Sports Research Trends in the Last 10 Years Information to Librarians, Researchers, and Policy Makers

by Beni Setiawan

Sports Research Trends in the Last 10 Years: Information to Librarians, Researchers, and Policy Makers

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Abstract – Currently, librarians, researchers, and policy maker still need updated information regarding the profile of research trends, especially in sports. This research aims specifically to explore sports research trends. Publication (Scopus) at the International Level is dominated by scientific journal articles, while the Indonesian level is dominated by Conference Papers (Proceedings). The opportunity for publication in Scopus indexed scientific journals is still wide open. The research implications: (1) contribute ideas to librarians, researchers, and policy maker in the world to be able to develop sports and be able to produce Scopus documents (reputable journals) to the fullest; (2) providing ideas for librarians, researchers, and policy maker regarding sports research trends; and (3) providing information on research trend profiles from Scopus documents related to international and Indonesian sports to librarians, researchers, and policy maker.

Keywords – librarian, policy maker, researcher, research trend, sports.

1. Introduction

Sport has become a top study in the last ten years. Recent research results show that the field of sports still needs to be explored and explored more deeply [1], [2], [3]. Other countries can adopt innovations in sports in the development of sports achievements, one of which is by looking at the latest trend profiles in sports research [4], [5] through the Scopus document. In this case, librarians and researchers have the opportunity to contribute significantly to the advancement of the sports field in their country. This is because librarians and researchers are at the forefront of developing innovation and contributing ideas to policy makers.

Scopus is a reputable international index. Based on the Scopus database with the keyword sports science from 2012 to 2021, 41,871 Scopus indexed documents are shown in Figure 1. As a comparison, in Indonesia, where sports are the leading favorite entertainment, there are not many Scopus documents. Conditions in Indonesia alone in the publication on Scopus include 1,089 Scopus documents for all research fields as of November 29, 2021 (www.scopus.com). Even though research and innovation need to be published in reputable international journals, one of which is the Scopus index standardized at the international level.

(www.scopus.com)

Figure 1. Scopus title "sport" document from 2012-2021* (as of November 29, 2021)

In fact, in Indonesia, publications on journal indexed Scopus are still low [6], especially in sport. Indonesia is not in the top 10 at the international level. It is also relevant to the State University of

Surabaya (i.e., Indonesia), where publications at Scopus are also still low. It can be used as material for strengthening publications within the sports faculty at the international level and in Indonesia. We know that sports is one of the research fields evenly distributed globally, but its publication is still low compared to other general fields. The results of limited interviews with several lecturers at the State University of Surabaya (i.e., Unesa) related to the factors causing the low publication of Scopus, namely: (1) Sports lecturers are accustomed to activities in the field; (2) The climate for scientific publications within the sports faculty, especially for reputable international journals, is still low; (3) The culture of publishing research results has not been optimized in reputable international journals; (4) There are still many sports lecturers who cannot determine a reputable international journal that is safe. In addition, Unesa also does not have documents related to sports research trends based on the Scopus database. Based on the problems above, it is essential to find sports research topics that are excellent in Scopus Publications. It is hoped that the results of this research can be the first bridge for researchers to develop sports in environment and produce Scopus documents to the fullest.

1.1. Research Objective

The primary purpose of this research is to explore sports research trends. The Scopus document's research trends will be explored: sports at the International and Indonesian levels.

1.2. Research Urgency

There is a need for research to find sports research topics that are trending in the Scopus database. It will be the first bridge for librarians and researchers. This is because librarians and researchers are at the forefront of developing innovation and contributing ideas to policy makers.

