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The role of traditional dance movements in balance and flexibility

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ABSTRACT

Problems: Much research on physical fitness remains focused on conventional sports, while the potential of traditional dance movements in enhancing balance and flexibility has been insufficiently investigated scientifically. In Indonesia, particularly South Kalimantan, traditional dances such as Baksa Kembang Dance and Radap Rahayu Dance possess movement characteristics that theoretically can train postural control and joint mobility, yet their physical fitness effects remain undocumented in the scientific literature. **Purpose:** This review aims to examine the contribution of traditional dance movements to balance and flexibility and to identify research gaps in South Kalimantan traditional dances. **Methods:** This study employed a narrative literature review design. Systematic searches were conducted across Scopus, Web of Science, and SINTA databases for publications from 2010–2025 using keywords related to traditional dance, balance, and flexibility. Articles meeting inclusion criteria were peer-reviewed publications in English or Indonesian that investigated the effects of traditional dance on physical fitness components. Data were extracted and synthesized thematically. **Results:** The review findings demonstrate that traditional dance training programs consistently improve static and dynamic balance, muscular flexibility, and joint mobility, particularly among elderly populations. Underlying mechanisms include neuromuscular adaptation, sensorimotor integration, and strengthening of supporting muscles. However, the literature search identified a complete absence of empirical studies specifically investigating South Kalimantan traditional dances. Most evidence derives from Greek, Thai, Chinese traditional dances, and Balinese Lègong dance. Some studies show inconsistent results regarding flexibility and body composition, possibly due to heterogeneity in intervention design and participant characteristics. **Conclusion:** Traditional dance movements possess significant potential as holistic and culturally sensitive physical fitness interventions, and can be integrated into physical education programs and community health promotion. However, rigorous empirical research is urgently needed to investigate the specific fitness effects of South Kalimantan traditional dances to strengthen the evidence base and facilitate scientifically grounded practical application.

Keywords: traditional dance, balance, flexibility, physical fitness, south kalimantan.

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Introduction

Physical inactivity has become a global health concern, with sedentary lifestyles contributing to increased risks of chronic diseases and reduced quality of life across all age groups (World Health Organization, 2020). While conventional exercise programs have proven effective in improving physical fitness, cultural barriers and lack of engagement often limit their widespread adoption, particularly in traditional communities. Traditional dance, as a culturally embedded form of physical activity, offers a promising alternative that combines health promotion with cultural preservation. Indonesia is renowned for its rich diversity of traditional dances. It is estimated that around 3,000 traditional dance forms exist across the country. Of these, 671 dances have been officially documented, with 110 recognized by the Ministry of Education, Culture, Research, and Technology as part of Indonesia's Intangible Cultural Heritage (Bali.live, 2024). Traditional dances such as Baksa Kembang Dance and Radap Rahayu Dance from South Kalimantan exemplify this potential, characterized by graceful and structured movements that demand precise body control and coordination

(Anggraini, 2021; Lu'Lu'Ah et al., 2024). Systematic reviews have confirmed that traditional dance represents not only cultural heritage but also a form of physical exercise with significant fitness benefits (Daryanti et al., 2025; Drakakis et al., 2025), yet the specific biomechanical mechanisms underlying these benefits remain underexplored.

Balance and flexibility constitute two critical components of physical fitness that directly influence functional capacity, injury prevention, and quality of life across the lifespan. Balance, defined as the ability to maintain the body's center of mass within its base of support, plays a vital role in postural stability and fall prevention, particularly among elderly populations where fall-related injuries represent a major public health burden (Chen et al., 2025). Flexibility, referring to the range of motion available at joints and the elasticity of musculotendinous structures, is essential for movement efficiency, injury prevention, and maintenance of proper posture (Ridha & Rachman, 2023). From a biomechanical perspective, both components can be enhanced through structured physical training that challenges neuromuscular control and joint mobility. Traditional dance, with its repetitive movement patterns including footwork variations, arm swings, trunk rotations, and dynamic position transitions requires coordinated muscle activation and extensive range of motion, theoretically providing a comprehensive training stimulus for balance and flexibility. However, the dose-response relationship and comparative effectiveness of traditional dance movements versus conventional training methods remain subjects requiring empirical investigation.

Emerging research has begun to document the positive effects of traditional dance on various physical and psychological outcomes. Studies have demonstrated associations between traditional dance participation and improved motor skills and coordination in children Lutvitasari (2019), enhanced cognitive function in older adults, and increased overall physical activity levels in sedentary populations. Despite these promising findings, the literature presents several critical limitations. The mechanisms through which traditional dance movements influence balance and flexibility, whether through neuromuscular adaptation, proprioceptive training, or musculoskeletal conditioning, remain poorly understood. These gaps hinder the integration of traditional dance into evidence-based physical training and rehabilitation programs.

