

REVIEW ARTICLE



# The Research Map Regarding the Importance of Communication in Athlete Success: Bibliometric Analysis

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## ABSTRACT

**Background.** Communication in sports requires special attention, especially for athletes who are in direct contact with coaches, spectators, etc. **Objectives.** Based on an examination of 49 years of papers related to communication with athletes published in diverse scientific documents, we examine developments in the field in this article using bibliometric analysis. This is a bibliometric review of publications related to communication between coaches and or among athletes to identify authors, countries, affiliations, the most relevant sources, and the evolution of scientific results, thematic maps, and keywords. **Methods.** On February 8, 2023, the metadata search in the Scopus database using the search terms "athlete" and "communication" resulted in a total of 519 documents. **Results.** The author's keyword "communication" was the one that appeared in the most, with a total of 45 occurrences, followed by "athlete" with 44 and "sport" with 33 occurrences. The keyword "injury" was the newest keyword that came up ten times in 2017-2021 and 2022. On the thematic map, "crisis communication" is a growing topic that should receive researchers' attention. **Conclusion.** Researchers and scientists interested in this topic might also take advantage of several publications, authors, and trending keywords as references for further research. As a result, sports academics must work on research on the topic of communication in athletes and apply what they learn in training and competition practices.

**KEYWORDS:** *Communication, Athlete, Bibliometric, Biblioshiny.*

## INTRODUCTION

One of the determining factors in the success of sports is good communication among parties (athletes, coaches, spectators, and stakeholders) (1). Communication by a coach theoretically and practically influences athletes' performance (2). There may be communication breakdowns, which might exert a detrimental effect on performance (3), and athletes tend to blame for the perceived distractions (4). Elite athletes may experience significant stress due to perceived communication

inefficiencies (miscommunication, lack of communication, etc.) (5-7). Not to mention the characteristics of generation-Z athletes, who tend to hold a poor basic communication skill (8), interpersonal communication between elite athletes identifiable by verbal aggression includes verbal strength, sensation, and anger (9).

The growth of athletes' bad attitudes and performance is largely induced by a lack of harmonious communication and training programs

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that do not suit their character (10). The aggressive tactics applied by the coaches are allegedly perceived by athletes as bad communication, resulting in low levels of satisfaction, less successful teams, and less sportsmanship (11). If effective communication is hampered, the coach must be alert and responsive as it could negatively affect the team's performance (12).

However, many scientists have conducted research on various topics related to communication between athletes and those related to them. Communication crises in sports can find the way out by deeply understanding the theoretical and practical insights of Situational Crisis Communication Theory (SCCT) (13), which can be a basis for communication between managers, coaches, athletes, and officials, by which team achievement could increase (14). Sports satisfaction is determined by the communication relationship and the quality of the relationship over time between coaches and athletes, which provides useful support to communication strategies for both (15), which can influence performance (16) and improve the affective learning of athletes (17). Communication will exert a very positive impact if applied early on by athletes (18). Positive communication between athletes and coaches can improve athlete performance as well (19). When athletes can express thoughts, feelings, and needs within a team, effective communication occurs (20, 21). In addition, the flexibility of the coach's communication plays a prominent role in fostering honest attitudes towards athletes and providing support for athlete safety, especially in cases of post-match concussions (22). When they experience stress, coaches can identify it through some indicators, such as communication cues, behavior, and style (23).

Based on an examination of 49 years of papers related to communication with athletes published in diverse scientific documents, we examine developments in the field in this article using bibliometric analysis. This bibliometric study, which provides a mapping of research topics and allows the study of a wider selection, is an impartial and reliable resource (24). The use of bibliometric data and its consequences for scientific communication requires substantial research, and bibliometrics is relevant for all research domains (25, 26). Therefore, this study aims to identify the most relevant authors, countries, affiliations, sources, analyzed in this

study. Possible future studies in this field will benefit from our bibliometric study.

## LITERATURE REVIEW

Several other studies have been conducted regarding how athletes communicate in sports. For example, in NCAA female athletes, sports body image is communicated by coaches through training, body anatomy, and the recognition of body changes in athletes (27). Different attitudes and communication behaviors are also applied by male and female coaches in dealing with female athletes regarding irregular eating patterns and menstruation (28). Differences in the sex of the athletes also determine the communication, yet team sports tend to communicate in the same way (29). Parental communication also has a significant role in the development of athletic achievement. Mothers' ways of communication could be more supportive compared to those of fathers, who evaluate more negatively their children's technical instructions regarding sports activities (30). Athletes believe that support, negotiation, and the ability to communicate with parents and coaches in sports activities can improve and develop a number of life skills that can be applied in real life (31).

In addition, team sports are greatly influenced by a harmonious relationship between coaches and athletes (32, 33). Communication within the team has an important role in relation to athlete fatigue during the training process (34). Nonverbal communication can occur during the training process and is shown in different forms, such as body movements, gesture illustrations, artifacts, and facial expressions (35). Communication difficulties lead to the assertiveness of an athlete on the team, so special strategies need to be applied in the respective sports settings (36).

