

**The National Centre for Electro-Magnetic Therapies CIC**

Identifiers: NCT04577053 Unique Protocol ID: PEMF-BRI-Lyme-Disease-2020 Secondary  
IDs: Bioresonance Biofeedback

Brief Title: PEMF Therapy to Treat Lingering Symptoms of Lyme Disease After Treatment  
With Antibiotics

Date: Thursday 2<sup>nd</sup> September 2021

## **What is Lyme Disease?**

Lyme Disease is a bacterial infection transmitted from ticks to humans. This disease is often common in humans who live in wooded or grassy areas (such as North England and the Scottish Highlands) and are unprotected when outdoors. Whilst there are precautions for areas with higher populations of ticks, it is still possible to contract Lyme Disease anywhere in the UK. It is important to note that not all ticks will carry Lyme Disease, but that you should safely remove ticks as soon as possible.

## **Symptoms of Lyme Disease**

A bite from a normal tick may cause itching, a rash, or a raised surface on the skin for a few days, with symptoms subsiding quickly. Lyme Disease, however, has both short and [long-term symptoms](#), and can arise within 1 to 4 weeks, or can emerge up to 3 months after being bitten.

Symptoms usually start with a rash that may look like a bullseye on the skin, with darker colouration closer to the centre of the bite.

Short Term Symptoms:

1. Fever or Chills
2. Headaches
3. Joint or Muscle Pain
4. Tiredness or Loss of Energy
5. Swollen Lymph Nodes

Whilst the short-term symptoms may seem easily rectified, Lyme Disease can pose a serious threat to an individual in the long term. The longer a patient goes without treatment, the higher the risk of such symptoms occurring.

All the [potential symptoms](#) of long-term Lyme Disease are listed below:

1. Rashes across the body
2. Bouts of severe joint pain and swelling, especially in the knees
3. Neurological issues – Inflammation of the brain (Meningitis), Paralysis of the face (Bell's Palsy), Numbness or Weakness in Limbs, impaired muscle movement, and Neuropathy.
4. Heart Problems
5. Eye Inflammation
6. Liver Inflammation (Hepatitis)
7. Severe Fatigue (Fibromyalgia)
8. Severe Headaches and Neck Stiffness
9. Inflammation of Brain and Spinal Cord
10. Nerve Pain and Shooting Pain across the body

11. Issues with Memory and Concentration
12. Episodes of Dizziness and Shortness of Breath

There is treatment for Lyme Disease from the [NHS](#). You will be referred to a GP and given a blood test. The NHS specify that these blood tests can be inaccurate initially, so you may be required to retake them to confirm the presence of Lyme Disease in your system. If diagnosed, a GP will prescribe a course of anti-biotics for at least 28 days, where symptoms should improve. If symptoms are more severe, a patient may be redirected into hospital for direct anti-biotic treatment, or to see a specialist for alternative medication and supervision.

### **NCET Clinical Trial on Lyme Disease**

The National Centre for Electromagnetic Therapies (formally Biofeedback Centre Bristol) undertook a clinical trial in October to December 2020 that sought to ease the symptoms for Lyme Disease patients. The trial and therapy was focussed on Pulsed Electromagnetic Therapy (PEMF) in treating the disease and followed weekly sessions with volunteers.

In this study 10 patients were chosen to undergo PEMF treatment. These were 60-minute sessions where a patient was hooked up to SCIO devices, which scan and treat the body for an array of symptoms related to Lyme Disease. These sessions lasted 8 weeks at NCET's Weston-Super-Mare Clinic, with surveys completed at different time increments. The clinical trial had an equal mixture of men and women over the age of 18.

