Metric analysis of open access journals indexed in Scopus from 2019 to 2022: Orthopedics and Sports Medicine

Análisis métrico de revistas de acceso abierto indexadas en Scopus de 2019 a 2022: temática ortopedia y medicina deportiva

Lázaro Ernesto Horta-Martínez[1*] https://orcid.org/0000-0001-7335-6903

Melissa Sorá-Rodriguez[2] https://orcid.org/0000-0002-2657-3267

Yariadna Rodríguez-Pereira[3] https://orcid.org/0009-0006-4473-4059

[1]University of Medical Sciences of Havana, Faculty of Medical Sciences Diez de Octubre. Havana, Cuba.

[2]University of Medical Sciences of Havana. Faculty of Medical Sciences Victoria de Girón. Havana, Cuba.

[3]University of Medical Sciences of Havana, Faculty of Medical Sciences Julio Trigo. Havana, Cuba.

[*]Corresponding author email: lazarohorta4@gmail.com

ABSTRACT

Introduction: Scopus is considered, together with Isis Web of Science, one of the best databases, with a high prestige within this communication field.

Objective: To characterize the 1st quartile journals of open access indexed in Scopus in the field of Orthopedics and Sports Medicine.

Methods: A metric, descriptive and cross-sectional analysis of the open access journals indexed in Scopus belonging to the Orthopedics and Traumatology area was carried out, from 2019 to 2022.

Results: A total of 26 journals were obtained; Of these, the highest CiteScore index corresponds to the Journal of Sport and Health Science with 15.7, while the highest number of citations corresponds to the Journal of Bone and Joint Surgery with 10,826 citations; the CiteScore mean is 6.4 ± 2.8 and citations is 2817.8 ± 2754.6. The sub-theme with the largest number of journals is Surgery with 12 (46.2%) and the one with the fewest journals is Anthropology with 3.8% (n = 1).

Conclusions: The journals indexed in Scopus belonging to Q1 of the Orthopedics and Sports Medicine theme in the period from 2019 to 2022 have an average CitaScore of 6.4 and 2817.8 citations on average; published an average of 440 documents for 76.6% of citations, they belong mainly to the European continent with an average SNIP and SJR of 1,642 and 1,170 respectively, with Surgery being the most prevalent sub-theme and Springer Nature the most represented publisher.

Keywords: metric analysis; Scopus; scientific information; orthopedics and traumatology.

RESUMEN

Introducción: Scopus es considerada, junto a Web of Science, una de las mejores bases de datos, con un alto prestigio dentro de este ámbito comunicacional.

Objetivo: Caracterizar las revistas de acceso abierto de primer cuartil indexadas en Scopus en la temática de ortopedia y medicina Deportiva

Métodos: Se realizó un análisis métrico, descriptivo y transversal de las revistas de acceso abierto indexadas en Scopus, pertenecientes al área de ortopedia y traumatología, desde el 2019 hasta el 2022.

Resultados: Se obtuvieron un total de 26 revistas; de estas el mayor índice de *CiteScore* corresponde a *Journal of Sport and Health Science* con 15,7, mientras que el mayor número de citas corresponde a *Journal of Bone and Joint Surgery* con

10826 citaciones; la media de *CiteScore* es de 6,4 ± 2,8 y de citas es de 2817,8 ± 2754,6. La subtemática con mayor número de revistas es *Surgery* con 12 (46,2 %) y la de menor revistas es *Anthropology* con 3,8 % (n = 1).

Conclusiones: Las revistas indexadas en Scopus pertenecientes al Q1 de la temática de ortopedia y medicina deportiva en el período de 2019 a 2022 tienen una media de *CiteScore* de 6,4 y 2817,8 citas de promedio; publicaron un promedio de 440 documentos para un 76,6 % de citaciones; pertenecen, fundamentalmente, al continente europeo con un SNIP y SJR promedios de 1,642 y 1,170 respectivamente; *Surgery* fue la subtemática de mayor predominio y *Springer Nature* la editorial más representada.

Palabras clave: análisis métrico; Scopus; información científica; ortopedia y traumatología.

Received: 20/07/2023
Accepted: 01/09/2024

Introduction

Scientific research has among its absolute aims to share the results with the international community of specialists and those interested in the different topics, for this purpose, the journals are indexed in different databases that support the quality of their editorial work and their impact in the world of communication.

Scopus is considered, together with Isis Web of Science, one of the best databases, with a high prestige within this communication field, along with this there are large publishers that have high-quality journals and scientific rigor, in which researchers tend to trust for the consultation of articles signed by related colleagues in different subjects.

