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ATHLETES HEALTH IN INTERNATIONAL SPORT FEDERATIONS MAIN DOCUMENTS PARTICIPATING AT 2021 OLYMPIC GAMES IN TOKYO

ZDRAVJE ŠPORTNIKOV V URADNIH DOKUMENTIH MEDNARODNIH ŠPORTNIH ZVEZ UDELEŽENK OLIMPIJSKIH IGER V **TOKLIU LETA 2021**

ABSTRACT

The International Olympic Committee sets the direction for the development of sport, and international sports federations are responsible for incorporating that direction into their rules to maintain their presence at the Olympics. At the 2021 Tokyo Olympic Games, 33 international sports federations represented with their sports. We have analyzed the statutes of 33 international sports federations based on the keywords "health", "medicine", "doping" and "injuries". Doping is mentioned in all major documents, health is omitted by 30% of federations, medicine is not mentioned by 21% of federations, and only eight international sports federations mention injuries, representing 24% of federations. From the data on doping and injuries in sports, we can conclude that doping is a minor problem compared to injuries. The main reason for acute and chronic injuries could be related to the technical rules for practicing the sport, not to the constitution. If the number of injuries is to be reduced, the technical rules should be changed first, as the injury statistics per sport

Keywords: doping, acute, chronic, injuries, technical rules

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IZVLEČEK

Mednarodni olimpijski komite določa smer razvoja športa, mednarodne športne zveze so odgovorne za vključitev te usmeritve v svoja pravila za ohranitev prisotnosti na olimpijskih igrah. Na olimpijskih igrah v Tokiu 2021 je bilo 33 mednarodnih športnih zvez zastopano s svojimi športi. Analizirali smo statute 33 mednarodnih športnih zvez na podlagi ključnih besed "zdravje", "medicina", "doping" in "poškodbe". Doping je omenjen v vseh pomembnih dokumentih, zdravje ni omenjeno pri 30 % zvez, medicine ne omenja 21 % zvez, le osem mednarodnih športnih zvez omenja poškodbe, kar predstavlja 24 % zvez. Iz podatkov o dopingu in poškodbah v športu lahko sklepamo, da je doping manjša težava v primerjavi s poškodbami. Glavni razlog za nastanek enkratnih in ponavljajočih poškodb bi lahko bil povezan s tehničnimi pravili za udejstvovanje s športom in ne s statutom. Če želimo zmanjšati število poškodb, se morajo spremeniti tehnična pravila, kot kaže statistika poškodb po športih.

Ključne besede: doping, poškodbe, tehnična pravila

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INTRODUCTION

According to the World Health Organization definition, health is "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Who, 2006). It is important to know the definition of health and refer to the documents of the sports federations involved in the Olympic Games. The Olympic Games (OG) are administered by the International Olympic Committee (IOC). The Olympic Charter is the main document of the IOC, which sets out the basic principles of Olympism and the rules and statutes adopted by the IOC (IOC, 2020).

Of the five basic principles, the following three relate to health: 1.) Olympism is a philosophy of life that emphasizes the qualities of the body, will, and mind, combining them into a balanced whole. By combining sport with culture and education, Olympism aims to create a way of life based on the joy of effort, the educational value of good example, social responsibility and respect for universal fundamental ethical principles; 2.) the aim of Olympism is to place sport at the service of the harmonious development of humanity, in order to promote a peaceful society that strives to uphold human dignity; 3.) the practice of sport is a human right. Everyone must have the opportunity to practice sport, without any discrimination and in the Olympic spirit, which requires mutual understanding in the spirit of friendship, solidarity and fair play.

The mission and role of the IOC are described in more detail in the main document of the International Olympic Committee (chapter 2). Only the parts relating to ethics, health and doping are reproduced below: 1. To encourage and support the promotion of ethics and good conduct in sport and the education of youth through sport, and to work to ensure that the spirit of fair play prevails in sport and that violence is outlawed; 4. To cooperate with appropriate public or private organizations and authorities in an effort to place sport at the service of mankind and thereby promote peace; 9. protect clean athletes and the integrity of sport by leading the fight against doping and rejecting all forms of manipulation of competitions and related corruption; 10. Promote and support measures related to medical care and the health of athletes; 11. to oppose any political or commercial abuse of sport and athletes; 12. To promote and support the efforts of sports organizations and public authorities for the social and professional future of athletes; 18. To promote safe sport and the protection of athletes from all forms of harassment and abuse.

The IOC has a Medical and Scientific Commission that has the following tasks: to implement the World Anti-Doping Code and all other IOC anti-doping rules, especially on the occasion of OG; and to draw up guidelines for the medical care and health of athletes. The Olympic Charter states that the international federations within the Olympic Movement are responsible, among other things, for establishing and enforcing the rules for the practice of their respective sports in accordance with the Olympic spirit and for ensuring their application, as well as for promoting and supporting measures related to the medical care and health of athletes.

