Technical Article

Examination of experienced university student athletes of Olympic athletes in Japan

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Abstract
This study aimed to clarify how many university student athletes were among the athletes who represented Japan at the London Olympics (2012), Rio de Janeiro Olympics (2016) and Tokyo Olympics (2021); their result; and the faculties they belonged to in their universities. Athletes registered at the above mentioned competitions who were current university students or who belonged to a university in the past (including dropouts) were included in the survey. The result of this study shows that academic clustering is becoming increasingly customary.

1. Introduction
Universities have been reported to support athletes' career development (Aquilina, 2013). University sports have been shown at the conference on the promotion of university sports to be an important entity that supports the development of society through sports (MEXT, 2017). Because of this situation, there is an increasing interest in athletes who are in universities (hereinafter referred to as university student athletes) (Brown et al., 2015). With the increase in the general university entrance rate, the number of top-level athletes who choose university entrance courses is increasing (Arai et al., 2018).

On the other hand, university student athletes are unable to graduate from college due to poor academic performance and lack good grades due to excessive concentration in competitions. In addition, by spending most of their college life in competition, it is thought that it will be impossible to develop a second career after that. Therefor this reason, university student athletes need to play an active role in sports, complete their studies, and develop their careers for the future.

The idea of dual careers for athletes is attracting attention because it is necessary to develop a career for the future. A dual career is defined as "combining the beginning and end of a competitive life, which is part of a long life, with the important events and desires that occupy each stage of school, work, and other life (EU expert group, 2012; Waku, 2015)." For example, a dual career is a combination of sports and academics, or sports and work.

However, the practice of "academic clustering" has been identified out as a barrier to dual carriers (Fountain and Finley, 2009; Fountain and Finley, 2011). Academic clustering primarily means that university student athletes are directed towards a particular major. Fountain and Finley (2009) surveyed 11 Division I football players at the ACC Conference and found that clustering was performed at all universities. Suggs (2003) surveyed the majors of university student athletes on teams that participated in American football finals. It was revealed that American football players concentrated on specific majors, that are less difficult, similar to many university student athletes. However, few studies have investigated academic clustering in Japan and the actual situation has not yet been determined. In Japan, the Basic Sports Plan (Japan Sports Agency, 2016) devises measures to raise awareness about dual careers among

top-level athletes. Therefore, it is necessary to clarify academic clustering patterns among the top-level athletes in Japan.

Therefore, this study aimed to clarify how many university student athletes were among the athletes that represented Japan, the kind of results they had, and the faculties they belonged to. By clarifying these, it is possible to grasp the current state of academic clustering of top athletes in Japan, and it is thought that future issues in the university sports world can be determined.

2. Methods

Among the athletes registered at the London Olympics (2012), Rio de Janeiro Olympics (2016) and Tokyo Olympics (2021), those who are currently university students or who belonged to a university in the past (including dropouts) were included in the survey. Athletes who are university students but belong to professional and business teams are experienced university student athletes. High school and junior high school athletes are excluded from experienced university student athletes. For the current affiliation, final educational background, and competition results, the official website of the Japanese Olympic Committee was referenced (Japanese Olympic Committee, 2012; Japanese Olympic Committee, 2016; Japanese Olympic Committee, 2021). The competition results were classified into multiple medals, gold medals, silver medals, bronze medals, 8th place prizes, 9th place and below, and not participation. Athletes who entered graduate school had graduate school as their final academic background. Information about the faculty to which each player belonged was retrieved from the homepages, magazines, newspaper articles, and other relevant publication of each university. The classification of the faculty was referred to from the Benesse website. Compared and examined to each numerical value obtained from Japanese Olympic Committee and homepages, magazines, newspaper articles, etc.

3. Results

3.1 Percentage of university student athletes

The number of national team athletes who were in university was 215 out of 293 (73.4%) at the London Olympics, 249 out of 338 (73,7%) at the Rio de Janeiro Olympics and 420 out of 583 (72.0%) at the Tokyo Olympics (Table 1).

