

Editorial

American football and the evolution of modern sports medicine

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Sports have influenced the public image of medicine to the extent that a new branch of medicine has evolved: sports medicine. In this article, I will explain how this development was spurred on by American football—particularly by the number and severity of injuries as the sport grew in popularity. With time, it became imperative that new and better methods of treatment were needed. As modern sports medicine developed, so did the community of medical professionals dedicated to the specialty, culminating, in the United States, in the formation of the American Orthopedic Society for Sports Medicine (AOSSM).

The origin of sports medicine goes back to the beginning of written history, when ancient physicians—people who healed or exerted a healing influence—were known by names, such as medicine man, witch doctor, shaman, quack, quacksalver, and charlatan. In the 7th century BC, these ‘physicians’ began to study and treat athletes’ fractures, deformities, and maladies in infirmaries (asclepieas) in Greek temples. During the 5th century BC, the Greek historian Herodotus (484–424 BC) treated athletes and gymnasts, and his student, Hippocrates (468–370 BC), developed the discipline of anatomy. Hippocrates also did not believe that gods caused diseases—a revelation that led to the Hippocratic Oath, by which physicians still work. Several centuries later, the Greek surgeon Galen (131–201 AD) developed methods of an operation to remove arrows from the body. Galen, probably the first physical therapy practitioner, also taught trainers and developed techniques to increase the strength of athletes. He was the first to treat injured gladiators and to describe in detail the ligaments of the

extremities. Truly, he was the first sports medicine physician.

According to Rang,¹ “Sports were a slow activity in the ancient world. The Greeks had no team sports. The men were naked, and women were not allowed to participate or watch. The Romans had become a spectator occupation, with battles to the death between gladiators, men, and wild animals, and then chariot races. In mediaeval times, peasants only worked, prayed, and fought. The nobles had leisure for falconry, the chase, and jousting. These would have been lean times for a sports doctor.”

It seems that the ancient sportsmen would kick any object. 2000 years ago, the Spartans and Romans invented a game similar to soccer. And in 1000 AD, when the Danes occupied England, Britons would use heads of dead Danes as a kicking object. When they ran out of heads, they resorted to using an inflated cow bladder. The English developed a contest between two villages: a bladder was placed at the midpoint between the villages, and the winner was the village that kicked the bladder into the opposing town. During the tournament, they also kicked the opposing team and any living animals. This sport was vicious, and many players were maimed or killed. During the reign of King Henry II (1154–1189), the game was named soccer, and the king attempted to stop the game several times, calling the pastime “a combination of soccer, vandalism and mass modified-homicide.”¹ Royal Proclamations tried to stop the activity—6 times until 1581. Obviously, they failed. In 1823 in Rugby, William Ellis had the nerve to pick up the ball and run with it; hence, rugby football was born in England.

In the United States, however, football began in the early 1800s—then, without rules, padding, helmets, and officials. Consequently, there were many serious injuries and deaths. The first university football match was held on 6 November 1869, between Princeton and Rutgers. Rules were quite different from modern American football: each team had 25 players, the goal posts were 25 yards apart, and the bar was raised at liberty. The ball was moved using methods used in soccer and rugby. When Walter Camp joined Yale University, the rules changed drastically. In 1880, teams had 15 players and the centre ‘snap’ was created to start the ball. In addition, there were different goal scores for passing the goal line. More referees were added to the game to decrease the penalties and injuries resulting from breaking of rules. Camp also ruled that tackling below the knees was legal, thereby causing another source of injuries. The ‘wedge’, designed by Camp, was driven into the line of the opponents with the ball carrier in the centre of the wedge. Shortly after the adoption of Camp’s wedge, Lorin Deland of Harvard invented the ‘flying wedge’, which was even more dangerous for the players.²

In 1902, an editorial in the *Journal of the American Medical Association*³ stated that “The football season is now over and leaves behind it a respectable record of casualties, enough to supply a respectable Spanish-American War.” It continued, “The reports of casualties give plenty of evidence of this [slugging]; we had the records—‘kicked in the head’, ‘stabbed in the back’—showing that the game is made absolutely murderous at times.” The carnage was so severe that in 1902, President Roosevelt vowed to abolish football; however, he was not successful. At this time, rules and officials were introduced to the game. Helmets were required, and most players had padding in their uniforms. These measures minimised injuries. Nevertheless, the game is still violent today and deliberate injuries are sometimes incurred.