In 2012, a report on sports injuries and illnesses was published on OG: a total of 10 568 athletes (4676 women and 5892 men) from 204 National Olympic Committees (NOCs) participated in the study. National Olympic Committee (NOC) and London Organising Committee of the Olympic and Paralympic Games (LOCOG) medical staff reported 1361 injuries and 758 illnesses, representing an incidence of 128.8 injuries and 71.7 illnesses per 1000 athletes. Overall, 11% and 7% of athletes suffered at least one injury and illness, respectively. The risk of injury was highest in taekwondo, football, BMX, handball, mountain biking, track and field, weightlifting, field hockey, and badminton, and lowest in archery, canoe slalom and sprint, track cycling, rowing, shooting, and horseback riding. 35% of injuries were expected to prevent participation in competition or training. Women were 60% more likely to become ill than men (86.0 vs. 53.3 illnesses per 1000 athletes). The highest rates of illness were in athletics, beach volleyball, football, sailing, synchronised swimming, and taekwondo. In junior tennis, the reported injury frequency ranged from 1.2 injuries per 1000 hours of play (Spinks et al., 2006) to 21.5 injuries per 1000 athletic exposures (Hutchinson et al., 1995). A total of 310 illnesses (41%) involved the respiratory system, and the most common cause of illness was infection (n=347, 46%) (Engebretsen et al., 2013).

The report on the incidence of sports injuries and diseases OG contains the following data: A total of 11 274 athletes (5089 women, 45%; 6185 men, 55%) from 207 NOCs participated in the study. Rio 2016 NOCs and medical staff reported 1101 injuries and 651 illnesses, representing 9.8 injuries and 5.4 illnesses per 100 athletes during the 17-day period. Overall, 8% of athletes suffered at least one injury and 5% suffered at least one illness. Most injuries occurred in BMX cycling (38% of injured athletes), boxing (30%), mountain biking (24%), taekwondo (24%), water polo (19%), and rugby (19%), and the fewest in canoe slalom, rowing, shooting, archery, swimming, golf, and table tennis (0% to 3%). Of the 1101 reported injuries, an estimated 40% were absent ≥ 1 day and 20% were absent ≥ 7 days (>). Women were 40% more likely than men to become ill. Illnesses generally occurred less frequently than injuries, with the highest incidence recorded in diving (12%), open-water marathon (12%), sailing (12%), canoe slalom (11%), horseback riding (11%), and synchronized swimming (10%).

Illnesses were also less severe; 18% would likely result in missed work. Of the illnesses, 47% were related to the respiratory system and 21% to the gastrointestinal tract (Soligard et al., 2017).

The incidence of injury and illness at OG in 2012 and 2016 is similar and also similar to OG in 2008. It appears that the incidence of injury and illness at OG is fairly constant. In Slovenia, the National Institute of Public Health (for 2 million citizens in Slovenia) publishes the incidence of injuries during recreational activities, which for 2014 is 7.3% for men and 5.3% for women. Diseases of the respiratory system occurred in 10.1% of men and 16.9% of women in 2018, while diseases of the digestive system occurred in 4.4% of men and 6.6% of women (Dorminy et al., 2015).

Injury and disease surveillance and epidemiological studies are fundamental elements of concerted efforts to protect the health of athletes. To promote consistency in the definitions and methods used and to allow comparison of data from different studies, research groups have published 11 sport- or setting-specific consensus statements on the epidemiology of sports injuries (and possibly diseases) to date. The goal was to further improve consistency in data collection, injury definitions, and research reporting through an updated set of recommendations for sports injury and disease studies, including a new expansion of the Strengthening the Reporting of Observational Studies in Epidemiology checklist (STROBE). The statement provides recommendations for data collection and research reporting that cover the following key components: Definition and classification of health problems; severity of health problems; recording and reporting of athlete exposure; expression of risk; burden of health problems; characteristics of the study population; and methods of data collection. The IOC supports ongoing surveillance programmes and in-competition and out-of-competition studies to describe trends and patterns in injuries and illnesses, understand their causes, and develop interventions to protect the health of athletes. Implementation of the methods described in this statement will promote consistency in data collection and research reporting (Bahr et al., 2020).

Previous research has shown that the injury rate and the number of lower respiratory and digestive system diseases are high compared to the normal population. There is also a big difference between the medical health problems of athletes and doping cases, where doping is almost absent, and the occurrence of injuries.

In 2012, the World Anti-Doping Agency (WADA) conducted 267,645 doping tests, of which 4723 were positive, representing 1.76% of all samples. Since 2012, WADA has had the right to test collected samples eight years after they were taken, and many of the samples that were not positive in 2012 at OG were later found to be positive. To date, 116 cases have been positive and athletes have been disciplined, representing 0.01% of all athletes at OG (Wintermantel et al., 2016).

At OG 2016, WADA collected 4913 samples from 11274 athletes, and 29 of them contained banned substances, which corresponds to 0.003% (Pereira et al. 2017). According to WADA rules, it is possible that some samples will be positive also in the next years, but the probability that positive samples will be more frequent than in OG 2012 is very low.

Despite efforts to remain injury and illness free, it seems that all measures in sports have either already reached their limits or there is still much room for improvement. The first step would be to analyze for all sports involved in OG how they deal with health-related issues in their main official documents, statutes or laws that give instructions to international sports federations. We will analyze the sections on health, medicine, doping and injuries.

