

Research Article

Trends Research of Cerebral Palsy Football through a Bibliometric Analysis

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Abstract.

This research used bibliometric analysis to examine trends in Cerebral Palsy Football (CPF) research from 2012 to 2023. Based on the keywords entered in the Scopus database, 48 documents were obtained. After filtering based on specific criteria (only articles from journals and the English language), and 43 documents remained. CPF publications have increased regularly from 2016 to 2022. Spain is the country with the most research in the field of CPF. The International Journal of Sports Physiology and Performance is a Scopus-indexed journal that publishes many articles on CPF. Based on the visualization results using VOSviewer, seven clusters were obtained, and in the last year, research on CPF has been related to clinical articles, physical performance, training, and disabled athletes. The results of this research can be used as foundational material for further research in the field of CPF. For example, there is a need for research on training for CPF Players to improve their performance.

Keywords: bibliometric analysis, cerebral palsy football, trends research, disability sport

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1. INTRODUCTION

Cerebral palsy (CP) is a brain disorder experienced by a person, which results in experiencing many disturbances in motor activities. The Cerebral Palsy Football (CPF) branch is one of the innovations for disability sports accomplishments carried out by the NPC of Indonesia [1]. The CPF branch is one of the advancements for disability sports. For soccer players with cerebral palsy (CP) difficulties, there is a sport called CPF. People with athetosis, ataxia, and physical impairments can play CPF [2–4]. CPF has rules with some modifications from FIFA that are tailored to the needs of people with disabilities [5, 6].

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CPF games provide many benefits for CP people. CPF helps improve people's quality of life [7]. People with CP can develop motor skills and cognition through effective rehabilitation of CPF play [8]. Positive mood, happy, active, courageous, and confident, CP people will improve by playing CPF [9]. CPF also helps inform and raise public awareness to take action or seek treatment for CP [10–12]. In addition, CPF also raises experts and lecturers to conduct studies through research [13–17].

Conditions in the field: CPF games have not been evenly known, played, developed, and researched by everyone, especially for CP themselves, people with disabilities, and non-disabilities. So, the benefits of CPF have not been felt and enjoyed by everyone, and research on CPF is still very limited. The results of observations on the publication of documents about CPF indexed in Scopus until 2023 have only been tracked in 47 documents. The entire document discusses what CPF studies have never been conducted. Based on the analysis results, no literature review on CPF has been found.

Therefore, this study was conducted to analyze research on CPF. This research will be presented using bibliometric analysis. This study used bibliometric analysis to describe studies on CPF. In this study, some research questions were: 1) How many publications on CPF are released each year? 2) What five CPF studies are most often published in sources? 3) Which ten countries research CPF most productively? And 4) How is the visualization and network overlay about CPF research? The results of the thorough discussion of this research are expected to provide an overview of CPF research for future researchers. It is hoped that the results of this research can become a reference for CPF coaches on how to carry out training and improve the performance of CPF players.

2. METHOD

It is a bibliometric analysis in this study. The VOSviewer tool was used to assess the data visualization. In October 2023, the reference search was carried out. Data were taken from documents that Scopus indexed. Reference searches were performed with the keywords “cerebral palsy football” OR “CP football” OR “cerebral palsy soccer” OR “CP soccer” OR “7-a-side football” OR “seven-a-side football” obtained 48 documents. Then, only articles from journals and the English language were analyzed, so 43 documents were obtained. The data obtained were analyzed using VOSviewer (on the co-occurrence aspect).

3. RESULTS AND DISCUSSIONS

The number of publications per year is shown in Figure 1 and is based on Scopus data for articles in international journals indexed by Scopus.

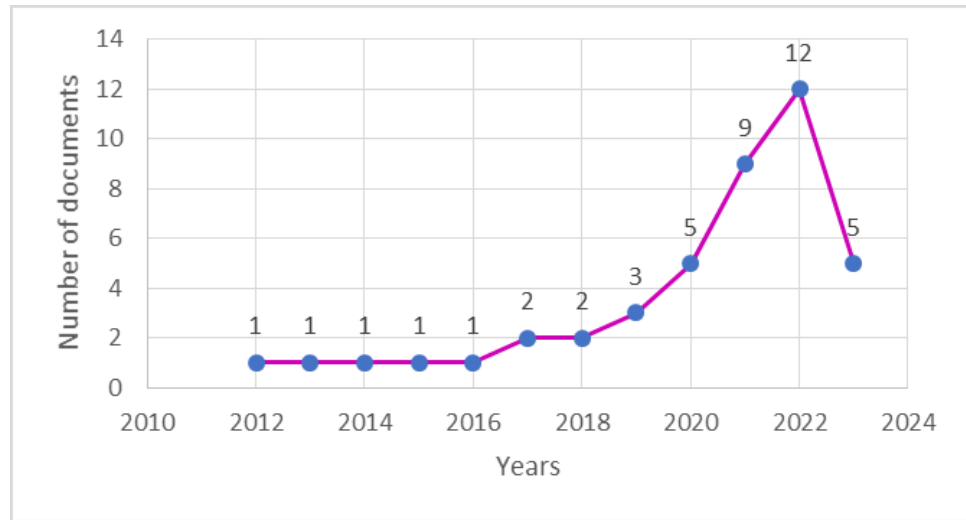


Figure 1: The number of publications per year on CPF.

