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REVIEW ARTICLE

A fundamental research on issues of baseball-type physical education classes in Japan: Through a review of practice-based research

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ABSTRACT

The purpose of this study was to identify the challenges associated with baseball-type activities in physical education classes through a review of research on instructional practices. To this end, 26 previous studies were selected for analysis, and descriptions related to instructional challenges were extracted. A category analysis was then conducted on the extracted descriptions. The procedure for the category analysis was as follows. First, the extracted descriptions were coded based on their content. Next, focusing on the similarities among the codes, subcategories were generated to encompass multiple related codes. In a similar manner, higher-order categories were created to group the subcategories. Following this, the proportions of each category were calculated, and the challenges of baseball-type instruction in physical education were examined accordingly. As a result, the challenges that emerge in the implementation of baseball-type lessons in physical education were found to fall into five categories: [Skill Development], [Deepening of Learning], [Lesson Design], [Learner Support], and [Improvement of Teaching Methods].

Keywords: Lesson improvement, Ball sports, Softball, Health, Physical education, Sport activities.

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INTRODUCTION

Ball games in Japanese physical education are generally categorized into three types: goal-type, net-type, and baseball-type games (MEXT, 2018, 2019). According to the national curriculum guidelines, goal-type games include basketball, handball, and soccer, with rugby added at the high school level. Net-type games include volleyball, table tennis, tennis, and badminton. In contrast, only softball is specified as a baseball-type game, making this category unique in that it contains significantly fewer sports options compared to the other two types. Furthermore, previous studies have pointed out that baseball-type games face limitations in terms of equipment and available space, which can restrict the range of activities that can be implemented (Ota et al., 2022). Omuro et al. (2021) also noted that large skill gaps between experienced and inexperienced students make it particularly difficult to teach baseball-type games in physical education classes. These observations suggest that baseball-type games are more challenging to teach and learn than other sports categories and thus improving students' skills in this area requires more effective instructional strategies.

Against this backdrop, there has been a growing body of research focused on improving baseball-type instruction and developing effective teaching materials. For example, Nagai et al. (2021) examined the effects of a lesson that combined the traditional Japanese game "*Rokumushi*"—a tag-like game involving movement between two distant circles while avoiding a thrown ball—with a baseball-type activity for elementary school students. The results suggested that integrating traditional games into baseball-type lessons may contribute to improving students' batting skills. Similarly, Kiyota et al. (2019) investigated the effectiveness of a baseball-type instruction program focused on batting skills and defensive role-play for junior high school students. Their findings revealed that using rubber-tethered toss batting drills during small-sided games significantly improved students' batting skills. Additionally, Yamada and Tsuji (2019) reported that a throwing skill improvement program for elementary school students led to increased interest and affection toward baseball-type games, indicating the program's potential value.

Although such practice-based studies are steadily accumulating, few studies have attempted to comprehensively review and integrate these findings. According to Tanaka and Ichikawa (2011), reviewing and synthesizing previous studies allows researchers to derive comprehensive and significant insights that transcend individual studies. Matsumoto et al. (2022) also emphasized that literature reviews can serve as valuable resources for health and physical education teachers seeking to improve instruction. Likewise, Fukuda et al. (2025) argued that reviewing past practical research provides useful implications for improving physical education classes. Based on these perspectives, conducting a comprehensive review of prior studies on baseball-type instructional practices holds significant value. Such a review can serve as a practical reference for teachers aiming to design more effective baseball-type physical education lessons.

Therefore, the present study aims to examine and organize the challenges of baseball-type games in Japanese physical education by reviewing relevant prior research. Furthermore, this study seeks to contribute to the improvement of baseball-type instruction by identifying key considerations for effective classroom implementation.

METHODS

Survey content

In this study, the focus is placed on issues related to baseball-type activities in physical education classes. Shiraishi et al. (2021), when examining issues in "*body-building exercises*," extracted challenges from three perspectives: (1) learners, (2) instructional materials (content), and (3) teachers. Therefore, in this study as

well, prior research on baseball-type instructional practices was reviewed to extract issues related to at least one of the following perspectives: "*learners*," "*instructional materials (content)*," or "*teachers*." However, it should be noted that these three perspectives are merely used as a lens for identifying issues and are not adopted as analytical frameworks or categorical themes.

