

## Dance for the Mind and Body...and for Medicine

*An intersection between dance and health that needs to be further explored and utilized*

by Huiyi Bao

I have been dancing since I was 5 years old, and for almost just as long, I have been on a trajectory towards a career in medicine. As I grew older, dance and medicine both developed into very real passions for me, and not in a mutually exclusive way. They evolved more strongly in the areas where they intersect – especially now, as I prepare for the next steps in my career.



For so long, I was caught up in the wash of preparing for medical school - from coursework requirements, to clinical hours, to MCAT prep - that I lost track of why exactly I was so committed to this path. When I finally lifted my head up to look at the bigger picture, I discovered the undeniable influence dance has had in guiding me towards finding my genuine purpose in medicine.

So where is this intersection between dance and medicine? It comes in the form of mind-body connection, movement meditation, and homeostatic coordination – all aspects that contribute to an embodied sense of kinesthetic awareness that ultimately enhances health from a biological standpoint. And in today's medical world, this falls into the field of integrative medicine which has become a hot topic of research looking into how these techniques promote longevity and recovery.

In the same vein, the idea that dance and movement promotes healing and preserves health is not just a novel discovery or a subjective view lacking a scientific basis. Rigorous studies have shown these practices to significantly improve health issues related to poor quality of life – including breast cancer, heart disease, and various neurological disorders. It supports the idea that fact-based physiological study of the body is not separate from the artistic and athletic components of dance and other sports. But despite data-driven support for the ability to heal through movement practices, the public at large is still mostly unaware of the benefits that these integrated and coordinated movement approaches provide, especially because they are not yet routinely incorporated into medical practice.

As with many people, I was unaware of the inner workings between dance movement and health until I consciously felt these connections within myself and continued to build on them. Eventually I became more in tune with and aware of my entire body. These discoveries led me to working concurrently with exercise physiologists and dance professors through an integrative

research approach. My research with these UC Irvine professors, along with my concurrent studies in Biological Sciences and Dance, has allowed me to cultivate a deeper understanding of the physiological impact of dance and movement and the potential it has to change medicine, from relying solely on conventional methods to including these integrative practices.

As I have continued to develop these two disciplines – dance and medicine – I have also come to understand the traditional perspectives of medicine that remain rigidly prevalent in healthcare today. There seems to be a fixed separation and distinction between natural remedies and pharmacological treatments and, on a more macroscopic scale, between the world of movement, arts, and humanities, on the one hand, and the world of empirical sciences on the other. These prevailing views in medicine have pushed movement-based healing away from allopathic medicine. With all the resistance against disrupting the hierarchy between arts and conventional medicine, it is unsurprising that the apprehensive attitudes of medical professionals have trickled down to influence the general public's own opinions and expectations.

The solution is not to turn against conventional approaches to medicine, but to shift our immediate tendency to disregard these integrative techniques and understand all its benefits. Dance encompasses and enhances coordination and kinesthetic awareness in a way that heightens peripheral awareness. This is a key component in the ability to detect when a functional unit within the body has strayed from the vital homeostatic maintenance that is required in order to support proper health. The vitality of human connection is another aspect of these integrated practices that shouldn't be overlooked. Not only are patients moving and bonding in each other's presence, but they are also learning from and being surrounded by people who understand exactly what they are going through.

It's interesting to note that medical professionals routinely advise patients to get up and move around as soon as possible following surgery or injury. This facilitates the healing process by increasing blood flow, oxygen delivery, and release of endorphins, resulting in downstream benefits like a boosted immune system, faster wound healing time, and heightened mental clarity. Moreover, these benefits can be enhanced by taking advantage of the human body's ability to restructure and reorganize itself in ways that potentially rewire connections within the nervous and muscular systems at neuromuscular junctions to boost functional efficiency.