This literature review addresses these research gaps by providing the first comprehensive synthesis of evidence on the role of traditional dance movements in enhancing balance and flexibility, with particular emphasis on South Kalimantan traditional dances. The focus on South Kalimantan dances is justified by several factors: (1) their distinctive biomechanical characteristics involving complex weight transfers and extended static positions that theoretically challenge balance control; (2) the incorporation of wide-range arm and leg movements that may promote flexibility development; (3) the cultural significance of these dances in the region, enhancing potential for community-based implementation; and (4) the current scarcity of scientific documentation on their physical fitness benefits, representing an unexplored area with significant research and practical potential. By synthesizing existing evidence and identifying knowledge gaps, this review will contribute to three key areas: (a) establishing a scientific foundation for traditional dance as a culturally appropriate physical activity intervention; (b) informing the design of culturally sensitive health promotion programs that leverage traditional practices; and (c) preserving and revitalizing traditional dance through demonstrated health benefits, thereby supporting both public health and cultural heritage objectives. Accordingly, this literature review is designed to achieve three primary objectives: (1) to synthesize research findings on the contribution of traditional dance movements particularly South Kalimantan traditional dances to balance enhancement; (2) to examine the evidence regarding traditional dance movements and flexibility improvement; and (3) to identify the proposed physiological and biomechanical mechanisms underlying these benefits.

Method

This study employed a narrative literature review design to examine the role of traditional dance movements in enhancing balance and flexibility. The narrative review approach was selected for its capacity to comprehensively synthesize findings from diverse study types while providing critical interpretation and evaluation of research outcomes (Sukhera, 2022). Narrative reviews permit broader exploration and in-depth discussion of complex topics, making them particularly suitable for emerging research areas where heterogeneous methodologies and outcome measures exist (Murphy, 2012; Baethge et al., 2019).

A comprehensive literature search was conducted across three major indexed scientific databases: Scopus, Web of Science (WoS), and SINTA (Science and Technology Index). The search strategy employed a combination of Boolean operators and the following keywords "traditional dance" OR "ethnic dance" OR "cultural dance" OR "folk dance" AND "balance" OR "postural control" OR "postural stability" AND "flexibility" OR "range of motion" OR "joint mobility" AND "physical fitness"; and specific dance forms: "Baksa Kembang" OR "Radap Rahayu" OR "South Kalimantan dance". For SINTA database searches, equivalent Indonesian keywords were utilized: "tari tradisional", "keseimbangan", "fleksibilitas", and

"kebugaran jasmani".

The search was limited to publications from 2010 to 2025, ensuring coverage of the most recent developments in physical education, movement science, and exercise physiology over the past 15 years. This timeframe was deemed appropriate to capture contemporary understanding while maintaining relevance to current practice and theory.

Articles were considered eligible for inclusion if they met the following criteria: (1) published in peer-reviewed academic journals indexed in Scopus, WoS, or SINTA; (2) written in English or Indonesian; (3) focused on traditional, ethnic, folk, or cultural dance forms (not exclusively contemporary or modern dance); (4) examined balance, flexibility, or both as primary or secondary outcome variables; (5) investigated the effects of traditional dance movements on physical fitness, functional capacity, or health outcomes; (6) provided full-text access; and (7) employed empirical research designs (experimental, quasi-experimental, observational), theoretical frameworks, or practice-based evidence.

Exclusion criteria were applied to remove: (1) non-peer-reviewed sources including conference proceedings, dissertations, theses, blog posts, opinion pieces, and gray literature; (2) studies examining exclusively contemporary or modern dance without traditional elements; (3) articles focusing solely on aesthetic, historical, or sociocultural aspects without addressing physical function or biomechanical mechanisms; (4) publications available only in abstract form; and (5) articles in languages other than English or Indonesian. Table 1 provides a comprehensive summary of inclusion and exclusion criteria.

Table 1. Inclusion and Exclusion Criteria

Aspect	Inclusion Criteria	Exclusion Criteria
Publication Type	Scientific articles published in peer-reviewed journals	Blog articles, popular opinions, non-scholarly reports, or sources without peer-review
Publication Quality	Peer-reviewed journal articles indexed in Scopus, SINTA, or Web of Science	Publications without a peer-review process
Text Accessibility	Articles with open access and full-text availability	Articles providing abstract only or lacking full-text access
Type of Dance	Studies addressing traditional dances (regional or ethnic dances)	Studies focusing solely on contemporary or modern dance without traditional elements
Variable Focus	Studies examining balance, flexibility, or both as primary variables or outcome measures	Studies that do not address balance or flexibility
Study Topic	Effects of traditional dance movements on physical fitness, physical function, or bodily health	Topics limited to aesthetics, history, or socio-cultural aspects without relation to physical function
Study Approach	Studies explaining biomechanical, neuromuscular, educational, or therapeutic mechanisms of dance movements	Studies that do not explain the relationship between dance movements and bodily functions
Document Type	Scientific journal articles	Conference proceedings, conference papers, undergraduate theses, master's theses, or dissertations
Language	Articles written in English or Indonesian	Articles written in other languages that cannot be adequately interpreted by the researchers

The literature selection process followed a multi-stage screening approach. First, titles and abstracts of retrieved articles were independently screened by the author to identify potentially relevant studies based on the eligibility criteria. Second, full texts of potentially eligible articles were obtained and thoroughly reviewed to confirm their relevance to the research questions. Third, reference lists of included articles were manually searched to identify additional relevant publications not captured in the initial database searches (snowball sampling).

