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Exploration of Structured Instruction-Based Gymnastics in Developing Gross Motor Coordination in Early Childhood

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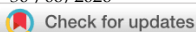
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Abstract

This study aims to describe the implementation of structured instruction-based gymnastics, explore its impact on gross motor coordination in early childhood, and identify the supporting and inhibiting factors in its implementation. This research employed a qualitative approach with a descriptive-exploratory design conducted at RA Al-Madina, Karanganyar, in April 2026. The research subjects were 30 children from Group A (ages 4–5 years) and Group B (ages 5–6 years), with the Head of RA and classroom teachers serving as informants. Data were collected through semi-structured interviews, observation, and documentation study, then analyzed using the Miles and Huberman interactive model. Data validity was ensured through source triangulation, technique triangulation, member checking, and persistent observation. The results indicate that the gymnastics activity employed Senam Sehat Gembira, a structured instruction-based gymnastics program that integrates explicit movement commands directly into its song lyrics, conducted routinely every week. Instructions were delivered through a combination of verbal, visual, and direct demonstration approaches that were simple and adaptive. This multi-sensory approach positively impacted children's balance, agility, eye-hand and eye-foot coordination, and movement synchronization. Supporting factors included teacher competence, children's enthusiasm, and a conducive school environment, while inhibiting factors encompassed the absence of written standard operating procedures and suboptimal parental involvement. This study confirms the importance of a systematic and well-planned gymnastics program supported by school-family collaboration to optimize gross motor development in early childhood. It also opens opportunities for further research on the effectiveness of Senam Sehat Gembira as a structured motor development medium in Islamic early childhood education institutions (RA).

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Introduction

Early childhood constitutes a critical period in human development commonly referred to as the *golden age*. During this phase, the brain develops rapidly, reaching approximately 80% of its adult capacity, such that the quality of stimulation provided is highly determinative of children's future development (Sania & Sirozi, 2025). One developmental aspect that cannot be overlooked is gross motor ability that is, the capacity to control the large muscle groups of the body in movements such as walking, running, jumping, and maintaining balance. This capacity is not merely a matter of physical competence; children who experience gross motor difficulties tend to exhibit low self-confidence and challenges in social interaction (Multahada et al., 2022). Arifiyanti et al. (2019) noted that motor development progresses in conjunction with the maturation of the nervous system, musculature, and cognitive capacity. Even the simplest movement is the product of collaboration among multiple bodily systems coordinated by the brain, and as such, motor development exerts an influence not only on children's social-emotional functioning but also on their cognitive development. Regrettably, the prevalence of sedentary lifestyles attributable to excessive gadget use has led to a significant decline in physical activity among young children, resulting in diminished movement coordination, postural instability, and an increased risk of obesity (Multahada et al., 2022; Sanda et al., 2026).

Gross motor development in early childhood is fundamentally shaped by physical activity stimulation that is purposeful, enjoyable, and developmentally appropriate. A growing body of research indicates that movement-based activities exert influence not only on children's physical capacities but also on their cognitive, social, and emotional development. One study demonstrated that movement-based play, such as number-jumping games, can produce a significant effect on gross motor ability in early childhood (Putri & Sudaryanti, 2025). Gymnastics represents one of the most widely implemented strategies for gross motor stimulation in early childhood education institutions (PAUD), including Raudhatul Athfal (RA). Involving systematic and rhythmic bodily movement, gymnastics is capable of simultaneously developing children's coordination, flexibility, muscular strength, and balance (Atqiya & Pratama, 2024). Research indicates that routinely conducted gymnastics activities yield positive effects on the enhancement of

gross motor ability in children, including movement coordination and postural stability (Sanda et al., 2026). Nevertheless, the effectiveness of gymnastics depends greatly on how the activity is designed and delivered to children, particularly with respect to the quality of instruction provided by the teacher.

Recent international evidence further emphasizes that structured physical activity provides greater benefits for preschool children's motor development than unstructured free play. A structured movement intervention program implemented with children aged 3–5 years significantly improved locomotor and object-control skills because learning activities were systematically planned, progressively delivered, and continuously reinforced by teachers. These findings indicate that the quality and organization of movement instruction are key determinants of successful gross motor development in early childhood (Ruiz-Esteban et al., 2020).

