Evidence on the effectiveness of interferential current therapy in the treatment of knee osteoarthritis: A meta-analysis

ML D Buenavente¹, CB Gonzalez-Suarez¹, MA B Lee-Ledesma¹, LA S Liao¹

Abstract
Introduction
This study evaluated available evidence regarding the effectiveness of interferential therapy (IFC) on knee osteoarthritis (OA) in providing pain relief and improving physical function such as doing activities of daily living and its efficacy in reducing intake of analgesics, such as Paracetamol.

Methodology
Online database search was done for randomized controlled trials (RCTs) comparing IFC against control or sham IFC in knee OA. Data from studies were pooled and analyzed using the Review Manager Software 5.2.

Results
There was a significant difference between intervention group and control group in decreasing pain in the osteoarthritic knee using the Visual Analog Scale (VAS) and the Western Ontario and McMaster University (WOMAC) Osteoarthritis Index as objective measures, as well as in decreasing intake of paracetamol. However, there was no significant difference between intervention group and control group in improving function in the osteoarthritic knee with reference to the WOMAC subscale for physical function.

Conclusion
IFC is effective in reducing pain and likewise decreasing paracetamol intake in patients with knee OA. It is best to combine IFC with exercise in managing pain, reducing intake of pain medication and improving function in patients with knee OA.

Introduction
Osteoarthritis (OA) is the most common degenerative joint disease.1,2,3,4,6,7,8,9 It is highly prevalent in the general population and is increasing in frequency with age. Pain, disability, and deterioration in quality of life are the main consequences of the disease. Although the main pathology is in the cartilage and subchondral bone, it is considered as an organ disease since nearly all of the periarticular tissues are involved.1,3 It can affect any joint in the body but involvement of the spine or weight-bearing joints such as the hip and knee may result in more disabling conditions than in other parts of the body. Although many predisposing factors, such as genetic, metabolic, and mechanical disturbances could attribute to its development, the exact etiopathogenesis of knee OA has yet to be defined. Thus, an absolute cure for OA is not available. A symptomatic approach is widely used along with a variety of treatment options. Treatment goals include management of painful symptoms and improvement of functional capacity. These goals are achieved by combining nonpharmacologic modalities, such as exercise programs, physiotherapy modalities and pharmacologic interventions including Paracetamol, Opioids, and NSAIDs.2,4,13,14,23 Therapeutic exercise plays a major role in the management of OA of the knee, with established evidence on improving both pain and function. It has been recognized as the standard of care in the treatment of osteoarthritis and is a strongly recommended non-pharmacologic intervention with a high level of evidence. The Cochrane review on exercise on osteoarthritis in 2008 showed platinum level of evidence that therapeutic, land-based exercise has a benefit in terms of reduction of knee pain and disability. It was also recommended that any type of exercise program that is done regularly and is closely monitored by health professionals can improve pain and physical function related to knee OA in the short term range. This includes individual physiotherapy-led sessions and exercise classes to home-based programs.14 The American College of Rheumatology (ACR) published guidelines in 2012 on the non-pharmacologic and pharmacologic management of osteoarthritis. They gave a conditional recommendation regarding the use of physical modalities, including electrophysiologic agents such as Transcutaneous Electrical Nerve Stimulation (TENS) and Interferential Current Therapy (IFC), in knee osteoarthritis and the use of acetaminophen/paracetamol, topical and oral NSAIDs, tramadol and intra-articular steroid injection. This is due to absence of high-quality evidence and/or evidence of only a small gradient of difference between desirable and undesirable effects of the treatment based on the consensus of 75% or more of the technical expert panel.2 TENS and IFC are forms of electroanalgesia based on the gate control theory of pain perception by Melzack and Wall. Interferential therapy delivers currents to deep tissues through the use of kilohertz-carrier-frequency pulsed or sinusoidal currents to overcome the impedance offered by the skin. It involves application to the skin of two medium frequency currents (in the range of 2000-4000 Hz) in order to produce an amplitude modulated low frequency effect within the tissues. The basic concept behind IFC is that skin impedance (resistance) is inversely proportional to the frequency of an applied current;
therefore there is less skin resistance to a frequency of 2000Hz than to a frequency of 200Hz.\textsuperscript{5,12} It has been claimed that IFC can be used to treat deeper tissues because lower pulse amplitude is required to overcome the associated skin resistance. The two medium-frequency currents "interfere" within the tissues and produce an amplitude-modulated beat frequency, which is calculated as the difference between the values of the two currents applied. IFCs have been used clinically since the 1950s, and its main clinical indications include pain management, reduction of swelling, and muscle strengthening.\textsuperscript{12,13,18,20,21,22,27}

