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Exploring the Role of Physical Activity-Induced Dopamine and Serotonin Release in Enhancing EFL Learners' Confidence in Speaking English

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Abstract

Many Indonesian EFL learners experience difficulties in speaking English confidently due to anxiety, fear of making mistakes, and reluctance to speak in front of others. This study explored EFL learners' confidence in speaking English through physical activity-induced dopamine and serotonin release. A qualitative case study was conducted at SMP Negeri 1 Krangkeng, Indramayu, West Java, involving classroom observations and semi-structured interviews with six eighth-grade students representing different levels of speaking confidence and one English teacher. Data were analyzed using Creswell's (2017) qualitative procedures and Braun and Clarke's (2021) thematic analysis. The findings showed that light and enjoyable physical activities, such as stretching, ice-breaking, games, and movement-based speaking tasks, helped students feel more relaxed, motivated, and confident in speaking English. These activities reduced nervousness, fostered a supportive classroom atmosphere, and improved students' emotional and linguistic readiness for speaking. The study concludes that integrating interactive physical activities into EFL speaking instruction can effectively enhance learners' confidence and participation in English speaking.

Keywords: Physical Activity, Speaking Confidence, EFL Learners, Dopamine, Serotonin.

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Introduction

In today's globalized language classrooms, many English as a Foreign Language (EFL) learners continue to struggle with speaking confidence despite years of formal instruction. This paradox is especially evident in Indonesia, where learners experience persistent speaking anxiety, fear of negative evaluation, and reluctance to communicate in English even after sustained classroom exposure (Mustamir, 2024; Teimouri et al., 2019). The challenge is not primarily linguistic, students often possess adequate grammar and vocabulary, but rather emotional and psychological, rooted in anxiety, low self-efficacy, and limited authentic communication opportunities (Asnaini et al., 2025).

Human emotions and motivation are significantly shaped by brain neurochemistry. Two pivotal neurotransmitters, dopamine and serotonin, play distinct yet complementary roles in regulating mood, motivation, and anxiety. Dopamine governs reward, motivation, and cognitive readiness, while serotonin stabilizes mood and reduces anxiety (Jaffer et al., 2024). When learners feel rewarded and calm, they are more willing to participate in speaking activities. This neurobiological perspective offers an innovative approach to addressing speaking confidence in EFL contexts.

Physical activities such as stretching, ice-breaking games, and movement-based tasks are documented to stimulate dopamine and serotonin release, thereby improving mood, reducing stress, and sharpening focus (Marques et al., 2021; World Health Organization, 2022). In EFL learning contexts, Huynh & Nguyen (2021) found positive correlations between physical movement and learners' self-confidence and willingness to communicate. However, most existing studies focus on psychological or pedagogical strategies for improving speaking confidence while neglecting the biological and neurochemical dimensions that underpin emotional readiness.

Previous studies have addressed speaking confidence through communicative activities (Rezalou & Yagiz, 2023), peer collaboration (Ding & Zhu, 2025), and positive teacher feedback (Ulpa et al., 2025), yet the intersection of physical activity, neurotransmitter release, and EFL speaking confidence remains underexplored. This study addresses that gap by investigating how physical activity-induced dopamine and serotonin release can enhance Indonesian EFL learners' confidence in speaking English. Specifically, it examines three research questions: (1) How do EFL learners describe their experiences of physical activity in relation to their speaking confidence? (2) What types of physical activities do learners identify as meaningful? (3) Why do learners explain changes in their speaking confidence after engaging in physical activities?

By integrating perspectives from neuroscience, educational psychology, and language pedagogy, this study offers a comprehensive interdisciplinary account of how movement-based learning addresses the emotional and biological barriers that consistently prevent Indonesian EFL learners from speaking confidently.

Speaking Confidence in EFL Contexts

Speaking confidence, as theorised by Bandura (1997), is fundamentally an expression of self-efficacy, a learner's belief in their capacity to perform a speaking task successfully. It is not simply boldness but the internal conviction that one can communicate meaningfully despite imperfections. MacIntyre et al. (1998) extend this through the Willingness to Communicate (WTC) construct, identifying it as one of the strongest predictors of actual language production. When WTC is high, learners speak more, practice more, and develop faster. Krashen's (1982) Affective Filter Hypothesis further explains how emotional states function as a filter on language acquisition: high

anxiety and low confidence tighten the filter, reducing both comprehensible input and productive output.

