

# Cognitive, Emotional, and Self-Perception Outcomes of the 3D Movement Method: A Qualitative Study of Adult Women's Experiences

Zarina Manaenkova<sup>1\*</sup>, Ekaterina A. Santanna<sup>2</sup> 

<sup>1</sup>Independent Researcher, California, USA

<sup>2</sup>School of Media & Communication, Shanghai Jiao Tong University, Shanghai, China

Email: \*research@zarinadelmar.com

**How to cite this paper:** Manaenkova, Z. and Santanna, E.A. (2025) Cognitive, Emotional, and Self-Perception Outcomes of the 3D Movement Method: A Qualitative Study of Adult Women's Experiences. *Journal of Behavioral and Brain Science*, 15, 183-199. <https://doi.org/10.4236/jbbs.2025.159011>

**Received:** August 27, 2025

**Accepted:** September 22, 2025

**Published:** September 25, 2025

Copyright © 2025 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0). <http://creativecommons.org/licenses/by/4.0/>



Open Access

---

## Abstract

**Background:** Mind-body exercise (MBE) is increasingly recognized for its multidimensional benefits to physical, cognitive, and psychological health. While established modalities like yoga, tai chi, and Pilates have been extensively studied, little is known about novel approaches that integrate multiplanar movement with structured verbal guidance. **Objective:** This qualitative study explored participant experiences with the 3D Movement Method as MBE practice, examining perceived cognitive, emotional, and self-perception outcomes in adult women. **Methods:** Semi-structured interviews were conducted with 22 women aged 34 - 69 years ( $M = 49.41$ ,  $SD = 11.96$ ) who were current practitioners of the 3D Movement Method, with engagement ranging from three months to over two years. Interviews were conducted via Zoom in March-April 2025. A focused thematic analysis was performed using MAXQDA to examine cognitive, emotional, and self-perception outcomes. **Results:** The analysis identified three main domains of change: emotional benefits (such as better mood, increased motivation, and greater emotional stability), cognitive improvements (including sharper concentration, more effective decision-making, and clearer thinking), and self-perception gains (enhanced bodily awareness and a revitalized sense of physical agency). Participants described these changes as arising from the integration of multiplanar movement with mindful attention and structured verbal guidance. **Conclusions:** The 3D Movement Method appears to support psychological well-being through a synergistic interaction between physical engagement, attentional control, and reflective self-awareness. The findings contribute to the evidence based on innovative MBE formats that combine biomechanically precise movement with continuous verbal guidance to foster

---

embodied self-awareness.

## Keywords

Mind-Body Exercise, 3D Movement Method, Qualitative Research, Cognitive Function, Emotional Regulation, Self-Perception, Embodied Cognition, Motor Learning, Verbal Guidance

---

## 1. Introduction

Mind-body exercise (MBE) is increasingly recognized as a multidimensional approach to improving physical, cognitive, and psychological health [1]-[3]. MBE involves purposeful movement combined with attentional focus, controlled breathing, and heightened bodily awareness, integrating neuromuscular, cognitive, and emotional processes [4] [5]. Compared with both high- and low-impact cardiovascular exercise, MBE generally requires lower energy expenditure, minimal space, and no specialized equipment, making it accessible for a wide range of participants [1] [4].

A variety of MBE modalities have been studied, including yoga, tai chi, qigong, Pilates, dance-based programs, and culturally specific practices such as capoeira [4] [6] [7]. Many originate in Eastern and Indigenous traditions, where they have been used for centuries to promote balance, mental clarity, and recovery [8] [9].

Tai chi and qigong integrate deliberate, slow movements with controlled breathing and meditative focus, while Pilates focuses on postural alignment, proprioceptive awareness, and core stability [10]-[12]. Capoeira blends martial art, dance, and music, providing combined physical, cognitive, and social engagement [6] [7] [13].

Extensive research links MBE to mental health benefits such as reduced anxiety, depression, and fatigue, alongside improved sleep quality, mood regulation, and resilience [14]-[17]. Meta-analyses show enhancements in executive function, working memory, and attentional control, reflecting the cognitive demands of coordinated, multi-step movement [3] [18]-[20]. These outcomes are consistent with Embodied Cognition Theory, which views cognition as grounded in bodily movement and sensory experience [21] [22]. The benefits often depend on training frequency and the integration of attentional focus into practice [15] [23].

Online delivery formats have expanded access to MBE by reducing geographic and scheduling constraints and providing cost-effective, high-adherence options [24] [25]. Digital programs in MBE have demonstrated improvements in psychological well-being, mindfulness, and stress regulation [11] [26]. These developments are particularly relevant for adult women, who often balance multiple roles and may face barriers to in-person participation [16] [17].

Although the benefits of established MBE modalities are well documented, few studies have examined emerging approaches that use three-dimensional move-

ment, spatial awareness, and structured verbal instruction. The role of instructional clarity in shaping cognitive and emotional outcomes is rarely addressed, despite evidence that attentional focus and precise feedback can improve motor learning, body awareness, and mind-body integration [27]-[29].

The present study explores participant experiences with a contemporary MBE approach, the 3D Movement Method, and examines perceived cognitive, emotional, and self-perception outcomes. It aims to clarify mechanisms that may explain the observed effects and to add to the evidence on innovative MBE formats that pair multiplanar movement with clear guidance to support psychological well-being and embodied self-awareness in adult women.

