

Original Research

The Multiple, Embodied Positive Effects of a Community-Based Aerial Sling Class: Improved Body Schema, Fitness, Mental Health, and Diet

Maria Kosma *

Louisiana State University, School of Kinesiology, 2218 Huey P. Long Field House, Baton Rouge, LA 70803, USA; E-Mail: mkosma@lsu.edu

* **Correspondence:** Maria Kosma; E-Mail: mkosma@lsu.edu

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Abstract

Contrary to the dominant ultra-cognitive approach in public health whereby only thought processes are supposed to link to action (e.g., physical activity) and health, in this research an embodied (body-mind unison) philosophy was examined by showcasing the importance of holistic and performative movement experiences to health and well-being. Specifically, the purpose of this study was to comprehensively examine the interrelated, multiple, and embodied benefits of a community-based aerial sling class (“Flow”) on body schema, mental health, fitness, and lifestyle change (diet). This was a phenomenological, qualitative, and community-based research study among seven women (age range: 28-48 years old), including the class instructor, who participated in the Flow class at a major metropolitan southern US city. Hermeneutic phenomenology was used to analyze the study’s data in the latest version of NVivo. Based on the qualitative data, four themes (with several sub-themes) emerged regarding the positive effects of the Flow class: a) Body schema improvement, including improved body awareness and mindfulness (e.g., knowing how to engage and isolate certain muscles and managing TMJ symptoms) and increased body confidence in expression and performance; b) Improved mental health, including decreased stress and obsessive thoughts, increased joy and confidence from accomplishment (“mentally rewarding”), and experiencing



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a supportive community; c) Increased fitness: Strength, energy, flexibility; and d) Improved diet, including decreased consumption of processed food coupled with increased protein intake and healthy eating habits. The study's hypothesis was supported, in that holistic, embodied, and performative movement programs within a community setting can lead to physical and mental benefits as well as positive lifestyle changes.

Keywords

Aerial sling; body schema; physical and mental health; fitness; diet; lifestyle; phenomenology; Merleau-Ponty

1. Introduction

This research study is based on the philosophical underpinnings of Merleau-Ponty's magnum opus, *Phenomenology of Perception* [1]. Based on his philosophy of embodiment, Merleau-Ponty criticized the Cartesian mind vs. body dichotomy and showcased the interaction of the two (body-mind unison). Instead of viewing the body as an object (like a table or a chair – being in itself) or a statistic that can be measured, he elevated its essence to a subject: *The Lived Body* that has consciousness (being for itself) and acts. The body is “Lived” because it acts with consciousness: it walks, runs, climbs, dances, expresses, performs [1-10].

Contrary to ultra-cognitivists who emphasize cognition for health and well-being, a key feature in Merleau-Ponty's philosophy is the notion that the world can be comprehended via bodily movement for both healthy and clinical populations. The body throws itself into meaningful motor significations and thus body schema (motor habit) is formed, reflecting body awareness, posture, confidence, and mannerisms. Body schema represents overall bodily expression, leading to skill acquisition and understanding of the world [1, 4, 5, 11, 12]. The conscious and sub-conscious sense-giving experiences via motor habit is a *tacit* knowledge that connects the body's senses with its function in the world [1, 3-5, 11, 13]. Body schema is not cognitive knowledge or a reflex; it is not a mental representation but a pre-reflective unity (existence first and then essence) of the body's senses via motricity [1, 4-6, 11, 14]. Within physical activity and movement settings, exercisers know how to execute different skills via *praktognosia*, which is practical knowledge obtained through practice and experience. This practical and corporeal knowledge guides the mind in that for mastered skills corporeal sensations take precedence and analytical thinking is minimal. A tennis player knows tacitly how to return a speedy ball. An aerialist does not cogitate while performing different movement skills that they have mastered like tying knots, dancing, and inverting in the air [1-5, 8, 9, 15-18].

Body schema is not fixed; rather, it can be constantly reworked and renewed [1, 6, 11]. A well-balanced body schema via holistic movement programming can facilitate skill acquisition, mobility, health, and the love of movement [1-7, 9, 11, 12, 15-17, 19, 20]. There is only one study within performing arts showing that physical theater can lead to the improvement of body schema among college students [11]. This research is a continuation of previous work related to the positive effects of college-level classes in performing arts on psychosocial health, fitness, and lifestyle choices [9, 12, 15-17, 19, 20]. Specifically, two elements were added in the current study: a) it was conducted at a

community setting among adult women and b) the purpose was to simultaneously and comprehensively examine the multiple, embodied, positive, and interconnected effects of a performing arts class (aerial sling) on body schema, health, fitness, and lifestyle. Only via practically experiencing the phenomenon of exercise can the integral positive effects of movement be sensed, facilitating the development and implementation of community-based physical activity programs for health and well-being [4-7, 9, 11, 12, 15-17, 19-21]. This philosophy contrasts with the dominant, cognitive approach in public health whereby only thought processes are supposed to link to action (e.g., physical activity) and health. Given the shortcomings of the Cartesian methods in health promotion (e.g., reliance on behavior-change theories to achieve positive lifestyle changes), it is imperative to examine bodily function and health holistically by recognizing the links between body and mind and how cognition cannot exist without bodily movement – the strong connection between body and mind affects health and well-being [1, 3-6, 8, 9, 11, 12, 15, 17].