Tokyo OG 2021 includes the following sports regulated by a world sports organization: Aquatics. Archery, athletics, badminton, baseball, basketball, boxing, canoeing, cycling, equestrian, fencing, field hockey, soccer, golf, gymnastics, handball, judo, karate, modern pentathlon, rowing, rugby heptathlon, sailing, shooting, skateboarding, sport climbing, surfing, table tennis, taekwondo, tennis, triathlon, volleyball, weightlifting, and wrestling.

METHODS

The sample includes international sports federations (ISF) responsible for conducting sports disciplines at OG 2021 in Tokyo. The following international federations are included: Aquatics (FINA), Archery (WA), Athletics (IAAF), Badminton (BWF), Baseball (WBSC), Basketball (FIBA), Boxing (IOC), Canoeing (ICF), Cycling (UCI), Equestrian (FEI), Fencing (FIE), Field Hockey (FIH), Football (FIFA), Golf (IGF), Gymnastics (FIG), Handball (IHF), Judo (IJF), Karate (WKF), Modern Pentathlon (UIPM), Rowing (FISA), Rugby Sevens (RW), Sailing (WS), Shooting (ISSF), Skateboarding (WS), Sport Climbing (IFSC), Surfing (ISA), Table Tennis (ITTF), Taekwondo (WTF), Tennis (ITF), Triathlon (ITU), Volleyball (FIV), Weightlifting (IWF), and Wrestling (UWW) (33 sports federations in all).

RESULTS

The variables are paragraphs that are related to health, medicine, doping and injury and included in statutes or constitutions.

Table 1. Health related paragraphs and definitions in documents of international sport federations.

Federation, Statutes	Paragraph, Definition
Aquatic sports (FINA), (FINA Federation Internationale De Natation Constitution, 2021)	Objectives: The Sport Medicine Committee shall deal with all medical aspects of all Aquatic disciplines. The powers and duties of the Sports Medicine Committee are: a) to provide medical and sport science expertise to the Bureau and to give recommendations on any matter regarding sport science, b) to consider the development of the medical, sanitary, and medical control rules and to submit proposals for legislation to the Bureau, c) to give recommendations on any matter regarding conditions of health in the practice of swimming, open water swimming, diving, high diving, water polo, artistic swimming and Masters, and d) to assess the availability of appropriate medical care for FINA athletes and Officials at FINA Competitions.
Archery (WA), Constitution 15.1.2020 (WA World Archery Constitution and Procedures, 2021)	Objectives: To protect clean athletes and the integrity of sport, by substantially contributing to the fight against doping and by taking action against all forms of manipulation of competitions and related corruption; To seek to ensure safe and harassment-free environment for all people involved at the events. Athletes competing in or preparing for Championships, Games, International and National Tournaments controlled by World Archery shall agree to submit to a duly Olympic doping control or any other medical test or examination decided by World Archery. In the exceptional event that the gender of a competing athlete is questioned, the Medical & Sport Science Committee or the IOC shall have the authority to take all appropriate measures for the determination of the gender of an athlete. The inquiry and proceedings shall be kept confidential. However, in the case where the gender challenge is upheld, the appropriate parties shall be informed of the result. The World Archery medical provisions are intended to safeguard the health of the athlete, and to promote the ethical concepts as foreseen by fair play, the Olympic spirit and medical practice. World Archery adopts the Olympic Movement Medical Code, as it may be amended from time to time. The Medical & Sport Science Committee shall follow and implement the principles laid down in such Code as suitable to World Archery purposes. Updated version of the Olympic Movement Medical Code is available on www.olympic.org/medical-commission World Archery policy regarding the participation in Events of individuals who have undergone sex reassignment is to comply with the applicable IOC rules and interpretations as may exist from time to time. All participants in World Championships and International Tournaments have a right to medical care, to at least the standard received in their home country.
Athletics (IAAF), Constitution, 1.1.2019 (IAAF International Association of Athletics Federations, 2019)	Purposes: protects clean athletes in Athletics by applying and enforcing the World Anti-Doping Code including implementing rules, programmes, systems and disciplinary measures; advance the sport of Athletics through ongoing research and development including the dissemination of technical, medical, logistical and other information about Athletics. The role of the Athletics Integrity Unit is to protect the integrity of Athletics. It will do this through education and testing, and by investigating and prosecuting anti-doping rule violations and other breaches of integrity within the Rules and Regulations (including the Integrity Code of Conduct and Rules based on the World Anti-Doping Code).