### **1.1. Context of Study: The 3D Movement Method as a Mind-Body Approach**

The 3D Movement Method, developed by Zarina del Mar, is a mind-body practice that integrates biomechanical principles with mindful attention. It offers a structured yet adaptable framework that prioritizes three-dimensional body awareness and internal sensory feedback over repetitive, linear exercise patterns and external performance metrics. Drawing on principles from functional anatomy and motor learning, the method emphasizes precise proprioceptive control through deliberate, equipment-free movements in all planes: sagittal, frontal, and transverse. This approach fosters joint articulation, kinetic chain alignment, and mindful modulation of muscular tension.

The method uses a “movement snacks” format, breaking complex motions into short, accessible sequences that fit into daily life. Combining verbal and visual guidance with mindful attention, it supports conscious recalibration, reduces injury risk, and promotes sustainable habits. The central role of verbal explanation in adult motor learning helps participants understand alignment, muscle engagement, and weight distribution, enabling them to distinguish productive effort from harmful strain and develop “kinetic mindfulness”. This focus on quality over quantity turns brief sessions into effective practice that enhances learning, retention, and the mind-body connection.

### **1.2. Theoretical Framework**

The design and potential benefits of the 3D Movement Method can be interpreted through two complementary perspectives.

Embodied Cognition Theory proposes that cognitive processes are grounded in bodily states and sensorimotor experiences [21] [22]. Multiplanar exercises performed with sustained, mindful attention may enhance mental clarity, concentration, and decision-making by engaging both physical and cognitive systems in an integrated way.

Motor Learning Principles emphasize the importance of attentional focus, timely feedback, and variability for effective skill acquisition [27] [29]. The 3D Movement Method applies these principles through its structured use of observa-

tion, precise verbal cues, and adaptive adjustments that respond to the participant's performance.

## 2. Methods

This study used qualitative interviews to investigate how the 3D Movement Method influences cognitive, emotional, and self-perception outcomes in women across adulthood. A qualitative approach was chosen because research on the psychological effects of this form of movement training is limited, and this method provides detailed, context-specific insights into participants' experiences.

The interview guide was developed specifically for this research, informed by previous literature on MBE and well-being, and included questions on multiple domains of experience. The guide covered participants' backgrounds, prior sports experience, discovery of the 3D Movement Method, health issues, and perceived benefits and challenges of practice. Participants received the interview questions in advance together with a written informed consent form. While the interviews aimed to address all core topics, participants could choose not to answer particular questions or to respond in ways that diverged from the intended framing.

### 2.1. Participants

The study included 22 women aged 34 - 69 years ( $M = 49.41$ ,  $SD = 11.96$ ), all of whom were actively practicing the 3D Movement Method at the time of data collection. Eligibility criteria required self-identification as female, age 35 years or older (later adjusted to 34 to accommodate volunteer interest), current engagement with the 3D practice of Zarina del Mar, and an expressed interest in women's health and well-being. Women were excluded if they reported severe psychiatric or neurological illness, an acute musculoskeletal injury within the previous three months, or unwillingness to be audio recorded.

Participants described a wide range of backgrounds in physical activity, from long-standing involvement in yoga, swimming, or dance to more recent adoption of gym-based training or running. Health conditions were heterogeneous, including osteoporosis or osteopenia with sarcopenia, thyroid dysfunction (including Hashimoto's thyroiditis), migraine, chronic osteochondrosis with back pain, post-accident motor restriction, and recovery from long COVID-19. Approximately one-third of women reported intermittent fatigue or cognitive "brain fog", while menopausal symptoms such as hot flashes, night sweats, insomnia, weight change, and joint stiffness were frequently noted. Several participants also mentioned financial limitations affecting access to health resources, whereas others reported having purchased all available online courses to support their practice.

Family and social circumstances varied: most women were married and had children, while a minority lived alone or without children. Reported support ranged from strong involvement of partners or relatives to limited assistance, with several participants describing additional caregiving responsibilities for elderly

family members. Occupations were equally diverse, spanning professional desk-based work in finance, government, and education, as well as roles in healthcare, massage therapy, and freelance creative industries; a number of participants were retired.

Residences included metropolitan, midsized, and rural areas across Russia, Italy, Spain, Slovakia, the United Kingdom, the United States, Canada, Mexico, Australia, Sri Lanka, and Trinidad and Tobago. This geographical distribution provided scope for considering how cultural, social, and environmental contexts influence women's health and movement opportunities.

Participant characteristics are summarized in the **Appendix** using broad category labels (age brackets, country/region, exercise background, health conditions) to minimize identifiability and safeguard anonymity, given the presence of rare conditions, distinctive activities, and specific locations within this follower population.

Recruitment was conducted through email invitations distributed via Zarina del Mar's practitioner platform to approximately 200 potential volunteers. Of these, 22 women completed interviews, 13 scheduled but did not attend, and 3 declined participation. Invitation emails described the study's purpose, expected duration, interview format and topics, and the requirement for audio recording. Written consent was obtained electronically before scheduling, and participation was voluntary and uncompensated. All participants retained the right to decline answering personal questions perceived as personally sensitive, a provision designed to prevent potential distress for individuals navigating experiences often subject to social stigma, such as the perimenopausal and postmenopausal transition and its associated effects on body image and self-perception [30].

