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# USE OF BIOCERAMICS TISSUE IN PATIENTS WITH POST-POLIOMYELITIS SYNDROME

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### Objectives

To assess the biological effect of bioceramics in patients with post-poliomyelitis syndrome. Check if it improves symptoms like pain and intolerance to cold, quality of sleep, PLM index and skin temperature after 4 weeks of use.

### Cases and Method

12 patients, with age average of 46.5 ± 8.8 years, with post-poliomyelitis syndrome (PPS), according to Mulder diagnosis criteria, divided into three equal groups, with the symptoms: pain, intolerance to cold and PLM index. A polysomnography exam was performed, as well as an infrared exam to assess the microcirculation and temperature before and after the four-week period of treatment with Invel® Bioceramics tissues. Everyone responded to the VAS of pain and intolerance to cold before and after the treatment period.



Polysomnographic montage



Bioceramics  
Mattress



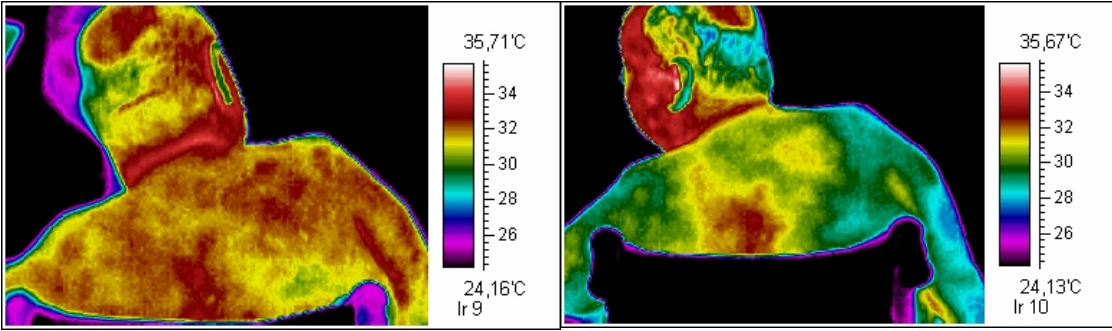
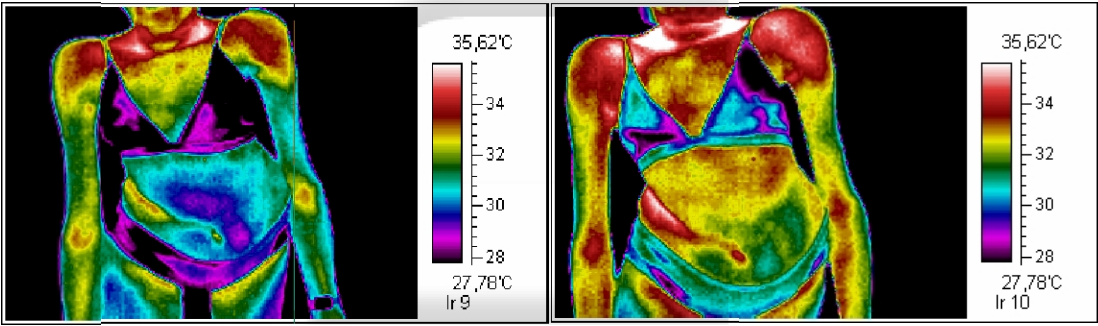
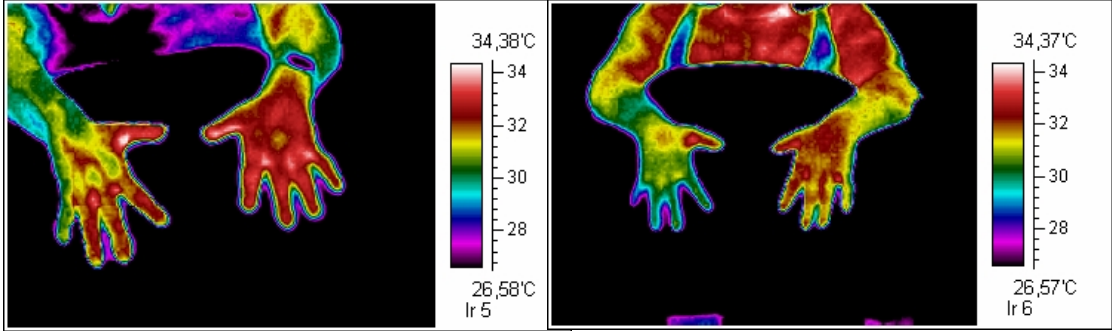
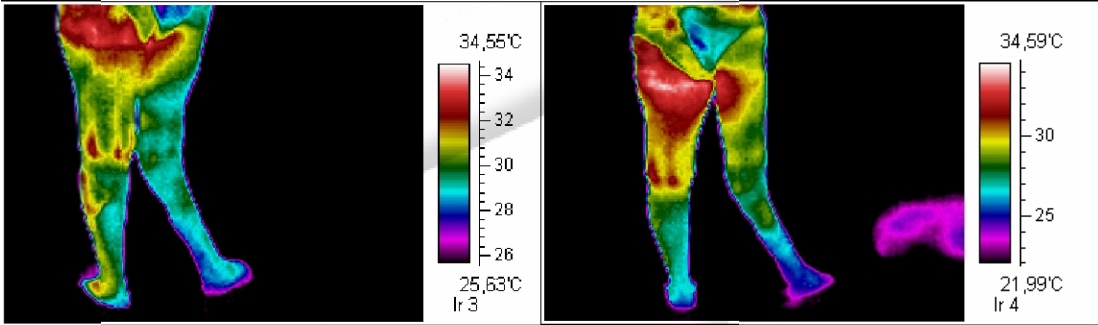
Bioceramics  
T-shirt