Badminton (BWF), Constitution, 23.5.2019, Governance chapter (BWF Constitution Of The Badminton World Federation, 2020)	Purposes and objectives: protect the integrity of badminton through programmes for the prevention and fight against doping and match-fixing. In particular, the Federation will ensure compliance with the World Anti-Doping Programme. Principles: all those working and participating in Badminton including players, coaches, technical officials, and administrators have a right to compete, work and participate in a harassment-free environment. The Federation shall use its Code of Ethics to ensure there are no forms of harassment whether that be physical, psychological, or other forms of harassment.
Baseball (WBSC), Statutes, 13.10.2017 (WBSC World Baseball Softball Confederation Statutes, 2017)	Objectives: to promote and encourage the development of physical attributes and moral values and ethical principles, mutual respect, and worldwide peace, which are the basis of our Sport, through the organization of world, continental, regional, sub-regional and national competitions. To promote clean sport, fight against doping through prevention and education and adhere to the World Anti-Doping Code (WADC). The following Commissions are mandatory: Anti-Doping and Medical Commission, The Medical and Anti-Doping Commission advises the Executive Board on all matters relating to athlete health and anti-doping, and for implementing the WBSC Anti-Doping Code. WBSC has adopted and administers and enforces a comprehensive set of anti-doping control programs addressing both in-competition and out-of competition testing ("Anti-Doping Program").
Basketball (FIBA), General Statutes, 29.8.2019 (FIBA Fédération Internationale de Basketball General Statutes, 2019)	Mission and role: formulate or adopt and implement appropriate policies in relation to discrimination, sexual harassment. equal opportunity, equity, drugs and doping, health, safety, infectious diseases, and such other matters as arise from time to time as issues to be addressed in basketball. The role of the Medical Commission is to advise the Secretary General on: a. The research and practice required to raise the quality of health care generally for players; b. The health care system available at the main official competitions of FIBA in order to ensure that it is capable of delivering care uniformly, effectively, and consistently during those competitions; c. How to ensure that the highest quality of sports medicine knowledge is disseminated through the entire sports medicine team associated with the sport of basketball (professionals, coaches, scientists, and administrators) through the provision of training, continuing education, and other resources; and d. Purely medical matters relating to the International Olympic Committee Medical Code and/or the World Anti-Doping Code.
Boxing (AIBA, IOC¹), AIBA Statutes. 3.11.2018 (AIBA International Boxing Association Statutes, 2018)	Objectives: to generally promote boxing as a healthy and educational activity for people, to protect the safety of Boxers and their welfare at all levels, notably by promoting and controlling good sporting practice; to regulate boxing in all its forms in accordance with these Statutes, AIBA Bylaws, AIBA Technical Rules and AIBA Competition Rules, AIBA Code of Ethics, AIBA Disciplinary Code, AIBA Procedural Rules and AIBA Anti-Doping Rules: to combat doping and integrity issues that might damage the sport of boxing.
Canoeing (ICF), Statutes, November 2018 (ICF International Canoe Federation Statutes, 2019)	Objectives: to take measures to prevent endangering the health of athletes; to encourage the development of recreational canoeing as a contribution to the healthy development of all ages. The duties of the Medical & Anti-Doping Committee are: a) To advise the ICF, its affiliated National Federations and the ICF Standing Committee on medical and Anti-Doping matters; b) To monitor the medical services at World Championships; c) To investigate and promote the prevention of sports injuries; d) To study, monitor and publicize biological aspects of training; e) To assist in the basic medical and Anti-Doping education of coaches; f) To formulate and publish guidelines for medical services; g) To plan and process educational Anti-Doping measures for athletes and National Federations; h) To give medical advice to the ICF Executive Committee and monitor the Doping-control panel in Anti-Doping matters; i) To establish Doping-control research programmes and participate in medical working groups on an international level (IOC etc.); j) To nominate the ICF Medical officers for international competitions, World Cups and World Championships (ICF Competitions) and Olympic Games; k) To

	establish Anti-Doping test procedures; l) To conduct scientific measures and
	seminars.
Cycling (UCI), Constitution, 27.9.2019 (UCI Union Cycliste Internationale Constitution, 2019)	Objectives: to promote sportsmanship, integrity, ethics and fair play with a view to preventing all methods or practices such as corruption or doping, which might jeopardize the integrity of competitions, riders, officials and members or give rise to abuse of cycling. The judicial body of the UCI is the Anti-Doping Tribunal. The responsibilities and function of the Anti-Doping Tribunal are governed by the UCI Regulations and the UCI Anti-Doping Tribunal.
Equestrian (FEI), Statutes, 19.11.2019 (FEI Fédération Equestre Internationale Statutes, 2019)	Objectives: to promote the highest standards of organization, judging, stewarding, course designing, veterinary and medication control and anti-doping controls of human Athletes and Horses at International Events.
Fencing (FIE,) Statutes, July 2020 (FIE International Fencing Federation Statutes, 2020)	Mission: to promote and develop the struggle against doping and to establish rules and appropriate measures to protect the health of athletes and prevent any abuse. Shall cooperate with the IOC, NOCs of the Member Federations, governments, sponsors, and investors holding bonds of respect and consideration, and stressing the importance of sport for the social development, culture, education, and health of its practitioners. Shall prohibit the FIE Family from suggesting or recommending promotion, advertising, or publicity of any good or service that can harm general health, healthy habits, environment. Shall promulgate the defense of human rights and promote and participate in actions to preserve natural resources and encourage healthy habits. This Commission's task is to examine all medical, dietetic, or climatic matters relating to fencing. It proposes all measures that may be useful in the struggle against drug abuse. It presents to the Executive Committee a report containing its suggestions or recommendations on all these issues. It presents to the Executive Committee a report which will be submitted to the Congress on all the proposals submitted to it. The drafting of the Congress decisions, in their final form, must be submitted to the Rules Commission or Legal Commission as applicable for approval by the Executive Committee. The Medical Commission will appoint an anti-doping panel of not less than 3 persons, whose members shall come from the Medical Commission. However, if there are insufficient members with adequate experience in anti-doping matters, the Medical Commission will recruit person(s) from outside of the Medical Commission, which person(s) shall require the approval of the Executive Committee.
Field Hockey (FIH), Statutes, 3.11.2018 (FIH International Hockey Federation Statutes, 2018)	Objectives: to preserve the integrity of the sport, including (without limitation) by adopting rules implementing the World Anti-Doping Code and other appropriate codes of conduct and ensuring that such rules and codes are enforced at all Hockey events sanctioned by the FIH, a Continental Federation and/or a member.
Football (FIFA), Statutes, June 2019 (FIFA Fédération Internationale de Football Association, 2019)	Objectives: to promote integrity, ethics and fair play with a view to preventing all methods or practices, such as corruption, doping or match manipulation, which might jeopardies the integrity of matches, competitions, players, officials and member associations or give rise to abuse of association football., With reference to art. FIFA shall take action especially, but not exclusively, against irregular betting activities, doping and racism. These activities are prohibited and subject to sanctions. FIFA is committed to respecting all internationally recognized human rights and shall strive to promote the protection of these rights. Medical Committee shall deal with all medical aspects of football, including the fight against doping.
Golf (IGF), Constitution, September 2018 (IGF International Golf Federation Consititution, 2016)	Objectives: to encourage and support measures related to the medical care and health of the athletes that participate in International Golf Federation competitions. Professional members ensuring that its competitions, athletes, and members are committed to safeguarding the integrity of golf and protecting clean athletes

