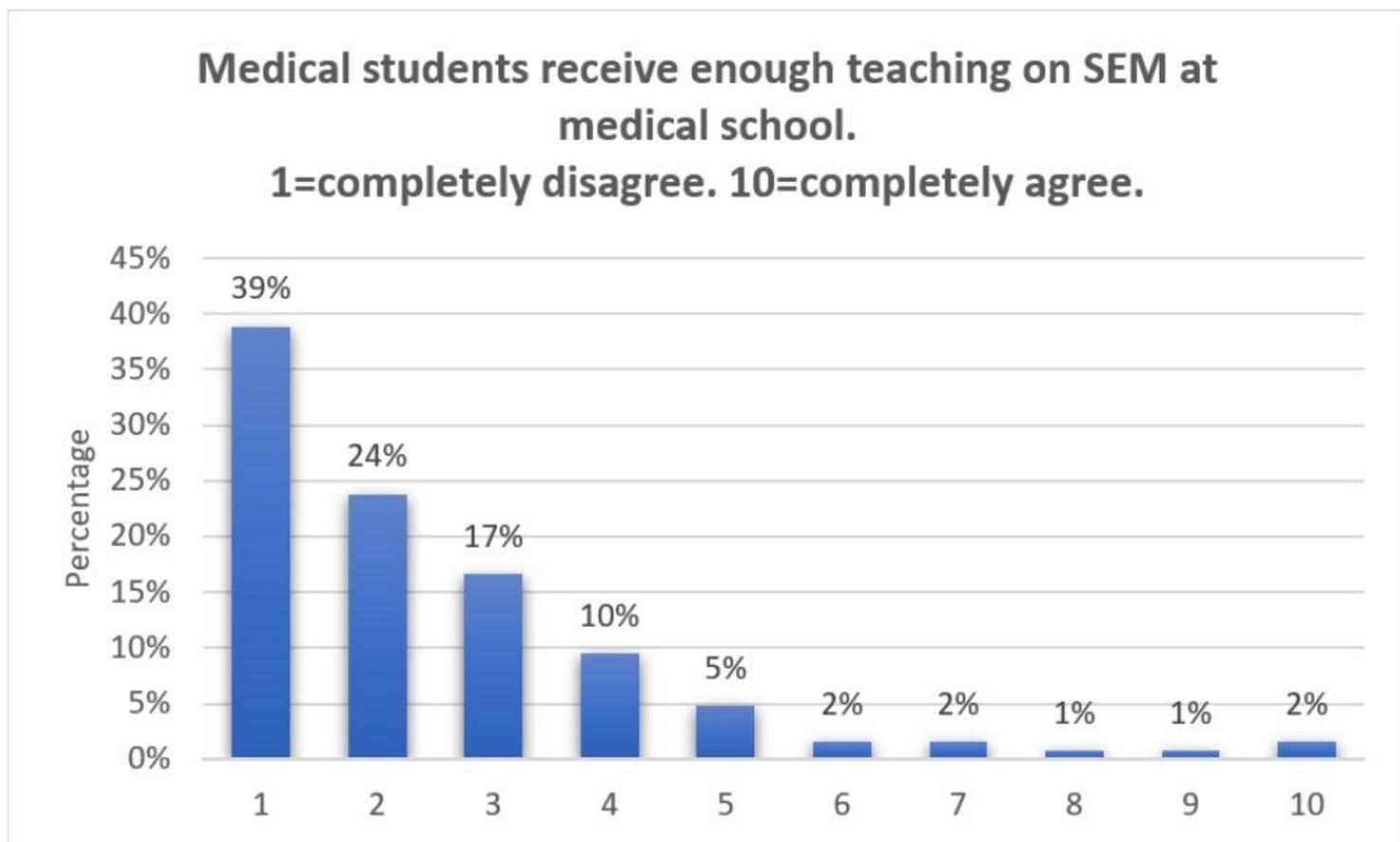


Figure 1

Responses when participants were asked if they agree or disagree with the statement 'Medical students receive enough teaching on SEM at medical school'.