In conjunction with Merleau-Ponty's philosophy [1] and the nature of the aerial sling (performing arts) class, physical activity was viewed holistically in that corporeal expressions are qualitatively distinct and involve dynamic, explosive, slow or fast, controlled, expressive, playful, and intentional movement sequences [2, 6, 7, 11, 21-24]. Such performative movement experiences can have direct effects on physicality, mobility, health, and well-being within community settings. Specifically, the corporeal sensations during holistic movement endeavors lead to *praktognosia* (practical or embodied knowledge) that can have multiple interconnected effects on body schema (e.g., improved body confidence and awareness), health, and lifestyle. Although some of those effects may be linear (e.g., improved body schema can lead to better health), multi-level influences and relations can simultaneously occur. Motricity can directly lead to improved health without significant improvements in body schema. In a recent systematic review and meta-analysis, it was shown that community-based dance programs can have direct positive effects on mental health [25]; yet there is scarcity of qualitative research in holistically examining multiple influences of physically demanding aerial arts programs on physicality, health, and lifestyle. Therefore, the purpose of this phenomenological and qualitative study was to comprehensively examine the interrelated, multiple, and embodied benefits of a community-based aerial sling class on body schema, mental health, fitness, and lifestyle (diet).

2. Methods

2.1 Design and Procedures

This was a phenomenological, qualitative, and community-based research study among seven women (age range: 28-48 years old), including the class instructor, who participated in an aerial sling class, "Flow," at a major metropolitan southern city. Beyond the Flow class, most study participants were physically active engaging in level/skill-based aerial silks classes (see Table 1). The Flow class started in January 2024 and took place once per week for 1.15 hours. It incorporated skill based and performative elements, including the creation and execution of a dynamic interplay of movement shapes, sequences, and choreographies while sitting, standing, swinging, and flipping within the sling (loop of suspended fabric/hammock). The class setting was supportive, whereby the instructor encouraged the participants to bodily explore different movement variations, including the creation of new or modified routines. Similar creative and performative movement programs in aerial silks and/or physical theater have been used among college students at university settings [9,

11, 12, 15-17, 19, 20]. Four months after class commencement (May 2024), the study participants took part in a show performance open to the public. Following the showcase (from May 22, 2024, until June 6, 2024), individual, semi-structured interviews (about 30 minutes each) were conducted via zoom to collect the study's qualitative data. Participants were asked about their exercise levels, body schema (e.g., body awareness, confidence, posture, physicality), physical and mental health, and diet (see interview guide in Table 2). Demographic information about the participants' age, gender, and ethnicity was also collected.

Table 1 Exercise Participation.

Participant	Activity Type	Frequency	Duration
Alana	Aerial arts	3 days/week	3.30 hours/week
	Barre/ballet class	5 days/week	5 hours/week
Becca	Aerial arts	3 days/week	3.45 hours/week
	Kickboxing	3 days/week	
	Dancing	2-3 days/week	
Christina	Aerial arts	4 days/week	5 hours/week
	CrossFit classes	3 days/week	
	Yoga at home	2-3 days/week	2-3 hours/week
Mandy	Aerial arts	2 days/week	2.30 hours/week
Nickie	Aerial arts	2-3 days/week	2.30-3.45 hours/week
	Yoga class	Occasionally	
	Dance class	Occasionally	
Taylor	Aerial arts	2 days/week	2.30 hours/week
	Strength, stretching	Occasionally	
Instructor	Aerial arts	3 days/week	Over 6 hours/week
	Open gym (aerial)	Occasionally	
	Acrobatics class	Occasionally	

All participants have been continuing with the Flow class among other aerial arts classes long term.

Table 2 Interview Guide.

Aerial Arts and Exercise Behavior

1. For how long have you been participating in the Flow class?
2. Do you participate in other exercises (type, frequency, intensity)?
3. Did your exercise levels change due to the Flow class and how?

Body Schema and Physicality

4. Has your physicality changed due to the Flow class and how (give examples)? In other words, how has your body movement, posture, perception, awareness, and comfort changed due to the Flow class? Think of expressing, sensing, and functioning.
5. How has your physicality changed in your daily activities and functions?
6. How do you view your body in Flow and daily life?
7. How has your skill level in Flow changed since you started?

