**Table E32. Data abstraction of randomized controlled trials of TENS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Author, Year** | **Country****Number of Centers and Setting** | **Inclusion Criteria** | **Number Randomized, Analyzed****Attrition** | **Intervention** | **Study Participants** |
| Buchmuller, 2012 | Multi-centerFrance | Age >18 years with chronic low backpain ≥40 VAS with or without radicular painExcluded: pain duration <3 months, previous TENS treatment, prior surgery for radiculopathy or planned surgery within 6 months, planned use of other treatment for LBP | Randomized: 236Analyzed: unclear (varied by outcome) Attrition: unclear | A. Active TENS 4 1-hoursessions per day (n=117) B. Sham TENS 4 1-hour sessions per day (n=119) | A vs. BMean age 53 vs. 53 years62% vs. 64% femaleRace not reportedLBP alone 39% vs. 43%; LBP + radicular pain: 61% vs. 57%VAS 63 vs. 66Roland-Morris disability score 15 vs. 15 |
| Facci, 2011 | Single-centerBrazil | Age >18 years with nonspecific,chronic low back painExcluded: low back pain duration <3 months, receiving other nonpharmacologic treatment, prior back surgery, contraindication to electrotherapy | Randomized: 150Analyzed: 150Attrition: 0% | A. TENS 10 30-minutessessions over 2 weeks(n=50)B. Interferential therapy 1030-minutes sessions over2 weeks (n=50)C. No treatment (n=50) | A vs. B vs. CMean age 50 vs. 45 vs. 47 years70% vs. 74% vs. 74% femaleRace not reportedLBP alone 78% vs. 78% vs. 70%; LBP +sciatica 22% vs. 22% vs. 30%Use of pharmacologic treatments 65%vs. 69% vs. 67% |

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year** | **Duration of Pain (acute, subacute, chronic)** | **Duration of****Followup** | **Results****(list results for acute, subacute and chronic separately)** |
| Buchmuller, 2012 | Chronic: 40 vs. 35months | 3 months | A vs. BImprovement of ≥50% in lumbar pain VAS from baseline: 25% (26/104) vs. 7% (7/104); RR 3.71 (95% CI 1.69 to 8.18)Improvement of ≥50% in radicular pain VAS from baseline: 34% (22/65) vs. 15% (9/60); RR 2.26 (95% CI 1.13 to 4.51)Improvement on Roland-Morris disability questionnaire at 6 weeks: 30% (32/107) vs. 24% (28/115); RR1.23 (95% CI 0.80 to 1.89)Improvement on Roland-Morris disability questionnaire at 3 months: 26% (29/110) vs. 25% (28/112); RR 1.05 (95% CI 0.67 to 1.65)Dallas functional repercussion of pain score, everyday activities: 69 vs. 69; p=0.84Dallas functional repercussion of pain score, professional and leisure activities: 70 vs. 70; p=0.98Dallas functional repercussion of pain score, anxiety and depression: 43 vs. 43; p=0.95Dallas functional repercussion of pain score, sociability: 30 vs. 35; p=0.80SF-36 physical dimensions score: 35.3 vs. 34.4; p=0.22SF-36 psychological dimensions score: 39.3 vs. 39.1; p=0.96Patient satisfaction scale >50% at 6 weeks: 53% (51/96) vs. 57% (55/96); RR 0.93 (95% CI 0.72 to1.20)Patient satisfaction scale >50% at 3 months: 62% (53/86) vs. 57% (43/75); RR 1.07 (95% CI 0.83 to1.39) |
| Facci, 2011 | Chronic: 3 to 6months 16% vs. 14% vs. 20%; 6 to 12 months 18% vs. 16% vs. 14%; >12 months66% vs. 70% vs.66% | 2 weeks | A vs. B vs. CVAS, mean change from baseline: -3.91 vs. -4.48 vs. -0.85; A vs. B, p=NS; A vs. C and B vs. C p>0.05McGill pain intensity index, mean change from baseline: -1.45 vs. -1.41 vs. -0.66; A vs. B, p=NS; A vs. C and B vs. C p>0.05McGill pain rating index, mean change from baseline: -17.66 vs. -25.34 vs. -3.53; A vs. B p>0.05; A vs. C and B vs. C p>0.05McGill number of words describing pain, mean change from baseline: -6.80 vs. -8.30 vs. -0.12; A vs. B, p=NS; A vs. C and B vs. C p>0.05RDQ, mean change from baseline (scores approximated based on graphic description): -6.26 vs. -7.42 vs. -0.91; A vs. B, p=NS; A vs. C and B vs. C p>0.05 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year** | **Adverse Events Including Withdrawals** | **Funding Source** | **Quality Rating** | **Comments** |