On the other hand, communication with athletes with spectators or fans is through technological advances, such as social media (21). Communication mechanisms built by male and female athletes in social media serve as a media promotion for personal brand management and sports organizations (37). Social media (Twitter) is one of the communication tools used by professional athletes with fans and other players (38). Kassing & Sanderson discuss the impact of using social media (Twitter) for athletes and fans as a form of relationship that is most social or

parasocial (36). Athletes and sports organizations face challenges and opportunities in developing and managing their personal trademarks, as well as in conceptualizing their branding (39). To monitor professional athletes' behaviour regarding injuries, postings on the internet, and postings on YouTube, using information and communication technologies (ICTs) is highly crucial (40).

## MATERIALS AND METHODS

The application of bibliometric to mapping science has contributed to the field's growing acceptance among academics (41). Due to its good and strong reputation as a database of abstracts and citations in some major disciplinary fields, the authors decided to conduct a bibliometric study using the Scopus database. Scopus is a well-known database with a high impact factor (42). Scopus is also chosen over other databases, such as Web of Science and PubMed because it has more papers (43), thousands of journals are covered under Scopus (44), and it has historically served as the main source of information for scholars (45). The term "metadata" refers to a simple summary of information about the data used in this research. All procedures—from data collection to data screening for existing publications—form the basis of this investigation. An important initial

step in this bibliometric assessment is identifying and determining research objectives (46, 47).

On February 8, 2023, a metadata search in the Scopus database used the search terms ("athlete\*" AND "communication") to find all papers that had been published until 2023. A total of 519 documents was captured. The entire procedure—starting from data collection to data screening for existing publications—formed the basis of this investigation (42), to ensure that the research findings are insightful and very helpful. To analyse the processed data, a web-based application called Biblioshiny (48) is used on the data that has been processed.

## RESULTS

**Main information.** Based on Table 1, numerous key facts were discovered from the outcomes of the bibliometric analysis, including: 1) A total of 285 scientific sources (journals) was collected related to the research theme; 2) There were 519 documents recorded; 3) Around 1,784 authorities were involved in conducting research related to communication among athletes; 4) The types of the recorded documents from Scopus include article (385), book chapter (6), conference paper (15), editorial (16), letter (6), note (11), retracted (2), review (55), and a short survey of 22 documents. Figure 1 explains some other information about the research theme.



Figure 1. Main Information.

**The most popular scientific source.** "Plos One" is the scientific source with the highest total citations, namely 2,536,627 citations, and the highest h-index, which is 367. Table 1 lists the top 10 reputable scientific sources based on the criteria

mentioned about the field of communication in athletes.

Today writers around the world can publish their articles in the relevant journals. "Athletic Therapy Today in the International Journal of

Athletic Therapy and Training" is the most widely published scientific source of articles related to communication in athletes with 24 documents, but the total citations up to 2021 are the lowest compared to other nine scientific sources in the top ten. 80% of the top ten scientific sources are accessed from Q1.

#### The most productive countries and affiliates.

Table 2 explains that the United States is the country with the most publications with 738 articles among other countries in the top ten rankings. Meanwhile, the University of North Carolina at Chapel Hill, United States, is the affiliate with the highest number of documents compared to other affiliates in the top ten list, with 32 documents. The United States dominates in

terms of publications as well as affiliates, 60% of which are from the United States. China and Japan are part of the top ten. In addition to the many well-known affiliations of the two countries in the field of sports, the two countries also have strong traditions in sports. This certainly influences research on sports conducted by the two East Asian countries.

Most globally cited documents Table 3 lists the ten articles with the highest number of citations (total citations per year). These ten articles also have an impact on the development of communication research on athletes. By offering suggestions and notions for ongoing research, ten papers have had a significant influence on the advancement of this field of study.

**Table 1. The Most Popular Scientific Source**

Rank	Sources	Articles	Quartile	Publisher	H-Index	Total Cites (2021)
1	Athletic Therapy Today in International Journal of Athletic Therapy and Training	24	Q3	Human Kinetics Publishers Inc.	17	938
2	British Journal of Sports Medicine	17	Q1	BMJ Publishing Group	189	77.969
3	Journal of Sports Sciences	16	Q1	Routledge	145	34.820
4	International Journal of Environmental Research and Public Health	13	Q1	Multidisciplinary Digital Publishing Institute (MDPI)	138	196.257
5	Communication and Sport	12	Q1	SAGE Publications Ltd	20	1.454
6	Current Sports Medicine Reports	12	Q2	Lippincott Williams and Wilkins Ltd.	56	5.501
7	Clinical Journal of Sport Medicine	10	Q1	Lippincott Williams and Wilkins Ltd.	109	13.137
8	Plos ONE	10	Q1	Public Library of Science	367	2.536.627
9	Journal of Athletic Training	9	Q1	National Athletic Trainers' Association Inc.	117	15.855
10	Journal of Science and Medicine in Sport	8	Q1	Elsevier BV	108	24.102

