Background and Objectives

The purpose of this systematic review is to evaluate the influence of pain neuroscience education (PNE) on pain and function in patients with chronic low back pain. Chronic low back pain is ongoing in approximately 30.7 percent of adults in the United States. Pain does not equal tissue damage and can be present without damage; it is frequently caused by hypersensitivity in the nervous system. PNE aims to change patients’ cognitions regarding their understanding of pain related to their condition, allowing patients improved function, mobility and quality of life.

Methods

The databases CINAHL complete, MEDLINE, SPORTDiscus, Cochran Central Register of Controlled Trials and MasterFILE were systematically searched using keywords related to chronic low back pain and PNE. The search was limited to randomized controlled trials. The initial search resulted in 195 articles and a secondary search yielded 83 articles, all of which were screened by title and abstract, followed by an in-depth full text analysis, after which six studies were still applicable to the review. These six studies were evaluated for quality using the PEDro scale, and one study was excluded. The resulting five studies were included in this review.

Results

In the five studies analyzed, the subjects had all experienced low back pain persisting for two months or greater. Consistent measures used in all of the studies centered on the evaluation of pain and disability scores. These were evaluated with standardized tools such as the Numeric Pain Scale, Visual Analog Scale, Roland Morris Disability Questionnaire and the Oswestry Disability Index. Additional measures examined the participants’ perceptions surrounding their pain as well as some evaluation of the cost aspect of incurring PNE with other treatment methods. Four of the five studies compared the effect of PNE included in the treatment plan with a control lacking this education. One study compared different forms of the delivery of PNE. While more research is necessary, these studies indicate positive findings for incorporating pain neuroscience education into the treatment of chronic low back pain patients.

Discussion and Conclusion

Upon review of five randomized controlled trials, PNE has been shown to promote improvements in pain levels, function, beliefs about pain/condition, as well as an indirect reduction in health care costs. Pain neuroscience education promotes a positive change in baseline measures, although not always statistically significant. Further research needs to be conducted to evaluate the effects of PNE on various outcomes. All five studies reviewed present neutral to positive effects of PNE on the impact chronic low back pain has on pain neuroscience education is a safe and cost-effective intervention that can be incorporated into ongoing physical therapy treatment of patients with chronic low back pain. The addition of pain neuroscience education into a multimodal approach to treatment is recommended when treating patients with chronic low back pain.

Summary of Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Participants</th>
<th>Intervention</th>
<th>Control Intervention</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 Louie</td>
<td>65 patients with lumbar radiopathy scheduled for decompressive lumbar surgery Mean Age: 49</td>
<td>Usual pre-operative education and PNE within 1 week prior to lumbar surgery for 30 minutes face-to-face with the therapist and patient</td>
<td>Usual pre-operative education</td>
<td>NPRS (lumb and leg pain), ODI (function), 10 item survey Level of Agreement with Likert scale about Post-Operative Thoughts/Beliefs and Postoperative Questionnaire on Utilisation of Healthcare Services</td>
<td>Patients receiving PNE in addition to traditional PT showed a reduction in pain and healthcare expenditures, an increase in function, and were more likely to feel prepared for surgery in comparison to the control group.</td>
</tr>
<tr>
<td>2002 Mosley</td>
<td>57 patients with CLBP ≥ 2 months Mean Age: 50.5</td>
<td>2 PT treatments/wkreatures for 4 weeks. HEP 1 hour PNE session ?ewak for 4 weeks</td>
<td>Ongoing medical management as prescribed by a general practitioner</td>
<td>NPRS (pain measure) and RMDQ (function/disability measure)</td>
<td>Patients receiving PNE in addition to traditional PT showed a reduction in pain and disability scores in comparison to the control group at the time of study and at 1 year follow up.</td>
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<tr>
<td>2003 Mosley</td>
<td>55 patients with a history of low back pain, CLBP ≥ 3 months and RMDQ ≥ 9/18 Mean Age: 41</td>
<td>Four individual PNE sessions of one hour each completed within two weeks of beginning manual therapy and an HEP focused on specific trunk muscle training</td>
<td>One hour four group PNE session within one week of initiation of specific motor training and HEP</td>
<td>NPRS (pain) and RMDQ (function), and physical therapist hours</td>
<td>Patients receiving PNE in addition to traditional PT showed a reduction in pain, disability scores, and PT hours per patient in comparison to the control group.</td>
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<tr>
<td>2004 Mosley</td>
<td>58 patients with CLBP &gt; 3 months Mean Age: ~43.5</td>
<td>6 PNE</td>
<td>Patient education on back anatomy and physiology</td>
<td>RMDQ (self-perceived disability), SOPV/P (pain beliefs), PCC (pain beliefs), SLR (Physical Performance) FBR (Physical Performance) and ADT (Physical Performance)</td>
<td>Patients receiving PNE showed reduction in pain beliefs, disability scores, and an increase in physical performance in comparison to the control group that received back anatomy education.</td>
</tr>
<tr>
<td>2014 Pires</td>
<td>62 patients with CLBP &gt; 3 months with or without radiation referred to leg. Literature in Portuguese Mean Age: 50.95</td>
<td>Patients participated in two 90 minute group PNE sessions prior to initiation of 12 session biomechanical therapy program</td>
<td>Participants participated in 12 session biomechanical therapy program</td>
<td>VAS (pain), GQOS (function), TSK (got thoughts)</td>
<td>Patients receiving PNE in addition to traditional PT showed a reduction in pain, an increase in function, and were more likely to perceive benefits from treatment in comparison to the control group.</td>
</tr>
</tbody>
</table>

References


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Contact Information

Terry Cox PT, DPT, OCS, CSMT, FAAMPT
Department of Physical Therapy
Southwest Baptist University
1600 University Avenue Bolivar, MO 65613
tcox@sbuniv.edu