

## 前言

本刊一年四期收录Web of Science核心合集数据库有关体教融合、体医融合、后疫情体育、冬奥研究、兴奋剂研究相关主题的最新研究。

Web of Science核心合集包括Science Citation Index Expanded (SCIE)、社会科学引文索引(SSCI)、艺术和人文引文索引(AHCI)、Emerging Sources Citation Index (ESCI)、Conference Proceedings Citation Index (CPCI)、Book Citation Index (BKCI)等，是科学及学术研究的全球原创引证索引。其涵盖超过 250 个自然科学、社会科学、艺术和人文学科。

本刊旨在利用Web of Science核心合集平台为广大师生提供有关目前热点的最新研究内容。本期选录体教融合方面的文献12篇，体医融合方面的文献8篇，后疫情体育方面的文献12篇，冬奥研究方面的文献16篇，兴奋剂研究方面的文献16篇。

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## 体教融合

本期体教融合方面的研究共检索到英文相关文献12篇，研究热点：概念化体育教育中的游戏和体育教学；体育俱乐部活动中运动沉浸体验对高中生健康促进和终身体育的影响；体育与青少年体育的实践性研究；体育和体育科学专业学生通过身体表现发展创造性智力；评估和改进国家在体育、体育活动和体育方面的人权报告(PEPAS)；特许运动和身体活动管理协会对英国高等教育、体育和体育活动、职业教育和培训提供的变革性抱负的批判性分析；改善学校体育:教师-教练和体育指导的观点和经验等方面的研究。

**Pill S, Evans J R, Williams J, et al. Conceptualising games and sport teaching in physical education as a culturally responsive curriculum and pedagogy[J]. *Sport, Education and Society*, 2021: 1-15.**

### ABSTRACT

The Australian Curriculum: Health and Physical Education (Australian Curriculum, Assessment and Reporting Authority (2020a) requires all teachers to include Aboriginal and Torres Strait Islander peoples', culture and history where there is scope to meaningfully do so. However, there is a general absence in Australia and internationally of understanding culturally responsive pedagogy for those perspectives in teaching Physical Education (PE). This concept paper proposes an educational framework comprising Yunkaporta's (2009) 8 Ways Aboriginal Pedagogy and the Game Sense approach (GSA) (Australian Sports Commission [ASC], 1996). for games and sport teaching in PE to move towards a culturally responsive curriculum and pedagogy. We provide an empirical argument that curricula are instruments of colonisation and explain the creation of a cultural interface through games and sport as one approach for decolonising PE. We present an opportunity to 'close the gap' between Western and Aboriginal knowledge through the purposeful design of engagement in reconciliation,

respect and recognition of continuous living Aboriginal cultures. We use the game Parndo (ASC, 2000) to illustrate an example of how Yunkaporta's (2009) framework and the GSA become a solution for closing our identified gap. By proposing a culturally responsive curriculum, we focus on the importance of identity for all people and how curricula must be relevant and meaningful for all Australians. Importantly, Yunkaporta's (2009) 8 Ways is a product of 'cultural interface', co-created through dialogue between Aboriginal and non-Aboriginal educators. Our findings, although not transferable to other settings, nonetheless have relevance to other countries where there is a similar move to decolonise PE curricula.

**Aldous D, Brown D. A critical analysis of CIMSPA's transformative aspirations for UK Higher education sport and physical activity vocational education and training provision. *Sport Education and Society*. 2021;26(6):634-647.**

**ABSTRACT:**

This paper provides a critical analysis of the Chartered Institute for Management of Sport and Physical Activity's (CIMSPA) transformative aspirations for UK Higher Education (HE) based Sport and Physical Activity Vocational Education and Training (SPAVET) provision. In doing so, we apply selected elements of Giddens' Structuration theory to offer an analysis of CIMSPA's structural properties (as rules and resources) and dimensions (signification, domination and legitimation). Illustration of CIMSPA's structural properties and dimensions was developed through adopting an institutional analysis strategy alongside a document analysis method. Publicly available strategic documents and web-based resources (N=18) were selected and analysed using open-coding techniques. Our analysis shows how continued state-sanctioned decentralisation of the UK HE sector has led to CIMSPA becoming an increasingly influential transformative structure; attempting to use its structural dimensions and resources as a medium to gain and exercise power, to promote (signification) – market-orientated discourses, practices and pedagogies in HEI provision, (domination) –



in an attempt to significantly influence regulatory control over UK SPAVET provision and (Legitimation) – create partnerships which normalise its position and message within selected UK HEIs. We conclude that whilst the transformative aspirations of CIMSPA offer a number of possibilities for the HE SPAVET sector, they also raise critical questions. The central issue requiring debate is how these aspirations shift dialectical control towards vocationally focused, market-orientated principles and away from the liberal educational, research-led principles of some current UK HE SPAVET provision.

**Bennie A. Conducting practitioner research in physical education and youth sport: reflecting on practice. *Sport Education and Society*. 2021;26(7):812-814.**

**ABSTRACT:**

Conducting Practitioner Research in Physical Education and Youth Sport has much to offer for students commencing their research journey, academics seeking to explore new methods, and practitioners working as teachers/coaches in school and youth sport settings. This book encourages practitioners to take on the role of researcher to learn about ways to improve practice within the workplace through action research, narrative inquiry, autoethnography, and self-study. Overall, the text achieves its purpose of describing what these methods involve, why they are valuable and, most importantly, how they can be easily translated into practice across multiple contexts.

**Bessa C, Hastie P, Rosado A, Mesquita I. Sport Education and Traditional Teaching: Influence on Students' Empowerment and Self-Confidence in High School Physical Education Classes. *Sustainability*. 2021;13(2).**

**ABSTRACT:**

Physical Education (PE) is recognized for its value in developing personal and social development. However, the instructional approach adopted by the teacher may affect the

achievement of positive outcomes. This study aimed to examine the effects of two different teaching approaches, Traditional Teaching (TT) and the Sport Education (SE) model, on students' empowerment and self-confidence in high school PE classes. A total of 430 high-school students (66.7% male), aged 14–21 years ( $M = 16.22$ ,  $SD = 1.03$ ) enrolled in 10th, 11th and 12th grades, participated in this study. A pretest-posttest quasi-experimental design was used across 18 classes. Classes met two times a week during a period of 8 weeks for a total of 1080 min. The Psychological Empowerment Instrument was used to measure empowerment. Students' self-confidence was measured with the self-confidence sub-scale of the Competitive State Anxiety Inventory-2. The findings of the research revealed that only SE was effective in improving high school students' empowerment and self-confidence. In the TT group, no gains were found, even decreasing over time. These results reinforce the adequacy of SE in PE as a curricular model to be used by teachers, particularly for the development of students' empowerment and self-confidence.

**Choi SM, Sum KWR, Leung FLE, Ha SCA, Sit C, Yeung KH. Predictors of Physical Activity Levels in University Physical Education Implementing Sport Education. *Journal of Sports Science and Medicine*. 2021;20(3):516-524.**

**ABSTRACT:**

Purpose: Existing research suggests that students' attitudes toward physical education are positive through Grade 5, but become less positive as grade levels increase; this research is, however, missing student voice. The purpose of this study was to further understand why students' attitudes have been shown to decrease. Methods: Twenty-six focus group interviews (students  $N = 65$ ) were conducted over 2 years to discover what was influencing attitudes from fifth to eighth grade. Results: Three themes emerged: (a) curriculum leads to decreases in student attitudes (subthemes repetitive and boring, an overemphasis on competition, and fitness testing activities—what's the purpose and why am I on display?), (b) social factors impact attitude: sweating and changing, and

(c) physical education assumptions, the easy “A” (subthemes: perceptions of physical education teachers and the easy “A”). Conclusion: Allowing students to explain the reasons for decreases in attitudes contributes to improving the teaching and learning process.

**Gale JT, Haszard JJ, Scott T, Peddie MC. The Impact of Organised Sport, Physical Education and Active Commuting on Physical Activity in a Sample of New Zealand Adolescent Females. International Journal of Environmental Research and Public Health. 2021;18(15).**

**ABSTRACT:**

Background: The majority of adolescents do less physical activity than is recommended by the World Health Organization. Active commuting and participation in organised sport and/or physical education individually have been shown to increase physical activity in adolescents. However, how these domains impact physical activity both individually and in combination has yet to be investigated in a sample of New Zealand female adolescents from around the country. Methods: Adolescent females aged 15–18 y (n = 111) were recruited from 13 schools across eight locations throughout New Zealand to participate in this cross-sectional study. Participants completed questions about active commuting, and participation in organised sport and physical education, before wearing an Actigraph GT3X (Actigraph, Pensacola, FL, USA) +24 h a day for seven consecutive days to determine time spent in total, MVPA and light physical activity. Results: Active commuters accumulated 17 min/d (95% CI 8 to 26 min/d) more MVPA compared to those who did not. Those who participated in sport accumulated 45 min/d (95% CI 20 to 71 min/d) more light physical activity and 14 min/d (95% CI 5 to 23 min/d) more MVPA compared to those who did not. Participation in physical education did not seem to have a large impact on any component of physical activity. Participation in multiple domains of activity, e.g., active commuting and organised sport, was associated with higher accumulation of MVPA but not light activity. Conclusion Active commuting and sport

both contribute a meaningful amount of daily MVPA. Sport participation has the potential to increase overall activity and displace sedentary behaviour. A combination of physical activity domains may be an important consideration when targeting ways to increase physical activity in adolescent females.

**Gutierrez D, Miguel Garcia-Lopez L, Andrew Hastie P, Segovia Y. Adoption and fidelity of Sport Education in Spanish schools. European Physical Education Review. 2021.**

**ABSTRACT:**

The main objectives of this study were to determine the percentage of teachers applying the Sport Education (SE) model in a central region of Spain and to identify the features these teachers perceived they were using when applying it. As a secondary objective, an attempt was made to respond to the differences in the application of the model depending on the educational stage and gender, and to determine any differences between the curriculum features of teachers applying SE and those who follow other methodologies. One hundred and ninety-nine physical education (PE) teachers participated in this study and a survey research design was used. The results reinforce the notion that PE teachers apply SE in a contextualised and pragmatic way. A significant percentage of teachers (64.8%) reported using SE in their curriculums, which demonstrates the success in expanding this instructional model in this region. Teachers also perceived that they applied a high percentage of the SE elements, although there was low fidelity to most of those elements that were considered to be central to the model such as extended units and permanent teams. Results are discussed based on literature about which goals are achieved and which ones are not based on the degree of fidelity to the central elements of the model. Implications for teacher training and future research are provided.

**Ko YJ, Kim J-S. Effect of exercise immersion experience on health promotion and lifelong physical education of high school students in sports club activities. Journal of Exercise Rehabilitation. 2021;17(3):169-174.**

**ABSTRACT:**

The purpose of this study was to investigate the impact of high school students' athletic commitment, health promotion education, and lifelong sports activities. To this end, the researcher searched for research subjects of 397 high school students residing in Seoul in 2019. As a result of the analysis, the following conclusions were drawn. First, the effect of exercise commitment on sports health promotion education was investigated. Looking at the activities of high school students, their commitment to behavior has had a profound impact on their health responsibilities and relationships. Second, the study also investigated the impact of athletic commitment to lifelong sports of sports activities in high school students and found that cognitive and behavioral commitment had a significant impact on lifelong sports. Finally, as a result of investigating the impact of health promotion education on lifelong sports of high school student sports activities, it was found that health responsibility and relationships have a great influence on lifelong sports.

