Author Year Country PEDro Score Research Design Total Sample Size	Methods	Outcome
Gabapentin		
Kaydok et al. 2014 Turkey RCT PEDro=7 N=28	**Population:** Age=42.8yrs' Time since SCI=35.3 mons; Duration of pain=29.3 mons; Type of pain=neuropathic. **Treatment:** Participants were randomly allocated to the gabapentin or pregabalin group. Those in the gapapentin group received an initial dose of 300 mg/day which was titrated to a max dose of 3600 mg/day by the 4th week. Those in the pregabalin group received an initial dose of 150mg/day which was titrated to a max of 600mg/day by the 4th week. These dosages were maintained for 8 weeks. Patients then underwent a 2 week washout period and were crossed over to the alternative group. **Outcome Measure**s: VAS	1. No significant difference in VAS between gabapentin and pregabalin.
Rintala et al. 2007 USA RCT PEDro=10 N=38	**Population:** SCI: Mean age=42.6 yr; Gender: males=20, females=2; Level of injury: paraplegia=7, tetraplegia=12; Severity of injury: AIS A-C=19, D=3; Time since injury=12.6 yr; Duration of pain=7.3 yr. Type of pain=neuropathic. **Treatment:** Patients were randomized into one of six groups: 1) gabapentin-amitripyline-diphenhydramine (GAD; n=7); 2) GDA (n=6); 3) AGD (n=6); 4) ADG (n=6); 5) DGA (n=7); 6) DAG (n=6). Each drug was administered for 9 wk with one washout week before and after each drug treatment, for a total of 31 wk. The maximum doses were 50mg 3x/day for amitriptyline, 1200mg 3x/day for gabapentin, and 25mg 3x/day for diphenhydramine (control). **Outcome Measures:** Center of Epidemiologic Studies Depression Scale-Short Form (CESD-SF)	1. No significant difference was seen at 8 weeks in subjects with high (≥ 10) baseline CESD-SF scores in : • Effectiveness of amitriptyline over gabapentin (p=0.061). • Effectiveness of gabapentin over diphenhydramine (p=0.97). 2. Subjects with low (<10) baseline CESD-SF scores showed no significant difference among the medications.
Levendoglu et al. 2004 Turkey RCT PEDro=9 N=20	**Population:** Age=23-62 yr; Gender: males=13, females=7; Onset of pain post injury=1-8 mo; Duration of pain=6-45 mo. Type of pain=neuropathic. **Treatment:** Subjects were randomized to gabapentin or placebo for a 4 wk titration period. Following this 4 wk period subjects continued to receive max tolerated doses. After a 2 wk washout period the treatments were switched in a crossover design. **Outcome Measures**: Neuropathic pain scale, VAS, and Lattinen test were used to assess pain and quality of sleep.	1. Both placebo and the gabapentin improved pain scores for the following: pain intensity (p<0.000), shape (p<0.000), hot (p<0.001), unpleasantness (p<0.000), deep and surface pain (p<0.001), at week 4 and 8 of administration. 2. Intensity of pain decreased significantly for the gabapentin groups during treatment p<0.001) and the intensity of pain differed between the two groups at all time periods (p<0.001). 3. VAS scores indicated that there was significant pain relief, which began at week 2 and continued until week 6 (p<0.05) and pain relief between the two groups at the end of the

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		stable dosing periods was significantly different (p<0.000). 4. More experienced side effects in the treatment group then in the placebo group (p<0.05).
Tai et al. 2002 USA RCT PEDro=6 N=7	**Population:** Age=27-47 yr; Gender: males=6, females=1; Level of injury=C2-T7; Time since injury=1 mo-20 yr. Type of pain=neuropathic. **Treatment:** Subjects with neuropathic pain were treated with gabapentin or placebo. **Outcome Measure**s: Neuropathic Pain Scale, which has 10 categories of pain types.	1. Significant reduction of "unpleasant feeling" with gabapentin vs. placebo (p=0.028). 2. Trends of reductions with gabapentin vs. placebo for "pain intensity" (p=0.094) and "burning feeling" (p=0.065). 3. No other differences for any other pain descriptors including "sharp," "dull," "cold," "sensitive," "itchy," "deep," and "surface."
Ahn et al. 2003 Korea Pre-post N=31	**Population:** Mean age=45 yr; Gender: males=19, females=12; Level of injury: paraplegia, tetraplegia; Severity of injury: complete, incomplete; Duration of pain=10 yr. Type of pain=neuropathic. **Treatment**: Subjects were started on 300 mg of gabapentin, which was increased over 18 days to 1500 mg, followed by a 5 wk maintenance period. If pain score did not decrease during this time period, meds were increased to 2400 mg/day and 3600 mg/day. Group 1 had <6 mo of pain and group 2 >6 mo. **Outcome Measures**: Pain and sleep interference scores of the two groups were compared.	1. At the end of the study, both groups showed they had lower mean scores for pain and sleep interference score (p<0.05). 2. Mean pain score for Group 1 decreased more than it did for Group 2 (p<0.05). 3. This score decreased more for Group 1 during wk 2-8 than it did for Group 2 (p<0.05). 4. Mean sleep interference score for Group 1 decreased more than it did for Group 2 (p<0.05).
