2021 International Conference on Information Technology and Contemporary Sports (TCS 2021)

Guangzhou, China 15 – 17 January 2021



IEEE Catalog Number: CFP21AM8-POD ISBN: 978-1-6654-2911-5

Copyright © 2021 by the Institute of Electrical and Electronics Engineers, Inc. All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

*** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP21AM8-POD

 ISBN (Print-On-Demand):
 978-1-6654-2911-5

 ISBN (Online):
 978-1-6654-2910-8

Additional Copies of This Publication Are Available From:

Curran Associates, Inc 57 Morehouse Lane Red Hook, NY 12571 USA Phone: (845) 758-0400

Fax: (845) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



2021 International Conference on Information Technology and Contemporary Sports (TCS)

TCS 2021

Table of Contents

reface xix	
Committees xx	
eviewers xxi	•••••
In Comment on Total and the Comment Comments Total Comments on the Comments of Comments on the Comments of Comments on the Comments of Com	.1.
. Information Technology and Internet Sports Teaching Researc	!n
he Development Path of Home Fitness Among Chinese Citizens after COVID-19 Pandemic: erspective of Network Technology and Information Dissemination .1	A
Application of Computer Aided Technology in Wushu Routine Sports .6. Zhao-Wei Li (Guangzhou University of Chinese, China), Yue-Zhong Li (Guangzhou University of Chinese, China), and Ya-Nan Li (Wuhan Institute of Physical Education, China)	
On the Influence of the Internet on College Students' Physical Exercise Behavior .10	
Research and Prospect of College Physical Education Mode Based on Network Information Sechnology 14	
tudy on New Media Communication Strategy of Traditional Chinese Sports 19	

An Experimental Study on the Teaching Model of Integrating Ideological and Political Education in Physical Education Courses for Hearing Impaired Students from the Perspective of Mobile Internet 24.
Jiajun Yu (Tianjin University of Technology, China), Zhiwu Zhang (Tianjin University of Technology, China), Meng Han (Tianjin University of Technology, China), and Yuexiang Li (Guangzhou Vocational and Technical University of Science and Technology, China)
A Survey of Physical Education Teachers' Technological Pedagogical Content Knowledge .30
Research on College Students' User Satisfaction with Running APP Based on Computer Information Technology .34
Application of Internet and Information Technology in School Physical Education .38
The Application of Network Interactive Teaching in Physical Education Online Courses .42
Aerobics Teaching Based on Modern Information Technology .46. Jun Liu (GuangDong University of Foreign Studies, China) and Qing Song (GuangDong University of Foreign Studies, China)
The Application of Cloud Computing in the Field of Physical Education .51
The Influence of Different Length of Adaptive Skills Learning in College Students' Breaststroke Learning Based on the Macmillan Analysis Approach .55
Implementation of Information Technology in the Construction of Physical Education Platform .60 Yong Jiang (Guangzhou Civil Aviation Vocational and Technical College, China) and Shuangyu Xu (Guangzhou Civil Aviation Vocational and Technical College, China)
The Influence of Teachers' Professional Ability on College Students' Football Learning Satisfaction Based on Institutional Equation Mode .64. Maqiang Chen (Chongqing University of Technology, China) and Hui Xie (Chongqing University of Technology, China)
Research on the Application and Development Prospect of Network Echnology in Physical Education Teaching Management of Higher Vocational Colleges .68
A Study of Integration of Information Technology and Teaching in Aviation Physical Education .76

