

# The Healing Rhythm of the Tide: Exploring the Synergy Between Oceanic Waves and Yoga for Mental and Physical Wellness in Coastal Liberia

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## Abstract

**Background:** The cross-fertilization of natural environment with wellness has emerged as proven to influence mental and physical health. The chanting roar and salt air of tidal waves along Liberia's Atlantic coast provides a one-of-a-kind chance to integrate marine life into yoga practice. This article examines the ways in which offering yoga classes on the shoreline is thought to contribute to participants' well-being.

**Objective:** Assess the feasibility of yoga being performed in the coastal setting and impact on relaxation in mind, physical health and community acceptability of coastal dwellers in Liberia.

**Methods:** A cross-sectional exploratory study based on a self-administered structured Likert-scale questionnaire was used to poll at least 30 adults in selected districts of Atlantic communities in Liberia. The survey asked about demographics, attitudes toward the coast, experiences of doing yoga by the sea and willingness to engage in such therapeutics. Responses were analysed using descriptive statistics and open-ended comments were coded thematically.

**Findings Results:** Of the 30 responders, most people agreed that ocean sound improved feelings of calm and mental clarity (83%); 77% agreed they were more relaxed and breathed better during ocean yoga. Around 70% of them were interested in taking part in coastal ypga

courses on a regular basis. Time limitations and lack of interest were reported as the main obstacles to participation.

**Conclusion:** Early evidence suggests coastal yoga may be an effective, low-cost, community-appropriate intervention for mental and physical well-being in Liberia. With the additional use of yoga as a community wellness and tourism-based intervention, the fusion of the sanctifying elements of nature – ebb and flow sea level rise offers multiple synergies.

**Keywords:**

Coastal wellness, tidal waves, mental health, community-based intervention, ocean therapy

**Background:**

The benefits of natural coastal environments for therapy purposes are now being appreciated in holistic health treatments. Numerous studies have shown that proximity to the sea is linked to better mental health status and general well-being as a result of the therapeutic effects of oceanic elements including the sound of waves, sea breeze and panoramic views 1. These structures provide sensory inputs which reduce stress responses, induce relaxation and a parasympathetic nerve state 3. In this regard, the Liberian Atlantic coast remains a somewhat unexplored yet conducive environment for assimilating yogic practices of yore with Oceans' soothing natural vibes. Coastal areas of Liberia have scenic natural beauty, even though, the structured mental health and wellness interventions is lacking, thus, demonstrating the relevance and necessity of nature-based interventions [5]–[6].

Comparative studies of yoga have found beneficial effects on stress, emotional regulation, and physical flexibility, all of which are crucial to the college experience, indicating that yoga, an embodied practice of physical postures, breath control and awareness, might be a valuable tool for college students 6. All these advantages may be enhanced when it is practised in nature and, particularly, by the sea. Unintentional rhythm and pace of the ocean helps in deep breathing, relaxation, lower cortisol levels leading to clear mind and calm state 3[5]. Studies conducted in India, the US and South Africa have reported on how synergistic associations are effective in urban-yoga practitioners and their psychological well-being, as a result of natural environments [3] 2.

Also, for post-war communities such as in Liberia, where there is psychological distress, trauma, and a scarcity of mental health resources, yoga and meditation provide non-pharmacologic, community-based interventions 9. These intervention strategies are culturally

sensitive and have the potential to be implemented in an informal, low resource setting with immediate effects. But little is known about the cultural acceptance and practical feasibility, as well as the actual effects, of coastal yoga in this context.

This study addressed the perceived effects of yoga near the Atlantic Ocean (based on initial pilot lessons), on the mental and physical health of the people of Montserrado county, and willingness to continue the initiative with the community.

## Objective

We set out to pragmatically evaluate the mental, emotional and physical wellbeing impact of attending yoga sessions in a beach setting by the Atlantic ocean. It also aimed to assess the community attitude, interest and knowledge about these ocean-based health moved communities. The goal was to identify influential facilitators and barriers of yoga participation and to explore whether certain natural "elements" of coastal settings contribute to perceived benefit. Results from this study will subsequently guide the formation of community-level well-being interventions and lead to public health recommendations that incorporate nature-based activities in Liberia.

