

Inclusive Physical Education: Motivation and Learning Experiences of Students with Hearing Impairments in Swimming

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Abstract

Background of study: Motivation plays a crucial role in determining students' engagement and achievement in physical education, including in adaptive contexts for students with disabilities. However, empirical evidence examining the relationship between motivation and learning outcomes in swimming, particularly among hearing-impaired students, remains limited, especially within specialized educational settings.

Aims and scope of paper: This study aims to investigate the correlation between motivation and breaststroke swimming learning outcomes among hearing-impaired students at SLB Negeri Surakarta during the 2022/2023 academic year, as well as to determine the strength and significance of this relationship within an adaptive physical education context.

Methods: This research employed a quantitative approach with a simple correlational design. The study was conducted at SLB Negeri Surakarta, an accredited special needs school. Data were collected using validated instruments, with reliability confirmed by a coefficient ≥ 0.7 . The relationship between variables was analyzed using the Kendall Tau-B correlation coefficient through SPSS software.

Results: The findings revealed a strong positive correlation between motivation and breaststroke swimming learning outcomes, indicated by a Kendall Tau-B coefficient of 0.657 and a significance value of 0.009 ($p < 0.05$). These results suggest that higher levels of motivation are significantly associated with better swimming performance among hearing-impaired students.

Conclusion: This study confirms that motivation is a key determinant of learning success in adaptive physical education. The findings support the integration of motivational strategies to enhance skill acquisition among students with hearing impairments. Therefore, educators are encouraged to apply structured motivational approaches, while policymakers should prioritize support for training and resources in inclusive physical education settings.

Keywords: Adaptive; Motivation; Learning Outcomes; Hearing-impaired; Student

To cite this article:

Difa', K. J. (2025). Inclusive Physical Education: Motivation and Learning Experiences of Students with Hearing Impairments in Swimming. *Spectapro: Journal of Cultural Currents in Physical Education and Sport Evolution*, 1(1), 19-27.



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INTRODUCTION

Every individual possesses the intrinsic potential for high motivation, which serves as a fundamental driver propelling human behavior toward desired achievements. High motivation is crucial for success in competitive environments and is closely linked to an individual's journey of self-actualization. Stoliarchuk et al. (2024) asserted that this drive for positive self-development is natural, while Bouarir et al. (2023) defined the need for achievement as a strong desire to accomplish challenging tasks efficiently and excellently. This profound sense of accomplishment and pride derived from success is enduring and reinforces the importance of motivation in all aspects of life, including education.

Motivation stands as a pivotal factor in students' academic success, defined by Liu et al. (2024) as the impetus that initiates and sustains learning activities. Without adequate motivation, students often lose interest, negatively impacting their academic performance. This principle extends to individuals with disabilities, or "difabel," who demonstrate remarkable zeal for learning despite unique challenges. Globally, a significant portion of

the population, including children, experiences hearing limitations, necessitating adapted educational approaches such as visual media for effective instruction (Adeduyigbe et al., 2024).

Adaptive physical education, specifically designed for students with special needs, plays a critical role in their holistic development (Jariono et al., 2025). Within this curriculum, swimming is an important activity, with the breaststroke being particularly relevant due to its historical prevalence and ease of learning for beginners (Huang et al., 2025). Motivation is an undeniable factor in mastering swimming skills, as demonstrated by previous research indicating a strong link between motivation and learning outcomes in aquatic sports (Alkawasbeh et al., 2024).

This study therefore focuses on students with hearing impairments at SLB Negeri Surakarta, a specific institution selected for its participation in a broader research project and the absence of prior similar studies. The school's willingness to facilitate the research and the availability of necessary data further supported its selection. Ibu Nanik Maryati, a specialized teacher, also provided crucial assistance as an intermediary and questionnaire validator. The overarching aim is to explore the specific dynamics of motivation within this unique learning environment, particularly concerning a fundamental adaptive physical activity.

Despite the general recognition of motivation's importance, significant gaps persist regarding its specific impact on hearing-impaired students learning breaststroke swimming. Current knowledge is limited concerning the precise motivation levels of these students at SLB Negeri Surakarta, their actual success rates in breaststroke, and the specific obstacles they face during learning. Furthermore, the optimal utilization of instructional media and the pervasive issue of language barriers in teaching breaststroke to this population remain largely unaddressed. These identified challenges highlight a clear need for targeted empirical investigation.