**Table 2. Most Country and Affiliation**

Country	Doc.	Country	Total Citation	Affiliation	Country	Doc.
United States	738	United States	2970	University of North Carolina at Chapel Hill	United States	32
United Kingdom	172	United Kingdom	1206	Ghent University	Belgium	29
Canada	118	Australia	811	University of Toronto	Canada	24
Australia	94	Canada	573	Loughborough University	United Kingdom	21
Spain	63	Qatar	422	University of Washington	United States	20
Belgium	62	Sweden	322	University of North Carolina	United States	16
Italy	60	Spain	239	University of Georgia	United States	15
Germany	54	France	204	Michigan State University	United States	14
China	52	Netherlands	203	Clemson University	United States	13
Japan	46	Germany	132	The University of Queensland	Australia	12

**Author keywords.** Key phrases in an article can be identified in the title, abstract, or author keywords. They can explain the topics and

content of the scientific work. Table 4 displays, 25 keywords that appear most often and are used by writers related to communication between

athletes. The author keyword "communication" is the one that appears the most with a total of 45 occurrences, followed by "athlete" with 44 and "sport" with 33 occurrences.

In addition to the keywords that appear the most, it is interesting to analyse the trending topic keywords from this research field. The analysis is intended to show the latest research trends (from the last ten years), which have been widely studied by scientists based on the keywords used. Several parameters are determined to see trending topics, including: 1) the time span used between 2013 and 2022; 2) the word minimum frequency of 10; and 3) the number of words per year of 3. Meanwhile,

Figure 2 shows 50 keywords with various analysis parameters provided by Biblioshiny. Among the analysis parameters used: 1) the selected fields are the author keywords; 2) the number of words is 50; and 3) the parameters used include word occurrence by frequency, shape using a circle, font type Tahoma, text colours using random dark, font size of 0.7, the ellipticity of 0.65, padding of 1, and rotation of 0. Figure 2 illustrates that the bigger and thicker the word, the more the keyword appears. Figure 3 shows hot topics based on keywords in the quadrant containing the motor theme such as sport communication, social support, and athlete-coach communication.

**Table 3. Most Global Cited Document**

Author	Year	Sources/DOI	TC	TCPY	NTC
<b>Ardern CL (48)</b>	2016	British Journal of Sports Medicine/ <a href="https://doi.org/10.1136/bjsports-2016-096278">https://doi.org/10.1136/bjsports-2016-096278</a>	373	46,63	9,72
<b>Williams AM (49)</b>	2005	Journal of Sports Sciences/ <a href="https://doi.org/10.1080/02640410400021328">https://doi.org/10.1080/02640410400021328</a>	286	15,05	10,51
<b>Gulliver A (50)</b>	2012	BMC Psychiatry/ <a href="https://doi.org/10.1186/1471-244X-12-157">https://doi.org/10.1186/1471-244X-12-157</a>	258	21,50	6,76
<b>Distefan JM (51)</b>	1998	Journal of Adolescent Health/ <a href="https://doi.org/10.1016/S1054-139X(98)00013-5">https://doi.org/10.1016/S1054-139X(98)00013-5</a>	183	7,04	2,98
<b>Longmuir PE (52)</b>	2013	Circulation/ <a href="https://doi.org/10.1161/CIR.0b013e318293688f">https://doi.org/10.1161/CIR.0b013e318293688f</a>	170	15,45	5,14
<b>Gould D (53)</b>	1993	Research Quarterly for Exercise and Sport/ <a href="https://doi.org/10.1080/02701367.1993.10607599">https://doi.org/10.1080/02701367.1993.10607599</a>	167	5,39	1,00
<b>Kerr ZY (54)</b>	2014	Brain Injury/ <a href="https://doi.org/10.3109/02699052.2014.904049">https://doi.org/10.3109/02699052.2014.904049</a>	166	16,60	6,46
<b>Passos P (55)</b>	2011	Journal of Science and Medicine in Sport/ <a href="https://doi.org/10.1016/j.jsams.2010.10.459">https://doi.org/10.1016/j.jsams.2010.10.459</a>	166	12,77	4,73
<b>Mellalieu SD (56)</b>	2009	Journal of Sports Sciences/ <a href="https://doi.org/10.1080/02640410902889834">https://doi.org/10.1080/02640410902889834</a>	157	10,47	4,06
<b>Haberman ZC (57)</b>	2015	Journal of Cardiovascular Electrophysiology/ <a href="https://doi.org/10.1111/jce.12634">https://doi.org/10.1111/jce.12634</a>	153	17,00	9,35

