

PhD Programs in Sport Science: Impact Beyond Academia and Scientific Publishing

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The PhD is an important academic qualification that not only supports innovative and impactful research but also provides structure and standards for the development of researchers. Given that fewer than 50% of PhD graduates are likely to be employed in an academic institution, the focus of the degree is not solely on the development of university-employed academics or researchers. Indeed, PhD programs develop an individual's research skills and advance learning and/or professional practice that can be applied across a range of sectors. Sport-science PhD graduates, for instance, often work in Olympic or professional sport, private practice, health, government agencies, or other industries. Industry-focused PhD programs will typically occur through cosupervision and codesign of the research among university and nonuniversity organizations. A tension in the management of such programs can be the complex balance between rapidly addressing important industry-relevant research questions or needs and the slower long-term process of developing the researcher. While these objectives can be achieved simultaneously, embedding transferable skills, industry-relevant learning, and end-user engagement into academic curricula within the PhD has its challenges.


It is common that course requirements of the PhD clearly articulate expectations and standards of researchers, but they often provide less detail on the specific requirements for formalized industry experience and learning. Instead, the current structure of many PhD courses allows flexibility for candidates and supervisors to incorporate learning and development based on the individual's prior experience and career aspirations. Adapting the structure of PhD programs to formalize industry-relevant professional-skills development and assessment could further facilitate industry engagement, developing industry-ready researchers and improving the conduct of research that has impact on both academia and industry. Such adaptation should consider industry engagement beyond cosupervision or placements and outline possible models by which PhD course structure, learning outcomes, and assessments can be improved. Within such framework, a greater focus could perhaps be given to consistent and formalized learning on discipline-specific expectations and standards, and/or industry-relevant skills relating to matters such as commercialization and

intellectual property, entrepreneurship, business administration, management, financial planning, and public policy. It is plausible that professional doctorates or similar models of a PhD already provide an appropriate structure to facilitate domain-specific learning, development experience alongside research practitioners (ie, completing research projects in the sport and exercise setting), and the knowledge necessary to drive the evolution, development, validation, and implementation of beneficial innovations. Yet, such models of a PhD are not the norm in sport and exercise science.

An important aspect of assuring learning in PhD programs is the development and examination of a single-authored dissertation, thesis, or exegesis that is evaluated by a group of senior researchers. In many countries, a viva voce (or oral thesis defense) is also part of the assessment process, which may be helpful in assessing the candidate's learning and contribution to the research. Candidates are sometimes required to publish a specific number of articles in peer-reviewed scientific journals (an unwanted outcome of which, unfortunately, is the recent fueling of predatory publishing). Given that PhD graduates can choose a range of professional pathways beyond academia, we believe that a reformation in PhD examination would be beneficial. Such change could include requirements for candidates to formally articulate the impact of their work beyond academia, to communicate their understanding of industry needs and how to address them, and a consistent approach to industry representatives in the examination process. Additionally, the value of updated academia- or industry-ready doctorate training may be greater if a candidate's skills were to be formally assessed in addition to what occurs in the dissertation and its oral defense.

We don't know the best way forward or intend to offer a "one size fits all" solution. What we do know is that the readership of the *International Journal of Sports Physiology and Performance* includes world-leading sport-science academics continuously making relevant contributions to our field, practitioners bringing the best applied sport-science methods and skills to medal-winning Olympic and professional sports worldwide, and sport-science PhD candidates hoping to become the next generation of leading academics and/or practitioners. This editorial is a call for reflection to all stakeholders regarding the future of sport-science PhD programs and their evaluation.

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