The effectiveness of structured movement instruction is also supported by intervention studies demonstrating that the amount and consistency of physical education significantly influence gross motor coordination among preschool children. Navarra et al. (2022) reported that children receiving higher frequencies of structured physical education showed significantly greater improvements in locomotor skills, object-control skills, and overall gross motor development than children receiving lower intervention doses. These findings highlight the importance of repeated and systematic movement experiences during early childhood education.

In addition to instructional strategies, the physical learning environment also contributes to children's motor development. Webster et al. (2023) demonstrated that preschool environments intentionally designed to stimulate movement, combined with teacher-guided activities, significantly improved children's fundamental motor skills and increased physical activity participation. This finding suggests that structured instruction should be supported not only by appropriate verbal guidance but also by learning environments that encourage active movement and repeated motor practice.

One form of gymnastics that has been widely recognized and implemented in early childhood education institutions in Indonesia is *Senam Sehat Gembira*. Unlike rhythmic gymnastics in general, which employs music solely as an accompaniment to movement, *Senam Sehat Gembira* possesses a distinctive characteristic: verbal instructions are

integrated directly into its song lyrics. These lyrics contain explicit movement commands such as "*rentang tangan*" (stretch your arms), "*tepuk tangan*" (clap your hands), "*lompat*" (jump), "*goyang ke kanan-kiri*" (sway left and right), and "*jalan di tempat*" (march in place), so that children not only move in accordance with the rhythm but simultaneously respond to the instructions embedded in what they hear. Accordingly, Senam Sehat Gembira constitutes an inherently structured instruction-based form of gymnastics, one that aligns with the developmental characteristics of early childhood namely, learning through concrete, enjoyable experiences that engage more than one sense simultaneously. Despite its widespread application in practice, scientific inquiry specifically addressing Senam Sehat Gembira in relation to children's motor development remains highly limited; this study therefore seeks to provide an empirical account of its implementation and impact within the RA context.

A clear gap exists between gymnastics conducted freely and gymnastics grounded in structured instruction. Freely conducted gymnastics tends to offer insufficient directional guidance in the formation of movement patterns, resulting in suboptimal motor stimulation. Conversely, structured instruction that is systematic, progressive, and consistent has been shown to assist children in understanding movement sequences, improving concentration, and strengthening motor coordination through purposeful repetition (Sanda et al., 2026). Chen et al. (2024), in a meta-analysis of various motor interventions, affirmed that structured interventions produce statistically more significant improvements in fundamental motor skills than unstructured approaches. The teacher plays a central role in this process, not merely as the executor of gymnastics activities, but as a movement model who actively and continuously guides children. Beyond enhancing motor ability, structured instruction-based gymnastics also contributes to children's social development. In its implementation, children learn to follow rules, coordinate their movements with peers, and build confidence in participating in group activities (Lubis et al., 2025). Gymnastics thus functions not only as a medium for physical development, but also as a vehicle for social-emotional learning that supports children's holistic development.

Several prior studies have examined the relationship between gymnastics and gross motor development in early childhood. Dewi et al. (2024) found that rhythmic

gymnastics consistently improved balance and movement coordination in children aged 4–5 years. Iswatiningrum & Sutapa (2022) demonstrated the superiority of *Senam Si Buyung* over a no-intervention group in enhancing gross motor ability among children in Group B. Meanwhile, Kojić et al. (2024) showed that structured physical activity significantly improved motor coordination and agility in preschool children compared to free-play groups. These studies, however, generally focused on specific types of gymnastics or the quantitative outcomes of interventions, without exploring in depth how the form of structured instruction delivered by teachers in the gymnastics process contributes to the development of gross motor coordination in children, particularly within the context of RA institutions in Indonesia.

The novelty of this study lies in its focus on exploring structured instruction as a key variable in gross motor coordination development in early childhood through a qualitative descriptive-exploratory approach. The study aims to: (1) describe the implementation of structured instruction-based gymnastics in RA, including how teachers design and deliver movement instructions; (2) explore its impact on children's gross motor coordination, encompassing balance, agility, and movement synchronization; and (3) identify the supporting and inhibiting factors of its implementation. Theoretically, this study enriches the literature on gross motor development in early childhood through structured physical activity during the *golden age*. Practically, its findings are expected to serve as a reference for teachers and PAUD/RA institutions in designing gymnastics programs that are more systematic, purposeful, and meaningful for children's development.