Research methods and analytical procedures

To collect previous studies on baseball-type physical education classes, a literature search was conducted using CiNii Articles, a comprehensive database of academic publications operated by the National Institute of Informatics. CiNii is recognized for its excellence in "*comprehensive searches of academic papers*" (Makino, 2020, p.77). Specifically, the keywords "*baseball-type, physical education*" and "*baseball-type, class*" were used, resulting in the extraction of a total of 129 studies (search date: April 16, 2025).

The screening process for the collected studies is illustrated in Figure 1. First, in the primary screening, the type of publication was reviewed, and symposium materials and conference abstracts were excluded. Next, in the secondary screening, the full texts were carefully examined, and studies not related to teaching practices of baseball-type games were removed. Then, in the tertiary screening, duplicate studies were excluded. As a result, 26 relevant studies were identified and included for analysis. All data collection was conducted solely by the author.

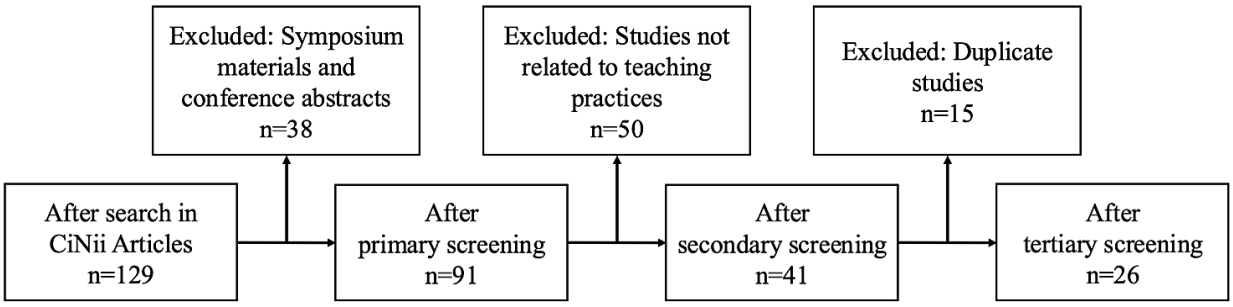

Figure 1. Screening process for selecting previous studies.

The 26 selected previous studies (Table 1) were thoroughly reviewed by the three researchers, each independently, to extract descriptions related to challenges in baseball-type activities from the perspectives of "*learners*," "*instructional materials (content)*," and "*teachers*." The extracted descriptions were then subjected to categorical analysis (Otani, 2019). According to Otani (2019), categorical analysis involves identifying and collecting numerous concepts from a large volume of data and analysing them as a whole. Given the extensive volume of descriptive data involved in examining challenges in baseball-type physical education classes, categorical analysis was deemed appropriate for achieving the objectives of this study.

The specific procedure of categorical analysis was as follows. First, the extracted descriptions were coded by interpreting their content and assigning corresponding codes. Next, subcategories were developed by grouping codes based on their similarities. Then, categories were generated by clustering related subcategories into higher-order themes. Afterward, the proportions of each category were calculated, and challenges in baseball-type physical education lessons were analysed accordingly. To ensure consistency and reliability in the coding process, a retest method (Tsuchiya, 2016) was applied, in which the coding was repeated one month later. In addition, to minimize the risk of data distortion due to researcher subjectivity, investigator triangulation (Flick, 1995, p. 282) was conducted by involving all three researchers in the analysis. Through these procedures, we strived to ensure the content validity of the analysis.

Table 1. List of previous studies analysed in this study.

