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PERSPECTIVES

From Education to Application: Sport and Exercise Sciences Courses in the Preparation of Applied Sport Scientists

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Introduction

Universities play a key role in the training of applied sport and exercise scientists. The British Association of Sport and Exercise Sciences (BASES) accredit sport and exercise scientists following a period of appropriate training under the guidance of an accredited member. After starting an undergraduate degree it typically takes 8-10 years to become a BASES accredited sport scientist. Therefore becoming BASES accredited takes a similar amount of time as for professions such as medicine or aviation. In the present paper, we emphasise the value of conducting pedagogical research into the process of training sport and exercise scientists. We argue that a profession that emphasises the use of scientific approach within applied work should see the value in producing evidence on how students learn the tools of their trade.

Professor Andrew Lane is based in the School of Sport, Performing Arts and Leisure at the University of Wolverhampton. He organised the 2006 British Association of Sport and Exercise Sciences Conference: From Education to Application, where the second day focused on Education and Professional Development.

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Development of an evidence base for methods of good practice for teaching applied work

The argument calling for research to develop and evaluate methods of good practice echoes arguments made for the basis of doing applied work. Interventions proposed to improve performance in sport should be grounded in theory and research, and therefore it is logical to expect a similar degree of insight into educational methods used to enhance student learning, particularly as the information being taught is aimed at teaching students theory and practice related to the first issue. We argue that there is need for research to evaluate the effectiveness of teaching methods designed to teach students how to apply theory to practice. When students leave sport and exercise science related courses they have read a great deal of theory across a range of disciplines and, through the various assessment methods, have attempted to demonstrate mastery of this knowledge. Ensuring students know how to apply theoretical knowledge across a range of different issues is extremely important. However, research evidence on how information is taught and assessed, and its relation to appropriate vocational skills in sport and exercise science occupations is clearly absent from the literature. No published studies were located on the effectiveness of assessment tasks such as a laboratory report, an essay or practical tests that ask students to develop interventions in relation to actual delivery.

In a recent article in the Sport and Exercise Scientist, Pedlar (2005) described the relationship between information and skills learned during academic study and those required in the day-to-day delivery of sports science. He described a sharp learning curve, arguing that although he was familiar with theories, he had received insufficient exposure to the requirements in terms of practical aspects. Pedlar's story is a familiar one and simply highlights the need to explore and evaluate teaching methods against the skills needed in practice. Research to investigate relationships between teaching methods, assessment, and vocational skills might highlight the most appropriate teaching methods. Dissemination of that research would ensure appropriate exposure and could promote usage beyond the confines of a single institution, which is where evaluation of teaching tends to occur.

Developing teaching methods that provide individual support for applied work becomes challenging, and is sometimes a stressful experience for lecturers aware of the importance of students acquiring practical skills. Increased student numbers who require vocationally relevant skills means that lecturers are challenged with the task of developing innovative ways of delivering the curriculum. Practical laboratory skills form an important part of the development of a sport scientist. Providing students with real laboratory experiences represents a challenge for lecturers. As Pedlar (2005) indicated, sport scientists need excellent practical skills to be able to carry out accurate assessments of the physiological, biomechanical or psychological states of the athletes they work with. Reducing the number of students in each laboratory-based class, or increasing the number of students in each laboratory, could reduce the quality of the learning experience for students, which ultimately will mean that graduate students cannot offer these specific vocational skills. We will illustrate how practical experiences could be taught to large numbers through an example of work conducted in health.

One strategy could be to borrow ideas from nursing where electronic resources have been developed to supplement traditional teaching methods (Alinier *et al*., 2004; McConville and Lane, 2006). Recent work to develop vocational skills in nursing used video clips that showed nurses trying to deal with difficult patients, or stress situations such as informing patients they are going to die (McConville and Lane, 2006). In this study, McConville and Lane (2006) indicated that students reported that watching videos of nurses dealing with such scenarios provided them with a meaningful experience, and importantly gave them a basic understanding of how to deal with such circumstances in real life settings. In sport and exercise sciences, there is a need for on-line learning laboratories that could provide students with an awareness of the skills needed, and could be accessed on multiple occasions. The development of on-line learning, in which students are provided with theoretically relevant information, supported by extension and practical work, could be an effective method of delivery (Haven and Botterill, 2003: Lane *et al.*, 2004).

If we consider the work of a sport psychology consultant, a key part of their work is teaching athletes psychological skills. Research is needed to identify the different ways sport and exercise psychologists teach athletes psychological skills in practice. After obtaining a list of teaching methods used by consultants, research is needed to explore how students are taught these skills in applied sport and exercise psychology modules. Research within education indicates that individuals have preferred learning styles (Honey and Mumford, 1992; Clarke and Lane, 2005) and developing student's ability to identify the best teaching method for the needs of the client is important. Students need to explore their own delivery style and find one that they are comfortable with and find effective. Additionally, the growth of online and e-learning represents a potentially exciting development for applied sport and exercise psychology and lecturers alike. There is a need to develop online material that could be used by athletes and to assess the effectiveness of such work through appropriately developed research programmes.

It is important to place this call for applied research within sport and exercise sciences within the context of an increasing volume of pedagogic research within sport and exercise sciences. BASES has recently restructured itself, forming a division in Educational and Professional Development. The 2006 BASES conference was titled 'From Education to Application', which indicates that many of the sentiments within this paper are being actioned strategically. The above developments should also be seen against the backdrop of an increased number of publications in pedagogic research in sport and exercise science. In the Journal of Hospitality, Leisure, Sport and Tourism Education there have been 11 papers that have focused specifically on sport and exercise related subjects (Batey, 2002; Dale and Lane, 2004; Hall, 2002; Johnes, 2004; Lane, 2004; Lane *et al.*, 2004a; Lane *et al.*, 2003; Lane *et al.*, 2002; Nash, 2003; Smith and Westerbeek, 2004; Smith, 2004). Generic papers have been excluded from this list (Aitchison, 2003; Downie and Moeller, 2002; Haven and Botterill, 2003; Henry, 2003; Lane *et al.*, 2003; Leung and Ivy, 2003; Lomine, 2003; McGugan, 2002; Tribe, 2003a; Tribe, 2003b). Other research on sport and exercise sciences has been the focus of work in education journals in higher education (Edwards and Thatcher, 2004; Lane *et al.*, 2004). In addition, professional papers through LINK (http://www.hlst.heacademy.ac.uk/resources/link) and the Sport and Exercise Scientist (see www.BASES.org.uk) provide outlets for dissemination, although peer review journals should offer greater quality controls. Therefore, it can be seen that there are a number of outlets for pedagogic research and we urge researchers to see pedagogic research as a key priority within each researcher's goals.

Conclusion

In conclusion, the present paper urges sports scientists and educators to show equal degrees of enthusiasm and rigour in how they evaluate the delivery of information, whether that is to students or clients. It calls for the development of an empirical basis for effective teaching in sport and exercise sciences which, in turn, should lead to graduating sport scientists possessing vocationally relevant skills.

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