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Research

Global Research Trends in Yoga for Sports Performance: A Bibliometric Analysis

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Abstract:
The intersection of yoga and sports performance has attracted growing scholarly attention over the past two decades, yet no dedicated bibliometric mapping of this research domain has been reported. This study undertook a bibliometric analysis of publications on yoga and sports performance retrieved from the Scopus database for the period 2000 to 2025. A total of 508 documents met the inclusion criteria and were analysed using VOSviewer and the Bibliometrix R package. The analysis examined annual publication trends, contributing countries and institutions, productive journals, highly cited publications, and keyword co-occurrence patterns. Annual output rose from 3 publications in 2000 to 98 in 2024, with marked acceleration after 2014. India and the United States were the leading contributors, together accounting for more than 59 percent of the total output. Five thematic clusters were identified through keyword analysis, centred on flexibility and motor control, psychological regulation, recovery and injury prevention, physiological markers, and cardiorespiratory fitness. The results reveal an expanding and increasingly interdisciplinary field. The analysis highlights underexplored areas including sport-specific yoga protocols, dose-response relationships and longitudinal tracking of performance outcomes that warrant sustained scholarly attention in the coming decade.

Keywords: bibliometric analysis; yoga; sports performance; Scopus; VOSviewer; research trends

1. Introduction

Success in competitive sport requires the integrated development of physical, physiological and psychological capacities. Athletes must generate and sustain force, maintain postural control, manage arousal and anxiety, and recover efficiently between training sessions and competitions. Conventional conditioning programmes often address these qualities through separate modalities such as resistance training for strength, aerobic exercise for endurance and sport psychology sessions for mental preparation. This compartmentalised approach can leave gaps, particularly in mobility, movement quality and stress regulation, that a complementary training method might help to fill (Ross & Thomas, 2010).

Yoga is an ancient Indian discipline that integrates physical postures known as asanas, regulated breathing known as pranayama, and meditative concentration. Because a single yoga session moves the body through wide ranges of motion, demands isometric holds against gravity, regulates breathing patterns and directs sustained attention, it engages flexibility, strength, autonomic control and concentration within one practice (Woodyard, 2011). This multidimensional character has encouraged coaches, sport scientists and athletes to explore yoga as a supplementary training tool across a range of sports including cricket, swimming, football and combat disciplines (Polsgrove et al., 2016). Intervention studies have reported improvements in hamstring and shoulder flexibility,

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static and dynamic balance, core stability and functional movement quality in both athletic and general populations (Tran et al., 2001; Gothe & McAuley, 2015). A smaller body of work has examined psychological outcomes such as reduced competitive anxiety, improved concentration and enhanced mindfulness, as well as physiological markers including cortisol modulation and heart rate variability (Pascoe et al., 2017; Buhlmayer et al., 2017).

The number of published studies on yoga and sport has grown substantially since 2000, spanning intervention trials, systematic reviews, physiological investigations and psychological studies. As the literature expands, a structured quantitative overview becomes necessary to identify the most active research areas, the countries and journals driving the field, and the thematic directions that remain underexplored. Bibliometric analysis provides such an overview by applying statistical methods to publication metadata including authorship, citation, keyword and journal data (Donthu et al., 2021). Despite the availability of bibliometric studies in broader yoga research and in sport science individually, no study has specifically mapped the intersection of yoga and sports performance.

The present study aimed to fill this gap by conducting a bibliometric analysis of the global research output on yoga for sports performance from 2000 to 2025. The specific objectives were to examine annual publication growth and its relationship to policy milestones, to identify the leading contributing countries, institutions and journals, to determine the most influential publications through citation analysis, and to map the thematic structure of the field through keyword co-occurrence clustering.

2. Methodology

2.1 Database and search strategy

Scopus was selected as the data source because of its broad multidisciplinary coverage, structured metadata export and established use in bibliometric research (Mongeon & Paul-Hus, 2016). The search was executed on 18 January 2025 using the following Boolean query applied to titles, abstracts and author keywords: TITLE-ABS-KEY ("yoga" AND ("sports performance" OR "athletic performance" OR "athlete" OR "sports" OR "exercise performance")). The search was limited to documents published between 2000 and 2025, written in English and classified as articles, reviews, conference papers or book chapters. The search strategy and eligibility criteria are summarised in Table 1.

