



# **SUITABILITY ASSESSMENT OF FOREST RECREATIONAL AREAS IN JELI AS NATURE THERAPY (*SHINRINYOKU*) SITES**

by

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## DECLARATION

I declare that this thesis entitled “Suitability Assessment of Forest Recreational Areas In Jeli as Nature Therapy (*Shinrinyoku*) Sites” is the result of my own research except as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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Date : 10 JUNE 2024

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# SUITABILITY ASSESSMENT OF FOREST RECREATIONAL AREAS IN JELI AS NATURE THERAPY (*SHINRINYOKU*) SITES

## ABSTRACT

The suitability assessment of forest recreational areas in Jeli for nature therapy, (*Shinrinyoku* or forest bathing), was conducted to determine the suitability of Lata Janggut, Lata Keding, Lata Renyok, and Bukit Salor sites for this practice. *Shinrinyoku* is a form of nature therapy that originated in Japan that involves immersing oneself in the forest atmosphere to promote mental and physical health. This study utilized questionnaires to gather opinions from 154 respondents regarding the four selected forest sites in Jeli. 154 respondents, majority of them were acquainted with the forest recreational areas in Jeli, especially Lata Janggut and Lata Keding. 95.5% agree that all areas are suitable as forest bathing area. The sites were evaluated based on several criteria including awareness, biodiversity value include serenity and overall environmental quality of the study sites. Respondents express their insights on their preferences and experiences in these areas. The collected data were analyzed to rank the sites and identify the possibility of the location for forest bathing. Results indicate a strong preference for those areas with high biodiversity and tranquillity, emphasizing the importance of a serene environment for effective nature therapy. This study could aid to guide local authorities in developing and promoting the most appropriate site for *Shinrinyoku*, enhancing both conservation efforts and the well-being of visitors. This study underscores the potential of Jeli's forests as therapeutic landscapes, fostering a deeper connection between people and nature.

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# **PENILAIAN KESESUAIAN KAWASAN REKREASI HUTAN DI JELI SEBAGAI TERAPI ALAM SEMULAJADI (SHINRINYOKU)**

## **ABSTRAK**

Penilaian kesesuaian kawasan rekreasi hutan di Jeli sebagai kawasan terapi alam semula jadi (*Shinrinyoku* atau mandi hutan) telah dijalankan bagi menentukan kesesuaian tapak di Lata Janggut, Lata Keding, Lata Renyok, dan Bukit Salor untuk amalan ini. *Shinrinyoku* adalah sejenis bentuk terapi alam semula jadi yang berasal dari Jepun yang melibatkan mendalami suasana hutan untuk menggalakkan kesihatan mental dan fizikal. Kajian ini menggunakan soal selidik untuk mengumpul pendapat daripada 154 responden mengenai empat kawasan hutan terpilih di Jeli. 154 orang responden, majoritinya mengenali kawasan rekreasi hutan di Jeli terutamanya Lata Janggut dan Lata Keding. 95.5% bersetuju bahawa semua kawasan sesuai sebagai kawasan mandian hutan. Kawasan tersebut dinilai berdasarkan beberapa kriteria termasuk kesedaran, nilai biodiversiti termasuk ketenangan dan kualiti persekitaran keseluruhan kawasan kajian. Responden menyatakan pandangan mereka tentang pilihan dan pengalaman mereka setelah melawat kawasan tersebut. Data yang dikumpul dianalisis untuk menentukan kesesuaian kawasan dan mengenalpasti kemungkinan lokasi untuk dijadikan kawasan mandi hutan. Kajian menunjukkan persetujuan untuk menjadikan kawasan yang mempunyai biodiversiti dan ketenangan yang tinggi, menekankan kepentingan persekitaran yang tenang sebagai kawasan terapi alam semula jadi yang berkesan. Kajian ini boleh membantu untuk membantu pihak berkuasa tempatan dalam membangunkan dan mempromosikan tapak yang sesuai untuk dijadikan kawasan *Shinrinyoku* serta dapat meningkatkan usaha pemuliharaan demi menjaga kesejahteraan pelawat. Kajian ini menggariskan potensi hutan Jeli sebagai landskap terapeutik sertamemupuk hubungan yang lebih mendalam antara manusia dan alam semula jadi.

