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The Relationship Between University Libraries' Collection for Sports and Their Students' Sports Performances

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To demonstrate the effectiveness of university libraries, we investigated the relationship between university students' sports performances and their libraries collections of sports. By examining approximately 20 university libraries' collections and their sports ranks, as indicated by Waseda Sports 2008, we demonstrated their positive correlation. In particular, the books whose topics are limited to enhancing specific sports performances are more correlated than those about sports in general.

Keywords: university library, sports performance, library collection, college sport, information service

Introduction

Libraries offer various information services, such as book reading, business information and medical information services. Book reading services, in particular, help children to develop an interest in books and contribute to building their reading and learning abilities (Murayama, 2008; Nakano, 1961; Tamura, 1961; Akahori, 1957). On the other hand, business information services help people find jobs or start their own business and might contribute to the national economy, while medical information services, especially for doctor, help save many patients' lives (Yoshida, 2008; Suzuki, 2006). Libraries are helping various aspects of people, and although it has not been demonstrated, they might contribute greatly in the field of competitive sports performance. Here, "competitive sports" indicates the sports referred to the Olympic motto "Citius, Altius, Fortius". The primary purpose of these sports is to win and improve scores. The results of competitive sports, such as in the Olympic and World Cup often affect the national economy. In fact, if an athlete victorious in such competitions, his/her country sometimes enjoys an economic boom. The Japan Ministry of Education, Culture, Sports, Science and Technology (2007) described that the result of competitive sports also boosted the morale of the people. Thus, if it can be illustrated that libraries contribute to sports performance, it may help raise the value of these libraries (Okubo, 2009). In this view, we investigated the relationship between university libraries' collections and their consequent competitive sports performances. The reason we focused on a university is that it is relatively easy to define the users affected by the library collection and their sports performances, as we will mention later. On the other hand, it is difficult to obtain the data of users' sports performance affected by the public libraries' collections. In addition, the collections often aim at improving public health rather than improving competitive sports performances (Goto, 1987). In addition, there are few special libraries in Japan. The JISS (Japan Institute of Sports Sciences) is responsible for improving

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competitive sports abilities, however, it does not have a library of its own (JISS, 2003-2008).

Methods

In this study, we conducted three investigations. First, we examined the number of books related to sports, in general, such as exercise physiology (henceforth "general sports books") in the library collections (investigation 1). Then, we examined the relationship between the number of university library books related to specific sports, such as basketball and football (henceforth "specific sports books") and the universities' performances in those sports (investigation 2). Finally, we summed up the number of specific sports books and examined the relationship between the number and the consequent sports performance (investigation 3).

Definition of College Sport

In this paper, we define "college sport" as the club activities whose teams have interscholastic matches. It does not include physical education classes or recreational group activities.

Sample Universities

We used top 20 universities that were ranked in the "National Sports Ranking" published in Waseda Sport 2008 (henceforth "sports ranking") as our investigation samples (henceforth, we call these top 20 universities as "ranked universities"). We regard the top ten universities to have better sports performances than the other ten universities. Henceforth, we call the former as "upper universities" and the latter as "lower universities". If the library collections of the upper universities were richer than those of the lower ones, we can claim that sports performance and library collections are correlated. These 20 libraries are listed in Table 1.

Table 1

The Number of Holdings of General Sports Books

Rank	Name of university	Exercise physiology	Bio-mechanics	Sport training
1	Nihon University	-	-	-
2	Waseda University	52	42	36
3	Nippon Sport Science University	99	77	74
4	Chuo University	65	27	27
5	Meiji University	84	30	9
6	Hosei University	89	27	20
7	Kinki University	43	26	11
8	Tsukuba University	107	81	67
9	Ritsumeikan University	70	43	31
10	Keio University	69	45	25
11	Kwansei Gakui University	77	42	12
12	Kokushikan University	82	35	39
13	Kansai University	58	25	12
13	Tokai University	135	47	36
15	Senshu University	30	11	15
16	Toyo University	78	38	27
17	Tenri University	0	0	0
18	Doshisha University	31	27	11
19	Juntendo University	88	29	10
20	Fukuoka University	65	28	27
20	Kyoto Sangyo University	59	25	14
Average of top 2-11 universities		75.5	44	31.2
Average of top 12-21 universities		62.6	26.5	19.1

The reason we used these universities instead of all the 750 universities in Japan is that it is difficult to define their sports performances even if we used random sampling.

Incidentally, the sports ranking was calculated in the following manner. First, Waseda Sport collected the result data of various sports conventions, such as intercollegiate for a year. Then, they assigned points to the top eight universities in each convention. Finally, they summed up the points of each university and determine the top 20 universities for that year.

