Article

Perceptions of "Sports for All" Instructor Competence in the Republic of Korea: A Big Data Analysis Approach

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Abstract: Background: This study examined the perceptions regarding the competency of "sports for all" instructors using big data analysis. Given the increasing number of everyday participants in sports in the Republic of Korea, this study aimed to identify sports for all instructor competency requirements and gaps and thus help to develop and foster such instructors' competence. Methods: This study employed big data analysis, specifically, text mining, opinion mining, term frequency–inverse document frequency analysis, and degree centrality analysis. Semantic network analysis was also performed using Textom and UCINET 6's NetDraw program. The data collection period was from 1 January 2016 to 31 December 2020. This five-year study was initiated following the reorganization of the sports for all instructor qualification system in the Republic of Korea in 2015. Results: First, eight groups were formed by extracting 80 words with the highest frequency and conducting a convergence of iteration correlation analysis. Second, categorization based on the results yielded four factors: certification of sports for all instructors, coaching competency, competency education, and emotions. Conclusions: The analysis of perceptions of the competencies of sports for all instructors revealed a great deal of interest in a qualification system that can develop competencies and in education that strengthens them. To become an effective sports for all instructor, corresponding competencies are required and a qualification system to acquire and strengthen these competencies is necessary. The state should focus continuous attention and effort on the qualification system to nurture such competencies.

Keywords: big data; coaching competency; perception of competency; Republic of Korea; semantic network analysis; sports for all instructors

1. Introduction

The desire for good health is part of the foundation of a developing society, identified through various activities that support a positive lifestyle [1]. Recently, interest in art, tourism, and sports has increased in the Republic of Korea, which reflects the desires of individuals and society to enjoy more culture and leisure time [2]. The term "work–life balance" has also emerged in tandem with the term "well-being". In other words, satisfying individual needs and recognizing the importance of personal time has become important. This leads us to the pertinent role of sports in modern society, as it goes beyond simply exercising, and has a significant impact on people's lives, including their health and education. In 2016, two major sports organizations in the Republic of Korea were integrated—the Korean Olympic Committee and the Korea Council of Sports for All. The concept of "Sports for All" refers to "sports activities conducted voluntarily in daily life for the promotion of health and fitness" [3]. For many, the merger of the two organizations marked the beginning of a revolutionary sports paradigm in the history of Korean sports [4]. The rights and benefits of sports that only elite players had enjoyed

would now be extended to the entire nation. For example, the sports competitions held in each province were transformed into harmonious activities for the enjoyment of both elite players and everyday sports players.

Prior to this, in 2015, the Korea National Qualification System for Sports Leaders was also revised. The major changes included the types of instructors and the grading of sports for all instructors, the application requirements for such instructors, the content of the qualification examinations and training courses, and the designation of the examination and training institutions. This revision was aimed at meeting the diversified demand for sports activities and was characterized by strengthening instructor expertise by subdividing instruction by subject and function [5]. According to the qualification statistics for the Korean Sports Instructor Training Program [6], the number of sports instructors steadily increased for the elderly and youth, including sports for all instructors, until 2019, before the COVID-19 outbreak. This indicates that the public's interest in sports instructors has increased since the reorganization of life sports instructor licenses in 2015.

A "sports for all instructor", as defined in the Korea National Sports Promotion Act, refers to a person who has obtained the relevant qualifications in accordance with the Korea National Sports Promotion Act to instruct and coach sports activities at schools, workplaces, local communities, and sports organizations. These instructors are important, as they help participants achieve their goals to improve their quality of life while expanding the population base for sports through development, consultation, publicity, and guidance on sports for all programs [5]. Citizens who participate in sports choose an event based on their personal preferences and motivation. Unlike professional sports (elite), the aim of sports for all is daily physical sports activity that improves physical strength, helps maintain health, and promotes leisure enjoyment. Thus, the main goal is to lead a richer and healthier life. "Sports for all" refers to voluntary and daily physical education (sports) activities performed to maintain physical strength and health [2].

Today, people's awareness of their health has increased according to their values and beliefs about a healthy life and longevity. With growing recognition of the importance of disease prevention, interest in health management has also increased. Consequently, the instructors involved in the systematic management of exercise have gained importance concurrent with the increased emphasis on sports participation. More active participation in leisure activities has been encouraged with the spread of sports for all [7]. However, COVID-19 in 2019 created fear worldwide, including in the Republic of Korea [8]. The government announced social distancing for every situation, which affected not only people's work lives, but also their school lives, home lives, and leisure activities. Consequently, sports culture changed in various ways. In the wake of the COVID-19 crisis, it is expected that the sports industry will be reorganized, smart virtual reality sports and non-contact sports will emerge, and home training and individual sporting activities will grow [9]. As ways to participate in sports continue to diversify in this changing era, the important roles played by sports for all instructors are in the spotlight.