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## Table of Contents

	<b>PAGE</b>
<b>DECLARATION</b>	i
<b>ACKNOWLEDGEMENT</b>	ii
<b>ABSTRACT</b>	iii
<b>ABSTRAK</b>	iv
<b>LIST OF TABLES</b>	1
<b>LIST OF FIGURES</b>	2
<b>LIST OF ABBREVIATION</b>	3
<b>LIST OF SYMBOLS</b>	4
<b>CHAPTER 1 INTRODUCTION</b>	6
1.1 Background of Study	7
1.2 Problem Statement	7
1.3 Objective	7
1.4 Scope of Study	8
1.5 Significant of Study	8
<b>CHAPTER 2 LITERATURE REVIEW</b>	
2.1 Concept of Forest Bathing	9
2.2 Overview of Kelantan's Forest	10
2.3 Criteria for Forest Bathing	12
2.4 Benefits of Forest Bathing For Human	13
<b>CHAPTER 3 MATERIAL AND METHOD</b>	
3.1 Study Area	15
3.2 Material	17
3.3 Method	18
<b>CHAPTER 4: RESULTS AND DISCUSSIONS</b>	
4.1 General Findings	19
4.2 Suitability assessment at each site	23
<b>CHAPTER 5: CONCLUSION AND RECOMMENDATION</b>	
5.1 Conclusion	25
5.2 Recommendations	25
<b>REFERENCES</b>	27

**LIST OF TABLES**

NO	TITLE	PAGES
Table 1	Agreement of respondents towards the parameters measured	22
Table 2	Mean score at each forest recreational sites	22



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KELANTAN

## LIST OF FIGURES

NO	TITLE	PAGES
Figure 3.1	Location of selected sites for this study	15
Figure 4.2	Forest recreation areas experience by respondents	20



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## LIST OF ABBREVIATIONS

FRIM	Forest Research Institute Malaysia
GIS	A Geographic Information System
HEF	Health, Emotion & Feelings
MS Excel	Microsoft Office Excel
NK	Natural Killer (cells)
PHD	Doctor of Philosophy



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## LIST OF SYMBOLS

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## CHAPTER 1

### INTRODUCTION

#### 1.1 Background of study

*Shinrinyoku*, also known as forest bathing, is a practice that originated in Japan in the 1980s. It involves an individual spending time in the forest or other natural environment to improve the individual's physical, mental health and reduce stress. This practice has gained popularity in recent years, and many studies have been conducted to investigate its health benefits. In Japanese, *yoku* means "bath" and *shinrin* means "forest." *Shinrinyoku*, then, refers to immersing oneself in the forest's atmosphere or experiencing it via our senses (Li Q, 2018).

Lata Janggut, Lata Keding, Lata Renyok and Bukit Salor were four selected forest area that offers recreational sites to many tourists. Located in Kelantan, Malaysia these areas have the potential to be developed as forest bathing sites to promote health and wellness of many people.

Visitors can enjoy the *Shinrinyoku* through all five senses, including sight, smell, hearing, touch, and taste. Through the practice of forest bathing, individuals established a profound connection with nature, resulting in enhanced physical and emotional well-being.

Moreover, *Shinrinyoku* if this concept been introduced in Kelantan, is not only a personal wellness practice but also a gateway to promoting eco-tourism and environmental conservation. By highlighting the therapeutic benefits of forest bathing, Kelantan can attract visitors seeking holistic health experiences while raising awareness about the importance of preserving its precious

rainforests. As urbanization and modernization encroach on natural habitats, *Shinrinyoku* serves as a poignant reminder of the intrinsic value of Kelantan's pristine forests and the need to protect them for future generations.