**Table 4. Most Frequent Word**

Words	Occurrences	Words	Occurrences
<b>Communication</b>	45	Injury prevention	8
<b>Athlete</b>	44	Football	7
<b>Sport</b>	33	Physical activity	7
<b>Concussion</b>	21	Psychology	6
<b>Sport communication</b>	12	Doping	5
<b>Sports medicine</b>	12	Rehabilitation	5
<b>Performance</b>	11	Reporting	5
<b>Coaches</b>	10	Social support	5
<b>Exercise</b>	10	Adolescents	4
<b>Injury</b>	10	Athlete-coach communication	4
<b>Education</b>	9	Coach-athlete relationship	4
<b>Traumatic brain injury</b>	9		

**Three-field plot.** Figure 4 displays a three-field plot showing the relationship between authors (left), affiliation (center), and country (right) in the communication of athletes. Author, affiliation, and

country are selected as the main metadata fields. The three key points indicate that the authors determine personal qualities. The authors' affiliation reveals their academic background. The

culture of knowledge is influenced by the country. The number of connections between each element and other elements is indicated by the height of each rectangle. The keyword "USA" has the most

links to "University of North Carolina at Chapel Hill" on the right side of the plot. Marshall, Registe-Mihalik, and Keer show the strongest ties to core research topics.



Figure 2. Word Cloud Based on Author Keywords.

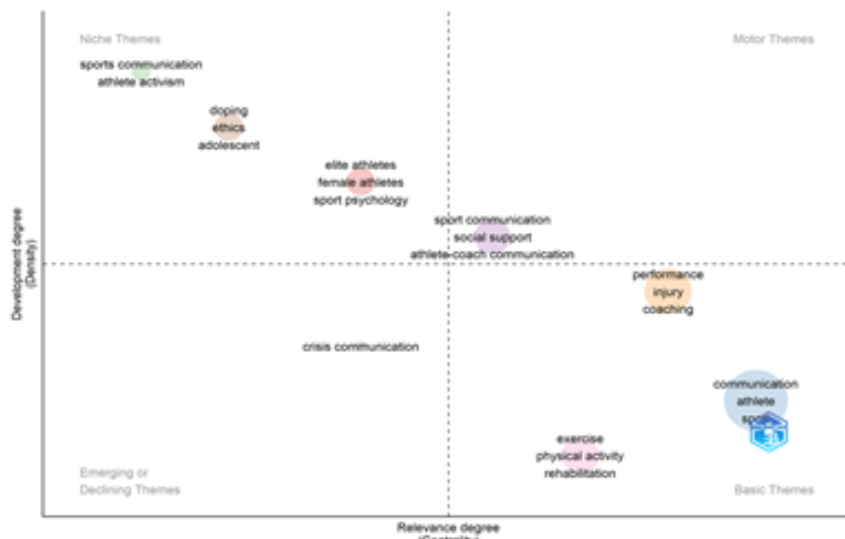


Figure 3. Thematic Maps.

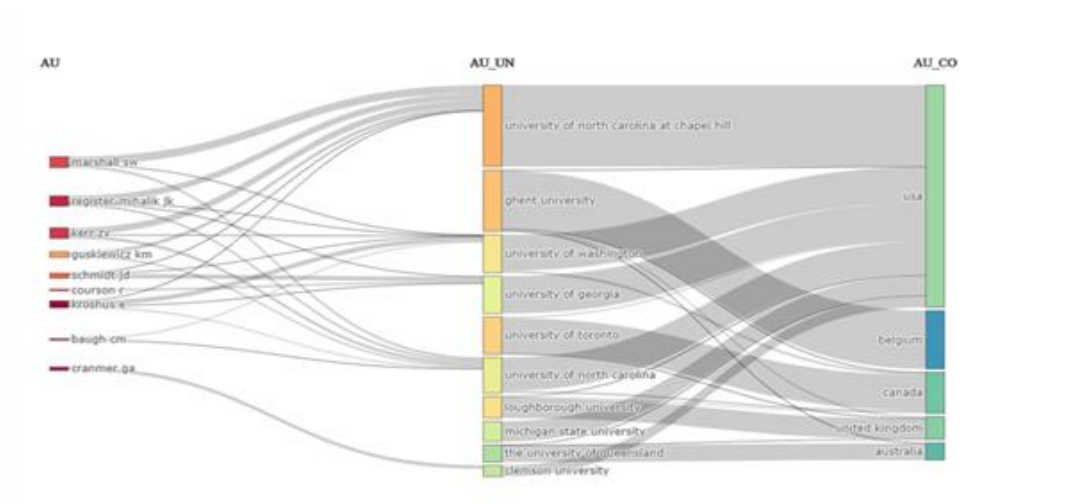


Figure 4. Relationship Between Authors, Affiliations, and Countries.

## DISCUSSION

This bibliometric research was conducted to reveal the trend of publications related to athlete communication until 2023. Interestingly, 18.3% of them were written in international collaboration. It depicts an exchange of knowledge between countries in the field of communication for athletes.

Journals offer authors options for publication, such as open access or closed access and paid or unpaid (58). Journals can also be multidisciplinary or specific to certain fields to accommodate the needs of readers in a particular field. Published scientific papers can have a real impact on the development of certain disciplines. The impact and influence of the journal can be determined from various criteria, such as its publisher, h-index, and quartile. The H-index is a way for people to see, measure, and assess the impact of someone's scientific work based on the number of publications cited by other people (59).