Table 1. Search strategy and eligibility criteria

Element	**Specification**
Database	Scopus (Elsevier)
Search query	TITLE-ABS-KEY ("yoga" AND ("sports performance" OR "athletic performance" OR "athlete" OR "sports" OR "exercise performance"))
Time period	2000 to 2025
Document types	Articles, reviews, conference papers, book chapters
Language	English
Exclusions	Editorials, errata, letters, non-English publications, duplicates
Analytical tools	VOSviewer version 1.6.20, Bibliometrix and Biblioshiny (R package), Microsoft Excel

2.2 Data processing and analysis

After the initial retrieval, records were exported in CSV and RIS formats. Duplicates, editorials, errata and documents outside the defined scope were removed manually, yielding a final dataset of 508 documents. The analysis was carried out at several levels. Publication trends were examined by plotting annual output over the study period. Geographic and institutional contributions were assessed from the affiliation data. Source journal productivity was ranked by document count and CiteScore. Citation analysis identified the most influential publications by total citation count. Keyword co-occurrence analysis was performed in VOSviewer with a minimum occurrence threshold of five, and thematic mapping was conducted in the Biblioshiny interface of the R Bibliometrix package using centrality and density coordinates (van Eck & Waltman, 2010;

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Aria & Cuccurullo, 2017). Centrality reflects the strength of links between a cluster and other clusters, indicating its importance within the field, while density reflects the internal cohesion of a cluster, indicating its development and maturity.

3. Results

3.1 Publication growth

Annual output rose from 3 documents in 2000 to 98 in 2024, reflecting a compound annual growth rate of approximately 15 percent. Growth was gradual between 2000 and 2013, with annual output remaining below 35, and then accelerated sharply from 2014 onward. This inflection point coincides with the declaration of the International Day of Yoga by the United Nations General Assembly in December 2014, which raised institutional and public awareness of yoga as a subject of scientific interest (Basavaraddi, 2015). The period from 2019 to 2024 alone contributed 52 percent of the total dataset, confirming that the field is still in a rapid expansion phase. Output for 2025 was 42 at the time of data extraction, and the full year figure is expected to surpass 2024. The annual publication trend is shown in Figure 1.

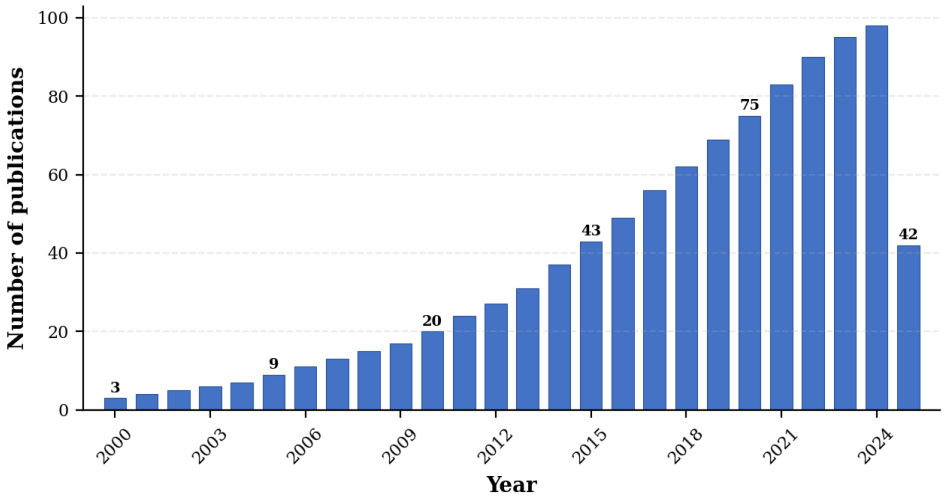

Figure 1. Annual publication output in yoga and sports performance research, 2000 to 2025 (2025 data are partial).