## 1.2 Problem Statement

Forest bathing or "*Shinrinyoku*" is a practice that has grown in popularity because to its potential advantages for health and well-being. However, more thorough scientific research is required to fully understand the physiological, psychological, and social effects of forest bathing. The ideal length and frequency of forest bathingsessions, their impact on different age groups and demographics, and their ability to reduce stress, enhance mental health, and advance general well-being should all be the subject of this research. For a fuller understanding of this practice, it is also essential to investigate the ways in which forest settings affect human health as well as the part played by cultural and environmental elements in the experiences of forestbathing especially the mental awareness of people today which is becoming more and more acute in the community due to various pressures in life that are increasinglydemanding to be stronger. Therefore, the community needs to pay attention to the issue of mental problems because it can affect the quality of life of someone who is facing such problems.

## 1.3 Objective

The objective of this study is to assess the suitability and potential of Lata Janggut, Lata Keding, Lata Renyok and Bukit Salor as forest bathing sites.

#### 1.4 Scope of Study

The study only focuses on four selected recreational sites that consisted of forest area nearby. The location of the study site is in Jeli district, Kelantan. Respondent that has experienced in visiting any sites listed will answer the survey. The study aimed to measure the effectiveness of these areas as forest bathing sites from the perspective of visitors. This was necessary because the community was largely unfamiliar with the concept of forest bathing due to a lack of direct exposure and the scarcity of scientific research or in-depth studies on the *Shinrinryoku* concept in Malaysia, unlike in Japan. Therefore, this study was conducted to identify the suitability of the study sites as forest bathing areas.

#### 1.5 Significant of Study

The importance forest bathing study is crucial for our knowledge on relationship between humans and the natural environment, with potential implications for improving public health and well-being. It also will raise the awareness of the concept of forest bathing which is less popular among the community, especially in Malaysia. Furthermore, it can contribute to urban planning and policy development by highlighting the importance of preserving green spaces in urban areas, fostering healthier communities, and promoting deep forest bathing to all ages to emphasize physical and mental health, especially in Malaysia. This study can open new avenues to improve the quality of our lives and the environment we live in. In addition, cases of suicide due to extreme stress can be reduced dramatically because mental and physical can be restored with the concept of forest bathing which helps them to be more calm and rational in making more rational actions or decisions in their lives.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Concept of Forest Bathing

Forest bathing, or "*shinrin-yoku*," is a practice that originated in Japan in the 1980s and involves immersing oneself in a forest environment to promote mental and physical well-being. The concept is based on the idea that spending time in nature can provide therapeutic benefits by reducing stress, lowering blood pressure, and enhancing mood. Scientific studies have shown that forest bathing can decrease levels of cortisol, a stress hormone, and boost the immune system by increasing the activity of natural killer cells (Li, 2010). This practice encourages individuals to engage their senses fully, taking in the sights, sounds, and smells of the forest to achieve a state of relaxation and mindfulness.

In Malaysia, forest bathing is gaining popularity as an eco-therapy practice due to the country's rich biodiversity and extensive tropical rainforests. Locations such as the FRIM (Forest Research Institute Malaysia) and Penang National Park offer ideal settings for forest bathing, providing a natural escape from urban life (Teng, 2019). These areas not only offer a serene environment but also serve as crucial sites for conservation and environmental education. Engaging in forest bathing in such biodiverse regions can enhance one's connection to nature and foster a deeper appreciation for Malaysia's natural heritage.

The physiological benefits of forest bathing are well-documented. Studies have demonstrated that spending time in forests can improve cardiovascular health by reducing blood pressure and heart rate (Park et al., 2009). Additionally, the practice can enhance mental health by alleviating symptoms of anxiety and depression. The natural environment provides a calming effect, promoting mental clarity and emotional stability. In Malaysia, forest bathing is being integrated into wellness programs, recognizing its potential to improve public health and well-being (Lim, 2020).

Incorporating forest bathing into daily life can lead to sustainable lifestyle changes, encouraging individuals to prioritize outdoor activities and mindfulness. The practice is accessible to people of all ages and fitness levels, making it an inclusive form of therapy. By fostering a culture of nature appreciation, Malaysia can enhance its efforts in environmental conservation and public health promotion. As urbanization continues to rise, forest bathing offers a valuable means to reconnect with nature, reduce stress, and improve overall quality of life (Lee, 2011).