The National Football League (NFL) reports an increasing rate of injuries among players of American football.⁴ Such increase is thought to be due to many factors. Artificial grass, introduced in the 1980s, may have been a major contributing factor, especially to knee injuries. Other factors that increase injury rates include the use of drugs and alcohol; the size, speed, and strength of players; overstraining while weight-lifting; dangerous training; and violence, including vengeance.

Physicians in the United States did not cope very well with football in the 1950s. Typically, they felt overworked and were not sympathetic with the injured athletes. Physicians who were willing to accept injured players prescribed only rest: confinement to bed for 6

weeks, use of crutches or canes for 6 weeks, use of casts for 6 weeks, and stopping playing.¹ Six was the magic medicine and a sure cure! To make matters worse, doctors or trainers who accepted athletic patients were despised; coaches would not let injured players see a doctor because they would usually never see the players again.

However, during the 1960s, physicians—especially orthopaedic surgeons—were concerned about sports injuries. Associations were founded with a focus on sports injuries; hence, the subspecialty of sports medicine was born. Furthermore, existing bodies, such as the National Athletic Trainers Association (NATA), formed in 1950, saw an increase in membership; today, NATA is made up of 27 000 trainers. And the American College of Sports Medicine, established in 1953 to focus on the physiology of athletes in sports, now concentrates on athletic and exercise injuries.

The Arthroscopy Association of North America (AANA) was established in 1981. Since then, its membership has increased rapidly. Members have a wide range of educational programmes from which to choose. The association was the first to create ‘wet labs’ i.e. models and cadavers to operate in laboratories for operation practice, which are based at their Learning Center at Rosemont, Illinois. The AOSSM and the AANA are very close fraternally, and many of the members of one organisation belong to the other. In 1964, the American Academy of Orthopedic Surgeons (AAOS) formed the Committee of Sports Medicine, with Jack Hughston as the Chairman. The committee lasted for 7 years and tutored many orthopaedic surgeons about the correct care of athletic injuries. The AAOS Committee of Sports Medicine gave birth to the AOSSM in 1971. In December of that year, a number of orthopaedic surgeons who were interested in sports medicine received a letter from Don H O’Donoghue requesting their presence at a 9:30am meeting on 30 January 1972, during an AAOS meeting in Washington DC. 75 orthopaedic surgeons were invited, and 58 were present at the meeting. These 75 invitees were designated as the founding members of the AOSSM, and the meeting on 30 January 1972 became its first organisational meeting. At this inaugural meeting, Don H O’Donoghue was elected first President of AOSSM. Indeed, he was called the ‘father of AOSSM’, and the ‘modern father of sports medicine’. In the following year, the first AOSSM annual meeting was held in conjunction with the AAOS meeting in Las Vegas. At this meeting, Jack C Hughston recommended that the journal he had been editing be named the *Journal of Sports Medicine*, and be taken over by the AOSSM.

The first 10 presidents of AOSSM are listed in the order they were elected. They were Don H O’Donoghue,

Joseph D Godfrey, Jack C Hughston, Joe W King, Leslie M Bodnar, Marcus J Stewart, John C Kennedy, James A Nicholas, Robert L Larson, and Fred L Allman Jr. These great men built the foundation of AOSSM.⁵

Don H O'Donoghue had conducted research on ligament injury in dogs in the early 1960s. With that research experience, he moved to the repair of knee ligaments in humans. He opened the door to many successful surgical knee ligament repairs. His techniques were so successful that surgeons from around the world visited him in Oklahoma. However, exuberant surgeons began to believe that all knee injuries should be operated on. This assumption was found to be a serious mistake, especially with the medial collateral ligament (MCL). At a sports medicine meeting, one of these exuberant surgeons proudly

announced that he operated on more than 50% of cases referred to his team, and 85% were MCL tears. It was not until late 1960s, when it was discovered that most isolated MCLs did not need surgical treatment. We were learning.

I therefore believe that American football was the stimulation for the organisation of all these sports medicine associations. Athletes will continue to injure themselves, and sports medicine practitioners must accordingly stay abreast of new injuries that may damage athletes' musculoskeletal systems. These practitioners must continue their ability to share their knowledge with other physicians who are involved with sports medicine. As Marcus J Stewart (AOSSM Past President 1977–1978) said, "We're not just physicians and surgeons. We're fellows with all the athletes of the world."⁵

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