Selected articles were critically appraised, and key information was extracted including: study design and methodology, participant characteristics, type of traditional dance examined, intervention parameters (frequency, intensity, duration), outcome measures for balance and flexibility, main findings, and proposed mechanisms. Given the heterogeneity of study designs and outcome measures across the literature, a

descriptive-narrative synthesis approach was employed rather than meta-analysis. Findings were organized thematically according to: (1) effects of traditional dance on balance performance, (2) effects on flexibility outcomes, and (3) traditional dance as functional training. Patterns, consistencies, and contradictions across studies were identified and discussed in relation to the theoretical framework presented in the introduction.

Results

This section presents a descriptive synthesis of research findings on the role of traditional dance movements in enhancing balance and flexibility. Initially, this review aimed to identify studies specifically examining South Kalimantan traditional dances (Baksa Kembang Dance and Radap Rahayu Dance) as primary research objects. However, systematic searches across Scopus, Web of Science, and SINTA databases revealed a notable absence of peer-reviewed empirical studies investigating the physical fitness effects of these specific dance forms. Consequently, the scope was expanded to include studies examining other Indonesian traditional dances and international traditional dance forms that share similar biomechanical characteristics, namely, structured movements requiring postural control, weight transfers, and an extensive range of motion. This broader approach allows for drawing parallels and identifying general principles applicable to South Kalimantan traditional dances, while simultaneously highlighting the critical research gap requiring future investigation.

The findings are organized thematically into three main categories: (1) effects of traditional dance on balance performance, (2) effects on flexibility outcomes, and (3) traditional dance as functional training. Each subsection synthesizes evidence from diverse geographical and cultural contexts to establish a comprehensive understanding of traditional dance's potential as a physical fitness intervention.

Traditional Dance and Balance Performance

Multiple studies across diverse populations demonstrate positive associations between traditional dance participation and improved postural balance. A recent systematic literature review by Drakakis et al. (2025) reported that traditional dance training programs consistently enhanced balance across various age groups, with particularly pronounced effects in older adult populations. This finding is corroborated by longitudinal experimental evidence from Greece, where a 32-week traditional dance program resulted in significant improvements in static balance among elderly participants (Douka et al., 2019). The intervention involved twice-weekly sessions incorporating Greek folk dance movements characterized by rhythmic stepping patterns, directional changes, and coordinated arm-leg movements, features conceptually similar to movements observed in South Kalimantan traditional dances.

Supporting evidence emerges from Indonesian contexts more proximate to the South Kalimantan cultural milieu. A randomized controlled trial in Bali demonstrated that six weeks of Lègong dance training produced significant improvements in physical fitness among adolescent girls, including enhanced aerobic capacity, muscular strength, and, notably, balance performance (Griadhi et al., 2021). The Lègong dance shares certain movement characteristics with South Kalimantan dances, particularly the emphasis on precise footwork, sustained semi-squatting positions, and controlled weight shifts that challenge postural stability. Similarly, research by Nikolaidou et al. (2021) found that elderly individuals who regularly participated in traditional dance exhibited superior balance and postural stability compared to non-dancing counterparts. These findings collectively suggest that traditional dance, regardless of specific cultural origin, provides training stimuli that engage coordination, rhythm, and weight transfer mechanisms all fundamental components of balance control.

The evidence base extends to Asian traditional dance forms with documented balance benefits. Li et al. (2022) reported that 12 weeks of Cha-cha dance training significantly improved both dynamic and static balance in healthy elderly participants through repetitive, symmetrical movements that stimulated muscular strength, postural control, and joint stability. Although Cha-cha represents a Latin dance form, its structured movement patterns and balance demands bear functional similarities to traditional ethnic dances. More directly relevant, studies examining Thai traditional dance and Chinese classical dance demonstrate that culturally embedded dance forms can serve as effective balance training modalities for elderly populations (Chen et al., 2025; Sanprakhon et al., 2025).

The consistent pattern across these diverse studies suggests that traditional dance constitutes a promising exercise program for improving balance and preventing falls, particularly among older adult populations (Buransri & Phanpheng, 2021). The movements inherent in traditional dances involving body coordination, rhythmic patterns, and continuous weight transfers appear to provide robust training stimuli for maintaining and enhancing postural balance across the lifespan.

Traditional Dance and Flexibility Outcomes

Enhanced flexibility represents another well-documented physical benefit of traditional dance training. Early foundational work by Keogh et al. (2009) highlighted that dance participation enabled elderly individuals to significantly improve aerobic capacity, lower-body muscular endurance, strength and flexibility, as well as balance and agility. More recent systematic evidence from Drakakis et al. (2025) confirms flexibility improvements, particularly among young adult and middle-aged participants engaged in traditional dance programs. Notably, several studies report improved body flexibility following traditional dance interventions even in older adult populations, who typically experience age-related declines in joint range of motion (Cruz-Ferreira et al., 2015).