Sports ranking has been published every January since 1980. This is the only data in Japan that quantifies the sports performances of many universities in a unified manner.

Investigation 1

We define general sports books as books whose titles or subtitles include terms like "exercise physiology", "biomechanics" or "sport training". We leave the books of other titles for future research. We chose books published from 1945 to March 2008. The reasons we did not use books published before 1945 are: (1) Users do not read old books; (2) Old information will not be effective in improving competitive sports abilities; and (3) The National Diet Library in Japan, which we will mention later was established after WWII, and the books related to the period before 1945 would be missing.

We submitted the previously-mentioned three titles to each university library OPAC and counted the number of holdings.

Investigation 2

Sports ranking deals with 43 sports. However, the ranked universities do not appear in the ranking of some sports (mainly because they are not good at such sports. Note that the ranked universities are defined as universities that are good at "many" kinds of sports, and not "all" kinds). Therefore, we chose sports wherein more than seven ranked universities were ranked. Such sports amounted to 13 different types as it is listed in Table 2.

We defined specific sports books as: (1) Books whose titles or subtitles include each sport name and one of the following keywords: "training", "practice", "schema", "improvement", "secret", "acquisition", "lecture", "coach" or "illustration"; and (2) Books published from 1945 to March 2008. We submitted such combinations of keywords and conditions to NDL-OPAC (the OPAC of the National Diet Library in Japan) and searched for the specific sport books. It is considered to contain the bibliographic data of all the books published in Japan. We selected up to 50 books for each sport. After selecting the specific sports books, we searched for them in Webcat Plus (the union catalog of almost all the university libraries in Japan) and counted the number of holdings in each university [1, 2].

Investigation 3

We summed up the number of specific sports books in ranked universities and divided them by of whole collections (the numbers of all the books the libraries had). The number of specific books is often influenced by the whole collection. To examine the effect of the relative amount (i.e., ratio) of specific sports books rather than their absolute numbers, we divided the numbers. We also calculated a similar ratio concerning the lower universities and compared them.

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[1] We use the personal OPAC for universities, such as Waseda University which has not joined the Webcat Plus union catalog.

[2] Unlike in investigation 1, we used Webcat Plus instead of OPAC of each university. This is because we did not consider using Webcat Plus until investigation 1 ended. We would like to use Webcat Plus for investigation 1 and confirm the results in the future.

Table 2

The Number of Holdings of Specific Sports Books

Rank	Name of university	Judo	Field and track	American football	Riflery	Kyudo	Swimming	Rugby	Yacht	Skiing	Skating	Volley -ball	Fencing	Soft tennis
1	Nihon	5	12	10	3	16	15	4	3	2	3	12	5	2
2	Waseda	8	18	8	1	16	17	7	2	13	2	7	2	6
3	NSSU	15	18	32	5	18	33	15	9	23	4	35	4	17
4	Chuo	2	10	8	2	9	6	3	2	5	1	10	2	2
5	Meiji	1	3	2	1	0	1	0	0	0	0	2	0	0
6	Hosei	1	4	2	0	1	4	0	0	0	0	3	1	3
7	Kinki	2	4	0	0	0	3	1	0	0	0	1	1	1
8	Tsukuba	9	8	5	1	10	13	5	0	4	0	24	1	6
9	Ritsumeikan	2	7	10	0	1	5	4	0	0	0	10	1	4
10	Keio	4	2	5	1	10	12	2	2	3	1	3	2	1
11	Kwansei Gakui	0	4	4	0	0	6	1	0	0	3	6	0	9
12	Kokushikan	5	2	1	0	3	4	3	0	1	0	6	0	2
13	Kansai	1	0	2	0	0	3	0	0	0	0	2	0	2
13	Tokai	3	3	8	0	1	11	3	2	0	0	8	0	4
15	Senshu	3	9	2	1	1	0	4	0	2	2	2	1	4
16	Toyo	2	8	5	0	2	11	7	0	6	0	8	3	1
17	Tenri	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Doshisha	3	8	4	2	0	2	5	2	8	0	3	3	0
19	Juntendo	1	0	0	0	0	2	0	0	0	0	0	0	0
20	Fukuoka	7	2	7	0	0	11	6	0	4	0	16	3	6
20	Kyoto Sangyo	2	1	6	0	1	6	1	0	0	0	5	2	1
Average of university appearing in ranking		4.63	6.13	7.5	1	6.17	9.58	2.57	1.13	6.13	1.14	13.71	2.57	3.86
Average of university not appearing in ranking		3	6	4.18	0.69	3.71	7.02	3.79	1	1.69	0.57	4.79	0.93	3.14

Note. Gray cells represent that left-most universities were ranked within top eight universities concerning that sport.