| Buchmuller, 2012 | A vs. BWithdrawals: 22% (26/117) vs. 30% (36/119); RR0.73 (95% CI 0.48 to 1.14)Withdrawals due to adverse events: 3% (3/117) vs.0.8% (1/119); RR 3.05 (95% CI 0.32 to 29)Serious adverse events: 4% (5/117) vs. 6% (7/119); RR 0.73 (95% CI 0.24 to 2.22)TENS application site skin reaction: 9% (11/117) vs.3% (3/119); RR 3.73 (95% CI 1.07 to 13) | French Ministere de laSante et Sports; Fondation CNP Assurances; Institut UPSA Douleurs; CEFAR France | Fair |  |
| Facci, 2011 | None reported | None reported | Good | p values not reported but narrativelydescribed as significant or not significant |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Author, Year** | **Country****Number of Centers and Setting** | **Inclusion Criteria** | **Number Randomized, Analyzed****Attrition** | **Intervention** | **Study Participants** |
| Shimoji, 2007 | Single-centerJapan | Chronic back pain outpatients withor without osteoarthritis Excluded: inability to attend sessions, use of analgesics | Randomized: 21Analyzed: 21Attrition: 0% (0/21) | A. Active TENS + massagetwice a week for 5 weeks(n=11)B. Sham TENS + massage twice a week for 5 weeks (n=10) | A vs. BMean age 62 vs. 64 years18% vs. 20% femaleRace not reportedSpondylosis deformans 82% vs. 80% Mean NRS 4.5 vs. 5.0 |
| Tsukayama, 2002 | Single-centerJapan | Low back pain without sciatica, >2week history of low back pain, >20 years oldExcluded: radiculopathy or neuropathy in lower extremity, tumor, fracture, infection or internal disease | Randomized: 20Analyzed: 19Attrition: 5% (1/20) | A: TENS twice a week for2 weeks (n=10)B: Electroacupuncture twice a week for 2 weeks (n=10) | A vs. BMean age 43 vs. 47Female: 80% vs. 89% Race not reportedJapanese Orthopedic Pain score: 15.6 vs. 16.3 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Author, Year** | **Duration of Pain (acute, subacute, chronic)** | **Duration of****Followup** | **Results****(list results for acute, subacute and chronic separately)** |
| Shimoji, 2007 | Chronic: 2.5 vs. 2.8months | 6 weeks | A vs. BPain, mean change from baseline: -1.4 vs. -1.1; p=0.4 |
| Tsukayama, 2002 | Chronic; Duration ofpain (days): 3120 vs.2900 | 2 weeks | A vs. BVAS, mean during intervention period: 86mm vs. 65mmVAS, difference between groups: 21mm, 95% CI 4.126 to 37.953, p=0.02JOA, mean change from baseline: -0.802 vs. -2.222, p=0.24 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Author, Year** | **Adverse Events Including Withdrawals** | **Funding Source** | **Quality Rating** | **Comments** |
| Shimoji, 2007 | None reported | Omron Healthcare | Fair |  |
| Tsukayama, 2002 | 1 withdrawal due to influenzaTransient aggravation of LBP: 1 vs. 1Discomfort due to press tack needles: 0 vs. 1Pain on needle insertion: 0 vs. 1Small subcutaneous bleeding: 0 vs. 1Transient fatigue: 1 vs. 0Itching with electrode: 1 vs. 0 | Foundation for Trainingand Licensure Examination in Anma- Massage-Accupressure, Acupuncture and Moxibustion | Fair |  |

**Please see Appendix C. Included Studies for full study references.**