	through the fight against doping and the prevention of the manipulation of competitions.
Gymnastics (FIG), Statutes, 1.1.2019 (FIG Fédération Internationale de Gymnastique Statutes, 2009)	Objective: to co-ordinate efforts for safe and healthy physical and moral development in gymnastics and the practice of all sports activities relating to it; to fight against all forms of doping, of violence and of sports injustice; to respect and implement the World Anti-Doping Code including its International Standards and to protect clean athletes. Drafted and approved by the Executive Committee in order to define decisions to be made for the organization and the control of all the events (e.g. Apparatus Norms, Accreditation, Award Ceremonies, Judges, Academies, World Cup events, Honorary Distinctions, Medical Rules, Anti-doping Rules, Licenses, Media, Publicity, Age Groups, etc.)
Handball (IHF), Statutes, 2.10.2019 (IHF International Handball Federation Statutes, 2019)	Purpose and objectives: to fight against doping in handball to protect the health of the players. The prevention of any use of doping shall be of special concern. The WADA Code and standards in force shall be an integral part of the Anti-Doping Regulations.
Judo (IJF), Statutes, 22.8.2019 (IJF International Judo Federation Statutes, 2019)	Objectives: respect international agreements for the protection of human rights as they apply to the activities of the IJF and its members and which ensure, in particular: maintaining conditions for the safety and well-being of participants and for medical care to maintain their physical and mental well-being. The IJF shall comply with the Olympic Movement Medical Code and the World Anti-Doping Code.
Karate (WKF), Statutes, 5.11.2018 (WKF World Karate Federation Statutes, 2018)	Objectives: the WKF will organize the World Karate Championships in collaboration with the member Federations are able to receive all the eligible participants and delegates on their territory, in full compliance with WKF antidoping and safety regulations and standards as well as with the World Anti-Doping Code ("WADA Code") and standards. The members of the Executive Committee cannot be appointed to the Medical Commission.
Modern Pentathlon (UIPM), Statutes, 1.1.2016 (UIPM International Union of Modern Pentathlon Statutes, 2015)	Objectives: the mission of UIPM is to promote integrity, ethics and fair play in the sport of Modern Pentathlon and constituent sports preventing the use and diffusion of any kind of doping; The statutes and rules of each Member must comply with the Statutes, the UIPM Code of Ethics, the UIPM Rules on Internal Organization, the UIPM Medical Rules and the UIPM Anti-Doping Rules and Procedures.
Rowing (FISA), Statutes and related bye-laws 1.2.2013 (FISA International Rowing Federation Rule Book, 2014)	Objectives: fairness and equality of opportunity FISA always seeks to ensure that its competitions and participants respect the principles of fairness and equality of opportunity. FISA carries out worldwide anti-doping tests, in and out of competition, and supports all appropriate measures taken in that field at the national and international level. Doping is strictly prohibited. The fight against doping is regulated by the World Anti-Doping Code, which the FISA Congress has formally adopted as FISA rules and that the FISA Council has the power to clarify and/or supplement, by appropriate Bye-Laws. Sports Medicine Commission responsibilities are: to oversee and advise on all medical aspects related to rowing; to monitor medical and safety services at World Rowing Championships and regattas of the World Rowing Cup; to investigate and promote the prevention of sports injuries; to formulate and publish guidelines for medical services; to document literature related to exercise physiology, sports medicine, and biomechanics; to formulate and publish anti-doping rules and to assist in putting them into effect.
Rugby sevens (RW) World Rugby Handbook, 14.1.2015 (WR World Rugby Handbook, 2015)	Roles, Powers and Responsibilities of the Executive Committee: to approve World Rugby Medical Policy. The preliminary review set out in Regulation shall be undertaken by a representative or representatives of World Rugby's Anti-Doping Advisory Committee.
Sailing (WS), Code of Ethics, 19.5.2019 (WS World Sailing Constitution, 2019)	Objective: all doping practices are strictly prohibited. The provisions against doping in the World Sailing Anti-Doping Code shall be scrupulously observed.