Research on Practice Innovation of University Physical Education Curriculum Under the Background of "Internet Micro-Era" 80
Research on Relevant Problems Concerning the Integration of Information Technology and Physical Education .87
Research on the Reform of College Physical Education Based on Information Technology .91
A Study on the Reconstruction of Chinese Folk Dance Culture's Education Path in Colleges Based on Information Technology .95. Yanmei Peng (Yunnan University of Finance and Economics, China)
Design of an Intelligent Management System for Sports Activities Based on New Information Technology 99
College Football Teaching Based on Information Technology .104
Football Mixed Teaching Design Based on ADDIE Model Under Information Technology: Take Kicking on the Inside of the foot as an Example .108
Research on the Development Strategy of Sports Venues in China Under the Background of Mobile Internet .113
A Review of Research on the Integration of Information Technology and Physical Education Curriculum Abroad .119 Ting Cao (Huanggang Normal University, China)
Enlightenment of Mobile Internet Technology on the Development of Physical Education Informatization During the Epidemic Period .124
Teaching and Research on "Integration in and Out of Class" of Flight Attendant Professional Cheerleading in the Context of Lifelong Physical Education Based on a Cheer Leading Network Learning Platform 129
Research on E-Sports Promotion in Terms of Cross-Cultural Communication: Case Study of Honor of Kings' Silk Road E-Sports Tournament (SRET) .133

Empirical Research on Integration of Information Technology with Swimming Education .137 Weiwei Huang (Guangzhou Sport University, China), Tingyan Gao (Fudan University, China), and Kexin Hu (Ersha Sports Training Center of Guangdong Province, China)
Research on the Influence of Information Technology on the Development of School Sports in Chinese Universities .142
Comparative Analysis on the Spiking Effect of Ace Spiker between Chinese and Foreign Women's Volleyball Teams Under Information Technology: Take the Finals of 2019 FIVB Volleyball Women's Nations League as an Example .146
Information-Based Teaching Ability Training of PE Teachers and Information-Based Teaching Practice Paths .152
The Application of Information Technology in the Teaching and Training of Taekwondo in College Physical Education .156
Online Teaching Mode of College Sports Dance Course Under the Background of Internet Plus .16(Hua He (Nanfang College of Sun Yat-sen University, China) and Qian Luo (Guangdong University of Foreign Studies, China)
An Evaluation Study on the Characteristics of Physical Form of Elite Young Female Volleyball Athletes in China Against the Backdrop of Information Technology .165 Ning Li (Zhejiang International Studies University)
An Empirical Study on Bilingual MOOC of Traditional Chinese Sports in the Context of International Communication 17.4
Effectiveness of Flipped Classroom Teaching Model in Badminton Teaching in Colleges and Universities 181
Synergetic Development of Land-Expropriated Farmers' Sports Demands and New Type of Town Sports in the Process of Urbanization Under the Background of Internet .185

Pata-Driven Physical Education Curriculum Design and Analysis: Research on the Integration of Information Technology and PE Teaching Process 190
A Policy Study on Variations of Management Concept of College Physical Education in Age of Internet 196
xperimental Research on the Implementation of Auxiliary Teaching of Track and Field Course Based on Wechat Platform 200
. Application of Big Data and Data Mining in Sports
Study on Network Technology-Based Spreading of China's Traditional Ethnic Sports through Confucius Institutes .205
Cinematic Factors Effecting Push-off Velocity in Flip Turn of Front Crawl Swimming 211 Dongxiang Huang (Shaoguan University, China), Bo Huang (South China Normal University, China), and Xiaobing Wang (Shaoguan University, China)
ffect of High-Intensity Interval Training and Accumulated Exercise on PGC-1α and SIRT3 evels in the Skeletal Muscle of Rats and Bioinformatics Analysis .215
Meta-Analysis on the Influence of Exercise on Subjective Well-Being of the Elderly and Its Dimensions .221
ituation and Lessons of Application of NBA Big Data Technology .228
Design and Implementation of the Archive Management System of the Physical Fitness Tests of Students in Primary and Secondary Schools: Based on the Cloud Data 232