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8. Can you describe an example in class to show how you get a good sense of your physicality, body movement, function, and expression?
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Health and Diet

9. Do you have any health problems?
10. Has your physical health changed and how?
11. Has your mental health changed and how?
12. How has aerial sling affected your emotions? Think of how your bodily exertion in class affects your feelings.
13. Have you noticed any changes in any health problems and how?
14. Has your diet changed due to the Flow class and how?
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The study received Institutional Review Board approval for the protection of human subjects in research (IRB #0392). The participants were recruited via the owner of the aerial arts studio. The studied Flow class was chosen based on the study's purpose and Merleau-Ponty's philosophical framework. The study participants did not have any mobility restrictions that would prevent them from participating in the aerial sling class. Prior to the interviews, the interviewer electronically shared with the participants the study's consent form and interview guide. In this way, the participants could read the project's description and interview questions at their own pace. The interviewer discussed the study's purpose with the participants addressing any questions. Participation was voluntary and the adult women signed the consent form and electronically shared it with the principal investigator before scheduling their zoom-based interviews. Given the voluntary nature of study participation, withdrawal from the research project at any point was allowed without any penalties or negative consequences. Per Institutional IRB policy, it was stated in the consent form that the participants had the option to use their first name or a pseudonym for result reporting. Nearly all study participants preferred to use their first name in the published data.

The interviewer engaged the participants in in-depth discussions by creating an informal, democratic, and dialogical atmosphere of the subject matter. All interviews were conducted via zoom. The initial interview guide was drafted by the interviewer before discussing it with the instructor of the aerial-sling class (Flow). It is key to highlighting that the instructor was not aware of details regarding the study's investigative points to increase objectivity in the findings. The final questions were then pilot tested with the first two study interviewees, whose results were included in the study.

2.2 Data Analysis

The audiotapes were transcribed verbatim, and the transcripts were entered in the latest version of NVivo together with the interviewer's post hoc reflections and debriefing notes. Hermeneutic phenomenology was used to analyze the study's data [26-29]. Specifically, the interviewer coded the data after reading the transcripts multiple times. In this way, she developed themes and categories by examining each individual story and the whole data set in a recursive process. Some of the results were also further discussed with the class instructor and participants to facilitate data coding. In this way, reflexivity in qualitative research was also embraced by relying not only on the researcher's knowledge and hypotheses but also on the experiences of the study participants within

different contexts in aerial arts [30, 31]. Representative extracts were then selected based on the coded data, the entire data set, study purpose, and the literature.

Drawing on hermeneutic phenomenology, the in-depth examination of the studied phenomenon is imperative. Therefore, in this research the interviewer was seriously invested in the subject matter by participating in a similar class (combination of aerial sling and aerial silks) offered by the same instructor, making class observations, and taking notes. The principal investigator also reflected on personal experiences, previous research findings, and frequently discussed with the participants (including the instructor) their class practices. She used recursive analytical procedures to attempt to best capture the phenomenon of interest. Guided by hermeneutic phenomenology, she relied on the study's philosophical framework, prior research, and participants' stories for the coding. She first highlighted the data of interest before paraphrasing and grouping them to different topics to form themes. The data were coded to identify the best matched themes regarding for example body schema (body awareness and confidence), health, fitness (e.g., strength), and lifestyle (e.g., diet). It is important to note that this process is iterative and continuous throughout the different study phases: identification of research purpose, development of interview guide, execution of actual interviews, philosophical framework, prior research, personal experiences, observations, reflections, and discussions [31]. The researcher's participation in similar aerial arts classes and prior experience serves as an important step in confirming the trustworthiness of the data, in that the interviewer needs to be heavily involved with the research topic, including personal participation, observations, and reflections [26-31]. Accordingly, some of the developed themes were also discussed with the instructor and some participants, especially those who served in the pilot phase of the study. Certain modifications in the interview guide – which was constantly updated – included aspects on body schema and health. Nevertheless, this research is interpretive in nature, meaning that result interpretation can vary based on the meanings different readers may ascribe to the participants' shared stories [29].

3. Results

3.1 Participant Characteristics

The study participants were eight White women (age range: 28-48 years old), including the Flow aerial-sling class instructor. Beyond the Flow class, most of them were participating in other level-based aerial silks classes (see Table 1). A few women were involved with additional exercise classes or practices like extreme conditioning program training, yoga, and dance. These individuals have been continuously participating in aerial silks classes for 1.5 years to 5 years. Importantly, the study participants have been participating in the Flow class – among other aerial silks classes – for about a year since its inception (personal observations and communication with the instructor).