Shooting (ISSF), General Regulations, 25.6.2017 (ASSF International Shooting Sport Federation Constitution, 2019)	The Medical Committee shall: advise relevant ISSF Bodies regarding sports medicine and medical matters as well as matters relating to the IOC Medical Code and/or the WADA Code; support the organization and execution of anti-doping controls in ISSF Championships; and promote the exchange of knowledge, experience, and research in sport medicine matters through events and publications. Anti-Doping Control in the Olympic Games will be conducted according to the procedures established by the IOC. Anti-Doping Control in all ISSF Championships will be conducted in all events and categories according to procedures established by the ISSF Anti-Doping Regulations.
Skateboarding (WS), Statutes, 3.7.2019 (WS World Skate Statutes, 2019)	The main goals of World Skate are: to promote sports free from doping; to adopt an Antidoping Policy in accordance with current WADA code. World Skate acknowledges and recognizes the Statutes and the purposes of the IOC; the IOC anti-doping rules, the WADA CODE and of all the other International Sport Organizations whose World Skate is a member. World Skate requires all its members to adopt an Antidoping Policy in compliance with the current World Skate Antidoping Policy. If there is a conflict between the Antidoping Policy of a National Federation and the World Skate Antidoping Policy, then the World Skate Antidoping Policy shall prevail.
Sport climbing (IFSC) Statutes, 16.3.2019 (IFSC International Federation of Sport Climbing Statues, 2019)	Objectives: to fight against doping and all other processes and procedures that might undermine sporting equality; to implement Anti-doping Rules in accordance with the World Anti-doping Code. The Plenary Assembly has the following duties and powers: to appoint members to the Anti-doping, Ethics and Disciplinary and Appeals Commissions, and to appoint the Auditor. The function of the Anti-Doping Commission is to ensure that the IFSC complies with the World Anti-Doping Code. Its rules will comply with the World Anti-Doping Code. members of Anti-doping, Ethics, Disciplinary and Appeals Commissions, Medical Commission and Rules.
Surfing (ISA), constitution,18.9.2018 (ISA Constitution of the International Surfing Association, 2008)	As an International Surfing Federation recognized by the International Olympic Committee within the Olympic Movement, each member is also required to comply with the provisions of the Olympic Charter published by the International Olympic Committee and the World Anti-Doping Code published by the World Anti-Doping Agency, as amended from time to time.
Table tennis (ITTF) (ITTF The International Table Tennis Federation Handbook, 2019)	Principles: shall observe the general and fundamental principles of the Olympic Charter, including, but not limited to, the Code of Ethics and Compliance; the Code of Prevention of the Manipulation of Competitions, the Olympic Movement Medical Code and the IPC Handbook; and no provision of this Constitution shall be deemed to conflict with or derogate from those principles. Anti-Doping Rules. Objectives: to foster friendly sporting competition and to eliminate unfair and unsporting practices such as match fixing, match corruption, irregular and illegal betting, doping or illegal equipment to enhance performance. Anti-Doping Manager depending on the circumstances and according to the ITTF Anti-Doping rules procedures.
Taekwondo (WTF), Statutes, 4.12.2017 (WT World Taekwondo Federation Statutes, 2017)	Statutes, rules, and codes: the WTF strictly observes the World Anti-Doping Agency ("WADA") Code. The WTF has promulgated the WTF Anti-Doping Code in conformity with the WADA Code. MNAs shall include in their regulations the procedural rules necessary to effectively implement the WTF Anti-Doping Rules and the IPC Anti-Doping Code. The Anti-Doping and Medical Committee studies medical affairs related to taekwondo competitions and establishes necessary guidelines.
Tennis (ITF) Constitution, 27.9.2019 (ITF The Constitution of International Tennis Federation Limited, 2019)	The mission and role of the ITF within the Olympic Movement is to promote and support activities related to medical care and athlete health. The Tennis Anti-Doping Programme is set out in full in a rule book that is published and distributed by the ITF to all National Associations. The purpose of the Programme is to implement the World Anti-Doping Code at the international level in the sport of tennis, and so to maintain the integrity of the sport and protect the health and rights of international-level tennis players. It is the responsibility