Application and Analysis of SPSS in the Adaptability of College Students in Different Altitude Areas 237
Yong Ge Mao (Qinghai University, China), Shao Ni Tang (Qinghai Normal University, China), Hui Ping Wang (Qinghai Communications Vocational and Technical College, China), and Zhen Wu (Qinghai University, China)
Review and Prospect of International Aquatic Training Research Based on Visualization Analysis of Big Data Literature 241
Deepening Path of Data Algorithm in Technical and Tactical Analysis of College Volleyball Training 249. Liuqing Yang (Heyuan Polytechnic, China), Yuanping Zhang (Heyuan Polytechnic, China), Hua Yin (Heyuan Polytechnic, China), and Yanmei Lu (Heyuan Polytechnic, China)
Effects of 24 Weeks Progressive Aerobic Training on Physical and Mental Health of Male Drug Addicts with Different Depression Levels: Data Analysis Based on Smart Big Data Acquisition System for Drug Treatment .253
Chinese Media Copyright Trading for Professional Sports Events in the Digital Era .259
The Behavior Analysis of College Students'home Fitness in Full Media Age .264
Study on China's Visual Sports Data News in the Omni-Media Era .27.1. Ningning He (Shanghai International Studies University, China), Hairong Liu (Shanghai International Studies University, China), Wei Wang (Shanghai International Studies University, China), and Yin Yu (Shanghai International Studies University, China)
A Hierarchical Regression Analysis of Factors Influencing Physical Exercise Activities of University Students 27.6
Mechanical Analysis and Pathway Simulation of Tennis Topspin 285. Bihong Xu (China University of Mining and Technology, China), Dezheng Hua (China University of Mining and Technology, China), and Xinhua Liu (China University of Mining and Technology, China)
Mapping Knowledge Analysis on Research of Sports Psychology in China Based on the 2010-2020 CSSCI Literature 290

Application of Big Data Analysis in Physical Health Monitoring of Chinese Students .294
Reliability of Using Stroke Index to the Evaluation in Swimming Technical Level for College Students Based on the Progressive Scoring Approach 298
A Verifying Analysis of the CART-Q from a Cross-Cultural Perspective .303
Research on School Sports Training Under the Background of Big Data .308
Development and Application of a System for Optimal Combination of Decision in the Mixed 4×100m Medley Relay .312
The Development and Research of Chinese Artistic Swimming Under the Background of Big Data — Compared with the World's top three Teams .318
Influences and Challenges of Algorithmic Push Regarding Sports News: A Research Based on Analytic Hierarchy Process .322
Application of Data Mining Technology in Sports Data Analysis in Colleges and Universities.329 Kewei Yu (Sun Yat-sen University), Ting Yuan (Sun Yat-sen University), and Yang Li (Sun Yat-sen University)
The Big Data Analysis of Current Situation and Development for High-Risk Sports Events in Jiangxi Province 333
Research on the Academic Frontier of International Football Based on HistCite .337
Research On the Application of Big Data in Physical Fitness Test and Health Promotion of College Students .343
The Research of The General Paradigm of Integrable Ware MCAI Courseware Design for Difficulty and Beauty Sports .347