3.2 Geographic distribution

India was the most productive country with 172 publications, representing 33.9 percent of the total output, followed by the United States with 131 publications or 25.8 percent. Together these two countries accounted for more than 59 percent of the dataset. Australia (44), the United Kingdom (39) and China (32) formed the next tier. The remaining positions in the top ten were held by Brazil (25), Germany (20), Canada (18), Japan (15) and South Korea (12). The distribution of the ten most productive countries is shown in Figure 2.

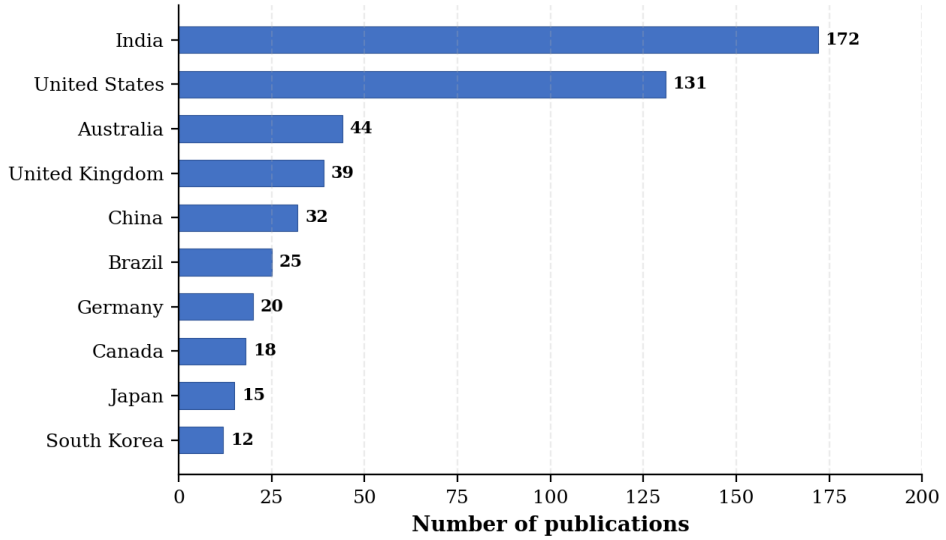

Figure 2. Top ten contributing countries by number of publications.

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India's numerical lead reflects a strong cultural and institutional connection to yoga, supported by dedicated departments of yogic science at national universities and government funded research initiatives under bodies such as the Ministry of AYUSH. The high citation impact of United States publications, with a mean of 27.6 citations per document compared with 12.8 for India, suggests that American studies tend to appear in higher impact journals and adopt designs such as randomised controlled trials that attract wider international engagement. Strengthening collaborative networks between Indian and Western institutions could combine traditional knowledge with advanced research methods and enhance the global impact of the field (Field, 2016). The country level citation data are shown in Table 2.

Table 2. Top ten contributing countries with citation metrics

Rank	Country	Documents	Total citations	Mean citations per document	h-index	% of total
1	India	172	2202	12.8	23	33.9
2	United States	131	3617	27.6	30	25.8
3	Australia	44	1012	23.0	15	8.7
4	United Kingdom	39	876	22.5	14	7.7
5	China	32	504	15.8	11	6.3
6	Brazil	25	318	12.7	9	4.9
7	Germany	20	394	19.7	10	3.9
8	Canada	18	302	16.8	8	3.5
9	Japan	15	184	12.3	7	3.0
10	South Korea	12	148	12.3	6	2.4

3.3 Source journals

The distribution of publications across journals followed the pattern described by Bradford's law, with a small core of journals contributing a disproportionate share of output. The International Journal of Yoga was the most productive source with 39 documents, consistent with its specialised scope. The Journal of Strength and Conditioning Research (28 documents) and the Journal of Sports Science and Medicine (21) ranked second and third, indicating substantial engagement from mainstream sport science outlets. The co-presence of complementary medicine journals such as the Journal of Alternative and Complementary Medicine and Complementary Therapies in Clinical Practice alongside sport specific periodicals reflects the inherently interdisciplinary character of the field. Frontiers in Psychology, which contributed 16 documents, has emerged as an important outlet for studies examining the cognitive and psychological effects of yoga in athletes. The ten most productive journals are listed in Table 3.

