

1.1 Sports medicine: the team sports physician

Introduction

Sports medicine is an increasingly popular specialty that has three main goals:

- 1) The promotion and implementation of physical activity in the prevention and treatment of many of the chronic diseases from which the population currently suffers;
- 2) the prevention, diagnosis, treatment, and rehabilitation of injuries that occur during athletic activity;
- 3) the prevention, diagnosis, and management of different situations, problems, and medical conditions that occur during or after athletic activity.

Accordingly, an increasing number of countries on every continent are regulating this specialty and its specialists, together with the areas of expertise and skills that a sports medicine physician should have, as well as the role that she should play in different organizations, institutions, clubs, sporting events, etc. In addition, the incorporation of a physician specializing in sports medicine into hospital staff continues to be a challenge. This has made the monitoring of athletes particularly necessary and has given rise to the specific role of team sports physician (TSP), who must look after all aspects related to athletes' health.

The TSP should possess both broad and specialized abilities and perspectives in order to be a good general practitioner for athletes in a team, club, national team, event, international tournament, or other environment. The team sports physician should have thorough knowledge of, and be skilled in, the fields of traumatology, physiology, training theory, nutrition, pharmacology, and anti-doping norms, etc. She should also have the personal qualities and mindset that enhance her dealings with the athlete, as part of a group of athletes that strives for a common goal. The team sports physician must know how to fit in with the team's coaching staff and the running of the team in general, which usually requires years of experience. She must also be comfortable with the hierarchical structures of institutions, but without losing her personality or her character. The team sports

physician must be able to win the trust of the players, the trainers, the coaches, and the rest of the staff through her knowledge and her good work. Trust is probably one of the most important issues, but... how can you win this trust? The TSP should be able to communicate confidentiality, loyalty, self-confidence, teamwork, etc.

We hope that this unit will allow readers to deepen their understanding of the basic aspects of sports medicine and the role of the team sports physician in taking care of players in a context that can become very complex, or even "dangerous," as the team becomes more professional and high profile.

The specialty of sports medicine

The specialty of sports medicine (SM) is a reality in many countries, although in each region the discipline has different study programs and training periods. In countries such as the United States, the completion of an additional year of study following another medical specialty is required, while in other countries, such as Australia, this additional period can last up to four years.

Recently, a group of 17 specialists in SM from 12 different countries authored a project on the ideal program for this specialty, which can serve as a model both for existing universities and for other countries interested in making it available. The basic areas of knowledge that this document recommends including in the study program include the following:

- 1)** Physical activity and health: it is important to understand the benefits of physical activity in the prevention and treatment of many diseases, such as hypertension, diabetes, cancer, etc., and to know how to prescribe the correct dosage that each patient needs to improve his condition.
- 2)** Medical issues related to physical exercise: the physician specializing in sports medicine must understand the aspects of physical activity related to cardiovascular, respiratory, gastrointestinal, renal, metabolic, immunological, dermatological, and mental functioning.
- 3)** Sports injuries: this is perhaps one of the areas in which the SP should have the greatest expertise and skill in order to make an accurate diagnosis and provide efficient and effective treatment. She should have knowledge of every type of injury (muscle, tendon, ligament, and bone), since all parts of the human body are susceptible to injury, from the head down to the tiny toe phalanxes. The SP should know

the main treatments available and the principles of rehabilitation, and should be able to take the correct decision on when injured athletes are fit to return to training or games.