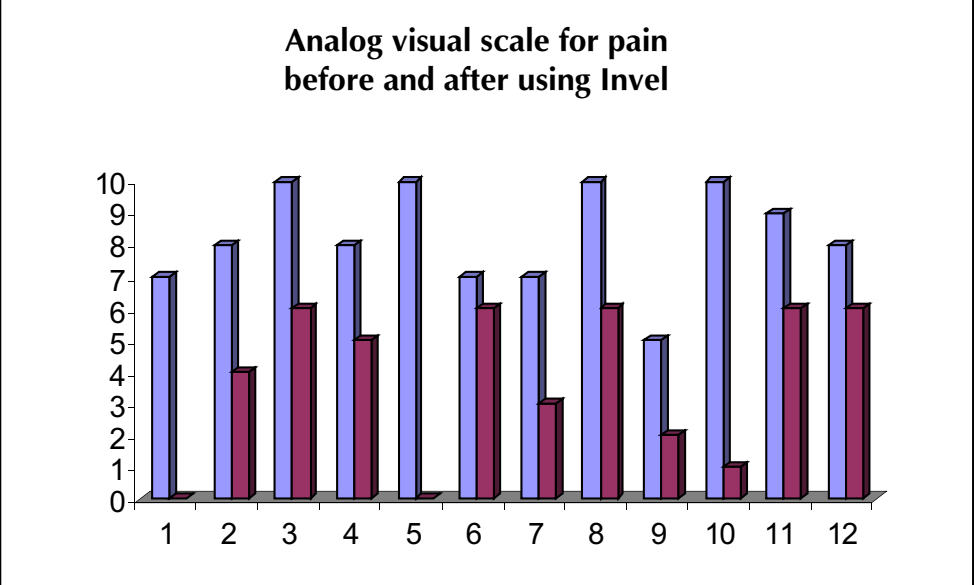
Bioceramics  
Thigh Sleeve

### Results

There was a significant improvement of pain in all patient, relative improvement of intolerance to cold and varied results concerning the skin temperature on patients with PPS.



| Polysomnographic Parameters | 1st Night N=12<br>Average ± DP | Variation | 2nd Night N=12<br>Average ± DP | Variation | T-test<br>p |
|-----------------------------|--------------------------------|-----------|--------------------------------|-----------|-------------|
| Efficiency of sleep %       | 72± 14                         | 43-98.6   | 72.6± 8.9                      | 54.5-83   | 0,27        |
| REM latency, min            | 130± 89                        | 29-355    | 161± 99                        | 72-399    | 0.31        |
| Awakening index, n/h        | 13± 10                         | 4,-35     | 11.8± 7.8                      | 3.7-24.7  | 0.34        |
| TTS, min                    | 331± 75                        | 203-455   | 324.5± 53.6                    | 244-436   | 0.94        |
| Latency of Sleep, min       | 48.0± 40                       | 7.5-166.5 | 32.3± 19.3                     | 8.-86     | 0.25        |
| PLM index, n/h              | 11± 14                         | 0-41      | 3.7± 6.3                       | 0-19      | 0.03        |
| FR Vigil, bpm               | 18± 3                          | 14-25     | 14.7± 2.6                      | 9.-19     | 0.32        |
| FR REM, bpm                 | 15± 4                          | 5.3-23    | 15.2± 3.4                      | 11.-23    | 0.85        |
| FR NREM, bpm                | 22± 18                         | 79-6      | 15.5± 3                        | 10.-21    | 0.41        |
| FC NREM, bpm                | 77± 14                         | 47-95     | 66± 11                         | 47.-90    | 0.009       |
| FC REM, bpm                 | 75± 14                         | 50-99     | 66.7± 10.4                     | 51.-84    | 0.03        |
| FC Vigil, bpm               | 83± 17                         | 53-113    | 72.2± 10.8                     | 55.-94    | 0.04        |



### Conclusion

This study has demonstrated that after 1 month using fabrics with Invel® bioceramics, complaints about pain from patients with post-poliomyelitis syndrome have significantly decreased and their quality of sleep has improved.

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