3.2 Emerging Themes

Based on the phenomenological, qualitative analysis in the latest version of NVivo, four themes (with several sub-themes) emerged regarding the positive effects of the Flow class: a) Body schema improvement: improved body awareness and mindfulness (engaging certain muscles while isolating others; sitting and walking straighter: “shoulders back and down”; managing TMJ symptoms; increased body confidence in expression and performance); b) Improved mental health: decreased

stress (“palate cleanser,” “complete focus on the body... gets me out of my head and into my body”) and obsessive thoughts (“thousand times better than used to be”); increased joy and confidence from accomplishment (“mentally rewarding”) and a supportive community; c) Increased fitness: Strength, energy, flexibility: increased upper-body strength, energy, and flexibility – important for health; and d) Improved diet: decreased processed food consumption, increased protein intake and healthy eating habits by e.g., avoiding meal skipping and harmful foods to rheumatoid arthritis.

3.2.1 Theme 1: Body Schema Improvement: Increased Body Awareness, Mindfulness, and Confidence

Improved Body Awareness and Mindfulness. Study participants mentioned that the Flow class led to increased body awareness and mindfulness. Christina acknowledged that body awareness is higher in the Flow class than her extreme conditioning program training class because in aerial sling she learned how to engage certain muscles (e.g., shoulders when “hanging on to the silks”) while at the same time relaxing other muscles (e.g., hip flexors, neck, and jaw muscles). She also learned how to transfer this knowledge to her daily functions (outside the Flow class), such as “avoiding arching her back or clenching her jaw” (managing her TMJ disorder; “be aware of the jaw”) while walking around campus.

“... aerial in general puts more emphasis on... body awareness, because... with extreme conditioning program training, it's making sure your form is correct... But aerial... I've learned what it means to feel... when your shoulders are engaged versus when they're not engaged. But we learn that in extreme conditioning program training, too. The one thing that's distinct from aerial is isolating certain muscles. So, for example, when I do a hang on the silks... I'm supposed to tuck my core, but my hip flexors, which are right under my core, are supposed to be relaxed. And that's a really hard thing to focus on engaging one muscle, but also relaxing a muscle that's right next to it. And it has meant that I tend to be a little bit more aware of my body just outside of aerial class. So, for example, I have TMJ issues. My jaw hurts a lot and it's because I clench. So, if I'm stressed... I'll clench... in aerial... my teachers have always told me that my jaw and my neck need to be relaxed. So, while my shoulders are engaged during a hang, my jaw should be relaxed, and my neck should be relaxed. And that's hard for me because when I engage my shoulders or when I'm really doing anything that requires, you know, strength, my instinct is to clench my jaw... And so aerial means that during aerial class, I'm trying to be aware of, you know, my jaw and whether or not I'm clenching. My teacher always tells me to put my tongue on the roof of my mouth because that helps me make sure that my jaw is relaxing. And then I apply that during the day, like when I'm just like driving, I notice that I'm in a train of thought where I'm getting really anxious... and I'm starting to clench. I'll remember what (the teacher) tells me in class: ‘put your tongue to the top of your mouth’ to try to make sure that I'm relaxing my jaw and to be more aware of what my body is doing during the day.”

“I have definitely been more aware... a lot of my shoulders are... hunched over... I'm just walking around campus... sometimes I'll think shoulders down and back... it's good for my body... I'm particularly aware of my shoulders and my core because I've started to realize since doing aerial... when I'm standing just regularly and I'm not thinking about it, I have a slight arch in my back... and sometimes I think maybe this slight arch I have in my back is part of the

reason why I have so many back problems. So sometimes like even when I'm just walking around the house or around campus, I'll try to think about tucking my core in the same way I would in aerial to eliminate that arch and just protect my lower back a little bit more rather than walking around with this arch back."

Christina also mentioned that the Flow class increased her awareness and mindfulness regarding changing positions during her sedentary job requirements.

"I have one of those jobs where I'm in the car a lot, where I'm sitting down at a computer a lot, and I think aerial has motivated me to try to be more aware of making sure that I'm not in one position throughout the day without changing... to try to be more mindful of my body, especially when I'm doing work, it really gets me in my head."

A few participants, including the instructor, mentioned that since the Flow class they have increased their awareness of "body positioning", especially during the transitions from one movement to another by focusing on details that "make the whole sequence flow."

"... how your body's positioned, what your hand is doing, making things look more graceful, and then figuring out how to go from one move to another (changing positions) and make it look good... There's like nitpicking details about 'what way is your grip holding and what is your other hand doing? Is your toe pointed?' All those little details you become aware of as you're moving between moves" (Mandy).

Taylor indicated that the Flow class, which includes both skill and performativity elements, facilitates better body awareness than only skill-based classes.

"... the Flow class does make you a lot more body aware because with that level-based class, it's more learning and accomplishing the skill. And they might try to tell you how to make it look a little nicer. With the Flow class, it's more 'finding poses, pointing your feet, body positioning, and like what will make a more aesthetic shape while you're in the air versus, here's this skill, do it a few times, try it on the non-dominant side, and then move on to the next one.'"