Figure 1 show that from 2018 to 2022, publications related to CPF have experienced a significant increase. This is in line with research on APE [18], football [19, 20], which has also increased yearly. CPF can be given as APE teaching material and even for students with disabilities. Light CP can be trained or develop their potential to excel in CPF sports, for example by providing CPF extracurricular activities. CPF can be a career choice as an athlete or player for students with CP disabilities. CPF can make athletes excel in disability sports from regional level to Paralympic level.

According to journals, the top five journals that have published the most articles on CPF are listed in Table 1.

TABLE 1: Top 5 journals for CPF.

No	SOURCE TITLE	Total	Quartile & SJR	Publisher
1	International Journal of Sports Physiology and Performance	5	Q1 & 1.333	Human Kinetics Publishers Inc.
2	Journal of Sports Sciences	3	Q1 & 1.141	Taylor & Francis
3	Retos	3	Q2 & 0.340	Federacion Espanola de Docentes de Educacion Fisica
4	Frontiers in Physiology	2	Q2 & 1.028	Frontiers Media S.A.
5	International Journal of Environmental Research and Public Health	2	Q1 & 0.828	Frontiers Media S.A.

Table 1 shows that journals in Quartile 1 dominate the top 5 journals that publish articles about CPF. In addition, the publishers are dominated by Frontiers Media S.A. Some researchers who published their articles in Q1 with the Publisher International Journal of Sports Physiology and Performance are Pe na-González et al. [21], Reina et al. [22] and Pe na-González et al. [23].

According to Scopus statistics, ten productive nations write extensively on CPF, as shown in Figure 2.

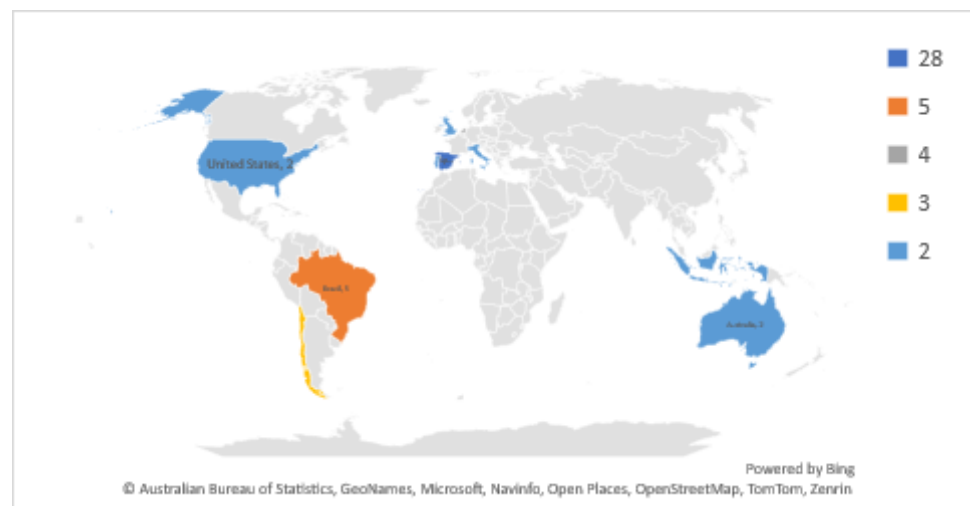


Figure 2: Ten productive nations write extensively on CPF.

In Figure 3, it is found that the most productive country that has researched a lot about CPF is Spain with 28 articles, followed by Brazil with five documents, the Netherlands with four documents, Chile with three documents, and Australia, Indonesia, Italy, Portugal, UK and US with two each document. Several researchers from Spain include Pe na-González et al. [23], Yanci et al. [17], Reina et al. [24]. Meanwhile, researchers from Indonesia include Umar et al. [25][16].

Figures 3 and 4 result of the network and overlay on CPF utilize VOSviewer.

Figure 3 shows seven groups marked with red, green, blue, yellow, purple, light blue, and orange. The focus of this cluster 1 (red) analysis broadly highlights aspects of fitness, performance, and training in the context of cerebral palsy football. Research that highlights aspects of agility, cerebral palsy football, and performance [26–28]. The focus of this cluster 2 (green) analysis broadly highlights the physical and neurological aspects, and research related to cerebral palsy football athletes. Research that discusses anthropometry, ataxia, and Paralympics [29, 30]. The focus of this cluster 3 (blue) analysis broadly investigates aspects of classification, speed, and accuracy of movement in cerebral palsy football athletes. Research highlighting acceleration, decision-making, and sprints [31, 32]. The focus of this cluster 4 (yellow) analysis broadly highlights