## 2.2. Procedure

All interviews were conducted via Zoom to accommodate geographic distribution and ensure accessibility. Sessions lasted approximately 20 - 60 minutes and were scheduled at mutually convenient times. At the start of each session, participants were reminded of the study's purpose, the voluntary nature of participation, and their right to skip any question or withdraw at any time. Permission to record was obtained before beginning the interview.

Interviews began with general background questions, followed by discussion of participants' experiences with the 3D Movement Method. Additional prompts addressed perceived physical, cognitive, and emotional effects, as well as barriers and facilitators to participation. The interviewer encouraged open-ended responses and intervened only to maintain focus on core topics.

At the end of each session, participants received contact information for follow-up and were informed of the option to request a debriefing. All recordings were transcribed verbatim in the original language, anonymized, and imported into MAXQDA (qualitative analysis software) for coding and analysis.

The interview corpus was originally collected for a broader study of life impacts

of 3D Movement practice, and the present focus on cognitive, emotional, and self-perception outcomes emerged during coding. All 22 interviews were analyzed, and transcripts were coded in MAXQDA with a stable codebook applied across cases. Signals of saturation were judged when later interviews yielded no new first-order codes and incoming material reiterated existing themes; complete saturation for these specific domains was not claimed because they were not targeted a priori [31]. Information power was considered adequate given the focused aim, the specific sample of current practitioners, sufficient interview depth, and a systematic, consistent coding process.

### **2.3. Data Analysis**

Transcripts were analyzed in MAXQDA (version 20) using the focused analysis approach described by Rädiker and Kuckartz [32]. The workflow unfolded across six iterative phases: i) preparation and familiarization; ii) development of provisional thematic categories; iii) first-cycle coding; iv) refinement of the category system in a second cycle; v) exploration of thematic relations and analytic options; and vi) contemporaneous documentation of analytic decisions. This software-supported process enhanced transparency and traceability from codes to themes while allowing new insights to be incorporated without compromising consistency across the dataset.

In earlier work with this corpus, coding was undertaken with two research assistants to capture the breadth of participants' accounts. In contrast, the present article reports a focused reanalysis restricted to emotional, cognitive, and self-perception outcomes; domains such as physical improvements and institutional contexts were out of scope. To minimize bias, the first author (developer of the 3D Movement Method) did not participate in data coding or thematic analysis; coding for this reanalysis was conducted by the second author. To mitigate single-analyst bias, she systematically revisited reflective notes recorded after each interview and maintained an analytic diary throughout, consistent with recommendations for reflexive qualitative practice [33] [34]. The resulting code system and accompanying memos were submitted to an independent colleague for critical review, providing an additional check on credibility and coherence.

### **2.4. Ethical Considerations**

The study followed the principles of the Declaration of Helsinki [35]. As the research involved non-interventional qualitative interviews, formal ethical approval was not required under established methodological guidance for minimal-risk studies. All participants received information about the study objectives and gave written permission for their interview data to be used. They were reminded that they could withdraw at any stage or decline to answer any question. Interview transcripts were anonymized, and potentially identifying occupational or geographic details were generalized or omitted. Pseudonyms were applied in all transcripts and quotations to protect participant confidentiality.

### 3. Results

Analysis of the interviews revealed three interconnected domains of change associated with engagement in the 3D Movement Method: emotional outcomes, cognitive outcomes, and self-perception outcomes. Although each domain can be discussed separately, participants' accounts often showed overlaps, suggesting that the practice influenced psychological well-being through an integrated mind-body process.

#### 3.1. Emotional outcomes

The majority of participants described clear improvements in mood, motivation, and emotional stability. These changes were sometimes subtle and cumulative, yet noticeable both to themselves and to others in their lives. One woman reflected on a shift in her reactivity and composure:

*“I think Zarina’s practices can absolutely help with mental and emotional balance. Maybe in another year or two I can tell you more. But even now, people tell me I seem calmer and less reactive. I attribute that to her method. It’s probably not just that—it’s also lifestyle. But yes, I believe it helps.”* (Participant N, 39 y.o.)

For others, the change was linked to relief from longer-standing low mood and lack of drive. A younger participant who had experienced periods of depression noted:

*“My mood has significantly improved recently, though I also started a new course of strong probiotics, so it might be a combination. Still, I’ve struggled with depression, and now I feel more motivated and less prone to procrastination. I believe the exercises are helping.”* (Participant M, 34 y.o.)

The sense of vitality and readiness to engage with daily activities was also mentioned repeatedly. As one participant put it:

*“My mood has definitely improved. I have more energy and a sense of joy. Even if I don’t have time in the morning, I make sure to do the exercises later in the day or even outdoors if it’s warm.”* (Participant A, 40 y.o.)

Together, these accounts suggest that the 3D Movement Method supported emotional well-being by combining physical engagement with practices that promoted a calmer, more energized mental state.