To fulfill the role of instructor for the activities falling under sports for all, instructors need to understand the job and the objective competency awarded through certification. Additionally, these sports leaders need to identify the motivation of the individuals they are coaching, remove any constraints on continued participation, and plan a teaching and coaching method to improve skills. The foundation for instructors consists of their coaching capabilities and competence [10]. "Competence" refers to behavioral characteristics, such as skills and knowledge, and underlying characteristics, such as personality traits, self-conception, and motives. Competence is essential to demonstrate expertise in specific task performance [11]. On the sports field, competence includes coaching competency and various abilities, such as the ability to learn, having an open mind, trust and friendliness, ethics, consultation ability, and attitude, all of which are necessary for good coaching [11]. Coaching competency is becoming increasingly important for sports for all instructors; it helps them fulfill their roles in promoting health, generally the main objective of the participants, and supporting various motivations for participation. The few recent studies

on coaching competency have been restricted to certain populations, such as corporate middle managers in the Republic of Korea [12,13]. Moreover, studies related to the coaching competency of sports for all instructors have not progressed significantly, with only a few studies on competency exploration, evaluation, and scale development [14,15].

Our study attempted to address this research gap. As the majority of Korean society uses the Internet (91.8%), online news and social networking services provide platforms for various opinions to be expressed and shared [16]. Big data techniques are a way to collect and analyze such data. "Big data" refers to a large amount of data that exceeds the range that can be collected, stored, managed, and analyzed using general database software. It is a next-generation analysis technique that can create value through large data exploration and analysis. Additionally, it is an appropriate analytical method for examining various phenomena and perceptions that are trending in society overall, versus those in a specific group [17]. Big data implies not only large-volume data but also the intention to analyze and utilize the data through various statistical techniques [17].

Prior studies on the sports industry, game analysis, and perception analysis have applied big data analysis [18–20]. However, there have been no studies on sports for all instructors in the Republic of Korea. As big data analysis is a suitable method for examining phenomena and perceptions of society overall [17], it is an appropriate method to examine the perceptions of the overall coaching competency of sports for all instructors. This study used big data analysis techniques to classify and investigate this topic through the key phrase "sports for all instructor competency". By analyzing the perceptions of sports for all instructors appearing in website news, blogs, and cafes, among others, using big data techniques, we attempted to capture the capabilities of these instructors that are suitable for the current era. Our aim was to identify the gaps and necessary competencies as perceived by society to enable instructors to cater to the increasing number of participants in sports. Our study findings aimed to identify a suitable coaching style and provide basic academic data for training qualifications for sports for all instructors.

The following research questions were set to achieve the purpose of this study. RQ1: What are the current perceptions of the sports for all instructor qualification systems? RQ2: What are the current perceptions of the capabilities related to different sports for all instructors? RQ3: Want are the current perceptions of sports for all instructors' capacity building and emotions?

2. Materials and Methods

2.1. Data Collection

We selected the Naver (www.naver.com [accessed on 23 September 2021]) and Daum (www.daum.net [accessed on 23 September 2021]) channels for our data collection (blogs, web documents, cafes, university forums, and news) for the Republic of Korea; "sports for all instructor competency" was used as the key phrase for data collection. We selected "Internet News" rather than various other media, such as newspapers and television stations, to reflect the increasing influence of online media. In addition, we selected Naver and Daum over numerous other domestic Internet news service portals because most people in Korea primarily use these sites—we looked at all media popularly used by the public, including news sources, blogs, and cafes, and determined that Naver and Daum most heavily influenced public opinion in Korea. Data were collected from 1 January 2016 to 31 December 2020; this five-year study originated in 2015 when the sports for all instructor qualification system was reorganized in the Republic of Korea. The data initially collected included 10,476 cases and 37,045 words. Data cleaning was performed to convert the collected data into a form that was easy to analyze; specifically, this step consisted of text preprocessing and morphological analysis. In this process, terms such as spacing, abbreviations, and similar words were unified, and stop words such as commas and special characters were removed. Data that did not match the "sports for all instructor competency" were carefully reviewed and deleted; ultimately, we used 1772 cases with 3938 words. The extracted words were refined according to our aim and the collection results. Since the

data from the Internet (Naver [www.naver.com (accessed on 23 September 2021)] and Daum [www.daum.net (accessed on 23 September 2021)]) did not include private identifier information, such as names, telephone numbers, home addresses, and social security numbers, ethical approval was not required. The study was conducted in accordance with the principles outlined in the Declaration of Helsinki.

2.2. Study Procedure

We used text mining, sentiment analysis, term frequency–inverse document frequency (TF–IDF) analysis, and semantic network analysis to capture and analyze the references to the coaching competency of sports for all instructors. Text mining is a technique that analyzes meaning by extracting parts of specific and related topics from text posted on the Internet and websites [21]. TF–IDF performs word frequency and inverse frequency analyses by using a statistical value that indicates the importance of a specific word in one document among several document groups [21]. Even if the frequency of the main word extracted through text-mining analysis is high, it cannot be determined whether the corresponding word is unconditionally important. Therefore, when TF–IDF is applied, the weight value increases according to the frequency of appearance [21].