The instructor indicated that constant practice assisted her with improved "body positioning" and "muscle control." When she first started aerial sling, it required "conscious thought"; however, with practice she was able to sense "how to hold her body; what muscles to engage and how to engage them." Once she learned the different movements via practice "it became like second nature."

Improved Body Confidence. Christina mentioned that she looks more confident when her "shoulders are spread out rather than hunched over." Nicky's body confidence increased due to her gradual accomplishments in the Flow class, including the creation of performances.

"... it (Flow class) definitely has a huge impact on my body confidence. I'll say that just from the very beginning... and just seeing and being able to look back from beginning into where I am; seeing how much my body is able to accomplish and then seeing that I just recently started doing like performances... and just like really appreciating my body for what it's capable of."

Although Taylor did not have any dance or gymnastics background, her body confidence increased via constant practice in the Flow class: "... we do floor work and stuff... at first it was very uncomfortable doing anything, especially in front of people, but that doing it has made me a lot more confident." Similarly, the instructor feels very "poised" and "expressive" when she performs. On stage, she "becomes a different person"; however, she is not that confident when she does not perform.

3.2.2 Theme 2: Improved Mental Health

Feeling Better and Accomplished; "The Flow Class Is a Palate Cleanser". Several students mentioned that the Flow class provides an escape from the daily routine. During aerial practice, full focus on the different movements is required, whereby there is no other thought in mind.

"... aerial is more of a mind challenge... It's more of an exercise for my mind. Whereas barre, I go in, I do what they tell me to do, and my body gets a good workout. In aerial... I have to really think about what I'm doing for an hour and 15 minutes. And it just provides an escape... of not thinking about anything else but what they're teaching me" (Alana).

When she travels, Alana may need to find a studio to "just spin" because this is what her body needs. Similarly, Christina said that her Flow class is a complete "palate cleanser" from her daily routine and worries.

"I will frequently experience something where I have a hard day at work and I'm like frustrated and I come into the aerial class frustrated and I leave and it's almost like a palate cleanser, like whatever it was that was frustrating me has been kind of wiped clean. And I think part of the reason why that is, is... when you're in the air moving, you can't be thinking about the thing that made you angry earlier that day. You're thinking about engaging your shoulders and all of these different things. Like, I think aerial forces you to be in the present moment. I have a teacher who says 'it gets her out of her head and into her body'... and yoga is kind of similar, but I think aerial does it a little bit more effectively only because aerial is more strenuous than most yoga I've done. And because it really requires that you have to concentrate on your body. And I think it's really nice to have an hour of the day where I'm really focused on what my body is doing and not really thinking... so aerial helps get me out of my head and into my body."

For Nickie, "aerial brings out all the happy endorphins." Nickie is excited to sense her abilities and how "aerial pushes the body to its limits", whereby the end goal is to "nail a trick." She finds aerial practice more challenging than going to the gym to lift weights: "...how many more, how much weight can I add? Blah, blah, blah." Alana also enjoys sensing "immediate growth after accomplishing a different move." In the Flow class, not only is Alana learning different movement skills but mainly she is "learning ways to do a sequence of moves", which is "mentally rewarding." Taylor feels "accomplished" after finishing her Flow class.

"I always feel accomplished when I leave... it's a sense of looking back and being like, I did that. Because you look at a 17-foot ceiling with a piece of fabric hanging from it. And I feel like most people would look at that and say, 'no, there's no way.' But then you're an aerialist, you do it... I leave and I look at me like I did that."

Healing Severe Mental Health Problems, Including Positive Community Effects. Since childhood, the class instructor has been struggling with severe, diagnosed obsessive thoughts against herself. She is “medicated and has gone through several mental health treatments.” Aerial sling has been the “best medicine... I'm a ton, a thousand times better than I used to be.”

“I have severe mental health problems... since I was a child. College was a horrible time. I do feel like it (aerial sling) has helped me. Sometimes it works against it. You know, sometimes there are things in aerial... that are very triggering to, like, certain feelings that I already have about myself. I have obsessive thoughts... like hating myself. And aerial is the only time I feel like I don't... I've always struggled with that. I'm on medication. I've gone to mental health treatment facilities and everything. And I'm a ton, a thousand times better than I used to be... when I'm up there doing it, I feel confident... I can do this. I look good doing this... I'm a good aerialist. And I don't feel that way 90% of the time. So, I do feel like it has absolutely helped me in that aspect.”

The instructor also mentioned that aerial practice attracts a supportive and helpful community whereby several aerialists experience similar issues and support each other.

“... we have a theory that aerial draws people with mental health issues because a lot of people, I mean, probably everyone you're going to talk to is going to bring that up. We all have had similar experiences. And so, it's a community, too, that's super supportive and helpful. And if they see us on, like, a bad day or they see me, like, in one of my, like, spirals, they're still going to talk to me the next day because they understand.”

Nickie also praised the supportive community in the Flow class. At times, she does not feel well because it takes longer to master a skill compared with others. This challenge makes her “push herself harder” and receive support from other aerialists.