#### 3.2. Cognitive Outcomes

Participants frequently associated the practice with clearer thinking, better concentration, and more efficient decision-making. These effects were reported both by individuals new to mindful movement and by those with prior experience in meditation or other contemplative practices. A 69-year-old participant observed:

*“Physically, I feel better and move better. Mentally, I’ve always been stable. I’ve practiced meditation for a long time, so I didn’t notice a big difference in that regard. Still, the improved movement helps with mental clarity too. I see this in my massage practice—people come in foggy-headed and leave saying they feel like*

*a different person. Movement works in a similar way by improving circulation and mental focus.” (Participant H, 69 y.o.)*

Others described gains in concentration and a reduction in mental fatigue, connecting these shifts to the mindful, body-focused nature of the sessions:

*“With her exercises, I’ve gained not just physical benefits like flexibility and softer tissues, but especially mental clarity and concentration. My thinking feels lighter, and I have less brain fatigue. This has a strong impact on my day-to-day functioning. Her method connects the body and mind. It’s not just movement—it brings awareness, mindfulness, and inner connection.” (Participant I, 45 y.o.)*

Improvements in executive functioning were also highlighted, with one woman noting:

*“My mental state has also improved. I make quicker decisions and stay more focused. If I planned several tasks but run out of time, I now reprioritize quickly and act decisively. My brain functions better overall.” (Participant L, 48 y.o.)*

Some linked these cognitive benefits to the practice’s requirement for precise observation and correction:

*“Her workouts help with focus. I love how she asks you to observe the movement—how it starts, what changes. That’s how I notice when I’m doing something incorrectly and adjust. Once you activate the right muscle, you feel the difference immediately.” (Participant A, 40 y.o.)*

The mental demands of maintaining balance, coordination, and sequence in complex positions were also mentioned:

*“Of course her exercises help with concentration. If someone who’s never exercised before is suddenly told to stand on one leg, rotate, or hold a pose—it requires effort and focus. Even my husband, who’s a physically fit 55-year-old osteopath and massage therapist, struggles with the ‘swallow pose’ when I ask him to try. It’s not easy! But it’s essential. The brain is part of the process—you can’t disconnect it.” (Participant Y, 55 y.o.)*

### **3.3. Self-Perception Outcomes**

Many participants described changes in how they perceived and related to their bodies. In many cases, this meant becoming more attuned to physical sensations and regaining a stronger sense of control over one’s body. One woman explained:

*“The biggest win for me is that movement has become a habit. I now get up from my desk and stretch. My body asks for it. I’ve become more aware of how I move and how different body parts feel—hips, thighs, neck, jaw. It’s not about flexibility in terms of doing splits, it’s about exploring different parts of the body and improving joint mobility.” (Participant N, 36 y.o.)*

Others framed this reconnection in mindful, restorative terms:

*“That’s why I appreciate Zarina’s programs. What matters most to me is her explanations. They are very specific and help me understand how to move my body. Through her, I’ve learned how to listen to myself again, despite the pain. Her sessions are moments of mindfulness where I feel reconnected to my body*

*and to myself.”* (Participant I, 45 y.o.)

For some, the sense of presence extended beyond the physical to include mental engagement:

*“I discovered Zarina on internet forums. Her approach suits me perfectly. I’m grateful I downloaded Instagram and found her account. I enjoy being present in my body and simultaneously engaging my mind. Through her training, I work not only on my body but also on my brain.”* (Participant L, 48 y.o.)

Spatial and sensory self-awareness also emerged as a new experience for several participants:

*“To me, the 3D approach is about connecting with your internal sensations, understanding yourself spatially, and forming a relationship with your body. It’s not about muscle-building, it’s about listening. After just a few sessions, I told my partner, ‘I can feel my glutes move independently!’ I had never felt that before. He even noticed a difference.”* (Participant A, 40 y.o.)

Others described a shift from aesthetic goals toward a focus on health and sustainable practice:

*“What makes Zarina’s approach interesting to me is her claimed work with the vagus nerve, although I don’t fully understand how it functions in her programs. Some complexes I can perform, others I can’t. It’s not just about the body—it’s about how the brain fails to catch the correct sequence of movements. I wasn’t looking for beauty or weight loss. I had a slim, athletic body for years. What I want now is health, and I know it depends on physical activity. I have no problems with nutrition, but my body doesn’t ‘reboot.’”* (Participant G, 60 y.o.)

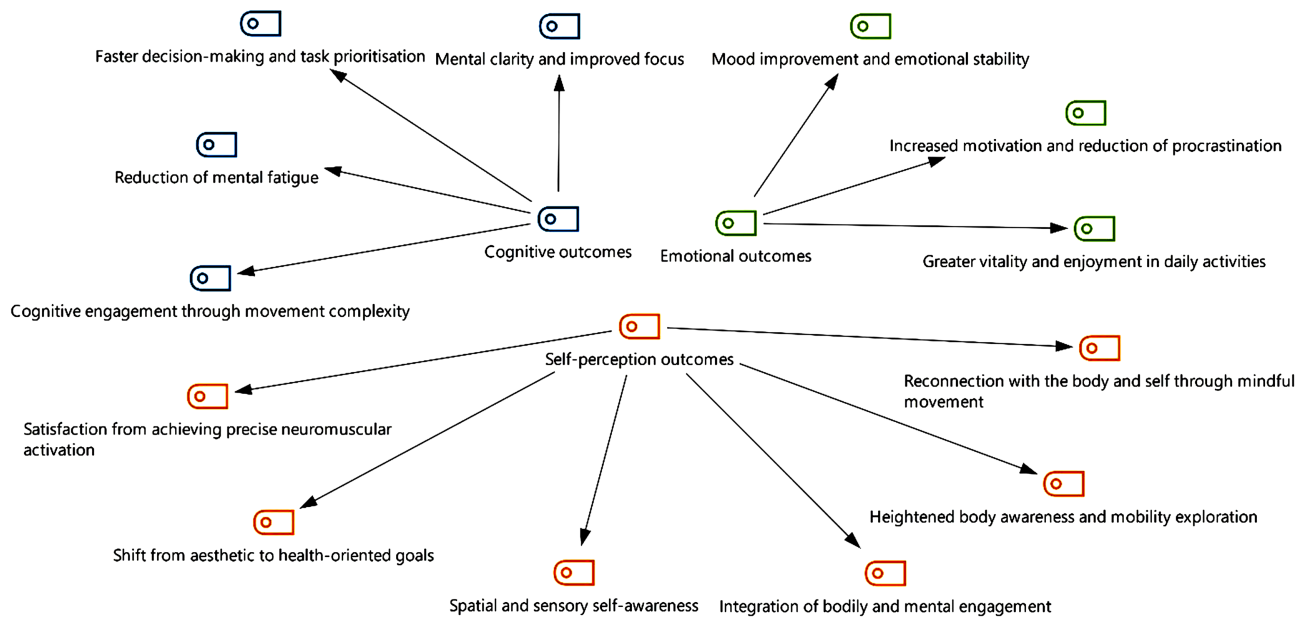
Finally, several participants described a deeply satisfying sense of alignment and accomplishment when movements felt “right”:

*“When I feel that I’ve ‘hit the mark’ during one of Zarina’s exercises, I feel a deep resonance. That’s why I keep returning to her programs. I want to build a weekly routine of those exercises that hit the right neural-muscular pathways. I know the process will take time. I’m not expecting quick results or magical weight loss—I’m aiming for sustainable, meaningful movement.”* (Participant G, 60 y.o.)

### 3.4. Integration of Domains

Across accounts, emotional, cognitive, and self-perception changes appeared to reinforce one another. Improved mood and energy supported greater focus and task management. Heightened bodily awareness fostered both mental clarity and emotional stability. This interplay suggests that the psychological benefits of the 3D Movement Method arise from a dynamic integration of physical practice, mindful attention, and self-reflection, rather than from isolated effects in any one domain.

**Figure 1** presents the thematic map generated in MAXQDA, illustrating the three primary domains: emotional outcomes, cognitive outcomes, and self-perception outcomes, along with their respective subthemes.



**Figure 1.** Thematic map of outcomes from the 3D movement method (generated in MAXQDA).

#### 4. Discussion

The findings indicate consistent positive changes in all three domains (cognitive, emotional, and self-perception), suggesting that the 3D Movement Method may facilitate a holistic improvement in psychological well-being through the combined influence of physical movement, attentional engagement, and structured verbal instruction. Given the self-selected sample and concurrent lifestyle changes reported by some participants, expectancy effects cannot be excluded.

The cognitive outcomes, including improved concentration, decision-making, and mental clarity, are consistent with Embodied Cognition Theory [21] [22]. Multiplanar movement sequences performed with sustained attentional focus may promote sensorimotor integration, which has been associated with improvements in executive functioning in MBE research [3] [19].

By requiring participants to maintain spatial orientation and proprioceptive awareness while following detailed verbal guidance, the method appears to engage both motor and cognitive processes simultaneously, potentially leading to the improvements described in participant accounts.

Changes in self-perception, including heightened bodily awareness and a sense of physical agency, can also be understood within the framework of Motor Learning Principles [27]-[29]. The structured verbal cues and opportunities for self-correction may enhance kinesthetic discrimination and postural control, supporting the development of a more accurate and confident body schema. These mechanisms have been observed in studies of Pilates, tai chi, and other mind-body modalities where attentional focus is integral to the practice [8] [10] [11].

The emotional outcomes described by participants, including improved mood and emotional stability, are likely influenced by both the cognitive and self-perception changes. Heightened bodily awareness may foster present-moment attention,

which has been linked to reductions in stress and anxiety [15] [16]. Additionally, the self-paced and adaptable structure of the practice may increase participant autonomy and intrinsic motivation, factors that can enhance emotional well-being [20].

These findings position the 3D Movement Method within the broader field of MBE as a distinctive approach that integrates biomechanically precise, multiplanar movement with continuous verbal guidance. This combination appears to support sustainable engagement by shifting emphasis from appearance-based goals toward functional ability, self-awareness, and long-term well-being. Such an orientation is increasingly highlighted in contemporary exercise psychology and public health literature.

#### **4.1. Limitations**

Several limitations should be considered. The sample size was small, in part because some scheduled participants did not attend, and it was self-selected from women already engaged with the 3D Movement Method, which may have favored higher motivation and positive expectations. Geographic representation was uneven, with concentration in Russia, Europe, and North America, which constrains transferability to other settings. All outcomes were obtained through self-report interviews, and no physiological or cognitive measures were collected to corroborate perceived change. Menopausal status and symptom reports were mentioned incidentally rather than documented systematically, so associations between stage of transition and outcomes were not examined. Because the first author is the inventor of the 3D Movement Method, interviews and coding were undertaken solely by the second author; this approach reduced direct developer influence but may still introduce interpretive bias, as described in the data analysis. Finally, all participants reported prior experience with physical activity, which may limit generalizability to sedentary women and to mind-body modalities other than the 3D Movement Method.

#### **4.2. Implications for Practice**

The findings highlight the potential value of incorporating precise, structured verbal guidance into MBE programs, particularly for adult women. Instructors and program designers may consider integrating multiplanar movement sequences with continuous verbal cues to support attentional focus, kinesthetic awareness, and self-perception. For digital and remote formats, maintaining instructional clarity may enhance participant engagement and sustain motivation, especially when participants have limited prior experience with mindful movement. Additionally, emphasizing functional goals and body awareness over aesthetic outcomes may promote long-term adherence and psychological well-being. These considerations could inform the development of future in-person and online interventions targeting holistic health outcomes.