Semantic network analysis is used in the analysis of social network communication messages. It analyzes the meaning of text through the degree of centrality between the words in the text. To understand a specific social phenomenon comprehensively, the structure of the network, which is the result of interactions, needs to be analyzed [22,23]. The displayed central value is between 0 and 1.00; the closer it is to 1.00, the more correlated the terms [24]. As a technique, sentiment analysis captures public opinions that appear on social media and reprocesses them into useful information. Also called opinion mining, as a technology, it quantifies the opinions and emotions of netizens and provides them as objectified information. Our research procedure is illustrated in Figure 1.
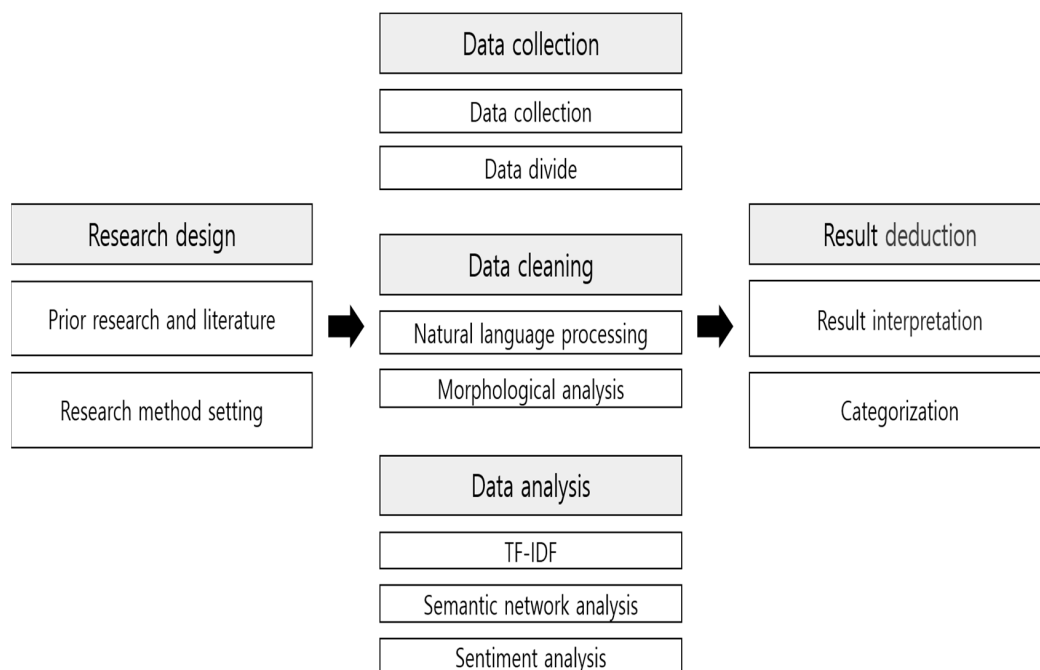

Figure 1. Research procedures. TF–IDF, term frequency–inverse document frequency.

2.3. Statistical Analysis

We conducted our text mining, TF–IDF analysis, and sentiment analysis using Textom (IMC Inc., Seoul, Republic of Korea) and UCINET 6's NetDraw program (IMC Inc., Seoul, Republic of Korea) based on Lee et al.'s [25] study. We also performed semantic network analysis and convergence of iteration correlation (CONCOR).

2.4. Research Integrity

To secure the objectivity and reliability of the data collection and refinement analysis, we followed the three procedures for big data analysis and refinement used by Lee et al. [26]. First, to understand the exact meaning of words, all words and text linked to the main words were checked during the refinement process. Second, according to the collection period and channel of the extracted words, we searched the websites directly to determine the exact meanings of the words. Third, these processes were conducted with a group of experts (two PhDs majoring in sports education and one professor majoring in sports education).

3. Results

3.1. Word Frequency, TF–IDF, and Degree Centrality Analyses

Eighty words with the highest frequency were selected for the keyword analysis of sports competency for all instructors. The frequencies, inverse frequencies, and degree centrality of the displayed words are listed in Table 1. "The relative influence of important keywords within a network" refers to the degree to which important keywords are located within a network based on the degree to which a specific word is directly related to other words [24]. Sports for all instructors (3552 cases), licenses (1177 cases), sports (1003 cases), physical education (926 cases), qualifications (887 cases), guidance (665 cases), specialties (635 cases), and instructors (614 cases) were ranked according to their frequency.

Table 1. Results of the word frequency, term frequency–inverse document frequency, and degree centrality analyses.

Rank	Word	Frequency	Word	TF–IDF	Word	DC
1	Sport instructor	3552	Sport	1123.12	Sport instructor	0.199
2	License	1177	PE	1066.25	License	0.101
3	Sport	1003	Qualification	1037.35	Sport	0.087
4	PE	926	Acquisition	1017.75	Exercise	0.077
5	Qualification	887	License	1009.31	PE	0.071
6	Acquisition	802	Coaching	934.03	Education	0.068
7	Coaching	665	Qualified training	930.42	Qualification	0.066
8	Exercise	647	Exercise	928.43	Competence	0.063
9	Professional	635	Coach	904.86	Professional	0.059
10	Coach	614	Test	857.70	Test	0.055
11	Test	582	Written test	854.34	Sports for all	0.054
12	Sports for all	570	Sports for all	854.27	Coach	0.054
13	Competence	562	Education	827.10	Acquisition	0.051
14	Written test	550	Administrative work	798.48	Coaching	0.048
15	Health	505	Health	793.98	Instructor	0.046
16	Qualified training	500	Professional	780.77	Trainer	0.046
17	Education	499	Instructor	687.63	Health	0.045
18	Administrative work	389	Senior	653.45	Connection	0.044
19	Senior	367	Competence	653.18	Notice	0.043
20	Connection	326	Employment	650.00	Employment	0.042
21	Administration	320	Trainer	647.97	Written test	0.040
22	Development competence	310	Practice	622.68	Practice	0.039
23	Instructor	309	Connection	617.48	Bodybuilding	0.033
24	Employment	301	Society	611.89	Center	0.032
25	Disability	297	Disability	598.09	Study	0.031
26	Practice	289	Administration	578.47	Sport event	0.031
27	Trainer	276	Swimming	565.62	Department	0.031
28	Youth	275	Development competence	559.33	Pass	0.030
29	Notice	262	Notice	555.71	Principles of PE	0.030
30	Society	258	Bodybuilding	532.42	Administration	0.029
31	Manager	246	Youth	529.28	Qualified training	0.029
32	Bodybuilding	237	Principles of PE	519.76	Major	0.028