The ten most productive countries and their affiliates conducting research related to communication with athletes are shown in Table 2. Of the several countries listed in Table 2, there are no representatives from the African continent who are included in the top ten most productive countries in publications related to the field of communication between athletes. This may happen because countries on the African continent focus more on other themes and research subjects. Apart from that, outstanding athletes will undoubtedly bring honor to their families, institutions, and, of course, their country. The world's elite athletes tend to come from institutions with rapid growth and development in sports science, as well as from countries with strong sporting traditions. Athlete communication studies are also part of the athletic achievement support system. No matter how talented they are, athletes cannot succeed without the government-provided support services provided by national governing organizations, which enable them to pursue a career in sports (60).

After conducting research, researchers must produce a report, either in ordinary notes or a book, to be published in a reputable scientific journal. It aims to provide information to readers regarding a basis, input, and other contributions. The research is conducted to contribute to the development of science. The contributions also influence the development of sports, in terms of communication among today's athletes per se.

By examining the subject of keyword trends, the index can also be used as a tool for forecasting future research (61). Figure 3 shows that the keyword "injury" is the new keyword used by scientists related to communication between athletes. These keywords appear ten times in the 2017, 2021, and 2022 timeframe's. This is related to how coaches and athletes communicate before, during, and after the training process, which can prevent injury. Or how athletes communicate the injuries they have suffered to the coach so that they can be treated immediately in the healing process. This is related to the second keyword that appears in Figure 3, "concussion" as concussion injury is a hot topic.

In accordance with the trend topics in Figure 4, "crisis" which is in the lower left quadrant, indicates that this topic is currently developing and is novel for research and continues to receive researchers' attention. This is related to how communication between athletes and coaches in training, matches, injuries, and psychological problems can improve individual and team achievements.

## CONCLUSION

A lot of articles on the topic of communication and athletes have been published. The study results concluded that the article is the most among other types of writing, with a total of 385 documents. The journal "Athletic Therapy Today" in the International Journal of Athletic Therapy and Training are the scientific source that publishes the most articles related to communication between athletes, with 24 documents. The United States is the country with the most documents, 738 documents. The University of North Carolina at Chapel Hill in the United States is the most productive affiliate with 32 documents. The three writer's keywords that appear the most are "communication," "athlete," and "sport." In connection with the study results, some subjects and terms commonly used in this theme have the potential to be further developed. Researchers and scientists interested in this topic might also take advantage of several publications, authors, and trending keywords as references for further research. In sum, sports academics around the world are supposed to conduct research on communication in sports and apply what they learn in training and competition.

### APPLICABLE REMARKS

- A research agenda is proposed to understand the dynamics of research and publications about athletes as communication actors. Various studies have documented their various communication activities with coaches, organizations, fellow athletes, spectators and fans which shows the important role of communication in supporting the success of an athlete at various levels, sports and regions.
- Those in the sports and communication fields can utilize these research findings to continue to understand how the role of communication can be developed and optimized to increase the performance and prestige of an athlete and the sport they play. Communication involving athletes requires special attention from the academics and stakeholders involved because the development of information technology has penetrated communication aspects in various contexts.

### REFERENCES

1. Sofyan D, Abdullah KH, Akinci AY, Osiobe EU. Map-based communication : a pivotal function of knowledge information in sports. *J Kaji Komun*. 2022;10(2):133–44. [doi:10.24198/jkk.v10i2.42170]
2. Sagar SS, Jowett S. Communicative Acts in Coach-Athlete Interactions: When Losing Competitions and When Making Mistakes in Training. *West J Commun*. 2012;76(2):148–74. [doi:10.1080/10570314.2011.651256]
3. Greenleaf C, Gould D, Dieffenbach K. Factors Influencing Olympic Performance: Interviews with Atlanta and Nagano U.S. Olympians. *J Appl Sport Psychol*. 2001;13(2):154–84. [doi:10.1080/104132001753149874]
4. Kristiansen E, Murphy D, Roberts GC. Organizational Stress and Coping in U.S. Professional Soccer. *J Appl Sport Psychol*. 2012;24(2):207–23. [doi:10.1080/10413200.2011.614319]
5. Athanasios L. Communication problems in professional sports: The case of Greece. *Corp Commun*. 2005;10(3):252–6. [doi:10.1108/13563280510614500]
6. Holt NL, Hogg JM. Perceptions of stress and coping during preparations for the 1999 women’s soccer world cup finals. *Sport Psychol*. 2002;16(3):251–71. [doi:10.1123/tsp.16.3.251]
7. Noblet AJ, Gifford SM. The Sources of Stress Experienced by Professional Australian Footballers. *J Appl Sport Psychol*. 2002;14(1):1–13. [doi:10.1080/10413200209339007]
8. Gould D, Nalepa J, Mignano M. Coaching Generation Z Athletes. *J Appl Sport Psychol* [Internet]. 2020;32(1):104–20. [doi:10.1080/10413200.2019.1581856]
9. Kerr JH, Grange P. Athlete-to-Athlete Verbal Aggression: A Case Study of Interpersonal Communication Among Elite Australian Footballers. *Athlete-to-Athlete Verbal Aggress A Case Study Interpers Commun Among Elit Aust Footballers*. 2018;360–72. [doi:10.1123/ijsc.2.3.360]
10. Kristiansen E, Tomten SE, Hanstad D V., Roberts GC. Coaching communication issues with elite female athletes: Two Norwegian case studies. *Scand J Med Sci Sport*. 2012;22(6):1–12. [doi:10.1111/j.1600-0838.2012.01521.x] [PMid:22925166]
11. Kassing JW, Infante DA. Aggressive communication in the coach-athlete relationship. *Int J Phytoremediation*. 1999;16(2):110–20. [doi:10.1080/08824099909388708]
12. Takamatsu S, Yamakita R. The relationship between athlete leadership and communication: Analyzing social networks within Japanese sport teams. *Asian J Sport Exerc Psychol*. 2022;2(3):151–5. [doi:10.1016/j.ajsep.2022.08.004]