Specific measurement outcomes provide quantitative support for these flexibility gains. Douka et al. (2019) documented significant improvements in both Sit-and-Reach test scores (indicating hamstring and lower back flexibility) and Back Scratch test performance (reflecting shoulder flexibility) among elderly Greek participants following the 32-week traditional dance program. These standardized assessments demonstrate measurable changes in functional flexibility across multiple body regions. The findings align with biomechanical principles: traditional dances typically require an extensive range of motion in the limbs and spine through movements such as hip swaying, extended stepping patterns, and lowered body positions. When performed regularly, these movements demand systematic stretching of muscles and enhance joint mobility.

Contemporary research continues to reinforce this relationship. Lei et al. 2025) demonstrated that consistent dance movement training develops both muscular strength and flexibility among student participants. The mechanism appears straightforward traditional dances demand and therefore train wide-ranging movements in the legs, arms, trunk, and spine. Movements such as deep lunges, cross-stepping patterns, and single-leg standing positions, common in many traditional dance forms, including those from South Kalimantan, progressively increase muscle extensibility and joint flexibility when practiced regularly. This enhanced flexibility contributes positively to posture and mobility, thereby supporting improvements in daily dynamic balance as well.

Traditional Dance as Functional Training

Beyond isolated fitness components, traditional dance functions as an integrative physical activity that combines motor skills, rhythm, and emotional expression into a comprehensive functional training modality. The movement characteristics of traditional dance, including rhythmic patterns, repetitive sequences, and cross-body coordination, establish it as an effective form of functional exercise that translates to activities of daily living (Sooktho et al., 2022).

Recent evidence demonstrates the functional training efficacy of culturally adapted dance programs. Sanprakhon et al. (2025) found that a Thai folk dance program combined with cognitive stimulation proved effective as functional training for elderly individuals with mild behavioral impairment (MBI). The intervention integrated structured movements that trained coordination, balance, and memory, supporting improvements in cognitive function and quality of life. This multi-domain benefit characterizes functional training addressing multiple physical and cognitive capacities simultaneously through ecologically valid movement patterns.

The functional training properties of traditional dance extend to cardiovascular and neuromuscular systems. Li et al. (2022) demonstrated that 12 weeks of Cha-cha training significantly improved dynamic and static balance in healthy elderly participants through repetitive, symmetrical movements that stimulated muscular strength, postural control, and joint stability. The dance functioned as comprehensive training, enhancing not merely balance in isolation but the integrated capacity for controlled movement the essence of functional fitness. Similarly, Chen et al. (2025) documented that a 10-week Chinese classical dance program for elderly participants incorporated movements such as lunges, squats, and single-leg standing combined with eye-hand coordination. These movement patterns strengthened thigh, hip, and core muscles while simultaneously increasing joint flexibility and training dynamic balance during directional changes.

The functional nature of traditional dance stems from its ecological validity the movements practiced in dance contexts transfer directly to movement demands in daily life. Unlike isolated joint exercises, dance training requires integrated whole-body coordination, anticipatory postural adjustments, and adaptive responses to changing movement patterns. This holistic training approach appears particularly relevant for elderly populations, where maintenance of functional independence depends on integrated physical capacities rather than isolated fitness components.

Discussion

This section interprets the synthesized findings in relation to the theoretical framework presented in the introduction, examines underlying mechanisms, considers practical implications, and identifies limitations and future research directions.

Physiological and Neuromuscular Mechanisms Underlying Benefits

The observed improvements in balance and flexibility through traditional dance training can be understood through several integrated physiological and neuromuscular mechanisms. First, traditional dance constitutes a multi-dimensional physical activity that challenges both neuromuscular and sensory systems. Traditional dance movements typically involve inter-segmental body coordination across multiple movement planes, including continuous transitions between single-leg and double-leg support (Nikolaidou et al., 2021). Repeated practice of such patterns is believed to strengthen the body's postural control system through enhanced neural pathways governing balance responses.

Empirical support for this mechanism emerges from intervention studies. Ekawana et al. (2022) demonstrated that balance improvements in elderly women resulted from movement characteristics involving rhythmic combinations of static and dynamic positions, with emphasis on support base changes and directional shifts. This training pattern stimulates the neuromuscular system to generate faster, more coordinated, and more effective postural responses during functional activities. The neuroplastic adaptations induced by such training appear to enhance the integration of sensory inputs (visual, vestibular, proprioceptive) with motor outputs, resulting in improved postural stability.

Second, traditional dance demands an integrated combination of muscular strength, agility, and flexibility. Movements such as cross-stepping, lunges, semi-squats, or single-leg standing positions strengthen leg and core muscles while simultaneously challenging proprioceptive and vestibular capacities to maintain stability. The literature documents that physical inactivity decreases flexibility and reduces muscular tone, ultimately weakening core stability and increasing fall risk (Çekok et al., 2024). Conversely, dance training with synchronized movements has been shown to enhance body position awareness and balance. For instance, in a 10-week Chinese classical dance program for elderly participants, movements including lunges, squats, and single-leg standing were combined with eye-hand coordination; these exercises strengthened thigh, hip, and core muscles while simultaneously increasing joint flexibility and training dynamic balance during directional changes (Chen et al., 2025).