In Indonesian EFL contexts, speaking anxiety is exacerbated by cultural communication norms, limited authentic English exposure outside classrooms, and evaluation-heavy pedagogical traditions (Mustamir, 2024). Most learners encounter English only during school lessons, making the classroom the sole arena for speaking practice, a condition that amplifies the social stakes of every speaking attempt.

Physical Activity, Dopamine, and Serotonin in Learning

Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure (Caspersen et al., 1985). In educational contexts, this encompasses everything from structured exercise to light stretching, ice-breaking games, and walking activities integrated into lessons. Movement triggers neurochemical changes in the brain, particularly in dopamine and serotonin systems, with demonstrable effects on mood, motivation, and cognitive functioning (Marques et al., 2021).

Dopamine, as a neurotransmitter central to reward and motivation, facilitates task engagement and goal-directed behaviour (Costa & Schoenbaum, 2022; Ubuka, 2021). When physical activity raises dopamine levels, learners feel more energised, focused, and intrinsically motivated to attempt challenging tasks. Serotonin, in turn, stabilises mood, reduces anxiety, and supports social ease (Michely et al., 2020; Jones et al., 2020). Together, these neurotransmitters create what this study terms "emotional readiness", the internal state in which learners possess both the motivation to attempt speaking and the emotional stability to follow through. Pourhamzeh et al. (2022) specifically note that serotonin modulates mood, cognition, anxiety, learning, and memory across the central nervous system, while Ruiz-Tejada et al. (2022) highlight dopaminergic pathways as central to voluntary physical activity and habit formation.

Research directly connecting physical movement to EFL speaking outcomes is emerging. Huynh & Nguyen (2021) demonstrated that movement-based activities increase EFL learners' WTC and self-confidence. Egawa et al. (2020) showed correlations between sports participation and communication skill enhancement. Fauziah & Yunita (2024) found that movement games significantly increased enthusiasm and pronunciation confidence in primary EFL learners. However, none of these studies explicitly examines the neurochemical mechanisms underpinning confidence changes, leaving a significant theoretical gap that this study addresses.

Research Methods

This study employed a qualitative case study design, selected because the phenomena under investigation, speaking confidence, anxiety, motivation, and emotional shifts, are experiential in nature and require contextual, in-depth inquiry rather than numerical measurement (Creswell (2017). A case study approach is appropriate when the aim is to examine a bounded system, here, one eighth-grade EFL class, through multiple data sources, enabling rich description of how movement-based learning interacts with students' speaking confidence.

1. Research Setting and Participants

The study was conducted at SMP Negeri 1 Krangkeng, Indramayu, West Java, a school representative of typical Indonesian EFL conditions, where English functions exclusively as a classroom subject with no presence in learners' daily environments. The participants were 29 eighth-grade students from Class G who engaged in English lessons integrating physical movement activities. Six students were purposively selected for in-

depth interviews, representing three speaking confidence levels (high, moderate, and low) with two students at each level. One English teacher was also interviewed. Purposive sampling was employed to ensure rich, meaningful data from participants with direct experience of the phenomenon under study (Creswell (2017).

2. Data Collection and Analysis

Three data collection techniques were triangulated: (1) classroom observation using a structured checklist tracking confidence-related behaviors during movement-integrated lessons; (2) semi-structured interviews with six students and one teacher, conducted in Bahasa Indonesia and subsequently translated; and (3) documentation including teaching materials, student work samples, and photographs of classroom activities. Data analysis followed Creswell's (2017) qualitative procedures for observation and documentation, and Braun & Clarke (2021) six-step thematic analysis framework for interview data, familiarization, initial coding, category searching, theme review, theme definition, and report production. Data source triangulation across observations, student interviews, and teacher interviews ensured credibility and reduced potential bias.