To et al. 2002 Australia Case Series N=44	**Population:** Age=15-75 yr; Gender: males=28, females=10; Level of injury: paraplegia, tetraplegia. Type of pain=neuropathic. **Treatment:** Neuropathic pain was treated with gabapentin. **Outcome Measures:** Level of pain experienced by subjects.	1. 76% of subjects reported some improvement in pain after taking gabapentin. 2. Visual Analogue Scores decreased from 8.86 pre-treatment to 4.13 post-treatment (6 mo later) (p<0.001), with a significant curvilinear trend (p=0.001).
Pregabalin		
Min et al. 2016 South Korea RCT Crossover PEDro=6 N=55	**Population:** Mean age=51.7yr; Gender: males=44, females=11; Level of injury: paraplegia=29, quadriplegia=26; Severity of injury: incomplete=45, complete=10; Mean time post injury=2458d; Type of pain=neuropathic. **Treatment:** Participants received pregabalin (300mg/d) and oxcarbazepine (300mg, 2x/d), each for 1-2wk, provided in a randomized sequence. Participants were divided according presence or absence of evoked pain. Outcomes were assessed before and after each trial. **Outcome Measures:** Visual Analogue Scale - Pain Intensity (electrical pain,	1. Overall, both pregabalin and oxcarbazepine were effective in relieving all types of pain (p<0.05), and there were no significant differences between medications in effectiveness. 2. Oxacarbazepine was significantly more effective in relieving electrical, burning, and numbness pain in those without evoked pain than those with it (p<0.05). 3. Pregabalin was significantly more effective in relieving burning pain in those without evoked pain than those with it (p<0.05).

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	burning pain, pricking pain, numbness, allodynia, hyperalgesia).	4. In those with evoked pain present, pregabalin was significantly more effective than oxcarbazepine in relieving allodynia and hyperalgesia than pregabalin ($p<0.001$). 5. In those with evoked pain absent, there was no significant difference between medications in effectiveness.
Kaydok et al. 2014 Turkey RCT PEDro=7 N=28	**Population:** Age=42.8yrs' Time since SCI=35.3 mons; Duration of pain=29.3 mons; Type of pain=neuropathic. **Treatment:** Participants were randomly allocated to the gabapentin or pregabalin group. Those in the gapapentin group received an initial dose of 300 mg/day which was titrated to a max dose of 3600 mg/day by the 4th week. Those in the pregabalin group received an initial dose of 150mg/day which was titrated to a max of 600mg/day by the 4th week. These dosages were maintained for 8 weeks. Patients then underwent a 2 week washout period and were crossed over to the alternative group. **Outcome Measure**s: Visual analog pain scale (VAS), neuropathic pain scale (NPS), Lattinen test (LT) and Beck depression inventory (BDI) pain diary.	1. No significant difference in VAS between gabapentin and pregabalin.
Cardenas et al. 2013 USA RCT PEDro=10 N=219	**Population:** Mean age=45.7yrs; Gender: Male=176; Female=43; Type of pain=neuropathic. **Treatment:** SCI individuals with neuropathic below level pain for greater than 3 months were randomized to a twice daily pregabalin group (up to 600mg/d) or placebo for 12 weeks. **Outcome Measures:** Duration-adjusted average change in pain,	1. Significant improvement in pain was seen in the treatment group compared to placebo, $p=0.0003$. 2. Significant improvement in pain related sleep interference scores were seen post treatment in the pregabalin group compared to placebo, $p<0.05$.
Arienti et al. 2011 Italy RCT PEDro=6 N=47	**Population:** Severity of injury: AIS A=33; B, C and D=14. Level of injury: paraplegia=19, tetraplegia=7. Type of pain=neuropathic. **Intervention:** Patients were randomly placed into three groups: pharmacological group received 600 mg per day of pregabalin. The pharmacological and osteopathic group received 600mg per day of pregabalin and osteopathical treatment once a week for the first month, once every fortnight for the second month, once during the third month all for 45 min each by an osteopathic physician. The osteopathic group received on the osteopathic treatment described above. **Outcome Measures:** Verbal numeric scale (VNS)	1. Rates of improvement based on the VNS scores were similar across the two treatments ($p=0.26$). 2. The highest pain relief was seen in the combined pharmacological and osteopathic group compared to the pharmacological alone ($p=0.05$) and the osteopathic alone ($p=0.001$).