To know the effectiveness and severity of a journal, different indexes are used to measure its impact, such as the quartile, the H index, CiteScore, SNIP (Source Normalized Impact per Paper), SJR (Scientific Journal Rankings).

Scimago Journal & Country Rank is an instrument created by SCImago Research Group, which allows obtaining scientific indicators from journals and countries taking into account the articles available in Scopus.

According to Scimago Journal & Country Rank (https://www.scimagojr.com/countryrank.php?area) the United States is the country with the largest scientific production in the field of Orthopedics and Traumatology worldwide with a total of 189,938 documents, 177,072 citable documents, 5,337,872 citations, 2,325,753 self-citations, 28.10 citations per document and an H index of 467.

Some journal evaluation studies[1] expose limitations and advantages of the current visibility of scientific production;[2] however, an article that evaluates the journals of open access indexed in Scopus belonging to the branch of Orthopedics and Traumatology is unknown, so is a necessity to the Orthopedics Scientifics to know about the principal characteristics of this kind of journals to close the gap of knowledge that exist in the scientific community. So, the objective of this research was to characterize the 1st quartile journals of open access indexed in Scopus in the field of Orthopedics and Sports Medicine.

Methods

A metric, descriptive and cross-sectional analysis of the open access journals indexed in Scopus belonging to the Orthopedics and Traumatology area was carried out, from 2019 to 2022.

In the Scopus preview search engine (https://www.scopus.com/sources.uri) a search for source was performed. The "thematic area" field was filled in with the term Orthopedics and Sports Medicine, in the display options it was selected: show

only open access journals, without a minimum number of selected citations, 1st quartile and as source type: journals.

For each journal, the following data were collected in a Microsoft Excel 2016 worksheet: name of the journal, CiteScore, highest percentile (in sub-theme), number of citations, number of documents, % of citations, SNIP (Source Normalized Impact per Paper), SJR (Scimago Journal & Country Rank), publisher, continent.

The descriptive statistical processing of the data, as well as the preliminary presentation of the results, was carried out in the spreadsheets of Microsoft Excel 2016.

The data were handled in accordance with scientific ethics. It was not necessary to obtain informed consent or approval endorsements by scientific and/or ethics committees, given the public nature of the analysis units.

Results

A total of 26 journals were obtained; of these, the highest CiteScore index corresponds to the Journal of Sport and Health Science with 15.7, while the highest number of citations corresponds to the Journal of Bone and Joint Surgery with 10,826 citations; the CiteScore mean is 6.4 ± 2.8 and citations is 2817.8 ± 2754.6 (fig. 1)