Table 1. Percentage of university student athletes

	London Olympics	Rio de Janeiro Olympics	Tokyo Olympics
Representative player	293	338	583
University student athlete	215(73.4%)	249(73.7%)	420(72.0%)

3.2. Results of university student athletes

Among the university student athletes, at the London Olympics, 5 athletes won multiple medals (2.3%), 6 won gold medals (2.8%), 24 won silver medals (11.0%), 12 won bronze medals (5.6%), 54 won 8th place prizes (25.0%), and 114 won prizes for 9th place and below (52.9%); there was 1 person who did not participate (0.4%). At the Rio de Janeiro Olympics, 4 athletes won multiple medals (1.6%), 12 won gold medals (4.8%), 10 won silver medals (4.0%), 24 won bronze medals (9.6%), 56 won 8th place prizes (22.5%), and 113 won prizes for 9th place and below (57.5%). At the Tokyo Olympics, 6 athletes won multiple medals (1.4%), 31 won gold medals (7.4%), 12 won silver medals (2.8%), 10 won bronze medals (2.4%), 107 won 8th place prize (25.5%), and 252 won prizes for 9th place and below (60.0%); there were 2 people who did not participate (0.5%) (Table 2).

3.3. Faculties of university student athletes

Next, we examined the faculties of university student athletes. For the classification of faculties, we referred to Benesse classification method. At the London Olympics, the faculties and number of student athletes were as follows: Physical Education / Health / Human Science, 103 (47.9%); Economics / Management / Commerce, 42 (19.5%); Law / Political, 29 (13.5%); Literature, 10 (4.6%); International Relations, 8 (3.7%); Medical Technology / Welfare, 5 (2.3%); Pedagogy, 4 (1.9%); Science, 4 (1.9%); Sociology, 4 (1.9%); Agriculture, 2 (0.9%); Pharmacy, 1 (0.5%); Life Science, 1 (0.5%) and unknown, 2 (0.9%) (Table 3). At the Rio de Janeiro Olympics, the faculties and number of student athletes were as follows: Physical Education / Health / Human Science, 122 (49.0%); Economics / Management / Commerce, 36 (14.5%); Law / Politics, 33 (13.3%); Medical Technology / Welfare, 11 (4.4%); International Relations, 10 (4.0%); Sociology, 10 (4.0%); Literature, 7 (2.8%); Pedagogy, 5 (2.0%); Agriculture, 4 (1.6%); Engineering, 4 (1.6%); Science, 3 (1.2%); Unknown, 4 (1.6%) (Table 4). At the Tokyo Olympics, the faculties

and number of student athletes were as follows: Physical Education / Health / Human Science, 224 (53.3%); Economics / Management / Commerce, 58 (13.8%); Law / Politics, 53 (12.6%); International Relations, 20 (4.8%); Literature, 17 (4.1%); Medical Technology / Welfare, 11 (2.6%); Sociology, 11 (2.6%); Science, 9 (2.2%); Engineering, 5 (1.2%); Pedagogy, 3 (0.7%); Medicine, 1 (0.2%); Unknown, 8 (1.9%) (Table 5).

Table 2. Results of university student athletes

	London Olympics	Rio de Janeiro Olympics	Tokyo Olympics
Multiple medals	5	4	6
Gold medal	6	12	31
Silver medal	24	10	12
Bronze medal	12	24	10
8th place prize	54	56	107
9th place and below	114	113	252
Not participate	1	0	2

Table 3. Faculty of university student athlete (London Olympics)

	London Olympics
Physical Education / Health / Human Science	103(47.9%)
Economics / Management / Commerce	42(19.5%)
Law / Politics	29(13.5%)
Literature	10(4.6%)
International Relations	8(3.7%)
Medical Technology / Welfare	5(2.3%)
Pedagogy	4(1.9%)
Science	4(1.9%)
Sociology	4(1.9%)
Agriculture	2(0.9%)
Pharmacy	1(0.5%)
Life Science	1(0.5%)
Unknown	2(0.9%)