**Sulz LD, Gleddie DL, Urbanski W, Humbert ML. Improving school sport: teacher-coach and athletic director perspectives and experiences. Sport in Society. 2021;24(9):1554-1573.**

**ABSTRACT:**

School sport can be a valuable contributor to the education and wellbeing of students. However, the school sport context faces numerous challenges. The purpose of the current study was to explore school sport from the perceptions and experiences of school athletic directors and teacher-coaches to better understand context and areas for change. Open-ended questionnaires were completed by teacher-coaches (n = 82) and athletic

directors (n=38) across all 10 provinces and 2 territories in Canada. A qualitative analysis of the data revealed three key themes: (a) shifting the culture of school sport; (b) building capacity to sustain school sport; and (c) club sport placing the future of school sport at risk. This research will provide greater insights into the Canadian school sport context to help inform actions to improve the experiences of those involved in school sport and ensure the sustainability of sport within the school system.

**Tendinha R, Alves MD, Freitas T, et al. Impact of Sports Education Model in Physical Education on Students' Motivation: A Systematic Review. Children-Basel. 2021;8(7).**

**ABSTRACT:**

Background: Research has suggested that applying the Sport Education Model (SEM) in Physical Education (PE) increases students' motivation. However, it is important to systematize this evidence to have a clearer idea. Therefore, this study aimed to analyze the impact of the SEM on the students' motivation. Methods: A systematic review with a narrative synthesis was performed. In March 2021, an articles search was conducted in PubMed, Scopus, and Web of Science. Eligibility criteria were: longitudinal or experimental study design; outcomes included PE settings; results reported the relationship between the SEM and students' motivation. Results: Fourteen studies were included, totaling 2146 students. The majority of the studies indicated a significant association between the SEM and motivation, particularly in autonomy and more enjoyment toward PE. Conclusions: This review supports that the SEM has a positive impact on motivation. The SEM offers a wide range of opportunities for students to develop more self-determined motivated behavior in PE classes. Therefore, the SEM should be considered when developing or adapting existing PE programs to promote students' intrinsic motivation to engage in physical activity.

**Vidaci A, Vega-Ramirez L, Cortell-Tormo JM. Development of Creative Intelligence in Physical Education and Sports Science Students through Body Expression. International Journal of Environmental Research and Public Health. 2021;18(10).**

**ABSTRACT:**

Body expression can enhance movement creativity and at the same time promote the growth of creative intelligence in college age. The aim of this study was to analyze the influence of an intervention in body expression classes on the creative intelligence of university students. The 49 participants aged 19 to 38 years engaged in the body expression course for seven weeks, 3 h per week. The Creative Intelligence test (CREA) was applied as an evaluative method to obtain the initial data and after the intervention the test was reapplied. Pre- and post-test results were analyzed and compared by gender and type of sporting background (team or individual sports). The results indicate an overall improvement in creative intelligence with a significant difference between the two evaluations ( $p < 0.001$ ). Women started with a higher score than men, and although an improvement in their final mean score could be observed, it was not significant. Men, on the other hand, had noted a significant increase ( $p < 0.001$ ) of these values in the post-test. Regarding the type of sports, at the beginning of the study, both groups had similar results; however, in the final test, the team sports players obtained better scores. In conclusion, body expression, thanks to its content focused on artistic-creative development, has been shown to be useful in the general progression of creative intelligence in college age.

**Yelamos GM, Carty C, MacLachlan M. Assessing and improving the national reporting on human rights in and through Physical Education, Physical Activity and Sport (PEPAS). *Revista De Psicologia Del Deporte*. 2020;29:36-44.**

**ABSTRACT:**

The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) and the Convention on the Rights of Persons with Disabilities (CRPD) are two of the nine international human rights treaties that safeguard the rights of vulnerable groups. This paper aims to examine, from a macropsychology perspective, the relevance and significance of Physical Education, Physical Activity and Sport (PEPAS) in reporting mechanisms related to the CRPD and CEDAW. A systematic document review of State Parties Reports (CEDAW n=100, CRPD= 133); List of Issues (CEDAW n=123, CRPD=84) and Concerns/Observations and Recommendations (CEDAW n=12, CRPD n=23) was undertaken. States Parties acknowledge the significance of sport and report on some key aspects, but they do not provide enough evidence or data to evaluate the impact of a legal framework into practice. The guidance given by the CEDAW and CRPD committees on articles related to PEPAS was appropriate and had a cross-cutting intersectional approach, although limited in scale. With the support of the sport sector both Treaty Bodies can leverage their capacity to call for greater attention to this agenda. A General Comment on Physical Education, Physical Activity and Sport (PEPAS) would help to provide clarification and guidance to State Parties on how to report on these related articles.



## 体医融合

本期体医融合方面的研究共检索到英文相关文献8篇，研究热点：细胞疗法治疗上肢运动损伤；糖尿病心脏康复患者运动前、运动中及运动后的急性血糖管理；英国和加拿大心血管预防和康复协会、国际心血管预防和康复理事会和英国体育和运动科学协会的联合声明；儿童和青少年1型糖尿病患者体力活动和运动参与对糖化血红蛋白的影响；运动医学与人工智能入门；石伟多功能纳米材料结合运动康复训练在心血管疾病诊治中的应用；Wii运动度假村对中度卒中患者运动能力和健康相关生活质量的影响行为神经学；基于大数据的运动慢性病康复智能预测与优化算法等。

**Baryeh K, Asopa V, Kader N, Caplan N, Maffulli N, Kader D. Cell-based therapies for the treatment of sports injuries of the upper limb. Expert Opinion on Biological Therapy. 2021.**

### **ABSTRACT:**

Introduction: The use of cell-based therapies in the management of sports injuries of the upper limb is increasingly popular despite the limited scientific evidence available for their use. We aim to evaluate the evidence for the use of cell-based therapies in these injuries and recommend areas for further research.

Areas covered: In accordance with a published protocol (PROSPERO; Registration No. CRD42020193258), a comprehensive search of the literature was performed using the MEDLINE and EMBASE databases from inception to June 2020. All human studies reporting on the clinical, histological, or radiological outcomes following the use of cell-based therapies in the management of epicondylitis or rotator cuff pathology were included in this study. This resulted in 22 studies being included in this review, all of which underwent risk of bias assessments.

Expert opinion: The evidence for the use of cell-based therapies in upper limb sports injuries is limited and generally of low quality. Given the heterogeneity in the cell types used, their harvesting methods and cell amounts, future research should be targeted at developing standardization of the reporting of these studies and more direct comparative studies looking at the efficacy of the different cell types.

**Buckley JP, Riddell M, Mellor D, et al. Acute glycaemic management before, during and after exercise for cardiac rehabilitation participants with diabetes mellitus: a joint statement of the British and Canadian Associations of Cardiovascular Prevention and Rehabilitation, the International Council for Cardiovascular Prevention and Rehabilitation and the British Association of Sport and Exercise Sciences. British Journal of Sports Medicine. 2021;55(13):709-720.**

**ABSTRACT:**

Type 1 (T1) and type 2 (T2) diabetes mellitus (DM) are significant precursors and comorbidities to cardiovascular disease and prevalence of both types is still rising globally. Currently, ~25% of participants (and rising) attending cardiac rehabilitation in Europe, North America and Australia have been reported to have DM (>90% have T2DM). While there is some debate over whether improving glycaemic control in those with heart disease can independently improve future cardiovascular health-related outcomes, for the individual patient whose blood glucose is well controlled, it can aid the exercise programme in being more efficacious. Good glycaemic management not only helps to mitigate the risk of acute glycaemic events during exercising, it also aids in achieving the requisite physiological and psycho-social aims of the exercise component of cardiac rehabilitation (CR). These benefits are strongly associated with effective behaviour change, including increased enjoyment, adherence and self-efficacy. It is known that CR participants with DM have lower uptake and adherence rates compared with those without DM. This expert statement provides CR practitioners with nine recommendations aimed to aid in the participant's improved blood glucose control

before, during and after exercise so as to prevent the risk of glycaemic events that could mitigate their beneficial participation.

**Kearney J, Brittain J-S. Sensory Attenuation in Sport and Rehabilitation: Perspective from Research in Parkinson's Disease. Brain Sciences. 2021;11(5).**

**ABSTRACT:**

People with Parkinson's disease (PD) experience motor symptoms that are affected by sensory information in the environment. Sensory attenuation describes the modulation of sensory input caused by motor intent. This appears to be altered in PD and may index important sensorimotor processes underpinning PD symptoms. We review recent findings investigating sensory attenuation and reconcile seemingly disparate results with an emphasis on task-relevance in the modulation of sensory input. Sensory attenuation paradigms, across different sensory modalities, capture how two identical stimuli can elicit markedly different perceptual experiences depending on our predictions of the event, but also the context in which the event occurs. In particular, it appears as though contextual information may be used to suppress or facilitate a response to a stimulus on the basis of task-relevance. We support this viewpoint by considering the role of the basal ganglia in task-relevant sensory filtering and the use of contextual signals in complex environments to shape action and perception. This perspective highlights the dual effect of basal ganglia dysfunction in PD, whereby a reduced capacity to filter task-relevant signals harms the ability to integrate contextual cues, just when such cues are required to effectively navigate and interact with our environment. Finally, we suggest how this framework might be used to establish principles for effective rehabilitation in the treatment of PD.

**King KM, Jagers JR, Della LJ, et al. Association between Physical Activity and Sport Participation on Hemoglobin A1c Among Children and Adolescents with Type 1 Diabetes. International Journal of Environmental Research and Public Health. 2021;18(14).**

**ABSTRACT:**

Purpose: To determine associations between physical activity (PA) and sport participation on HbA1c levels in children with type 1 diabetes (T1D). Method: Pediatric patients with T1D were invited to complete a PA and sport participation survey. Data were linked to their medical records for demographic characteristics, diabetes treatment and monitoring plans, and HbA1c levels. Results: Participants consisted of 71 females and 81 males, were  $13 \pm 3$  years old with an average HbA1c level of  $8.75 \pm 1.81$ . Children accumulating 60 min of activity 3 days or more a week had significantly lower HbA1c compared to those who accumulated less than 3 days ( $p < 0.01$ ) of 60 min of activity. However, there was no significant difference in HbA1c values based on sport participation groups. A multiple linear regression model indicated that PA, race, age, duration of diagnosis, and CGM use all significantly predicted HbA1c ( $p < 0.05$ ). Conclusion: This study demonstrated the significant relationship between daily PA and HbA1c. Those in this sample presented with lower HbA1c values even if accumulating less than the recommended number of days of activity. Further, it was shown that sport participation alone may not be adequate enough to impact HbA1c in a similar manner.