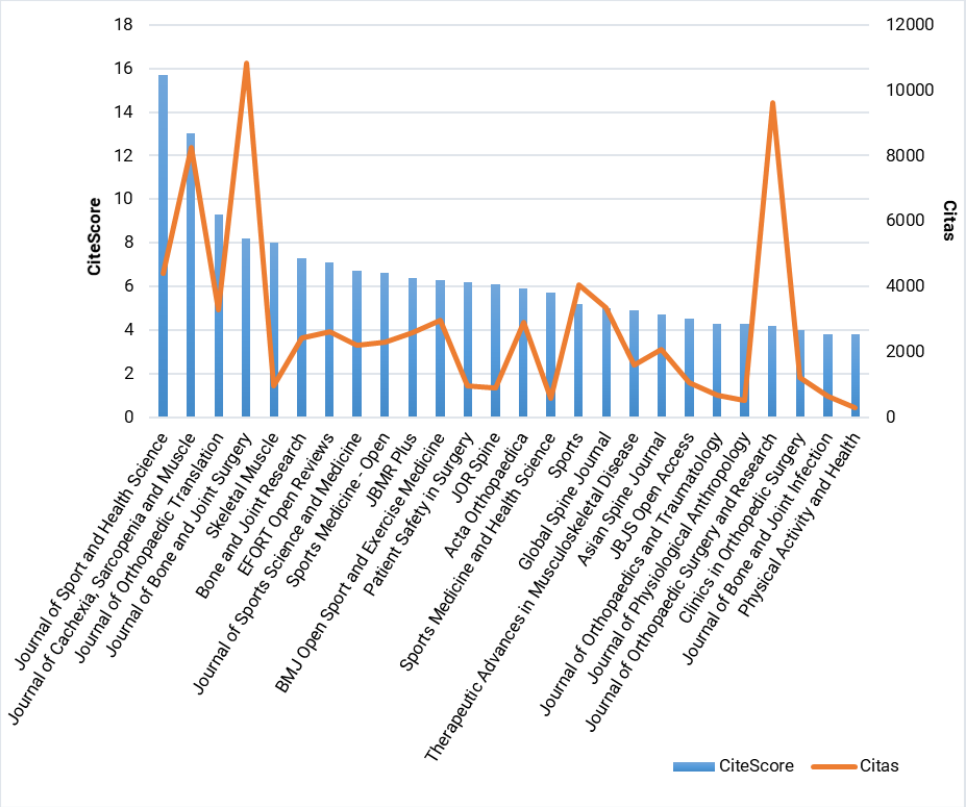
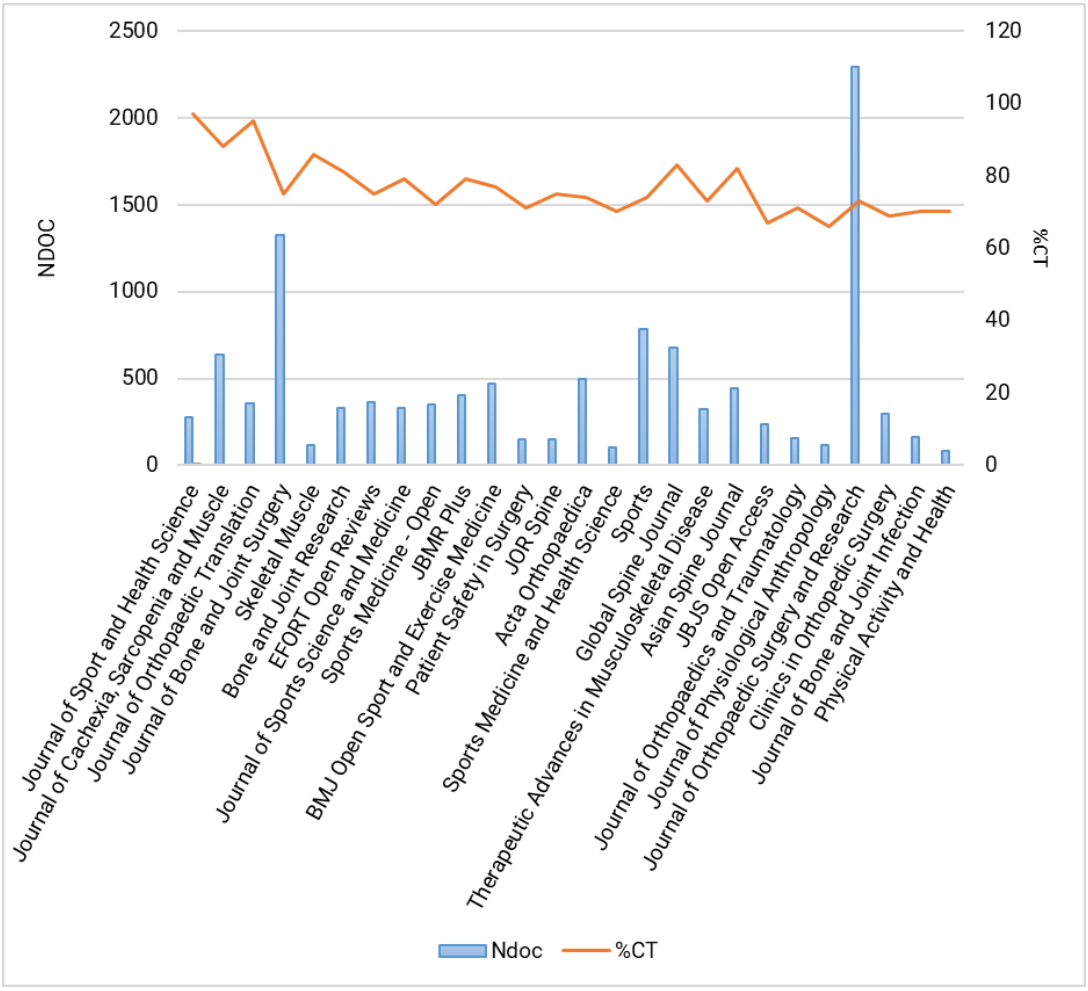


Fig. 1 – Distribution of journals in terms of CiteScore and citations.

The journal with the highest number of documents was the Journal of Orthopedic Surgery and Research with 2,290 manuscripts, while the journal with the highest number of citations was the Journal of Sport and Health Science with 97%; the mean number of documents was 440 ± 462.2 and the mean % citations was 76.6 ± 8 (fig. 2).