Finding and Discussion

Finding

Physical Activity Improves EFL Learners' Speaking Confidence

Classroom observation revealed a consistent pattern: students who arrived at speaking tasks reluctant and tense became noticeably more willing to participate after physical activity. Before movement sessions, behavioural indicators of low speaking confidence were pervasive, avoidance of eye contact, barely audible voices, hesitation before responding, and passive waiting for others to speak. After stretching, ice-breaking, and movement games, these indicators reversed. Students became more responsive without prompting, initiated peer interaction more naturally, and spoke with clearer, more confident voices.

The observation checklist tracked these changes across specific indicators. The most pronounced improvements appeared in self-efficacy (students' belief in their capacity to speak) and motivation to speak. Item 5, confident expression during speaking performance, showed consistent positive movement across all observed sessions.

Interview data confirmed and extended these observations. Students described a clear emotional transition, using words like relaxed, enthusiastic, energized, and ready to characterize their post-activity state. For example:

"The feeling was confusion, like being afraid to come forward, afraid of making mistakes, and worried about many things. However, after doing physical activity, I felt more confident and more enthusiastic." (Student 1)

"Honestly, physical activity really helped. Before that, I felt confused, sleepy, weak, and unmotivated. After physical activity, I became more enthusiastic and relaxed, so I felt calmer and less nervous." (Student 3)

The teacher corroborated these findings: "Usually after physical activity, the classroom atmosphere becomes livelier. Students look more active and less tense when starting speaking activities." Notably, the teacher observed that even habitually silent students began attempting to speak after movement games, describing this as a "very clear change."

Meaningful Physical Activities Supporting Speaking Confidence

Three categories of physical activity dominated participants' accounts of what was most effective: stretching, ice-breaking activities, and movement-integrated games. Among these, vocabulary-based ice-breaking activities were identified most consistently as most beneficial.

Stretching served a transitional function, moving students from physically passive, seated conditions into greater alertness. Students described it as reducing stiffness and tiredness before speaking. Ice-breaking activities were valued for creating a relaxed social atmosphere that lowered the perceived risk of speaking. Games were praised for generating genuine enjoyment:

"Playing games, because the instructions help build our enthusiasm so we don't feel sleepy." (Student 1)

"I prefer activities that are active but relaxed, such as practicing while walking or ice breaking, because they make me feel more ready to speak." (Student 4)

Vocabulary-integrated ice-breaking activities were uniquely valued because they addressed both emotional and linguistic readiness simultaneously. Students who rehearsed key vocabulary through movement before speaking tasks reported entering those tasks with greater familiarity and confidence:

"Because Miss Kiki's ice breaking activities about vocabulary are good. So we understand each word better." (Student 3)

"Indirectly, it introduces vocabulary. That is important too, because if we want to speak but do not know the vocabulary, it becomes messy." (Student 4)

Activity intensity emerged as a critical variable. Students consistently preferred activities that were *menyenangkan* (enjoyable), *ringan* (light), and *rame* (lively). The teacher confirmed this, noting that overly vigorous activities occasionally left students physically drained rather than emotionally ready: "If the activities are enjoyable, students open up more quickly. But if the activities are too active, sometimes they become too tired."

Activity Type	Emotional Effect	Influence on Speaking Confidence
Stretching	Reduces tiredness, physical tension	Increases physical alertness before speaking
Ice-Breaking	Creates relaxed, socially supportive atmosphere	Reduces fear of being judged; increases WTC
Movement Games	Generates enthusiasm, peer interaction, enjoyment	Increases motivation, participation, and confidence
Vocabulary Ice-Breaking	Reduces anxiety; improves cognitive readiness	Prepares both emotional and linguistic readiness
Walking/Moving Dialogue	Creates natural, low-pressure interaction	Reduces formality; shifts focus from performance to communication

Table 1. Types of Physical Activities and Their Effects on Speaking Confident

Reasons Behind Confidence Changes After Physical Activity

Students articulated several interconnected reasons for their post-activity confidence changes. The most frequently cited were: reduction of sleepiness and physical fatigue, increased emotional relaxation, a more supportive classroom atmosphere, improved vocabulary familiarity, and greater willingness to communicate. These reasons form a coherent neurobiological narrative.