## **2.2 Overview of Kelantan's Forest**

Kelantan, a state in northeastern Malaysia, is renowned for its lush tropical rainforests, which form part of the larger Taman Negara National Park. These forests are characterized by a diverse array of flora and fauna, including several endemic and endangered species. The forest ecosystem in Kelantan plays a crucial role in maintaining ecological balance, regulating climate, and

supporting the livelihoods of local communities (Zainudin, 2018). The dense canopy, rich biodiversity, and serene environment make Kelantan's forests an ideal location for implementing *shinrinyoku*, or forest bathing, as a form of eco-therapy.

The establishment of *shinrinyoku* in Kelantan is a natural extension of the state's commitment to conservation and sustainable tourism. Forest bathing can enhance the eco-tourism appeal of Kelantan by attracting visitors seeking holistic health and wellness experiences in nature. Moreover, it provides an opportunity to promote environmental awareness and conservation efforts among both locals and tourists. Integrating *shinrinyoku* into the tourism offerings can help mitigate the negative impacts of traditional tourism practices, fostering a more sustainable and eco-friendly approach to exploring Kelantan's natural landscapes (Ahmad & Ahmad, 2021).

Forest bathing in Kelantan not only contributes to individual well-being but also supports broader environmental and economic goals. By encouraging a deeper connection with nature, *shinrinyoku* can foster a sense of stewardship and responsibility towards forest conservation. This practice can be a valuable component of environmental education programs, helping to cultivate a culture of sustainability and respect for natural resources. Additionally, the economic benefits derived from eco-tourism and wellness tourism can provide financial support for conservation initiatives and community development projects in Kelantan (Norazlin et al., 2019).

### 2.3 Criteria for Forest Bathing

Criteria for forest bathing or *Shinrin-yoku*, encompass several key elements that distinguish it from simple nature walks. Firstly, the selection of a suitable forest environment is crucial. Forests chosen for *shinrin-yoku* should ideally be rich in biodiversity, with diverse flora and fauna contributing to a tranquil and immersive atmosphere (Park et al., 2010). Such environments are believed to amplify the therapeutic effects of forest bathing by providing a sense of awe and connection to nature.

The practice emphasizes mindfulness and sensory engagement. Participants are encouraged to engage actively with their surroundings, using all their senses to fully experience the forest environment. This includes observing the play of light through the canopy, listening to the sounds of birds and rustling leaves, and inhaling the fragrances of plants and soil (Hansen et al., 2017). By immersing oneself fully in the sensory experience of the forest, *shinrin-yoku* aims to induce a state of relaxation and reduce stress levels.

The duration and pace of forest bathing are important considerations. Unlike conventional hikes or nature walks, forest bathing sessions typically involve slow, leisurely walks or stationary activities such as meditation or yoga amidst nature. The emphasis is on slowing down and allowing time for contemplation and reflection, rather than covering a specific distance or achieving a fitness goal (Li et al., 2020). Research suggests that spending at least 2-4 hours in a forest environment over a day or weekend can yield significant physiological

and psychological benefits (Song et al., 2019). Research has also examined the physiological advantages of forest bathing, revealing that persons with hypertension may experience a decrease in diastolic blood pressure and inflammatory indicators as a result of engaging in forest bathing (Wu et al., 2019). In addition, there is evidence to show that forest bathing is linked to a reduction in urine dopamine levels, indicating its potential to induce relaxation in the body (Li et al., 2016).

#### **2.4 Benefits of Forest Bathing For Human**

Forest bathing offers a multitude of benefits for human health and well-being, supported by a growing body of scientific research. One of the primary advantages is its ability to reduce stress levels. Spending time in forest environments has been shown to lower cortisol levels, the hormone associated with stress, thereby promoting relaxation and a sense of calm (Li, 2010). This effect is thought to be enhanced by phytoncides, antimicrobial compounds released by trees and plants, which have been shown to reduce stress and improve mood (Park et al., 2010).