Legend: Ndoc: number of documents; %CT: % of citations.

Fig. 2 – Distribution of journals in terms of number of documents and % of citations.

Table 1 shows the SNIP and SJR of the journals, where it can be seen that the highest SNIP index is 2,731, corresponding to the Journal of Sport and Health Science, with a mean of 1.642 ± 0.456; and the highest SJR index is 2.159, which belongs to the Journal of Cachexia, Sarcopenia and Muscle, with a mean of 1.170 ± 0.454. The continent with the highest number of journals was Europe (n = 11; 42.3%)

Table 1 - Distribution of the journals in terms of SNIP and SJR

Journals (continents)	SNIP	SJR
Journal of Sport and Health Science (Asian)	2.731	2.041
Journal of Cachexia, Sarcopenia and Muscle (American)	2.243	2.159
Journal of Orthopaedic Translation (Asian)	1.618	1.077
Journal of Bone and Joint Surgery (American)	2.673	1.996
Skeletal Muscle (American)	1.171	1.53
Bone and Joint Research (European)	1.5	1.607
EFORT Open Reviews (European)	2.323	1.325
Journal of Sports Science and Medicine (European)	1.619	1.027
Sports Medicine-Open (American)	2.052	1.538
JBMR Plus (American)	1.275	1.112
BMJ Open Sport and Exercise Medicine (European)	1.511	1.249
Patient Safety in Surgery (American)	1.889	0.738
JOR Spine (American)	1.191	0.829
Acta Orthopaedican (European)	1.871	1.612
Sports Medicine and Health Science (Asian)	1.339	0.939
Sports (European)	1.36	0.88
Global Spine Journal (European)	1.572	1.043
Therapeutic Advances in Musculoskeletal Disease (European)	1.092	1.102
Asian Spine Journal (Asian)	1.486	0.992
JBJS Open Access (American)	1.81	1.385
Journal of Orthopaedics and Traumatology (European)	1.765	0.941
Journal of Physiological Anthropology (Asian)	1.339	0.596
Journal of Orthopaedic Surgery and Research (American)	1.251	0.744

Clinics in Orthopedic Surgery (Asian)	1.668	0.904
Journal of Bone and Joint Infection (European)	1.112	0.684
Physical Activity and Health (European)	1.234	0.383
Minimum SNIP: 1,092 **Maximum SNIP:** 2,731 **Half SNIP:** 1,642 **Standard deviation SNIP:** 0,456	**Minimum SJR:** 0,383 **Maximum SJR:** 2,159 **Half SJR:** 1,170 **Standard deviation SJR:** 0,454	

The sub-theme with the largest number of journals is Surgery with 12 (46.2%) and the one with the fewest journals is Anthropology with 3.8% (n = 1) (table 2).

Table 2 - Distribution of the journals in the subthemes

Sub-theme	n	%
Orthopedics and Sports Medicine	7	26,9
Surgery	12	46,2
Physical Therapy, Sports Therapy and Rehabilitation	4	15,2
Rehabilitation	2	7,7
Anthropology	1	3,8
Total	**26**	**100**

The publisher with the highest prevalence is Springer Nature (n = 6; 23.1%), there were 9 publishers with only 1 journal (3.8%) (table 3).

Table 3 - Distribution of the journals according to publisher

Publisher	n	%
Elsevier	2	7.7
Wiley-Blackwell	3	11.5
Wolters Kluwer Health	2	7.7
Springer Nature	6	23.1
British Editorial Society of Bone and Joint Surgery	2	7.7
Department of Sports Medicine, Medical Faculty of Uludag University	1	3.8
BMJ Publishing Group	1	3.8
Medical Journals Sweden AB	1	3.8
KeAi Communications Co.	1	3.8
Multidisciplinary Digital Publishing Institute (MDPI)	1	3.8
SAGE	2	7.7
Korean Society of Spine Surgery	1	3.8
Korean Orthopaedic Association	1	3.8
Copernicus	1	3.8
Ubiquity Press	1	3.8
Total	**26**	**100**

Discussion

The work of the scientific review is a determinant of the quality of a journal, which is why it is necessary for them to have real scientists-reviewers-dedicated to this task in order to critically evaluate the veracity, quality and novelty of the

investigations, favor their enrichment[3] and thus constitute a feedback network in learning; Therefore, a journal that is poor in quantity and quality of reviewers is a journal that will not achieve a high impact rate within the world of science communication.