Student accounts of increased alertness and motivation after movement align with dopamine's documented role in cognitive readiness and reward processing (Costa & Schoenbaum, 2022): "Because before that I felt tired, so it was difficult to memorise. But after that I became more enthusiastic and fresher. So the memorisation entered my mind more quickly." (Student 1). Similarly, accounts of reduced fear and greater calmness correspond precisely to serotonin's function in anxiety reduction and emotional stabilisation (Jones et al., 2020; Pourhamzeh et al., 2022).

Individual differences were consistent throughout. Personality, motivation, learning habits, and attendance shaped how quickly and deeply each student benefited from physical activity. The teacher noted: "Every student has a different character, so their responses are also different. Some become confident immediately, while others need more time." Students who were less responsive to movement alone required additional teacher encouragement and peer support before confidence changes translated into speaking behavior.

One remarkable finding concerns the internalization of physical activity as a self-regulation strategy. Student 1 described applying movement techniques independently at home: "When I feel lazy to study, I listen to music first, then study again. Like when I feel tired from studying, I do stretch first, then continue studying again." This transfer of classroom strategy to independent learning contexts suggests that physical activity developed durable motivational habits beyond immediate lesson participation.

Discussion

The findings converge on a central claim: physical activity changes the emotional conditions under which EFL learners approach speaking English, and those changed conditions support the development of speaking confidence. This finding aligns with and extends previous research in several important ways.

The reduction of speaking anxiety after physical activity is the most consistent result across all data sources. This corresponds to Krashen (1982) Affective Filter Hypothesis: anxiety functions as a filter blocking productive language output regardless of linguistic competence. When physical activity lowered students' affective filter through serotonin-mediated anxiety reduction, students who possessed adequate language knowledge were finally able to deploy it. Students explicitly described no longer overthinking mistakes, a functional description of affective filter lowering.

Huynh & Nguyen (2021) found that movement-based activities increased EFL learners' confidence and WTC, a pattern this study replicates with the added dimension of students' interior emotional accounts and neurochemical explanation. The present study is consistent with Wiralodra English Journal research by Achadiyah (2024), who found that affective barriers significantly constrain EFL learners' linguistic performance, suggesting that interventions targeting emotional readiness, such as physical activity, represent a valuable complement to purely linguistic instruction.

Bandura (1997) self-efficacy theory illuminates the mechanism through which post-activity confidence translates into behavior. When students feel physically refreshed and emotionally comfortable, their self-efficacy estimates increase, they believe in the

moment that they can do this, and that belief produces observable actions: raised hands, spontaneous peer interaction, more confident delivery. The activities that generated enjoyment and small successes reinforced this cycle by providing the positive mastery experiences Bandura identifies as the primary source of self-efficacy.

MacIntyre et al. (1998) WTC construct captures what happens at the moment of decision: a student decides whether to speak. This study shows that physical activity shifts both conditions MacIntyre identifies as WTC's determinants, confidence up, anxiety down, which is why post-activity participation increased across confidence levels, though at different rates. Students with existing higher confidence benefited more immediately; those with lower self-efficacy required accumulated positive experiences and teacher support before physical activity's effects fully translated into participation.

Faradila et al. (2024) found that game-based learning consistently increases motivation and engagement across ten recent EFL studies. The present study refines this finding: games in EFL speaking contexts are most effective when they combine movement, peer interaction, and vocabulary content, addressing neurobiological, social, and linguistic dimensions simultaneously. The social dimension of peer influence also emerged importantly: when students observed classmates participating actively after movement activities, their own WTC increased through social modelling, consistent with Bandura (1997) vicarious experience as a source of self-efficacy.

The neurochemical explanation ties these findings together. Physical activity raised dopamine, improving motivation, focus, and cognitive readiness; it raised serotonin, reducing anxiety and stabilizing emotional state. Together, these neurotransmitters produced the emotional readiness that made speaking feel less threatening and participation more accessible. This integrated neurobiological account distinguishes the present study from prior research that addresses confidence through purely psychological or pedagogical frameworks

Conclusion

This study demonstrates that integrating light, enjoyable physical activities, particularly vocabulary-based ice-breaking games, stretching routines, and movement-integrated speaking practice, into EFL speaking lessons consistently supports learners' speaking confidence. Physical activity addressed the primary barriers preventing Indonesian EFL learners from speaking English: anxiety, emotional tension, fatigue, and low self-efficacy. The mechanism operates through dopamine and serotonin release, which together raise motivation, reduce anxiety, and create the emotional readiness necessary for speaking participation.