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Vranken et al. 2008 Netherlands RCT PEDro=9 N=40	**Population:** Treatment group: Mean age=54.2 yr; Gender: males=11, females=9; Control group: Mean age=54.7 yr; males=10, females=10. Type of pain=neuropathic. **Treatment:** Those in treatment group received escalating doses of pregabalin (150 mg, 300 mg, or 600 mg daily), while the control group received placebo. **Outcome Measures:** Visual Analogue Scale (VAS)	1. 82.5% of subjects completed the study. 2. Those in the treatment group experienced a decrease in pain ($p<0.01$) compared to control group. 3. With respect to health status and quality of life, treatment group experienced a statistically significant improvement on the EQ-5D VAS and EQ-5D utility scores ($p<0.01$). 4. Scores on the SF-36 showed significant improvement in the bodily pain domain ($p<0.009$) for the treatment group, but not in other domains.
Sidall et al. 2006 Australia RCT PEDro=9 N=137	**Population:** Mean age=45 yr; Gender: males=19, females=12; Level of injury: paraplegia, tetraplegia; Severity of injury: complete, incomplete; Duration of pain=10 yr. Type of pain=neuropathic. **Treatment:** Patients were randomized to either flexible-dose pregabalin 150 to 600 mg/day (n=70) or placebo (n=67), administered BID **Outcome Measures:** Pain scores, sleep interference and anxiety scores of the two groups were compared.	1. The mean baseline pain score was 6.54 in the pregabalin group and 6.73 in the placebo group. 2. The mean endpoint pain score was lower in the pregabalin group (4.62) than the placebo group (6.27; $p<0.001$). 3. Efficacy observed as early as wk 1 and maintained for the duration of the study. 4. The average pregabalin dose after the 3 wk stabilization phase was 460 mg/day. 5. Pregabalin was associated with improvements in disturbed sleep ($p<0.001$) and anxiety ($p<0.05$) 6. Mild or moderate, typically transient, somnolence and dizziness were the most common adverse events.
Carbamazepine		
Min et al. 2016 South Korea RCT Crossover PEDro=6 N=55	**Population:** Mean age=51.7yr; Gender: males=44, females=11; Level of injury: paraplegia=29, quadriplegia=26; Severity of injury: incomplete=45, complete=10; Mean time post injury=2458d; Type of pain=neuropathic. **Treatment:** Participants received pregabalin (300mg/d) and oxcarbazepine (300mg, 2x/d), each for 1-2wk, provided in a randomized sequence. Participants were divided according presence or absence of evoked pain. Outcomes were assessed before and after each trial. **Outcome Measures:** Visual Analogue Scale - Pain Intensity (electrical pain, burning pain, pricking pain, numbness, allodynia, hyperalgesia).	1. Overall, both pregabalin and oxcarbazepine were effective in relieving all types of pain ($p<0.05$), and there were no significant differences between medications in effectiveness. 2. Oxacarbazepine was significantly more effective in relieving electrical, burning, and numbness pain in those without evoked pain than those with it ($p<0.05$). 3. Pregabalin was significantly more effective in relieving burning pain in those without evoked pain than those with it ($p<0.05$). 4. In those with evoked pain present, pregabalin was significantly more effective than oxcarbazepine in

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		relieving allodynia and hyperalgesia than pregabalin ($p<0.001$). 5. In those with evoked pain absent, there was no significant difference between medications in effectiveness.
Salinas et al. 2012 Colombia RCT PEDro=9 $N_{Initial}=46$; $N_{Final}=44$	**Population:** Mean age=36yr; Gender: males=42, females=4; Level of injury: paraplegia=28, quadriplegia=18; Severity of injury: incomplete=13, complete=33; Time post injury <2wk; Type of pain=neuropathic. **Treatment:** Individuals without neuropathic pain were randomized to receive carbamazepine (600mg/d, n=24) or placebo (control, n=22) for 1mo. Outcomes were assessed pre and post treatment, and at 3 and 6mo follow-up. **Outcome Measures:** Visual Analogue Scale - Pain Intensity (VAS-PI), Short Form 36 Scale (SF-36).	1. At 1mo, significantly less of the treatment group reported moderate/intense pain (VAS-PI$\geq$4) than the control group (2 vs 8, $p=0.024$). 2. At 3mo, more of the treatment group reported moderate/intense pain than the control group, but the difference was not significant (8 vs 6, $p=0.498$). 3. At 6mo, less of the treatment group reported moderate/intense pain than the control group, but the difference was not significant (6 vs 8, $p=0.298$). 4. There was no significant difference between groups in SF-36 scores.
