



What do Students Learn from Undokai? A Quantitative Content Analysis of Reflections in Japanese Schools

Hideaki Tanimoto ^{a, *}, Daisuke Kakoi ^b, Mitsuhiro Matsuda ^a

^a Faculty of Sport and Health Sciences, Osaka Sangyo University, Osaka, Japan

^b Faculty of Education, Otani University, Kyoto, Japan.

* Corresponding Author E-mail: tanimoto-h@spo.osaka-sandai.ac.jp

DOI: <https://doi.org/10.54392/ijpefs2616>

Received: 06-12-2025; Revised: 07-02-2026; Accepted: 13-02-2026; Published: 17-02-2026



Abstract: Undokai, a Japanese school sports festival, is widely implemented in schools and is assumed to offer learning opportunities beyond physical development. However, few studies have systematically examined students' reflections using large-scale open-ended data, including differences by school stage and gender. This study aimed to clarify students' perceived learning outcomes and self-growth through undokai and to examine (a) school-stage and gender differences in word-use patterns and (b) how word co-occurrence patterns vary according to students' favorability toward undokai. Open-ended reflections were collected after undokai from 932 students in Japan (junior high school: n=425; elementary school: n=507) from two elementary schools and one junior high school. Responses were analyzed using quantitative content analysis supported by KH Coder, including co-occurrence network analysis with KWIC-based contextual checks, correspondence analysis with school stage and gender as external variables, and co-occurrence network analysis treating favorability ratings as an external variable. Favorability toward undokai was associated with co-occurrence patterns involving attitudes toward exercise and others' gaze. Themes of perceived learning outcomes and self-growth were broadly consistent with educational goals articulated in the Courses of Study (e.g., solidarity/responsibility and fostering familiarity with exercise). Correspondence analysis indicated differences by school stage and gender: elementary students emphasized personal physical development, whereas junior high students highlighted relationships with peers and the school community; gender-related differences were more evident among junior high school students. Quantitative content analysis of large-scale student reflections helps clarify students' perceived learning outcomes and self-growth through undokai, providing practical implications for developing instructional strategies that consider students' favorability toward undokai, school stage, and gender in Japanese schools.

Keywords: Undokai, School Sports Festival, Sports day, Physical Education, Quantitative Content Analysis, Text Mining, Student Reflections

1. Introduction

Undokai is a school sports festival widely practiced in Japanese schools, and the term is commonly explained as a compound of "undo" (exercise) and "kai" (meeting) (Akiyama, 2020). The first undokai is generally traced back to 1874 in Japan and is commonly associated with Archibald Lucius Douglas (1842–1913), a British teacher involved in naval education, who promoted the introduction of Western-style "athletic sports" during the early modernization of Japan (Haslett, 1990). Over time, undokai evolved into a uniquely Japanese school event while being influenced by Western models (Haslett,

1990). A contemporary undokai typically has several features: (1) all students can participate, (2) individuals may take part in multiple activities, and (3) it provides an opportunity for students and teachers to gather as a school community. In this sense, undokai may function as a means to familiarize students with physical activities in school education (Kimura *et al.*, 1995; Yamahira, 2017).

In Japanese school education, undokai is generally positioned not within physical education as a subject but within "special activities" (tokubetsu katsudo). In the revised Courses of Study, the objectives and contents of special activities are

organized from the perspectives of relationship-building, social participation, and self-realization through group-based activities (Ministry of Education, Culture, Sports, Science and Technology Japan, 2017a; 2017b). Undokai, as part of special activities, is expected to contribute to broad educational aims such as fostering responsibility and solidarity, promoting familiarity with exercise, developing safe and disciplined group behavior, and supporting physical fitness and health (Ministry of Education, Culture, Sports, Science and Technology Japan, 2017a; 2017b). Accordingly, undokai is not merely a sporting occasion but a school-wide educational activity that may shape both physical and psychosocial learning through preparation, practice, and participation.

Notably, although undokai is positioned within special activities, Yamahira (2014) argued that undokai is not simply a school event within special activities but can be understood as being effectively linked to physical education. Moreover, the Course of Study commentary for special activities explicitly states that, when implementing undokai, it is important to connect the event with physical education classes (Ministry of Education, Culture, Sports, Science and Technology Japan, 2017c). In actual school practice, preparation and practice for undokai are often conducted during physical education lessons, where teachers design tasks, provide feedback, and manage peer interactions. Accordingly, students' perceptions of undokai may be influenced by key pedagogical factors central to physical education, such as perceived competence, social evaluative experiences, and a supportive instructional climate, underscoring the relevance of examining undokai within the broader framework of physical education pedagogy.

Given this close linkage with physical education, it is important to clarify what students perceive they learn and how they grow through undokai experiences. Although early undokai research largely focused on historical development, recent studies have examined potential educational effects for participating students. For example, Nakayama *et al.* (2022) reported that junior high school students' evaluations of undokai experiences (e.g., challenge/achievement and cooperative experiences) were associated with grit via the satisfaction of basic psychological needs (autonomy, competence, and relatedness), suggesting that undokai may contribute to non-cognitive development through motivational mechanisms. In addition, Kubota (2023), focusing on cancellations and downsizing of elementary-school undokai during the COVID-19 period,

suggested that perceived restrictions on children's autonomy were linked to reduced opportunities for role fulfillment and lower social participation awareness in the following year, highlighting that how undokai is implemented and how children participate may matter for psychosocial outcomes. Furthermore, Nishimura and Igarashi (2024) reported that retrospective meaning-making of lower/upper secondary school events experiences including undokai was related to university students' daily life skills, implying that school-event experiences may have longer-term developmental relevance.