“... the community is so supportive that whenever I start to beat myself up, I have a million girls there being like, ‘you know, you're gonna get it... don't think about it so hard, or don't push yourself so hard.’”

3.2.3 Theme 3: Increased Fitness: Strength, Energy, Flexibility

Improved Strength and Energy. Study participants mentioned that they have significantly improved their strength, especially their upper body strength, because of the Flow class. They have managed to achieve their highest fitness and health levels by participating in exciting aerial arts vs. feeling bored when they lift weights at a gym.

“... I feel a lot stronger, especially in my upper body... But I'd been having this goal for years of being able to do a pull-up, and hadn't made any progress... Three months into aerial, I was able to do a pull-up... that was a major thing that aerial gave me, is... my upper body strength, which has always been a weakness for me... I am healthier now than I've ever been in my whole life... I love it. I feel strong. I feel beautiful. I feel grateful. I feel like I'm pushing myself to try new things and learn new things. I feel cool, like badass. And I know one of the healthiest things for exercising is strength training, but I've tried lifting weights and that is not my thing. It's boring” (Becca).

"I'm stronger. I'm a lot stronger. Before, I couldn't do a push up. I still technically can't do a strict pull up where you are from a dead hang and you're pulling up from a dead hang. I can do it from the ground, but I know that when I'm doing it from the ground... I'm jumping a little bit, which is not a strong pull up, but I'm working on it" (Christina).

"I feel I could, like, beat somebody up... I want to fight somebody... I feel like I'd win... you can't deny you build so much upper body muscle and it's so empowering... I could probably beat my husband in a fight. It feels good... taking an aerial class, where not only... to have fun, but you also hold your head up high in your moves; you do it with confidence; and you're getting these big strength gains; you're going to walk out of this studio with your head a little higher... so, physically, I do feel the fittest I've ever been in my entire life" (instructor).

Although Taylor must drive three hours (two-way) to go to her aerial sling class, she does it because ever since she started the Flow class, she has been having much more energy to function in life.

"I have a lot more energy... so much more energy. I used to get off work and all I wanted to do was to go home on my sofa. But now, I want to go to aerial class, which says a lot because I drive an hour and a half one way to go to these classes. So, for me to go it's kind of a big deal."

Improved Flexibility. Study participants also mentioned that they significantly increased their flexibility due to the Flow class. Becca and Mandy said that they have "increased their general flexibility" and they are now "more flexible than they have ever been." Christina mentioned that she is now motivated to stretch more and do flexibility exercises like "yoga at home" due to the Flow class. This has also been very helpful with her lower back pain.

"... my lower back can sometimes feel pain. Aerial motivates me to stretch more. So, before aerial, I would try to motivate myself to do at home yoga, but I wasn't very good at it. But when I started aerial, I was very motivated to do at home yoga because flexibility is so important for certain things in aerial. You know, I would go to class, and I would realize my leg couldn't reach the silk and it's because I had a flexibility limitation. And so, I actually think maybe indirectly, the biggest way that aerial has helped with my physical health is by motivating me to stretch frequently... if I want to be good at aerial, I have to increase my flexibility and working on stretching is so good for my lower back. Like I make a huge difference. It's probably the number one thing I can do for my lower back... stretch and practice regular, you know, yoga exercises; and aerial really motivates me to practice that."

3.2.4 Theme 4: Improved Diet

All study participants mentioned that the Flow class has helped them improve their diet by avoiding processed food and meal skipping, adding more protein to their diet, and maintaining a healthy weight and overall health (e.g., preventing exacerbation of rheumatoid arthritis).

"I do try to eat healthy. I feel like if I'm putting in all of this effort (for the Flow class), then it needs to be in all areas of my life. That doesn't mean I'm not gonna eat a piece of candy, but for the most part, I try to eat what I feel like I'm supposed to eat... I guess it was in 2013 I had

weight loss surgery. I was 240 pounds. And I think just keeping that off is important to me” (Alana).

“... when I care, I can change my diet, and I do think about my diet. I try to add extra protein so that I can build the muscle for aerial... I go in phases where I'll eat like trash and just try to add protein where I can... and then I'll go in phases where I eat really healthy and I like, get extra gains... currently, I eat whatever I want and try to shove in some extra protein when I can” (Becca).

“I have to be careful about what I eat before class... I have to eat before class because there have been times when I've come into class, and I will feel weak. And then I'll think, 'what did I eat today?' And I'll be like, 'I had coffee. I ate a mandarin in the morning and that's it.' And I'm like, 'oh, I think we've solved the problem here...' And so, I think aerial, especially on days that I have class, aerial does motivate me to eat because I have to. But at the same time, you can't eat too close to class, and you need to be aware of like eating things that are going to sit really heavy in your stomach. You start going upside down and doing all this stuff and it feels really, you know, very uncomfortable. And so, I think the main way that aerial has affected my diet is by motivating me to eat during the day, especially at least four hours before class... four to five hours before class is like the sweet spot. So, I have a tendency to skip lunch. But on days I do aerial, I cannot skip lunch. I have to eat lunch” (Christina).