Through these mechanisms, traditional dance functions as functional training that enhances supporting muscle strength, flexibility, and sensorimotor coordination. The combination of these benefits ultimately consolidates an individual's capacity to maintain postural balance in daily activities and prevent falls, particularly among older age groups. The multi-system engagement inherent in dance training simultaneously addresses strength, flexibility, coordination, and sensory integration, distinguishing it from single-component exercise interventions and may explain its robust and consistent effects across diverse populations.

The biomechanical demands of traditional dance movements also warrant consideration. Many traditional dances, including those from South Kalimantan based on descriptive cultural documentation, involve sustained positions that require isometric muscle contractions (e.g., semi-squat positions), dynamic movements that challenge eccentric and concentric muscle control (e.g., lowering and rising movements), and rapid direction changes that necessitate anticipatory postural adjustments. These varied biomechanical demands provide comprehensive neuromuscular training that translates to improved functional capacity. The specificity of training principle suggests that movements practiced in dance contexts weight transfers, directional changes, and coordinated multi-joint actions, directly enhance the neural control strategies employed in similar real-world movement situations.

Educational and Cultural Implications

Beyond physical benefits, the educational and cultural implications of traditional dance practice prove significant for both individual and community health promotion. Traditional dance represents popular cultural heritage across world regions and offers numerous health benefits (Drakakis et al., 2025). Integration of traditional dance into exercise programs or physical education curricula provides dual benefits serving simultaneously as cultural preservation and health-promoting physical activity.

In educational contexts, teaching regional dances has been shown to function as cultural preservation (maintaining tradition and local identity) alongside its role as physical training that enhances students' fitness and motor skills (Mattsson & Lundvall, 2015). Curriculum analysis research indicates that dance in schools can be framed within dual objectives of "dance as cultural preservation" and "dance as physical training" complementary goals in forming both identity and public health (Liu et al., 2024; Tao et al., 2022). This dual function holds particular relevance for South Kalimantan traditional dances, which carry significant cultural meaning for the Banjar people while simultaneously offering potential physical fitness benefits that remain scientifically undocumented.

For general populations, culturally rooted physical activity approaches appear more attractive and sustainable than culturally neutral exercise modalities. Unlike gym-based exercise concepts that may not appeal to all demographic groups, culturally familiar music and dance can invite broader participation due to their recreational and emotional dimensions (X. Liu et al., 2023). Intervention studies over the past decade

demonstrate that culturally adapted traditional dance programs, including Spanish flamenco, Greek traditional dance, Bollywood dance, and local ethnic dances such as Tigray, consistently deliver health benefits perceived by participants, including mood enhancement, psychological well-being, and quality of life improvements. Additionally, these dance programs strengthen participants' social dimensions, such as peer engagement and comfort in group activity participation (Beune et al., 2022; Douka et al., 2019; Gebretensay et al., 2019).

Specific examples illustrate these multi-dimensional benefits. A hula (Hawaiian traditional dance) program for hypertensive patients not only clinically reduced blood pressure but also provided positive sociocultural impacts, such as fostering identity pride and community connection among participants (Kaholokula et al., 2017). Similarly, Aguiñaga et al. (2022) reported that Latin dance classes for Latino elderly individuals increased physical activity while improving cognitive function, as participants enjoyed nostalgic engagement with music and dance from their own culture. These findings confirm that traditional dance plays important pedagogical and cultural roles connecting generations with their cultural heritage, strengthening social bonds, enhancing self-confidence, and motivating movement for health.

These implications encourage educators and health practitioners to more frequently utilize traditional dance as a holistic exercise intervention strategy, given its unique appeal and positive effects on both physical and psychosocial dimensions. For South Kalimantan specifically, systematic investigation and promotion of Baksa Kembang Dance and Radap Rahayu Dance could serve the dual purpose of cultural preservation and community health enhancement, a synergistic approach to addressing both cultural and public health objectives.

Practical Applications and Recommendations

The synthesized evidence suggests several practical applications for integrating traditional dance into physical fitness and health promotion programs across multiple contexts.

In community health settings, traditional dance offers a culturally appropriate, engaging, and cost-effective intervention for improving balance and flexibility, particularly among older adults at risk for falls. Community centers, senior centers, and public health initiatives could implement culturally adapted dance programs that respect local traditions while providing structured physical activity. The cultural familiarity of traditional dance may enhance participation rates and long-term adherence compared to conventional exercise programs that lack cultural resonance.

Within educational contexts, schools in South Kalimantan and across Indonesia could systematically integrate regional traditional dances into physical education curricula, ensuring that students develop both cultural appreciation and physical fitness. Such integration would address national educational objectives for cultural preservation while simultaneously contributing to youth physical activity levels. This dual-purpose approach proves particularly valuable in resource-limited settings where separate programs for cultural education and physical training may be unfeasible.