	of each National Association to implement the World Anti- Doping Code within its national jurisdiction.
	The duties of the Sport Science and Medicine Commission shall be to advise and make recommendations to the Board of Directors on all questions of a medical and scientific nature concerning the game of tennis and wheelchair tennis.
Triathlon (ITU), Constitution, 14.1.2020 (WT World Triathlon Constitution, 2020)	Objectives: to promote fair play in sport. In particular, to play a leading role in the fight against doping and manipulation against sport competitions both within Triathlon and its Related Multisports. Any cases of alleged doping shall be submitted by the chair of the Tribunal to the Court of Arbitration of Sport Anti-Doping Division. The Medical and Anti-Doping Committee advises Congress and the Executive Board on athletes' health, the promotion of health and physical activity, and the protection of clean athletes.
Volleyball (FIVB), Constitution, 5.2.2021 (FIVB Fédération Internationale de Volleyball Constitution, 2021)	Neither doping nor injuries are mentioned in the FIVB statutes. The same applies to the Doping or Medical Commission.
Weightlifting (IWF), Constitution and by- laws, 15.4.2017 (IWF Internationa Weightlifting Federation Constitution & By- Laws, 2017)	Objectives: at IWF World Championships, contacts the organizing committee to ensure the provision of medical supplies, doping control, transportation, first aid and medical services as required by the IWF Technical and Competition Rules and Regulations and related standard requirements. An application for membership implies complete recognition of the IWF Constitution & By-Laws, Technical and Competition Rules & Regulations and the Anti-Doping Policy. Accept and fully comply with the IWF Constitution, By-Laws, Technical and Competition Rules & Regulations and the Anti-Doping Policy.
Wrestling (UWW), Constitution, 1.9.2014 (UWW United World Wrestling Constitution, 1395)	Doping. The World Anti-Doping Code is mandatory for the Federation. The agreement entered between the Federation and the WADA shall be applicable to doping controls. The Federation shall also be entitled to carry out out-of-competition doping tests. Medical & Anti-doping Commission. The following Commissions are permanent commissions of the Federation: Medical & Anti-doping Commission.

Table 2. Frequency of words: health, doping (including anti-doping), medic (with abbreviation -ine, -al) and injur (with abbreviation -y, -ies) in Constitutions of International Sport Federations.

Federation	Health	Doping	Medic -ine, -al	Injur -y, -ies
Aquatic sports (FINA)	1	38	0	0
Archery (WA)	1	30	21	0
Athletics (IAAF)	0	11	1	0
Badminton (BWF)	1	15	0	0
Baseball (WBSC)	1	14	2	0
Basketball (FIBA)	3	5	11	0
Boxing (IOC)	1	9	2	0
Canoeing (ICF)	2	11	10	1
Cycling (UCI)	0	6	0	0
Equestrian (FEI)	0	5	8	0
Fencing (FIE)	11	13	15	4
Field Hockey (FIH)	0	8	0	0
Football (FIFA)	0	11	6	0
Golf (IGF)	1	5	1	0
Gymnastics (FIG)	1	7	1	0
Handball (IHF)	1	4	5	0
Judo (IJF)	0	4	5	0
Karate WKF)	1	4	1	0
Modern Pentathlon (UIPM)	1	3	4	0
Rowing (FISA)	7	5	27	4
Rugby sevens (RW)	0	5	6	0
Sailing (WS)	0	3	0	1
Shooting (ISSF)	1	16	6	1
Skateboarding (WS)	0	10	1	1
Sport climbing (IFSC)	2	13	4	0
Surfing (ISA)	0	4	0	0
Table tennis (ITTF)	5	110	13	13
Taekwondo (WTF)	1	11	7	0
Tennis (ITF)	1	27	1	0
Triathlon (ITU)	6	24	9	0
Volleyball (FIV)	1	0	0	0
Weightlifting (IWF)	6	48	20	2
Wrestling (UWW)	0	8	1	0

DISCUSSION

The data presented in Table 1 and Table 2 show comprehensive information on how international sports organizations address the issue of sports medicine, health, doping, and injuries at the formal level. Health in any paragraph in the main document of ISF is omitted by 10 federations, which represents 30% of all federations at OG. Doping is mentioned in all main documents of all ISF. Medicine is not mentioned by seven ISF, which represents 21%. And only eight ISF are dealing with injuries, which represents 24%. It is more than obvious that all ISF are under the same directions regarding doping. It can be recognized, according to our analysis, that doping is a mostly dangerous practice in sport. Perhaps primarily not from medical reasons, but from the perspective of fair play, giving to all an equal starting position, which should not be enhanced by external help of drugs. For those who fail to respect doping rules, constitutions and statutes presents protocols on how to deal with them and how they can be disciplined.

When we compare data from previous OG about injuries and doping with ISF constitutions and statutes, it is notable that doping is not such a big problem anymore, and it was not even the biggest problem of sports at all. In a very extensive and comprehensive publication of the IOC Medical Commission (2010), the area of injuries for all Olympic sports is presented in great detail. The requirements of each sport, an overview of scientific work related to injuries, causes and risk factors for injuries and injury prevention are comprehensively presented.

How aware of those problems are particular ISF and to which areas they give more focus? Canoeing federation states that they will take measures to prevent endangering the health of athletes; following this statement is a full list of tasks and duties. This is a unique ISF orientation. Aquatic sports, basketball give the medicine committee a possibility to give recommendations regarding conditions of health in their sports. Archery federation is more oriented into the determination of the athletes' gender and alcohol is a forbidden drug (mostly for safety reasons). Athletics federation is focused on athletes' integrity. Badminton federation is focused on match fixing and harassment-free sport. Cycling, besides medical aspects (mostly doping), emphasizes the fight against corruption. Fencing federation protects athletes from abuse, practices human rights and takes care of healthy habits and environment. Football federation is focused on human rights and emphasizes the fight against racism. Gymnastics federation is oriented to safe and moral development in gymnastics, and against injustice.