2. Research Methods

The research uses bibliometrics. There are three components of bibliometrics, namely: a) bibliometrics for bibliometrics, which is the primary domain of bibliometric research and is traditionally used as a research methodology; b) bibliometrics for scientific disciplines (scientific information), considering that researchers work is scientifically oriented, their interest is influential in their field of

specialization and allows for a joint borderland with quantitative research in information retrieval; c) bibliometrics for science policy and management (science policy), is the domain of research evaluation in various research topics [7], [8]. This study uses reputable international publication data sourced from the Scopus database (www.Scopus.com). Data collection through a search for publications on Scopus with the keyword sport with the article title category in the period 2012 – 2021* (as of November 29, 2021). Research trends from the Scopus document will be explored, namely: sports at the international and Indonesian levels. The results of the Scopus database will be visualized using VOSviewer. The VOSViewer application is used to describe and derive novelty from sports research [9], [10], [11].

3. Results and Discussion

3.1. Publication Output and Subject Area

There are 149,905 document articles in the Scopus journal relevant to sport in the last ten years (2012-2021). For the Indonesian level, there are 1,089 documents. In general, at the international and Indonesian levels. The top 10 subject areas at the global and Indonesian levels are presented in Table 1.

Table 1. Subject areas in research on sports topics

International (149.905 Doc.)		Indonesia (1.089 Doc.)	
Subject Area	Total	Subject Area	Total
Medicine	71.167	Engineering	490
Health Professions	37.455	Materials Science	352
Social Sciences	29.379	Physics and Astronomy	171
Engineering	16.218	Computer Science	171
Computer Science	14.154	Medicine	164
Psychology	11.511	Social Sciences	151
Business, Management, and Accounting	9.277	Health Professions	103
Biochemistry, Genetics and Molecular Biology	8.492	Environmental Science	74
Arts and Humanities	7.222	Business, Management, and Accounting	64
Environmental Science	5.846	Biochemistry, Genetics and Molecular Biology	62

Table 1 shows that the subject area of the sports topic at the international level is dominated by medicine, health professions, and social science. Engineering and Material Science dominate Indonesia's number 1 and 2. It is in line with the Document Type at the Indonesian and Unesa levels that are dominated by proceedings.

3.2. Document Type, Source Type, dan Source Title

Sport research topics in the last ten years (2012-2021) based on Scopus documents refer to Document type is presented in Table 3, Source Type in Table 3, and Source Title in Table 4.

Table 2. Document Type in research on sports topics

International (149.905 Doc.)		Indonesia (1.089 Doc.)	
Document type	Total	Document type	Total
Article	104.444	Conference Paper	684
Conference Paper	15.650	Article	380
Review	12.143	Book Chapter	12
Book Chapter	7.295	Review	9
Editorial	2.998	Letter	2

Table 2 describes Sport research topics in the last ten years (2012-2021) based on document type at the international level, dominated by articles. This is compared to the Indonesian group, which was dominated by the Conference Paper (Proceedings). This is also expanded with Source Type-based data presented in Table 3.

Table 3. Source Type in research on sports topics

International (149.905 Doc.)		Indonesia (1.089 Doc.)	
Source type	Total	Source type	Total
Journal	124.783	Conference Proceeding	676
Conference Proceeding	11.794	Journal	392
Book	8.236	Book Series	14
Book Series	4.524	Book	6
Trade	453	Trade Journal	1

Table 3 describes the research topics of sport in the last ten years (2012-2021) based on Source type at the international level dominated by Journals. This is inversely proportional to the level of Indonesia and Unesa, which were overlooked in the Conference Proceedings. This is also expanded by the Source Title-based data presented in Table 4.

Table 4. Source Title on research on sports topics

International (149.905 Doc.)		Indonesia (1.089 Doc.)	
Source Title	Total	Source Title	Total
Teoriya I Praktika Fizicheskoy Kultury	2.312	IOP Conference Series Materials Science And Engineering	339
British Journal of Sports Medicine	1.876	Journal of Physics Conference Series	139
International Journal of Environmental Research And Public Health	1.575	International Journal of Human Movement And Sports Sciences	46
American Journal of Sports Medicine	1.367	IOP Conference Series Earth And Environmental Science	40
Journal of Strength And Conditioning Research	1.238	Journal of Physical Education And Sport	19
Medicine And Science In Sports And Exercise	1.192	AIP Conference Proceedings	17
Journal of Sports Sciences	1.189	Asian Social Science	11
Journal of Physical Education And Sport	1.166	Advanced Science Letters	8
Orthopaedic Journal of Sports Medicine	1.159	Indian Journal of Public Health Research And Development	8
Plos One	1.073	Open Access Macedonian Journal of Medical Sciences	8