Table 4. Faculty of university student athlete (Rio de Janeiro Olympics)

	Rio de Janeiro Olympics
Physical Education / Health / Human Science	122(49.0%)
Economics / Management / Commerce	36(14.5%)
Law / Politics	33(13.3%)
Medical Technology / Welfare	11(4.4%)
International Relations	10(4.0%)
Sociology	10(4.0%)
Literature	7(2.8%)
Pedagogy	5(2.0%)
Agriculture	4(1.6%)
Engineering	4(1.6%)
Science	3(1.2%)
Unknown	4(1.6%)

Table 5. Faculty of university student athlete (Tokyo Olympics)

	Tokyo Olympics
Physical Education / Health / Human Science	224(53.3%)
Economics / Management / Commerce	58(13.8%)
Law / Politics	53(12.6%)
International Relations	20(4.8%)
Literature	17(4.1%)
Medical Technology / Welfare	11(2.6%)
Sociology	11(2.6%)
Science	9(2.2%)
Engineering	5(1.2%)
Pedagogy	3(0.7%)
Medicine	1(0.2%)
Unknown	8(1.9%)

4. Discussion

This study aimed to clarify how many university student athletes are among the athletes represented Japan at the London Olympics (2012), Rio de Janeiro Olympics (2016) and Tokyo Olympics (2021), the kind of results they achieved and the faculty they to which they belonged.

This study suggests that university student athletes accounted for approximately 70% of the athletes at the three tournaments. Further, the chances of top-level athletes going to college are increasing as the general college entrance rate increases.

The results of university student athletes represented Japan were relatively good. Therefore, it can be seen that advanced practice is possible at the university.

As a result of examining the faculties of representative athletes who were experienced university student athletes, there was a tendency for academic clustering. In the United States, the National Collegiate Athletic Association (NCAA) has pointed out that academic clustering has become a practice because it is necessary to maintain a GPA above a certain standard for participation in games and practice. However, despite the lack of rules like those of the NCAA in the Japanese university sports world, it has been revealed that academic clustering is becoming customary.

Since the Tokyo Olympics were held in their country, it is hypothesized that the number of athletes who choose sports departments to concentrate on the competition increased.

From the above, although the number of athletes attending university is increasing, the tendency of academic clustering has been clarified, and it is considered that dual career formation has not progressed among top-level athletes. In recent years, COVID-19 has rapidly promoted the digitization of university classes. It was suggested that utilizing online classes makes it possible to go on to more diverse faculties. It is possible to eliminate academic clustering by advancing the digitization of lessons. In Japan, the Basic Sports Plan (Japan Sports Agency, 2016) mentions measures to raise awareness of dual careers for top-level athletes. However, since top-level athletes do not form dual careers, it is possible that junior athletes will refer to it. Because it is difficult for athletes who have already graduated from college to aim for a dual career, it is suggested that junior athletes need to be trained in dual and second careers.

In this study, we surveyed top-level athletes such as Olympic athletes; however, since they have achieved high results in Japan, it is considered that most athletes have a fulfilling second career. In the future, it will be necessary to clarify the tendency of academic clustering in Japan by targeting university student athletes at various levels of competition. By advancing the research, problems for the formation of dual careers will be identified, and considered to solve the second career problem of athletes.

5. Conclusions

This study aimed to understand the situation of academic clustering among Olympic athletes. The result of this study showed that academic clustering is becoming increasingly customary. In the future, it will be necessary for universities to create a system that increases the number of faculties from which university student athletes can choose.

Author Contribution

Conceptualization, F.Y., G.H.; methodology, F.Y.; validation, F.Y.; formal analysis, F.Y.; investigation, F.Y.; writing-original draft preparation, F.Y., G.H.; writing-review and editing, F.Y., G.H.; visualization, F.Y.; supervision, Y.S.

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Conflicts of Interest

The authors declare no conflict of interest.

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