Beyond these recent studies, prior work has reported associations with psychological aspects such as school adjustment (Yokoyama *et al.*, 2012; Ishikawa *et al.*, 2013; Taruki *et al.*, 2016), self-efficacy (Yokoyama *et al.*, 2012; Ishikawa *et al.*, 2013; Hasegawa, 2009), and theory of mind development (Oikawa, 2018) as well as social aspects such as group cohesiveness (Kawamoto, 2014; Nakagawa, 2017; Kubota, 2021), and normative awareness/behavior (Shimojo *et al.*, 2005; Oikawa *et al.*, 2015). However, the literature has tended to focus on specific outcomes in isolation, and comprehensive examinations of students' perceived learning outcomes and self-growth through undokai remain limited, particularly using large-scale open-ended responses.

Therefore, this study applied quantitative content analysis to students' open-ended responses to comprehensively evaluate the educational effects of undokai. Specifically, we examined (a) favorability toward undokai and reasons for liking/disliking it and (b) perceived learning outcomes and self-growth through undokai experiences.

2. Materials and Methods

2.1 Participants

The survey was conducted in 1 public junior high school and 2 public elementary schools in Japan. The total number of students enrolled in the participating schools was 1,189 (508 in the junior high school and 681 across the two elementary schools). After the study purpose and questionnaire content were explained to the school principals and teachers in charge, including physical education teachers, permission to conduct the survey was obtained. An information sheet was distributed to guardians through the schools, stating that the survey was not a test, was unrelated to academic evaluation, that responses would be treated confidentially and anonymously, and that the

data would be used for research purposes only. In addition, the classroom teacher explained to students that participation was voluntary, that completing the questionnaire was taken as assent, and that they could stop responding at any time without penalty.

During the survey period, responses were obtained from 1,041 students (455 junior high school students and 586 elementary school students), excluding those who were absent, submitted blank questionnaires, or otherwise did not provide usable responses. After excluding responses with missing data, the final analytic sample consisted of 932 students (425 junior high school students and 507 elementary school students).

Ethical approval for this study was obtained from the institutional ethics review committee (Approval No.: 2023-Human Ethics-37).

2.2 Measures

The students were asked to reflect on the undokai held at their schools and to respond in the form of open-ended questions about their favorability toward the event and the reasons for it, as well as the learning outcomes they obtained from it. Specifically, to confirm the level of favorability of undokai, students were asked the question, "How much do you like undokai?" and were asked to answer on a 4-point scale from "I like undokai very much" to "I dislike very much". Next, they were asked to respond to the favorability question by giving their own reasons for their choice (from "I like undokai very much" to "I dislike undokai very much") as an open-ended response. Regarding the learning outcomes obtained from the undokai, the students were instructed to write at least one and up to three open-ended responses about "what you learned or feel you grew up through undokai".

2.3 Analysis

In this study, a quantitative content analysis was conducted to examine the outcomes, issues, and educational effects of undokai using open-ended data from the participants. Traditionally, qualitative methods have been used to analyze open-ended data, but they can be limited by subjectivity, lack of reproducibility, and limitations in the number of data handled (Mackieson *et al.*, 2018). In this study, to overcome these limitations, we employed text-mining techniques to quantify and systematically analyze the textual data. KH Coder 3.02c official-package Base Edition was used

for the analysis. Responses were analyzed in Japanese without translation into English.

Before conducting the analysis using text mining techniques, typographical errors in the responses were corrected, and irrelevant comments, such as comments of appreciation for the survey and incomplete sentences, were removed to improve the accuracy of the analysis. Next, to prevent unrelated topics from being linked in co-occurrence relationships between words, common function words that occur frequently but do not have meaning by themselves (e.g., Japanese particles and auxiliary verbs) were excluded (Higuchi, 2016; 2017). In addition, the settings were adjusted to prevent compound nouns from being split during extraction (e.g., "radio gymnastics" and "not good at"). After the preliminary processing, a co-occurrence network analysis was conducted.

Co-occurrence network analysis was used to investigate themes or topics in textual data by identifying groups of words with similar occurrence patterns (Higuchi, 2016; 2017). In the co-occurrence network diagram, lines connecting words are drawn based on the Jaccard coefficient. Thicker lines between words indicate stronger co-occurrence relationships, and the size of the circle surrounding a word represents its frequency of occurrence (Higuchi, 2016; 2017). In this study, the 60 most frequently occurring words were used in the analysis, and the subgraphs were detected using the modularity method.

We classified each subgraph shown in the detected co-occurrence network diagram by themes enclosed using dashed lines and assigned names to represent their content. In naming the subgraphs, the meanings and co-occurrence relationships of the words were examined by checking the context in which the co-occurring words were used in each subgraph in the original text data by utilizing KWIC (Key Word in Context) Concordance (Higuchi, 2016; 2017). To enhance the reliability and validity of the naming, the tentative subgraph names were discussed with three researchers specializing in teaching physical education to assess the appropriateness and accuracy of the names and to determine the final subgraph names.

In analyzing the degree of favorability toward undokai and the reasons for it, changes in co-occurrence patterns were examined (Higuchi, 2016; 2017). In other words, a co-occurrence network was detected by using the responses regarding "favorability of undokai" as an external variable to examine how the

Subgraph 1 was composed of 11 words: "fun," "cooperation," "class," "unity," "event," "one," "other," "grade," "acting," "interaction" and "can watch". The words were extracted from statements such as *"It is fun because it is an event where we can unite with our classmates in dancing, long rope jumping, etc."* and *"Because it is an event where we can not only be united as one class but also interact and cooperate with other grades at the beginning of the year"*. Therefore, subgraph 1 was named "intra- and inter-group interactions".