Table 4 describes the research topics of sport in the last ten years (2012-2021) based on Source Title (top 10) at the international level dominated by scientific journal articles. It contrasts the Indonesian level, which was dominated by the Conference Paper (Proceedings). The top 10 source titles at the Indonesian level are held by (1) IOP Conference Series Materials Science and Engineering, (2) Journal of Physics Conference Series, and (3) ACM International Conference Proceeding Series. In the top ten, there are no documents from the proceedings.

3.3. Affiliation dan Keyword

Sport research topics in the last ten years (2012-2021) based on Scopus documents referring to Affiliation are presented in Table 5 and keywords in Table 6.

Table 5. Affiliation in research on sports topics

International (149.905 Doc.)		Indonesia (1.089 Doc.)	
Affiliation	Total	Affiliation	Total
Loughborough University	1.281	Universitas Pendidikan Indonesia	175
Deutsche Sporthochschule Köln	1.134	Universitas Sumatera Utara	104
Universidade de São Paulo	1.027	Institut Teknologi Bandung	76
University of Toronto	986	Universitas Negeri Jakarta	57
Harvard Medical School	984	Universitas Indonesia	46
The University of Queensland	979	Universitas Negeri Yogyakarta	45
Norges idrettshøgskole	916	Hasanuddin University	34
The University of Sydney	916	Bina Nusantara University	28
The University of British Columbia	850	Universitas Negeri Surabaya	28
La Trobe University	843	Universitas Sebelas Maret	24

Table 5 shows that Affiliation in research on sports topics at the international level is ranked in the top 3 with Scopus documents above 1,000, namely Loughborough University (1,281), Deutsche Sporthochschule Köln (1,134), and Universidade de São Paulo (1,027). For the Indonesian level, two campuses have documented above 100, namely the University of Education Indonesia (175) and the University of North Sumatra (104). Keywords in sports research topics are presented in Table 6.

Table 6. Keyword research on sports topics

International (149.905 Doc.)		Indonesia (1.089 Doc.)	
Keyword	Total	Keyword	Total
Human	61.825	Sports	574
Humans	46.447	Education	296
Male	36.883	Human	91
Article	35.455	Students	84
Female	29.651	Article	81
Adult	27.936	Indonesia	76
Sports	26.936	Male	55
Sport	25.537	Physical Activity	51
Adolescent	16.938	Health	49
Athlete	15.909	Adult	48

Table 6 shows the keywords for research on sports topics at the international and Indonesian levels. At the International and Indonesian levels, the top keywords are Human (60,372), Sports (574), and Sports (15).

3.4. Visualization of Sports Research Trends at the International Level

There are 149,905 documents (international level) related to sport in the Scopus database, and then researchers visualize research trends on this topic assisted by VOSViewer software. The research trend of Scopus database-based Sports topics is pictured in the form of Network Visualization (NV) in Figure 2a, Density Visualization (NV) in Figure 2b, and Overlay Visualization (NV) in Figure 2c.

Figure 2a shows the overall picture of Scopus data-based research on sports topics (2012-2021). Researchers worldwide produced five clusters (shown in red, green, yellow, blue, and purple). The first cluster (red color) is a sport in the study of games, movement, Olympic, action, skills, speed, health care, future direction, and action recognition. The second cluster (green color) is a sport in the patient study, ligament, pain, anterior cruciate ligament rec, ACL, and BMI. The third cluster (blue) is a sport in football, incidence, concussion, chronic traumatic encephalopathy, and athlete exposure. The fourth cluster (purple) studies the player, sprint, match play, speed, validity, high intensity, season, and distance. Cluster five (yellow) is a sport in a systematic review, meta-analysis, science, and controlled trial.
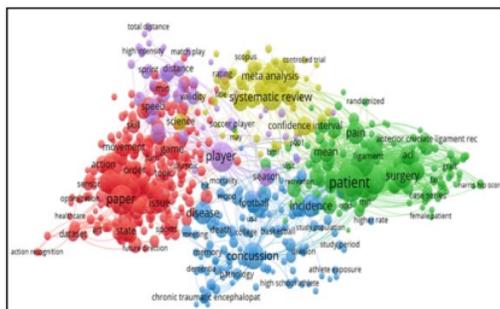