No	Authors	Year	Article information
1	Furukawa	2013	Development of a baseball-type game unit from the perspectives of "*Developmentally Appropriate Representation*" and "*Exaggeration*". *Educational Practice Research*, 23, 187-192.
2	Inomata	2025	Designing physical education lessons that foster joy and enjoyment. *Report on Educational Practice*, 7, 1-20.
3	Ishii et al.	2009	Considerations on the construction of teaching materials for baseball-type games in elementary. *Educational Practice and Research: Bulletin of the Center for Educational Research and Practice, Faculty of Education: Shinshu University*, (10), 71-80.
4	Iura et al.	2009	Considerations on the development of teaching materials for ball games in elementary school physical education. *Educational Practice and Research: Bulletin of the Center for Educational Research and Practice, Faculty of Education: Shinshu University*, (10), 61-70.
5	Kakite et al.	2018	Empirical research intended to develop independence on baseball lesson of physical education: Focus on "*MANABIAI*" theory. *Journal of Junior High School Education*, 49, 47-52.
6	Kakoi and Mitsumoto	2012	Consideration of method for hitting the moving ball in elementary school physical education classes: Through a case of using "*Synchronized Style of Batting*" in the elementary school upper grades. *Memoirs of Osaka Kyoiku University, Ser.V School Subjects and Allied Problems*, 60(2), 23-30.
7	Kano and Inagaki	2018	Case study of qualitative changing in baseball game as team tag competition. *Bulletin of the Faculty of Education Mie University*, 69, 291-298.
8	Kiyota et al.	2019	Considerations on development and learning outcomes of instructional program intended to improve junior high school girls' game performance of baseball-type games in PE class: Focusing on batting skill and off-the-ball movement of defense in games. *Bulletin of Japan Women's College of Physical Education*, 49, 27-38.
9	Kurihara et al.	2021	A study on the situational judgment during offense in baseball-type games for 5th grades of elementary school. *Bulletin of Nippon Sport Science University*, 50, 2015-2024.
10	Matsumoto	2023	Practical report of softball lesson in high school physical education. *Bulletin of Senior High School at Otsuka University of Tsukuba*, 64, 135-146.
11	Miwa et al.	2017	Zur ausbildung und verbesserung der für baseball typischen spielfähigkeit bei schulkindern. *Journal of the Center for Collaboration and Development in Educational Practice and Management, University of Miyazaki*, (25), 105-117.
12	Mori	2016	A critical examination of striking/fielding type games in the cases of elementary physical education: Balance Ball Baseball as the counterproposal. *Bulletin of the Department of Health and Physical Education: Aichi University of Education*, (41), 1-6.
13	Nadamoto et al.	2017	The effect of learning process systematized by "*Stepping up Task Game*" extracted from tactics of baseball. *The Bulletin of Japanese Curriculum Research and Development*, 39(4), 71-82.
14	Nagai et al.	2021	The effect of physical education class combining traditional play and baseball game on throwing, catching and hitting abilities for fourth graders. *Bullentin of the Colledge of Education Ibaraki University: Educational Sciences*, (70), 111-119.
15	Nakagaki and Okade	2009	Making standard on defensive game performance in baseball type game for junior high school as the case study. *Japanese Journal of Sport Education Studies*, 29(1), 29-39.
16	Nakagawa	2006	A study on unit structure for baseball-type games. *Educational Practice Research*, 16, 119-124.
17	Otsu	2024	Baseball-type practical research in junior high school physical education classes. *Bulletin of the Faculty of Education, Ibaraki University: Educational Science*, (73), 151-169.
18	Saito et al.	2019	Teaching material of every activity in physical education. *Bulletin of the Center for Educational Research and Practice*, (48), 81-88.
19	Sasaki	2015	Aiming for physical education that fosters both enjoyment and skill: A practice of "*baseball-type games*" in the fourth grade. *Bulletin of Koganei Elementary School attached to Tokyo Gakugei University*, 37, 149-152.
20	Seki	2025	A study of physical education lessons that promote growth through peer teaching: Focusing on teacher feedback to athletically skilled students. *Practical Research Report of the Professional School for Teacher Education, Graduate School of Education, Shinshu University*, 21-24.
21	Suzuki	2020	A case study of team tactics in baseball-type games: From a fifth-grade lesson on the "*Hankachi-Otoshi*" game. *Journal of Teaching Material Studies*, 31, 75-82.

22	Takizawa and Kondo	2018	Research on the performance of field players in baseball-type games for 3rd and 4th grade elementary school students: Focus on two main types of games. *NSSU Journal of Sport Sciences*, 7, 1-22.
23	Takizawa et al.	2018	Research on overhand throwing and batting ability in striking and fielding game classes for 3rd grade elementary school students. *Japanese Journal of Sport Education Studies*, 36(1), 17-34.
24	Uchikawa and Tsutsumi	2021	The learning process which makes students get involved better: practical study of ball game junior high school "*Goal Group*" "*Net Group*" "*Baseball Group*". *Educational Practicum Research of Saga University*, (39), 17-28.
25	Yamada and Tsuji	2019	A study of effects of learning of throwing exercise in fourth grade on the learning of baseball-type games in fifth grade. *The Bulletin of Japanese Curriculum Research and Development*, 42(3), 25-39.
26	Yamamoto	2019	Instructional strategies for enhancing game understanding through decision-making in play: A teaching practice of baseball-type games focusing on defensive situations in physical and health education. *Educational Practice Research*, 29, 133-138.