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### AUTHORS’ CONTRIBUTIONS

Study concept and design: Hanny Hafiar. Acquisition of data: Ari Agung Prastowo, Anissa Lestari Kadiyono. Analysis and interpretation of data: Ari Agung Prastowo, Davi Sofyan. Drafting the manuscript: Eko Purnomo. Critical revision of the manuscript for important intellectual content: Hanny Hafiar, Eko Purnomo. Statistical analysis: Hanny Hafiar, Ari Agung Prastowo, Davi Sofyan. Administrative, technical, and material support: Anissa Lestari Kadiyono, Ari Agung Prastowo. Study supervision: Hanny Hafiar.

### CONFLICT OF INTEREST

The authors mention that there is no “Conflict of Interest” in this study.



13. Brown KA, Adamson A, Park B. Applying Situational Crisis Communication Theory to Sports: Investigating the Impact of Athlete Reputational Crises on Team Perception. *J Glob Sport Manag.* 2020;5(2):202–22. [doi:10.1080/24704067.2019.1604077]
14. Ezzeldin R. Aly. Communication Management Among Athlete and Coaches. *Natl Univ Libr.* 2014;3(September):5–6.
15. Davis L, Jowett S, Tafvelin S. Communication strategies: The fuel for quality coach-athlete relationships and athlete satisfaction. *Front Psychol.* 2019;10(SEP). [doi:10.3389/fpsyg.2019.02156] [PMid:31607989]
16. Kim Y, Park I. “Coach really knew what i needed and understood me well as a person”: Effective communication acts in coach–athlete interactions among Korean olympic archers. *Int J Environ Res Public Health.* 2020;17(9). [doi:10.3390/ijerph17093101] [PMid:32365657]
17. Turman PD, Schrodt P. New avenues for instructional communication research: Relationships among coaches’ leadership behaviors and athletes’ affective learning. *Commun Res Reports.* 2004;21(2):130–43. [doi:10.1080/08824090409359975]
18. Turman PD. Athletic coaching from an instructional communication perspective: The influence of coach experience on high school wrestlers’ preferences and perceptions of coaching behaviors across a season. *Commun Educ.* 2003;52(2):73–86. [doi:10.1080/03634520302465]
19. West L. Coach-Athlete Communication: Coaching Style, Leadership Characteristics, and Psychological Outcomes. *Hum Movement, Sport Leis Stud.* 2016;1–71.
20. Mclean S, Salmon PM, Gorman AD, Dodd K, Solomon C. Integrating communication and passing networks in football using social network analysis. *Sci Med Footb.* 2019;3(1):29–35. [doi:10.1080/24733938.2018.1478122]
21. Hafiar H, Prastowo AA, Limilia P, Amin K, Solihin AO. Information Exposure Effect of Athletic Performance, Idolizing and Sportsmanship on Sports Fan Students. *Phys Educ Theory Methodol.* 2023 Apr;23(2):155–61. [doi:10.17309/tmfv.2023.2.01]
22. Milroy JJ, Wyrick DL, Sanders L, Refistek E, Beamon E. Student-athlete concussion disclosure and coach communication within collegiate athletics. *J Concussion.* 2019;3:205970021989410. [doi:10.1177/2059700219894104]
23. Thelwell RC, Wagstaff CRD, Chapman MT, Kenttä G. Examining coaches’ perceptions of how their stress influences the coach–athlete relationship. *J Sports Sci.* 2017;35(19):1928–39. [doi:10.1080/02640414.2016.1241422] [PMid:27719269]
24. Hernández-Torrano D, Ibrayeva L, Sparks J, Lim N, Clementi A, Almukhambetova A, et al. Mental Health and Well-Being of University Students: A Bibliometric Mapping of the Literature. *Front Psychol.* 2020;11(June):1–16. [doi:10.3389/fpsyg.2020.01226] [PMid:32581976]
25. Abdullah KH. Publication Trends in Biology Education: A Bibliometric Review of 63 Years. *J Turkish Sci Educ.* 2022;19(2):465–80.
26. Supriadi D, Hafiar H, Safi AM, Amin K. Journalism and public relations: An interconnection in academic research. *PRofesi Humas.* 2023 Feb;7(2):144. [doi:10.24198/prh.v7i2.42064]
27. Coppola AM, Ward RM, Freysinger VJ. Coaches’ Communication of Sport Body Image: Experiences of Female Athletes. *J Appl Sport Psychol.* 2014;26(1):1–16. [doi:10.1080/10413200.2013.766650]
28. Kroshus E, Sherman RT, Thompson RA, Sossin K, Austin SB. Gender Differences in High School Coaches’ Knowledge, Attitudes, and Communication About the Female Athlete Triad. *Eat Disord.* 2014;22(3):193–208. [doi:10.1080/10640266.2013.874827] [PMid:24456303]
29. Sullivan P. Communication differences between male and female team sport athletes. *Int J Phytoremediation.* 2004;21(1):121–8. [doi:10.1080/08934210409389381]
30. Sutcliffe JT, Herbison JD, Martin LJ, McLaren CD, Slatcher R, Benson AJ, et al. Exploring parent-athlete sport related communication outside of the sport environment with the Electronically Activated Recorder. *Psychol Sport Exerc.* 2021;54(February). [doi:10.1016/j.psychsport.2021.101919]
31. Camiré M, Trudel P, Forneris T. High school athletes’ perspectives on support, communication, negotiation and life skill development. *Qual Res Sport Exerc.* 2009;1(1):72–88. [doi:10.1080/19398440802673275]
32. Avcı KS, Çepikkurt F, Kale EK. Examination of the relationship between coach-athlete climate for volleyball players. *Univers J Educ Res.* 2018;6(2):346–53. [doi:10.13189/ujer.2018.060218]