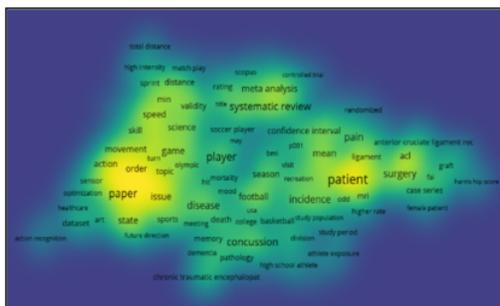*Figure 2a. Network Visualization research trend (International) Sport topic*

Figure 2b. Density Visualization research trend (International) Sport topic

Figure 2b shows the Density Visualization research trend (International) on sport (2012-2021). High-intensity yellow inpatient studies, surgery, systematic reviews, meta-analyses, and concussions. Potential that can still be developed includes the study of action recognition, chronic traumatic encephalopathy, athlete exposure, future direction, and health care.
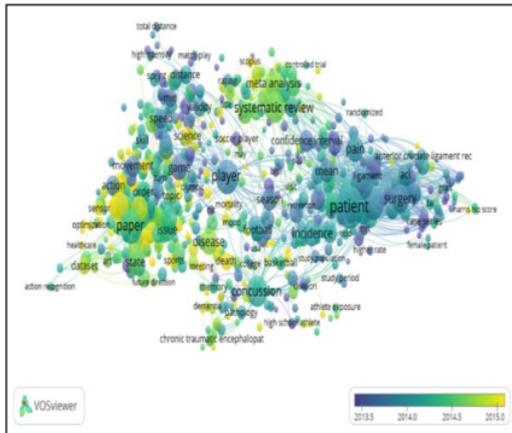

Figure 2c. Overlay Visualization research trend (International) Sport topic

Figure 2c shows the Overlay Visualization of research trends (International) on the topic of sport (2012-2021). The yellow indicator shows the current (latest) research that is being conducted predominantly. There are studies on healthcare, sensors, science, disease, death, and meta-analysis.

Term	Occurrences ⌄	Relevance
patient	351	0.63
paper	226	0.87
player	226	0.45
score	224	0.72
study design	200	0.82
month	185	0.65
concussion	185	0.58
systematic review	185	0.48
application	154	1.04
surgery	151	1.18
return	144	0.72
disease	136	0.51
incidence	135	0.41
pain	133	0.76
field	125	0.78
game	123	0.64
meta analysis	123	0.61
state	122	1.00
environment	117	1.00
understanding	117	0.51

Figure 3. Distribution of Terms, Occurrences, and Relevance of research trends (International) on Sport (2012-2021)

Figure 3 shows the distribution of terms, occurrences, and relevance of research trends (international) on the sport topic (2012-2021). Based on the Occurrence data, the studies that appear most frequently in research publications several research trends (International) on Sport topics (2012-2021), including Concussion, Player, Patient, and Systematic Review. In the concussion study, several topics relevant to the concussion include Player, game, issue, attention, brain, football, season, memory, head, baseline, score, systematic review, SRC, Chronic traumatic encephalopathy, high school athlete, athletic trainer, incidence, patient. In the player study, several topics are relevant to players, including concussion, basketball, incidence, football, season, score, player score, speed, match play, high intensity, skill, game, movement, action. In the patient study, there are several topics relevant to the patient, including female patient, concussion, pathology, incidence, disease, order, systematic review, meta-analysis, pain, and ACL. In the systematic review study, several topics are relevant to the review, including concussion, incidence, science, confidence, interval, web score, meta-analysis, pain, and ACL. From the visualization results can be used as an alternative for researchers to get ideas and initial descriptions in research related to sports topics.