Subgraph 2 was composed of 5 words: "deepen," "bond," "friends," "together," and "compete with". The composed words were extracted from statements such as *"Because I can work together with my friends to deepen our bond through practice for undokai."* and *"Because I enjoy competing with my friends"*. Therefore, subgraph 2 was named "solidarity with peers."

Subgraph 3 was composed of 7 words: "family," "come," "myself," "watch," "embarrassed," "someone" and "nervous". The composed words were extracted from statements such as *"Because I can show my family how much I've grown up"* and *"Because I am embarrassed due to someone other than my family coming to watch"*. Therefore, subgraph 3 was named "others' gaze."

Subgraph 4 was composed of 4 words: "games," "various," "competition," and "interesting". The composed words were extracted from statements such as *"Because there are various games and I feel rewarded afterwards"* and *"Because we can all work together on various competitions such as tug-of-war and ball tossing"*. Therefore, subgraph 4 was named "variety of undokai activities".

Subgraph 5 was composed of 5 words: "dance (noun)," "dance(verb)," "united," "dislike," and "race". The composed words were extracted from statements such as *"Because I can dance with uniting classmates"* and *"Because I like to dance together on undokai, but I dislike the clown race"*. Therefore subgraph 5 was named "attitude toward the undokai activities".

Subgraph 6 was composed of 6 words: "exercise," "like," "body," "move," "run," and "not good at". The composed words were extracted from statements such as *"I like to move my body (exercise)"* and *"I am not good at exercise"*. Therefore, subgraph 6 was named "attitude toward exercise".

Subgraph 7 was composed of 3 words: "practice," "work hard," and "show". The composed words were extracted from statements such as *"Because I can show the results of my hard practice"* and *"Because I can show the results of practice for my performance"*. Therefore, subgraph 7 was named "demonstrating growth achieved through practice".

Next, a co-occurrence network diagram was constructed to determine how the co-occurrence relationship between words changed with the degree of favorability toward undokai, using the responses regarding the question "How much do you like undokai?" as an external variable (Figure 2). Among the words shown in Figure 2, the words displayed within the red circle are the characteristic words of those who responded that they like undokai, and the darker the color, the higher the degree of "liking undokai". On the other hand, the words in blue are characteristic words of those who answered that they dislike undokai, and the darker the color, the higher the degree of "dislike of undokai". The words displayed in yellow are those in a neutral position, regardless of the degree of undokai favorability.

Based on the above, confirming the co-occurrence network diagram, it was shown that "like" was indicated in red and "dislike" and "not good at" were indicated in blue, starting from the words "exercise" and "run" and "dance." Additionally, the words "family," "myself," and "show" were displayed in red, and "embarrassment," "someone," and "nervous" were displayed in blue, starting from the word "watch".

3.2 Perceived Learning Outcomes and Self-Growth through Undokai

The analysis revealed that the total number of words was 18692, and the number of unique words was 964. The top 10 most frequently occurring words were "friend (276 words)," "cooperation (247 words)," "fast (204 words)," "dance (noun) (184 words)," "unity (165 words)," "deepen (143 words)," "run (136 words)," "foot (127 words)," "important (121 words)," and "rhythm (107 words)."

A co-occurrence network analysis was conducted using the responses regarding what they learned and what they thought they grew up from the undokai, and 8 subgraphs were detected (Figure 3).

Subgraph 1 was composed of 10 words: "friend," "cooperation," "deepen," "unity," "important," "bonds," "someone," "class," "become closer," and "members of group".