Stadium Resource Sharing Service Platform: Problems, Functions and Constructio .353
Research on the Emotion Regulation Effect of Home Sports Based on Social Media Data Analysis and Online Experimental Investigation 357 Fuwei Jiao (Beijing Sport University, China), Tianxiao Guo (Beijing Sport University, China), Jianwei Li (Beijing Sport University, China), Pengjie Li (Beijing Sport University, China), Run Cao (Beijing Sport University, China), and Yanfei Shen (Beijing Sport University, China)
The Shortage and Dilemma of International Communication of Traditional Chinese Sports in the Omni-Media Era 363
Based on the use of SPSS Software Analysis of the Plateau and Plain Area of College Students Physical Quality Difference 37.0
Analysis of Monitoring Data of Higher Vocational Students' Physical Health Data Based on "Big Data" Technology .37.4
Association between Motor Ability and Academic Performance in Elementary Schoolchildren .379. Zhao-Wei Li (Guangzhou University of Chinese Medicine, China), Yue-Zhong Li (Guangzhou University of Chinese Medicine, China), and Jia-Ji Sun (Guangzhou Business School, China)
On Sharing of College Physical Education Network Course and Network Teaching Resource Under the Background of Collaborative Innovation Strategy .384
Formation and Enhancement of user Stickiness of Fitness Apps — A Study Based on ECM-ISC .388 Xi Jiang (Guangdong University of Foreign Studies, China), Deyi Huang (Guangdong University of Foreign Studies, China), and Zijun Kong (Guangdong University of Foreign Studies, China)
Analysis of Asian men's Gymnastics Competition Pattern from the Perspective of Big Data .399 Zhao-Fang Peng (GuiZhou Medical University, China), Wei Guo (GuiZhou Medical University, China), Yong Jia (Chongqing Institute of foreign trade and economic cooperation, China), and Ling Yuan (GuiZhou Medical University, China)
Big Data Analysis of Nadal's Winning Factors in Men's Singles Final of 2020 French Open .403 Jianjian Lin (University of International Relations, China) and Jie Song (Beijing University of Agriculture, China)
Research on the SPOC Blended Teaching Mode of Public Physical Education in Colleges and Universities: Take the Badminton Course as an Example .408

Study on the Risk Problem and Prevention and Control Mechanism of University Football in Guangdong Province .412
Visual Analysis of Published Articles of Chinese Sports Science CSSCI Journal 2010-2020 .418 Maoxuan Liu (Jiangxi University of Finance and Economics, China) and Jing Feng (Jiangxi University of Finance and Economics, China)
Algorithm of Modern Information Technology Applications and Data Fusion in Volleyball Teaching of College Sports .423
Research on the Differential Changes in the Physical Health Level of General Higher Education Institutions Students in the Epidemic Era by Data Analysis Model Based on Independent Sample T-Test .427
Application of Big Data Analysis in the Physical Fitness Monitoring of Chinese Students .435 Deliang Cai (Guangdong University of Foreign Studies, China), Deyi Huang (Guangdong University of Foreign Studies, China), and Peng Ning (Guangdong University of Foreign Studies, China)
Invisible Rules in Video Game NBA 2K: Procedural Rhetoric Analysis In A Potential Physical Education Tool .440
Research on The Correlation Between BMI and Vital Capacity of Bai Nationality College Students Based on Statistical Analysis .446. Shichao Wang (Dali University, China), Lihua Zhao (Dali University, China), and Fangyuan Bai (Dali University, China)
Sports Video Target Tracking Algorithm Based on Optimized Particle Swarm Algorithm .451 Yi Xu (Guangdong Eco-Engineering Polytechnic, China) and Qiaomei Liang (Guangdong University of Foreign Studies, China)
Research on Copyright Protection of Sports Events Based on Blockchain Technology .455 Jun-Ming Cui (Guangzhou Sport University, China) and Jing Pang (Guangdong AIB Polytechnic, China)
3. Artificial Intelligence and Sports Equipment Technology Application
The Application of Training Impulse and Sports Training Monitor in the Load Monitoring of Female Handball Players .460
Effect of Online and Offline Hybrid Teaching on Self-Esteem and Self-Confidence of College Students with Physical Weakness .465

Design and Implementation of College Venues Information Management System .469	
Therapeutic Effect of Double Needle Acupuncture Therapy for 63 Case of Tennis Elbow .473 Guo-Ping Xie (Guangzhou University of Chinese medicine, China), Jin Qi (Guangzhou University of Chinese medicine, China), Bu-Ping Liu (Guangzhou University of Chinese medicine, China), and Ri-Sheng Zhong (Guangdong University of Foreign Studies, China)	
Research on the Future Health of Society Based on College Students' Physical Health Standards .477	·
Research on the Application of Wearable Devices in Implicit Stratified Soccer Teaching .481 Miao Shen (Guangdong University of Technology, China), Yuanyuan He (South China Normal University, China), Junyu Tang (South China Normal University, China), Zhijian Liang (South China Normal University, China), Wenju Xue (South China Normal University, China), and Pei Li (South China Normal University, China)	
Applied Research of Speech Recognition System-Based Auxiliary Communication Device in College PE Course for the Deaf .485	
Artificial Intelligence Technology in Sports Application: The Chinese Experience .489	