3.5. Visualization of Sports Research Trends at the Indonesian Level

There are 1,089 documents (Indonesian level) related to the topic of sport in the Scopus database, and then the researcher visualizes research trends on this topic assisted by the VOSViewer software. The research trend of the Scopus database-based Sport topic is visualized in the form of Network Visualization (NV) in Figure 4a, Density Visualization (NV) in Figure 4b, and Overlay Visualization (NV) in Figure 4c.
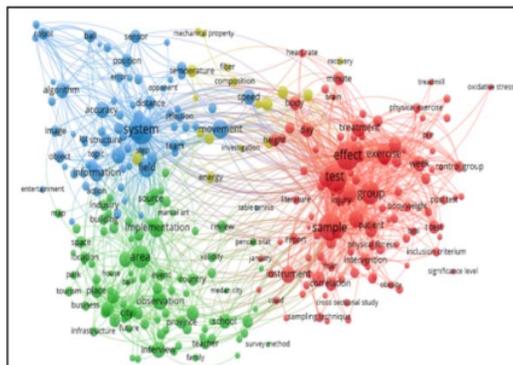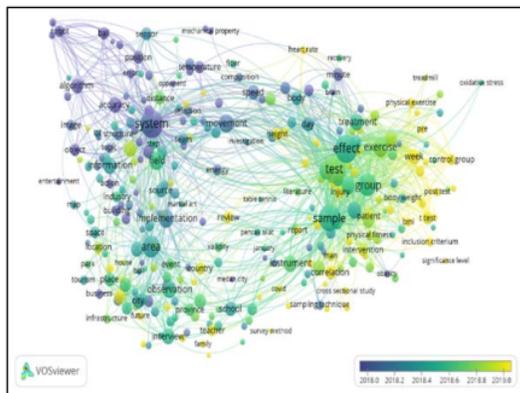

Figure 4a. Network Visualization research trend (Indonesia) Sport topic

Figure 4a shows the overall picture of Scopus data-based research on Sports topics (2012-2021). Researchers in Indonesia produced 4 clusters (shown in red, green, blue, and yellow). The first cluster (red color) is a sport in studying the effect, test, group, patient, body weight, treatment, physical exercise, obesity, inclusion criteria, heart rate, physical fitness, exercise, intervention, treadmile, and oxidative stress. The second cluster (green) is a sport in the study area, implementation, source, event, validity, review, martial arts, school, survey method, interview, infrastructure, tourism, park, martial art, ball, teacher, industry, and table tennis. The third cluster (blue color) is sports on system studies, field, accuracy, distance, information, entertainment, image, object, robot, ball, sensor position, temperature, movement, speed, structure, team, opponent, error, algorithm, and IoT. The fourth cluster (yellow) is sport as a study of mechanical properties, recovery, fiber, composition, and energy.

test, patient experience, injury treatment, sample, intervention, physical fitness, movement, accuracy, and information. Potentials still have great opportunities to develop sports topics in entertainment studies, survey methods, table tennis, martial arts, oxidative stress, physical exercise, recovery, mechanical property, sensors, ball, robot, image, IoT, table tennis, and energy.

Figure 4c shows the Overlay Visualization of research trends (International) on the topic of sport (2012-2021). The yellow color indicator shows the current (latest) research conducted predominantly. There are studies on healthcare, sensors, science, disease, death, and meta-analysis. Figure 5c shows the Overlay Visualization of research trends (International) on the topic of sport (2012-2021). The yellow indicator shows the current (latest) research that is being conducted predominantly. Studies on patient, COVID, review, teacher, intervention, height, physical fitness, heart rate, and injury.