Methods

This study employed a qualitative approach of a descriptive-exploratory nature. This approach was adopted to explore and gain an in-depth understanding of the phenomenon of structured instruction-based gymnastics and its impact on gross motor coordination in early childhood within a real-world context. The descriptive-exploratory design was selected because in-depth scholarly inquiry into structured instruction-based gymnastics within the Raudhatul Athfal (RA) context remains highly limited, necessitating an open and comprehensive mode of exploration.

The study was conducted at RA Al-Madina, located in Karanganyar. This institution was selected on the grounds that it has implemented gymnastics activities in a structured and consistent manner as part of its physical-motor development program for early childhood. Data collection was carried out in April 2026, encompassing the full series of interviews and observations. The research subjects comprised all students enrolled at RA Al-Madina, drawn from four classes across two age groups namely Group A (ages 4–5 years) and Group B (ages 5–6 years) totaling 30 children. Observation was conducted in a focused manner on two classes selected as representatives of each group: one class from Group A and one class from Group B.

Research informants consisted of the Head of RA and classroom teachers who were directly involved in the implementation of gymnastics activities. Data collection employed three complementary techniques: semi-structured interviews, observation, and documentation study. Interviews were conducted with the Head of RA and classroom teachers to elicit information pertaining to the planning and implementation of gymnastics activities. Observation was carried out directly during gymnastics sessions to examine the form of instruction and children's responses. Documentation study was used to review lesson planning documents, photographs, and activity records available at the institution. Data analysis employed the interactive model proposed by Miles and Huberman, consisting of three concurrently operating and interrelated activities: data reduction, data display, and conclusion drawing/verification (Rijali, 2018). Data validity was ensured through four strategies: (1) source triangulation, by comparing and cross-referencing data obtained from two different informants namely the Head of RA and the classroom teacher; (2) technique triangulation, by cross-referencing data obtained through three different data collection techniques namely interview, observation, and documentation; (3) member checking; and (4) prolonged engagement.

Result

Gymnastics activities at RA Al-Madina are conducted routinely once per week, on Fridays, with a duration of approximately eight minutes. Although brief, these sessions nonetheless contribute to children's physical activity during the school day. The gymnastics sessions follow the general phases of physical activity, proceeding from warm-up through core movement to cool-down, and are supported by the use of a mobile phone

and sound system in the school's sufficiently spacious yard. Gross motor development is further reinforced through free outdoor play during recess, including activities such as football and other games that train balance, muscular strength, and movement coordination.



Figure 1. Children lining up in preparation before gymnastics begins

The gymnastics activity implemented at RA Al-Madina employs Senam Sehat Gembira as its primary medium. This program was selected because its song lyrics already contain direct movement instructions, enabling children not only to follow the musical rhythm but also to listen to and respond to the commands embedded in the song. This is further supported by visual demonstration from the teacher – that is, by modelling and showing the process (Widanty, 2022) of the gymnastics movements. The combination of auditory instruction from the song lyrics and visual demonstration from the teacher creates a multi-sensory motor learning process, engaging the auditory, visual, and kinaesthetic senses simultaneously. This arrangement offers a distinct advantage over gymnastics without built-in verbal instruction, as children have access to two simultaneous sources of movement guidance: the song they hear and the teacher they observe.

Prior to implementation with the children, teachers engaged in a process of independent preparation, studying and memorising movements from digital video references. In addition to the instruction embedded in the song, teachers delivered further instruction verbally, visually, and through direct demonstration in alignment with the lyrics of Senam Sehat Gembira, using commands such as "*rentang tangan*" (stretch your arms), "*tepuk tangan*" (clap your hands), "*lompat*" (jump), "*goyang ke kanan-kiri*" (sway left

and right), and "*jalan di tempat*" (march in place), which are readily comprehensible to young children. Implementation was divided between a lead teacher who demonstrated movements at the front and an assisting teacher who guided and corrected individual children's movements. Teachers also applied a flexible, pressure-free approach, allowing children to remain comfortable and enthusiastic throughout the activity.



Figure 2. Children following the "kelinci melompat ke kanan-kiri" [rabbit jump left and right] movement (song lyric)

The implementation of structured instruction-based gymnastics was found to exert a positive impact on children's gross motor coordination. Children began to demonstrate development in the areas of postural balance, agility, and speed of response to instructions and changes in musical tempo. Eye-hand and eye-foot coordination also developed, as evidenced by children's increasing capacity to move their limbs in a more purposeful manner. Movement synchronization appeared to improve: children who had previously been hesitant in moving their hands and feet simultaneously began to demonstrate more synchronised and harmonious movements in keeping with the rhythm. Consistent and repeated practice proved effective in helping children integrate movement patterns across multiple limbs, while simultaneously improving concentration and self-confidence in movement.