Physiologically, forest bathing has been linked to improved immune function. Natural killer (NK) cell activity, which plays a critical role in combating infections and cancer, has been found to increase after individuals engage in *shinrinryoku* (Li, 2010). This immune-boosting effect is attributed to exposure to phytoncides and other bioactive substances released by trees, which stimulate the production and activity of NK cells in the body. Consequently, regular practice of forest bathing may contribute to better overall immune health and resilience to illnesses. Furthermore, forest bathing can significantly improve mental health outcomes. Studies indicate that exposure to natural

environments can reduce symptoms of anxiety and depression (Hansen et al., 2017). The serene and peaceful atmosphere of forests promotes mindfulness and reduces rumination, contributing to improved mood and emotional well-being. Moreover, the sensory stimuli provided by nature such as the sight of greenery, the sound of birdsong, and the scent of pine contribute to a positive psychological state and can enhance overall mental clarity and cognitive function (Berman et al., 2008). Forest bathing supports cardiovascular health. Research has demonstrated that spending time in forest environments can reduce blood pressure and heart rate, indicating a beneficial effect on cardiovascular function (Ochiai et al., 2015).

## CHAPTER 3

### MATERIALS AND METHOD

#### 3.1 Study area

There were four study sites selected in this study namely Bukit Salor, Lata Janggut, Lata Keding and Lata Renyok. All sites were in Jeli District and it is selected as it represents forested recreational area. Figure 3.1 show the location of the selected sites.



**Figure 3.1** Location of selected sites for this study

Bukit Salor is situated at  $5^{\circ}43'27.8''N$   $101^{\circ}45'35.6''E$  and characterized by rolling hills and rich biodiversity. The area features a tropical climate with high humidity and abundant rainfall throughout the year (Ahmad & Fadzil, 2016). The vegetation in Bukit Salor includes a diverse array of flora, forest, rubber plantation trees, ferns and orchids that contribute to the ecological significance of the area (Zainudin, 2018).

Lata Keding located at 5°44'48.0"N 101°50'55.7"E. It is one of notable tourist area with flowing river and waterfall in the Jeli district, surrounded by tropical rainforest. The waterfall can be easily reached by a road, making it a convenient location for both local residents and tourists. The climate is just like in Bukit Salor and the area provide habitat for a variety of wildlife species, including monkeys, birds, and reptiles (Ahmad & Fadzil, 2016). The local population near Lata Keding consists of small villages engaged in agriculture and eco-tourism activities, benefiting from the natural beauty and recreational opportunities offered by the waterfall and surrounding forest (Teng, 2019).

Meanwhile Lata Renyok is another prominent waterfall in the Jeli district, known for its picturesque setting amidst pristine rainforest. The climate here mirrors that of other parts of Malaysia, characterized by high humidity and ample rainfall, which sustain the lush vegetation surrounding the waterfall (Zainudin, 2018). The forest around Lata Renyok is rich in biodiversity, with a mix of hardwood trees, ferns, and mosses providing habitat for numerous species of flora and fauna (Ahmad & Fadzil, 2016). The population near Lata Renyok includes indigenous communities and small settlements that rely on the forest for resources and eco-tourism ventures, emphasizing the area's dual role in cultural heritage and economic sustainability (Teng, 2019).

Meanwhile, Lata Janggut is renowned for its cascading waterfall and the surrounding pristine rainforest in the Jeli district. Lata Janggut famous with descending streams that stream down a sequence of rocky ledges, forming a lovely and serene atmosphere. The name "Lata Janggut" originates from the Malay language, where "lata" refers to a waterfall and "janggut" means beard. The name is thought to have derived from the resemblance of the moss-covered rocks encircling the waterfall, which bear a

resemblance to a configuration resembling a beard. The population near Lata Janggut consists of rural communities engaged in sustainable practices such as agroforestry and eco-tourism, which help preserve the natural integrity of the forest while providing economic opportunities (Teng, 2019).