Figure 4b. Density Visualization research trend (Indonesia) Sport topic

Term	Occurrences ∨	Relevance
system	217	0.56
effect	211	0.67
test	207	0.57
sample	195	0.52
paper	154	1.23
group	142	0.90
area	130	0.73
application	110	0.47
exercise	104	1.03
field	96	0.57
implementation	93	0.66
movement	93	0.37
training	88	0.47
subject	79	0.74
instrument	77	0.46
information	75	0.86
treatment	75	0.83
difference	74	0.68
observation	73	0.67
technology	72	0.61

Figure 5. Distribution of Term, Occurrences, and Relevance of research trends (Indonesia) on sport (2012-2021)

Figure 5 shows the distribution of terms, occurrences, and relevance of research trends (Indonesia) on sport (2012-2021). Based on the Occurrences data, the studies that appear most frequently in several research trends (Indonesia) on the topic of sport (2012-2021), including System, Effect, Test, Sample, Movement, Exercise, Technology, Implementation, Physical Education, Physical Activity, Robot Soccer, and Robots. In the System study, several sports topics relevant to the system include team, movement, field, selection speed, distance, prototype, device, sensor, position, ball, robot, algorithm, accuracy, error, image, vision, action, object, team, body, ration, heart rate, treatment, effect, exercise, sample, test, source, implementation, area, observation, city, government, country, event, map, communication, energy, ratio, information, and outputs.

Figure 4c. Overlay Visualization research trend (Indonesia) Sport topic

Figure 4b shows the Density Visualization research trend (International) on sport (2012-2021). High intensity in yellow in the study of the system, effect,

In the Effect study, several sports topics relevant to Effect include: test, exercise, treatment, minute, heart rate, body, sample, composition, temperature, recovery, variation, accuracy, intervention, instrument, sampling technique, body weight, intervention, oxidative stress, treadmill, source, industry, area, government, teacher, school, country, city, field, technology, accuracy, system, speed, movement. In the Test study, several sports topics relevant to the Test include: heart rate, minute, body, height, day, treatment, effect, exercise, week, control group, intervention, inclusion criteria, beside technique, instrument, physical exercise, sensor, device, speed, movement, team, field, system, accuracy, implementation, area, validity, school, and technology. In the sample study, several sports topics relevant to the sample include: effect, exercise, treatment, physical exercise, week, minute, body, day, height, physical fitness, intervention, instrument, sampling technique, inclusion criteria, validity, school, society, implementation, area, observation, city, culture, interview, field, technology, accuracy, movement, speed, and temperature.

In the study of Movement, several sports topics relevant to movement include: body, effect, exercise, test, group, sample, motion, distance, position, ball, robot, accuracy, technology, implementation, area, sensor, and algorithms. In the Excercise study, several sports topics relevant to excercise include sensor, system, accuracy, movement, body, heart rate, minute, day, test, treatment, physical exercise, treadmill, week, body weight, effect , test, sample, physical fitness, intervention, woman, instrument, inclusion criteria. In the Technology study, several sports topics relevant to technology include sensors, accuracy, system, device, movement, filed, industry, implementation, community, effect, test, and sample.

In the Implementation study, several sports topics relevant to implementation include robot, ball, position, system, movement, field, accuracy, technology, communication, algorithm, area, government, observation, teacher, school, teacher, city, policy, test, sample, and instrument. In the study of physical education, several sports topics relevant to physical education include: teacher, implementation, effect, test, sample, and instrument. In the study of physical activity, several sports topics relevant to physical activity include: system, school, body, day, effect, exercise, week, group, test, intervention. In the study of robot soccer, several sports topics relevant to robotic soccer include:

system, algorithm, ball, position, movement, implementation. In the study of robots, several sports topics relevant to robots include system, object, camera, sensor, distance, algorithm, ball, position, movement, implementation, and implementation. The visualization results in Figure 4 can be used as an alternative for researchers to get ideas and initial descriptions in research related to sports topics.

3.6. Research Implication

- Contribute ideas to librarians, researchers, and policy maker in the world to be able to develop sports and be able to produce Scopus documents (reputable journals) to the fullest;
- Provide ideas for librarians and researchers regarding sports research trends;
- Providing information on research trend profiles from Scopus documents related to international and Indonesian sports to librarians, researchers, and policy makers.