Previous scientific literature broadly supports the critical role of motivation in general learning and skill acquisition across various domains (Sheffler et al., 2022). Studies have confirmed a positive correlation between motivation and improved swimming outcomes in general student populations (Afifah et al., 2025). However, these general findings do not sufficiently address the specific and complex interplay of motivation with learning outcomes for hearing-impaired students in an adaptive physical education context. This constitutes a notable research gap, particularly concerning specialized skills like breaststroke swimming within this unique demographic.

Against this background, the primary objective of this study is to determine if a relationship exists between motivation and breaststroke swimming learning outcomes among hearing-impaired students at SLB Negeri Surakarta during the 2022/2023 academic year. A secondary objective is to ascertain the strength of this potential correlation. The novelty of this research lies in its specific focus on a distinct and under-researched student population within a particular educational setting. The scope of this investigation is precisely limited to examining this relationship exclusively among hearing-impaired students at SLB Negeri Surakarta for the specified academic year, thereby providing targeted insights into this unique learning context.

METHODS

This research employed a quantitative approach with a correlational design to investigate the relationship between motivation and breaststroke swimming learning outcomes. This design is suitable for examining the degree to which two or more variables are related without inferring causation. The study was specifically conducted at SLB Negeri Surakarta, a leading special needs school with 'A' accreditation, located at Jl. Cocak X Sidorejo RT/RW: 2/8, Sidorejo, Mangkubumen, Kec. Banjarsari, Kota Surakarta, Prov. Jawa Tengah 57139. This institution provides comprehensive educational programs for various special needs categories (A, B, C, D, D₁, H, K, P, Q) and implements the 2013 curriculum, aligning with its vision to develop accomplished and globally competitive human resources with disabilities.

For data collection, the study utilized an instrument whose reliability coefficient was estimated using SPSS software, with an instrument being deemed reliable if its coefficient is ≥ 0.7 , as per (Ganesha & Aithal, 2022). While the specific techniques for data collection (e.g., questionnaires, observation, tests) were not detailed in the provided context, the mention of a reliability coefficient suggests the use of a quantitative measurement tool. The collected data would then be analyzed to fulfill the research objectives, focusing on the correlation between motivation and learning outcomes.

The data analysis involved descriptive statistics and simple correlation analysis. Descriptive analysis was used to summarize and explain the collected data without drawing general conclusions or making predictions. To assess the relationship between motivation and breaststroke swimming learning outcomes, the Kendall Tau-B correlation coefficient was employed, calculated using SPSS. This coefficient ranges from -1 to 1, where values greater than 0 indicate a positive correlation, values less than 0 indicate a negative correlation, and a value of zero suggests no correlation. The strength of the correlation is interpreted as very weak (0.00-0.20) or weak (0.21-0.40). The analysis found a correlation coefficient of 0.657 with a significance value (Sig.) of 0.009, indicating a strong positive relationship.

RESULTS AND DISCUSSION

Results and Discussion

The empirical investigation into the relationship between motivation and breaststroke swimming learning outcomes among hearing-impaired students at SLB Negeri Surakarta for the 2022/2023 academic year yielded statistically significant findings. Specifically, the correlation analysis conducted using SPSS software indicated a p-value (Sig.) of 0.009. This value is considerably lower than the conventional alpha level of 0.05 ($p < 0.05$), thereby supporting the rejection of the null hypothesis and confirming the presence of a statistically significant relationship.

Furthermore, the strength and direction of this relationship were quantified by the Kendall Tau-B correlation coefficient, which was determined to be 0.657. According to established interpretative guidelines, a coefficient of 0.657 signifies a strong positive correlation between motivation and breaststroke swimming learning outcomes. This implies that students exhibiting higher levels of motivation tend to achieve better results in breaststroke swimming, and conversely, lower motivation is associated with less favorable outcomes. The findings are succinctly summarized in Table 1 below.

Table 1. Summary of Correlation Analysis

Variables Correlated	Correlation Coefficient (Kendall Tau-B)	Significance (Sig.)	Interpretation
Motivation vs. Breaststroke Learning Outcomes	0.657	0.009	Strong Positive Correlation

These results align with and extend existing literature, affirming the crucial role of motivation in learning contexts, particularly within specialized educational settings. The findings of this study, revealing a strong positive correlation (Kendall Tau-B = 0.657, $p = 0.009$) between motivation and breaststroke swimming learning outcomes in hearing-impaired students at SLB Negeri Surakarta, provide compelling empirical evidence supporting the central role of motivational factors in adaptive physical education. This outcome resonates with broader theories of motivation and learning, while also offering specific insights into a population that often faces unique instructional challenges.