- 4)** Nutrition: proper nutrition is key to good health and strong athletic performance. Physicians must have comprehensive knowledge of hydration and the main nutrient groups, as well as the most common and effective nutritional supplements. They must also know how to apply this information in each case, depending on whether the patient is an individual athlete or a team, and keeping in mind the different conditions (from pre-game requirements to high-altitude conditions or ultra-endurance athletes).
- 5)** Pharmacology: Medication is very often abused by the general population, and also by athletes. An SP must be familiar with the most frequently used medications, their interactions and adverse effects, and their potential interactions with physical exercise, especially in extreme temperatures or high-altitude conditions.
- 6)** Anti-Doping: Knowledge of this issue is important, especially for physicians responsible for athletes that are subject to the control process. SPs must be familiar with the latest World Anti-Doping Agency norms, which are updated every year. As prescribers of medication, they must know whether a substance is permitted or not and, where necessary, they should know how to use a substance. If they do not comply with the applicable norms, SPs are subject to very severe sanctions, including disqualification.
- 7)** Team sports and sporting event management: Team SPs are responsible for athletes' health and performance. They should therefore monitor the pre-competition testing and the health and performance of athletes during training, travel, regular seasons, competitions, and national and international events. SPs also play an important role during major sporting events, in tasks involving the design of plans and procedures for any medical emergencies involving athletes or fans.
- 10)** Physical activity in extreme environments (altitude, cold, or heat): this is a very specific area of expertise that requires specialized training.
- 11)** Care of specific groups (children, women, older adults, and the disabled): the treatment of injuries in children requires a high level of specialization and much experience. Female athletes can suffer from certain specific disorders caused by participating in sports, such as secondary amenorrhea or iron deficiency anemia, which must be properly understood and treated. In the case of older people who play sports, physicians must know how to find a balance between participating in healthy physical activity, and dealing with problems related with age, such as arthrosis of the knee. Finally, in the case of

patients with specific disabilities, specialized knowledge of this group is required.

- 12)** Essential skills: although this is not always the case, it is assumed that the SP should have communication, collaborative, and, on some occasions, leadership skills, as well as the ability to maintain their professionalism and integrity at all times.
- 13)** Supplementary skills: included in this category are the skills necessary to carry out a proper physical examination, particularly of the musculoskeletal, cardiorespiratory, and neurological systems. Some of the basic skills that an SP must have are: knowing how to interpret an electrocardiogram, and having knowledge of and experience in ultrasound on soft tissues for the diagnosis of most sports injuries (Humphries, Rod, and Dijkstra, 2017).

Definition and role of the team sports physician

Above all, the team sports physician (TSP) must be a qualified physician with an unrestricted medical license that allows her to be responsible for the treatment and coordination of the medical care of all members of the sports team. Accordingly, the main responsibility of the team sports physician is to provide for the individual well-being of the athletes so that they can each achieve their full potential. The TSP must have in-depth knowledge of the care of injuries to the musculoskeletal system and of the types of medical diagnoses made in sports. The TSP must also actively integrate with other health professionals, including medical specialists, coaches, physical therapists, psychologists, and physical trainers. Finally, the team sports physician must assume responsibility for decisions that affect the athlete's safe participation within the structure of the team.

What a team sports physician must know

The main concern of the team sports physician must be to provide the best medical care to athletes at all levels of competition. Team sports physicians must therefore meet the following basic training requirements:

- They should be qualified in medicine and surgery: this implies being a member of a professional organization and holding a license to practice medicine in the place where they work. Since team sports physicians travel a great deal, such as during the Olympic Games, they should have the corresponding certificate issued by the health authorities which enables them to work and care for their players in another country.

- They should have basic knowledge of emergency medical care for any serious situation that might arise during a different sports events.
- They should be trained in basic and advanced cardiopulmonary resuscitation.
- They should have knowledge of internal medicine in order to resolve common medical issues, from an infection to an allergy.
- They should have in-depth knowledge of traumatology and the ability to manage the majority of sports injuries, both in terms of their diagnoses, and their treatment and prevention (Herring, Kibler, y Putukian, 2017).

Currently, along with specific training in sports medicine, there are other courses available which offer participants the opportunity to acquire knowledge and skills. These include master's degrees, doctorates, post-doctorates, and other related master's degrees, which all help to increase knowledge in areas of great interest to the sports medicine physician, such as sports cardiology, sports nutrition, rehabilitation, or training theory. They are also useful for addressing specific populations. In addition to these medical qualities, there are complementary training programs that can help develop the profile of a team sports physician: courses on research and innovation, managing new technologies, business administration, occupational medicine, and professional ethics, etc.

What is expected of a team sports physician:

The team sports physician must be willing to dedicate the time and effort necessary for taking care of his players and his team in general. On many occasions, this time and effort around a player can be considerable. For a player to be in top condition, she must feel that her family environment is also taken care of. Players often move with their entire family to other cities or countries. Putting families in contact with medical specialists, or resolving stressful situations, also tends to be one of the team sports physician's roles. Thus, the physician often tends to care for the staff and their families. The team sports physician must also develop her knowledge of the sport that his team plays, and should stay current with the latest information.