Three themes organized the findings. First, physical activity improved speaking confidence by reducing anxiety and increasing enthusiasm across learners with different confidence profiles. Second, light, enjoyable, and socially engaging movement activities, especially vocabulary ice-breaking, were identified as most meaningful, addressing both emotional and linguistic preparation. Third, confidence changes were explained by a cluster of interconnected factors: reduced fatigue, improved mood, supportive classroom atmosphere, vocabulary readiness, and greater willingness to take communicative risks.

Author Contribution Statement

Importantly, physical activity was not equally effective for all learners or at the same rate. Individual differences in personality, motivation, and confidence level influenced responsiveness, and teacher encouragement remained essential for students with higher anxiety. Physical activity created favorable conditions for confidence

development but worked most powerfully as part of a broader system including consistent teacher support and positive peer interaction.

For teachers, these findings suggest that deliberate inclusion of light movement activities before speaking tasks, chosen with their affective purpose in mind, represents a practical and accessible strategy for improving EFL speaking confidence. Future research should employ experimental designs with larger, more diverse participant populations and physiological measurement tools to directly assess neurotransmitter activity, enabling causal rather than descriptive claims about the relationship between physical movement and speaking confidence in EFL contexts.

References

Achadiyah, R. (2024). Tertiary Efl Learners' Barriers in Translating Indonesian News Item Text Into English and Vice Versa. Wiralodra English Journal, 8(2), 134–146. https://doi.org/10.31943/wej.v8i2.304

Asnaini, A., Tohamba, C. P. P., & Rusli, T. I. (2025). Self-Confidence Factors of Efl Students in Speaking Class: a Case Study in Higher Education. Klasikal : Journal of Education, Language Teaching and Science, 7(1), 57–72. https://doi.org/10.52208/klasikal.v7i1.1263

Bandura, A. (1997). Self-efficacy: The exercise of control. In Self-efficacy: The exercise of control. (pp. ix, 604–ix, 604). W H Freeman/Times Books/ Henry Holt & Co.

Braun, V., & Clarke, V. (2021). Thematic analysis: A practical guide. SAGE publications Ltd.

Caspersen, C. J., Powell, K. E., & Christenson, G. M. (1985). Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. Public Health Reports, 100(2), 126.

Costa, K. M., & Schoenbaum, G. (2022). Dopamine. Current Biology, 32(15), R817–R824.

Creswell, J. W., & Creswell, J. D. (2017). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. SAGE Publications. https://books.google.co.id/books?id=KGNADwAAQBAJ

Ding, Y., & Zhu, J. (2025). Mobile based peer feedback in EFL speaking: learners' motivation, behavioral engagement in feedback provision, and achievement. Asian-Pacific Journal of Second and Foreign Language Education, 10(1). https://doi.org/10.1186/s40862-024-00314-9

Egawa, J., Hochi, Y., Iwaasa, T., Togashi, E., Inaba, K., & Mizuno, M. (2020). The Effects of University Students' Physical Activity Experience on Communication Skills and Anxiety. In R. H. M. Goossens & A. Murata (Eds.), Advances in Social and Occupational Ergonomics (pp. 358–366). Springer International Publishing.

Faradila, E. Z., Ihsani, H., Sopiah, R. N., Syahidah, S. M., Dealova, Z. K., Mulyana, A., Indonesia, U. P., No, J. S., & Barat, J. (2024). PADA PEMBELAJARAN PJOK nasional (Prayoga et al ., 2022). Tujuan utama pembelajaran PJOK di sekolah adalah untuk pikiran serta dalam mendorong pola hidup aktif sepanjang hidup . Selain itu , tujuan dari pengembangan keterampilan dasar gerak motorik , kon. Indo-MathEdu Intellectuals Journal, 5(3), 3119–3128.