**Ramkumar PN, Luu BC, Haeberle HS, Karnuta JM, Nwachukwu BU, Williams RJ. Sports Medicine and Artificial Intelligence: A Primer. American Journal of Sports Medicine. 2021.**

**ABSTRACT:**

Artificial intelligence (AI) represents the fourth industrial revolution and the next frontier in medicine poised to transform the field of orthopaedics and sports medicine,

though widespread understanding of the fundamental principles and adoption of applications remain nascent. Recent research efforts into implementation of AI in the field of orthopaedic surgery and sports medicine have demonstrated great promise in predicting athlete injury risk, interpreting advanced imaging, evaluating patient-reported outcomes, reporting value-based metrics, and augmenting the patient experience. Not unlike the recent emphasis thrust upon physicians to understand the business of medicine, the future practice of sports medicine specialists will require a fundamental working knowledge of the strengths, limitations, and applications of AI-based tools. With appreciation, caution, and experience applying AI to sports medicine, the potential to automate tasks and improve data-driven insights may be realized to fundamentally improve patient care. In this Current Concepts review, we discuss the definitions, strengths, limitations, and applications of AI from the current literature as it relates to orthopaedic sports medicine.

**Shi W. Application of Multifunctional Nanomaterials Combined with Sports Rehabilitation Training in the Diagnosis and Treatment of Cardiovascular Diseases. Integrated Ferroelectrics. 2021;216(1):81-93.**

**ABSTRACT:**

This article aims to study the application of multi-functional nano-materials combined with sports rehabilitation training in the diagnosis and treatment of cardiovascular diseases. This paper uses multi-functional nano-materials combined with sports rehabilitation training methods to record the physical condition of patients with cardiovascular diseases after the illness. Use intelligent monitoring system to design network nodes, and use network technology to carry out real-time data transmission of the physical conditions of patients with cardiovascular diseases, so as to ensure the real-time transmission of patients' physical conditions, to achieve real-time understanding of the recovery status of patients with cardiovascular diseases, and whether they adapt This therapy. Then compared with the traditional cardiovascular

patients' own feelings, to judge the feasibility of multifunctional nanotechnology combined with sports rehabilitation training, so as to the multifunctional nanotechnology combined with sports rehabilitation training in cardiovascular medicine Technology improvements and upgrades. Research data shows that multi-functional nanomaterials combined with sports rehabilitation training can greatly increase the speed of new blood vessel disease review. Research data shows that multifunctional nanomaterials combined with sports rehabilitation training combine disease-related protein and nucleic acid molecules in the body with precision-targeted nanomedicine, and at the same time transfer function-related organic macromolecules and peptides to the site of effect to protect them It is degraded by enzymes and not immune to rejection, so that they cross biological barriers, and then achieve the effect of diagnosis and treatment of cardiovascular disease. It has improved the recovery rate by about 20% and has an important role in promoting the diagnosis and treatment of cardiovascular diseases.

**Unibas-Markaida I, Iraurgi I. Effect of the Wii Sports Resort on Mobility and Health-Related Quality of Life in Moderate Stroke. Behavioural Neurology. 2021;2021.**

**ABSTRACT:**

Background. Stroke is a common cerebral circulatory disorder that has several sequelae that affect the daily life of patients as well as their quality of life and the lives of people close to them. Video games are being used in the rehabilitation process to address these sequelae and their benefits are shown on physical activity and in the cognition area. However, their effects on daily life activities and quality of life are not known. This study was aimed to test the effect of the Nintendo Wii Sports Resort on mobility and health-related quality of life among patients who have suffered a moderate stroke. Methods. A prepost design study was conducted with 30 moderately impaired stroke patients aged 65 +/- 15. The study lasted eight weeks. 15 participated in the intervention group and the others belong to the control group. They were assessed in mobility (Timed Get Up and Go Test-TUG) and health-related quality of life (SF-36 Health

Questionnaire). Parametric test and effect sizes were used to analyze the change in outcomes and to compare groups. Results. There were no differences at baseline between the groups. After the intervention, the intervention group had experienced a greater change according to the size of the effect on the variables concerning TUG ( $d = 1.32$ ), physical function ( $d = 1.32$ ), social function ( $d = 0.71$ ), and Physical Component Summary ( $d = 0.75$ ). On the other hand, the control group had a significant change in mental health according to effect size; however, this effect is not statistically relevant ( $d = 0.88$ ; CI 95% = -3.74 to 5.50). Conclusions. The results on mobility and health-related quality of life indicate an improvement in both groups. However, according to the effect sizes and its confidence of interval, the intervention group achieved better results than the control group. Although more studies are needed in this area, the results are encouraging for improving mobility and health-related quality of life after stroke.

**Zhang X, Wang X. Intelligent Prediction and Optimization Algorithm for Chronic Disease Rehabilitation in Sports Using Big Data. Journal of Healthcare Engineering. 2021;2021.**

**ABSTRACT:**

This paper investigates chronic diseases in the older population in the Chinese province of Henan and analyzes the rehabilitation needs and the current supply of related services in different levels of medical and elderly care institutions. We explore the fundamental causes for the diversified needs and insufficient supply of chronic disease patients in professional medical services and daily care. Using big data and deep learning (DL) in the sports domain, we propose a novel and intelligent prediction system for chronic diseases. Our model explores effective sinking methods of high-quality medical resources, training and guidance practices, assistance and guidance measures, and the ability to improve the grassroots services so that more chronically ill populations can stay in the community family as long as possible. In such an environment, they can receive cheap, safe, and suitable services. It can also lead to further improvement in constructing the government' s regional medical rehabilitation care service system and can formulate long-term care relevant compensation policies.

## 后疫情体育

本期后疫情体育方面的研究共检索到英文相关文献12篇，研究热点：一名高中运动员在COVID-19后的SARS-CoV-2心肌炎症状及对其运动许可的影响；冠状病毒病对大学可持续体育的影响；冠状病毒病封锁期间运动员的睡眠和心理健康；新冠肺炎疫情期间日本学生运动员认同、心理健康和社会支持的关系；COVID-19时期的参与性体育活动：分析活动参与者的(虚拟)体育行为；Covid-19后重返运动的儿童新指南儿科护理杂志-儿童与家庭护理；冠状病毒病大流行期间体育传染性风险情况识别工具开发和实施后的体育社会环境感知等方面。

**Das BB. SARS-CoV-2 Myocarditis in a High School Athlete after COVID-19 and Its Implications for Clearance for Sports. Children-Basel. 2021;8(6).**

### **ABSTRACT:**

This case report describes a high school athlete with palpitation, myalgia, fatigue, and dyspnea on exertion after SARS-CoV-2 infection with evidence of myocarditis by cardiac magnetic resonance (CMR), but echocardiography and troponin were normal. This case is unusual as the standard cardiac tests recommended by the American Heart Association for sports clearance, including ECG, echocardiography, and cardiac biomarkers, were normal. Still, she continued to be symptomatic after mild COVID-19. The CMR was performed to evaluate her unexplained palpitation and showed patchy myocardial edema two months after her initial SARS-CoV-2 infection. In this case, the diagnosis of myocardial involvement would be missed by normal echocardiograms and cardiac bio-markers without CMR. Because acute myocarditis is a risk factor for sudden death in competitive athletes, pediatric cardiologists should consider performing additional tests such as cardiac MRI in symptomatic COVID-19 patients, even if cardiac biomarkers and echocardiograms are normal.



**Duclos-Bastias D, Vallejo-Reyes F, Giakoni-Ramirez F, Parra-Camacho D. Impact of COVID-19 on Sustainable University Sports: Analysis of Physical Activity and Positive and Negative Affects in Athletes. Sustainability. 2021;13(11).**

**ABSTRACT:**

The suspension of university activities due to the pandemic affected training and sports competitions. However, some universities adapted online education, allowing students to carry out their activities without being infected by the virus. The aim of this study was to find out the impact of the pandemic on physical activity levels and the positive and negative effects on Chilean university athletes. The information was obtained by applying the PANAS scale and demographic and physical activity variables were also measured. The sample of Chilean university athletes (n = 254) were aged between 18 and 31 years (M = 22.17; SD = 2.76). This study led to the conclusion that maintaining the frequency of physical training during the pandemic was associated with a preservation in the levels of Positive Affect and Negative Affect compared to the non-pandemic period. Thus, physical activity training was protective of emotional well-being and, therefore, of mental health.

**Facer-Childs ER, Hoffman D, Tran JN, Drummond SPA, Rajaratnam SMW. Sleep and mental health in athletes during COVID-19 lockdown. Sleep. 2021;44(5).**

**ABSTRACT:**

The global coronavirus 19 (COVID-19) pandemic and associated lockdown restrictions resulted in the majority of sports competitions around the world being put on hold. This includes the National Basketball Association, the UEFA Champions League, Australian Football League, the Tokyo 2020 Olympic Games, and regional competitions. The mitigation strategies in place to control the pandemic have caused disruption to daily schedules, working environments, and lifestyle factors. Athletes rely on regular access to training facilities, practitioners, and coaches to maintain physical and mental health to

achieve maximal performance and optimal recovery. Furthermore, participation in sport at any level increases social engagement and promotes better mental health. It is, therefore, critical to understanding how the COVID-19 pandemic and associated lockdown measures have affected the lives of athletes. We surveyed elite and sub-elite athletes (n = 565) across multiple sports. Significant disruptions were reported for all lifestyle factors including social interactions, physical activity, sleep patterns, and mental health. We found a significant increase in total sleep time and sleep latency, as well as a delay in mid-sleep times and a decrease in social jetlag. Training frequency and duration significantly decreased. Importantly, the changes to training and sleep-related factors were associated with mental health outcomes. With spikes in COVID-19 cases rising around the world and governments reinstating lockdowns (e.g. United Kingdom; Melbourne, Australia; California, USA) these results will inform messaging and strategies to better manage sleep and mental health in a population for whom optimal performance is critical.

**Hagiwara G, Tsunokawa T, Iwatsuki T, Shimozono H, Kawazura T. Relationships among Student-Athletes' Identity, Mental Health, and Social Support in Japanese Student-Athletes during the COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*. 2021;18(13).**

**ABSTRACT:**

The purpose of the two studies was to investigate the relationships among student athletes' identity and mental health during the COVID-19 pandemic. In addition, this study aimed to clarify the relationship between perceived social support from teammates and mental health in student-athletes. Two studies were conducted to investigate and clarify the mental health states of student-athletes in Japan during the COVID-19 pandemic. In Study 1, conducted in April 2020, the participants were 402 male student-athletes and we examined the relationships among student-athletes' identity and mental health. The results of correlational analyses indicated significant negative

correlations between the degree of student-athletes' identity and depression and sports helplessness. In Study 2, conducted in March 2021, the participants were 135 male student-athletes and examined the relationship between perceived social support from teammates, student-athletes' identity, and mental health. The results indicated a significant correlation between social support, student athletes' identity, and mental health.

**Han Q, Li X, Wang Z. How Should Athletes Coping With COVID-19: Focus on Severity and Psychological Support. *Frontiers in Psychology*. 2021;12.**

**ABSTRACT:**

**Objective:** Athletes are suffering from many uncertainties and hope to achieve the best possible position under the current circumstances of this global coronavirus disease (COVID-19) pandemic. In this study, we aimed to address the severity and psychological support for athletes with COVID-19.

**Methods:** We extracted public data and news reports of the up-to-date first seven cases of elite athletes with COVID-19 confirmed in China and made psychological recommendations based on scientific evidence.

**Results:** The severity and mortality in athletes who tested positive to COVID-19 are mild and extremely low. The included cases from different sports are two soccer players, two athletes from ice hockey, and three from fencing. In this study, we adapted well-recognized psychological questionnaires, improvised it for athletes to use under the COVID-19 pandemic, and also provided recommended psychological support.

