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Effect of Playing Pickleball on the Physical Performance of Physical Activity Towards Health and Fitness Students

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ABSTRACT

Pickleball, a rapidly growing sport, offers promising benefits for improving student fitness. This study investigated the effect of playing pickleball on the physical performance of Physical Activity Towards Health and Fitness 4 students at Bohol Island State University during the second semester of AY 2024–2025. A quantitative design with purposive sampling was employed, involving 37 students. Data were collected through a validated survey and analyzed using descriptive statistics, t-tests, and Pearson's correlation. Results revealed that students held generally positive perceptions of pickleball, particularly regarding its role in fitness and social interaction. Pre-test findings indicated low baseline proficiency across skills, while post-test results showed significant improvement, especially in serving. A significant difference in performance between the two groups was observed, suggesting the influence of training and experience. However, no significant correlation was found between perception and performance. These findings highlight the importance of structured training and differentiated instruction in enhancing student skills and physical education outcomes.

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1. INTRODUCTION

Pickleball, a versatile and rapidly growing sport that blends elements of tennis, badminton, and ping pong, has gained widespread popularity due to its accessibility, low-impact nature, and numerous health benefits. With its simple rules and moderate intensity, pickleball appeals to individuals across all age groups and fitness levels, offering an enjoyable yet effective means of improving overall physical fitness. Research consistently supports that pickleball serves as an excellent cardiovascular exercise, promoting enhanced heart and lung function. Regular participation has been linked to improved cholesterol levels and reduced blood pressure, which collectively contribute to better cardiovascular health (Calixtro, 2024a). Beyond cardiovascular benefits, pickleball engages multiple muscle groups, with particular emphasis on the legs, arms, and core. This engagement leads to enhanced muscular strength, endurance, and flexibility. Furthermore, the fast-paced nature of the game improves balance, coordination, and agility, which can significantly decrease the likelihood of falls and other injuries particularly important in older adults.

In educational environments, the integration of pickleball into physical education curricula has shown encouraging results, suggesting the sport's potential to improve student fitness and well-being. A quasi-experimental study evaluating the Physical Activity Towards Health and Fitness (PATHFit) program observed significant improvements in cardiorespiratory endurance and muscular fitness among college students after participating in a 12-week pickleball intervention. However, the study also reported small to moderate effect sizes, indicating that the results might not be as robust as expected, and suggesting the need for more specialized physical activity programs or sport-specific training to maximize effectiveness (Dimarucot *et al*., 2024). Despite these positive findings, there remains a lack of research specifically focused on the impact of pickleball on students' physical performance within the PATHFit 4 framework. Most existing studies have assessed overall fitness improvements through generalized activity programs, but few have isolated the specific effects of pickleball, making it difficult to draw precise conclusions about the sport's role in improving physical performance.

Furthermore, while short-term physical improvements through pickleball are well-documented, research on the long-term maintenance of these gains is scarce. Sustaining improvements in fitness over time is a critical factor in ensuring the lasting health benefits of any physical activity. In addition to its physical advantages, pickleball also has significant potential to foster improvements in cognitive function, emotional health, and social interaction, which are increasingly recognized as integral to the development of a well-rounded, holistic student experience. These cognitive and emotional benefits, including stress relief, mood enhancement, and increased social connectedness, are especially important in the context of modern education, where students face increasing pressures and mental health challenges.

In light of these considerations, addressing the gaps in current research is crucial for the development of evidence-based approaches to physical education. A more focused study on the effects of pickleball in the PATHFit 4 program could provide valuable insights into the specific impact of the sport on students' physical performance, mental well-being, and social dynamics. Such research could lead to tailored recommendations for improving student outcomes in both physical and psychosocial domains. Moreover, exploring the potential of pickleball to foster inclusivity and engagement in physical education programs could open new pathways for promoting lifelong physical activity among diverse student populations. As the sport continues to grow in popularity, understanding its full range of benefits and

applications will be essential for shaping effective, evidence-driven physical education practices.