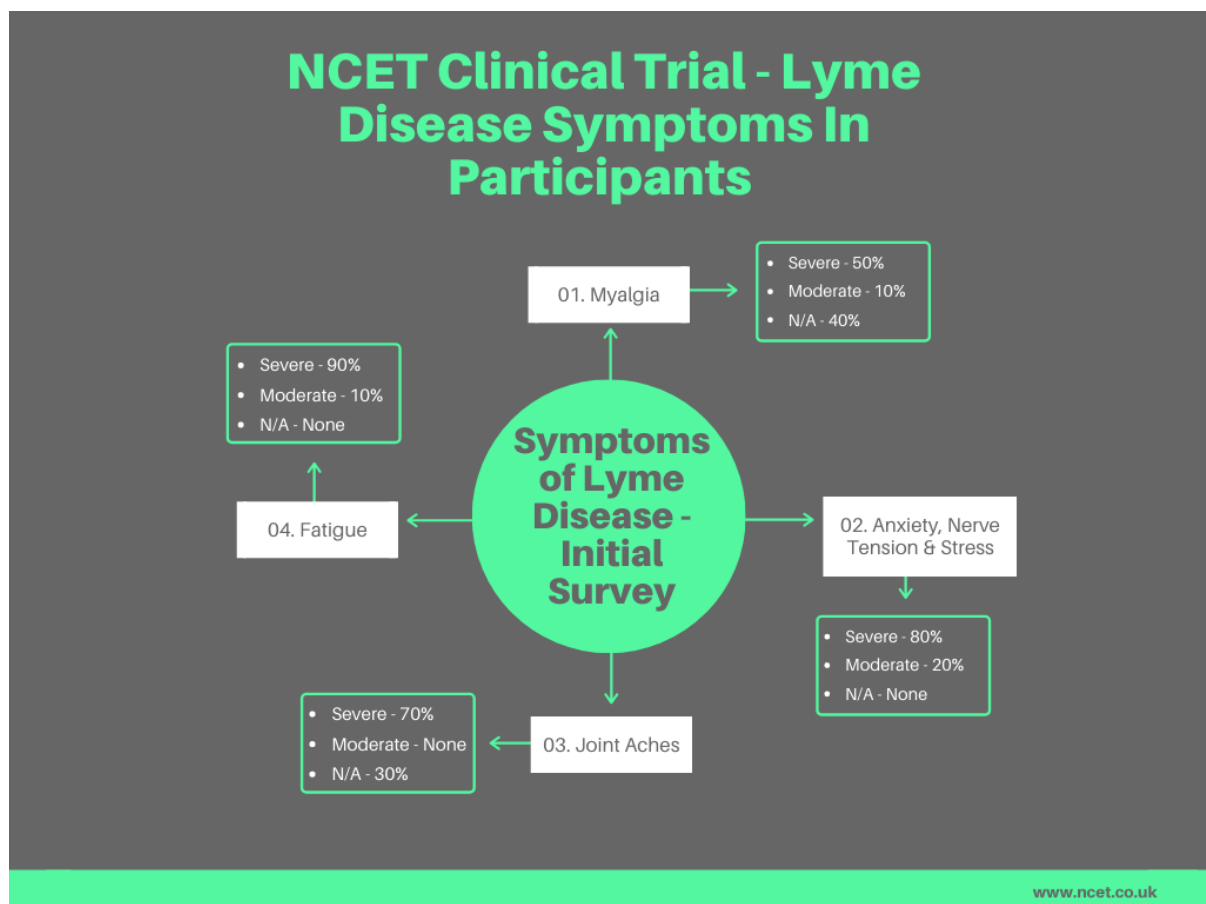
### **Initial Survey Before Trial**

Before the trial took place, volunteers were asked to fill out a survey relating to specific symptoms. These included fatigue, joint pain, and mood. It would then be compared with later results after treatment. Patients would respond to statements about their health by rating their experiences out of 100. 100 would indicate no issue whatsoever, whilst 0 indicated a very severe experience with the specific symptom. Their score would help us define whether specific symptoms were Severe, Moderate, or None.

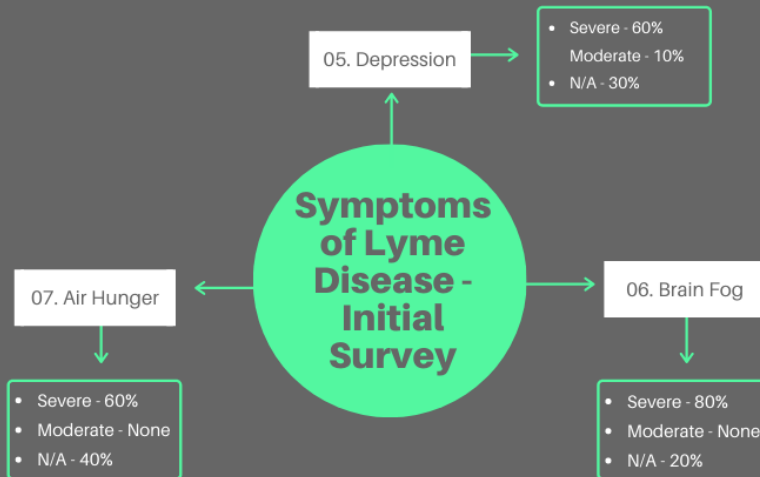
Here are the initial ratings of all participants prior to the clinical trial:

1. Myalgia
  - 50% --> Severe
  - 40% --> None
  - 10% --> Moderate
2. Anxiety, Nerve Tension & Stress
  - 80% --> Severe
  - 20% --> Moderate
  - 0% --> None