RESULTS

Categories generated as a result of the categorical analysis of the free-text descriptions are indicated by [ ], subcategories are indicated by { }, and codes are indicated by < >. The total number of codes generated was 55 (Table 2). These codes were classified into the following categories: [Skill development] (25.5%), [Deepening of learning] (25.5%), [Lesson design] (21.8%), [Learner support] (18.2%), and [Improvement of teaching methods] (0.1%).

Table 2. Results of category analysis (Number of codes).

[categories]	{subcategories}	<codes>	Example description
Skill Development (14)	Improvement of fielding Skills (6)	Improving fielding-related skills (2)	Improve the defensive skills of fielders.
		Attention to each pitch in defense (1)	Emphasize movements for each pitch in defense.
		Increase practice to expand range (1)	Add practice to expand the range of fielding.
		Reduction of stationary fielders (1)	Reduce learners who remain stationary while fielding.
		Enhancement of catching skills (1)	Emphasize catching as part of fielding skills.
	Mastery of basic movements (5)	Teaching weight transfer methods (2)	Teach how to shift body weight.
		Connection from batting to running (1)	Connect batting with immediate base running.
		Batting using equipment (1)	Bat using appropriate equipment.
		Batting against thrown balls (1)	Hit balls that are thrown.
	Development of tactical judgment (3)	Fostering complex situational judgment (2)	Foster ability to judge complex game situations.
		Easing judgment difficulty (1)	Alleviate the difficulty of making judgments.
Deepening of learning (14)	Examination of analysis methods (8)	Individual analysis of learners (2)	Conduct individual analysis for each student.
		Analysis of knowledge and skills (2)	Analyze changes in knowledge and skills.
		Conducting objective analysis (1)	Perform objective analysis.
		Analysis of teacher's influence (1)	Analyze the teacher's influence.
		Study of tactical knowledge changes (1)	Examine changes in tactical knowledge.
		Gender-based analysis (1)	Conduct analysis by gender.
	Accumulation and	Expansion of sample size (2)	Increase the sample size.

	expansion of research (6)	Accumulation of case examples (2)	Accumulate more case examples.
		Accumulation of evidence (1)	Collect supporting evidence.
		Accumulation of research on judgment (1)	Accumulate studies related to situational judgment.
Lesson Design (12)	Lesson structure and unit planning (7)	Securing unit hours (2)	Secure enough instructional hours.
		Dealing with rainy weather (1)	Consider alternatives for rainy days.
		Unit planning with sequence awareness (1)	Plan units with progression in mind.
		Lesson planning for high school level (1)	Design lessons suitable for high school.
		Incorporating lectures (1)	Include lecture-style teaching.
		Clarifying objectives for each lesson (1)	Clarify objectives for each class.
	Rules and game design (3)	Designing games and rules (1)	Design game formats and rules.
		Rule modifications across unit (1)	Modify rules throughout the unit.
		Game close to official rules (1)	Plan a game close to real softball matches.
	Review of teaching environment (2)	Reducing transition time (1)	Reduce the time needed for transitions.
		Instructions in large spaces (1)	Improve methods for giving instructions in wide spaces.
Learner Support (10)	Ensuring physical activity opportunities (4)	Securing number of at-bats (2)	Ensure sufficient at-bat opportunities.
		Increasing physical activity (1)	Increase learners' physical activity during games.
		Increasing at-bats and fielding chances (1)	Provide more batting and fielding opportunities.
	Consideration for all learners (4)	Designing joyful and enjoyable lessons (2)	Develop lessons that bring joy and fun to all learners.
		Ensuring autonomy of less-skilled learners (1)	Develop support for autonomy in students less skilled at sports.
		Lesson design based on developmental stage (1)	Plan lessons considering students' developmental levels.
	Creating a positive atmosphere (2)	Creating a question-friendly environment (1)	Foster an environment where students can ask questions freely.
		Feedback on successful experiences (1)	Share success experiences with the whole class.
Improvement of teaching methods (5)	Teaching methods and programs (4)	Enhancing batting practice (1)	Improve the quality of batting practice.
		Teaching correct form (1)	Teach proper batting form.
		Reinforcing repetitive practice (1)	Address insufficient repetitive practice.
		Developing effective teaching programs (1)	Develop more effective teaching programs.
	Considering how to utilize ICT (1)		Consider how to utilize ICT effectively in lessons.