Chen et al. 2018 China PCT N=54	**Population:** NMES+carbamazepine group: Mean age=41.8±12.6 yr; Gender: males=25, females=2; Time since injury=31.2±11.5 mo; Level of injury: C=12, T=13, L=2; Severity of injury: AIS A=16, B=3, C=5, D=3; Type of pain=neuropathic. Carbamazepine group: Mean age=43.5±13.7 yr; Gender: males=23, females=4; Time since injury=29.7±10.8 mo; Level of injury: C=14, T=10, L=3; Severity of injury: AIS A=18, B=2, C=3, D=4; Type of pain=neuropathic. **Intervention:** Participants were assigned to either an NMES + carbamazepine group or a carbamazepine only group for 3 mo of treatment with outcomes measures at baseline and post-intervention. **Outcome Measures:** Pain intensity numerical rating scale (NRS), quality of life (QOL) sort form 36 (SF-36) scale, and adverse events. *Neuromuscular electrical stimulation (NMES), neuropathic pain (NPP)	1. No significant difference in NRS for NPP or the QOL in SF-36 in the NMES group ($p>0.05$). 2. No serious adverse events in either group.
Lamotrigine		
Agarwal & Joshi, 2017 India RCT PEDro=6 N=147	**Population:** Age=18+ yr; Gender: males=136, females=11; Level of injury: paraplegia=64, tetraplegia=83; Severity of injury: AIS A=112. B/C/D=35; Type of pain=neuropathic. **Intervention:** Participants with neuropathic pain (NP) were randomized to either amitriptyline or lamotrigine for 3	1. No significant differences between reduction of pain scores between the amitriptyline and lamotrigine groups ($p>0.05$). 2. Only notable adverse events were dry mouth and drowsiness, and patients reported exceeding the 50 mg dose recommendation in the

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	wk trials to compare the effects of pain suppression. **Outcome Measures:** Short-form MC Gill Pain Questionnaire (SFMPQ2) score on pain, adverse events and withdrawn patients.	amitriptyline group with no adverse events in the lamotrigine group. 3. 140 of the 147 subjects completed the study, 5 dropped out and two passed away.
Finnerup et al. 2002 Denmark RCT PEDro=10 N=30	**Population:** SCI patients with pain at or below the level of injury. Type of pain=neuropathic. **Treatment:** A 1 wk baseline period was followed by two treatment periods of 9 wk. Lamotrigine slowly increased to a maximum of 400 mg or placebo separated by a 2 wk washout period. **Outcome Measures:** The primary outcome measure was the change in median pain score from baseline week to the last week of treatment. Secondary outcome measures included thresholds to standardized sensory stimuli using quantitative sensory testing.	1. Twenty-two patients completed the trial. 2. No statistically significant effect of lamotrigine as evaluated in the total sample 3. In patients with incomplete SCI, lamotrigine significantly reduced pain at or below SCI level. 4. Patients with brush evoked allodynia and wind-up-like pain in the area of maximal pain were more likely to have a positive effect to lamotrigine than patients without these evoked pains.
Levetiracetam		
Finnerup et al. 2009 Denmark RCT PEDro=7 N=36	**Population:** Mean age=52.8 yr; Gender: males=29, females=7; Level of injury: C=13, T=19, L=4; Severity of injury: AIS A=13, B=2, C=3, D=18; Type of pain: at level=17, below level=31; Type of pain=neuropathic. **Treatment:** Patients were randomized into two 5 week treatment groups receiving either levetiracetam or placebo tablets. After a 1 wk washout period, individuals were crossed over to the 2nd group. Patients received 500 mg x2 for the first week, 1000mg x2 in the second week, and 1500 mg x2 in wk 3-5. Patients were assessed at baseline, end of each treatment and 6 mo follow-up. **Outcome Measures:** Neuropathic pain symptom inventory	1. Levitiracetam treatment showed no significant improvement in median pain intensity compared to placebo treatment (p=0.46). 2. No difference was seen in pain relief between the patients treated with levitiracetam alone and those with concomitant main medication. 3. Side effects due to levetiracetam included incoordination, dizziness, somnolence, constipation and confusion; however, these effects were not statistically different from those in the placebo group.
Valproate		
Drewes et al.1994 Denmark RCT PEDro=5 N=20	**Population:** Mean age=32.5 yr; Gender: males=15, females=5; Level of injury: paraplegia=16, tetraplegia=4; Type of pain=neuropathic. **Treatment:** Subjects were administered 600 mg of valproate or placebo 2x daily. Daily dose of valproate was increased (on an individual basis) if pain persisted and no side effects were reported. First treatment phase lasted 3 wk, followed by a 2 wk washout period, followed by 3 wk of cross-over treatment. **Outcome Measures:** McGill Pain Questionnaire **(**MPQ)	1. A trend toward improvement was noted among those in the valproate group; however, differences between the two groups were not significant.