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

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number Randomized, Analyzed**  **Attrition** | **Intervention** | **Study Participants** |
| Buchmuller, 2012 | Multi-center  France | Age >18 years with chronic low back  pain ≥40 VAS with or without radicular pain  Excluded: 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: 236  Analyzed: unclear (varied by outcome) Attrition: unclear | A. Active TENS 4 1-hour  sessions per day (n=117) B. Sham TENS 4 1-hour sessions per day (n=119) | A vs. B  Mean age 53 vs. 53 years  62% vs. 64% female  Race not reported  LBP alone 39% vs. 43%; LBP + radicular pain: 61% vs. 57%  VAS 63 vs. 66  Roland-Morris disability score 15 vs. 15 |
| Facci, 2011 | Single-center  Brazil | Age >18 years with nonspecific,  chronic low back pain  Excluded: low back pain duration <3 months, receiving other nonpharmacologic treatment, prior back surgery, contraindication to electrotherapy | Randomized: 150  Analyzed: 150  Attrition: 0% | A. TENS 10 30-minutes  sessions over 2 weeks  (n=50)  B. Interferential therapy 10  30-minutes sessions over  2 weeks (n=50)  C. No treatment (n=50) | A vs. B vs. C  Mean age 50 vs. 45 vs. 47 years  70% vs. 74% vs. 74% female  Race not reported  LBP alone 78% vs. 78% vs. 70%; LBP +  sciatica 22% vs. 22% vs. 30%  Use of pharmacologic treatments 65%  vs. 69% vs. 67% |

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| **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. 35  months | 3 months | A vs. B  Improvement 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); RR  1.23 (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=0.84  Dallas functional repercussion of pain score, professional and leisure activities: 70 vs. 70; p=0.98  Dallas functional repercussion of pain score, anxiety and depression: 43 vs. 43; p=0.95  Dallas functional repercussion of pain score, sociability: 30 vs. 35; p=0.80  SF-36 physical dimensions score: 35.3 vs. 34.4; p=0.22  SF-36 psychological dimensions score: 39.3 vs. 39.1; p=0.96  Patient satisfaction scale >50% at 6 weeks: 53% (51/96) vs. 57% (55/96); RR 0.93 (95% CI 0.72 to  1.20)  Patient satisfaction scale >50% at 3 months: 62% (53/86) vs. 57% (43/75); RR 1.07 (95% CI 0.83 to  1.39) |
| Facci, 2011 | Chronic: 3 to 6  months 16% vs. 14% vs. 20%; 6 to 12 months 18% vs. 16% vs. 14%; >12 months  66% vs. 70% vs.  66% | 2 weeks | A vs. B vs. C  VAS, 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>0.05  McGill 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>0.05  McGill 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>0.05  McGill 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>0.05  RDQ, 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 |

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| **Author, Year** | **Adverse Events Including Withdrawals** | **Funding Source** | **Quality Rating** | **Comments** |
| Buchmuller, 2012 | A vs. B  Withdrawals: 22% (26/117) vs. 30% (36/119); RR  0.73 (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 la  Sante et Sports; Fondation CNP Assurances; Institut UPSA Douleurs; CEFAR France | Fair |  |
| Facci, 2011 | None reported | None reported | Good | p values not reported but narratively  described as significant or not significant |

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number Randomized, Analyzed**  **Attrition** | **Intervention** | **Study Participants** |
| Shimoji, 2007 | Single-center  Japan | Chronic back pain outpatients with  or without osteoarthritis Excluded: inability to attend sessions, use of analgesics | Randomized: 21  Analyzed: 21  Attrition: 0% (0/21) | A. Active TENS + massage  twice a week for 5 weeks  (n=11)  B. Sham TENS + massage twice a week for 5 weeks (n=10) | A vs. B  Mean age 62 vs. 64 years  18% vs. 20% female  Race not reported  Spondylosis deformans 82% vs. 80% Mean NRS 4.5 vs. 5.0 |
| Tsukayama, 2002 | Single-center  Japan | Low back pain without sciatica, >2  week history of low back pain, >20 years old  Excluded: radiculopathy or neuropathy in lower extremity, tumor, fracture, infection or internal disease | Randomized: 20  Analyzed: 19  Attrition: 5% (1/20) | A: TENS twice a week for  2 weeks (n=10)  B: Electroacupuncture twice a week for 2 weeks (n=10) | A vs. B  Mean age 43 vs. 47  Female: 80% vs. 89% Race not reported  Japanese Orthopedic Pain score: 15.6 vs. 16.3 |

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| **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. 2.8  months | 6 weeks | A vs. B  Pain, mean change from baseline: -1.4 vs. -1.1; p=0.4 |
| Tsukayama, 2002 | Chronic; Duration of  pain (days): 3120 vs.  2900 | 2 weeks | A vs. B  VAS, mean during intervention period: 86mm vs. 65mm  VAS, difference between groups: 21mm, 95% CI 4.126 to 37.953, p=0.02  JOA, mean change from baseline: -0.802 vs. -2.222, p=0.24 |

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

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