### **5. Conclusions**

This qualitative study suggests that the 3D Movement Method may be associated

with perceived improvements in cognitive function, emotional regulation, and self-perception in adult women. The integration of mindful, multiplanar movement with structured verbal guidance appears to facilitate an interplay between physical engagement, attentional control, and reflective self-awareness.

By interpreting the results through Embodied Cognition Theory and Motor Learning Principles, the study contributes to understanding how attentional focus and instructional clarity may enhance the benefits of MBE. While the findings are limited by the qualitative, self-reported nature of the data and the self-selected sample, they point to the value of incorporating precise verbal guidance into movement-based interventions.

Future research should examine these effects in more diverse populations, use mixed-methods or longitudinal designs, and include objective measures of cognitive and physiological outcomes. Experimental comparisons between instruction-rich and demonstration-only formats may clarify the specific contribution of verbal guidance to the observed benefits.

### **Author Contributions**

Author contributions: Z. M.—conceptualization, methodology, writing—review & editing; E. S.—data analysis and curation, writing—original draft. Both authors approved the final manuscript.

### **Ethical Considerations**

All procedures adhered to the ethical principles set out in the Declaration of Helsinki. Formal approval by an Institutional Review Board or Ethics Committee was not required, as the research involved non-interventional, minimal-risk qualitative interviews with adult participants, consistent with established methodological guidance. To protect confidentiality, all transcripts were anonymized and any potentially identifying details were generalized or omitted.

### **Informed Consent Statement**

Informed consent was obtained electronically through an emailed invitation that included the study description.

### **Data Availability Statement**

The interview transcripts used in this study are not publicly available to protect participant privacy. Anonymized excerpts are available from the corresponding author upon reasonable request.

### **Acknowledgements**

The authors are grateful to all participants for their time, kindness, and willingness to share their experiences and insights. During manuscript preparation, the authors used ChatGPT (OpenAI, GPT-5, 2025) for grammar and language proof-reading; the authors reviewed and edited all output and take full responsibility for

the content.

## Conflicts of Interest

Zarina Manaenkova is the developer of the 3D Movement Method, and Ekaterina Santanna has served as a consultant to Zarina del Mar LLC; no other competing interests are declared.

## References

- [1] Suk, J., Kim, K. and Kim, J.U. (2025) A Meta-Analysis of Studies of the Effect of Mind Body Exercise on Various Domains of Cognitive Function in Older People with or without Mild Cognitive Impairment. *Journal of Evidence-Based Integrative Medicine*, **30**, 1-21. <https://doi.org/10.1177/2515690x251363709>
- [2] Zou, L., Zhang, Y., Yang, L., Loprinzi, P.D., Yeung, A.S., Kong, J., *et al.* (2019) Are Mindful Exercises Safe and Beneficial for Treating Chronic Lower Back Pain? A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Journal of Clinical Medicine*, **8**, Article 628. <https://doi.org/10.3390/jcm8050628>
- [3] Wu, C., Yi, Q., Zheng, X., Cui, S., Chen, B., Lu, L., *et al.* (2018) Effects of Mind-Body Exercises on Cognitive Function in Older Adults: A Meta-Analysis. *Journal of the American Geriatrics Society*, **67**, 749-758. <https://doi.org/10.1111/jgs.15714>
- [4] Dong, Y., Zhang, X., Zhao, R., Cao, L., Kuang, X. and Yao, J. (2024) The Effects of Mind-Body Exercise on Anxiety and Depression in Older Adults: A Systematic Review and Network Meta-Analysis. *Frontiers in Psychiatry*, **15**, Article 1305295. <https://doi.org/10.3389/fpsyt.2024.1305295>
- [5] França, C., Martinho, D., Gouveia, É.R. and Portugal, A. (2025) Mind-Body Exercise and Depression. In: Schuch, F.B. and Stubbs, B., Eds., *Physical Activity, Physical Fitness and Depression*, Routledge, 93-104. <https://doi.org/10.4324/9781003478539-7>
- [6] Monteiro-Junior, R.S., da Rocha Fernandes, V., Pereira Oliva, H.N., Prudente, T.P. and Ribeiro, S. (2025) Capoeira and Brain Function: Hypotheses and Perspectives from a Systematic Review. *Mental Health and Physical Activity*, **28**, Article ID: 100678. <https://doi.org/10.1016/j.mhpa.2025.100678>
- [7] Ribeiro, S., Pimentel, A.P., Fernandes, V.R., Deslandes, A.C. and Amarante, P. (2024) It Is Time for More Holistic Practices in Mental Health. *PLOS Mental Health*, **1**, e0000028. <https://doi.org/10.1371/journal.pmen.0000028>
- [8] Deuel, L.M. and Seeberger, L.C. (2020) Complementary Therapies in Parkinson Disease: A Review of Acupuncture, Tai Chi, Qi Gong, Yoga, and Cannabis. *Neurotherapeutics*, **17**, 1434-1455. <https://doi.org/10.1007/s13311-020-00900-y>
- [9] Lin, X., Zheng, J., Zhang, Q. and Li, Y. (2024) The Effects of Mind Body Exercise on Anxiety: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Mental Health and Physical Activity*, **26**, Article ID: 100587. <https://doi.org/10.1016/j.mhpa.2024.100587>
- [10] Ju, M., Zhang, Z., Tao, X., Lin, Y., Gao, L. and Yu, W. (2023) The Impact of Pilates Exercise for Depression Symptoms in Female Patients: A Systematic Review and Meta-Analysis. *Medicine*, **102**, e35419. <https://doi.org/10.1097/md.00000000000035419>
- [11] Aibar-Almazán, A., Hita-Contreras, F., Cruz-Díaz, D., de la Torre-Cruz, M., Jiménez-García, J.D. and Martínez-Amat, A. (2019) Effects of Pilates Training on Sleep Quality, Anxiety, Depression and Fatigue in Postmenopausal Women: A Randomized