## Methods

Descriptive analysis of cross-sectional data obtained from participants from selected coastal communities of the Atlantic coast of Liberia was used. A Likert-scale questionnaire was given to 30 adults who attended, on a voluntary basis, yoga meetings organized in coastal areas. The survey was divided into four parts: (1) demographic variables; (2) attitudes towards the coastal environment; (3) past experience with practicing coastal yoga; and (4) willingness/obstacles towards returning to a coastal environment for practicing yoga. Responses for each item ranging from a 5-point Likert scale were as follows: 1Strongly Disagree to 5Strongly Agree.

Using purposive sampling, first-time yoga na\{i\}ve and experienced subjects were recruited. Trained research assistants performed in-person data collection over 2 weeks. Ethical considerations Ethical considerations were adhered to and confidentiality was observed. Results Descriptive statistics such as frequency distribution and percentages were calculated using Microsoft Excel. The findings were calculated and analyzed to draw the most common themes on wellness perceptions and receptiveness to coastal yoga programs.

## Ethical Considerations

Ethical clearance The study was cleared by the Institutional Ethics Committee of Desh Bhagat University (IEC/DBU/2024/017) and was conducted in accordance to the national and international guidelines for the human research. Written consent was obtained from participants prior to their taking part in the study, and they were briefed on the purpose of the study, the procedures and their rights. Confidentiality was ensured and the participants were anonymous; they were identified only with a pin code and all the information was kept safe. Ethics considerations were particularly pertinent because of the participation of coastal communities in Liberia. Cultural safety, voluntary participation and community involvement contributed to the integrity and trustworthiness of the research.

## .Results:

**Table 1: Demographic Profile of Respondents (N = 30)**

Variable	Category	Frequency	Percentage (%)
Gender	Male	12	40
	Female	18	60
Age	18-30 years	14	46.7
	31-45 years	10	33.3
	46 and above	6	20
Yoga Experience	First-time participant	22	73.3
	Practiced before	8	26.7

The demographic of the participants of this coastal yoga intervention is a juxtapositional background into the community cohort and receptiveness to health programs. More than one half (60%) of the sample was female with 40% being males, among 30 participants requested for the questionnaire. This higher proportion of females indicates a higher predisposition or receptiveness of females towards yoga and wellness related activities in the region, which is

a reflection of worldwide gender differences in yoga participation where females are found more interested and involved compared to males.

Age distribution shows a young sample, with almost half of the participants (46.7%) between 18 and 30 years. The second common age group (33.3%) is from 31 to 45 years and lower (20%) at 46 years and above. Youth skewing could be indicative of the demographic of the coast or the tendency of young adults to seek unconventional methods of mental and physical well-being. This age trend might also be suggestive of an important opportunity for the incorporation of preventive health strategies among the young population that may be more open to lifestyle modifications.

With respect to prior yoga experiences, the results showed that 73.3% of the respondents had never done yoga prior to their first time, and 26.7% had done yoga before. The high proportion of new participants we saw emphasizes that adopting yoga is relatively young in these Liberian coastal communities. It highlights not only a level of exposure and a potential for development of formal yoga programs is found. The high level of participation by first-timers is also indicative of an underlying curiosity or receptivity to exploration of other forms of health care when they are made available in a familiar, community-based format.

**Table 2: Perceptions of Coastal Environment**

Statement	Agree (%)
The sound of ocean waves makes me feel calm and relaxed	90
The fresh sea breeze improves my mood and mental clarity	87
Spending time near the coast emotionally uplifts me	80
The beach environment enhances my focus during mindfulness practices	83
Practicing yoga at the coast feels spiritually refreshing	86

Participant attitudes toward the beach environment were very positive and similar in likelihood across different dimensions of well-being. A whopping 90% of those surveyed

concurred that the sound of ocean waves had a calming effect. That this association can occur suggests that even sounds arising from purely natural sources (e.g., ocean waves) can have immediate stress-relieving properties and help induce a meditative mental state. In support of such an idea, 87% say the fresh sea air improved their mood and mental clarity—a finding consistent with the physical effects of fresh air and negative ions in coastal climates that have been shown to increase serotonin levels and cognitive alertness.

What's more, 80% of people reported feeling better after a stint on the coast – regardless of the weather and other factors. This mere affective response evidences the therapeutic value of natural seascapes, particularly in individuals in post-conflict or under-resourced societies, as is the case in health care in Liberia's coastal zones. Just as importantly, 83% of the respondents said that the beach setting helped them stay more attentive while practicing mindfulness. The immersive character of coastal environments, however, and the regularity of the sound of waves and vast horizons may act to more effectively anchor attention than the urban or indoor environment.