2. METHODS

Emerging as a widely played activity, pickleball shows potential in supporting students' physical well-being. This study employed a quantitative research design to determine the relationship between playing pickleball and the physical performance of PATHFit 4 students during the second semester of the academic year 2024–2025 at Bohol Island State University – Main Campus, Tagbilaran City, Bohol, Philippines. The primary aim was to correlate the effect of pickleball participation with selected indicators of physical performance. The respondents of the study were selected through purposive sampling, consisting of 37 PATHFit 4 students who actively participated in pickleball sessions as part of their PATHFit curriculum (Etikan *et al*., 2016). Data were gathered using an adapted survey questionnaire, which measured dimensions of physical performance. The questionnaire was modified and validated based on existing tools used in similar PE and sports performance studies. After data collection, the results were statistically analyzed using descriptive statistics, specifically the mean and standard deviation (SD), to summarize the perception and level of physical performance among the students. To assess the differences between the physical performance pretest and post-test groups, the independent samples t-test was employed. To examine the relationship between perception of playing pickleball and students' physical performance levels, Pearson's product-moment correlation coefficient was used.

Furthermore, before conducting the research, ethical clearance was obtained. Participants were fully informed of the purpose and scope of the study, and their participation was entirely voluntary. Informed consent was obtained from all respondents. Anonymity and confidentiality were maintained throughout the research process, and the data collected were used solely for academic purposes.

3. RESULTS AND DISCUSSION

Table 1 presents that students generally held positive perceptions of pickleball, as reflected in the mean scores across most indicators. Specifically, statements such as "Thinking pickleball is a good form of exercise" with the mean score of 4.35 and "Believing playing pickleball can help improve my overall fitness" with the mean score of 4.60 received higher scores, indicating a strong belief in the sport's physical benefits. Other items, like "Having a good understanding of the rules of pickleball" and "Motivated to participate in pickleball activities," both with a mean score of 3.78, reflected a positive, though moderately strong, perception of the rules and personal motivation. However, the statement "Interested in learning more about pickleball," with the lowest mean score of 3.30, indicated a more neutral perception regarding further learning. The overall mean score of 3.80 suggested that, overall, students viewed pickleball positively.

These positive perceptions implied that students were likely to engage in and enjoy the sport, particularly because of its fitness benefits and social aspects (Green & Senger, 2021). Given the strong agreement with statements highlighting pickleball's health benefits, educators and recreational coordinators might consider emphasizing these aspects in their programs (Williams & Patterson, 2020). Additionally, the relatively neutral interest in learning more about pickleball suggests a potential area for development. Encouraging students to expand their understanding of the sport through structured learning opportunities or in-depth instruction could enhance both interest and participation (Johnson & Smith, 2018).

Finally, the findings also indicated that students felt comfortable participating and socializing during pickleball activities, making it a favorable option for group settings (Jones & Richards, 2019). Therefore, enhancing educational or recreational pickleball programs with a focus on strategy, technique, and enjoyment may further increase student engagement.

Table 1. Perceptions in Playing Pickleball among PATHFit 4 students.

Indicators	Mean	SD	Description
1. Feeling confident in my ability to play pickleball.	3.57	0.50	Positive Perception
2. Having a good understanding of the rules of pickleball.	3.78	1.49	Positive Perception
3. Believing pickleball is a fun and engaging sport.	3.60	0.50	Positive Perception
4. Motivated to participate in pickleball activities.	3.78	1.49	Positive Perception
5. Thinking pickleball is a good form of exercise.	4.35	1.36	Strongly Positive Perception
6. Feeling comfortable participating in pickleball with others.	3.41	0.50	Positive Perception
7. Understanding the basic strategies and techniques of pickleball.	4.00	0.00	Positive Perception
8. Believing that playing pickleball can help improve my overall fitness.	4.60	0.50	Strongly Positive Perception
9. Enjoying the social aspects of playing pickleball.	3.60	0.50	Positive Perception
10. Interested in learning more about pickleball.	3.30	0.74	Nuetral Perception
Total Mean	**3.80**	**0.76**	**Positive Perception**

Table 2 presents the pre-test results, showing that the respondents demonstrated overall low proficiency in all the tested pickleball skills. The total mean score of 2.29 fell within the "Very Poor" category, indicating that most participants lacked the basic techniques and consistency needed for effective play. This highlights a substantial need for skill development before these individuals can perform at an acceptable or competitive level.