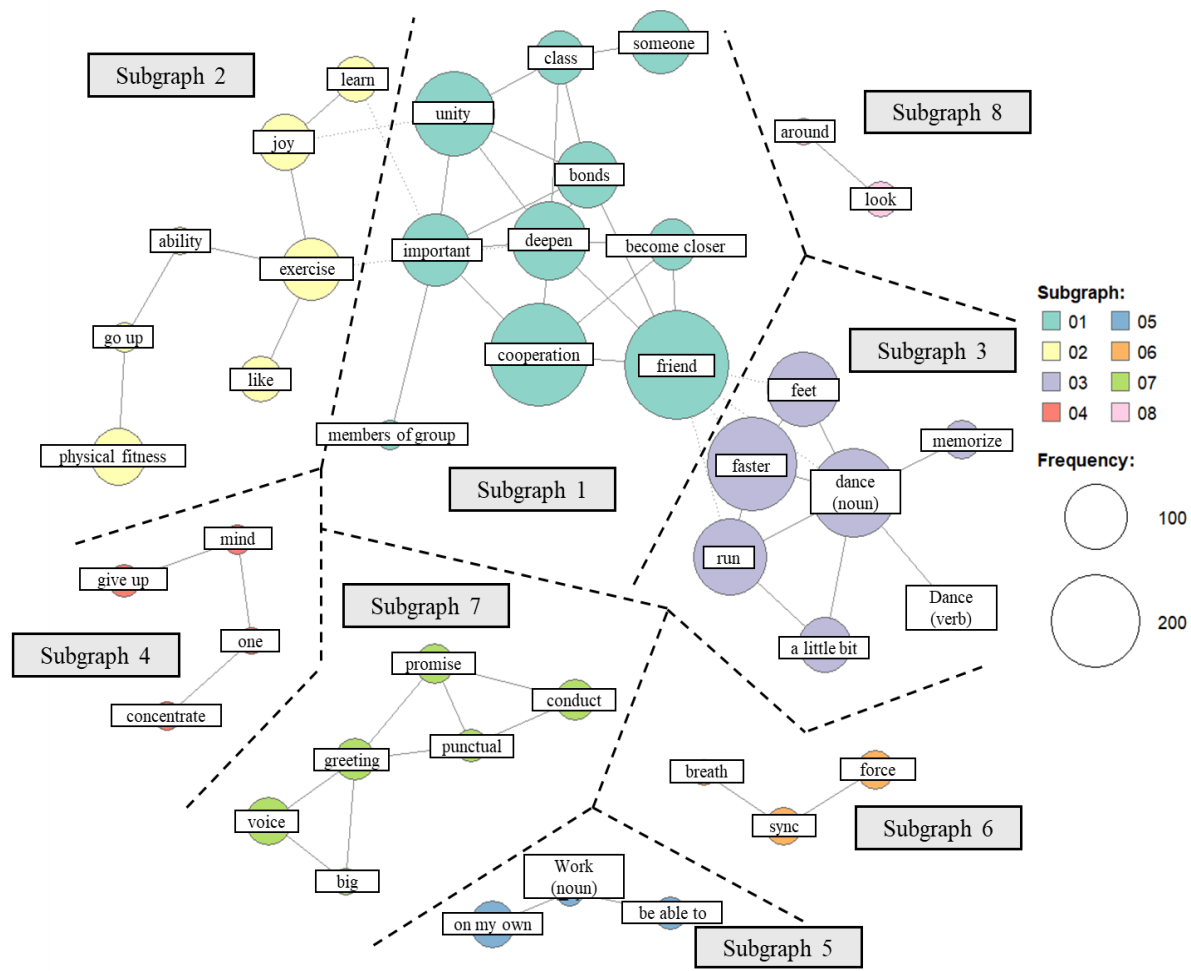


Figure 3. Co-occurrence network diagram of perceived learning outcomes and self-growth

The composed words were extracted from statements such as "I have learned to greet people in a big voice" and "I have learned code of conduct with being punctual". Therefore, subgraph 7 was named "mastery of disciplined group behavior".

Subgraph 8 was composed of two words "look" and "around". The composed words were extracted from statements such as "I have mastered being able to take action by looking around me" and "I have mastered giving accurate instructions to those around me". Therefore, subgraph 8 was named "improved ability to make judgment of situations".

A correspondence analysis was conducted to examine whether the perceived learning outcomes and self-growth differ by sex and school stage (Figure 4). The results of the analysis revealed that there were characteristic terms that differed by sex and school stage.

In the "elementary school boys", the characteristic words "no longer nervous," "become good," and "acting" were found, and these words were confirmed in sentences such as "I am no longer nervous

in front of others" and "I learned that I can become good one day if I keep practicing".

In the "elementary school girls", the characteristic words "race," "dance (verb)" and "rhythm" were found, and these words were confirmed in sentences such as, "Through dancing, we can teach each other a lot" and "I became faster at running in the race".

In the "junior high school boys", the characteristic words "greeting," "promise," and "punctual," were found, and these words were identified in sentences such as "I have learned to greet people in a loud voice" and "I learned the importance of being punctual and following rules of conduct."

Finally, In the "junior high school girls," the characteristic words "classmates" and "be able to" were found, and these words were identified in sentences such as "I have been able to cooperate with my classmates." and "I learned the importance of uniting with my classmates".