Table 1. *Cont.*

Rank	Word	Frequency	Word	TF–IDF	Word	DC
33	Center	223	Center	515.76	Get a job	0.027
34	Object	221	Sport event	515.18	Matter	0.027
35	Sport event	206	Manager	512.66	Fitness	0.026
36	Swimming	205	Department	495.91	Program	0.026
37	Principles of PE	195	Holder	479.84	Swimming	0.026
38	Department	195	Object	465.64	Subject	0.026
39	Holder	186	Rehabilitation	457.81	Holder	0.025
40	Practice-oral test	180	Fitness	456.10	Student	0.025
41	Rehabilitation	179	Oral test	437.36	Guide	0.024
42	Psychological training	167	Subject	431.16	Senior	0.024
43	Condition	165	Practice-oral test	415.28	Career	0.023
44	Age	163	Study	409.41	Society	0.023
45	Oral test	158	Psychological training	394.05	Development competence	0.023
46	Fitness	156	Condition	391.32	Take test	0.023
47	Subject	148	Take test	389.53	Work	0.022
48	Take test	143	Age	388.57	Disability	0.022
49	Institution	138	Sport instructor	383.63	Association	0.022
50	Pass	133	Program	380.71	School	0.021
51	Major	129	Pass	358.60	Athlete	0.021
52	Guide	127	Major	357.43	Job	0.020
53	Career	124	Institution	348.10	Idea	0.020
54	Matter	107	Guide	331.23	Oral test	0.020
55	Get a job	105	Get a job	315.53	Graduation	0.020
56	Athlete	102	Career	313.84	Rehabilitation	0.019
57	Student	99	Matter	308.37	Individual	0.019
58	Special treatment	93	Athlete	297.69	Special treatment	0.017
59	Work	89	Industry	290.96	Game	0.017
60	Development	89	Work	288.02	Industry	0.017
61	Association	88	Association	278.94	Development	0.016
62	Industry	87	Special treatment	278.91	Duty	0.016
63	Reward	86	Development	276.10	Manager	0.016
64	Game	86	Safety	275.45	Schedule	0.016
65	Safety	85	Reward	270.91	Career path	0.016
66	Graduation	83	Job	269.28	Institution	0.014
67	Idea	83	Game	269.21	Object	0.014
68	Qualifying examination	81	Student	269.07	Facilities	0.013
69	Job	79	Welfare	263.85	Youth	0.013
70	Schedule	78	Qualifying examination	262.60	Physical	0.012
71	School	78	Graduation	259.28	Safety	0.012
72	Welfare	76	Idea	257.39	Reward	0.011
73	Career path	75	Schedule	254.64	Qualifying examination	0.011
74	Duty	74	School	251.29	Welfare	0.011
75	Physical	70	Physical	246.84	Administrative work	0.010
76	Individual	66	Career path	245.51	Practice-oral test	0.005
77	Facilities	66	Duty	236.66	Athletic association	0.004
78	Athletic association	65	Facilities	220.94	Psychological training	0.001
79	Study	64	Athletic association	219.84	Age	0.001
80	Program	62	Individual	218.84	Condition	0.001

TF–IDF, term frequency–inverse document frequency; DC, degree centrality; PE, physical education.

3.2. Semantic Network Analysis

We performed network visualization and CONCOR analysis to visually derive the patterns and degree centrality relationships among the 80 keywords selected from the collected data. CONCOR analysis forms groups between homogeneous words by creating clusters around keywords with similar characteristics [24]. The visualization results are shown in Figures 2 and 3. From these, we created eight groups—necessary field and ability, necessary competence, acquisition field, acquisition purpose, sports institution,

qualification examination, necessary institution, and job. The representative words in each group were as follows: Group 1: specialties, physical education, programs, education, training, health, and rehabilitation; Group 2: practical skills, tests, training, practice, study, age, and capacity-building; Group 3: qualifications, subjects, sports for all instructors, careers, and employees; Group 4: physical strength, life, graduation, individuals, and majors; Group 5: sports club, leader, public notice, and job; Group 6: oral test, practical, test, and pass-through exercises; Group 7: recruitment, work, experience, instructors, and safety; and Group 8: bodybuilding, trainers, and fitness. The results for the sets of groups and words are presented in Table 2.

