



Hue Light USA

IMMUNITY CARE SYSTEM



THREE CASE REPORTS

OUTLINING

THE BENEFITS

of Photomodulation for
Mild Cognitive Impairment

INTRODUCTION

Photobiomodulation (PBM) is an increasingly popular non-invasive technique that utilizes visible light or near-infrared energy to activate cellular activity. According to recent research, PBM has increasingly been considered a possible means of intervention for cognitive disorders, especially those caused by traumatic brain injury or related to Alzheimer's disease or Parkinson's disease. This technique has been widely used in other medical treatments with promising results and could be essential for developing treatments for cognitive disorders. Preliminary studies show much potential for PBM as an alternative approach to treating these neurological conditions. Although further research is needed, its current applications suggest it could become a highly viable treatment in the years ahead.

Details of the Case Study

The present study's findings demonstrate a promising outcome for using photobiomodulation (PBM) as a potential intervention for treating patients with amnesic mild cognitive impairment (MCI). After 9 weeks of intervention, three patients in the study showed improvements in Tests A, B, and C. This case report reveals that PBM may be an effective option for improving cognition and behavior in MCI patients, as well as demonstrating its applicability for such an intervention. This study provides invaluable insight into the viability of leveraging PBM to successfully transform MCI patient care programs. Let us understand the case study in detail.

Working Methodology

1. Selection of Participants

Amnesic mild cognitive impairment (MCI) is an increasingly common condition, particularly in older adults. It has been examined thoroughly to identify effective interventions for the disorder. Individuals with amnesic MCI did not have a history of dementia or other complex neurological disorders, such as diabetes, atherosclerosis, hypothyroidism, or cardiac disease. To measure progress during treatment and post-treatment efficacy, each patient was carefully assessed using standardized neuropsychological tests for cognitive functioning and psychological measures for mood state and anxiety levels. Furthermore, to measure any changes in daily functioning capabilities related to treatment outcomes, questionnaires were administered by experienced research assistants. Overall, using detailed assessments before and after interventions can give insight into the efficacy of treatments available for amnesic MCI.

2. Assessment Tests

Standard assessment tools are the best way to evaluate a patient's cognitive levels. These standardized measures can accurately represent cognitive abilities, adaptive living skills, memory functions, mood, and anxiety levels. By comparing a person's test performance with the normative samples of their age group and educational level, we can assess the impact of illness on an individual's functioning. The tests adopted are as follows:

- Clinical Dementia Rating Scale [18] (CDR)
- Functional Activities Questionnaire [19] (FAQ)
- Hong Kong List Learning Test [20] (HKLLT)
- Rey-Osterrieth Complex Figure Test [21] (Rey-O)
- Geriatric Anxiety Scale-10 Item Version [22] (GAS-10)
- Chinese Geriatric Depression Scale [23] (CGDS)