The implementation of the activity was influenced by a number of supporting and inhibiting factors. In terms of internal factors, the primary supports included teacher competence in sourcing and preparing movement references, children's high level of enthusiasm, to the extent that they were able to memorise movements through routine practice, and the availability of adequate basic facilities. The institution further

demonstrated its commitment by involving all teachers and making full use of the school's spacious and safe outdoor environment. Inhibiting factors included the absence of written standard operating procedures (SOPs), which has the potential to give rise to inconsistencies, as well as suboptimal parental involvement, attributable to the fact that documentation of activities has not been widely communicated to families.

Discussion

The findings of this study indicate that the routine gymnastics activities conducted at RA Al-Madina are consistent with the motor development theory advanced by Gallahue, which posits that children in early childhood are in a phase of developing fundamental bodily movements. During this phase, children gradually become capable of maintaining postural balance, coordinating their limbs, responding to directional instruction, and executing increasingly purposeful and controlled movements (Purwanti, 2025). The use of simple and direct instructions – such as "*rentang tangan*" (stretch your arms), "*tepuk tangan*" (clap your hands), "*lompat*" (jump), "*goyang ke kanan-kiri*" (sway left and right), and "*jalan di tempat*" (march in place) – is appropriate to children's concrete mode of thinking, making the instructions easy to understand and imitate. In line with this, Kusmiati et al. (2024) noted that children's motor ability develops through two principal factors: biological maturation and learning experiences that repeatedly engage the cooperative functioning of the nervous system and musculature. This advantage is particularly evident in the context of Senam Sehat Gembira as used at RA Al-Madina, where movement instructions are embedded directly in the song lyrics, such that repetition occurs not only at the level of physical movement but also in children's simultaneous processing of verbal instruction.

The use of Senam Sehat Gembira in this study reinforces the argument for the importance of structured instruction in developing gross motor coordination in early childhood. Verbal instruction integrated into song lyrics enables children to process movement commands auditorily while simultaneously executing them kinaesthetically, without needing to await additional instruction from the teacher.

Table 1. Evidence Supporting the Role of Structured Instruction in Senam Sehat Gembira

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Structured instruction component	Observation findings	Contribution to gross motor coordination
Verbal movement instructions embedded in song lyrics	Children listened to commands such as <i>stretch your arms, clap your hands, jump, sway left and right, and march in place</i> while performing the movements.	Helped children understand and execute movement sequences more independently.
Teacher demonstration	Teachers simultaneously demonstrated every movement while children followed the examples.	Improved the accuracy of children's movement execution.
Multi-sensory learning	Children received auditory input from the song lyrics and visual input from teacher demonstrations while performing kinaesthetic activities.	Supported movement synchronization and coordination.
Repeated practice	Weekly gymnastics sessions enabled children to repeatedly perform the same movement patterns.	Enhanced balance, agility, eye-hand and eye-foot coordination, and movement synchronization over time.

As shown in Table 1, the combination of verbal instructions embedded in song lyrics, teacher demonstrations, multi-sensory learning, and repeated practice provided children with consistent movement cues throughout the activity. This condition is consistent with the principle of multi-sensory learning, which holds that learning stimulation engaging more than one sense simultaneously can accelerate the formation of movement patterns and enhance children's motor memory retention (Purwanti, 2025). Furthermore, the repetitive and rhythmic character of the lyrics in Senam Sehat Gembira serves as a form of natural scaffolding: children who have not yet memorised the movements are nonetheless able to follow along, as the song provides consistent verbal cues at all times. Although scientific inquiry specifically examining Senam Sehat Gembira remains highly limited, the findings of this study offer preliminary indications that instruction-song-based gymnastics holds significant potential as a medium for developing both gross motor skills and verbal instruction-processing ability in early childhood. This

simultaneously opens avenues for future research to examine the effectiveness of this form of gymnastics in a more rigorous and systematic manner.

The present findings are also supported by a recent meta-analysis indicating that fundamental motor skills and moderate-to-vigorous physical activity are positively associated during the preschool years. Children who demonstrate better gross motor competence are more likely to engage in higher levels of physical activity, while repeated movement experiences further strengthen motor skill development. This reciprocal relationship suggests that structured gymnastics programs implemented consistently in early childhood education can simultaneously enhance children's movement competence and promote active participation in physical activity (Liu et al., 2023).