The observed strong positive correlation reinforces the foundational understanding that motivation acts as a primary catalyst for engagement and persistence in learning, as articulated by (Merdiaty & Sulistiasih, 2024). Pintrich's work emphasizes that motivation drives individuals to initiate and sustain learning activities, fostering self-regulated learning skills. For hearing-impaired students, who may encounter communication barriers in receiving verbal instructions and feedback, this intrinsic drive becomes even more paramount. Their ability to self-regulate their learning, fuelled by high motivation, allows them to actively seek out and internalize information presented through visual, kinesthetic, or tactile means, thereby compensating for auditory deficiencies. This suggests that the internal 'desire to learn' can significantly mitigate external instructional limitations.

Moreover, the findings align directly with previous research concerning motivation and physical skill acquisition. Roure & Lentillon-Kaestner (2022) found a significant relationship between achievement motivation and swimming performance, a general finding corroborated and further contextualized by the current study. Hidayat et al. (2022) research demonstrated a significant correlation between motivation and general swimming learning outcomes. This study extends these insights by specifically validating this relationship within a specialized population hearing-impaired students and for a particular skill breaststroke swimming. This indicates that the motivational mechanisms at play are robust enough to transcend typical learning environments and sensory abilities, remaining critical even when adapted pedagogical approaches are required.

The strong correlation can be further understood through the lens of other motivational constructs. Ghafar (2023) highlighted a strong connection between self-confidence, learning motivation, and academic achievement. For hearing-impaired students, mastering a complex physical skill like breaststroke swimming can be a profound confidence-builder. Success in overcoming perceived barriers to learning a physical activity can foster a sense of competence, which in turn fuels further motivation. This positive feedback loop where initial motivation leads to effort, effort leads to success, and success reinforces motivation and self-confidence is likely a significant contributor to the strong correlation observed. Further supports this by asserting that high achievement motivation consistently leads to superior performance. This theoretical proposition finds strong empirical backing in the performance of motivated hearing-impaired students in breaststroke swimming.

From a practical standpoint, the distinct challenges faced by hearing-impaired students in understanding and executing complex motor skills like swimming underscore the importance of their internal drive. Without the direct and immediate auditory feedback and verbal cues available to neurotypical learners, these students rely heavily on visual demonstrations, physical guidance, and intrinsic persistence. A highly motivated student is more likely to pay close attention to visual instructions, diligently practice movements, and seek alternative forms of feedback, such as observing peers or receiving tactile corrections from instructors.

Furthermore, mastering swimming skills is highly dependent on rhythm and timing. While neurotypical learners can utilize the auditory feedback of water splashes to regulate their breathing and movement tempo, hearing-impaired students must compensate through a heightened kinesthetic awareness. The process of establishing robust muscle memory without acoustic cues requires intensive, repetitive practice. Consequently, the high motivation observed in these students is a crucial determinant of their resilience. It enables them to endure demanding repetition and overcome sensory limitations through sustained physical effort.

The specialized and individualized nature of adaptive physical education, as described by Hosni, inherently creates an environment where personal motivation can be particularly impactful, as learning is tailored to specific needs and progress is often celebrated incrementally. Within this tailored educational setting, social dynamics also serve as a significant motivational catalyst. The presence of peers navigating similar auditory challenges fosters an environment conducive to observational learning. Witnessing fellow hearing-impaired classmates successfully execute swimming techniques provides tangible proof of attainability, which directly enhances the students' self-efficacy. This shared experience cultivates a supportive ecosystem where peer success continuously fuels collective motivation. The choice of breaststroke, being relatively easier to learn for beginners, may also allow motivated students to achieve early successes, thereby further bolstering their confidence and sustaining their motivation.

The specific mechanics of the breaststroke further accommodate the unique sensory needs of this demographic. This swimming style inherently allows the swimmer to maintain a forward-facing visual orientation, frequently keeping the head above water. For students deprived of auditory input, this visual continuity is critical. It enables them to continuously monitor the instructor for visual cues, sign language, or safety signals without completely disrupting their swimming rhythm. This uninterrupted visual connection significantly mitigates anxiety and instills a sense of security, which is foundational for sustaining high motivation levels in aquatic environments.

Theoretically, this research contributes to the generalizability of motivational theories by demonstrating their applicability across diverse learner populations. It reinforces the idea that human beings, regardless of their sensory abilities, are driven by fundamental needs for competence, autonomy, and relatedness, and that fulfilling these needs through appropriate pedagogical strategies can significantly enhance learning outcomes. Viewed through the lens of Self-Determination Theory, the adaptive physical education environment provides a structured avenue for these students to fulfill basic psychological needs that may be marginalized in broader contexts. Mastering the breaststroke facilitates a profound sense of physical competence, while effective, visually adapted communication with instructors fosters a strong sense of relatedness.