Table 3. Top ten most productive source journals

Rank	Journal	Documents	CiteScore 2024
1	International Journal of Yoga	39	3.2
2	Journal of Strength and Conditioning Research	28	5.6
3	Journal of Sports Science and Medicine	21	4.8
4	Journal of Alternative and Complementary Medicine	18	4.1
5	Frontiers in Psychology	16	5.8
6	International Journal of Environmental Research and Public Health	14	4.6
7	Evidence-Based Complementary and Alternative Medicine	12	3.4
8	Complementary Therapies in Clinical Practice	11	5.2

9	Perceptual and Motor Skills	10	2.7
10	Journal of Bodywork and Movement Therapies	9	3.1

3.4 Highly cited publications

The citation analysis identified several landmark publications that have shaped the direction of the field. Ross and Thomas (2010), a comparative review of yoga and conventional exercise, was the most cited document in the dataset, reflecting its broad relevance to researchers positioning yoga alongside established training modalities. The intervention study by Polsgrove et al. (2016), which demonstrated clear gains in flexibility and balance in college athletes after ten weeks of yoga, was among the most cited empirical investigations and has been widely referenced in subsequent athlete based studies. Gothe and McAuley (2015), a meta-analysis of yoga and cognition, attracted high citation counts by providing the first pooled estimate of yoga's cognitive benefits, a finding with direct relevance to attentional demands in sport. Pascoe et al. (2017), a systematic review documenting the physiological stress markers modulated by mindfulness and yoga, was heavily cited in the physiological mechanisms cluster. Among more recent publications, Buhlmayer et al. (2017), who conducted a meta-analytical review of mindfulness based interventions for sport performance, received rapid citation accumulation, indicating strong current interest in the psychological applications of contemplative practices in competitive settings.

3.5 Keyword co-occurrence and thematic clusters

The keyword co-occurrence analysis in VOSviewer with a minimum threshold of five occurrences identified 68 qualifying keywords, which grouped into five thematic clusters. Cluster 1, centred on flexibility, balance, motor control and agility, was the largest and most established stream, reflecting the long standing interest in yoga as a method for improving mobility and postural stability in athletes. Cluster 2 focused on psychological variables including mindfulness, anxiety, concentration and self-efficacy, indicating sustained and growing attention to the mental dimensions of yoga in competitive sport. Cluster 3 covered recovery, injury prevention, delayed onset muscle soreness and sleep quality, representing the expanding recognition of yoga as a restorative modality for athletes managing high training loads. Cluster 4 grouped physiological markers such as cortisol, heart rate variability and autonomic function, an emerging mechanistic research stream with high citation impact relative to its size. Cluster 5 addressed cardiorespiratory fitness and endurance, which was the smallest cluster, consistent with the limited evidence for strong aerobic adaptations from yoga practice. The number of publications associated with each cluster is shown in Figure 3, and a summary of the clusters is presented in Table 4.