The capacity of children at RA Al-Madina to follow, imitate, and even memorise the sequence of gymnastics movements practised routinely reflects the operation of a fundamental principle of motor learning: that movement skills are formed through practice that is repeated and consistent. Through regular gymnastics activity, children demonstrated improvement across multiple motor aspects, including balance, agility, eye-hand movement synchronisation, and the ability to coordinate bodily movement with rhythm. Kurnia et al. (2024) affirmed that repetition in learning experiences contributes significantly to the enhancement of children's capacity to control bodily movements in a coordinated manner.

The high level of enthusiasm exhibited by children throughout the activity indicates that the process unfolded in an enjoyable atmosphere, consistent with the principle of learning through play. Children in early childhood generally absorb knowledge and skills more readily when activities are conducted in a pleasurable and pressure-free environment. This was reflected in children's eagerness to follow the gymnastics movements alongside their teachers and peers. N. K. Harahap et al. (2025) corroborated this finding by asserting that physical activity packaged within a play-based atmosphere is capable of encouraging children's active engagement while simultaneously optimising their motor development. Sanenek et al. (2023) meanwhile, underscored the importance of balanced stimulation of both gross and fine motor skills through a diversity of learning activity forms. These findings are further supported by Sittun et al. (2025), who demonstrated that gymnastics conducted once per week can exert a positive and

significant effect not only on motor development but also on the development of self-awareness, responsibility, and social behaviour in children aged 5–6 years. This further affirms that enjoyable, movement-based learning approaches constitute an effective strategy for supporting children's holistic development in early childhood education institutions.

The availability of open play areas within the school environment also made a tangible contribution to children's motor development. This condition is consistent with the ecological theory developed by Bronfenbrenner, which identifies the surrounding environment as an important factor in children's developmental process (M. I. Harahap et al., 2025). Nevertheless, this study also identified a number of shortcomings warranting attention, including the absence of written standard operating procedures (SOPs), the relatively brief duration of gymnastics sessions, and the still limited participation of parents in supporting the activity. Shadikin et al. (2024) emphasised that motor stimulation yields more optimal results when implemented in a planned, sustained manner with the support of the family environment. Suriani (2025) further noted that regular and consistent practice has been demonstrated to produce more meaningful improvements in children's attainment of motor skills.

In general, both the routine gymnastics activities and outdoor play conducted at RA Al-Madina exerted a positive influence on the development of movement coordination, postural balance, and children's capacity to respond to instructions. These findings reinforce the conclusions of numerous prior studies that have consistently emphasised the critical importance of physical activity for gross motor development in early childhood. Sanenek et al. (2023) noted that rhythmic gymnastics in particular is capable of enhancing gross motor ability in children, especially with regard to balance and bodily coordination — findings consistent with the improvements observed in the present study. M. I. Harahap et al. (2025) similarly demonstrated that physical education programmes designed in a structured manner can significantly improve muscular strength, balance, and movement coordination in children. The commonality between those studies and the present one lies in the positive impact of physical activity on motor development. A fundamental difference, however, is discernible in the level of planning: prior studies generally employed more systematic programmes, whereas the gymnastics

activity at RA Al-Madina remains grounded in informal references and is not yet supported by formalised written guidelines. Rhythmic gymnastics has also been found to positively influence improvements in concentration, agility, and coordination in children (Purwanti, 2025). The approximately eight-minute duration of Senam Sehat Gembira, while relatively brief, is suitable for early childhood, whose attention spans are readily diverted. When conducted consistently, this form of gymnastics can make a reasonably significant contribution to children's motor development.

Kurnia et al. (2024) further noted that gymnastics programmes designed in a specific and systematic manner tend to be more effective in promoting motor development than programmes of a general nature. In the present study, gymnastics activities continue to be implemented in an adaptive manner without a well-designed programme structure. Parental involvement remains limited, as the activities conducted at school have not been communicated adequately to families, despite the fact that parental support constitutes an important factor in reinforcing motor stimulation in the home environment. Accordingly, while this study demonstrates alignment with prior research with respect to the positive effects of physical activity on children's motor development, considerable scope for improvement remains, particularly regarding programme planning, activity variation, and collaboration with parents.