### **3.2 Materials**

A public opinion survey was conducted to gauge the level of public awareness, perception, and knowledge on forest bathing at four selected sites. A set of questionnaires was developed to evaluate the selected site on its suitability for forest bathing area based on respondent opinion. Parameter measure includes demographic, knowledge, aesthetics value, spiritual and awareness on forest bathing with respondent's selected recreational site. A 5-point Likert scale is a psychometric response method where respondents can easily answer questions and state their level of agreement in five points. The 5-point Likert scale consists of the below points – (1) Strongly Disagree; (2) Disagree; (3) Neither Agree nor Disagree; (4) Agree; (5) Strongly Agree.

Reliability of the question was tested during pilot test before real data collection was carried out to verify the validity of the questions in the questionnaires by ensuring that the Cronbach's alpha value was above 0.7. Questionnaires were distributed randomly using online and offline platform. All data were tabulated in MS Excel and analysis was done in this platform.

### 3.3 Method

There were two primary approaches employed for data collection which are site observation and questionnaire survey. Site observation was done to acquiring information about the immediate environment through sensory perception to get an overview of the sites. The purpose of conducting site observations was to assess the potential of study sites for forest bathing destinations. Questionnaires were used as the main instrument to access the respondent evaluations on the suitability and their opinion toward forest bathing experience. The data collection was conducted both holidays and normal days over a period of two weeks.

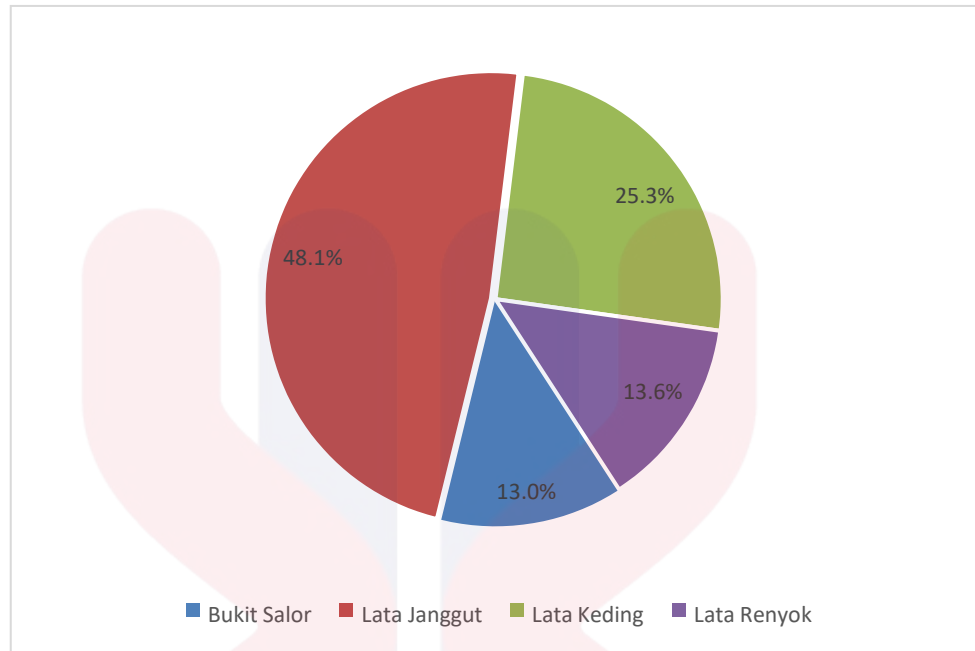
## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 General Findings

A total of 154 local participants had completed the survey. The group consists of 63.6% female and 36.4% males, with 81% of them are married and the remaining is single in status. The respondents came from various states in Peninsular Malaysia, including Sabah and Sarawak. The respondents' age range is from 13 to 64 years old, with average of 27 years old. From the analysis, it shows that majority of the respondent are Malay (91.6%) while the remaining are from Hindu, Bidayuh, Chinese, and other races. In addition, 62.7% of the total respondent hold higher education of First Degree and above which include Master and PhD holder. 41 respondents are from STPM/ Diploma/ Foundation/ Matriculation and the rest are from high school, elementary school students.