3. Application of Photobiomodulation (PBM)

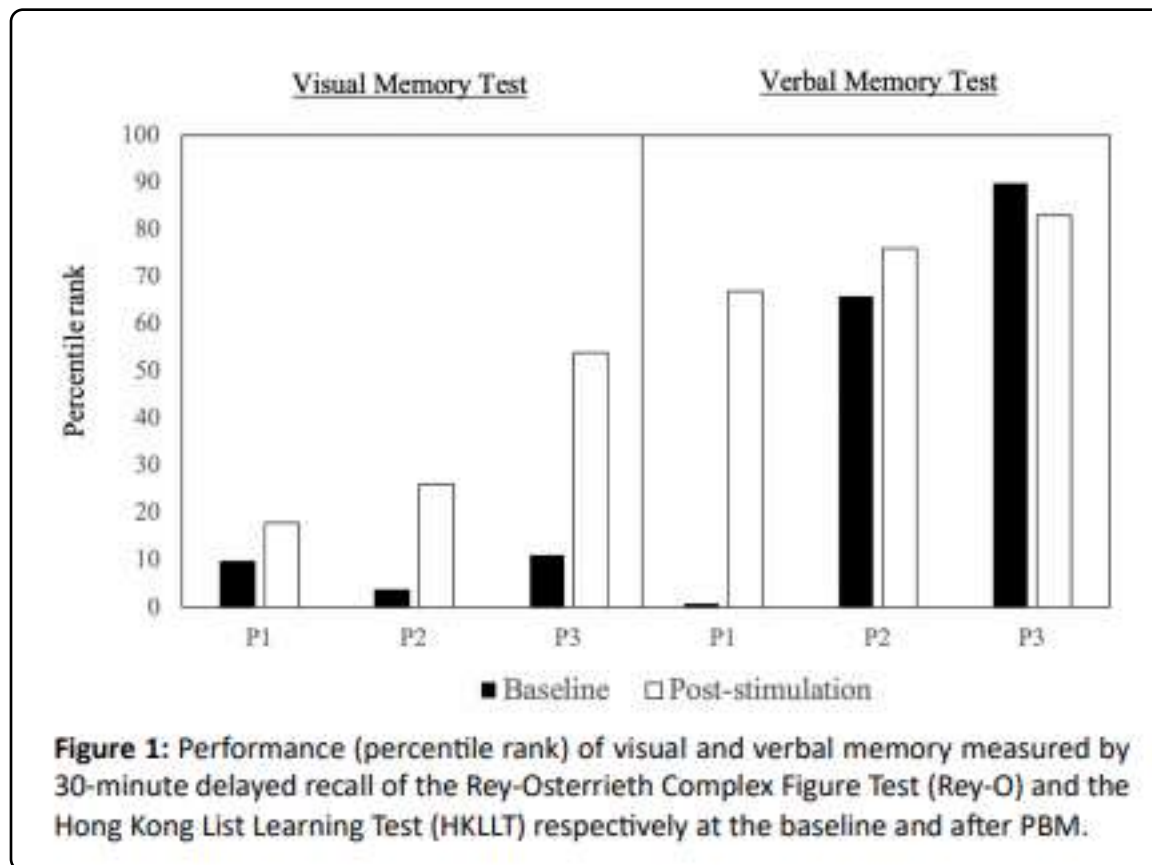
Photobiomodulation (PBM) proved to be an effective and efficient method of pain reduction due to its ability to penetrate deep into the tissue. To utilize PBM, a device was developed that contained up to nine individual LED nodes and was granted a CE certificate and FDA registration as a Class 1 device.

For the whole process, 18 sessions are required (2 sessions for 9 weeks), each lasting approximately 20 minutes with three stimulation sections. There were one-minute breaks between them, with a total duration of stimulation reaching 350 seconds which generated a fluence or energy density of 7 J/cm². It is clear from this process that PBM can bring both short- and long-term relief from pain-related discomfort.

Case Reports of Three Patients

1. Case 1

P1 presented with a history of neurological disorders and a low score on the Clinical Dementia Rating scale and Functional Assessment Questionnaire, raising concerns about potential difficulty performing daily tasks. However, P1's memory was improved after the intervention, as evidenced by her pre- and post-neuropsychological memory test results. This indicates that P1 had successfully overcome her initial difficulties, assuring us of an improved quality of life for this 48-year-old housewife with 11 years of education.



Participant	Age	Gender	Work Status	Years of Education	CDRS Score	CDR Score	FAQ Score
P1	48	F	Housewife	11	146.20	0.5	6
P2	73	F	Retired	13	156.79	0.5	5
P3	66	F	Retired	11	158.29	0.5	2
Mean	62.3			11.67	153.76	0.5	4.33
SD	12.90			1.15	6.59	0	2.08

Results:

Prior to the intervention, P1's memory function was weak, with a 1st percentile rank on the Hong Kong List Learning Test (a verbal memory test). Also, P1 was in the 10th percentile on the Rey-O (visual memory) Test. Fortunately, her performance saw significant improvements following the intervention. Not only did her verbal memory increase by 2.62 standard deviations (SD), but P1 also reported an improved ability to recall events since the second month of photo-biomodulation