The need for systematic program planning identified in this study is consistent with previous international evidence demonstrating that gross motor interventions are more effective when they are implemented through structured educational programs delivered by trained teachers over a sustained period. Furthermore, the review recommends strengthening parental involvement because children's opportunities to practice movement skills outside school substantially influence intervention effectiveness. These findings reinforce the importance of developing formal standard operating procedures (SOPs) and strengthening school-family collaboration in implementing structured gymnastics programs (Veldman et al., 2016).

On the basis of the foregoing findings, several imperatives merit follow-up action. With respect to planning, physical-motor activities in PAUD/RA institutions should be designed with measurable objectives, systematic phases, and clearly identified developmental indicators, so that such activities possess genuine pedagogical value rather

than serving merely as routine (Kurnia et al., 2024). From the standpoint of instructional strategy, enjoyable and flexible approaches have proven effective in enhancing children's enthusiasm; however, teachers must continue to develop activity variation, for example, by integrating gymnastics movements into daily themes, songs, or narrative storytelling, so that learning becomes richer in meaning (Kusmiati et al., 2024). In addition, the teacher's role cannot be limited to that of a movement instructor; teachers must also function as creative activity designers who are responsive to each child's developmental needs. Motor development evaluation should likewise be conducted in a structured manner, employing instruments such as observation, anecdotal records, and developmental portfolios (Ulfah & Khoiriah, 2025). Finally, institutions must establish more active and regular communication channels with parents for instance, through periodic reports or activity documentation, so that the motor stimulation received by children at school can be reinforced and continued in the family environment, thereby supporting children's development in a comprehensive and sustained manner (Kurnia et al., 2024).

Conclusion

The findings of this study indicate that structured instruction-based gymnastics at RA Al-Madina exerts a positive impact on the development of gross motor coordination in early childhood. The use of Senam Sehat Gembira, which integrates verbal instructions into song lyrics, has been shown to create a multi-sensory and effective motor learning experience for young children. Routinely conducted gymnastics activities were found to improve children's balance, agility, movement coordination, and capacity to follow instructions and movement rhythm. The use of verbal, visual, and direct demonstration-based instructions that are simple in nature enables children to understand movements more readily, allowing the activity to proceed in an enjoyable manner that is consistent with their developmental stage.

The successful implementation of the activity was supported by teacher competence, children's enthusiasm, and a school environment conducive to physical activity. Nonetheless, this study also identified several impediments, including the absence of written Standard Operating Procedures (SOPs) and suboptimal parental involvement in providing motor stimulation at home. These conditions indicate that the

gymnastics activity requires further development in order for its implementation to be more purposeful and sustainable.

Based on the findings of this study, PAUD/RA institutions are advised to develop more systematic gymnastics programmes through the formulation of SOPs, the enhancement of movement and instructional media variation, and the intensification of children's physical activity. Teachers are also expected to continually enhance their creativity in designing motor activities that are engaging and responsive to children's developmental needs. Furthermore, collaboration between schools and parents should be strengthened through communication and developmental progress reporting, so that motor stimulation may be conducted consistently both at school and at home. With more optimal management, gymnastics activities are expected to support children's development more comprehensively, not only in terms of motor aspects, but also with respect to children's social, emotional, and self-confidence development in early childhood.

Declarations

Author contribution statement

Febryanggita Kusuma Pranata contributed to data collection through field observation and interviews, the development of literature review in the introduction, and the deepening of the discussion pertaining to Senam Sehat Gembira, as well as the verification of the results section. Krisna Amanda Nindyasari contributed to coordinating research access with the RA institution, data collection through observation and interviews, and the drafting of the introduction including its theoretical framework. Annisa Dwi Nursanti contributed to data collection through observation and interviews, the retrieval and synthesis of supporting sources for the discussion section, and the drafting of the conclusion. Rosita Dewi Lestari contributed to data collection through observation and interviews, the documentation of gymnastics activities, and the processing and analysis of interview data that were subsequently integrated into the results section. Annafi' Nurul 'Ilmi Azizah contributed to research supervision, methodology development, critical revision of the manuscript, and final approval of the article for publication. All authors have read and approved the final version of the manuscript.

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Data availability statement

The data supporting the findings of this study are available upon request addressed to the corresponding author, subject to the privacy and confidentiality provisions applicable to research informants.

Declaration of interests statement

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this article.

Additional information

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