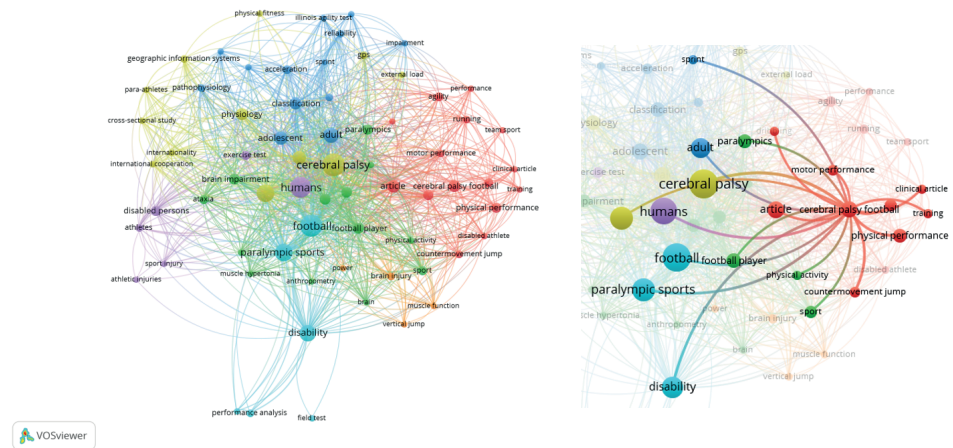


Figure 3: Network visualization for CPF.

aspects of athlete performance, environmental factors, and international load cooperation in the context of cerebral palsy football.

Research describing athletic performance, cerebral palsy, and international cooperation [33, 34]. The focus of this cluster 5 (light blue) analysis broadly involves aspects of injury, fitness testing, and the impact of exercise on individuals with disabilities. Research discussing athletic injury and exercise tests [35, 36]. The focus of this cluster 6 (purple) analysis broadly explores the involvement and performance of athletes with disabilities in Paralympic football. Research related to disability, field test, football, paralympic sports, performance analysis, sport performance [37, 38]. The focus of this cluster 7 (orange) analysis broadly highlights the impact of injury, muscle strength, and physical aspects on cerebral palsy football athletes. Research on brain injury, muscle function, strength, and vertical jump [39–41].

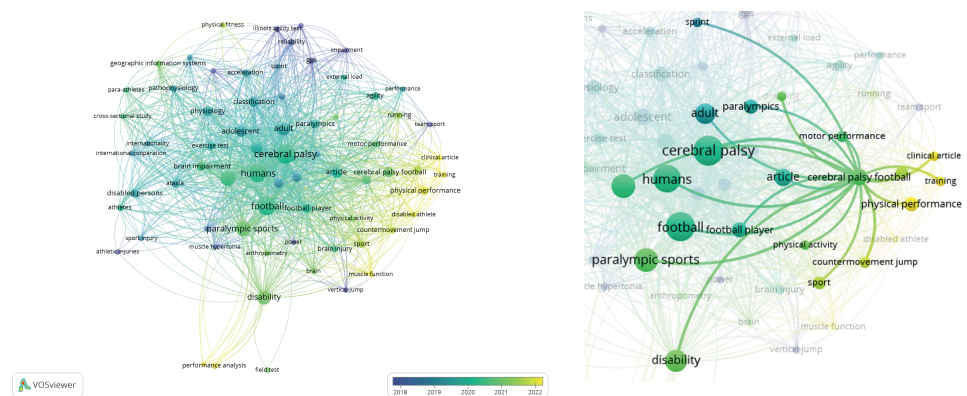


Figure 4: Overlay visualization for CPF.

Based on Figure 4, the latest developments in Cerebral Palsy (CP) Football research in the last 2-3 years, the research focus has become increasingly prominent on several key

aspects such as countermovement jumps, sport, clinical article, physical performance, and training. Countermovement Jump (CMJ) measurement is an important aspect in evaluating CP Football athletes' physical skills and abilities. CMJ can provide in-depth insight into an athlete's jumping strength and potential, which can be integrated into designing training programs to improve their performance [42, 43]. Clinical articles make an important contribution by exploring the medical and health aspects related to CP Football.

Clinical research can provide a better understanding of the impact of these sports on the physical and mental health of athletes with CP [44]. The research results also highlight the close relationship between sport, physical performance, and the game of CP Football. This research may have identified training strategies that can improve athletes' motor skills, endurance, and agility in the context of these games [45]. The emphasis on training in CP Football research represents an effort to develop effective training programs that focus on the specific needs of athletes with cerebral palsy. This training may include strength, balance, and coordination exercises to improve the athlete's performance in the game [45]. The limitation of this research is that it only uses the Scopus database, does not use other databases.

4. CONCLUSION

CPF publications have increased regularly from 2016 to 2022. Spain is the country with the most research in the field of CPF. The International Journal of Sports Physiology And Performance is a Scopus-indexed journal that publishes many articles about CPF. Based on the visualization results using VOSviewer, 7 clusters were obtained, and in the last year, research on CPF has been related to clinical articles, physical performance, training, and disabled athletes. The results of this research can be used as basic material for further research in the field of CPF. The results of this research can be used by CPF coaches to conduct further research on training for CPF Players to improve player performance.

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