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## Currents in Pharmacy Teaching and Learning

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Experiences in Teaching and Learning

## Instructional design and assessment of an elective course on the use of drugs in sport

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## ABSTRACT

**Background and purpose:** The use and misuse of drugs in sport is becoming increasingly important globally, and the role of pharmacists is evolving in this regard. This paper describes the design and implementation of an elective course “Drugs in Sport” in an undergraduate pharmacy curriculum.

**Educational activity and setting:** The elective course was designed to introduce BSc pharmacy students to an evidence-based approach to safe, effective, and legal use of drugs in sport. The course covered why athletes take drugs, evolution of doping in sport, the international regulations regarding doping and anti-doping in sport including the World Anti-doping Agency Prohibited List, as well as testing and monitoring for drug use in sport. It also included the role of athlete support personnel (ASP) in preventing the use of prohibited substances by athletes. A web-based survey was conducted at the end of the course to assess the students' perspectives of the course.

**Findings:** Students provided an evaluation of the course in terms of its content, methods of delivery, and assessment. Overall, the students demonstrated competence. They gained insight into international and national regulations regarding doping and anti-doping in sport and the potential role of pharmacists as ASP in providing support and advice for athletes and the public.

**Summary:** Designing and implementing an evidence-based course on the use of drugs in sport customized for pharmacy students was achieved successfully. Such courses could provide an opportunity to advance the scope of pharmacy practice and possibly provide a new career path for future pharmacists.

## Background and purpose

The use of drugs in sport is an important issue for sports regulatory agencies and is of interest to the global public. The World Anti-Doping Agency (WADA), the lead international organization for anti-doping, is tackling this problem through implementation of the World Anti-Doping Code.<sup>1</sup> Athletes may take drugs for a variety of circumstances. These include therapeutic use for acute or chronic medical conditions, social and recreational use, and performance-enhancement.<sup>2</sup> Any of these circumstances could involve the use of

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substances and/or methods that are either permitted or prohibited in sport. However, both intentional and inadvertent use of prohibited substances and methods have recently escalated, causing significant consequences for athletes' careers.<sup>2</sup> Some of the most commonly misused prohibited substances in sport include anabolic androgenic steroids and other anabolic agents, stimulants such as amphetamine, ephedrine, pseudoephedrine, and methylphenidate, cannabinoids, and peptide and growth hormones.<sup>3-7</sup> Ensuring the safe, effective, and legal use of drugs in sport demands the involvement of healthcare professionals, in particular pharmacists, who have a unique insight into the modes of action, uses, side effects, and legal status of drugs commonly used by athletes.

Professional practice areas where pharmacists can provide services related to sports pharmacy include major sporting events, specialized sports medicine hospitals, and community pharmacy settings.<sup>8-12</sup> Within these arenas, pharmacists can provide information on prohibited drugs to other healthcare professionals, offer advice on therapeutic use exemptions in sporting events, deliver pharmaceutical services at international games, and serve as doping control officers for anti-doping drug testing authorities.<sup>8,9,11-14</sup> In addition, athletes may require particular advice on over-the-counter medicines and dietary supplements in order to prevent inadvertent use of prohibited substances.<sup>10,15</sup> Pharmacists' roles in preventing doping in sport is recognized by the International Pharmaceutical Federation (FIP), which has published a statement of professional standards entitled the *Role of the Pharmacist in the Fight Against Doping in Sport*.<sup>16</sup>

The evolving discipline of sports pharmacy has been previously described in the literature.<sup>8,9,17-20</sup> In order to provide high quality advice on safe, effective, and legal use of drugs in sport, pharmacists require effective educational programs on this subject as recommended for all Athlete Support Personnel (ASP) in the World Anti-Doping Code<sup>1</sup> and related literature.<sup>9,11,13,17,20,21</sup> This education should begin in the curricula of pharmacy degree programs, a situation which, to date, occurs infrequently.<sup>8,9,21-23</sup>

Qatar has become a regional and global hub for sports, with many international sporting events held annually. Therefore, pharmacists have the potential to play a valuable role as part of the clinical service teams for the many major sporting events that are hosted by Qatar. There is also potential for a sports pharmacist to make a substantial contribution to patient care in both general practice and in specialist sport medicine settings.<sup>21</sup> Mottram et al.<sup>20</sup> conducted a study to evaluate the knowledge and perspective of pharmacists in Qatar regarding the use of drugs in sport. The findings showed that pharmacists had a limited awareness of doping and anti-doping in sport and demonstrated deficiencies in knowledge regarding the prohibited status of drugs that may be used by athletes, particularly with respect to over-the-counter medicines and supplements.<sup>20</sup> Another study assessed pharmacy students' perspectives about doping in sports and their views about inclusion of a "sports pharmacy" course in the pharmacy curriculum.<sup>21</sup> The study reported that 85% of students were unaware of the FIP's statement on the pharmacist's role in anti-doping, and about 90% of them supported the proposal to include sports pharmacy in the pharmacy curricula.

As a result of these studies, an elective course entitled "Drugs in Sport" was introduced in the College of Pharmacy at Qatar University during the fall semester of the 2015-2016 academic year. To our knowledge, this is the first course on the use of drugs in sport targeted for pharmacy students in the region. The College of Pharmacy at Qatar University is committed to continuous quality improvement of its curriculum to ensure compliance to international accreditation standards and that program learning outcomes are being met. As normal practice, students enrolled in each course are routinely asked to evaluate the course for the purpose of improving the quality of teaching and learning. This article reports on the development and implementation of the evidenced-based sports pharmacy course and the perspectives of the pharmacy students who took the course on its learning outcomes, design, teaching methodologies, content delivery, and assessment of learning.

## Educational activity and setting

### Course description

A two-credit hour elective course called "Drugs in Sport" (PHAR444) was introduced in a four-year Bachelor of Science in Pharmacy (BSc Pharm) degree program at the College of Pharmacy, Qatar University, during the fall semester of the 2015-2016 academic year. The course was designed to introduce undergraduate pharmacy students to an evidence-based approach to the safe and effective use of drugs in sport. It was delivered as an elective module to third professional year BSc Pharm students. In addition to generic aspects (i.e. key elements) of drug use in sport such as the regulations of doping in sports, the course incorporated specialty topics that targeted pharmacy undergraduates. These specialty topics could be tailored to the particular career pathways of students in sport science, medicine, physiotherapy, dentistry, nursing, or other disciplines. For instance, two of the topics related to ASP were about "the role of pharmacist as an ASP" and "pharmacy services at major sporting events". Similar concepts could be applied to doctors, sport scientists, and others. There were no prerequisites required for students to register for the course.

The course syllabus included the following areas of learning: (1) the regulation of drug use in sport, including the evolution of doping and anti-doping as well as the national and international bodies responsible for anti-doping; (2) prohibited substances and methods, including a review of classes and physiological actions of substances and methods on the WADA Prohibited List; (3) permitted substances and methods; (4) doping control through monitoring and testing for prohibited drug use; (5) extent of doping in sport, including use statistics and surveys and perspectives of athletes and medical practitioners; (6) clinical and pharmaceutical services at major sporting events; and (7) roles of pharmacists as ASP to advise and support members of the general public regarding their participation in sport and exercise. More detailed information about the course syllabus is presented below.

### Learning objectives

The aim of the course was to provide a basic knowledge and understanding of the international and national regulations regarding

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