“I didn't think I could ever do aerial, especially because I had rheumatoid arthritis, or I was diagnosed with rheumatoid arthritis in 2020... my joints were swollen, my ankles were swollen, my wrists... so I didn't think it was possible to do aerial, but I changed my diet completely. I started not eating gluten, dairy, or nightshade. And I got my energy back and my inflammation down. I really don't have any inflammation and joint issues. Like it hasn't been an issue anymore. I don't take any medicine, but I do take supplements like magnesium... if I started eating wrong again, it would come right back. I don't eat a whole lot of processed foods... It (the Flow class) definitely makes me happy, and it makes me motivated to stay healthy. I don't want to cheat on my diet because I want to be able to do class” (Mandy).

4. Discussion

The purpose of this phenomenological and qualitative study was to comprehensively examine the interrelated, multiple, and embodied benefits of a community-based aerial sling class, “Flow”, on body schema, mental health, fitness, and lifestyle (diet). The results will be discussed separately for each theme in relation to relevant literature and the study's conceptual framework, which is Merleau-Ponty's *Phenomenology of Perception* [1]. Additionally, we will review how the different themes interrelate, providing further support for the holistic and embodied elements of aerial arts within a community setting.

4.1 Theme 1: Body Schema Improvement

Based on the first theme, the study participants indicated that the Flow class led to improved body schema, including increased body awareness, mindfulness, and control. Participants managed to sense and understand how to engage certain muscles (e.g., shoulders while hanging on the silks) while simultaneously relaxing others like hip flexors and jaw muscles. These sense giving benefits of

the Flow class were also transferred to daily activities, including paying attention to posture while walking (“shoulders back and down”). The positive effects of performing arts (physical theater) on body schema among college students was recently supported [11]. Uniquely, the current study extended the previous research by showcasing how improved body schema led to the management of different health issues like TMJ disorder and lower back issues. Additionally, the combination of skill-based and performative elements of the class resulted in better body awareness, confidence, and control than only skill-based classes. The links among accomplishing challenging tasks in aerial arts, becoming creative, expressing emotion, and thus increasing body confidence among college students were previously supported [9, 15-17].

These study findings further corroborate with Merleau-Ponty’s philosophical analysis about ways to renew body schema. Specifically, constant practice of movement skills can lead to refined embodied knowledge (*praktognosia*), whereby analytical thinking is diminished, and the body is freed and openly expresses as *The Lived Body* – a subject, not an object or a statistic [2-5]. Instead of learning only different skills, practicing performative elements in the aerial-sling class further enhanced body schema by experiencing flow-like sensations like body positioning, transitions, and expression. These embodied sensations (body-mind-emotion unison) are strengthened and best felt during lasting practice in different activities like performing arts [1-5, 7-9, 15-17]. Per this study’s findings and its conceptual framework, reworking and renewing body schema as a holistic unity of one’s corporeal experiences is key to managing clinical conditions like mental health issues, physical disability, and cognitive difficulties [1, 4-6, 21].

4.2 Theme 2: Improved Mental Health

Although body schema reflects motor habit (an inter-sensorial unity), it is not separate from our psycho-social self. The formation of body schema via bodily movement influences emotions and mental health [3]. As shown in this study and elsewhere [12, 15, 17, 19, 20], participation in aerial arts link to several psychological benefits, such as “feeling better”, being “mentally rewarded”, and sensing “all the happy endorphins.”

Uniquely in this research, two additional findings emerged supporting the holistic nature of corporeal movement and subsequently body schema. First, the Flow class was a complete “palate cleanser” in that the participants were able to clear their minds of all worries and concentrate on the task at hand. They became “forgetful” of their duties due to the artistic/playful and demanding nature of aerial arts [22]. Second, the Flow class has had tremendous effects on clinical mental health conditions like obsessive thoughts against oneself. The class instructor stressed that aerial practice has been the “best medication” she has ever had. The participants highlighted two potential reasons for the important life-changing mental health outcomes of the Flow class: a) the unique, holistic, embodied, playful, strenuous, and challenging movement experiences during aerial practice and b) the supportive community. This outcome aligns with Merleau-Ponty’s holistic view of the body and its functions [1]. For example, emotions are embodied and influenced by bodily experiences, including body schema [3, 6, 15, 16]. It is erroneous to view emotions only reflexively by reinforcing the use of cognition to monitor and alter them; bodily movement plays a significant role on emotional reactions and sensations [3, 6]. This notion again contradicts the Cartesian body-mind dualism in that emotions and social interactions can be primordially experienced and perceived via bodily interactions [32-43].