**Conclusion:** The severity and mortality in Chinese athletes contracted with COVID-19 are mild and low with zero death. Psychological support of any kind from nurses, team medical staff, psychologists, family, and friends through social media and telecommunication should be adopted and can be of great help.

**Helsen K, Derom I, Corthouts J, De Bosscher V, Willem A, Scheerder J. Participatory sport events in times of COVID-19: analysing the (virtual) sport behaviour of event participants. European Sport Management Quarterly. 2021.**

**ABSTRACT:**

Research question: Due to government restrictions because of COVID-19, all participatory sport events (PSEs) were cancelled. As a result, knowledge is needed as to how and to what extent participants of PSEs modified their sport behaviour to fill the void of event cancellation. Therefore, this study aimed to (1) investigate to what extent event participants have modified their sport behaviour as a result of the COVID-19 measures, and (2) analyse the factors that determine participation in virtual events (real activities using an online recording platform).

Research methods: A total of 2869 respondents completed an online survey which was widely disseminated in Flanders (Belgium) six weeks after the announcement of the COVID-19 lockdown. The sample included both event and non-event participants. Descriptive and binary logistic regression analyses were used to investigate how event participants adapted their sport behaviour and which factors determined virtual event participation.

Results and findings: Since the COVID-19 measures, event participants did not decrease the frequency but only the intensity of their sport behaviour. Based on social ecological theory, participation in virtual events could be explained by both individual determinants (e.g. motivation towards developing skills), and interpersonal determinants (e.g. previous participation in a virtual event).

Implications: This study contributes to research on the impact of COVID-19 measures and consequently the cancellation of PSEs on sport behaviour of event participants. Confronted with an uncertain future, the findings provide insights for event organisers to develop and optimise virtual event experiences in order to reach non-event participants as well.

**Hyeop LS. The Study of the Impact of COVID 19 on Professional Sports in Korea. Culinary Science & Hospitality Research. 2021;27(2):106-113.**

**ABSTRACT:**

The purpose of this study is to find out more specifically and systematically the impact of COVID 19 on professional sports in Korea, as perceived by sports fans recognize by sports fans. Seeing what changes have occurred in watching professional sports compared to the COVID 19 era that sports fans felt. A total of 13 sports fans participated in the interview and expressed their in-depth opinions on each question, which turned out to be so damaging that the domestic professional sports industry was very shrinking due to COVID 19, making it impossible to operate the league normally. As such, with the current situation serious and the league running without spectators, sports fans are found to have minimal fun watching the broadcast on TV or the Internet. Under these circumstances, sports fans have been found to be interested and satisfied by large-scale online cheering with other fans, although they are enjoying sports games through online broadcasts. On the other hand, professional sports players also need to actively serve their fans online in the current situation where they cannot meet their fans in person. This study aims to analyze the psychology and behavior of sports fans more objectively in a situation where normal professional sports league operations are not possible due to COVID 19, suggesting how professional sports teams operate clubs for their fans.

**Mascrot N. Confinement during Covid-19 outbreak modifies athletes' self-based goals. Psychology of Sport and Exercise. 2020;51.**

**ABSTRACT:**

Because achievement goals are context-specific, the study first investigated the evolution of two achievement goals of 697 regular athletes, namely self-approach goals (improving oneself) and self-avoidance goals (avoiding regression), before and during the confinement situation and the physical exercise restrictions due to the Covid-19

outbreak. Secondly, we sought to examine the potential predicting role of self-approach and self-avoidance goals on athletes' intention to exercise during confinement, while self-avoidance goals were usually not related to this outcome in a more traditional context. Using a retrospective correlational design, the results of repeated measures ANOVA highlighted that self-approach goals scores decreased while self-avoidance goals scores increased and became the athletes' goals with the highest score during confinement. The results of hierarchical regression analyses showed that self-approach and self-avoidance goals were both found as positive predictors of intention to exercise during confinement. This study reinforces the assumptions that (a) a specific achievement setting encourages the adoption of different achievement goals (which was identified here with regular athletes in an unusual context of confinement), (b) self-avoidance goals are not always maladaptive, and (c) shifting among multiple goals according to the requirements of the situation may be beneficial.

**McBride DL. New Guidelines for Children Returning to Sports after Covid-19. Journal of Pediatric Nursing-Nursing Care of Children & Families. 2021;59:196-197.**

**ABSTRACT:**

Approximately 45 million children participate in some form of athletics. The COVID-19 pandemic has affected many aspects of their lives, including sports activities. Families are asking care givers questions about how best to ensure the safety of their children when returning to sports activities. The American Academy of Pediatrics has issued revised guidelines for children returning to athletic activities after COVID-19. These include strengthening the recommendations for cloth mask wearing for all children engaging in vigorous sports and clarifications of cardiac risks to children who have had COVID-19.

**Ramon Lete-Lasa J, Martin-Acero R, Rico-Diaz J, Gomez-Varela J, Rio-Rodriguez D. Perception of the Sports Social Environment After the Development and Implementation of an Identification Tool for Contagious Risk Situations in Sports During the COVID-19 Pandemic. *Frontiers in Psychology*. 2021;12.**

**ABSTRACT:**

This study details the methodological process for creating a tool for the identification of COVID-19 potential contagion situations in sports and physical education before, during, and after practice and competition. It is a tool that implies an educational and methodological process with all the agents of the sports system. This tool identifies the large number of interactions occurring through sports action and everything that surrounds it in training, competition, and organization. The aim is to prepare contingency protocols based on an exhaustive analysis, risk detection, and proposal of contingency measures trying to reduce the residual risk to a minimum. In the second part, the results of the implementation of this tool in the sports system of Galicia (Spain) are shown. The technicians have changed their perceptions about the coronavirus transmission in sports. They highlight the problem for returning to sports participation for athletes under 18 years in the pandemic context.

**Symons K, Breitbarth T, Zubcevic-Basic N, Wilson K, Sherry E, Karg A. The (un)level playing field: sport media during COVID-19. *European Sport Management Quarterly*. 2021.**

**ABSTRACT:**

Research question: The creation of sport media content is guided by the need to cover live, seasonal events, which typically results in the greater coverage of men's sport than women's. However, with the onset of the COVID-19 pandemic, live sport was halted. This paper presents the findings of a study into the media coverage of women in sport during the pandemic. Specifically, the study sought to answer the research question, how

has Australian mainstream media covered women in sport during a period of time with no live sport on the global stage?

Research methods: The study used quantitative content analysis to track the coverage from 20 media outlets using consistent one-directional coding practices, involving a single individual coder at the same time each day to focus on counting articles covering women in sport.

Results and findings: The findings show a slight reduction in the coverage of women in sport at the start of the COVID-19 crisis in Australia and that low levels of coverage persisted throughout. This indicates that in the absence of live sport, media institutions reflexively revert to traditional ritualized, routinized practices to create sport media content, and women in sport stories are excluded regardless of the presence of play.

**Watson AM, Haraldsdottir K, Biese KM, Goodavish L, Stevens B, McGuine TA. COVID-19 in US Youth Soccer Athletes During Summer 2020. Journal of Athletic Training. 2021;56(6):542-547.**

**ABSTRACT:**

Context: As sports are reinitiated around the United States, the incidence of COVID-19 among youth soccer athletes remains unknown.

Objective: To determine the incidence of COVID-19 among youth soccer athletes and the risk-mitigation practices used by youth soccer organizations.

Design: Cohort study.

Setting: Survey distributed to Elite Clubs National League member clubs. Patients or Other Participants: Youth soccer club directors throughout the United States.

Main Outcome Measure(s): Surveys were completed in late August 2020 regarding the club's current phase of return to soccer (individual only, group noncontact, group contact), date of reinitiation, number of players, cases of COVID-19, and risk-reduction procedures being implemented. Case and incidence rates were compared with national pediatric data and county data from the prior 10 weeks. A negative binomial regression



model was developed to predict club COVID-19 cases using the local incidence rate and phase of return as covariates and the log of club player-days as an offset.

Results: A total of 124 respondents had reinitiated soccer, representing 91 007 players with a median duration of 73 days (interquartile range = 53-83 days) since restarting. Of the 119 clubs that had progressed to group activities, 218 cases of COVID-19 were reported among 85 861 players. Youth soccer players had a lower case rate and incidence rate than children in the United States (254 versus 477 cases per 100 000; incidence rate ratio = 0.511, 95% CI = 0.40, 0.57; P=.001) and the general population in the counties where data were available (268 versus 864 cases per 100 000; incidence rate ratio = 0.202, 95% CI = 0.19, 0.21; P < .001). After adjusting for the local COVID-19 incidence, we found no relationship between the club COVID-19 incidence and the phase of return (noncontact:  $b = 0.35 \pm 0.67$ ,  $P = .61$ ; contact:  $b = 0.18 \pm 0.67$ ,  $P = .79$ ). Soccer clubs reported using a median of 8 (interquartile range = 6-10) risk-reduction procedures.

Conclusions: The incidence of COVID-19 among youth soccer athletes was relatively low when compared with the background incidence among children in the United States during the summer of 2020. No relationship was identified between the club COVID-19 incidence and the phase of return to soccer.

## 冬奥研究

本期冬奥体育方面的研究共检索到英文相关文献16篇，研究热点：冬季奥运会对体育旅游的影响；滑坡对埃尔祖鲁姆跳台滑雪设施的破坏；加拿大政府参与卡尔加里1968年冬奥会申办失败；2018年冬奥会体育和政治的媒体代表；揭示冰上滑行初期的摩擦和空气动力阻力；北京2022年冬奥会赛区寒潮入侵与BCC-AGCM模型的可预测性；冬季奥运会主办城市的生态环境问题等方面。

**Bai X, Shin H, Lee S. The Impacts of the Winter Olympic Games on SPORT Tourism: A Systematic Review. Kinesiology. 2021;6(1):39-47.**

### **ABSTRACT:**

**Purpose:** Sport Tourism is a driving force for sustainable economic development of tourism destinations. The Winter Olympic Games is a catalyst for this momentum. In order to clearly sort out the impacts of the Winter Olympic Games on sport tourism of the host city, this paper employed a systematic review. This study allowed to provide some enlightenment for the development of sport tourism in the host cities of the Winter Olympic Games in the future, and proposed the corresponding reference for the continued research in this field.**Method:** This paper adopted systematic review, more rigorous than the traditional literature review, to explore the impacts of the Winter Olympic Games on sport tourism in host cities. Through the literature search of selected data, 369 articles in English language was retrieved and finally narrowed down to 17 articles according to the set research criteria. The information extracted from the remaining articles was used to present the types of impacts the Winter Olympics have had on sport tourism in host cities and in how it impacted.**Results:** Through the review and summary of the literature, current Winter Olympic Games had both positive and negative impacts on sport tourism in host cities. According to its specific manifestation, this paper classified the impact factors. Positive impacts could be summarized into three parts: improving sport tourism revenue, improving city image and promoting urban

reform. Negative impacts were mainly reflected in two aspects: the excessive cost leads to excessive burden and the unsatisfied sustainable development sustainable development. Conclusions: This paper clearly stressed that the Winter Olympic Games had both positive and negative impacts on the development of sport tourism in host cities, and further analyzed the aspects in which these impacts are found. Based on research results, it proposed the enlightenment on the development planning and ecological environment in order to ensure the sustainable development of sport tourism for the upcoming Beijing Olympic Games. It is a pity that there were still some limitations in the research scope and methods, and it hoped that they can be solved in the following research.