Finally, 86% of participants declared that doing yoga near the ocean was spiritually uplifting. This emphasises the importance of coastal yoga not only as a physical or mental intervention, but also as an individual, and possibly transformational experience. Taken together these results support the restorative synergy of yoga and coastlines and lend credence to the suitability of the Atlantic coast of Liberia as a site for community-based, nature-integrated health interventions.

**Table 3: Experience with Coastal Yoga**

Statement	Agree (%)
Ocean wave rhythms deepen my breathing during yoga	83
I can meditate more easily near the ocean	77
Yoga at the coast improved my physical flexibility	73
Stress and anxiety are reduced during coastal yoga sessions	80
I feel more connected to nature after yoga at the beach	87

The findings of the participants' experiences of coastal yoga illustrated distinct positive effects which emphasized the equivalent benefits of practising yoga within these natural coastal contexts. A large majority (83%) of respondents indicated that the rhythmic noise of ocean waves improved their breathing experience in yoga. This may be because the rhythm of waves can function as an organic cue for deep, paced breathing – a key component of yogic practice that, as we know, enhances the parasympathetic nervous system and lowers stress system responses in the body.

And 77 percent said the ocean made it easier to meditate. Perhaps the peaceful nature of the coastal setting serves to reduce distraction and encourage inward focusing to promote better practice of mindfulness and meditation. This is consistent with previous research on the relationship of the natural environment to improved concentration and reduce cognitive fatigue during contemplative practice.

Physical well-being was also positively impacted, with 73% reporting that their flexibility increased from practising yoga on the coast. The sand at the beach can also provide unstable ground, which can force your muscles to engage more and can help keep your joints moving, especially if you're new to exercise or getting back into it.

Mental health gains were particularly obvious, with 80% of participants experiencing a decrease in stress and anxiety while practicing yoga on the coast. This is consistent with the well-documented calming influences of blue space, exposure to bodies of water like a beach has been linked to reduced cortisol levels and better emotional regulation. The beach location therefore does not only improve the feeling of the senses, it also forms a psychological shield to everyday worries.

Most importantly, 87% of participants felt more connected to nature after their beach yoga. This increased nature sensitivity, as an underpinning of the additional benefits of practicing yoga in the natural world, suggests the deeper therapeutic capacity to merge yoga with outdoor settings. It's a relationship that can contribute to a sense of tranquillity, thankfulness and spiritual rejuvenation — something that can be especially important in places with limited formal mental health resources.

**Table 4: Willingness and Barriers to Participation**

Statement	Agree (%)
I would like to attend regular coastal yoga sessions	70
Coastal yoga should be promoted in local communities	83
I believe yoga can improve public health in Liberia	77
Time constraints prevent my participation	50
I need more awareness before joining yoga sessions	67

Willingness and barriers to participation in coastal yoga The findings concerning willingness and barriers to participation in coastal yoga suggest an overall positive community attitude towards coastal yoga, limited by practical constraints which would inhibit sustained participation. A substantial proportion of participants (83.46%) felt that coastal yoga should be actively promoted to the local population, indicating strong public support of nature-based wellbeing programmes. Furthermore, there was a 70% expressed personal interest in participation in regular coastal yoga sessions, indicating a strong potential for solid community uptake if the programs were available and organised.

Even among those that did not believe yoga would be beneficial to themselves or their families, there was strong support for yoga as a public health intervention, with 77% believing that yoga could have a positive impact on public health in Liberia. This is indicative of an increasing acknowledgement of the role and benefit of integrative, non-prescription based interventions to mental, emotional and physical health and well-being, particularly for the underserved or resource restricted settings. It also reflects willingness to accept cultural sensibilities that bridge traditional to modern definitions of wellness.

But the data also indicate some significant headwinds. Time restrictions were reported to be a hindrance to participation by 50% of the sample, indicating a desire for time flexible classes and for yoga to be incorporated into daily life/ other community activities. 67% also reported that they were in need of more background before they could really get into it with the yoga classes. And so, the value of outreach and introduction classes and clear messaging about the benefits, structure, and including nature of programs is of note.