From four selected recreational sites, Lata Janggut is the most popular visited forest recreational area by the respondents, where 48.1% of them had experience doing activities in that particular area. Meanwhile, total percentage of respondents who had experience the recreational forest area in Lata Keding, Bukit Salor and Lata Janggut were at 25.3%, 13% and 13.6%, respectively as shown in Figure 4.2. From this study, visitor's estimated time spending at the recreational forest area in average is half a day.



**Figure 4.2:** Forest recreation areas experience by respondents

A Likert scale was used to evaluate respondent's knowledge, awareness and understanding on *Shinrinyoku* and its effect. It includes understanding the area, the aesthetics value and social interaction between living thing in the forest as well as purpose of visiting the area. In likert scale 1 to 5, a high agreement of statement is count for scale 4 and 5, while at scale 1 to 3 it is consider disagreement. Meanwhile, mean score was also calculated for each *Shinrinyoku* site.

From the survey in general, 88.3% of respondents agree that they feel fresh after visiting the forest recreational area, while 11.7% were not so. Hence, in a study by Li et al 2007;2008 emotionally 90.9% of the respondents agree that their emotions are more stable after visiting the forest recreational area. Thier visit gave positive vibes to them when 89.6% agree that they feel the positive effect after went back from the recreational area. Research has shown that forest bathing can have significant positive effects on human health. Hence, forest bathing can increase the activity of human natural killer (NK) cells and increase the expression of anti-cancer

proteins. This finding also reflects to a study by Moa et al., (2017) that prove forest bathing can alleviate negative emotional moods and benefit individuals suffering from chronic heart failure. Besides undergo recreation activity, 93.2% respondents feel relax and leisure from daily business and 91.5% of them experience a sense of tranquilly and openness.

Among aesthetics value of forest recreational area are the aroma of the forest, refreshing view from the forest and surrounding and natural sounds that enhance feeling and well-being as well as sense of tranquilly. The presence of natural sounds has been discovered to induce a state of tranquilly, resulting in a soothing effect on individuals. This contributes to the creation of a more pleasant environment and has the ability to assist in reducing stress levels among individuals (Watts et al., 2016). The diversity of animal and plant that live in the area for example trees, shrubs, and flowers were also give impact to personal feelings to forest recreationist.

When asking on the suitability of forest recreational area at four sites as forest bathing area, 95.5% agree that all areas are suitable as forest bathing area. Table 1 show the overall percentage of agreement to all parameter measured in evaluation nature healing sites in Jeli. Meanwhile, Table 2 shows the mean score of parameters measured by each sites.

Table 1. Agreement of respondents towards the parameters measured

Category	Item	Agree (%)	Disagree (%)
Health, Emotion & Feelings	Feeling fresh after visit	88.3	11.7
	Emotionally stable after visits	90.9	9.1
	Feel more positive	89.6	10.4
	Experience sense of tranquilly	91.5	8.5
Aesthetics	Aroma of forest	90.9	9.1
	Refreshing effect from forest view	92.1	7.9
	Calming nature sound in forest	93.5	6.5
	Diverse flora and fauna	92.9	7.1
Knowledge and understanding	Knowledge about nature healing	52.3	47.7
	Feel Connected With Nature	67.5	32.5
	Prefer To Be Alone While Enjoying The Forest/Nature	54.6	45.4
Spiritual	Close to nature	86.5	13.5
	Appreciate nature	89.6	10.4

Table 2. Mean score at each forest recreational sites

Sites	HEF	Aesthetics	Knowledge	Spiritual
Bukit Salor	4.45	4.59	3.68	4.52
Lata Janggut	4.53	4.55	3.38	4.42
Lata Keding	4.58	4.56	3.64	4.44
Lata Renyok	4.33	4.34	3.82	4.21

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#### 4.2 Suitability assessment at each site

Mean score parameter measured at each site were calculated as shown in Table 2. The data presented in the table provides the mean scores for four dimensions (Health, Emotion, Feeling; Aesthetics; Knowledge; and Spiritual) across four forest recreational sites. These scores are based on a Likert scale, typically ranging from 1 (strongly disagree) to 5 (strongly agree). The scores across all sites and dimensions are relatively high, indicating a generally positive reception from visitors.