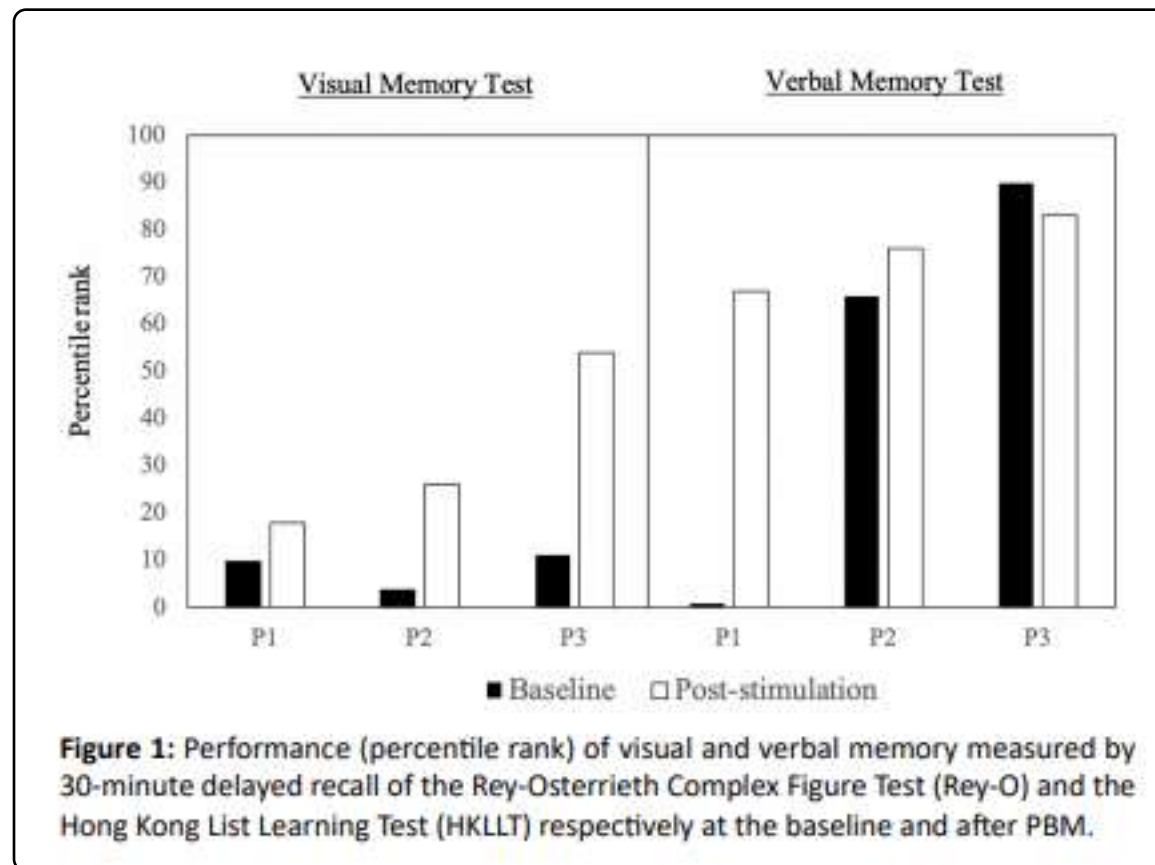
(PBM) stimulation. This is evidence of a highly successful treatment and denotes a positive outlook for P1's future memory function.

The case report also indicated that P1 had significant impairments in terms of memory loss, judgment, and problem-solving. After the intervention, however, these difficulties notably decreased to the point where her overall functioning improved drastically. Her FAQ score dropped from 6 to 1, which indicated that she had managed to reduce the severity of the issues from considerable levels to minimal impairment. Overall, this powerful result shows the beneficial effect earthing can have on individuals suffering from such difficulties.

Measure	Case Report of P1		Case Report of P2		Case Report of P3	
	Before	After	Before	After	Before	After
CDR	0.5	0	0.5	0	0.5	0
FAQ	6	1	5	1	2	0
HKLLT	-2.17	+0.45	+0.40	+0.71	+1.26	+0.97
Rey-O	-1.27	-0.91	-1.80	-0.65	-1.23	+0.09
CGDS	3	3	6	4	3	2
GAS	9	4	10	6	6	3

Case 2

Patient 2 presented several positive characteristics upon entering the study. Being a 73-year-old female with 13 years of education and no history of neurological disorders, she began the research with an above-cutoff adjusted CDRS total score (156.79), signifying that she did not display any signs of dementia. Additionally, her scores in both CDR (0.5) and FAQ (5) indicated a low risk for dementia and cognitive impairment. Furthermore, her GAS-10 score illustrated moderate levels of anxiety (10).