Table 2. Results of the convergence of iteration correlation analysis.

| No	Group	Word
1	Necessary field and ability	Professional, center, youth, principles of physical education, program, education, development, student, heath, manager, welfare, sport, disability, institution, senior, exercise, society, rehabilitation, department, industry
2	Necessary competence	Practice-oral test, qualified training, psychological training, administrative work, coaching, study, acquisition, condition, age, development competence, competence, object, administration, job, written test, qualification
3	Acquisition field	License, subject, sport instructor, qualifying examination, career path, get a job, sport event, schedule
4	Acquisition purpose	Physical, sports for all, graduation, association, individual, physical education, guide, major, connection, athlete, school
5	Sports institution	Game, athletic association, matter, coach, notice, duty
6	Qualification examination	Oral test, practice, test, pass
7	Necessary institution	Employment, work, career, special treatment, instructor, safety, reward, swimming, holder, facilities
8	Job	Bodybuilding, trainer, take test, fitness, sports for all
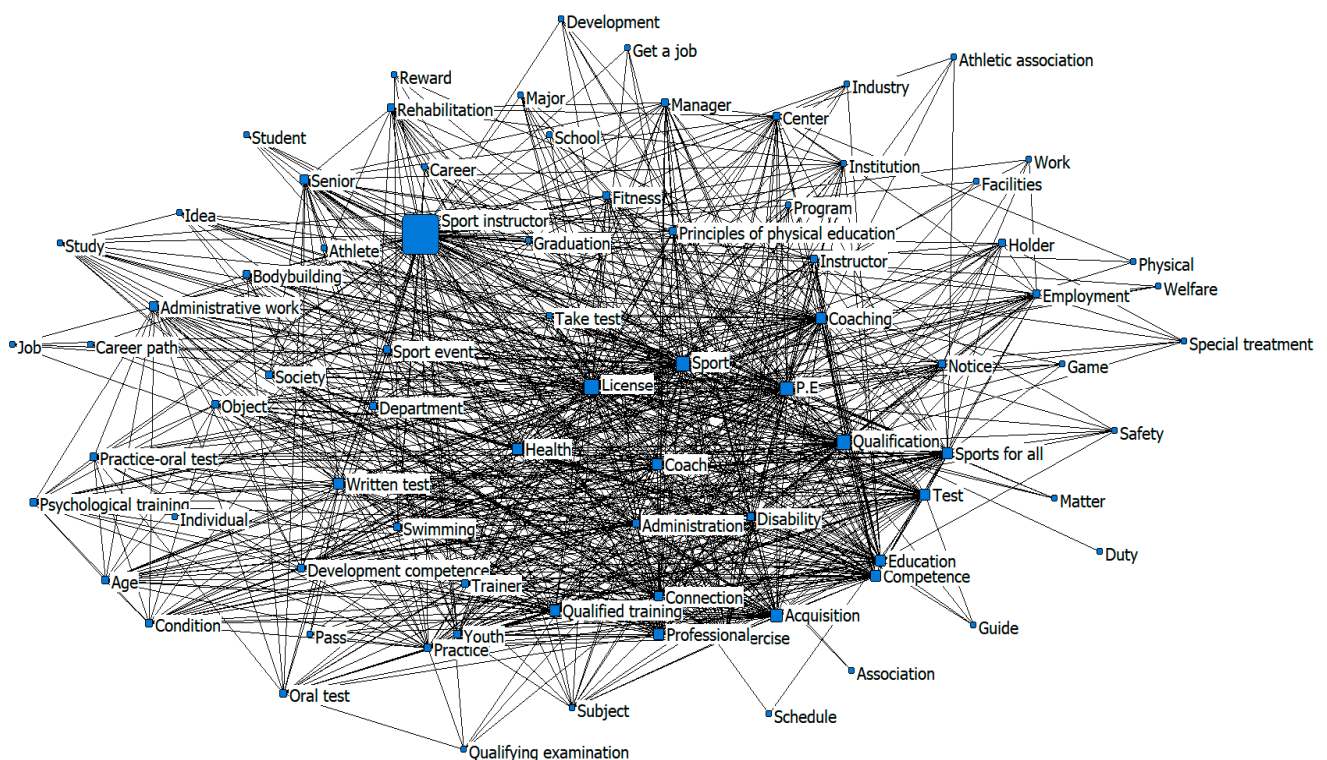
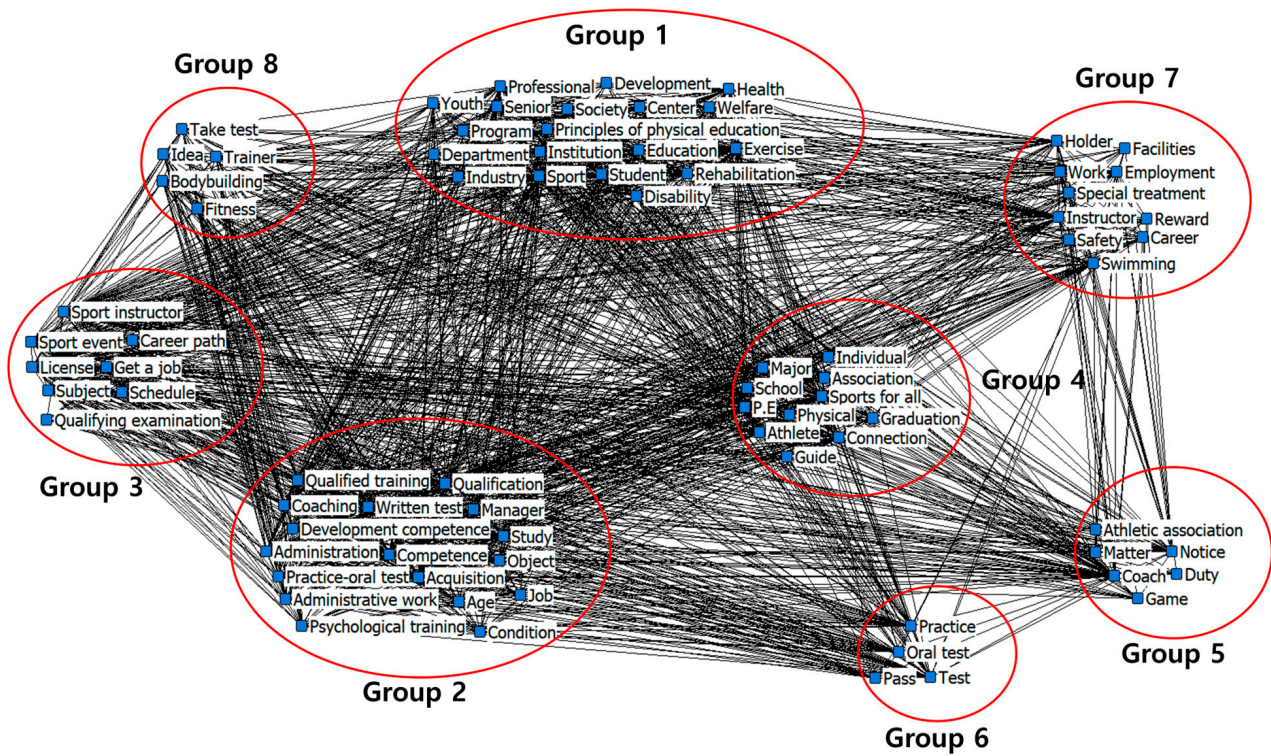**Figure 2.** Semantic network map.