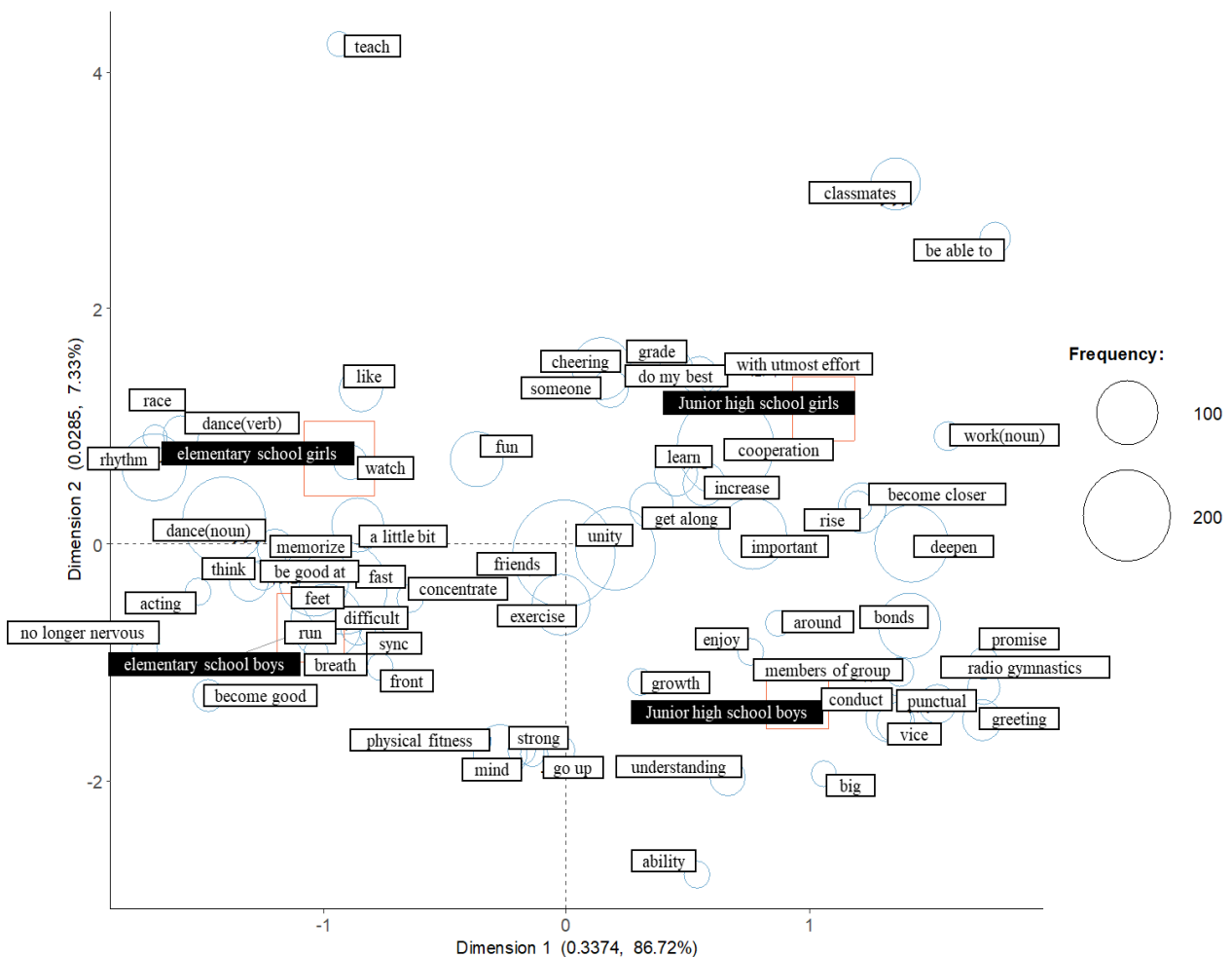


Figure 4. The result of correspondence analysis

4. Discussion

This study applied quantitative content analysis to students’ open-ended responses to comprehensively evaluate the educational effects of undokai. Specifically, we examined (a) favorability toward undokai and reasons for liking/disliking it and (b) perceived learning outcomes and self-growth through undokai experiences.

4.1 Interpretation of Factors Shaping Undokai Favorability

A co-occurrence network analysis was conducted using the responses regarding the reasons for liking (or disliking) undokai, and 7 subgraphs were detected: “intra- and inter-group interaction”, “solidarity with peers”, “others’ gaze”, “variety of undokai activities”, “attitude toward undokai activities”, “attitude toward exercise” and “demonstrating growth achieved through practice.” In addition, a co-occurrence network diagram was constructed to determine how the co-occurrence relationship between words changed with the degree of favorability toward undokai, using the responses regarding the favorability of undokai as an

external variable. The characteristic words changed according to the degree of favorability toward undokai, starting from “exercise,” “run,” and “dance” in “attitude toward undokai activities (subgraph 5)” and “attitude toward exercise (subgraph 6)” and “watch” in “others’ gaze (subgraph 3)”. In other words, the level of favorability of undokai varies depending on the formation of an attitude toward exercise and the perception of others’ gazes during exercise.

This result can be explained by the inferiority complex proposed by Adler (1932). The inferiority complex is defined as “expressing a belief that a task or problem cannot be solved, thereby shelving the problem to be addressed and focusing on avoiding failure” (Adler,1932).

According to previous studies that examined “physical education dislike” using this concept of inferiority complex, awareness of one’s own poor motor skills and social experiences that promote it, such as ridicule from others, are related to the formation of negative attitudes toward physical education (Carlson, 1995; Lynn *et al.*, 2005; Emilio, 2014). In addition, according to Sasaki & Suko (2016), the construct of

inferiority complex in physical education constructs a two-factor structure: the "complex focused on motor skill," which is attributed to poor motor skills, and the "complex focused on psychosocial and physical factors" which is causing feelings of inferiority to develop into an inferiority complex. The two-factor structure of the "inferiority complex" is consistent with the findings of this study. In other words, it can be inferred that the inferiority complex felt during the practice sessions leading up to undokai and during the presentation of athletic achievements on undokai influences the favorability toward undokai.

To resolve this inferiority complex, [Toyama *et al.* \(2022\)](#) examined the causal relationship between the inferiority complex and physical competence and suggested that schools can suppress the inferiority complex by devising instructional methods such as setting small-step tasks and using a portfolio that shows students' own learning progress.

Although previous studies that examined the inferiority complex targeted physical education classes, as mentioned above, undokai is not conducted as physical education classes but as part of special activities in Japanese schools. However, [Yamahira \(2014\)](#) reviewed previous studies on the educational significance of undokai and concluded that "undokai is not simply a sports event as a special activity, but can be understood as effectively linked to physical education." In addition, in Special Activities in the Courses of Study for Elementary Schools ([Ministry of Education, Culture, Sports, Science and Technology Japan, 2017c](#)), it is clearly stated that the point to keep in mind when implementing undokai is to link it with physical education classes. Therefore, when implementing undokai, practical efforts are required to enhance physical competence in relation to physical education classes, considering the educational goals and content of physical education.

4.2 Interpretation of Educational Effects and Group Differences (School Stage and Gender)

As a result of the co-occurrence network analysis of students' perceived learning outcomes and self-growth at the undokai, 8 subgraphs emerged: "cultivation of solidarity", "fostering an attitude of familiarity with exercise", "improvement of physical fitness and motor skills", "awareness of the importance about resilience", "cultivation of responsibility", "cooperation", "mastery of disciplined group behavior" and "improved ability to make judgment of situations".