Participant	Age	Gender	Work Status	Years of Education	CDRS Score	CDR Score	FAQ Score
P1	48	F	Housewife	11	146.20	0.5	6
P2	73	F	Retired	13	156.79	0.5	5
P3	66	F	Retired	11	158.29	0.5	2
Mean	62.3			11.67	153.76	0.5	4.33
SD	12.90			1.15	6.59	0	2.08

Results:

P2 made a noteworthy improvement in her memory functioning following the implementation of the intervention. Her visual memory test was estimated to be at the 4th percentile rank at baseline. Following the intervention, this had climbed to a respectable 26th percentile. Additionally, her verbal memory improved considerably in its percentile rank - jumping from 66th to 76th percentile. These significant gains suggest that P2 responded positively to the

intervention, illustrating its efficiency and efficacy.

P2's reported improvement in memory after PBM stimulation is remarkable. Before the intervention, she had trouble recalling things and had moderate difficulties in judgment and problem-solving. However, an assessment after the PBM intervention showed improvement in memory recall, judgment, and problem-solving skills. Further, there was an improvement in the ability to manage difficult chores and hobbies after PBM stimulation.

Additionally, her FAQ score (Functional Assessment Questionnaire), which had a score of 5 at the baseline, decreased to 1 following the stimulation – signifying a vast improvement. Hence, it can be said that PBM stimulation has proved to be effective in improving cognitive functions in P2.

Measure	Case Report of P1		Case Report of P2		Case Report of P3	
	Before	After	Before	After	Before	After
CDR	0.5	0	0.5	0	0.5	0
FAQ	6	1	5	1	2	0
HKLLT	-2.17	+0.45	+0.40	+0.71	+1.26	+0.97
Rey-O	-1.27	-0.91	-1.80	-0.65	-1.23	+0.09
CGDS	3	3	6	4	3	2
GAS	9	4	10	6	6	3

Case 3

P3 was an elderly female, at 66 years of age, with 11 years of formal schooling and no known history of neurological disorders. She obtained a score compared to the baseline on the adjusted CDRS total score (158.29) and showed no signs of memory impairment by scoring 0.5 on the CDR and 2 on the FAQ. Furthermore, her GAS-10 and CGDS results showed no evident signs of anxiety or depressive symptoms.

Results:

Following a PBM intervention program, P3 showed remarkable improvement in her visual memory. Her visual memory test results moved from a clinically classified borderline range (at the 11th percentile) to an average range (at the 54th percentile). This improvement was greater than 1.32SD and showcased considerable growth throughout the intervention. Her verbal memory test scores remained reduced from the 90th percentile to the 83rd percentile (still staying within a high average range). This significant improvement highlights interventions' impact on an individual's cognitive functioning.

The participant reported that she found it easier to remember information, whereas her ability in this area was severely limited prior to the intervention. Such as, she remembered how to write a Chinese word after thinking for a bit. This marked improvement provides encouraging evidence of the potential utility of this technology for improving cognitive function.

Discussions

The above case reports have demonstrated the effectiveness of photobiomodulation (PBM) as a treatment for mild cognitive impairment (MCI). These studies revealed that nine weeks of PBM stimulation improved visual and verbal memory function. Further, it increased functional independence and decreased symptoms of depression and anxiety among participants. Notably, all the patients experienced the treatment well, and no adverse side effects were observed.

At baseline, all patients had an impaired range of memory functioning ranging from minor to moderate. However, after completing their PBM therapy, the range improved to normal levels. This evidence provides further support for PBM as an effective intervention for MCI.

Further, it was observed that three MCI patients of similar ages who did not receive PBM treatments were not as successful in their recovery results compared to those who had received

the treatment. Over the course of nine weeks, no substantial improvements were observed in their conditions despite resorting to traditional or clinical methods. This has highlighted the need for more effective and reliable techniques, with PBM displaying a promising natural solution to improve patient outcomes.

CONCLUSION

These intriguing case reports provide promising evidence that photobiomodulation (PBM) may effectively manage mild cognitive impairment. The 18-session PBM course, conducted over nine weeks, gave excellent results. The case reports showed improved memory and increased emotional and functional independence levels. Furthermore, all participants comfortably tolerated the treatment and experienced no adverse reactions. This compelling evidence implies that further use of PBM to treat mild cognitive impairment should be thoroughly explored through careful, controlled studies.

Reference Link

<https://scholars.direct/Articles/alzheimers-disease-and-dementia/add-5-018.pdf>



ADDRESS

146 Rock Hill Dr
Rock Hill, NY 12775



CONTACT DETAILS

Phone: 845-796-9951
Email: info@huelightusa.com