Figure 3. Results of the convergence of iteration correlation analysis.

3.3. Sentiment Analysis

For sentiment analysis, at least 100 to 1000 data points are appropriate [24]. Among the collected data, we extracted the data containing emotions and ended with 894 data points. Table 3 presents the results of the sentiment analysis. The analysis showed a positive sentiment rate of 73.89% and a negative rate of 26.11%. Positive words were extracted as follows: good, recommended, excellent, special, and satisfactory. The negative words that were extracted were sadness, hardship, regret, and self-reproach. Additionally, the frequency and ratio were high in the order of liking, joy, interest, sadness, and rejection.

Table 3. Results of the sentiment analysis.

Division	Contents		Rate (%)
Positive	677/894		73.89
Negative	217/894		26.11
Positive word	Frequency	Negative word	Frequency
Good	127	Sadness	76
Recommendation	58	Hard	8
Thanks	35	Sorry	7
Excellent	30	Blame oneself	5
Happiness	26	Concern	
Special	23	Difficult	

Table 3. *Cont.*

Division	Contents		Rate (%)	
Satisfaction	18		Lack	
Wish	16		No idea	
Fresh			Hard	
Fine	15		Give up	4
Growth			Depressed	
Stable	14		Heavy	
Smile			Inconvenience	
Best	13		Not much	
Expectation			Hate	3
Innovative	11		Nervous	

3.4. Big Data Analysis Categorization

Based on the results of the TD–IDF and semantic network analyses using text mining with "sports for all instructor competency" as the key phrase, we categorized the results extracted through sentiment analysis and the groups into four factors. The categorization results are presented in Table 4.

Table 4. Data analysis categorization results of CONCOR factors.

Title	CONCOR Factor	Word
Qualification system for sport instructor	Acquisition field, acquisition purpose, qualification examination, necessary institution, job	License, subject, sport instructor, qualifying examination, career path, get a job, sport event, schedule, physical, sports for all, graduation, association, individual, physical education, guide, major, connection, athlete, school, oral test, practice, test, pass, employment, work, career, special treatment, instructor, safety, reward, swimming, holder, facilities, bodybuilding, trainer, take test, fitness, sports for all
Coaching competence	Necessary field and ability, necessary competence	Professional, center, youth, principles of physical education, program, education, development, student, health, manager, welfare, sport, disability, institution, senior, exercise, society, rehabilitation, department, industry, practice oral test, qualified training, psychological training, administrative work, coaching, study, acquisition, condition, age, development competence, competence, object, administration, job, written test, qualification
Development competence	Sports institution	Game, athletic association, matter, coach, notice, duty
Emotion	Positive, negative	Good, recommendation, thanks, excellent, happiness, special, satisfaction, wish, fresh, fine, growth, stable, smile, best, expectation, innovative, sadness, hard, sorry, blame oneself, concern, difficult, lack, no idea, hard, give up, depressed, heavy, inconvenience, not much, hate, nervous

4. Discussion

We attempted to analyze the perceptions of sport instructor competency in the Republic of Korea by conducting big data analysis using the key phrase "sports for all instructor competency". We ultimately categorized the data to identify the trends as discussed below.

4.1. Instructor License for Sports for All

With regards to sports for all instructor certification, keywords such as subject, event, practical skill, and career were identified. They can be attributed to the influence of the

sports instructor qualification system, which was reformed in 2015. In this reform, the written test was conducted first. Previously, the written test was conducted based on the training content. Prior to the qualification system reform, the process consisted of the following elements: practical skills → oral test → training → written test. Consequently, a deluge of textbooks and online lectures emerged after the reform in response to the increase in the burden of the first exam [27]. Based on each subject's criteria presented by the Korea Institute of Sports Science, the exam is simply classified by the table of contents and knowledge is delivered without actually learning content; that is, to pass the written test, the focus is on rote learning. Moreover, the knowledge required for sports for all instructors is changing as test takers choose relatively easy subjects. Jung et al. [11] raised concerns about individuals being certified as sports for all instructors without having the minimum knowledge, skills, and attitude required, given that in the reformed system they can select five out of seven subjects where the level of difficulty is low.