- Controlled Trial. *Maturitas*, **124**, 62-67.  
<https://doi.org/10.1016/j.maturitas.2019.03.019>
- [12] Guidotti, S., Fiduccia, A., Morisi, G. and Pruneti, C. (2025) Benefits of Pilates on Depression, Anxiety, and Stress: An Observational Study Comparing People Practicing Pilates to Non-Active Controls. *Healthcare*, **13**, Article 772.  
<https://doi.org/10.3390/healthcare13070772>
- [13] Mascari, L.H. (2021) The Afro-Brazilian Martial Art of Capoeira: Cultural Healing and Identity. Master's Thesis, University of Wisconsin-Milwaukee.
- [14] Makhfudli, M., Tonapa, S.I., Has, E.M.M., Chong, M. and Efendi, F. (2024) Efficacy of Mind-Body Exercise to Reduce Sleep Disturbance and Depression among Older Adults: A Systematic Review and Meta-Analysis. *Asian Nursing Research*, **18**, 408-419. <https://doi.org/10.1016/j.anr.2024.08.002>
- [15] Weber, M., Schnorr, T., Morat, M., Morat, T. and Donath, L. (2020) Effects of Mind-body Interventions Involving Meditative Movements on Quality of Life, Depressive Symptoms, Fear of Falling and Sleep Quality in Older Adults: A Systematic Review with Meta-Analysis. *International Journal of Environmental Research and Public Health*, **17**, Article 6556. <https://doi.org/10.3390/ijerph17186556>
- [16] Xu, H., Liu, J., Li, P. and Liang, Y. (2024) Effects of Mind-Body Exercise on Perimenopausal and Postmenopausal Women: A Systematic Review and Meta-Analysis. *Menopause*, **31**, 457-467. <https://doi.org/10.1097/gme.0000000000002336>
- [17] Yue, H., Yang, Y., Xie, F., Cui, J., Li, Y., Si, M., *et al.* (2025) Effects of Physical Activity on Depressive and Anxiety Symptoms of Women in the Menopausal Transition and Menopause: A Comprehensive Systematic Review and Meta-Analysis of Randomized Controlled Trials. *International Journal of Behavioral Nutrition and Physical Activity*, **22**, Article No. 13. <https://doi.org/10.1186/s12966-025-01712-z>
- [18] Wayne, P.M., Yeh, G. and Mehta, D.H. (2018) Minding the Mind-Body Literature: Aging and Cognitive Decline. *The Journal of Alternative and Complementary Medicine*, **24**, 196-199. <https://doi.org/10.1089/acm.2018.29044.pjw>
- [19] Blomstrand, P., Tesan, D., Nylander, E.M. and Ramstrand, N. (2023) Mind Body Exercise Improves Cognitive Function More than Aerobic- and Resistance Exercise in Healthy Adults Aged 55 Years and Older—An Umbrella Review. *European Review of Aging and Physical Activity*, **20**, Article No. 15.  
<https://doi.org/10.1186/s11556-023-00325-4>
- [20] Chan, J.S.Y., Deng, K., Wu, J. and Yan, J.H. (2019) Effects of Meditation and Mind-Body Exercises on Older Adults' Cognitive Performance: A Meta-Analysis. *The Gerontologist*, **59**, e782-e790. <https://doi.org/10.1093/geront/gnz022>
- [21] Gallagher, S. (2006) *How the Body Shapes the Mind*. Clarendon Press.
- [22] Shapiro, L. (2019) *Embodied Cognition*. Routledge.
- [23] Tao, J., Liu, J., Chen, X., Xia, R., Li, M., Huang, M., *et al.* (2019) Mind-Body Exercise Improves Cognitive Function and Modulates the Function and Structure of the Hippocampus and Anterior Cingulate Cortex in Patients with Mild Cognitive Impairment. *NeuroImage: Clinical*, **23**, Article ID: 101834.  
<https://doi.org/10.1016/j.nicl.2019.101834>
- [24] Kemper, K.J., Lynn, J. and Mahan, J.D. (2015) What Is the Impact of Online Training in Mind-Body Skills? *Journal of Evidence-Based Complementary & Alternative Medicine*, **20**, 275-282. <https://doi.org/10.1177/2156587215580882>
- [25] Lee, D., Kang, D., Ha, N., Oh, C., Lee, U. and Kang, S.W. (2018) Effects of an Online Mind-Body Training Program on the Default Mode Network: An EEG Functional