**Celik S, Ozyazicioglu M, Sahin R, Uysal H, Cakici FZ, Kalkan E. The destruction of Erzurum ski-jumping complex by a landslide: evaluation of an engineering design failure. *Natural Hazards*. 2021;107(1):475-496.**

**ABSTRACT:**

A number of new winter sports facilities were constructed in the city of Erzurum for 2011 FISU-Universiade Winter Games, some of which constituted the first examples in Turkey. One of those is the ski-jumping complex, which hosts 5 runways along with a cluster of structures in various sizes and annexes, complementing the runways. On the northern slope of Kiremitlik Hill, where the complex is situated, a landslide occurred on 15th July of 2014, leading into complete collapse of the runways and major damage to the entire facility. This study presents a technical summary and forensic analysis of the formation of this natural hazard to illuminate the causes that cumulatively led to this engineering failure that created a massive material loss. In this work, we investigate the issue from geological, geophysical and geotechnical perspectives to illuminate the true causes of this engineering failure. We also hope that this technical evaluation provides an example for engineers as well as public administrators not to overlook the critical ground conditions and well-established design principles of civil engineering.

**Dichter HL. Canadian Government Involvement in Calgary's Failed 1968 Winter Olympic Bid. International Journal of the History of Sport. 2021.**

**ABSTRACT:**

In the early 1960s the Canadian government in Ottawa saw international events, including major sporting events, as a way to bolster Canada's position globally. To support Calgary's bid for the 1968 Olympic Winter Games, the Canadian federal government formed an interdepartmental committee to work with the Calgary Olympic Development Association to try to improve the Canadian city's chance of winning the Olympic Games. The inclusion of sites within Banff National Park for some of the proposed competition venues required federal government involvement, but John Diefenbaker and Lester Pearson's governments became even more involved in the bid process than was typical at the time because of the importance with which they viewed the Olympic Games to their broader public diplomacy efforts. The extensive work to support Calgary's (ultimately unsuccessful) 1968 Olympic Winter Games bid foreshadowed the importance of federal government involvement in the bidding stages and not just their involvement in the organizing of the Olympic Games themselves.

**English P, Murray R. North Korea and the 'Peace Games': media representations of sport and politics at the 2018 winter olympics. Continuum-Journal of Media & Cultural Studies. 2021.**

**ABSTRACT:**

The reopening of the border hotline between North and South Korea started the process for a unified nation marching in the opening ceremony of the 2018 Winter Olympics. The event was described as the 'Peace Games', highlighting the intersection of sport and politics on a global stage. This article examines the representations in media reporting of North Korea at the 2018 Winter Olympics in six regionally and internationally significant nations. There were 660 online articles from six English-language news

websites from North Korea, South Korea, Japan, China, the US, and UK dealing with North Korea's return to the global sporting arena. The results provide an understanding of the different narratives applied when reporting on North Korea in sporting contexts, which in this sample also include broader political elements. In this example, even though North Korea's participation in the Winter Olympics was part of a major sporting event, the importance of political concerns and issues was greater compared with sporting achievements in newsmedia representations of the 2018 Winter Olympics.

**Irbe M, Gross KA, Viba J, Cerpinska M. Unveiling ice friction and aerodynamic drag at the initial stage of sliding on ice: Faster sliding in winter sports. Tribology International. 2021;160.**

**ABSTRACT:**

Reducing friction is an unending challenge in winter sports. Decisive improvements in sport equipment hinge on a precise prediction of resistance forces; the dynamic sliding friction-coefficient at low speed is still unclear and hampers progress. Two approaches disclosed changes in the coefficient-of-friction: two numerical models and an experimental model. We obtained accurate experimental data on the resistance coefficients from timing sensors on an ice track and a small accelerometer on the skeleton. A comparison of acceleration from the accelerometer with a numerical model showed a transition from static friction to kinetic friction, as "stick and slip" faded at 6 m/s. Speed and acceleration from this new approach will facilitate further investigations on sliding in bends on the ice track.

**Kim H-M, Grix J. Implementing a Sustainability Legacy Strategy: A Case Study of PyeongChang 2018 Winter Olympic Games. Sustainability. 2021;13(9).**

**ABSTRACT:**

Given the growing need for hosts of sports mega-events to provide concrete plans for a

sustainable sports mega-event at the bidding stage, it is perhaps surprising that there has not been more research on the actual implementation of the legacy plan in terms of sustainability. The main aim of this paper is to do just that: to analyse an empirical example of the implementation of the sustainability legacy plan for the PyeongChang 2018 Winter Olympic Games. Through an empirical analysis, the research methods used to collect the data are document analysis and semi-structured interviews with stakeholder sampling (16 documents and 10 interviewees). The paper uncovers the difficulties the PyeongChang Games encountered in achieving the sustainable legacy planned in the bid files through an evaluation of the implementation of PyeongChang's legacy strategy in the context of South Korea. Part of the findings reveal that Gangwon Province and South Korea achieved their strategic goals set out in advance of the PyeongChang Olympics as an effective tool for promoting regional development. One of the main obstacles to the sustainability of the PyeongChang Olympics was the lack of a clear plan for the post-Games use of Olympics venues and conflicts of interest among stakeholders of the PyeongChang Winter Games.

**Li X, Gao H, Ding T. Cold surge invading the Beijing 2022 Winter Olympic Competition Zones and the predictability in BCC-AGCM model. Atmospheric Science Letters. 2021;22(8).**

**ABSTRACT:**

The 24th Olympic and Paralympic Winter Games will be held at three competition zones in North China. The cold surge is considered as the most dominant weather affecting the game schedule by the Organizing Committee of Beijing Olympic Games. In this article, both the frequency of 124 cold surge cases invading the competition zones and the corresponding atmospheric circulation during the winters of 1985-2020 are first analyzed. The results show that the frequency has not been reduced by the global warming. On the contrary, it has been increasing slightly in recent decade. By verifying the forecast skill of temperature drop at the zones in Beijing Climate

Center-Atmospheric General Circulation Model (version 2.2), it is found that the average efficient forecast leading time with persistent temperature drop exceeding 1 degrees C is about 7 days, but significant differences exist among the individual cases. The 20 best forecasts and the 20 worst forecasts were selected for further analysis. In the 20 worst forecasts, the cold surge processes cannot be forecasted even 1 day in advance. It is mainly due to the great deviation of the simulated circulation from the observation, especially the failure to forecast the enhancement of the Siberian High especially in its southeast part before the cold surge occurrence. While in the 20 best forecasts, the model can capture the cold surges 9 days before the occurrence, owing to its skill in forecasting the positive sea level pressure anomalies from the southern Barents Sea and the Kara Sea to eastern China. Above evaluations can provide useful information to the forecast of cold surge invading the competition zones beyond 1 week.

**Li Y, Liu J, Ang S, Yang F. Performance evaluation of two-stage network structures with fixed-sum outputs: An application to the 2018winter Olympic Games. Omega-International Journal of Management Science. 2021;102.**

**ABSTRACT:**

In many applications of performance evaluation based on data envelopment analysis (DEA), it is often found that decision-making units (DMUs) have two-stage network structures, and the sum of these DMUs' outputs is fixed. For example, in the Olympic Games, each participant country has two stages-the preparation of athletes and competition of athletes-and at a single game the total numbers of gold, silver, and bronze medals (the DMU outputs) are fixed. Such an evaluation scenario is very common in practice, but none of the existing approaches adequately analyze this kind of situation. This paper addresses this scenario and proposes a two-stage DEA approach with fixed-sum final outputs. The approach has two steps: constructing a common efficient frontier and evaluating the DMUs based on that frontier. To illustrate the proposed approach, we apply it to a real dataset for the 2018 PyeongChang Winter Olympic

Games. Our results show that: (1) countries with high latitudes and a developed economy had much better efficiency; (2) the efficiency of the whole two-stage Olympic process is much more correlated with competition stage efficiency than with preparation stage efficiency; and (3) there are few DMUs whose efficiency in both stages is better than average. Finally, policy suggestions are made to help inefficient nations to win more Olympic medals. (c) 2020 Elsevier Ltd. All rights reserved.

**McAlister J. 'Couple goals': Tessa Virtue and Scott Moir as celebrity romance text at the 2018 Winter Olympic Games. *Celebrity Studies*. 2021;12(3):460-479.**

**ABSTRACT:**

At the 2018 Winter Olympic Games in Pyeongchang, Canadian ice dance pair Tessa Virtue and Scott Moir won two gold medals, making them the most decorated Olympic figure skaters of all time. However, it was not their on-ice achievements that dominated coverage; rather, it was the possibility that were in an off-ice romantic relationship. This article explores why Virtue and Moir were read so relentlessly as romantically involved in coverage of the Pyeongchang Olympics. Using a corpus of approximately seventy articles written about the pair in February 2018, it combines two different reading methods: a distant reading to elucidate patterns, and a close reading for thematic analysis. It finds that Virtue and Moir were read romantically because they embodied two different romantic discourses: the discourses of 'romance' and 'intimacy' as outlined by David Shumway, which emphasise passion and emotional closeness respectively. It concludes that Virtue and Moir were read not just as romantically involved but as 'couple goals', because of their apparent success in embodying these two (not necessarily mutually agreeable) discourses, which highlights cultural narratives about romantic love in the Anglophone cultural imagination.



**Miller AJ. Wintry Women: Skiing, Modern Girls, and the Body Politics of Sport as Represented in 1930s Nihonga. *Journal of Japanese Studies*. 2021;47(2):313-348.**

**ABSTRACT:**

In the broad field of 1930s Nihonga representing conventional female beauties, a small group of paintings featured women skiing, outfitted in loose winter gear with icy facial expressions and a sense of fitness and emotional austerity. These images inform the viewer of the state's interest in women's bodies as well as a cultural fascination with athletics. By considering the significance of the emerging ski industry and the social impact of the unrealized 1940 Olympics, this article investigates how images of women engaged in winter sports informed and reflected the gendered body politics of the decade.

**Park DJ, Shin NR, Sydnor S, Clarke C. Ice Dancing to Arirang in the 2018 PyeongChang Winter Olympic Games: The Intersection of Music, Identity, and Sport. *Sociology of Sport Journal*. 2021;38(1):78-87.**

**ABSTRACT:**

This cultural-interpretive essay offers critical commentary on Koreanness, racial ideology, hegemonic racial power, and racialized cultural taste with the aim of interpreting the sport-music nexus by examining a case of the interface between music and sport: The authors focus on the case of the Olympic ice dance that the South Korean team performed for the Korean traditional folk song Arirang at the 2018 PyeongChang Winter Olympic Games. The authors argue that music and sport can be understood as a semiological system that shapes non-Whites' ideological belief system. In addition, this essay engages with a discussion of cultural classification that often racializes skaters of color as the aforementioned are informed by Orientalism.