Journal citation metrics have gained momentum in the 21st century, given the technological advances in the mid-20th century, researchers refer to these metrics to assess which journal to send their manuscripts to,[4] hence there are journals that can publish more than 1,000 documents annually.

CiteScore is a metric for the citations per publication that a journal receives.[4] This calculation is made by dividing the cumulative citations up to a certain year by the documents published in the 3 years prior to this. The percentile CiteScore is the ranking measure obtained by journals within a given category,[4] in order to compare the CiteScore of the different journals within that category -or subcategory-.

Vizoso et al.[5] state that Spanish researchers have been forced to publish their research in top-level journals to favor the accreditation process, hence the Q1 journals with the highest number of documents and citations. The authors consider that an evaluation of the number of self-citations would be necessary to determine the percentage of these that are abused or not.

In 2014, the Spanish journal on the subject of Orthopedics and Sports Medicine was the Andalusian Journal of Sports Medicine followed by *Apunts. Medicina de l'Esport*, both from Q3, however the first had an SJR of 0.207 and the second with 0.180, despite this privileged position, the Spanish Journal of Orthopedic Surgery and Traumatology had a greater number of documents (n = 231),[6] which explains that the position between quartiles is not the only factor that researchers choose to send their manuscripts, the authors consider that in this section the fact of the existence of journals with high costs for the processing of investigations takes on singular value; open science has been advancing but its work is still inefficient, at least the journals that have this feature of payment should have a mixed approach and not only for monetary purposes.

For the location by quartiles of the journals, 4 fundamental classifications are used:[7,8]

- Q1: any journal that obtains percentiles higher than 75%
- Q2: those of percentiles between 50 and 75%
- Q3: those with percentiles between 25 and 50%
- Q4: those with a lower percentile equal to or less than 25%

The impact factor represented by the quartiles is considered inefficient by some researchers, who believe that this method has no true value to define the relevance of a journal in the international field,[9] as a response to which the global h index emerged.

Sáez & Barranquero[10] explain in their paper how the journals with the best rankings belong to countries like the United States and the United Kingdom. This factor is due to the high investment they make in researching the different branches of knowledge, where it is known that one of the best publishers in the world Springer Nature belongs to a German-British affiliation. Despite not belonging to 2 of the most exponent countries in matters of scientific communication, Elsevier is in the top 3 of the best publishers globally, being a company of Dutch origin, it has come to have this privileged position.

A bibliometric study[11] how scientific texts acquire reliability and are better accepted by the community in correspondence to the quartile held by the journal, this being the hierarchy of the impact factor, exposing that almost all Q1 journals in the world belong fundamentally to the European area. Fact that is expressed in the present investigation.

A total of 27,339 journals are listed in SJR, of which 7,720 are open access,[12] which shows that only 28.2% of the scientific communication of journals indexed in Scopus is free, explaining this factor why Latin American countries lack a presence in these journals and their researchers prefer publication in journals in the area that are not indexed in this database or do not have a high-level quartile within the same.

With more than 84 million files, more than 17 million researcher profiles, 2,000 publishers, and 2 billion references, Scopus is undoubtedly the largest database on the Internet,[13] so indexing a journal in it would cause its rapid rise within visibility parameters, and also exposes the arduous, severe, reliable, and transparent work of the editorial committee.

The quality indicators that are the responsibility of the journals are an expression of the editorial rigor towards what is published, raising the standards of efficiency, means leaving the right to exist of the knowledge exhibited, thus constituting a legacy for the scientific community.[14]

The cases of lack of ethics when it comes to a scientific publication are multiple, however, in the research by *Zuñiga Vargas*[15] the most common are exposed: inflating the number of references of an article, committing plagiarism in any of its versions, unjustifiably eliminating a signatory, seeking early correction, falsifying data for research, including false co-authors, authorship as a "gift" or by compromise, exchange of citations between authors, modifying the number or order of signatories, not declaring conflicts of interest, excessive self-citation, changes in the title or bibliography of an article, duplicate and simultaneous submissions of the same manuscript, inflating or segmenting a publication, and the use of "ghost" signers.

Conclusions

The journals indexed in Scopus belonging to Q1 of the Orthopedics and Sports Medicine theme in the period from 2019 to 2022 have an average CitaScore of 6.4 and 2817.8 citations on average; published an average of 440 documents for 76.6% of citations, they belong mainly to the European continent with an average SNIP and SJR of 1,642 and 1,170 respectively, with Surgery being the most prevalent sub-theme and Springer Nature the most represented publisher.

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Conflict of Interests

The authors declare no conflict of interest.