These subgraphs are generally consistent with the goals of undokai as stated in the Courses of Study: "promote and maintain physical and mental health, to learn safe and disciplined group behavior to protect oneself from incidents, accidents, and disasters, to foster an attitude of familiarity with physical activity, to cultivate a sense of responsibility and solidarity, and to improve physical fitness." Although "cooperation" and "improved understanding and judgment of situations" do not match the goals of it, they are clearly stated as competencies to be cultivated on the undokai in the Courses of Study. The findings of this study support the appropriateness of undokai curricula in Japan.

In addition, sex and school stage differences in perceived learning outcomes and self-growth through undokai were examined using correspondence analysis, and different characteristic terms were detected by sex and school stage. By school stage, the elementary school students tended to experience personal growth in physical fitness and athletic ability, with characteristic words such as "no longer nervous," "become good," and "acting" (elementary school - boys) and "race," "can dance," "rhythm" (elementary school - girls). On the other hand, junior high school students tended to experience growth in terms of deep relationships with others and the school community, with characteristic words such as "greeting," "promise," and "punctual," (junior high school - boys) and "class" and "be able to" (junior high school - girls).

According to developmental psychology, the period from elementary school to junior high school is a time of transition from the concrete operational phase to the formal operational phase ([Piaget, 1932](#)), during which the ability to perceive self and others objectively develops ([Selman, 1980](#)). The results of this study support these changes in developmental stage, and it can be inferred that the learning environment of undokai contributes to the development of social skills as well as physical growth in the growth process of students.

Furthermore, the detected characteristic words were verified in aspect of sex, and the differences were more pronounced in the junior high school stage. In other words, junior high school boys used "greeting," "promise," and "punctual" as characteristic words, indicating that they perceive learning outcomes and self-growth related to "mastering disciplined group behavior," while junior high school girls used "class" and "be able to," as characteristic words, indicating that they tended to perceive learning outcomes and self-growth

related to “cultivating a sense of solidarity” and “cooperation”.

These differences may be related to the differences in undokai games between boys and girls. In Japan, the revised curriculum guidelines in 1989 no longer distinguish between “boys and girls” in the physical education curriculum at all elementary, junior high, and high schools. In addition, the current curriculum guidelines commentary on physical education (Ministry of Education, Culture, Sports, Science and Technology Japan, 2017c; 2017d) clearly state that “in principle, boys and girls will study together,” so Japan’s physical education curriculum is moving toward the realization of a society in which everyone can freely participate in sports without being bound by gender.

On the other hand, it has been reported that there are a certain number of gender differences in undokai games (Tahara *et al.*, 2005; Kishimoto *et al.*, 2005; Katsuki *et al.*, 2005), and even games held as mixed gender one may contain content that evokes gender (Aiba, 2020). Because gender differences in this regard are particularly prominent in junior high schools (Tahara *et al.*, 2005; Kishimoto *et al.*, 2005; Katsuki *et al.*, 2005), characteristic words related to perceived learning outcomes and self-growth likely differed significantly in junior high schools.

Currently, coeducational classes are becoming more common in the practice in undokai and physical education classes in Japanese schools, and attempts are being made to correct gender differences. However, as Griffin (1981) points out, coeducational classes may be the first step toward gender equality, but the next, and perhaps most important, step toward achieving gender equality in physical education is for teachers to take responsibility for and promote gender equality in their classes. In other words, not only gender differences in undokai games but also gender differences in perceived learning outcomes and personal growth may be created by the content of instruction in school educational settings, such as gender awareness implicitly required in the process of athletic practice, and attempts should be made to correct them.

On the other hand, it cannot be denied that such gender differences are not influenced by the content of instruction in school education but are simply influenced by gender characteristics in learning styles and normative consciousness. Therefore, it is necessary to explore using various variables in the future why

gender differences occur in perceived learning outcomes and self-growth at undokai.

4.3 Limitations of this Study and Future Perspectives.

In this study, we examined the educational effects of undokai and found that the educational goals outlined in the current curriculum are consistent with students’ perceived learning outcomes and self-growth. In addition, the study provided suggestions regarding the need for instruction that considers favorability toward undokai, school stage, and gender. However, because the data were collected from only two elementary schools and one junior high school, the generalizability of the findings may be limited.

Moreover, the present study employed a quantitative content analysis of open-ended textual data and did not quantify the educational effects of undokai using scale scores or other measurement-based indicators. In addition, no comprehensive and psychometrically validated scale is currently available to assess educational outcomes such as learning and self-growth through undokai experiences. Future research should therefore develop and validate a scale to measure students’ perceived learning outcomes and self-growth in undokai and, based on such measurement, conduct hypothesis-testing, measurement-based quantitative studies to examine determinants of these educational effects and strategies to enhance them. Furthermore, to clarify why school-stage and gender differences emerge, future studies should expand the range of participating schools and incorporate additional educational variables (e.g., instructional content, learning climate, and the structure of undokai activities) to enable more detailed and multifaceted analyses.

5. Conclusion

This study clarified, using quantitative content analysis of students’ open-ended responses, that undokai, a traditional Japanese school sports festival, is not merely a sports event but has multifaceted educational effects on students’ social skills and attitudes toward exercise, as well as on their perceived self-growth. The co-occurrence network analysis suggested that favorability toward undokai was associated with aspects such as attitudes toward exercise and others’ gaze, and that perceived learning outcomes and self-growth were broadly consistent with educational goals articulated in the Courses of Study,

including the cultivation of solidarity and fostering familiarity with exercise. Furthermore, patterns of characteristic terms by school stage and gender indicate that undokai may influence a range of psychosocial experiences across students' developmental periods.