**Teare G, Potwarka LR, Bakhsh JT, Barrick SJ, Kaczynski AT. Hosting the 2010 Vancouver Olympic Games and wellbeing among Canadian youth. *European Sport Management Quarterly*. 2021.**

**ABSTRACT:**

Research question Although research traction is increasing, intangible social impacts are still difficult to measure and relatively under-researched compared to their tangible economic counterparts. Thus, the current study examines the question: what were the associations between hosting the 2010 Vancouver Olympic Games, social wellbeing (i.e. sense of belonging), and subjective wellbeing (i.e. life satisfaction) among Canadian youth? Research methods Using data from the Canadian Community Health Survey (n > 1,000,000), a time series analysis of youths' (aged 12-19) reports of perceived sense of belonging to their community and perceived life satisfaction across four time points before and after the Vancouver Winter Olympic and Paralympic Games at the national, provincial, and regional levels was conducted. Research findings The number of youths who reported a strong sense of belonging to their community significantly increased in the host region of North Shore after the Games concluded (2011-2012 to 2013-2014). The number of youths who reported a strong sense of belonging to their community and high life satisfaction significantly increased from 2007-2008 (pre-event) to 2009-2010 in the host region of Richmond. Implications This study provides preliminary evidence that mega-sport events might positively affect wellbeing of youth living in regions that house venues for the event. The study also demonstrates the temporary nature of positive social impacts. Suggestions for how to help create situations where positive social impacts are more likely, and to help maintain the wellbeing benefits of mega-sport events for youth populations are offered.

**Yang C, Yao MY, Li L. Development of a flexible wearable thermal textile accessory for winter sports. Textile Research Journal. 2021.**

**ABSTRACT:**

In pursuit of a healthy lifestyle, people are paying more attention to sports activities, even in winter. They are thus seeking high function and maximum comfort to improve their performance. However, cold weather may result in a higher risk of injuries. It is of prime importance to perform warm-up, which can increase body temperature to relieve muscle stiffness and allow improvement of performance. Unfortunately, the traditional approach of wearing multiple thick layers of clothing to keep warm can prevent the easy movement of the body. Therefore, the integration of flexible textile and wearable thermal technology has become a major research initiative in both sports and textile fields. Current attempts by high-tech start-ups and wearable textile enterprises are not able to overcome the hurdle of transforming wearable technology into a fashionable and marketable product. Hence, this paper introduces a design-driven method to develop a flexible wearable thermal textile accessory for winter sports usage. The relationships between thermal textiles, electrical resistance, thermal performance, stretchability, energy consumption, and function stability were evaluated to optimize the thermal textile fabrication. Then, a prototype was produced and its specification was defined. These enable the realization of mass production and provide a blueprint for the future development of wearable textiles.

**Ye L, Di P. Optimizing the regulation and control of sports injury and fatigue of Winter Olympic ice and snow athletes based on injury prevention. Revista Brasileira De Medicina Do Esporte. 2021;27:79-82.**

**ABSTRACT:**

This study reveals the characteristics and relationship of sports injury and fatigue of the Winter Olympics athletes, and monitors the athletes' psychological condition through case analysis of excellent athletes, and provides empirical evidence for athletes' psychological training and preparation for the physical and mental health services of Winter Olympics. Through questionnaires, literature review and other methods to study the injury situation of Winter Olympics ice and snow athletes, the results show that the proportion of chronic lumbar and knee joint injuries, and repeated muscle strains of Chinese Winter Olympics ice and snow athletes is large, and the cure rate is not high. The preparation activities are neither paid enough attention or sufficient, and the rationality of training plan arrangement is insufficient. The main cause of injury is insufficient understanding of the mechanism of injury and illness among athletes and coaches. Individual elite athletes need to improve their coping skills and pay attention to their psychological fatigue. In view of the sports' psychological characteristics and the problems faced by winter athletes, personalized psychological intervention programs should be formulated.

**Zhang H, Yu Y, Zha T, Rodrigo-Comino J. Assessing previous land-vegetation productivity relationships on mountainous areas hosting coming Winter Olympics Games in 2022. Science of the Total Environment. 2021;788.**

**ABSTRACT:**

In order to prevent land degradation in areas before hosting big events such as the Winter Olympic Games (WOG), developing strategic vegetation restoration plans is key. To evaluate four experimental areas with different degrees of human impacts located in

the Chongli District, northern Hebei Province, China, where the coming WOG 2022 will take considering: i) the feedback mechanisms between vegetation and soil in the process of future vegetation restoration; ii) the vegetation productivity of land in different land-use types; iii) the management mode considering the sustainable development as the primary goal. To achieve these goals, we applied a minimum soil data set (MDS) to screen the most relevant indicators (soil organic matter (SOM), total nitrogen (TN), total phosphorus (TP), available phosphorus (AP), available potassium (AP), available nitrogen (AN), soil bulk density (BD), soil porosity (SP), pH, clay, silt, sand and gravel), and the nonlinear scoring method to establish a soil quality index (SQI). For this purpose, 400 soil samples (0-20 an depth), the total biomass of one natural grassland (NG) and abandoned farmland (AF), and the growing stock of natural secondary forest (NF) and a larch plantation (LP). The results showed that the SQI can be established based on TN, silt, TP and gravel. Under LP and AF land-use type, vegetation showing a poor effect on the improvement of soil quality (SQIs were significantly lower than the NF and NG). It was also observed that above 1700 m, the growing stock of artificial vegetation exceeds the range of vegetation productivity (about  $165 \text{ m}^3 \cdot \text{h}^{-1}$ ) that the land can carry under the LP. We concluded that the main reason is the excessive depletion of N and P after human impacts. On the other hand, the SQI of NF and NG were higher, which is due to the significant improvement of soil quality by the conservation of the vegetation, so that no longer limited by the spatial distribution law, also showing higher vegetation productivity of land at different altitudes. This demonstrates that it is key to develop effective restoration plans considering the soil-vegetation relationship status of the NF and NG land-use types in this area in the territories used by the activities of the WOG 2022. (C) 2021 Elsevier B.V. All rights reserved.

**Zhang P, Yang X, Yin Y, Zhang Z, Yao Y. Effects of multidisciplinary model of damage control on acute cervical spinal cord injury in winter Olympic sports. American Journal of Translational Research. 2021;13(5):5051-5058.**

**ABSTRACT:**

Purpose: To investigate the feasibility of multidisciplinary model of damage control (MMDC) in patients with acute cervical spinal cord injury (ACSCI) in winter Olympic sports. Methods: A total of 110 patients with ACSCI who participated in winter Olympic sports were selected as the study subjects, and were divided into the study group (SG, n=60, MMDC) and the control group (CG, n=50, conventional intervention) according to the intervention mode. The clinical effects of intervention, changes in neurological function and muscle tone before and after intervention, the changes in motor function and activity of daily living during intervention, and patient satisfaction towards intervention were compared between the two groups. Results: The effective rate of intervention in the SG was 98.33%, higher than 88.00% in the CG ( $P < 0.05$ ), and the percentage of patients with Grade E injuries in the SG after intervention was 30.00%, significantly higher than 12.00% in the CG ( $P < 0.05$ ). The scores of all dimensions of Ashworth scale in the SG were lower than those in the CG ( $P < 0.05$ ). The patients in the SG exhibited higher FMA scale and modified Barthel index (MBI) scores than the CG from 1 to 6 months of intervention ( $P < 0.05$ ). Conclusion: MMDC showed better efficacy, the patients' neurological function, muscle tone and motor function could be better restored, and patients' abilities of daily activities were improved after intervention.

**Zhao X, Bai X, Shin H. The Aspects of Ecological ENVIRONMENT in Host City of the Winter Olympic Games. Public Value. 2021;6(1):83-91.**

**ABSTRACT:**

Purpose: Environment protection is one of the major tasks of International Olympic Committee which is listed into Olympic Charter in 1996. As the concept of sustainable

development was introduced into Olympic Games, the environment protection was the top issue which the host cities should be concerned. Winter Olympic Games is a sport events relying on natural environment particularly. Therefore, this paper explored the aspects of winter Olympic Games on ecological environment in host cities. It will propose the references for 2022 winter Olympic Games to make winter Olympic Games and ecological environment sustainable. Method: This paper employs the systematic literature review to explore the relationship between winter Olympic Games and ecological environment. 15 articles was scanned and presented for extracting relevant information to analyze the aspects of ecological environment of host cities in winter Olympic Games. The in-formation of Year, the place of Winter Olympic Games, impact or not, positive or negative impact, the specific performance and effect on host cities were extracted to use. Results: Among the existing studies, it is believed that holding the Winter Olympics will have a certain impact on the ecological environment. There are negative and positive impacts both. The negative impact is mainly caused by the site selection and the construction of the venues occupying the natural environment, which leads to a series of subsequent effects, and then affects people's lives, containing water pollution, land source, air pollution and soon. There is also positive impact which can improve the environment protection. Conclusion: First, the hosting of the Winter Olympic Games should take full account of the city's own eco-logical environment and urban environment. Second, the concept of sustainable development of the Olympic movement should be fully implemented. Third, relevant laws and regulations related to environmental protection should be issued.

## 兴奋剂研究

本期兴奋剂方面的研究共检索到英文相关文献16篇，研究热点：体育利益相关者对兴奋剂行为检举信念的实证调查；未申报的兴奋剂在商业运动营养补充剂中非常普遍；西班牙优秀田径运动员和国家标准田径运动员对兴奋剂的态度和敏感性；体育中兴奋剂违规行为的检举；对公平、兴奋剂和体育需求的信任；国际游泳联合会兴奋剂控制规则之外的特殊情况：孙杨案；改进运动中糖皮质激素兴奋剂检测的新方法等方面。

**Barkoukis V, Petrou M, Lazuras L, Ourda D. An empirical investigation of sport stakeholders' beliefs about whistleblowing against doping behaviour. *International Journal of Sport and Exercise Psychology*. 2021.**

### **ABSTRACT:**

The present study investigated the beliefs of athletes and sport stakeholders about whistleblowing against doping in elite competitive sport. Semi-structured interviews took place with five elite athletes, five coaches and five sport directors, from both team and individual sports in Cyprus. Three themes were identified through thematic analysis and reflected issues pertaining to: (a) understanding whistleblowing, (b) facilitating factors and barriers to whistleblowing, and (c) aspects of a reliable and transparent reporting system. Our findings corroborate previous research on whistleblowing against doping in sport, and provide novel insights about the beliefs, attitudes, and concerns of sport stakeholders, such as coaches and sport directors, about the feasibility of existing whistleblowing policies and processes. The policy and practice implications of our findings are discussed.



**Chirico A, Lucidi F, Pica G, et al. The Motivational Underpinnings of Intentions to Use Doping in Sport: A Sample of Young Non-Professional Athletes. International Journal of Environmental Research and Public Health. 2021;18(10).**

**ABSTRACT:**

Doping use is considered as a deviant behavior in sport contexts, and it is necessary to recognize preventive factors to shut down the negative consequences. We proposed that athletes experiencing loss of personal significance would be more prone to doping use intentions. This pathway should occur through the effect of the enhanced predominance of obsessive (vs. harmonious) passion that such athletes experience concerning their sport activity, which, in turn, facilitates the adoption of moral disengagement strategies to find justifications for it, when they perceive that significant others approve their intention. The study relied on a cross-over design, with a convenience sample of 437 athletes recruited at four sports sciences Universities evenly distributed in Italy. Questionnaires administered contained a validated tool based on Kruglanski's theorizing on radical and deviant behavior (e.g., Loss of Significance, Obsessive, and Harmonious passion) and deriving from social cognitive theory (e.g., Moral disengagement). Results of the study tested a serial mediation moderated model, which links the different variables to explain the influence they have on the intentions to use doping. Overall, this research suggests a motivational dynamic that may be at the heart of illicit behaviors in sport, such as using drugs-enhancing performance potentially among athletes of all kinds.