Analyzing the specific indicators, Serving had the highest mean score of 2.57. Although still categorized as "Poor," it was the strongest skill among the group, suggesting that some participants had a basic understanding of serving. However, overall performance still required improvement. In contrast, Forehand Stroke with a mean score of 2.24 and Backhand Stroke with a mean score of 2.27 both fell into the "Very Poor" range, indicating deficiencies in stroke technique and issues with control and accuracy during rallies. Similarly, Dink and Volley, both with mean scores of 2.19, were also rated "Very Poor," with the dink (a soft, controlled shot near the net) emerging as a particular area of weakness. High standard deviations, especially for volleying, suggested notable variability in skill levels across participants, showing that while some students showed potential, others required more intensive training.

The findings underscore the importance of a structured training program focused on developing fundamental pickleball skills through consistent practice. They also highlight the need for differentiated instruction to address varying skill levels. Ignoring these differences could hinder both performance and enjoyment. Consequently, differentiated instruction has proven effective in physical education by tailoring content, processes, and learning environments to meet diverse student needs. Some researchers (Colquitt *et al*., 2017) emphasized the value of personalizing instruction to align with students' readiness, interests, and learning profiles, thereby promoting greater engagement and achievement. Differentiated strategies in sports education enhanced motivation and led to improved academic outcomes (Amran *et al*., 2024). Furthermore, other researchers supported the integration of the Teaching Games for Understanding (TGfU) model with DI to create more adaptive and inclusive physical education settings. Differentiated instruction improved

student engagement in dance activities, reinforcing its effectiveness in promoting active participation. Collectively, these studies affirm that DI is a vital pedagogical approach in physical education, fostering motivation, engagement, and overall learning success.

Table 2. Level of Physical Performance in Playing Pickleball on Pre-test.

	Pre-test		
Indicators	**Mean**	**SD**	**Description**
Serving	2.57	1.09	Poor
Forehand Stroke	2.24	0.98	Very Poor
Backhand Stroke	2.27	1.07	Very Poor
Dink	2.19	1.13	Very Poor
Volley	2.19	1.27	Very Poor
Total Mean	**2.29**	**1.11**	**Very Poor**

Table 3 shows the post-test results for various skills in pickleball, including the mean and standard deviation for each skill. The data indicated that all skills received high scores, ranging from Good to Very Good, in terms of physical performance. The total mean of 8.70 was interpreted as Very Good. This suggested that participants developed proficiency in these key skills, with serving showing the highest mean score of 9.00. The forehand stroke, while still strong with a mean of 8.32, was slightly lower compared to the other skills.

The relatively small standard deviations across all skills indicate consistent results among participants, showing minimal variation in performance. These findings imply that participants successfully learned and demonstrated the necessary skills in the sport. The high mean scores suggested that the training or intervention was effective in improving skill performance (Anderson & Davis, 2020; Nacionales & Calixtro, 2024). Participants also appeared to have reached a level of competence where they could perform the skills efficiently (Baker & Lee, 2018).

The consistency in scores, reflected by low standard deviations, points to uniform improvement across the group (Clark & Franklin, 2019). Practically, this suggests that systematic skill development contributes to a high level of mastery in specific techniques (Young & Kim, 2021). The slight variation in forehand stroke performance compared to other skills may also highlight an area for further targeted training (Baker & Lee, 2018).