Nevertheless, because this study relied on open-ended textual data, the educational effects of undokai were not quantified using scale scores. Future research should develop and validate a psychometrically sound scale to assess perceived educational outcomes of undokai and, based on such measurement, examine determinants of these outcomes using broader samples and additional educational variables.

These findings support the appropriateness of the current curriculum and provide practical implications for designing and implementing undokai in Japanese schools to enhance students' learning and development.

References

- Adler, A. (1932). What Life should mean to you. Chapter 3 Feelings of Inferiority and Superiority, In Porter A. (Eds.), *Martino Publishing*, 49-70. [[WebLink](#)]
- Aiba, K. (2020). Taiikusai no dance ni okeru iseiai no kouchiku [Dance Performances of Cheering Squads and the Construction of Heterosexuality], *Journal of Sport and Gender Studies*, 18, 6-19. [[DOI](#)]
- Akiyama, T. (2020). Undokai and Sports Events in the Japanese School System. *Pediatrics International*, 62, 1230-1233. [[DOI](#)] [[PubMed](#)]
- Carlson, T.B. (1995). We Hate Gym: Student Alienation from Physical Education. *Journal of Teaching Physical Education*, 14(4), 467-477. [[DOI](#)]
- Couturier, L.E., Chepko, S., Coughlin, M.A. (2005). Student Voices-What Middle and High School Students have to say about Physical Education. *Physical Educator*, 62(4), 170. [[WebLink](#)]
- Griffin, P.S. (1981) One Small Step for Person kind: Observations and suggestions for Sex Equity in Coeducational Physical Education Classes. *Journal of Teaching in Physical Education*, 1(1), 12-17. [[DOI](#)]
- Hasegawa, Y. (2009). Difference of Educational Significance of School Events by Social Stratification -Case of School Sports Day. *Bulletin of Hijiya University*, 16, 135-144. [[DOI](#)]
- Haslett, J.G. (1990). The uniqueness of "undokai" in Japan: bringing the community/family together through dance and sport-like activities. *Bulletin of Chukyo University Research Institute of Health and Sport Sciences*, 4, 57-65.
- Higuchi, K. (2016). A Two-Step Approach to Quantitative Content Analysis: KH Coder Tutorial Using Anne of Green Gables (Part I). *Ritsumeikan Social Sciences Review*, 52(3), 77-91. [[PDF](#)]
- Higuchi, K. (2017). A Two-Step Approach to Quantitative Content Analysis: KH Coder Tutorial Using Anne of Green Gables (Part II). *Ritsumeikan Social Sciences Review*, 53(1), 137-147. [[PDF](#)]
- Ishikawa, A., Yamaguchi, T., Matsuzaki, K. (2013). A Study on School Adjustment and how to Improve It: Changes in School Adjustment due to Sports Festivals. *Atomi Gakuen Women's University, Bulletin of the Department of Clinical Psychology*, 1, 69-83. [[WebLink](#)]
- Katsuki, Y., Kishimoto, A. (2005). A Case Study of a Junior High School Athletic Festival: From the Viewpoint of Gender Equality Program. *Research Reports of Environment and Humanity University of Hyogo*, 7, 157-163. [[WebLink](#)]
- Kawamoto, A. (2014). The Developmental Significance of School Event Experiences in Junior and Senior High Schools: Focusing on Retrospective meaning-making among University Students. *J-Stage, Developmental Psychology Research*, 25(4), 453-465. [[DOI](#)]
- Kimura, K., Takahashi, H., Katsumata, K., Kawabata, A. (1995). A Study on the Development of School 'Undokai' in Japan. *Research journal of health and sport sciences, Chukyo University*, 36, 9-17. [[PDF](#)]
- Kishimoto A., Katsuki Y. (2005). Gender Bias in Junior High School Athletic Meet: A Study of Programs in H and S Cities in Hyogo Prefecture. *Journal of Sport and Gender Studies*, 3, 42-52. [[DOI](#)]
- Kubota A. (2021). Long-Term Effects of School Event Experiences in Junior High and High School on University Life - A Retrospective Study from the