Results

Investigation 1

Since we were unable to use the OPAC of Nihon University, during the investigation period, we excluded the university and used the top 2-11 universities as samples. The results of investigation 1 are shown in Table 1. For instance, we can see that Chuo University library had 65 books whose titles or subtitles included "exercise physiology". Comparing the average number of holdings of the upper (top 2-11 universities) and lower (top 12-21 universities) universities, we may say that the former is larger than the latter. For instance, the average number of holdings of books whose titles or subtitles included "biomechanics" in the upper and lower universities were 44.0 and 26.5, respectively (see Table 1).

Investigation 2

The number of holdings of specific sports books of the ranked universities is shown in Table 2. If the

sports performance was ranked within the top 20 for that sport, the value is represented with a half-tone. For instance, while NSSU (Nippon Sport Science University) was ranked within top 20 in the case of its performance in Judo and had 15 Judo related books, Hosei University was not ranked within the top 20 and had only one Judo related book.

The average number of holdings of ranked and non-ranked universities is also shown in Table 2. We can see that the former is larger than the latter except for in the case of Rugby (see Table 2).

Investigation 3

We calculated the ranks of the ranked universities concerning the 13 sports which were used in investigation 2. In that order (see Table 3), we illustrate the number of holdings of specific sports books ("C" in Table 3) divided by the number of whole collections (times 1,000) ("C/N" in Table 3). The results concerning all the sports [3] are shown in Table 4. The average C/Ns of the upper half of the universities are higher than those of the lower half. For instance, the average C/Ns of the upper and lower half of universities concerning 13 sports are 0.068 and 0.015, respectively. These tendencies can be observed even if we exclude the data of NSSU, which has the largest C/N. Therefore, we can say that not only the absolute number of books, but also the ratio in collection might be related to the sports performance (see Tables 3 and 4).

Table 3

The Number of Holdings of Specific Sports Books Concerning 13 Sports

Rank	Name of university	C	C/N
1	NSSU	228	0.538
2	Waseda	107	0.021
3	Tsukuba	86	0.035
4	Fukuoka	62	0.036
5	Chuo	62	0.027
6	Ritsumeikan	44	0.016
7	Kokushikan	27	0.038
8	Nihon	92	0.019
9	Keio	48	0.011
10	Meiji	10	0.004
11	Kansai	10	0.005
12	Juntendo	3	0.01
13	Doshisha	40	0.017
14	Kwansei Gakuin	33	0.01
15	Hosei	19	0.009
16	Tenri	0	0
17	Tokai	43	0.017
18	Senshu	31	0.021
19	Kinki	13	0.006
20	Toyo	53	0.04
20	Kyoto Sangyo	25	0.025
Average of the upper 11		70.6	0.068
Average of the lower 11		24.6	0.015

[3] In this case, we do not have to rearrange the universities, and thus, the order is the same as that in Table 1.

Table 4

The Number of Holdings of Specific Sports Books Concerning All Sports

Rank	Name of university	C	C/N
1	Nihon	92	0.019
2	Waseda	107	0.021
3	NSSU	228	0.538
4	Chuo	62	0.027
5	Meiji	10	0.004
6	Hosei	19	0.009
7	Kinki	13	0.006
8	Tsukuba	86	0.035
9	Ritsumeikan	44	0.016
10	Keio	48	0.011
11	Kwansei Gakui	33	0.01
12	Kokushikan	27	0.038
13	Kansai	10	0.005
13	Tokai	43	0.017
15	Senshu	31	0.021
16	Toyo	53	0.04
17	Tenri	0	0
18	Doshisha	40	0.017
19	Juntendo	3	0.01
20	Fukuoka	62	0.036
20	Kyoto Sangyo	25	0.025
Average of upper 11		67	0.063
Average of lower 11		30	0.02

Discussions

From the results of investigations 1, 2 and 3, we can say that there was a positive correlation between the university sports performances and their libraries' collections. In particular, specific sports books seemed to be more relevant than general sports books.

However, this does not imply that we have proved a causal relationship between the collection and the performance wherein a rich collection results in good sports performance. It is very likely that the passion of the athletes or universities toward sports produces both a rich collection and a good sports performance. Furthermore, a good performance might have lead to the rich collection of sport books.

Conclusions

We have demonstrated the positive correlation between universities' sports performances and their library collections. The next step is to investigate the frequency of the use of the collection and its relation to consequent sports performances. If there is correlation between universities' sports performances and their frequency of the use of the collection, it can be suggested that universities' library collections have a positive influence on their sports performances.

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