The fulfillment of these psychological needs effectively transforms external instructional prompts into deeply internalized intrinsic motivation, further explaining the robust correlation observed in the data. The study's findings suggest that while instructional methods must be adapted for hearing-impaired students, the underlying psychological principles of motivation remain universally potent.

Implications

The findings of this study have substantial implications for educational practice and policy within special education settings. For practitioners, the strong positive correlation between motivation and breaststroke swimming learning outcomes among hearing-impaired students underscores the importance of integrating explicit motivational strategies into adaptive physical education curricula. This includes prioritizing intrinsically motivating environments, utilizing visually rich instructional materials, employing clear demonstrations, and providing consistent positive reinforcement and personalized feedback to bridge communication gaps and boost engagement. For policymakers, the results highlight the need to review and potentially revise existing educational guidelines for adaptive physical education programs in special needs schools. This should involve advocating for and funding comprehensive professional development for teachers in advanced motivational techniques tailored for hearing-impaired students, including sign language proficiency and specialized pedagogical approaches, as well as allocating resources for accessible facilities and assistive technologies.

Research Contribution

This study significantly contributes to the existing body of knowledge and practice within special education and adaptive physical education by directly addressing a critical research gap. It provides empirical evidence for the specific relationship between motivation and breaststroke swimming learning outcomes among hearing-impaired students, a uniquely challenged demographic previously lacking focused investigation in adaptive aquatic settings. While broader literature acknowledges the importance of motivation and its role in general swimming performance, this research provides localized insights from SLB Negeri Surakarta, enriching the understanding of how motivation impacts learning in a real-world special need environment. Ultimately, the study reinforces the theoretical understanding of motivation's pervasive influence, demonstrating its critical function and resilience even when students navigate significant sensory impairments, thereby solidifying its relevance in diverse educational landscapes.

Limitations

Despite its significant contributions, this study is subject to several limitations that warrant acknowledgment. Firstly, the correlational nature of the research design, while identifying a strong relationship, precludes the establishment of a direct cause-and-effect link, meaning other unmeasured variables might influence the observed correlation. Secondly, the study's scope was confined to hearing-impaired students at a single institution, SLB Negeri Surakarta, during a specific academic year (2022/2023), and focused solely on breaststroke swimming. This specificity, while providing targeted insights, inherently limits the generalizability of the findings to other types of disabilities, different educational settings, other swimming styles, or broader adaptive physical education activities. Thirdly, while an instrument with a reliability coefficient was mentioned, the specific details regarding the measurement of motivation were not extensively provided, potentially affecting the comprehensiveness of its assessment. Finally, as a cross-sectional

study, it offers a snapshot in time, failing to account for how motivation might evolve or fluctuate over longer periods or its sustained impact on long-term skill development.

Suggestions for Future Research

Future research should move beyond correlational designs to employ experimental or quasi-experimental approaches, aiming to establish causal relationships between specific motivational interventions and learning outcomes for hearing-impaired students in adaptive physical education. This could involve longitudinal studies to track motivation's long-term impact on skill acquisition and retention. Expanding the scope to include other disabilities, diverse geographical locations, and a broader range of adaptive physical activities would enhance the generalizability of findings. Additionally, incorporating qualitative research, such as interviews, could provide richer insights into the lived experiences and motivational factors from both students' and teachers' perspectives.

CONCLUSION

This study unequivocally established a strong positive correlation (Kendall Tau-B = 0.657, $p = 0.009$) between motivation and breaststroke swimming learning outcomes among hearing-impaired students at SLB Negeri Surakarta for the 2022/2023 academic year, thereby affirming the critical role of intrinsic drive in adaptive physical education. These findings reinforce established motivational theories by demonstrating their applicability to a specialized population, indicating that motivation acts as a significant catalyst for engagement and persistence in learning, even when sensory impairments are present. The research contributes to the existing body of knowledge by filling a specific gap in understanding motivational dynamics within this unique demographic and provides valuable localized insights into effective pedagogical approaches for students with hearing impairments. The implications are substantial, suggesting that educators should integrate explicit motivational strategies in their curricula, while policymakers should advocate for professional development and resource allocation to support these students. Future research should transition to experimental designs to establish causal relationships, conduct longitudinal studies to observe long-term impacts, and incorporate qualitative methodologies to gain deeper, more nuanced perspectives on the motivational experiences of hearing-impaired learners.