33. Sullivan PJ, Gee CJ. The Relationship Between Athletic Satisfaction and Intra-team Communication. *Gr Dyn*. 2007;11(2):107–16. [doi:10.1037/1089-2699.11.2.107]
34. Choi H, Jeong Y, Kim SK. The relationship between coaching behavior and athlete burnout: Mediating effects of communication and the coach– athlete relationship. *Int J Environ Res Public Health*. 2020;17(22):1–17. [doi:10.3390/ijerph17228618] [PMid:33233544]
35. Dobrescu T. The Role of Non-verbal Communication in the Coach-athlete Relationship. *Procedia - Soc Behav Sci*. 2014;149:286–91. [doi:10.1016/j.sbspro.2014.08.231]
36. Connelly D, Rotella RJ. The Social Psychology of Assertive Communication: Issues in Teaching Assertiveness Skills to Athletes. *Sport Psychol*. 2016;5(1):73–87. [doi:10.1123/tsp.5.1.73]
37. Geurin-Eagleman AN, Burch LM. Communicating via photographs: A gendered analysis of Olympic athletes' visual self-presentation on Instagram. *Sport Manag Rev*. 2016;19(2):133–45. [doi:10.1016/j.smr.2015.03.002]
38. Hambrick ME, Simmons JM, Greenhalgh GP, Greenwell TC. Understanding Professional Athletes' Use of Twitter: A Content Analysis of Athlete Tweets. *Int J Sport Commun*. 2016;3(4):454–71. [doi:10.1123/ijsc.3.4.454]
39. Kristiansen E, Williams AS. Communicating the Athlete as a Brand: An Examination of LPGA Star Suzann Pettersen. *Commun Athl as a Brand An Exam LPGA Star Suzann Pettersen*. 2018;(371):371–88. [doi:10.1123/IJSC.2015-0066]
40. Sanderson J. Professional Athletes' Shrinking Privacy Boundaries: Fans, Information and Communication Technologies, and Athlete Monitoring. *Prof Athletes' Shrinking Priv Boundaries Fans, Inf Commun Technol Athl Monit*. 2018;240–56. [doi:10.1123/ijsc.2.2.240]
41. Aria M, Cuccurullo C. Bibliometrix: An R-tool for comprehensive science mapping analysis. *J Informetr*. 2017;11(4):959–75. [doi:10.1016/j.joi.2017.08.007]
42. Sofyan D, Abdullah KH, Gazali N. A Bibliometric Review of Basketball Game: Publication Trends Over the Past Five Decades. *ASM Sci J*. 2022;17(December):1–12. [doi:10.32802/asmscj.2022.1277]
43. Sweileh WM, Al-Jabi SW, AbuTaha AS, Zyoud SH, Anayah FMA, Sawalha AF. Bibliometric analysis of worldwide scientific literature in mobile - health: 2006-2016. *BMC Med Inform Decis Mak*. 2017;17(1):1–12. [doi:10.1186/s12911-017-0476-7] [PMid:28558687]
44. Iddik JEB and S. Green supply chain management and organizational culture: a bibliometric analysis based on Scopus data (2001-2020). *Int J Organ Anal*. 2022;30(1):156–79. [doi:10.1108/IJOA-07-2020-2307]
45. Khiste GP, Paithankar RR. Analysis of Bibliometric term in Web of Science. *Int Res J*. 2017;01(32):78–83.
46. Sofyan D, Saputra YM, Nurihsan J, Kusmaedi N, Abdullah KH. Stance of Sports and Fitness: A Scientometric Review. *Phys Educ Theory Methodol*. 2022 Dec;22(4):596–607. [doi:10.17309/tmfv.2022.4.20]
47. Sofyan D, Abdullah KH, Hafiar H. The Philosophy of Sport and Physical Education: Four Decade Publication Trends via Scientometric Evaluation. *Phys Educ Theory Methodol*. 2022;22(3):437–49. [doi:10.17309/tmfv.2022.3.20]
48. Ardern CL, Glasgow P, Schneiders A, Witvrouw E, Clarsen B, Cools A, et al. 2016 Consensus statement on return to sport from the First World Congress in Sports Physical Therapy, Bern. *Br J Sports Med*. 2016;50(14):853–64. [doi:10.1136/bjsports-2016-096278] [PMid:27226389]
49. Williams AM, Hodges NJ. Practice, instruction and skill acquisition in soccer: Challenging tradition. *J Sports Sci*. 2005;23(6):637–50. [doi:10.1080/02640410400021328] [PMid:16195012]
50. Gulliver A, Griffiths KM, Christensen H. Barriers and facilitators to mental health help-seeking for young elite athletes: a qualitative study. *BMC Psychiatry*. 2012;12(157):1–14. [doi:10.1186/1471-244X-12-157] [PMid:23009161]
51. Distefan JM, Gilpin EA, Choi WS, Pierce JP. Parental influences predict adolescent smoking in the United States, 1989-1993. *J Adolesc Heal*. 1998;22(6):466–74. [doi:10.1016/S1054-139X(98)00013-5] [PMid:9627817]
52. Longmuir PE, Brothers JA, De Ferranti SD, Hayman LL, Van Hare GF, Matherne GP, et al. Promotion of physical activity for children and adults with congenital heart disease: A scientific statement from the