According to a study by Ahn et al. [28], physical education majors tend to prepare at school for the qualification system, while non-physical majors tend to "prepare by themselves". The latter are less exposed to an environment where they can systematically prepare for practical and oral qualification tests. Thus, many of these instructors who have developed a love for sports and have the goal of acquiring a sports for all instructor license look for a health club where they can easily prepare for a qualification test in a relatively conducive environment. They may then naturally choose a qualification event, such as bodybuilding, and acquire a license. This phenomenon can explain why the keyword "bodybuilding" consistently appeared at a high frequency in the past five years. Notably, a quick consideration of the statistics on qualification acquisition status over the past five years reveals that bodybuilding is an overwhelmingly high-ranking sport [6]. This shows that non-majors specialize in particular sports to become life sports instructors. To solve this problem, Ha and Kim [29] proposed adding various events to the Asian Games or Olympic Games.

Today, an instructor can choose five out of seven subjects for the written test. The seven subjects are not specific but are related and include knowledge of physical education, the foundation to the coaching competency of a sports for all instructor. However, as instructors are only assessed on five subjects in the written test, there is a concern about the lack of professional knowledge. Additionally, as mentioned, students tend to choose the easier options, which may not qualify as practical items for certification. In the process of obtaining a license, based on strategic choices, as in the above-mentioned situation, the professionalism and the value offered by sports for all instructors may gradually decrease.

According to the sports welfare policy of the "Comprehensive Plan for National Sports Promotion" announced by the Korean Ministry of Culture, Sports, and Tourism in 2013 [30], the role and ability of sports leaders with expertise are important in operating comprehensive sports clubs. The policy also mentions that schools need experts to guide programs such as after-school activities. Thus, the keywords acquisition, facility, center, recruitment, and holder appeared frequently. The implication is that these individuals need to demonstrate their abilities by acquiring licenses in an increasingly diversifying sports field. From the keywords mentioned, interest in certification is increasing, evidenced by the increase in the number of applicants and the increasing population of sports for all instructors since the qualification system reform. Additionally, applicants are attempting to forge their career paths by utilizing their qualifications. Therefore, it is necessary to position the sports for all instructors' license as an opportunity for instructors to work at the national level and to improve their professionalism at the individual level.

4.2. Sports for All Instructor Competence

Regarding the competency of sports for all instructors, the important keywords were physical education, practice, and guidance. These words reflect the abilities required in the field based on the content acquired through the qualification verification process (writing, practical training, training) after the reform. For example, if the keywords and

the qualification test process are connected, we get physical education–writing, guidance–practice, and practical–training. In other words, this means that a leader learns the skills and competencies that are practically required in the sports field. The subjects selected for the sports education written test—Korean sports history and sports ethics—appear before and after the reform; however, sub-subjects of basic physical education, such as exercise physiology, sports sociology, and sports psychology, are new. Professional knowledge of physical education becomes the basis of roles such as field instructor and player management based on the knowledge of various physical education fields as well as practical events [31]. Additionally, according to Eun's [32] study, professionalism is the most basic factor for instructors to demonstrate their capabilities. Among these specialties, technical expertise is important; however, the importance of knowledge related to classes in the field of physical education and sports—that is, professional knowledge related to physical education—has increased significantly compared with the past. Therefore, in order to fulfill the role of a sports for all instructor, the above keywords can be seen as expressing basic capabilities that apply in the field based on physical education-based knowledge. According to Park and Nam's [33] study, the quality of the educational service perceived by learners of physical education had a positive effect on their happiness and intent to continue exercising. As such, sports for all instructors should provide excellent service to ensure the health, physical fitness, and leisure pursuit of all sports participants. This is an important factor for increasing and maintaining the sports for all population.

Sports for all instructors, as professional sports personnel, need to understand and meet local residents' needs, provide appropriate information, and strive to help these participants lead healthy lives [2]. Therefore, in each physical education field, sports for all instructors, as well as specific instructors for the elderly, the young, and the disabled, should develop their capabilities as instructors in their respective positions. As such, institutional reorganization at the national level serves as a positive factor by expanding, diversifying, and subdividing the scope of sports [32]. According to the sports world, the reformed qualification system plays a positive role in helping physical education students advance into revitalized work or sports for all. However, Jung [34] highlighted the problem that there are too many types of qualifications as a result of the subdivision of the qualification system according to the field and the subject of guidance. Thus, it is difficult to verify the effectiveness and value of the professional qualification system, as there is little difference in the subjects from those in the prior qualification system. The name of the qualification subdivided by additional social needs is a positive change, but also indicates the need to further reform the qualification system. Namely, after the reorganization, the qualifications of sports instructors were more subdivided than before. However, the qualification system for disabled, elderly, and youth sports instructors with special characteristics is differentiated from the qualification system for sports instructors in only one subject (special physical education theory, elderly physical education theory, and infant physical education theory). In this current form, it is difficult to properly test expertise in the field because the certification and training are virtually the same.