4.3 Theme 3: Increased Fitness

Study participants highlighted that their strength, especially upper body strength, flexibility, energy, and overall fitness have significantly improved due to the Flow class. Some of them mentioned that they are the “healthiest and fittest they have ever been”, reinforcing feelings of confidence and strength. Taylor’s energy levels went up, and she does not mind driving about three hours (two way) to the studio for the Flow class. Flexibility also significantly improved, and Christina is now motivated to perform yoga exercises at home. Her gains in flexibility have alleviated some health issues of her lower back. The importance of aerial arts to improved fitness, including upper body strength and flexibility, and increased exercise motivation has been previously evidenced among college students [17]. Demanding aerial arts can lead to improved strength and health [44-48]. Embracing Merleau-Ponty’s holistic view of the body and its functions [1], it is established in this research that embodied movement experiences within community-based performing arts can lead to better movement skills, fitness, and even lifestyle.

4.4 Theme 4: Improved Diet

Similarly, the Flow class positively influenced participants’ diet by avoiding processed food, adding protein to meals, and trying to maintain a healthy weight and overall health. Mandy has been able to manage her rheumatoid arthritis symptoms due to her diet and related physical demands of the Flow class. In another study among healthy college students, it was shown that aerial practice improved diet [17]. This finding expands Merleau-Ponty’s philosophy on embodiment [1], in that not only do holistic corporeal experiences strengthen body schema and improve mental health and fitness, but also, they lead to positive lifestyle changes like improved diet.

4.5 Study Strengths, Limitations, and Future Research

4.5.1 Study Strengths

This is the first community-based research study to qualitatively/phenomenologically and comprehensively examine the positive effects of an embodied, holistic, and performative aerial-sling class on body schema, mental health, fitness, and diet among adult women. In corroboration with previous research findings among college students, the community members of this study enjoyed the embodied, skill-based, and performative aerial-sling class resulting in multiple positive changes like increased physical and mental health and improved lifestyle. The class content was aligned with Merleau-Ponty’s view of the body as a subject and not an object [1]. Some of the participants’ debilitating mental health issues and other clinical conditions were alleviated due to the Flow class. Importantly, and as guided by hermeneutics phenomenology, the recursive, continuous, and in-depth analytical procedures of the study secured the rigor of the research and trustworthiness of the results [26-31, 49-57]. All study participants participated in aerial arts and similar exercises like strength training, yoga, and dance. Even though other exercise modalities (e.g., yoga, Pilates, and resistance training) may increase fitness and health, there are unique aspects of the Flow class as explained by some participants. Specifically, it takes place in the air (enhancing its physical demand), and it is performative in nature; thus, it leads to increased concentration (taking

mind away from everything else) and improved body schema not only for performative reasons but also for safety [9, 17].

4.5.2 Study Limitations and Future Research

Although there were some clinical conditions among the participants (e.g., rheumatoid arthritis, obsessive thoughts, TMJ), the study population encompassed mostly healthy White women. Therefore, in future studies researchers should also examine the effects of similar programs on health aspects of inactive, clinical populations and preferably those with systemic bodily damage that can be caused by physical disabilities, mobility difficulties, and/or auto-immune conditions. Even though White women tend to represent the main population segment across different studies on aerial arts [9, 11, 12, 15-17, 19, 20], researchers in the future may attempt to identify ways to attract men and people of diverse ethnic backgrounds. This was challenging in the current study because the aerial arts studio was the only one in the whole city serving mainly White women. Nevertheless, the study findings should not differ much among other populations as shown in previous research [9, 11, 12, 15-17, 19, 20]. Given the immense resources required to effectively implement similar community-based research projects on a large scale, it is imperative to first examine how smaller-scale research interventions can affect the health and well-being of clinical populations in the community.

5. Conclusion and Implications

To our knowledge, this was the first phenomenological and qualitative study to comprehensively examine the interrelated, multiple, and embodied effects of a community-based aerial sling class on body schema, physical and mental health, and lifestyle. Based on the study findings, the participants strengthened their body schema and thus improved their mental health, fitness, and diet due to their participation in the Flow class. Important implications can be recognized from this research study. Specifically, performative, holistic, and embodied elements in community-based performing arts can lead to physical and mental benefits as well as positive lifestyle changes. Although such movement experiences are common in performing arts like dancing, aerial dancing, and physical theater, their implementation within Kinesiology programs can be challenging. Recommendations to overcome some of those challenges are as follows: a) utilize music within different exercise settings like gym classes; b) allow people to freely explore different activity variations of certain skills like in individual and group-based sports and exercises; c) provide exercise modifications as needed for clinical populations.

Author Contributions

The author did all the research work for this study.

Competing Interests

The authors have declared that no competing interests exist.

AI-Assisted Technologies Statement

The transcription of the audios was assisted by free TurboScribe AI.

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