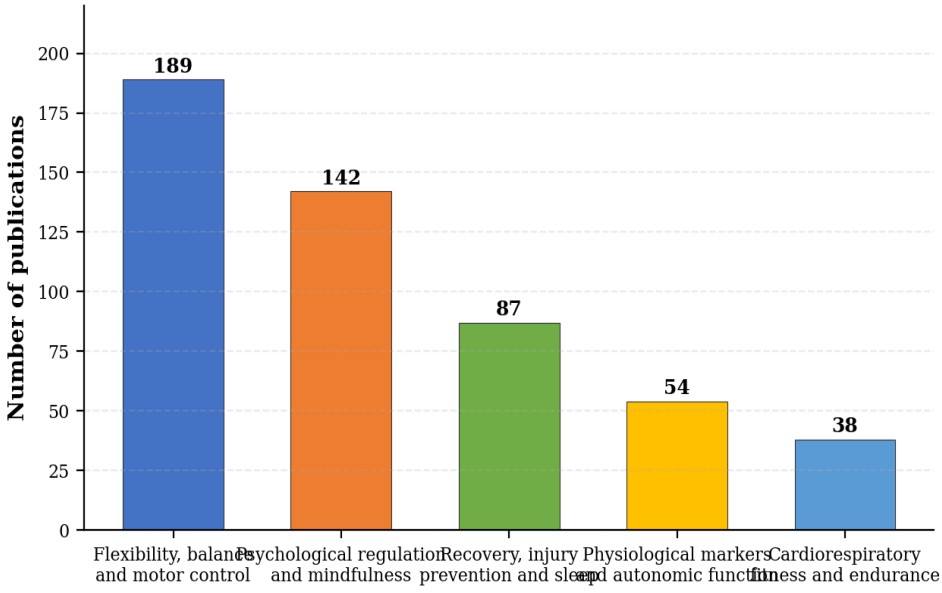

Figure 3. Number of publications associated with each thematic cluster identified through keyword co-occurrence analysis.

Table 4. Summary of thematic clusters, representative keywords and research maturity

Cluster	Theme	Representative keywords	Publications	Research maturity
1	Physical performance	Flexibility, balance, agility, strength, range of motion	189	Established; largest cluster
2	Psychological regulation	Mindfulness, anxiety, concentration, stress, self-efficacy	142	Growing; strong recent output
3	Recovery and injury	Recovery, injury prevention, DOMS, sleep quality, fatigue	87	Developing; acceleration since 2019
4	Physiological markers	Cortisol, heart rate variability, autonomic function, GABA	54	Emerging; high citation impact
5	Cardiorespiratory fitness	VO2max, aerobic capacity, endurance, body composition	38	Limited; smallest cluster

4. Discussion

The bibliometric profile revealed by this analysis indicates a research field that has grown rapidly and diversified considerably since 2000. The sharp increase in output after 2014 suggests that international policy recognition of yoga, together with broader trends toward integrative and evidence based sport science, has amplified scholarly interest. The concentration of output in India and the United States is consistent with India's cultural and institutional connection to yoga and with the strong sport science research infrastructure in the United States. The comparatively high citation impact of American publications indicates that international collaboration and methodological rigour, particularly the use of randomised controlled designs, tend to attract wider scholarly engagement. Strengthening collaborative networks between Indian and Western institutions could combine traditional expertise with advanced experimental methods and enhance the global impact of the field (Field, 2016).

The thematic clusters map clearly onto the multidimensional nature of yoga as a training modality. The dominance of the physical performance cluster is expected, since flexibility, balance and motor control are the most immediately observable and measurable outcomes of asana practice and have been the focus of intervention research since the early 2000s (Tran et al., 2001; Polsgrove et al., 2016). However, the size of this cluster also suggests a degree of topical concentration that may benefit from redirection toward more complex performance attributes such as power, reaction time, sport-specific skill acquisition and competitive movement efficiency. The psychological regulation cluster is the second largest and has shown strong recent growth, reflecting the integration of mindfulness based approaches into sport psychology and the recognition that yoga targets cognitive and emotional dimensions relevant to performance under pressure (Buhlmayer et al., 2017). Studies in this cluster have begun to examine not only anxiety reduction but also attentional focus, emotional resilience and flow states, which represent promising avenues for future research.

The recovery and physiological markers clusters, although smaller, are notable for their rapid recent growth and high citation impact. These clusters represent the most promising frontiers for establishing the mechanistic evidence base that coaches and practitioners require to justify the inclusion of yoga in structured training programmes. In particular, studies examining cortisol modulation, heart rate variability and vagal tone provide a physiological rationale for the stress regulatory effects of yoga that complement its physical benefits (Pascoe et al., 2017). The small size of the cardiorespiratory fitness cluster is consistent with the findings of intervention studies showing that yoga produces only modest aerobic adaptations compared with conventional endurance training, and suggests that yoga is best positioned as a complement rather than a substitute for aerobic conditioning in athletic contexts.

Several limitations should be noted. The analysis relied solely on the Scopus database, which may have excluded relevant publications indexed only in PubMed, Web of Science or regional databases. The restriction to English language publications may underrepresent research from South and Southeast Asian countries where yoga research is actively pursued in vernacular academic journals.