For HEF (health, emotion, feeling), Lata Keding scores the highest (4.58) indicating that visitors feel the most positive impact on health, emotions, and feelings here. Lata Renyok scores the lowest (4.33) but still shows a strong positive impact, suggesting all sites are effective in enhancing visitors' well-being.

In aesthetics evaluation, Bukit Salor scores the highest (4.59), indicating visitors find it the most aesthetically pleasing while Lata Renyok scores the lowest (4.34), though still relatively high, suggesting that all sites offer appealing visual experiences. Measuring spiritual aspect, Bukit Salor scores the highest (4.52), indicating it has the strongest impact on visitors' spiritual experiences while Lata Renyok scores the lowest (4.21), but remains strong, indicating all sites provide a significant spiritual experience.

Spiritual values at all sites were in good agreement. People who enjoy being alone in the forest or wilderness typically look for chances to reflect, unwind, and connect with the natural surroundings. The inclination towards being alone in nature environments are motivated by a want for self-reflection, emotional tranquilly, and the ability to solve problems (Yang et al., 2021).

Despite the growing evidence supporting the benefits of forest bathing, also known as *Shinrin-yoku*, the overall knowledge about this practice remains low. Several factors contribute to this such as limited public awareness which people in Malaysia might not be familiar with the term or its benefits. Besides that, lack of education and promotion will also be the factors of not understanding the real meaning of forest bathing. The need for increased public awareness and educational efforts about forest bathing aligns with the findings of Li (2010), who emphasized the health benefits of *Shinrin-yoku* and the importance of promoting it widely. Furthermore, studies by Hansen, Jones, and Tocchini (2017) highlight the psychological and physiological benefits of forest bathing, supporting the necessity of broader public education on this practice.

Studies have shown that natural environments significantly enhance human well-being, aesthetics, and spiritual experiences. For instance, Hartig et al. (2014) found that exposure to natural environments can improve emotional well-being and reduce stress levels. Similarly, Kaplan and Kaplan (1989) highlighted the restorative benefits of natural settings, which contribute to positive emotions and cognitive functioning. Furthermore, Pretty et al. (2007) discussed how green exercise, or physical activity in natural environments, enhances mental health outcomes. The consistent high scores across the sites in the current study align with these findings, indicating that forest recreational sites provide substantial benefits to visitors' health, emotions, and spiritual well-being.

## CHAPTER 5

### CONCLUSION AND RECOMMENDATIONS

#### 5.1 Conclusion

This research is a preliminary study that proposes the use of forest recreational area in Jeli as forest bathing location. From the survey carried out to 154 respondents, majority of them were acquainted with the forest recreational areas in Jeli, especially Lata Janggut and Lata Keding. 95.5% agree that all areas are suitable as forest bathing area. Engage in forest bathing had gave a positive impact on the mental and emotional well-being of the respondents. Although receiving favourable feedback, the survey also revealed that respondents are lacked in prior knowledge about the idea of *Shinrinyoku*. Knowledge and awareness on forest bathing or *Shinrinyoku* were slightly low at all sites tested. But the idea of feel refresh, positive and relax are indicator that respondents experienced after visiting selected forest recreational area. This suggests the necessity for further awareness and educational efforts to establish forest therapy as a recognised practice in Malaysia.

#### 5.2 Recommendations

Since this is the preliminary study on suitability of an area for forest bathing, several recommendations could be listed to enhance future study. It includes:

- Carry out a fundamental research on knowledge and awareness of *Shinrinyoku* prior to finding the suitable area for it. It is crucial as

understanding basic and concept will help to get a better perception from focus group.

- Arrange educational campaigns and seminars that highlight its advantages. By partnering with educational institutions to include forest treatment concepts into the curriculum, we can enhance students' awareness. Enhancing amenities and ensuring easy access to forest recreational sites is of utmost importance.
- Increase number of respondents at each site to ensure the accuracy and reliability of the data and results.
- Mapping the selected sites and related with vegetation covers using GIS and satellite image to help visual view for park management planning.

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