The team sports physician has the ultimate responsibility for monitoring the medical treatment of the athlete. Therefore, he must:

- Coordinate pre-competition screening, testing, and evaluations.
- Treat injuries on the field.
- Be responsible for the treatment of injuries and illnesses.

- Coordinate rehabilitation and the return to training.
- Provide adequate preparation for a safe return to action after suffering an injury or illness, particularly on professional teams, where stressful situations are common, and there is pressure to return quickly to the field of play from the coach, the club, the media and often from the player himself. If there is a conflict of interest, the team sports physician must help to deal with it.
- Aid the continual process of recovery from injuries until the moment of return-to-play (RTP). This is usually an issue that the team sports physician should coordinate with his patients, but often ends up managing together with the player and the coach, who will decide when the player will return to training sessions and games.
- Consolidate his medical experience with that of other people who are responsible for looking after the athlete's health, among them medical specialists, athletic trainers, physiotherapists or rehabilitation specialists (in Spain, the physical trainer tends to do this), and other professionals in the field of physical and mental health (sports psychologists).
- Provide adequate nutrition education, related to ergogenic aids, substance abuse, and other medical problems that may affect a player or athlete.
- Stay current with all aspects of doping and have the knowledge required to fill out the location forms that the World Anti-Doping Agency (WADA) requests from athletes.

Administrative and Logistical Duties

- Establish and define the relationships between all the parties involved.
- Educate athletes, parents, administrators and trainers on aspects necessary for the care of the athlete.
- Develop a chain of command: it is of vital importance that everybody involved in the care of an athlete understands who they must call upon in the event of difficulties.
- Develop an emergency plan for competitions and training sessions: trips, overnight stays in hotels, and other elements must be included in this emergency plan. Cases of food contamination, drugging, or "poisoning" by the opposing team have been known to happen. It is therefore vitally important to have a set of emergency procedures for all of these cases, in order to act as quickly and effectively as possible.
- Deal with problems relating to equipment and its supply.
- Provide a proper level of coverage for the event.

- Assess the environmental and game conditions. Playing field hockey on a grass field in India with an outside temperature of 50°C isn't the same as playing a soccer game in adverse weather conditions (for example, in light drizzle).

What are team sports physician's main challenges?

As mentioned above, the knowledge and duties of a team sports physician are broad and varied. As a result of changes in the needs of athletes and teams, we have moved on from a traditional model to a new, far more demanding operational model. The current model of the specialist in sports medicine has surpassed the traditional model, in which the sports physician (usually a generalist interested in sports) was the "first contact." The improved model recognizes the multi-disciplinary nature of the athlete's "first professional contact", which could be a physiotherapist, school nurse, team sports physician, medical generalist, orthopedic surgeon, soft tissue therapist, podiatrist, chiropractor, osteopath, nutritionist, psychologist, or expert in biomechanics (Dijkstra and Pollock, 2014). This model proposes that both medical and training teams be administrated by experienced and qualified individuals who work together towards a common performance objective, and who are accountable to a performance director and, ultimately, to the Board of Directors. In this way, the importance of establishing appropriate services to care for the health of athletes in a continual way, and not just during major competitions, is emphasized.

Providing sports medicine to elite athletes is challenge on many fronts, and deciding when athletes can return to play is a complex matter. This is a subject that will be dealt with at length during the course. By way of introduction, Creighton, Shrier, Shultz, Meewisse and Matheson (2010) proposed a return-to-play model based on decisions, with the objective of clarifying the steps that sports physicians must follow when deciding when athletes can return to play. For this decision-making to be successful, the presence of two elements in the environment is fundamental: the integration of disciplines and communication between them, which facilitates optimal training and competition while promoting the safeguarding of health in the long-term. At the same time, it is well known that the organizational structure can affect high-performance teams, and so the optimization of the structure of its medical and training teams that cater to an athletic elite must be a strategic priority for every club's sports organization. These and other challenges can be addressed with an integrated health and performance structure, where roles and responsibilities are transparent and exist within a well-defined system of clinical governance and external professional evaluations.

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