There is emerging evidence from placebo-controlled trials suggesting that IFC is effective for pain reduction associated with osteoarthritis, degenerative disc disease, or vertebral fractures, however, there are limited data on its effectiveness.\textsuperscript{12} Most of the previous studies on the use of electrophysiologic agents have no effect in the relief of pain since it was used as a standalone intervention compared with another physical intervention or with sham intervention. The study of Johnson and Tabasam in 2003 investigated the analgesic effect of IFC versus TENS and versus sham electrotherapy in experimentally induced ischemic pain. They concluded that IFC reduced pain intensity to a greater extent than sham electrotherapy. However, there was no difference in the magnitude of analgesia when compared with TENS.\textsuperscript{27} With regard to the effect of IFC on pressure pain sensitivity, Fuentes et al found out that active interferential was more efficient than placebo in decreasing muscle pain sensitivity and sham interferential therapy was not significantly different from control.\textsuperscript{22} Despite the above mentioned studies, there are still a limited number of studies on the use of IFC in knee osteoarthritis. Recent researches have refined their methods where electrophysiologic agents are used in conjunction with standard of care which is therapeutic exercise.

**Materials and Methods**

**Objectives**

The primary objective of this meta-analysis is to evaluate the evidence of the effectiveness of interferential current therapy in the treatment of knee osteoarthritis with respect to pain relief and improvement of physical function, such as performing activities of daily living, as an adjunct treatment to exercise which is the standard of care. The secondary objective of this meta-analysis is to determine whether IFC is effective in reducing intake of analgesics, such as Paracetamol.

**Study Selection and Inclusion/Exclusion Criteria**

The studies considered eligible for inclusion in the review were randomized controlled trials (RCTs) or clinical controlled trials (CCTs) comparing IFC with a placebo or sham intervention in patients with osteoarthritic knee pain in journals published in the English language. Exclusion criteria for this study were: 1) descriptive studies with low level of evidence, 2) studies based on animal data, 3) studies with healthy subjects in experimental setting.

**Population**

Studies included in the review were restricted to trials with participants meeting the following criteria: 1) male and female subjects over the age of 18, 2) any nationality or race, and 3) subjects with knee pain diagnosed with knee osteoarthritis clinically based on the American College of Rheumatology Diagnostic Criteria or radiographically based on the Kellgren-Lawrence Classification.

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**Table 1: Methodological Quality Assessment of the Studies Included Using the Modified CASP.**

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Did the trial address a clearly focused issue?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Was the assignment of patients to treatments randomized?</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Were all of the patients who entered the trial properly accounted for at its conclusion?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Were patients, health workers and study personnel 'blind' to treatment?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Were the groups similar at the start of the trial?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Aside from the experimental intervention, were the group treated equally?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Were all clinically important outcomes considered?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>TOTAL</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>7</td>
</tr>
</tbody>
</table>

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Intervention
Studies with the use of IFC in the experimental group were included. Sham IFC was used in the placebo or control group.

Outcome Measures
The primary outcome measures of interest were knee pain and physical function. The Visual Analog Score (VAS) was used to measure knee pain and the Western Ontario and McMaster University Osteoarthritis Index (WOMAC) was used to measure knee pain and physical function. The secondary outcome measure includes the number of rescue medication (Paracetamol) in grams per week.