The results indicated a significant difference in the mean scores between the two groups of students in terms of their physical performance in playing pickleball, with a t-value of -44.037 and a degree of freedom (df) of 8. The p-value was reported as less than 0.001, which was below the commonly used significance threshold of 0.05, suggesting that the difference between the two groups was statistically significant. This means that the performance in pickleball between the two groups of students differs to a degree that was unlikely to have occurred by chance.

The significant difference in the mean scores suggested that factors such as training, experience, or other interventions may be influencing the physical performance of students in pickleball (Bartholomew & Jowers, 2019). This outcome could prompt further investigation into the variables that contribute to such differences (Green & Senger, 2021). For educators or coaches, this finding could encourage a closer look at the specific physical attributes or skills that impact performance in the sport, leading to more targeted training programs (Johnson & Smith, 2018). Moreover, understanding these differences may also guide recommendations for improvements in physical education curricula or extracurricular sports activities (Williams & Patterson, 2020). For example, if one group shows significantly better

performance, it may indicate a need for more support or practice opportunities for the other group.

Table 3. Level of Physical Performance in Playing Pickleball on Post-test.

	Post-test		
	Mean	**SD**	**Description**
Serving	9.00	0.71	Very Good
Forehand Stroke	8.32	0.58	Good
Backhand Stroke	8.95	0.71	Very Good
Dink	8.70	0.78	Very Good
Volley	8.54	0.56	Very Good
Total Mean	**8.70**	**0.67**	**Very Good**

Table 4 presents the perception of playing pickleball and physical performance. The correlation coefficient (r = -0.101) suggested a weak negative relationship between the two variables. However, this relationship was not statistically significant, as indicated by the p-value (p = 0.554), which exceeded the commonly accepted alpha level of 0.05. This implied that individuals' perceptions of playing pickleball were not meaningfully associated with their actual physical performance levels. In other words, whether someone perceived pickleball positively or negatively did not significantly predict how well they performed physically in the sport.

Table 4. Significant Relationship Between Perceptions of Playing Pickleball and Physical Performance.

Pearson's Correlations			
Variable		**Perception**	**Physical Performance**
1. Perception in Playing Pickleball	Pearson's r	—	
	p-value	—	
2. Physical Performance	Pearson's r	-0.101	—
	p-value	0.554	—

These findings reflected a broader trend in sports psychology research, where subjective experiences or motivations did not always align with physical outcomes. Self-perceptions of fitness and motivation often did not correlate strongly with objective physical performance in recreational athletes, highlighting the complex nature of psychological and physiological interactions in sports (Liu *et al*., 2021). Although enjoyment and perception of physical activity could enhance long-term participation, they did not always directly affect performance metrics (O'Brien *et al*., 2020). The weak and non-significant correlation in this study aligned with these findings and suggested that interventions aimed at improving performance in pickleball should have focused more on physical training rather than altering player perceptions.

Furthermore, the lack of significant correlation could also have been influenced by demographic or contextual factors such as age, skill level, or frequency of play (Chao *et al*., 2019), who argued that contextual factors could mediate the relationship between psychological variables and physical performance. Additionally, in less competitive or more social sports settings, such as recreational pickleball, perceptions are related more to enjoyment and social connectedness than to performance outcomes (Ford *et al*., 2018). This implied that promoting positive perceptions might still have been valuable, but primarily for

increasing participation and well-being rather than for enhancing performance (Calixtro, 2024b).

4. CONCLUSION

Students demonstrated positive perceptions of pickleball, mainly regarding its fitness benefits and social aspects, although their interest in deeper learning was limited. Pre-test results revealed low skill proficiency, but post-test outcomes indicated significant improvements across all measured skills, particularly serving. A notable performance difference between student groups highlighted the potential impact of training, prior experience, or instructional methods. Overall, the study emphasizes that structured training and differentiated instruction are essential to enhance performance and maximize the benefits of pickleball in the Physical Activity Towards Health and Fitness program.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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