Regarding rehabilitation settings, the functional training properties of traditional dance suggest potential applications in physical therapy and rehabilitation contexts. Dance-based interventions could complement conventional therapeutic exercises, particularly for patients requiring balance training, fall prevention, or functional mobility enhancement. The engaging nature of dance, combined with its social and aesthetic dimensions, may improve adherence compared to conventional exercise protocols that patients often find monotonous or unmotivating.

From a research perspective, given the complete absence of empirical studies on South Kalimantan traditional dances, there exists an urgent need for collaborative research between movement scientists, physical educators, and cultural experts to systematically document, analyze, and evaluate the physical fitness effects of Baksa Kembang Dance and Radap Rahayu Dance.

Limitations of Current Evidence and Research Gaps

Despite substantial supportive findings, several limitations and research gaps require attention. First, results across studies show inconsistency for certain parameters. Although most studies report improvements in flexibility and body composition, some investigations show contradictory results or minimal changes in these aspects. This variability may stem from differences in dance intervention design (dance type, duration, training frequency), subject characteristics (age, baseline fitness level, ethnic group), and limited sample sizes in several studies. The heterogeneity of methodologies and outcome measures complicates direct comparisons and meta-analytic synthesis.

Second, many studies focus on single age categories or specific populations, necessitating caution when generalizing to broader populations. Research gaps also appear in the scarcity of long-term studies examining the sustainability of traditional dance training effects. Limited evidence exists regarding how long balance and flexibility improvements can be maintained after program completion, or how rapidly decline occurs when training ceases. Understanding these retention parameters proves essential for program design and public health recommendations.

Furthermore, in-depth understanding of the biopsychological mechanisms of traditional dance requires

expansion. For example, the specific contributions of sensory systems (visual, vestibular, proprioceptive) to traditional dancers' balance adaptations remain incompletely elucidated, although evidence indicates that sensorimotor integration is triggered by dance training. The neuroplastic changes, cardiovascular adaptations, and musculoskeletal modifications induced by different dance forms and training parameters require more detailed investigation using advanced assessment technologies.

Critical Research Gap for South Kalimantan Traditional Dances. Most significantly, this review identified a complete absence of peer-reviewed empirical research examining the physical fitness effects of South Kalimantan traditional dances specifically. This gap represents both a limitation of the current review and a critical opportunity for future research. The biomechanical characteristics of Baksa Kembang Dance and Radap Rahayu Dance, including their specific movement patterns, postural demands, and training parameters remain undocumented in the scientific literature. Consequently, claims regarding their effects on balance and flexibility, while theoretically plausible based on movement observation and evidence from analogous dance forms, lack direct empirical verification. This gap severely limits the development of evidence-based programs utilizing these culturally significant dance forms and represents the highest priority for future investigation.

Future research should explore more comprehensive quantitative and qualitative measurements, including detailed biomechanical analysis of dance movements, assessment of dynamic balance in functional contexts, and psychological impacts of traditional dance participation to strengthen the evidence base. Randomized controlled trials with more rigorous methodology and adequate sample sizes are required to confirm preliminary findings. Although traditional dance shows promise as a health intervention, its practical recommendations still require more solid scientific data to support them as official guidelines. By continuing research in this area, scientists can close knowledge gaps and provide more convincing conclusions about the strategic role of traditional dance movements in enhancing balance, flexibility, and overall health, particularly for culturally significant but scientifically understudied dance forms such as those from South Kalimantan.

Conclusion

Based on the findings of this narrative literature review, it can be concluded that traditional dance movements possess significant potential for enhancing balance and flexibility across diverse age groups through multiple integrated physiological pathways. Evidence from various empirical studies demonstrates that participation in traditional dance programs consistently improves static and dynamic balance, muscular flexibility, and joint mobility. The mechanisms underlying these benefits include neuromuscular activation and adaptation, engagement of sensory systems (proprioceptive, vestibular, and visual), strengthening of supporting muscles, and enhancement of musculotendinous flexibility through the characteristic movements of traditional dance—structured rhythmic patterns, weight transfers, multi-segmental coordination, and repeated transitions between static and dynamic positions. Beyond physical benefits, traditional dance possesses high educational and cultural value, establishing it as a holistic and culturally sensitive intervention that offers unique advantages in terms of participation sustainability and psychosocial benefits, positioning it as highly relevant for school physical education programs, community health promotion, and functional rehabilitation.

However, this review identifies a critical research gap, the complete absence of peer-reviewed empirical research specifically investigating South Kalimantan traditional dances, particularly Baksa Kembang Dance and Radap Rahayu Dance, which severely limits evidence-based application of these culturally significant dance forms despite their theoretically plausible benefits. Additional limitations include inconsistencies across studies due to heterogeneity in intervention design and participant characteristics, as well as an incomplete understanding of long-term effects and specific biopsychological mechanisms. Based on these findings, rigorous empirical investigation through randomized controlled trials with adequate sample sizes and validated outcome measures is urgently needed, requiring collaborative research among movement scientists, physical educators, and cultural experts to document, analyze, and evaluate the biomechanical characteristics and fitness effects of South Kalimantan traditional dances. By advancing this research agenda, the scientific community can contribute to developing culturally sensitive, physiologically effective, and socially sustainable fitness interventions that bridge traditional cultural heritage with contemporary public health needs, while simultaneously facilitating the systematic integration of traditional dance into physical education and community fitness programs.