Handball federation aims to protect the health of the players. Karate federation has no special paragraphs about athletes.

If we conduct sport in the spirit of "Mens sana in corpore sano" (a healthy mind in a healthy body), then the biggest problem in sport are injuries, which are mostly related to the content of rules on how to conduct a particular sport. Rules are causing acute injuries, which are mostly defined as accidental sport situations. Already from rules which define sport's techniques and how it should be performed, we can recognize the most important critical points in the sport. Head and spine acute injuries seem to be most important to prevent. Collisions with the head are most critical. In some combat sports, ISF defines actions that are allowed and rewarded and the opposite. However, despite the protection (helmets), head injuries still frequently occur in striking and kicking sports (boxing, taekwondo, karate), while in grappling and throwing sports (judo, wrestling) they occur slightly less frequently (Hammami et al, 2018). A special case are rules that allow collision head to apparatus (e.g. football fast ball, with mass of 0.45 kg, can cause head acceleration of up to 50.7G (Dorminy et al., 2015), which is not in the rules, but it happens often between players when competing for a high ball, and there are many head injuries such as lacerations, contusions and fractures (Bobian et al., 2016). When ISF (e.g. FIG, FINAdiving WS, IJF, IWF) prescribes expected body positions and these have an important effect on performance for various reasons, injuries occur after improper landing on the ground, by the apparatus/athlete or by the water (Boden & Jarvis, 2009; Kruse & Lemmen, 2009), resulting in severe vertebra injuries. Some ISF rules in sport games define actions not allowed against other player's trunk. Even though such actions are not allowed, they do happen, but are penalized, and serious vertebra injuries are rare.

On other hand, when we conduct sport in the spirit of Altius, Citius, Fortius (faster, higher, stronger), health is not most important anymore, as each word relates to stretching the limits of the individual. Long-term one-sided load according to ISF technical rules causes mostly chronic injuries. ISF which supports one body side load (tennis, table tennis, shooting, golf, fencing, archery, badminton, athletics, baseball, rowing) have numerous chronic injuries of spine and overloaded body side parts. Even for sports that seem to be symmetrical (e.g. women and men artistic gymnastics), it was found that FIG regulations stimulate asymmetric movements (Čuk, 2016), and also injuries are adequate (Campbell et al., 2019). There is a set of fighting sports, which by rules cannot be supposed as asymmetric, such as boxing, judo, taekwondo, karate. In those sports, the aim is to use the weaker athlete's side, which means they are asymmetric in praxis. The highest symmetricity by technical rules can be found in swimming, canoeing and

cycling, but there are again a lot of chronic injuries, such as low back injuries and overuse syndrome of shoulders and knees (Barrios et al., 2014; Holland et al., 2018; Trinidad et al., 2020).

ISF educates coaches on how to avoid injuries by complex planning, but there are still huge numbers of injuries. And it seems that nobody would like to address proper action regarding the rules. In some cases, very simple rule changes can be adopted for lowering the number of injures because of the one-sided load. For example, sports with a dominant body side (e.g. fencing, table tennis and others) should change the placement of apparatus into the other hand after each point. In sports where maximal achievement is a result of the dominant side (e.g. long jump, high jump), two results should be required: one with the use of the left and one with the right side. In combat sports, protective wearing should be mandatory, and in some sports punches to athletes' head should be forbidden. In some sports (e.g. artistic gymnastics) asymmetrical elements should be valued less than symmetrical ones. In sports where asymmetry is defined by apparatus design (e.g. rowing in doubles), the apparatus should be redesigned to become symmetrical. Such simple rule changes would likely improve the sport very quickly and benefit the health of athletes.

CONCLUSION

Sport is conducted under two main ideas: "Mens sana in corpore sano" and "Altius, Citius Fortius". In the first, health is mentioned as the most important goal; in the second, it is probably in fourth or lower place. The IOC, which is responsible for Olympic sports, and the ISF have focused mainly on the anti-doping program in recent decades. However, according to available data, doping is a smaller problem than sports injuries.

The fight against injuries in sport shows a very low official commitment of the ISF. ISF's main documents (statutes, constitutions) show that the medical problems of its sports and the health of athletes in general are not in its focus, and when they are in focus, the real reasons for injuries are not addressed. The rules governing the practice of certain sports are the primary cause of acute and chronic injuries. According to our analysis, the proposed changes could likely have a strong effect on reducing the number of injuries.

Among the important conclusions of this article is the initiative of athletes from different sports asking the IOC to develop a starting point for all ISFs to regulate the area of doping

(information, detection, and sanctioning) and the area of injuries in their documents (injury reduction targets, education of coaches in prevention procedures, standardized procedures to analyze the nature and frequency of injuries). The current regulation of formal starting points shows great differences between sports in the regulation of both areas and the prevention of doping and injuries. In any case, both areas require a common and comprehensive approach to the regulation of formal starting points and the work of sports and other institutions in these areas. Ultimately, we must not forget that we are regulating the areas that affect athletes the most.

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The authors declare that they have no conflict of interest.

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