Qifang Liang (First Affiliated Hospital of Guangdong Pharmaceutical University (Clinical School of Medicine), China), Wenxing Liu (First Affiliated Hospital of Guangdong Pharmaceutical University (Clinical School of Medicine), China), Buping Liu (Guangzhou University of Chinese Medicine, China), Xiaohong Chen (Panyu District Hospital of Traditional Chinese Medicine, China), Kunze He (Guangzhou University of Chinese Medicine, China), Zhongsheng Wang (Guangzhou University of Chinese Medicine, China), Shuxin Guo (Guangzhou University of Chinese Medicine, China), Leiying Ou (Guangzhou University of Chinese Medicine, China), Yanfang Yang (Guangzhou University of Chinese Medicine, China), Jin Qi (Guangzhou University of Chinese Medicine, China), Wei Xiao (Guangzhou University of Chinese Medicine, China), Wei Xiao (Guangzhou University of Chinese Medicine, China), Suling Nie (Guangzhou University of Chinese Medicine, China), Suling Nie (Guangzhou University of Chinese Medicine, China), and Meijuan Zhang (Guangzhou University of Chinese Medicine, China)
Summary of Core Muscle Strength and Surface Electromyography in Patients with Chronic Nonspecific low Back Pain 502
Research on the Application of Flipped Classroom Model in College Sports Dance Teaching .508 Yannin Chen (Guangdong University of Foreign Studies, China) and Xuwu Li (Guangdong University of Foreign Studies, China)
The Influence of Wearable Devices on the Body weight and Physical Exercise Consciousness of College Students .512
Comparative Analysis of Physical Fitness Test Indexes between Physique and Health .516
Effectiveness of Acute: Chronic Workload Ratio and Oslo Sports Trauma Research Center Questionnaire on Health Problems in Monitoring Sports Load and Injury of Track and Field Athletes .520
An Experimental Research on Microseismic Monitoring Technology in Detecting the Contact Time of Badminton Amateurs' Lunge .524
Research on the Application of "Micro-Learning" in Tai Chi Teaching .529. Shuangyan Yang (Nanjing Vocational University of Industry Technology, China) and Ling Xu (Guangdong University of Foreign Studies, China)
A Study of Liu Shiwen's Table Tennis Techniques and Tactics Based on Computer-Aided Video .533 <i>Xinru Shan (Huazhong Agriculture University, China), Hao Lei (Zhongnan University Of Economics And Law, China), and Xinge Wu (Huazhong Agriculture University, China)</i>

Investigation and Research on the Application Effect of VAR (Video Assistant Referee) Technology in China League One .537
A Feasibility Study on the Popularization of Tai Chi with Virtual Reality Technology .542
Research on the Correlation between Body Mass Index and Physical Health Index of Medical College Students .546
Strategies to Improve the Quality of College Students' Physical Health Test Under the Background of Informatization .551
The Application Research of Data Analysis of Student's Physical Health Testing on Optional Courses of Ice and Snow Sports .555
Research of Effects of Intelligent Rope Skipping on BMI or Health-Related Physical Fitness Among Overweight Middle School Students and the Correlation .559 Jiao Cao (Guangdong University of Education, China) and Yun Duan (Xiangnan University, China)
Apply SPSS Software to Analyze the Influence of new Teaching Method on Students' Physical and Mental Health and Teaching Effect .565
Recognition of Technical Action Types Based on Main Frequency of Hitting Sound Spectrum of Elite Badminton Players .571
Research on the Construction Status and Smart Application of the Community Elderly "Physical and Medical Integration" CenterBased on the Typical Case of the Community Elderly "Physical and Medical Integration" Center in Yinhang Street, Shanghai .578 Yunxia Ding (Nanjing Sport Institute, China), Ling Lu (Nanjing Sport Institute, China), and Hailong Wang (Shangti Health Technology (Shanghai) Co., LTD, China)
Construction of Sports Tourism Suitability Evaluation System Based on AHP .584