- Perspective of Group Socialization Theory. *JASEA Journal*, 29, 31-40. [[DOI](#)]
- Kubota A. (2023). The Downsizing of Primary School Sports Events in COVID-19 Pandemic and Its Impact on Attitude toward Social Participation: A Retrospective Study of Parent- Child Pairs. *JASEA Journal*, 31, 49-58. [[DOI](#)]
- Landolfi, E. (2014) Teachers' Understanding of Students' Attitudes and values toward Physical Activity in Physical Education Dropout Rates and Adolescent Obesity. *The Physical Educator*, 71(3), 365-390. [[WebLink](#)]
- Mackieson P. Shlonsky A. (2018). Connolly M. Increasing Rigor and Reducing Bias in Qualitative Research: A Document Analysis of Parliamentary Debates using Applied Thematic Analysis. *Qualitative Social Work*, 18(6), 965-980. [[DOI](#)]
- Ministry of Education, Culture, Sports, Science and Technology Japan. (2017a). Shogakko gakushu shido yoryo [Course of Study for Elementary School]. [[PDF](#)]
- Ministry of Education, Culture, Sports, Science and Technology Japan. (2017b). Chuogakko gakushu shido yoryo [Course of Study for Junior High School]. [[PDF](#)]
- Ministry of Education, Culture, Sports, Science and Technology Japan. (2017c). Shogakko gakushu shido yoryo tokubetsu katsudo hen [Course of Study for Elementary School: Special Activities]. [[PDF](#)]
- Ministry of Education, Culture, Sports, Science and Technology Japan. (2017d). Shogakko gakushu shido yoryo taiiku hen [Course of Study for Elementary School: Physical Education], Monbukagakusho. [[PDF](#)]
- Ministry of Education, Culture, Sports, Science and Technology Japan. (2017e). Chugakko gakushu shido yoryo hoken taiiku hen [Course of Study for Junior High School: Physical Education]. [[PDF](#)]
- Nakagawa, Y. (2017). Chugakkou gyouji ni torikumu katei de syoujiru seito no henyou to chugakkou kyoushi ni yoru enjo –seito kan no kakawari, kurasu no yousu, tasonkanjou ni chakumoku site- [How Students Change Themselves and How the Teacher Supports Them during the Practice Process towards Sports Festival and Music Festival in a Junior High School; Focusing on students' Interaction, Class Atmosphere, and their Other-Esteem], *Japanese Journal of Clinical Educational Psychology*, 34(1), 27-40. [[DOI](#)]
- Nakayama, Maeda, S., Nakasuga, R., Takumi. (2022). The relationship between experience evaluation, basic psychological needs, and grit in sports festivals. *Journal of School Education Hyogo University of Teacher Education, School Education Research*, 35, 213-221. [[DOI](#)]
- Nishimura, K., Igarashi, T. (2024) Influence of school event experience in secondary education on daily life skills of college students: Focusing on college students' retrospective meaning. *Bulletin of educational research of Setsunan University*, 20, 1-16. [[WebLink](#)]
- Oikawa, T. (2018). Examining the Influences of Undokai Experiences have on the Development of Children's Theory of Mind in the Context of Japanese Early Childhood Settings. *Human Developmental Research*, 32, 13-26. [[PDF](#)]
- Oikawa, T., Kawata, M. (2015). Formation and Sharing of Norms during the Early Stage of a Kindergarten's Athletic Meet Practice. *Clinical Research on Child Development*, 7, 37-47. [[DOI](#)]
- Piaget, J. (1932). The moral judgement of the child. Harcourt, Brace. [[WebLink](#)]
- Sasaki, B., Suko, R. (2016) The Factorial Concept of Inferiority Complexes and their Relationship to Students' Personal Characteristics Regarding Physical Education. *Japan Journal of Physical Education, Health and Sport Sciences*, 61, 663-680. [[DOI](#)]
- Selman, R.L. (1980). The Growth of Interpersonal Understanding: Developmental and Clinical Analyses, Academic Press, New York. [[WebLink](#)]
- Shimojo, T., Hirose, H. (2005). A Study on the Development of the Normative Consciousness of Children (2): Changes in the Normative Consciousness before and after Athletic Meet. *Bulletin of Faculty of Education Center for Educational Research and Development*, 22, 117-138. [[WebLink](#)]
- Tahara, J., Serizawa, Y. (2005). Junior High School Physical Education from the Perspective of

Gender: Health and Physical Education Instructor Sex and School Athletic Meet (Sports Day) Events. *Journal of sport and gender studies*, 3, 18-25. [DOI]

Taruki, Y., Araragi, C. (2016). A Study on the Sense of Fulfillment in Junior High School Event Activities -Focusing on the Sports Festival and the Cultural Festival. *JASEA Journal*, 24, 31-39. [DOI]

Toyama T. Nakasuga T. Sugiyama Y. (2022). Assessment of the causal relationship between physical competence and avoidance attitudes in physical education. *Japan Journal of Physical Education, Health and Sport Sciences*, 67, 897-914. [DOI]

Yamahira Y. (2014). Coambodia ni okeru undokai no yuuyousei – Syougakkou wo taisyou tosite- [The utility of sports festivals in the Kingdom of Cambodia: A case study of public elementary schools]. *The International Budo University Journal*, 30, 83-92. [PDF]

Yamahira Y. (2017). Nihon shiki Undokai no kaigai yushutsu, *Taiikuka Kyoiku*, 65(6), 52-55.

Yokoyama R. Furuta M. (2012). An examination of the effects of athletic meets on junior high school students' self-efficacy and school adjustment: Focusing on differences in self-affirmation. *Academic Journals (non-AUE-publications)*, Tokai *journal of school health* 36(1), 71-80. [WebLink]

Acknowledgments

The authors would like to thank the experts and junior high school students and elementary school children who were involved in this study.

Author Contribution Statement

Hideaki Tanimoto: Conceptualization, Methodology, Data collection, Formal analysis, validation, Writing original manuscript. Daisuke Kakoi: Methodology, Data collection, Formal analysis, validation, Writing original manuscript. Mitsuhiro Matsuda: Data collection, Formal analysis, validation, Writing Review and Editing. All the authors read and approved the final version of the manuscript.

Ethics Approval Statement

Ethical approval for this study was obtained from the institutional ethics review committee of Osaka Sangyo University.

Does this article pass screening for similarity?

Yes

Informed Consent

Guardians received an information sheet and could opt out. Students provided assent by completing the questionnaire. Participation was voluntary, and students could withdraw at any time without penalty.

Funding Source

This study received no external funding.

About the License

© The Author(s) 2026. The text of this article is open access and licensed under a Creative Commons Attribution 4.0 International License.