## Discussion

The results of this research provide a strong argument for the added value of practicing yoga on real ocean sides. Most participants described the coastal environment as having a strong positive impact on their relaxation, emotional health, and attention during practicing of mindfulness. These findings are consistent with findings from other studies in coastal regions of South Africa, India and the United States, linking positive nature-based healing to proximity to water and nature, i.e. reduced anxiety, greater happiness and enhanced psychological resilience [3]. The rhythmic nature of waves specifically was demonstrated to be useful for controlling deep breathing, a key feature in yoga employed to stimulate the parasympathetic branch of the nervous system, turning down its stress reactions [4].

Given that most participants (73.3%) were novices to yoga, the high levels of benefit endorsement across mental, emotional and physical realms of experience indicate that coastal yoga is both accessible and efficacious from an early stage. This is in accordance with physiological research demonstrating that yoga even when practised for short durations reduces cortisol levels, increases vagal tone, and promotes emotional self-regulation [6,7]. Both the positive emotions and connectedness to nature observed among 87% of participants may indicate a wider therapeutic mechanism in which nature-based activities and movement-based practices assist in promoting overall healing. Such gains are particularly important in post-conflict and resource-poor settings, such as Liberia, where conventional mental health services may be scarce or out of reach. Previous interventions in comparable contexts have demonstrated that both yoga and mindfulness practices, when offered in a community context and adapted to local culture, can have a major impact on enhancing mental resiliency, decreasing trauma-based symptoms, and fostering emotional equilibrium [8].

Most importantly, the research investigated community enthusiasm for ongoing involvement. Many of those surveyed wanted to practice coastal yoga activities regularly and 83% felt it should be encouraged in local communities. These findings indicate a receptivity environment for up-scaling yoga programs, especially when adopted within public health settings and community-based systems. But, like most health interventions in low-resource settings, some practical obstacles need to be addressed. Insufficient time availability (reported by 50% of the participants) and poor knowledge (identified by 67%) were identified as the main barriers in maintaining regular participation. This result is consistent with what has been observed in similar settings where health promotion initiatives face

competition from economic activities, family responsibilities, and low awareness of alternative health practices 10.

To overcome such obstacles, effective community sensitization campaigns play a critical role. Such efforts should include messages that are culturally sensitive, culturally acceptable and consistent with local health beliefs. Further, factoring in promotional season, employing peer educators or local champions, and aligning with the community calendar (eg mornings and weekends) have also been known to have a positive impact on attendance and adherence 12. Community-based interventions that promote coastal yoga as one component of a broader wellness or livelihood initiative (e.g., women's groups, youth associations, or school health programs) may also provide a sustainable approach to long-term behavioral change and community ownership.

## Conclusion

This pilot investigation offers promising preliminary evidence that yoga practices on the shores of the Atlantic coastline could lead to substantial mental, emotional and physical health benefits among the residents of coastal Liberia. Folks in the study testified to better breath, lower stress and a happy lift of their spirits, as well as “greater flexibility and connection to nature;” which seems to suggest coastal yoga has potential as a transformational, community-friendly intervention. Crucially, the readiness to continue participating and high perceptions of wellness outcomes, the latter even amongst first-time practitioners, illustrate that communities, are ready to adopt such nature-based solutions.

Opportunities for integrated intervention Exhibiting downward trends in human well-being, Liberia is an area of low-resource where yoga is low-cost and the coastal environment holds unique endowments; therefore, there is a strategic window to integrate coastal yoga into national health promotion and at the community level. Nevertheless, for scaling and sustainability, some challenges need to be addressed, such as the requirement of time and initial knowledge gaps. By providing culturally relevant education, adapting programming to meet local needs, and engaging everybody within the community, coast-based yoga can be an equitable and accessible lever to support public health, resilience, and the return to wellness and health in our bodies and earth – no matter how challenging!

### Authors' Contributions

**Dr. Stephen Monday** conceived the study, designed the research framework, and led the drafting and revision of the manuscript. **Prof. (Dr) H. K. Sidhu** provided academic oversight, critically reviewed the methodology, and guided the refinement of the study objectives. **Prof. (Dr) Daniel Mairafi Gimbason** contributed to theoretical structuring, ensured scholarly accuracy, and supported manuscript finalization. All three authors reviewed and approved the final version of the manuscript and take full responsibility for the integrity and accuracy of the work.

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### Conflict Of Interest

The authors attest that no conflicts of interest exist with this publication. They have no financial relationship, personal association, institutional obligation, or professional interest which might have inappropriately affected the performance, analysis, or reporting of the study. The study and findings reported rest on scientific evidence and observations from the community.

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