Fauziah, N. Z., & Yunita, S. (2024). the Use of Movement in Learning English. English Education and Applied Linguistics Journal (EEAL Journal), 7(1), 44–52. https://doi.org/10.31980/eeal.v7i1.1444

Huynh, T.-N., & Nguyen, L. V. (2021). the Effects of Physical Movement on Language Learners' Self-Confidence and Willingness To Communicate. VNU Journal of Foreign Studies, 37(4), 70–84. https://doi.org/10.25073/2525-2445/vnufs.4676

Jaffer, U., Izwan, E. S. H., Azimi, N. D., Mohamad Zaidi, R. J., Abdullah, S. N., Che Mohd Nassir, C. M. N., Ahmed, M. A., & Osman, R. A. H. (2024). Dopamine, Serotonin, and the Pursuit of Balance: Neurobiological and Islamic Perspectives on Motivation – a Narrative Review. International Journal of Education, Psychology and Counseling, 9(56), 997–1012. https://doi.org/10.35631/ijepc.956062

Jones, L. A., Sun, E. W., Martin, A. M., & Keating, D. J. (2020). The ever-changing roles of serotonin. The International Journal of Biochemistry & Cell Biology, 125, 105776.

MacIntyre, P. D., Clément, R., Dörnyei, Z., & and Kimberly A. Noels. (1998). Conceptualizing Willingness to Communicate in A L2: A Situational Model of L2 Confidence and Affiliation. The Modern Language Journal, 43(March), 545–562.

Marques, A., Marconcin, P., Werneck, A. O., Ferrari, G., Gouveia, É. R., Kliegel, M., Peralta, M., & Ihle, A. (2021). Bidirectional association between physical activity and dopamine across adulthood—a systematic review. Brain Sciences, 11(7). https://doi.org/10.3390/brainsci11070829

Michely, J., Eldar, E., Martin, I. M., & Dolan, R. J. (2020). A mechanistic account of serotonin's impact on mood. Nature Communications, 11(1), 2335.

Mustamir, M. (2024). Indonesian Efl Learners and Speaking Anxiety: Insights From a Meta-Synthetic Analysis. English Review: Journal of English Education, 12(2), 509–518. https://doi.org/10.25134/erjee.v12i2.9950

Organization, W. H. (2022). Physical Activity. Geneva: WHO. https://www.who.int/news-room/fact-sheets/detail/physical-activity?utm_source=chatgpt.com

Pourhamzeh, M., Moravej, F. G., Arabi, M., Shahriari, E., Mehrabi, S., Ward, R., Ahadi, R., & Joghataei, M. T. (2022). The Roles of Serotonin in Neuropsychiatric Disorders. Cellular and Molecular Neurobiology, 42(6), 1671–1692. https://doi.org/10.1007/s10571-021-01064-9

Rezalou, A., & Yagiz, O. (2023). The Effects of Communicative Activities on EFL Learners' Speaking Performances in CLT Classroom1. International Journal of Languages Education, 11.1(11.1), 1–19.

Ruiz-Tejada, A., Neisewander, J., & Katsanos, C. S. (2022). Regulation of Voluntary Physical Activity Behavior: A Review of Evidence Involving Dopaminergic Pathways in the Brain. Brain Sciences, 12(3). https://doi.org/10.3390/brainsci12030333

Stephen D Krashen. (1982). Principles and Practice in Second Language Acquisition. Pergamon Press Inc, 46(2), 1–3.

Teimouri, Y., Goetze, J., & Plonsky, L. (2019). SECOND LANGUAGE ANXIETY and ACHIEVEMENT. Studies in Second Language Acquisition, 41(2), 363–387. https://doi.org/10.1017/S0272263118000311

Ubuka, T. (2021). Dopamine. In H. Ando, K. Ukena, & S. B. T.-H. of H. (Second E. Nagata (Eds.), In Handbook of Hormones: Comparative Endocrinology for Basic and Clinical Research (2nd ed.). Elsevier. (pp. 1037–1039). Academic Press. https://doi.org/https://doi.org/10.1016/B978-0-12-820649-2.00289-8

Ulpa, S., Tahir, M., & Amin, F. H. (2025). Teachers' Perceptions of Speaking Confidence Strategies: A Case Study at Cambridge English School. Journal on Interdisciplinary Studies in Humanities, 8(2), 2025. https://doi.org/10.34050/elsjish.v8i2.44442