- Connectivity Study. *Scientific Reports*, **8**, Article No. 16935.  
<https://doi.org/10.1038/s41598-018-34947-x>
- [26] Jung, Y., Ha, T.M., Oh, C.Y., Lee, U.S., Jang, J.H., Kim, J., *et al.* (2016) The Effects of an Online Mind-Body Training Program on Stress, Coping Strategies, Emotional Intelligence, Resilience and Psychological State. *PLOS ONE*, **11**, e0159841.  
<https://doi.org/10.1371/journal.pone.0159841>
- [27] Lee, T.D. and Schmidt, R.A. (2025) Motor Learning and Performance: From Principles to Application. *Human Kinetics*.
- [28] Sigrist, R., Rauter, G., Riener, R. and Wolf, P. (2012) Augmented Visual, Auditory, Haptic, and Multimodal Feedback in Motor Learning: A Review. *Psychonomic Bulletin & Review*, **20**, 21-53. <https://doi.org/10.3758/s13423-012-0333-8>
- [29] Wulf, G. and Lewthwaite, R. (2016) Optimizing Performance through Intrinsic Motivation and Attention for Learning: The OPTIMAL Theory of Motor Learning. *Psychonomic Bulletin & Review*, **23**, 1382-1414.  
<https://doi.org/10.3758/s13423-015-0999-9>
- [30] Bonevski, B., Randell, M., Paul, C., Chapman, K., Twyman, L., Bryant, J., *et al.* (2014) Reaching the Hard-To-Reach: A Systematic Review of Strategies for Improving Health and Medical Research with Socially Disadvantaged Groups. *BMC Medical Research Methodology*, **14**, Article No. 42. <https://doi.org/10.1186/1471-2288-14-42>
- [31] Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., *et al.* (2017) Saturation in Qualitative Research: Exploring Its Conceptualization and Operationalization. *Quality & Quantity*, **52**, 1893-1907.  
<https://doi.org/10.1007/s11135-017-0574-8>
- [32] Rädiker, S. and Kuckartz, U. (2020) Focused Analysis of Qualitative Interviews with MAXQDA. MAXQDA Press.
- [33] Johnson, J.L., Adkins, D. and Chauvin, S. (2020) A Review of the Quality Indicators of Rigor in Qualitative Research. *American Journal of Pharmaceutical Education*, **84**, 7120. <https://doi.org/10.5688/ajpe7120>
- [34] Turner, D. (2020) Reflexive Journals in Qualitative Research. *Qualitative Research Journal*, **20**, 297-305.
- [35] World Medical Association (2013) World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. *JAMA*, **310**, 2191-2194.

### Appendix: Participant Characteristics

ID	Age bracket	Country	Exercise background (generalized)	Health issues (generalized)
N	30 - 39	USA	Aerobic and endurance; Flexibility and mobility; Coordination and skill training	Neurological history; Back pain (intermittent)
G	60 - 69	Russia	Long-term sport participation; Strength and resistance	Injury or surgery history; Mobility or gait limitation; Low energy
Y	50 - 59	Russia	Long-term sport participation; Aerobic and endurance; Flexibility and mobility	Menopausal symptoms; Sleep disturbance; Weight change
M	30 - 39	Slovakia	Aerobic and endurance; Flexibility and mobility; Strength and resistance	Back pain; Spinal curvature
H	60 - 69	Australia	Mixed routine across modalities	Well-being goals; Not discussed
N	30 - 39	USA	Coordination and skill training; Flexibility and mobility	Lower-body weakness or deconditioning
I	40 - 49	Italy	Aquatic exercise; Strength and resistance	Bone density concerns; Ongoing pain; Low energy
L	40 - 49	Russia	Long-term sport participation; Strength and resistance; Flexibility and mobility	Headache or migraine; Menopausal symptoms
T	40 - 49	Sri Lanka	Aerobic and endurance; Strength and resistance; Flexibility and mobility	Perceived muscle weakness
A	40 - 49	Russia	Flexibility and mobility; Coordination and skill training	Low energy; Body composition change
C	60 - 69	Spain	Strength and resistance	Stiffness; Reduced flexibility
M	60 - 69	Mexico	Long-term sport participation; Strength and resistance	Bone density concerns; Thyroid-related fatigue; Hip or lumbar pain
U	30 - 39	USA	Coordination and skill training; Flexibility and mobility; Strength and resistance	Injury history; Core weakness; Low back joint issues
B	30 - 39	Trinidad and Tobago	New to structured exercise; Flexibility and mobility	Preventive health focus
S	40 - 49	UK	At-home video sessions; Flexibility and mobility; Walking	Bone and muscle maintenance
K	30 - 39	Canada	Flexibility and mobility; Strength and resistance; Coordination and skill training	Not discussed
N	60 - 69	USA	Flexibility and mobility; Functional everyday activity; Hiking or brisk walking	Thyroid-related low energy; Post-viral recovery; General aches and pains
N	60 - 69	Russia	Aerobic and endurance; Flexibility and mobility; Strength and resistance	Back pain; Reduced activity after caregiving

**Continued**

O	40 - 49	Russia	Flexibility and mobility; Strength and resistance	Not discussed
A	40 - 49	Canada	At-home self-directed activity; New to structured exercise	Sedentary lifestyle
C	60 - 69	USA	At-home and gym sessions; Walking; Light strength	Health maintenance
C	60 - 69	USA	At-home video sessions; Low-frequency activity	Joint stiffness (shoulder)

Note. Categories reflect interview content and protect anonymity. “Not discussed” indicates the topic was not covered, not that a condition was absent.