References

Aguiñaga, S., Kaushal, N., Balbim, G. M., Wilson, R. S., Wilbur, J. E. E., Hughes, S., Buchner, D. M., Berbaum, M., McAuley, E., Vásquez, P. M., Marques, I. G., Wang, T., & Marquez, D. X. (2022). Latin Dance and Working Memory: The Mediating Effects of Physical Activity Among Middle-Aged and Older Latinos. *Frontiers in Aging Neuroscience*, *14*(April), 1–8. https://doi.org/10.3389/fnagi.2022.755154

Anggraini, A. A. T. (2021). Estetika Tari Baksa Kambang di Tanah Banjar Kalimantan Selatan. *UPT Perpustakaan ISI Yogyakarta*, 1–22.

Baethge, C., Goldbeck-Wood, S., & Mertens, S. (2019). SANRA—a scale for the quality assessment of narrative review articles. *Research Integrity and Peer Review*, *4*(1), 2–8. https://doi.org/10.1186/s41073-019-0064-8

Beune, E., Muilwijk, M., Jelsma, J. G. M., van Valkengoed, I., Teitsma-Jansen, A. M., Kumar, B., Diaz, E., Gill, J. M. R., Jenum, A. K., Palaniappan, L., van der Ploeg, H. P., Sheikh, A., Davidson, E., & Stronks, K. (2022). The acceptability and effect of a culturally-tailored dance intervention to promote physical activity in women of South Asian origin at risk of diabetes in the Netherlands—A mixed-methods feasibility study. *PLoS ONE*, *17*(2 February), 1–21. https://doi.org/10.1371/journal.pone.0264191

Buransri, M., & Phanpheng, Y. (2021). Effects of traditional srichiangmai dance on balance and mobility in the elderly. *Muscles, Ligaments and Tendons Journal*, *11*(2), 215–222. https://doi.org/10.32098/mltj.02.2021.02

Chen, C. L., Su, W. S., Holmes, M. W. R., & Chang, J. H. (2025). Effects of 10 Weeks Classical Chinese Dance Training on Flexibility, Balance and Muscle Strength of the Elderly. *Journal of Medical and Biological Engineering*, *45*(4), 566–572. https://doi.org/10.1007/s40846-025-00964-1

Cruz-Ferreira, A., Marmeleira, J., Formigo, A., Gomes, D., & Fernandes, J. (2015). Creative Dance Improves Physical Fitness and Life Satisfaction in Older Women. *Research on Aging*, *37*(8), 837–855. https://doi.org/10.1177/0164027514568103

Daryanti, F., Mustika, I. W., Rahayuningtyas, W., & Mustofa, H. A. (2025). The Role of Traditional Dance Education in Children's Learning: A Systematic Literature Review. *Journal of Curriculum Studies Research*, *7*(2), 140–154. https://doi.org/10.46303/jcsr.2025.15

Douka, S., Zilidou, V. I., Lilou, O., & Manou, V. (2019). Traditional dance improves the physical fitness and well-being of the elderly. *Frontiers in Aging Neuroscience*, *11*(APR), 1–9. https://doi.org/10.3389/fnagi.2019.00075

Drakakis, A., Karatrantou, K., & Gerodimos, V. (2025). The Impact of Traditional Dance Intervention Programs on Health of Young, Middle-Aged, and Older Adults: A Literature Review. *Inquiries in Physical Education and Sport*, *23*(1), 38–58. https://doi.org/10.26253/HEAL.UTH.OJS.ISPE.2025.2315

Ekawana, P., Subadi, I., Satyawati, R., Arfianti, L., & Melaniani, S. (2022). Modified traditional dance therapy: An applicative balance therapy for Hargo Dedali's Elderly. *International Journal of Health Sciences*, *6*(April), 492–505. https://doi.org/10.53730/ijhs.v6ns9.12380

Gebretensay, M., Mondal, S., Mathivanan, D., Abdulkader, M., Gebru, G., & Mohamedhusien, K. (2019). Effect of traditional dances on selected psychological variables among high school students in Ethiopia. *Turkish Journal of Kinesiology*, *5*(1), 22–27. https://doi.org/10.31459/turkjkin.522682

Griadhi, I. P. A., Adiatmika, I. P. G., & Tirtayasa, I. K. (2021). Traditional Lègong dance training is superior to moderate aerobic training on physical fitness improvement among young girls. *Journal of Physical Activity and Health*, *18*(7), 826–831. https://doi.org/10.1123/jpah.2020-0816

Kaholokula, J. K., Look, M., Mabellos, T., Zhang, G., de Silva, M., Yoshimura, S., Solatorio, C., Wills, T., Seto, T. B., & Sinclair, K. A. (2017). Cultural dance program improves hypertension management for native Hawaiians and Pacific Islanders: A pilot randomized trial. *Journal of Racial and Ethnic Health Disparities*, *4*(1), 35–46. https://doi.org/10.1007/s40615-015-0198-4