DISCUSSION

Based on the results of the category analysis conducted in this study, the challenges observed in the implementation of baseball-type units in physical education classes were classified into five categories: [Skill development], [Deepening of learning], [Lesson design], [Learner support], and [Improvement of teaching methods]. The following section discusses the characteristics and educational implications of each category.

[Skill development] accounted for the largest number of codes (14), indicating that baseball-type games require both advanced individual skills (e.g., hitting, throwing, catching) and team tactics. Subcategories such as {Improvement of fielding skills}, {Mastery of basic movements}, and {Development of tactical judgment}

suggest that teachers are placing emphasis not only on the instruction of individual skills but also on the cultivation of decision-making abilities in game-like situations. This highlights the need to develop "*practical physical competence*," which encompasses not only motor skills but also the cognitive ability to respond appropriately to dynamic situations.

Meanwhile, [Deepening of learning] also accounted for 14 codes, reflecting the strong emphasis on balancing theoretical grounding with empirical validation in baseball-type instruction. Subcategories such as {Examination of analysis methods} and {Accumulation and expansion of research} were frequently cited, indicating a focus on collecting and analysing individual-level data and seeking evidence-based improvements in practice. This demonstrates teachers' commitment to viewing their instructional practice through a research-oriented lens, representing a noteworthy example of promoting reciprocal interaction between educational practice and research.

In the category of [Lesson design], elements such as unit planning, rule setting, and environmental arrangements were widely addressed. In terms of instructional structure, challenges such as <Securing unit hours> and planning with curricular coherence emerged, underscoring the need for sustained and systematic instruction. Additionally, issues such as <Dealing with rainy weather> and effective use of physical space were highlighted, pointing to the importance of lesson management skills that can adapt flexibly to the environmental constraints unique to health and physical education.

In the category of [Learner support], subcategories such as {Consideration for all learners} and {Ensuring physical activity opportunities} were prominent. This suggests that in baseball-type activities—where there is a wide variation in learners' experiences, skill levels, and interests—ensuring opportunities for participation for all learners is a critical issue. In particular, the emphasis on support for students who struggle with physical activity and the sharing of successful experiences to enhance self-efficacy reflects a learner-centred perspective on instruction.

Finally, the category of [Improvement of teaching methods] included suggestions for improving instructional content directly related to skill development, such as batting practice and form correction. References to the use of ICT were also found, indicating the potential for feedback and motion analysis supported by technology. This points to a shift toward a new vision of physical education that integrates technological tools alongside traditional teaching methods.

In summary, the implementation of baseball-type units in physical education reveals a range of multifaceted challenges that must be addressed in an interconnected manner. In particular, a balanced approach that simultaneously emphasizes skill instruction, lesson structure, learner support, and research-based validation is essential for building higher-quality physical education lessons.

CONCLUSION

The purpose of this study was to clarify the challenges associated with baseball-type activities in physical education classes through a review of instructional practice-based research. To this end, 26 previous studies were analysed, and descriptions related to challenges in instructional practice were extracted. Subsequently, a category analysis was conducted focusing on the similarities among these descriptions. The following three key findings were obtained:

1. Previous studies on baseball-type activities in physical education classes were predominantly conducted at the elementary school level, with relatively few targeting high school students.

2. The challenges that arise in the implementation of baseball-type units in physical education classes can be categorized into five groups: [Skill Development], [Deepening of Learning], [Lesson Design], [Learner Support], and [Improvement of Teaching Methods].
3. Among these categories, a particularly high number of descriptions pertained to [Skill Development] and [Deepening of Learning], indicating the importance of areas such as {Mastery of Basic Movements} and {Accumulation and Expansion of Research} as key issues to be addressed in the future.

While this study yielded the above findings, it also revealed several limitations. First, the analysis did not differentiate between school levels. Although 26 studies were included in the analysis, the majority of them focused on elementary school practice. As such, the challenges identified in this study may primarily reflect those encountered at the elementary level. To design a more systematic approach to baseball-type instruction, it would be beneficial to classify prior research according to school level. Second, the number of studies analysed was relatively limited. In this study, literature was collected primarily using CiNii Articles. However, other sources such as Google Scholar and institutional repositories (e.g., IRDB) are also available for literature collection. To gain a more comprehensive understanding of the challenges surrounding baseball-type instruction in physical education, future research should consider utilizing a broader range of sources. These points remain issues for future investigation.

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No potential conflict of interest was reported by the author.

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