4. Conclusion

Scientific journal articles dominate publications (Scopus) at the international level. The Indonesian and Unesa levels are dominated by the Conference Paper (Proceedings). The top 10 source titles at the Indonesian level are held by (1) IOP Conference Series Materials Science and Engineering, (2) Journal of Physics Conference Series, and (3) ACM International Conference Proceeding Series. Based on the Scopus Document, it was found that sports-related research trends are still a potential topic and are widely studied in the international and Indonesian world. The opportunity for publication in Scopus indexed scientific journals is still wide open. Suppose researchers feel constrained by research data from primary sources in the field. In that case, researchers can do research based on systematic reviews and meta-analyses that have been widely carried out at the international level indexed by Scopus. Recommendations: (1) It is necessary to conduct research that is relevant to the topic of sports that can be published in Scopus indexed journals; (2) Collaboration with other universities in research and publication can be used as an alternative to increasing publication in reputable international journals.

Acknowledgments

References

[1]. Andrade, A., Dominski, F. H., & Vilarino, G. T. (2021). Outdoor Air Quality of Environments Used for Exercise and Sports Practice: An Analysis of Scientific Production through Bibliometric Analysis. *Applied Sciences*, *11*(10), 4540.

[2]. Calabuig-Moreno, F., Gonzalez-Serrano, M. H., Alonso-Dos-Santos, M., & Gómez-Tafalla, A. (2021). Entrepreneurial ecosystems, knowledge spillovers, and their embeddedness in the sport field: a bibliometric and content analysis. *Knowledge Management Research & Practice*, *19*(1), 65-83.

[3]. Cui, X. (2021). Academic Influence of China's Sports Social Discipline Based on Bibliometrics. *Mobile Information Systems*, *2021*.

[4]. Gama, J. C. F., Ferreira Neto, A., & Santos, W. D. (2021). Training To Work On Sports: Bibliometric Characteristics and Collaboration Networks. *Movimento*, *27*.

[5]. Khatra, O., Shadgan, A., Taunton, J., Pakravan, A., & Shadgan, B. (2021). A Bibliometric analysis of the top cited articles in sports and exercise medicine. *Orthopaedic Journal of Sports Medicine*, *9*(1), 2325967120969902. https://doi.org/10.1177/2325967120969902

[6]. Suprapto, N., Kusnanik, N. W., Iriani, S. S., Wibawa, S. C., Sujarwanto, S., Yulianto, B., ... & Nurhasan, N. (2021). *The Comparison of Scimago Institutions Rankings (SIR), Scopus, and SINTA Profile: A Case of the Top Indonesian Institutions.* Library Philosophy Practice (e-journal). 5788.

[7]. Glanzel, W. (2005). Bibliometrics as a research field. Course script. Leuven, Belgium: Katholieke Universiteit Leuven.

[8]. Tianji, H., Shengdong, Y., Hao, L., Chunyang, Z., Dongqi, D., Weiyang, Z., & Xiaoji, L. (2020). Mapping knowledge domains of bibliometrics regarding percutaneous vertebroplasty and percutaneous kyphoplasty based on VOSviewer. *Chinese Journal of Tissue Engineering Research*, *24*(15), 2410.

[9]. Xie, L., Chen, Z., Wang, H., Zheng, C., & Jiang, J. (2020). Bibliometric and visualized analysis of scientific publications on atlantoaxial spine surgery based on Web of Science and VOSviewer. *World Neurosurgery*, *137*, 435-442.

[10]. Hamidah, I., Sriyono, S., & Hudha, M. N. (2020). A Bibliometric analysis of Covid-19 research using VOSviewer. *Indonesian Journal of Science and Technology*, 34-41.

[11]. Huang, T., Wu, H., Yang, S., Su, B., Tang, K., Quan, Z., ... & Luo, X. (2020). Global trends of researches on sacral fracture surgery: a bibliometric study based on VOSviewer. *Spine*, *45*(12), E721-E728.

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