Keogh, J. W. L., Kilding, A., Pidgeon, P., Ashley, L., & Gillis, D. (2009). Physical benefits of dancing for healthy older adults: A review. *Journal of Aging and Physical Activity*, *17*(4), 479–500. https://doi.org/10.1123/japa.17.4.479

Lei, Z., Yuan, K., Xu, J., Miao, Y., Dai, Y., Wang, J., & Chang, J. (2025). Effects of physical exercises on balance in children with down syndrome: a systematic review and meta-analysis. *BMC Sports Science, Medicine and Rehabilitation*, *17*(1). https://doi.org/10.1186/s13102-025-01222-2

Li, H., Qiu, X., Yang, Z., Zhang, Z., Wang, G., Kim, Y., & Kim, S. (2022). Effects of Cha-Cha Dance Training on the Balance Ability of the Healthy Elderly. *International Journal of Environmental Research and Public Health*, *19*(20). https://doi.org/10.3390/ijerph192013535

Liu, W., Xue, H., & Wang, Z. Y. (2024). A systematic comparison of intercultural and indigenous cultural dance education from a global perspective (2010–2024). *Frontiers in Psychology*, *15*(November), 1–

18. https://doi.org/10.3389/fpsyg.2024.1493457

Liu, X., Soh, K. G., & Omar Dev, R. D. (2023). Effect of Latin dance on physical and mental health: a systematic review. *BMC Public Health*, *23*(1), 1–12. https://doi.org/10.1186/s12889-023-16221-6

Lu'Lu'Ah, N., Firdha Rizky Aulia, & Linda. (2024). Nilai-Nilai Pendidikan Tari Baksa Kambang Terhadap Masyarakat Banjar Kalimantan Selatan. *Islamologi: Jurnal Ilmiah Keagamaan*, *1*(1).

Lutvitasari, D. E. (2019). Implementasi Tari Baksa Kembang Dalam Mengembangkan Motorik Kasar Pada Kelompok B2 Di TK Pertiwi 49 Bantul. In *UIN Sunan Kalijaga*. UIN Sunan Kalijaga.

Mattsson, T., & Lundvall, S. (2015). The position of dance in physical education. *Sport, Education and Society*, *20*(7), 855–871. https://doi.org/10.1080/13573322.2013.837044

Murphy, C. M. (2012). Writing an Effective Review Article. *Journal of Medical Toxicology*, *8*(2), 89–90. https://doi.org/10.1007/s13181-012-0234-2

Nikolaidou, M. E., Karfis, V., Koutsouba, M., Schroll, A., & Arampatzis, A. (2021). Postural Balance Ability and the Effect of Visual Restriction on Older Dancers and Non-Dancers. *Frontiers in Sports and Active Living*, *3*(September), 1–7. https://doi.org/10.3389/fspor.2021.707567

Rhythms of the Archipelago: Celebrating Indonesia's Vibrant Dance Legacy. (2024). Bali.Live. https://bali.live/p/rhythms-of-the-archipelago-celebrating-indonesias-vibrant-dance-legacy

Ridha, S., & Rachman, A. (2023). Survei Lokasi Dan Penyebab Cedera Olahraga Pada Atlet Cabang Olahraga Permainan. *Jambura Sports Coaching Academic Journal*, *2*(1), 13–20. https://doi.org/10.37905/jscaj.v2i1.20614

Sanprakhon, P., Suriyawong, W., Longphasuk, N., Khatichop, N., Arpaichiraratana, C., Wongwiseskul, S., Rattanaselanon, P., Pipatpiboon, N., & Thaipisuttikul, P. (2025). Effects of traditional Thai folk dance combined with cognitive stimulation program on behavior and cognition among older adults with cognitive decline: A randomized controlled trial. *The Journal of Prevention of Alzheimer's Disease*, *12*(4), 100066. https://doi.org/10.1016/j.tjpad.2025.100066

Sooktho, S., Songserm, N., Woradet, S., & Suksatan, W. (2022). A Meta-Analysis of the Effects of Dance Programs on Physical Performance: Appropriate Health Promotion for Healthy Older Adults. *Annals of Geriatric Medicine and Research*, *26*(3), 196–207. https://doi.org/10.4235/agmr.22.0066

Sukhera, J. (2022). Narrative Reviews: Flexible, Rigorous, and Practical. *Journal of Graduate Medical Education*, *14*(4), 414. https://doi.org/10.4300/JGME-D-22-00480.1

Tao, D., Gao, Y., Cole, A., Baker, J. S., Gu, Y., Supriya, R., Tong, T. K., Hu, Q., & Awan-Scully, R. (2022). The Physiological and Psychological Benefits of Dance and its Effects on Children and Adolescents: A Systematic Review. *Frontiers in Physiology*, *13*(June), 1–13. https://doi.org/10.3389/fphys.2022.925958

World Health Organization (WHO). (2020). https://www.who.int/