**Duiven E, van Loon LJC, Spruijt L, Koert W, de Hon OM. Undeclared Doping Substances are Highly Prevalent in Commercial Sports Nutrition Supplements. Journal of Sports Science and Medicine. 2021;20(2):328-338.**

**ABSTRACT:**

Sports nutrition supplements have previously been reported to contain undeclared doping substances. The use of such supplements can lead to general health risks and may give rise to unintentional doping violations in elite sports. To assess the prevalence of doping substances in a range of high-risk sports nutrition supplements available from Dutch web shops. A total of 66 sports nutrition supplements - identified as potentially high-risk products claiming to modulate hormone regulation, stimulate muscle mass gain, increase fat loss, and/or boost energy - were selected from 21 different brands and purchased from 17 web shops. All products were analyzed for doping substances by the UK life sciences testing company LGC, formerly known as the Laboratory of the Government Chemist, using an extended version of their ISO17025 accredited nutritional supplement screen. A total of 25 out of the 66 products (38%) contained undeclared doping substances, which included high levels of the stimulants oxilofrine, beta-methylphenethylamine (BMPEA) and N,beta-dimethylphenethylamine (NBDMPEA), the stimulant 4-methylhexan-2-amine (methylhexaneamine, 1,3-dimethylamylamine, DMAA), the anabolic steroids boldione (1,4-androstadiene-3,17-dione) and 5-androstene-3 beta,17 alpha-diol (17 alpha-AED), the beta-2 agonist higenamine and the beta-blocker bisoprolol. Based upon the recommended dose and the potential variability of analyte concentration, the ingestion of some products identified within this study could pose a significant risk of unintentional doping violations. In addition to inadvertent doping risks, the prescribed use of 3 products (4.5%) could likely impose general health risks.

**Garcia-Grimau E, De la Vega R, De Arce R, Casado A. Attitudes Toward and Susceptibility to Doping in Spanish Elite and National-Standard Track and Field Athletes: An Examination of the Sport Drug Control Model. *Frontiers in Psychology*. 2021;12.**

**ABSTRACT:**

The Sport Drug Control Model (SDCM) is likely to be the model which most explicitly represents the theoretical paradigm of the psychological study of the use of doping in sport. This model can be further developed through its analysis in different populations and cultures. The main aim of this study was to empirically test the SDCM while analyzing for the first time the intentions and attitudes toward doping in Spanish track and field athletes. A secondary aim was to assess the extent to which the variables in the model together predict attitude, susceptibility, and behavior toward the use of performance-enhancing substances. Participants were 281 Spanish elite and national-standard track and field athletes from whom 80.1% were 18-28 years old and 49.5% were females. Participants completed the SDCM questionnaire measuring morality, legitimacy, benefits appraisal, threat appraisal, self-efficacy to refrain from doping, reference groups' endorsement of doping methods/substances, use of legal supplements, availability and affordability of doping, attitudes toward doping, susceptibility to doping and, self-reported use of banned performance-enhancing substances or methods. Structural equation modeling supported a good fitness of the SDCM and confirmed that positive attitudes toward doping predicted high susceptibility to doping ( $\beta = 0.55, p < 0.001$ ), which is in turn associated with the use of prohibited substances and methods ( $\beta = 0.12, p < 0.05$ ). The factors that have most influence on attitudes toward doping are morality ( $\beta = 0.46, p < 0.001$ ) and reference group opinion ( $\beta = 0.62, p < 0.001$ ). Self-reported doping use was 9.6%. These findings confirm SDCM reproducibility and variability (as it accounts for several variables) in Spanish track and field competitive athletes. It is recommended to implement preventive programs which allow athletes to acquire a strong moral stance against doping and

coaches to employ the tools required to instill and educate their athletes in rejecting these illegal practices that corrupt the integrity of competitive sport.

**Gleaves J, Petroczi A, Folkerts D, et al. Doping Prevalence in Competitive Sport: Evidence Synthesis with "Best Practice" Recommendations and Reporting Guidelines from the WADA Working Group on Doping Prevalence. Sports Medicine. 2021;51(9):1909-1934.**

**ABSTRACT:**

**Background** The prevalence of doping in competitive sport, and the methods for assessing prevalence, remain poorly understood. This reduces the ability of researchers, governments, and sporting organizations to determine the extent of doping behavior and the impacts of anti-doping strategies. **Objectives** The primary aim of this subject-wide systematic review was to collate and synthesize evidence on doping prevalence from published scientific papers. Secondary aims involved reviewing the reporting accuracy and data quality as evidence for doping behavior to (1) develop quality and bias assessment criteria to facilitate future systematic reviews; and (2) establish recommendations for reporting future research on doping behavior in competitive sports to facilitate better meta-analyses of doping behavior. **Methods** The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to identify relevant studies. Articles were included if they contained information on doping prevalence of any kind in competitive sport, regardless of the methodology and without time limit. Through an iterative process, we simultaneously developed a set of assessment criteria; and used these to assess the studies for data quality on doping prevalence, potential bias and reporting. **Results** One-hundred and five studies, published between 1975 and 2019, were included. Doping prevalence rates in competitive sport ranged from 0 to 73% for doping behavior with most falling under 5%. To determine prevalence, 89 studies used self-reported survey data (SRP) and 17 used sample analysis data (SAP) to produce evidence for doping prevalence (one study used

both SRP and SAP). In total, studies reporting athletes totaled 102,515 participants, (72.8% men and 27.2% women). Studies surveyed athletes in 35 countries with 26 involving athletes in the United States, while 12 studies examined an international population. Studies also surveyed athletes from most international sport federations and major professional sports and examined international, national, and sub-elite level athletes, including youth, masters, amateur, club, and university level athletes. However, inconsistencies in data reporting prevented meta-analysis for sport, gender, region, or competition level. Qualitative syntheses were possible and provided for study type, gender, and geographical region. The quality assessment of prevalence evidence in the studies identified 20 as "High", 60 as "Moderate", and 25 as "Low." Of the 89 studies using SRP, 17 rated as "High", 52 rated as "Moderate", and 20 rated as "Low." Of the 17 studies using SAP, 3 rated as "High", 9 rated as "Moderate", and 5 rated as "Low." Examining ratings by year suggests that both the quality and quantity of the evidence for doping prevalence in published studies are increasing. **Conclusions** Current knowledge about doping prevalence in competitive sport relies upon weak and disparate evidence. To address this, we offer a comprehensive set of assessment criteria for studies examining doping behavior data as evidence for doping prevalence. To facilitate future evidence syntheses and meta-analyses, we also put forward "best practice" recommendations and reporting guidelines that will improve evidence quality.

**Henning A, McLean K, Andreasson J, Dimeo P. Risk and enabling environments in sport: Systematic doping as harm reduction. *International Journal of Drug Policy*. 2021;91.**

**ABSTRACT:**

Doping and the use of performance enhancing drugs (PEDs) are often considered and discussed as a separate issue from other types of substance use, by sporting bodies, politicians, the media, and athletes who use drugs themselves. However, perceptions and understandings of substance use in the sport and fitness world are directly related to

those of substance use in the non-sport world. One way the gap between sport and non-sport substance use research can be bridged is to consider sport risk and enabling environments. Similar to non-sport contexts and drug use, it is important to analyse the environments in which doping occurs. This approach allows us to examine the dynamic interplay between risk and enabling factors, as the enabling environment shifts in response to changes produced in the risk environment, and vice versa. There are models of sport environments that have proven effective at both enabling doping by athletes and reducing harms to athletes: systematic doping. This article will use secondary literature in order to review and analyse known cases of systematic doping through the risk and enabling environment frameworks. We argue that these systems responded to anti-doping in ways that protected athletes from the risk factors established by anti-doping policy and that athletes suffered most when these systems were revealed, exposing athletes to the full range of doping harms. Further, we argue that risks within these systems (i.e. extortion, bullying) resulted from the broader prohibitive sport environment that forces doping underground and allows such abuses to occur.

**Jokipalo I, Khudayarov A. A Netnography and a Survey on Doping Use among Competitive Doping-untested Strength-sport Athletes. *International Journal of Sports Medicine*. 2021;42(07):645-650.**

**ABSTRACT:**

Doping-untested strength-sport athletes (powerlifters, strongmen, armlifters, etc.) are infamous for their doping use, but their exact doping regimens are not known. The purpose of this study was to provide a reasonable portrait of doping history in this specific athlete group for medical practitioners. Seventy-five athletes were selected by netnography of the social media community around the Finnish doping-untested strength-sport federations on the basis of their activity in doping-related discussions, and the athletes were invited to answer a detailed doping-related anonymous survey. Fifty respondents completed the survey. 100% of the respondents reported use of anabolic

androgenic steroids, 66% reported use of stimulants, and 80% use of non-steroidal anabolic substances. The doses of both testosterone products and human growth hormone were notably larger than reported in previous studies of gym users (mostly non-competitive athletes). The subjects reported simultaneous use of an average 5.66 illegal substances, and lifetime use of 16.78 illegal substances. The doses of illicit drugs, as well as polypharmacy, among competitive doping-untested strength-sport athletes are higher than previously reported among recreational gym users, and side effects are likely in this specific population.

**Lazuras L, Barkoukis V, Bondarev D, et al. Whistleblowing Against Doping Misconduct in Sport: A Reasoned Action Perspective With a Focus on Affective and Normative Processes. Journal of Sport & Exercise Psychology. 2021;43(4):285-297.**

**ABSTRACT:**

Whistleblowing against doping misconduct represents an effective deterrent of doping use in elite competitive sport. The present study assessed the effects of social cognitive variables on competitive athletes' intentions to report doping misconduct. A second objective was to assess whether the effects of social norms on whistleblowing intentions were mediated by actor prototype evaluations and group identification and orientation. In total, 1,163 competitive athletes from Greece, Russia, and the United Kingdom completed a questionnaire on demographics, past behavior, social cognitive variables, and intentions toward whistleblowing. Regression analyses showed that whistleblowing intentions were associated with different social cognitive variables in each country. Multiple mediation modeling showed that attitudes and subjective norms were associated with whistleblowing intentions indirectly, via the effects of anticipated negative affect and group identification and orientation, respectively. The findings of this study are novel and have important implications about the social, cognitive, and normative processes underlying decision making toward reporting doping misconduct.

**Lima G, Muniz-Pardos B, Kolliari-Turner A, et al. Anti-doping and other sport integrity challenges during the COVID-19 pandemic. Journal of Sports Medicine and Physical Fitness. 2021;61(8):1173-1183.**

**ABSTRACT:**

The coronavirus disease (COVID-19) pandemic has had an unprecedented impact on the world of sport and society at large. Many of the challenges with respect to integrity previously facing competitive sport have been accentuated further during the pandemic. Threats to the integrity of sporting competition include traditional doping, issues of technological fairness, and integration of transgender and intersex athletes in elite sport. The enforced lull in competitive sport provides an unprecedented opportunity for stakeholders in sport to focus on unresolved integrity issues and develop and implement long-lasting solutions. There needs to be a concerted effort to focus on the many technological innovations accelerated by and perfected during COVID-19 that have enabled us to work from home, such as teaching students on-line, applications for medical advice, prescriptions and referrals, and treating patients in hospitals/care homes via video links and use these developments and innovations to enhance sport integrity and anti-doping procedures. Positive sports integrity actions will require a considered application of all such technology, as well as the inclusion of "omics" technology, big data, bioinformatics and machine learning/artificial intelligence approaches to modernize sport. Applications include protecting the health of athletes, considered non-discriminative integration of athletes into elite sport, intelligent remote testing to improve the frequency of anti-doping tests, detection windows, and the potential combination with omics technology to improve the tests' sensitivity and specificity in order to protect clean athletes and deter doping practices.