Bibliometric indicators such as citation counts are subject to temporal bias, as older publications have had more time to accumulate citations, and disciplinary citation norms vary across sport science and complementary medicine journals. The thematic clustering is sensitive to the minimum occurrence threshold selected, and alternative thresholds may yield somewhat different cluster configurations. Future bibliometric work could incorporate multiple databases and extend the analysis to include co-authorship network structures and bibliographic coupling patterns.

5. Conclusion

This bibliometric analysis of 508 publications from 2000 to 2025 maps a rapidly expanding research landscape at the intersection of yoga and sports performance. India and the United States are the primary knowledge producing countries, and the field's intellectual structure is organised around five thematic clusters centred on physical performance, psychological regulation, recovery, physiological mechanisms and cardiorespiratory fitness. The strongest and most established evidence base concerns flexibility, balance and motor control, while the most promising emerging frontiers involve recovery protocols, physiological markers of stress regulation and sport-specific yoga intervention designs. Future research should prioritise adequately powered randomised controlled trials with competitive athletes, standardised yoga protocols, dose-response investigations and longitudinal tracking of performance outcomes across competitive seasons. As both the scientific evidence and the applied interest in yoga for sport continue to grow, this bibliometric overview provides a structured foundation for directing the next phase of inquiry in this evolving interdisciplinary field.

References

1. Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. Journal of Informetrics, 11(4), 959–975. https://doi.org/10.1016/j.joi.2017.08.007
2. Basavaraddi, I. V. (2015). Yoga: Its origin, history and development. Ministry of External Affairs, Government of India. https://www.mea.gov.in/in-focus-article.htm?25096
3. Buhlmayer, L., Birrer, D., Rothlin, P., Faude, O., & Donath, L. (2017). Effects of mindfulness practice on performance-relevant parameters and performance outcomes in sports: A meta-analytical review. Sports Medicine, 47(11), 2309–2321. https://doi.org/10.1007/s40279-017-0752-9
4. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, 133, 285–296. https://doi.org/10.1016/j.jbusres.2021.04.070
5. Field, T. (2016). Yoga research review. Complementary Therapies in Clinical Practice, 24, 145–161. https://doi.org/10.1016/j.ctcp.2016.06.005
6. Gothe, N. P., & McAuley, E. (2015). Yoga and cognition: A meta-analysis of chronic and acute effects. Psychosomatic Medicine, 77(7), 784–797. https://doi.org/10.1097/PSY.0000000000000218
7. Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: A comparative analysis. Scientometrics, 106(1), 213–228. https://doi.org/10.1007/s11192-015-1765-5
8. Pascoe, M. C., Thompson, D. R., Jenkins, Z. M., & Ski, C. F. (2017). Mindfulness mediates the physiological markers of stress: Systematic review and meta-analysis. Journal of Psychiatric Research, 95, 156–178. https://doi.org/10.1016/j.jpsychires.2017.08.004
9. Polsgrove, M. J., Eggleston, B. M., & Lockyer, R. J. (2016). Impact of 10-weeks of yoga practice on flexibility and balance of college athletes. International Journal of Yoga, 9(1), 27–34. https://doi.org/10.4103/0973-6131.171710
10. Ross, A., & Thomas, S. (2010). The health benefits of yoga and exercise: A review of comparison studies. The Journal of Alternative and Complementary Medicine, 16(1), 3–12. https://doi.org/10.1089/acm.2009.0044
11. Tran, M. D., Holly, R. G., Lashbrook, J., & Amsterdam, E. A. (2001). Effects of hatha yoga practice on the health-related aspects of physical fitness. Preventive Cardiology, 4(4), 165–170. https://doi.org/10.1111/j.1520-037X.2001.00542.x
12. van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping.

Scientometrics, 84(2), 523–538. https://doi.org/10.1007/s11192-009-0146-3

13. Woodyard, C. (2011). Exploring the therapeutic effects of yoga and its ability to increase quality of life. International Journal of Yoga, 4(2), 49–54. https://doi.org/10.4103/0973-6131.85485

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