Despite encouraging movement and knowing the benefits that follow, drug treatment approaches are most often still the first-choice method. But as research demonstrating the health benefits of movement continues to surface, I am hopeful that attitudes from health care providers will follow suit by embracing treatment styles that connect the mind and body through movement.

I have been exploring these connections firsthand through the research that I am conducting with Dr. S. Ama Wray, a dance professor at UCI's Claire Trevor School. Dr. Wray created an integrative approach to kinetic movement connections called Embodiology® and offers a practice that uses fundamental elements of dance, rooted in both Western and Ghanaian

practices, to affect physiological processes incurred by stress, aiming to boost vitality in the process. Our research, which we have entitled, “Students who are resilient, empowered, and moving,” combines work from Dr. Wray’s practice of Embodiology® with research in the UCI School of Biological Sciences.

We have been gathering data that tracks the effects of movement meditation sessions during an eight-week long program. This is accomplished via consensual recordings of students as they move during the sessions which are then analyzed via a high-acuity movement annotating software. The resulting movement data is then compared to poll results from each student as they progress throughout the program in order to assess variations in stress levels. Our research also explores how the participants’ movements change as they become more in tune with their bodies, and how this coincides with their mental and emotional states.

This type of movement-centered approach is what I think needs to be implemented more into medical research, especially when prescription drug routes have been exhausted. Alzheimer’s is a prime example of this phenomenon where new drugs that initially seem promising have often yielded disappointing results at phase II or III of clinical trials – costing the US government billions of dollars annually. Yet amidst the endless cycling of new drugs, there are promising alternative routes involving yoga and meditation techniques that have shown to actually restore memory and reduce Alzheimer’s related anxiety. However, this line of Alzheimer’s research is both under-represented and under-funded for a number of systemic and dispositional causes behind American healthcare. Everything from funding allocation to public opinions on integrative medicine play into this disparity in the available research between drugs and movement-based methods. While these ingrained obstacles will take time to overcome, it starts with a willingness to explore preventative embodied approaches from big medical institutions and individual people.

This process of pivoting our focus in patient care to incorporate movement-based therapies must be embraced—and not sidelined—by the medical community in order to succeed. If we can elevate the importance of integrative approaches, we may be able to usher in an era of multidimensional medicine that treats a patient as a whole being. This means working with the patient, their support system, and community, while also supporting their mental and emotional health that go beyond just the physical.



*Huiyi Bao graduated from University of California, Irvine this June, 2023 with a B.A. in Dance and B.S. in Biological Sciences. She plans to apply to medical school while continuing to bring her knowledge and passion for dance with her as she pursues a career in medicine.*

## References

Kelley, G. A., & Kelley, K. S. (2015). Meditative movement therapies and health-related quality of life in adults: A systematic review of meta-analyses. *PloS one*, 10(6), e0129181.

- Suggests that meditative movement therapies significantly improved health problems related to poor quality of life. But like most studies on the impact of movement meditation based treatment, there is always more comparative and additional data that is needed in order to confirm these benefits.

Khalsa, D. S., & Perry, G. (2017, March). The four pillars of Alzheimer's prevention. In *Cerebrum: the Dana forum on brain science* (Vol. 2017). Dana Foundation.

- Describes the four fundamental practices/modification to lifestyle and attitude that make a difference in helping to prevent and enhance treatment of Alzheimer's Disease. These pillars include diet and supplements, physical and mental exercise, yoga and meditation, and psychological well being.

Moss, A. S., Wintering, N., Roggenkamp, H., Khalsa, D. S., Waldman, M. R., Monti, D., & Newberg, A. B. (2012). Effects of an 8-week meditation program on mood and anxiety in patients with memory loss. *The journal of alternative and complementary medicine*, 18(1), 48-53.

- Data collected from this eight week long meditation program for participants with memory loss concluded that 12 minutes of meditation per day (which included coordinated movement) was associated with positive changes in mood, anxiety, and other neuropsychological parameters, and these changes correlated with changes in cerebral blood flow.