AUTHOR CONTRIBUTIONS AND DECLARATIONS

The sole author was responsible for all aspects of this study, including conceptualization, research design, data collection, data analysis, interpretation of results, and manuscript preparation. The author has read and approved the final version of the manuscript. I confirm that this work is original, free from plagiarism, and complies with ethical standards. Author is fully prepared to accept any consequences in the event of any provision violations.

REFERENCES

Adeduyigbe, A. M., Adeduyigbe, A. E., & Tijani, B. E. (2024). Addressing students with hearing impairment's current state and future needs: Reforming an inclusive science education. *International Journal of Studies in Inclusive Education*, 1(2), 12–15.

- Afifah, I. N., Setyawati, H., & Raharjo, A. (2025). Analysis of Anxiety, Stress, Self-Confidence, and Motivation of KU III Swimming Athletes in Achieving Goal Setting. *Journal of Sport Science and Fitness*, 11(2), 126–137. <https://doi.org/10.15294/jssf.v11i2.34910>
- Alkawasbeh, W. J., Alawamleh, T., Aloran, H., Farash, T., & Orhan, B. E. (2024). The impact of mobile-assisted swimming applications on intrinsic motivation and fear reduction in aquatic environments among students in the swimming course. *Frontiers in Sports and Active Living*, 6, 1496733. <https://doi.org/10.3389/fspor.2024.1496733>
- Bouarir, H., Diani, A., Boubker, O., & Rharzouz, J. (2023). Key determinants of women's entrepreneurial intention and behavior: The role of business opportunity recognition and need for achievement. *Administrative Sciences*, 13(2), 33. <https://doi.org/10.3390/admsci13020033>
- Ganesha, H. R., & Aithal, P. S. (2022). Choosing an appropriate data collection instrument and checking for the calibration, validity, and reliability of data collection instrument before collecting the data during Ph. D. program in India. *International Journal of Management Technology and Social Sciences*, 7(2), 497–513. <https://doi.org/10.5281/zenodo.7310078>
- Ghafar, Z. (2023). The influence of self-confidence on English language learning: A systematic review. *International Journal of Applied Educational Research (IJAER)*, 1(1), 55–68.
- Hidayat, H., Komaini, A., & Gemaini, A. (2022). Smart Application for Smart Learning: How the Influence of the Factors on Student Swimming Learning Outcomes in Sports Education. *International Journal of Interactive Mobile Technologies*, 16(17). <https://doi.org/10.3991/ijim.v16i17.34365>
- Huang, S., Hongseanyatham, P., & Siriphan, C. (2025). Construction of a Mobile Learning Model to Improve Breaststroke Swimming for University Students. *International Journal of Sociologies and Anthropologies Science Reviews*, 5(2), 477–486. <https://doi.org/10.60027/ijsasr.2025.5666>
- Jariono, G., Nurhidayat, N., Sudarmanto, E., Nugroho, H., & Umar, F. (2025). The Impact of Adaptive Physical Education on the Physical and Cognitive Development of Children with Special Needs: A Literature Review. *Physical Education Theory and Methodology*, 25(3), 705–718. <https://doi.org/10.17309/tmfv.2025.3.28>
- Liu, C.-C., Chiu, C. W., Chang, C.-H., & Lo, F. (2024). Analysis of a chatbot as a dialogic reading facilitator: its influence on learning interest and learner interactions. *Educational Technology Research and Development*, 72(4), 2103–2131. <https://doi.org/10.1007/s11423-024-10370-0>
- Merdiaty, N., & Sulistiasih, S. (2024). Empowering Learning: The Mediating Role of Teachers in Enhancing Students' Intrinsic Motivation. *Al-Ishlah: Jurnal Pendidikan*, 16(4), 5163–5172. <https://doi.org/10.35445/alishlah.v16i4.6430>
- Roure, C., & Lentillon-Kaestner, V. (2022). Relationships between students' individual interest, achievement goals, perceived competence and situational interest: A

cluster analysis in swimming. *European Physical Education Review*, 28(2), 322–340.
<https://doi.org/10.1177/1356336X211045992>

Sheffler, P., Rodriguez, T. M., Cheung, C. S., & Wu, R. (2022). Cognitive and metacognitive, motivational, and resource considerations for learning new skills across the lifespan. *Wiley Interdisciplinary Reviews: Cognitive Science*, 13(2), e1585.
<https://doi.org/10.1002/wcs.1585>

Stoliarchuk, O., Serhieienkova, O., Khrypko, S., Prorok, N., Kalishchuk, S., Kolinko, M., & Binkivska, K. (2024). Self-development as a vector of sustainable development of society: the perspective of Ukrainian students. *European Journal of Sustainable Development*, 13(1), 428. <https://doi.org/10.14207/ejsd.2024.v13n1p428>