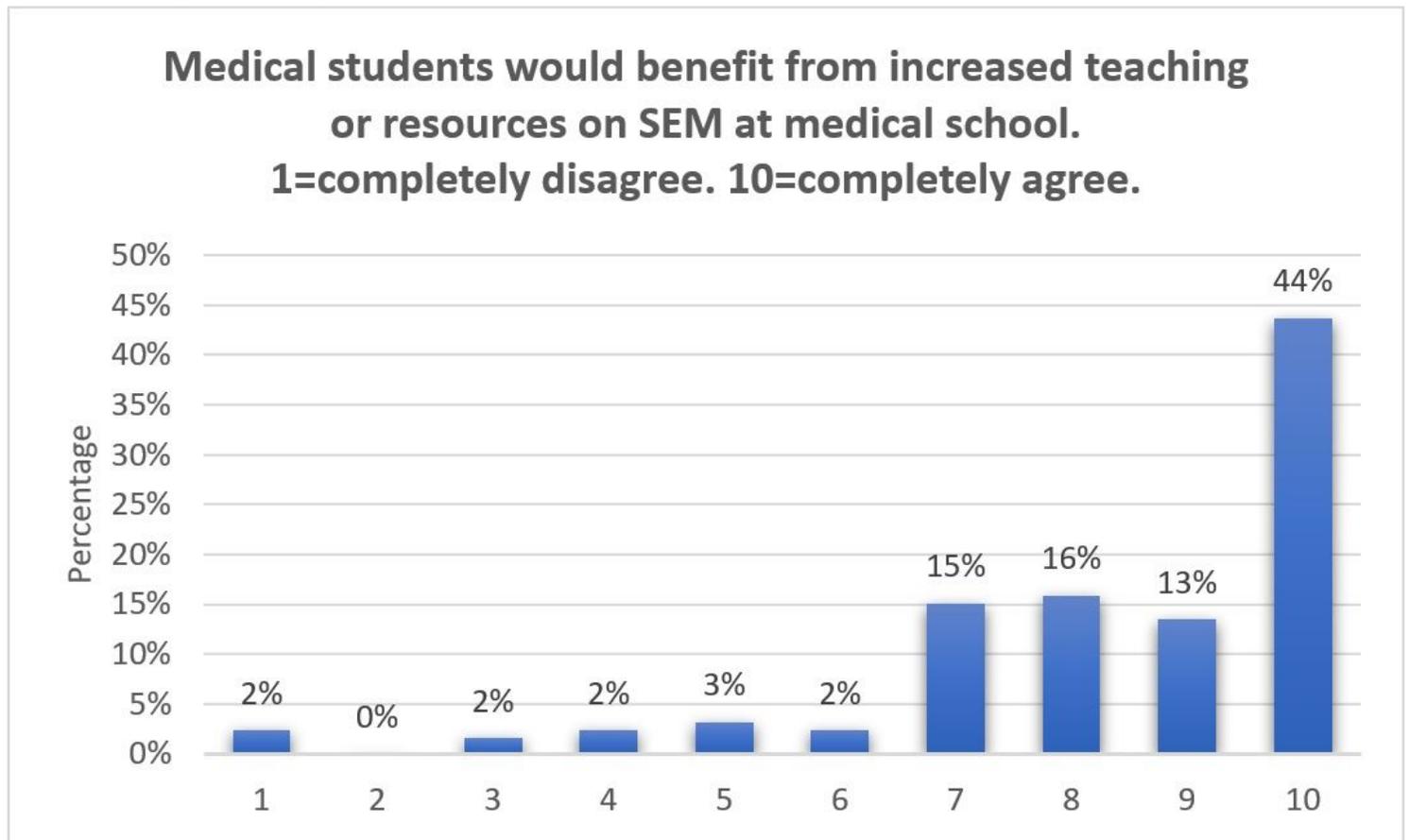


Figure 2

Responses when participants were asked if they agree or disagree with the statement 'Medical students would benefit from increased teaching or resources on SEM at medical school.'

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendix1questionnaire.docx](#)
- [Appendix1questionnaire.docx](#)