**Otto F, Pawlowski T, Utz S. Trust in fairness, doping, and the demand for sports: a study on international track and field events. *European Sport Management Quarterly*. 2021.**

**ABSTRACT:**

**Research question** We investigate empirically the impact of spectators' trust in fairness of the sporting competition on TV demand for sports as well as its role in the doping-demand relation. **Research methods** We use data from a two-wave panel survey and a sporting event scenario where doping issues are present. The effects are estimated using Zero-Inflated Poisson regressions and radius matching based on the propensity score. **Results and findings** Results of the panel survey analysis suggest that trust in fairness has no impact on TV demand. Our scenario analysis further reveals that awareness about a major doping case negatively affects trust in the fair conduct and integrity of athletes. However, we again find no general effect on the demand for sports. **Implications** Results of our study suggest that athletes can be seen as (dis)trust ambassadors promoting the (un)fairness of the sporting competition to consumers. However, in contrast to popular (political) claims, our results question the trust channel as a driver for spectator sports demand and as a mechanism in the doping-demand relation.

**Petroczi A, Backhouse SH, Boardley ID, et al. 'Clean athlete status' cannot be certified: Calling for caution, evidence and transparency in 'alternative' anti-doping systems. *International Journal of Drug Policy*. 2021;93.**

**ABSTRACT:**

Athletes, sponsors and sport organisations all have a vested interest in upholding the values of clean sport. Despite the considerable and concerted efforts of the global anti-doping system over two decades, the present system is imperfect. Capitalising upon consequent frustrations of athletes, event organisers and sponsors, alternative antidoping

systems have emerged outside the global regulatory framework. The operating principles of these systems raise several concerns, notably including accountability, legitimacy and fairness to athletes. In this paper, we scrutinise the Clean Protocol TM , which is the most comprehensive alternative system, for its shortcomings through detailed analysis of its alleged logical and scientific merits. Specifically, we draw the attention of the anti-doping community-including researchers and practitioners-to the potential pitfalls of using assessment tools beyond the scope for which they have been validated, and implementing new approaches without validation. Further, we argue that whilst protecting clean sport is critically important to all stakeholders, protocols that put athletes in disadvantageous positions and/or pose risks to their professional and personal lives lack legitimacy. We criticise the use of anti-doping data and scientific research out of context, and highlight unintended harms that are likely to arise from the widespread implementation of such protocols in parallel with-or in place of-the existing global anti-doping framework.

**Petrou M, Lazuras L, Hillier M, Mojtahedi D. Doping behaviour in mixed martial arts athletes: the roles of social norms and self-regulatory efficacy. *International Journal of Sport and Exercise Psychology*. 2021.**

**ABSTRACT:**

The present study examined, for the first time, the multivariate association between social norms, negative self-conscious emotions, and self-regulatory efficacy and doping intentions in an international sample of MMA athletes, with an emphasis on moderation and mediation effects. We also examined whether MMA athletes with different doping experiences also differed in doping-related self-conscious emotions, self-regulatory efficacy, social norms and doping intentions. A cross-sectional survey-based design was used, and structured anonymous online questionnaires were completed by 249 MMA athletes from 16 countries. Three groups of users were identified based on self-reported doping use: never users, never user contemplators, and ever users. One-way ANOVA

showed that athletes with differed doping experiences gave significantly different scores in social norms, self-conscious emotions, self-regulatory efficacy, and doping intentions. Hierarchical regression analysis showed that doping intentions were significantly associated with perceiving greater social approval of doping among referent others (injunctive norms), anticipating less negative self-conscious emotions from doping, and with lower levels of self-regulatory efficacy, after controlling for the effect of past doping use. Moderated regression analysis showed that self-conscious emotions did not interact with social norms in predicting doping intentions. Regression-based mediation analysis further showed that self-regulatory efficacy significantly mediated the association of injunctive norms and self-conscious emotions with doping intentions. Our findings highlight the role of social norms and self-conscious emotions in the decision-making process underlying doping in MMA athletes. The practical implications of our findings are discussed within the context of clean sport education and related campaigns to prevent doping in MMA.

**Plachka K, Pezzatti J, Musenga A, et al. Ion mobility-high resolution mass spectrometry in anti-doping analysis. Part I: Implementation of a screening method with the assessment of a library of substances prohibited in sports. *Analytica Chimica Acta*. 2021;1152.**

**ABSTRACT:**

In this series of two papers, 192 doping agents belonging to the classes of stimulants, narcotics, cannabinoids, diuretics, beta 2-agonists, beta-blockers, anabolic agents, and hormone and metabolic modulators were investigated, with the aim to assess the benefits and limitations of ion mobility spectrometry (IMS) in combination with ultra-high performance liquid chromatography (UHPLC) and high resolution mass spectrometry (HRMS) in anti-doping analysis. In this first part, a generic UHPLC-IM-HRMS method was successfully developed to analyze these 192 doping agents in standard solutions and urine samples, and an exhaustive database including retention times, (CCSN2)-C-TW

values, and m/z ratios was constructed. Urine samples were analyzed using either a simple "dilute and shoot" procedure or a supported liquid-liquid extraction (SLE) procedure, depending on the physicochemical properties of the compounds and sensitivity criteria established by the World Anti-Doping Agency (WADA) as the minimum required performance levels (MRPL). Then, the precision of the generic UHPLC-IM-HRMS method was assessed as intraday, interday as well as interweek variation of UHPLC retention times and (CCSN2)-C-TW values, for which RSD the values were always lower than 2% in urine samples. The possibility to filter MS data using IMS dimension was also investigated, and in average, the application of IMS filtration provided low energy MS spectra with 86% less interfering peaks in both standard and urine samples. Therefore, the filtered MS spectra allowed for an easier interpretation and a lower risk of false positive result interpretations. Finally, IMS also offers additional selectivity to the UHPLC-HRMS enabling to separate isobaric and isomeric substances. Among the selected set of 192 doping agents, there were 30 pairs of isobaric or isomeric compounds, and only two pairs could not be resolved under the developed conditions. This illustrates the potential of adding ion mobility to UHPLCHRMS in anti-doping analyses. (C) 2021 The Author(s). Published by Elsevier B.V.

**Tozaki T, Ohnuma A, Kikuchi M, et al. Robustness of digital PCR and real-time PCR against inhibitors in transgene detection for gene doping control in equestrian sports. *Drug Testing and Analysis*. 2021.**

**ABSTRACT:**

Gene doping is a threat to fair competition in sports, both human and equestrian. One method of gene doping is to administer exogenous genetic materials, called transgenes, into the bodies of postnatal humans and horses. Polymerase chain reaction (PCR)-based transgene detection methods such as digital PCR and real-time PCR have been developed for gene doping testing in humans and horses. However, the significance of

PCR inhibitors in gene doping testing has not been well evaluated. In this study, we evaluated the effects of PCR inhibitors on transgene detection using digital PCR and real-time PCR against gene doping. Digital PCR amplification was significantly inhibited by high concentrations of proteinase K (more than 0.1  $\mu\text{g}/\mu\text{l}$ ), ethylenediaminetetraacetic acid (more than 5  $\text{nmol}/\mu\text{l}$ ), and heparin (more than 0.05  $\text{unit}/\mu\text{l}$ ) but not by ethanol or genomic DNA. In addition, phenol affected droplet formation in the digital PCR amplification process. Real-time PCR amplification was inhibited by high concentrations of phenol (more than 1% v/v), proteinase K (more than 0.001  $\mu\text{g}/\mu\text{l}$ ), ethylenediaminetetraacetic acid (more than 1  $\text{nmol}/\mu\text{l}$ ), heparin (more than 0.005  $\text{unit}/\mu\text{l}$ ), and genomic DNA (more than 51.9  $\text{ng}/\mu\text{l}$ ) but not by ethanol. Although both PCR systems were inhibited by nearly the same substances, digital PCR was more robust than real-time PCR against the inhibitors. We believe that our findings are important for the development of better methods for transgene detection and prevention of false negative results in gene doping testing.

**Ventura R, Daley-Yates P, Mazzone I, et al. A novel approach to improve detection of glucocorticoid doping in sport with new guidance for physicians prescribing for athletes. *British Journal of Sports Medicine*. 2021;55(11):631-+.**

**ABSTRACT:**

The systemic effect of glucocorticoids (GCs) following injectable routes of administration presents a potential risk to both improving performance and causing harm to health in athletes. This review evaluates the current GC antidoping regulations defined by the World Anti-Doping Agency and presents a novel approach for defining permitted and prohibited use of glucocorticoids in sport based on the pharmacological potential for performance enhancement (PE) and risk of adverse effects on health. Known performance-enhancing doses of glucocorticoids are expressed in terms of cortisol-equivalent doses and thereby the dose associated with a high potential for PE for any GC and route of administration can be derived. Consequently, revised and

substance-specific laboratory reporting values are presented to better distinguish between prohibited and permitted use in sport. In addition, washout periods are presented to enable clinicians to prescribe glucocorticoids safely and to avoid the risk of athletes testing positive for a doping test.

**Vetrova EG, Khalatova RI, Kashaeva AA. Exceptional circumstances beyond International Swimming Federation Doping Control Rules: The Sun Yang case of Court of Arbitration for Sport. Vestnik of Saint Petersburg University. Law. 2021;12(1):131-143.**

**ABSTRACT:**

The authors refer to the exceptional circumstances surrounding Sun Yang's violation. The athlete intervened in the doping control procedure in several ways. First, he questioned the proper accreditation of the IDTM's (The company "International Doping Tests and Management") Samples Collection Personnel, one of which photographed him. This officer was suspended from urine sampling, but there was no longer a male specialist on the IDTM's Samples Collection Personnel. Therefore, the collection of urine samples did not take place due to the athlete's actions. A general distrust of IDTM's Samples Collection Personnel due to inappropriate photographing was the catalyst for follow-up action. Secondly, the athlete required IDTM's Samples Collection Personnel to confirm his credentials (accreditation) from the anti-doping organization, despite the submission of documents by IDTM's Samples Collection Personnel following the International Standard for Testing and Investigations. Not having received the additional and, in the opinion of the athlete, necessary documents, he refused to participate in the doping control procedure as a whole, tearing up his previously given written consent. Finally, the athlete took part in the destruction of blood samples with a hammer, but his role in this process was controversial. A prerequisite for the destruction process of the samples was the assistance of the IDTM's Samples Collection Personnel, who handed them over to the athlete in response to insistent demands. The listed

circumstances, which are exceptional, however, could not affect the reduction of Sun Yang's period of ineligibility, since the FINA (International Swimming Federation) Doping Control Rules, based on WADA (World Anti-Doping Agency) Code 2015, do not imply such a basis. The new WADA Code 2021 offers a more flexible concept of liability and takes into account exceptional circumstances that in subsequent disputes about tampering can be established based on the example of the dispute CAS 2019/A/6148.