College Students .588.
Mingxuan Gao (South China Normal University, China), Xiaotong Chen (South China Normal University, China), Yongyi Lu (South China Normal University, China), Jiyu Xiao (South China Normal University, China),
Hongji Hu (South China Normal University, China), and Yupeng Shen (South China Normal University, China)
Research on the Development Situation and Countermeasures of Intelligent Equestrian Sport in China 592
Donghua Zhou (Wuhan Business University, China) and Kefu Peng (Wuhan Business University, China)
Study on Current Application and Construction Strategies of Stadiums in Tianjin in the Post-National Games Period Based on the Concept of Mapping .596
Jiacheng Feng (Tianjin University of Technology, China), Zhiwu Zhang (Tianjin University of Technology, China), Yuanming Jiu (Tianjin
University of Technology, China), Jinjin Chen (Tianjin University of Technology, China), and Zhanlu Liu (Tianjin University of Technology, China)
Constraints and Solutions of School Physical Education Policy Implementation in China Based on Structural Equation Model .602
Yang Wang (Xinhua College of Sun Yat-sen University, China)
Physical Health Status Analysis of Elementary School Students and the Countermeasures Under the Background of Informatization: A Case Study of Huayang Elementary School, Tianhe District, Guangzhou City .607.
Zheying Lin (Guangdong Industry Polytechnic, China), Yanchun Wang (Guangzhou Sport University, China), and Lijuan Chen (Guangzhou Sport University, China)
Research on the Effect of Using Sports Apps Based on GPS and Sensing Technology to Promote College Students' Extracurricular Exercises: Take Chongqing University of Technology as an
Example .615. Yuan Song (Chongqing University of Technology, China), Huihui Lan
(Chongqing University of Technology, China), Fenghua Cao (Chongqing University of Technology, China), and Maqiang Chen (Chongqing University of Technology, China)
Research on AI Technology and the New Era of Physical Education .619
Research on the Construction and Application of College Students' Digital Health Management Platform .624.
Lei Ma (Tianjin University of Traditional Chinese Medicine, China), YuShi Guo (Tianjin University of Traditional Chinese Medicine, China),
Wenqing Jia (Tianjin University of Traditional Chinese Medicine,
China), and Haoyu Lang (Shanghai University of Traditional Chinese Medicine, China)

Using Wearable Electronic Devices to Quantify the Physical and Physiological Response of
Collegiate Students Participating in Leisure-Time Team Sports .628.
Pei Li (South China Normal University, China), HengLiang Zhang
(Shenzhen Xili School of Nanshan District, China), DingBang Zhang
(South China Normal University, China), GuangWei Jiang (Shenzhen
Nanshan Foreign Language School, China), JianQiang He (South China
Normal University, China), and HongYou Liu (South China Normal
University, China)
Research on the Construction of Integrated Sports and Medicine and Health Management Platform Under the Background of Internet Era .632
Ping Jia (Beijing Normal University, China)
A Study on the Current Situation and Strategies of Physical Education Students' Athletics Learning Interest: Factor-Based Analysis .636.
Fan Jiang (Shandong Normal University), Yihan Yin (Shandong Normal University), and Xiangying Wang (Shandong Normal University)
An Analysis of Technical Innovation in China's Sports Goods Industry .643
Research on the Construction and Development of Intelligent Sports Teaching Environment in Universities .648.
Ming Wang (Zhuhai College of Jilin University)
Author Index 653.