- American Heart Association. *Circulation*. 2013;127(21):2147–59. [doi:10.1161/CIR.0b013e318293688f] [PMid:23630128]
53. Gould D, Finch LM, Jackson SA. Coping strategies used by national champion figure skaters. *Res Q Exerc Sport*. 1993;64(4):453–68. [doi:10.1080/02701367.1993.10607599] [PMid:8278672]
54. Kerr ZY, Register-Mihalik JK, Marshall SW, Evenson KR, Mihalik JP, Guskiewicz KM. Disclosure and non-disclosure of concussion and concussion symptoms in athletes: Review and application of the socio-ecological framework. *Brain Inj*. 2014;28(8):1009–21. [doi:10.3109/02699052.2014.904049] [PMid:24738743]
55. Passos P, Davids K, Araújo D, Paz N, Minguéns J, Mendes J. Networks as a novel tool for studying team ball sports as complex social systems. *J Sci Med Sport*. 2011;14(2):170–6. [doi:10.1016/j.jsams.2010.10.459] [PMid:21145787]
56. Mellalieu SD, Neil R, Hanton S, Fletcher D. Competition stress in sport performers: Stressors experienced in the competition environment. *J Sports Sci*. 2009;27(7):729–44. [doi:10.1080/02640410902889834] [PMid:19424897]
57. Haberman ZC, Jahn RT, Bose R, Tun H, Shinbane JS, Doshi RN, et al. Wireless Smartphone ECG Enables Large-Scale Screening in Diverse Populations. *J Cardiovasc Electrophysiol*. 2015;26(5):520–526. [doi:10.1111/jce.12634] [PMid:25651872]
58. Marta RF, Hafiar H, Budi Setiawan Y, Andriani F, Lestari P, Pamungkas S, et al. Author compliance in following open journal system of communication science in Indonesia. *J Phys Conf Ser*. 2019;1175(1). [doi:10.1088/1742-6596/1175/1/012222]
59. Brandão LC, Soares de Mello JCCB. A multi-criteria approach to the h-index. *Eur J Oper Res*. 2019 Jul;276(1):357–63. [doi:10.1016/j.ejor.2018.12.033]
60. Sands W, Cardinale M, McNeal J, Murray S, Sole C, Reed J, et al. Recommendations for Measurement and Management of an Elite Athlete. *Sports*. 2019 May;7(5):105. [doi:10.3390/sports7050105] [PMid:31067746]
61. Huang J, Duan X, He F, Wang G. A historical review and Bibliometric analysis of research on Weak measurement research over the past decades based on Biblioshiny. 2021;1–19.