4.3. Competency Training and Sentiment Analysis

Regarding competency education, we found the terms athletic, association, and duty. These references can be attributed to the fact that the educational institution for strengthening the capacity of sports for all instructors changed when the Korean Olympic Committee and the Korea Council of Sport for All were merged into the Integrated Sports Association in 2016. Among the policy objectives of the Unified Sports Council, Park [35] stated that all three areas of school physical education, sports for all, and elite sports should be included in a "virtuous cycle of sports". He indicated that the most important factors are the pursuit of mutual development and the creation of a fair sports society. Additionally, Chang [36] indicated that the sports budget, which had previously been dualized (professional sports and sports for all) is now more efficient through the integration of these sports organizations. Moreover, some argue that it is a reasonable decision to change direction toward a

welfare state by combining sports for all with elite sports to guarantee sports in everyday life in the future [35,36]. Through the integration of the two previously independent sports organizations in the Republic of Korea, the support received by professional sports is now available for everyday sporting activities. Additionally, various competitions, which used to be the stage for only professional athletes, are being held together with competitions in sports for all. These are changing into festivals that both professional athletes and everyday athletes can enjoy, not favoring one over the other. In this situation, sports for all instructors are important for the average person to properly participate in sports.

As such, the coaching competency of sports for all instructors should not be simply based on athletic ability and knowledge but should also consider each environment and the individuals participating. Currently, the training course for sports for all instructors in the Republic of Korea focuses on individual competency and coaching competency as field work-oriented training education, but technical competency is absent [37]. In the United States, national standards for sports coaches have been established, and the coaching capabilities required for sports for all instructors are divided into skills, knowledge, and attitude and are outlined in detail. European Union countries are currently developing the EU Coaching Qualifications Framework, which presents qualification standards as an initial effort to standardize coaching certifications across the EU. In the UK, Sport Coach UK [38] has been working since 2006 to establish a UK coaching framework and coach qualification standards to foster professional sports coaches and raise their status as stable professionals. In Canada, the coaching qualification program is structured as a competency-based course, presenting five core competencies (valuing, interaction, guidance, problem-solving, and critical thinking) that lay the foundation for fostering sports for all instructors [39]. The qualification requirement in the current sports for all instructor qualification system in Korea is being 18 years of age or older. Since this provides anyone with an opportunity to become a great sports for all instructor, capacity and maintenance training are required to nurture them into becoming the right sports for all instructors. However, a notable problem both before and after the reform of the physical education instructor qualification system is re-education [34,40]. If a leader stays in one place for a long time, they will develop habits—that is, they will stick to traditional methods without acquiring new knowledge and exercise methods. To improve this situation, re-education has been continuously emphasized. Nevertheless, current re-education programs by the Korea Sports Council are limited to a few sports and specific cities and provinces; further, these programs are being conducted online. In response, we propose measures such as "integrated re-education", "the introduction of a re-education system", and "the utilization of training centers" for all cities and provinces. To nurture the correct qualifications of sports for all instructors—that is, coaching capabilities—in the Republic of Korea, the verification process of the qualification system that is currently in progress must be reviewed. Additionally, the framework of national standards suitable for the occupation of sports for all instructors overseas should be prepared based on the Korea National Competency Standards by supplementing the training education content [41]. Furthermore, if sports for all instructors acquire basic capabilities based on these national standards and are educated on each subdivided area, it will help nurture and maintain desirable instructors.

Examining the positive and negative ratios in the collected data through sentiment analysis confirmed that the positive ratio was higher. We found positive words, such as good, recommendation, and thank you, and negative words, such as sad, hard, and shame. These sentiments may arise from changes in the qualification requirements that apply if instructors are over the age of 18. There are also many applicants for the sports for all instructor license, explaining the positive emotions regarding acquiring a license. There is also a potential struggle that comes from having only studied physical education with little practical education once the instructor begins to coach. However, despite narrowing down and analyzing the main data, meanings could not be found from the words that appeared through sentiment analysis.

Finally, this study has some limitations, which also indicate directions for future study. First, we attempted to identify the competency requirements and perceptions of sports for all instructors through keyword association. However, it was not possible to identify the detailed functions, knowledge, and attitudes for competency with only those keywords. Furthermore, there was a limit to extracting sentiment data with one keyword phrase; therefore, the sentiment analysis was unable to extract specific meanings. In future research, we need to search for detailed phrases that contain these words and classify the competency of sports for all instructors into skills, knowledge, and attitudes. In so doing, we can clarify the competence standards of instructors in the Republic of Korea and enable more meanings to emerge from sentiment analysis. Second, this study used big data analysis to identify the competency of sports for all instructors. However, by collecting data from an unspecified number of people, we did not capture comments from specific people. Therefore, future studies should provide deeper meaning through qualitative, in-depth interviews with individuals who participate in sports for all or experts in the field.

5. Conclusions

The results of our analysis of the competency of sports for all instructors identified using the key phrase "sports for all instructor competency" were as follows. Through words such as physical education, programs, and practice, which appeared frequently, we were able to capture the importance of the basic competency required for instructors despite the reform changes. However, the results of sentiment analysis did not reveal any significant meaning. The public's perception of the keywords "sports for all instructor competency" and the results of the analysis related to the sports for all instructor licenses indicate a need for a corresponding competency for sports for all instructors. There is no option but to use a qualification system to acquire and strengthen these competencies. To ensure the appropriate capabilities of the sports for all instructors, the state needs to direct continuous attention and effort to the qualification system and nurture these instructors. The Republic of Korea can improve the current situation by referring to the measures suggested in studies conducted thus far, starting with the improvement of the qualification system for strengthening sports competency for instructors as well as the application and sustainability of coaching competency in sports coaching, as shown in our big data analysis.

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