3. Joint Aches
  - 70% --> Severe
  - 30% --> None
  - 0% --> Moderate
4. Fatigue
  - 90% --> Severe
  - 10% --> Moderate
  - 0% --> None
5. Depression
  - 60% --> Severe
  - 30% --> None
  - 10% --> Moderate
6. Brain Fog
  - 80% --> Severe
  - 0% --> Moderate
  - 20% --> None
7. Air Hunger
  - 60% --> Severe
  - 40% --> None
  - 0% --> Moderate



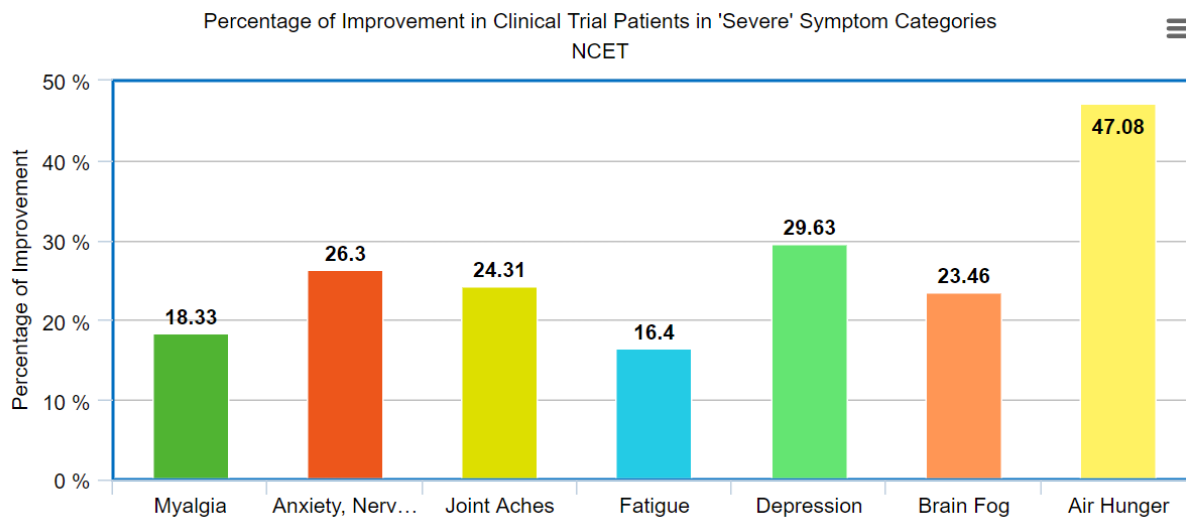
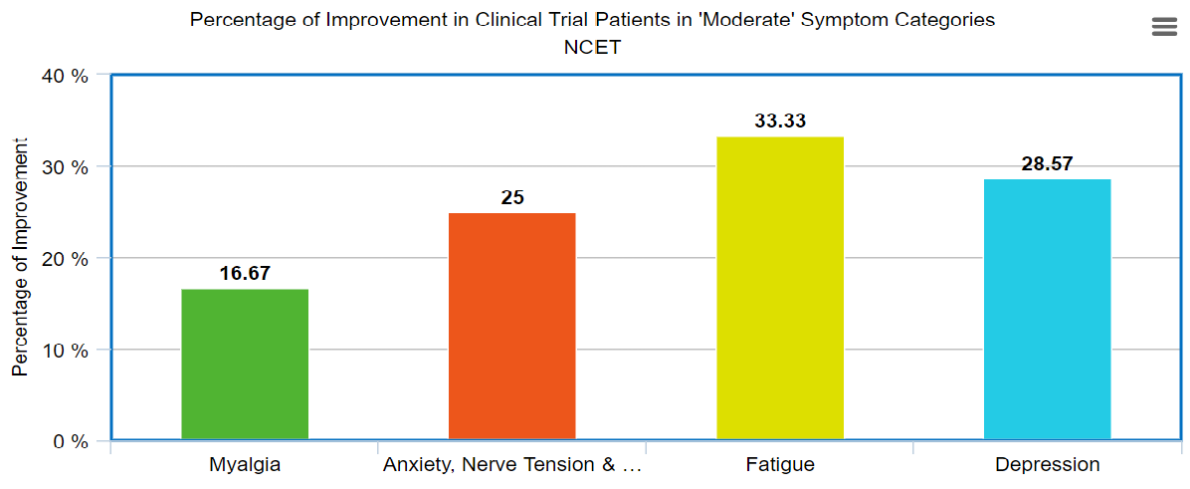
# NCET Clinical Trial - Lyme Disease Symptoms In Participants



## Results

Over the course of the clinical trial, there were improvements for all volunteers. This showed a great promise for using PEMF therapy in treating symptoms of Lyme Disease. In contrast to their initial surveys, many patients moved from being in the 'Severe' category into the 'Moderate' or 'None' categories. Sub-categories of symptoms were created to measure the success of the treatment, with percentages indicating an improvement from their initial survey. Results are as follows:

1. Myalgia
  - 18,33% --> Severe
  - 16,67% --> Moderate
  - N/A --> None.
2. Anxiety, Nerve Tension and Stress
  - 26.3% --> Severe
  - 25% --> Moderate
  - N/A --> None (no participants in group)
3. Joint Aches
  - 24,31% --> Severe
  - N/A --> Moderate (no participants in group)
  - N/A --> None. Participates identified as having hardly any or no joint aches and pains. Should participants in that segment suddenly develop joint pain within 2 months, this is unrelated to the intervention being researched.
4. Fatigue
  - 16,4% --> Severe
  - 33,33% --> Moderate (one participant only)
  - N/A --> None
5. Depression
  - 29,63% --> Severe
  - 28,57% --> Moderate (one participant only)
  - -9,26% --> None\*\* This signifies a decline, not improvement
6. Brain Fog
  - 23,46% --> Severe
  - N/A --> Moderate (no participants in group)
  - 5,00% --> None
7. Air Hunger
  - 47,08% --> Severe
  - N/A --> Moderate (no participants in group)
  - 3,75% --> None



## **Discussion and Conclusion**

The clinical trial provided promising results regarding the efficacy of Pulsed Electro-Magnetic Therapy in treating symptoms of Lyme disease. Firstly, there was the most improvement across all symptoms for participants in the 'Severe' categories. This indicates that PEMF therapy is especially useful in lowering extreme symptoms of Lyme Disease to a more moderate category. PEMF therapy was also shown to be most effective in treating Air Hunger and Depression symptoms. This reveals that SCIO devices may encourage cell regeneration in the lungs and brain more-so than other locations in the body during initial therapy.

The trial also gave positive results for participants suffering with 'Moderate' symptoms. Whilst the rate of improvement was not as high overall as the 'Severe' category, PEMF therapy was shown to

lower the severity of Depression and Fatigue in participants at a higher rate than those suffering with the same symptoms in the 'Severe' category.

It is important to note that a few of the results were restricted by the number of participants in each category. For Fatigue and Depression in the 'Moderate' category, there was only one participant. This indicates that the results may not be representative of a larger study group, and therefore should be treated with caution when assessing the efficacy of PEMF therapy. Another participant, who defined themselves as having little to no symptoms of Depression, experienced more moderate symptoms as the trial went on. It is difficult to speculate whether this increase in severity was due to the clinical trial or was due to personal experiences outside of the treatment. If a participant was to indicate that their symptoms worsened severely, they were recommended to stop the trial and seek professional medical help. This did not occur during the clinical trial.

As PEMF therapy encourages the relaxation of the mind, it is prudent to suggest that this participant was experiencing difficulties outside of the clinical trial (through personal relationships, national lockdowns, or other factors), which impacted their ratings in the concluding survey. Nonetheless it remains a topic to be considered during future clinical trials, to determine whether PEMF therapy can induce negative effects on participants suffering from depression.

NCET have been limited in their research of the effects of PEMF therapy and Lyme Disease. Although initial results were positive, follow-ups with the patients after the trial became difficult. Therefore, it is difficult to draw reliable conclusions of the long-term benefits of PEMF therapy, and the effects of discontinuing therapy after the clinical trial. It became clear that the emergence of a third national lockdown, and general COVID-19 society had impacted the lives of many and may have reverted some patients back towards more severe symptoms due to lack of social mobility, financial issues, or other related problems. As fewer than 50% of participants filled out a survey after 6 months following the trial, it was decided to not to use such results as a reliable conclusion.

The benefits of PEMF therapy in immediately treating Lyme Disease are more conclusive. This trial reveals that a short period of PEMF therapy promotes healing of all listed categories. Whilst the improvements are below 50%, it is important to note that this clinical trial was conducted over a short period of time with limited participants. Should PEMF therapy have continued with patients over a longer trial period, it is safe to assume that symptoms would continue to improve, even subside completely. NCET are confident in concluding that Pulsed Electro-Magnetic Therapy, conducted in weekly hour-long sessions, can improve the long-term symptoms of Lyme Disease in a non-invasive, affordable manner, although continued use of such therapies is recommended.

A clinical trial researching the benefits of PEMF therapy on PTSD and Anxiety is soon to be conducted by NCET. This is in direct response to concerns surrounding depression improvements during the Lyme Disease clinical trial. This study will be published through Clinical Trials when completed.

Further information regarding NCET's services, clinics, and research are available through the website [www.ncet.co.uk](http://www.ncet.co.uk).