

**In an adult population undergoing primary total knee replacement (TKR) does the addition of Transcutaneous Electrical Nerve Stimulation (TENS) to usual care improve pain management & as a result improve range of movement (ROM) within 3 months post-operatively**

### **Clinical Bottom Line**

The studies provide mixed but largely positive findings, however due to their low methodological quality further studies are required to confirm a definite response.

### **Criteria for Critically Appraised Topic**

#### ***Population:***

Adults (18 years and over) who have undergone primary Total Knee Replacement (TKR) surgery

#### ***Intervention:***

TENS in addition to usual care

#### ***Comparison:***

Usual care (other forms of analgesia and advice)

#### ***Outcomes:***

##### ***Primary Outcomes:***

Pain

##### ***Secondary outcomes:***

Range of movement

Function

#### ***Inclusions:***

Defined groups of Primary TKR through open surgery

English

Assessed postoperatively for pain using VAS, VRS or NRS

Or analgesic consumption

#### ***Exclusions:***

TKR revisions

Mixed surgery (fractures or other joints e.g. hip)

## **Search Terms used**

### ***Databases Searched:***

Cochrane	Pedro	Sportsdiscuss	Medline
pubmed	Bandolier	NELH	NHS evidence
OT seeker	NICE	HTA	DARE01/CRD
AMED	CINAHL	Embase	

### ***Types of study included:***

Systematic reviews

Randomised Controlled Trials (RCTs)

Quasi Experimental designs (e.g Cohort, N=1)

Controlled trials

### ***Key words searched:***

Knee replacement, TKR, Knee arthroplasty, TKA

Postoperative pain, analgesia, TENS, Transcutaneous electrical nerve stimulation,

Lower limb surgery, VAS, VRS, NRS

### ***Time Frame:***

Literature from last 35 years (prior to this TENS units were insufficiently developed)

## Available Evidence

Database Searched (Specific to CAT)	Number of abstracts	Number of Relevant Abstracts
Cochrane	2	2
AMED	3	3
Medline/pubmed		2
CINAHL	2	
Embase	3	1
NAIRC		2
DARE		1
Pedro, OT Seeker. Sportsdiscuss	0	0
<b>Total</b>		<b>11</b>

### Results:

11 abstracts were assessed by the group & 5 articles answered the clinical question

### Articles assessed:

Angulo DL, Colwell CWJr . 1990. Use of postoperative TENS and continuous passive motion following total knee replacement. J Ortho Sport Phys Ther. Vol11, 12, pp 599-604

Breit R, Van der Wall H. 2004 Transcutaneous electrical nerve stimulation for postoperative pain relief after total knee arthroplasty. The Journal of arthroplasty. Vol 19, 1 pp45-8

Fischer H B, Simanski C J, Sharp C, Bonnet F, Camu F, Neugebauer E A, Rawal N, Joshi G P, Schug S A, Kehlet H. 2008 A procedure-specific systematic review and consensus recommendations for postoperative analgesia following total knee arthroplasty. *Anaesthesia*.;63:1105-1123.

Walker RH, Morris BA, Angulo DL, Schneider J, Colwell CW, Jr. 1991 Postoperative use of continuous passive motion, transcutaneous electrical nerve stimulation, and continuous cooling pad following total knee arthroplasty. *J Arthroplasty*;6(2):151-6.

Wang N. 2001 Can pre-emptive and continued transcutaneous electrical nerve stimulation. (TENS) improve the management of post-operative knee pain? PhD Thesis

### **Implications for practice**

Further trials are required as the available evidence suggests TENS has a positive analgesic effect.