Critical Appraisal and Quality Assessment
The studies included were RCTs and a CCT with a high methodological critical appraisal score using the Critical Appraisal Skills Programme (CASP). The CASP scale consists of 11 items that are scored according to the degree to which the specific criteria are met. It was modified to have a total of 7 items answerable by yes or no (why was this modified), and a score of 6 out of 7 (85%) was considered to be a high quality and valid study. The studies were assessed by two independent reviewers. If there were any difference in the score of the two reviewers, it would have been resolved by an adjudication of a third reviewer. Inter rater reliability of the two reviewers was calculated using Cohen’s kappa coefficient with a result of 0.85.

Search Strategy
Keywords related to interferential therapy, IFC, and knee osteoarthritis were used, in searching for RCTs, CCTs and other relevant studies regarding the effectiveness of IFC in knee osteoarthritis. These terminologies were extensively searched in databases namely Science Direct, British Medical Journal, New England Journal of Medicine, Scopus, Pro-Quest, Science Direct, EBSCO, Bandolier, PubMed Central, Cochrane Library, eMedicine, MedScape, Sagepub, Archives of Physical Medicine & Rehabilitation and Google Scholar. The reference lists of all the studies gathered relevant to the study were likewise reviewed for possible inclusion of other studies. For this meta-analysis, readily accessible studies from the year 1950 up to September 2013 were retrieved. A copy of any published article that potentially met the inclusion criteria was obtained.

Data collection and extraction
The data collected were extracted using the data extraction tool developed specifically for use in reviewing included studies, based from the Joanna Briggs Data Extraction Tool. The following were recorded from each study: the author, country of origin, year of publication, sample size, subject age and gender, intervention description and control group description, trial design, randomization, blinding, handling of dropouts, inclusion and exclusion criteria, details of treatment, control procedure, primary and secondary outcome measures and main results.

Data synthesis and statistical analysis
Results from comparable studies were pooled in a statistical analysis using the Review Manager software (RevMan 5.2) from the Cochrane Collaboration. The standardized mean differences (SMD), weighted mean differences (WMD), and their 95% confidence intervals (CI) were calculated from available data and the forest plot of comparison was constructed. The statistic I² was also used to determine heterogeneity. I² measures the extent of inconsistency among the results of the studies, and is interpreted as approximately the proportion of total variation in study estimates that is due to heterogeneity rather than sampling error. If the I² was >75%, indicating the presence of heterogeneity, the random effect model was applied. Otherwise, the fixed effect model was used.

RESULTS
This work conforms to the values laid down in the Declaration of Helsinki (1964). The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study.

Study Inclusion
An initial database search identified 247 articles using the keywords 1) Interferential therapy, 2) interferential current therapy, 3) IFC, and 4) knee osteoarthritis. Of these articles, five were screened based on the title and abstract review. There were 242 studies excluded after applying the inclusion and exclusion criteria. Reasons for exclusion from the study were: 1) use of IFC on conditions other than knee osteoarthritis, 2) use of other physical interventions other than IFC in knee osteoarthritis, 3) descriptive studies, and 4) animal studies. A full article review of five published articles found eligible after database search and abstract review was done (Figure 1). Of the five published articles, only four were considered relevant and had comparable outcome measures, i.e. knee pain, knee function and paracetamol intake, which were included in the meta-analysis. The remaining article was excluded, since it was published in Serbian, with only the abstract having an English translation. All of the studies were considered to be of high methodological value using the modified CASP (Table 1). The included studies had a score of at least 6 out of 7 (85%). The studies included were RCTs and a CCT, comparing a group of participants receiving the standard of care, which is therapeutic exercise, with the intervention, IFC, or with a placebo or sham group that did not receive the intervention. All of the studies specified eligibility criteria and underwent random allocation and concealment, with the subjects having similar baseline characteristics.
# Table 2: Key Characteristics of the Included Studies.

<table>
<thead>
<tr>
<th>First Author, Year, Location</th>
<th>Method</th>
<th>Participants</th>
<th>Intervention and Control Groups</th>
<th>Number of treatments</th>
<th>Primary Outcome Measure</th>
<th>Secondary Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atamaz, 2012, Turkey</td>
<td>RCT, double-blind, multicenter trial</td>
<td>N=66 IPCs: 31 IPCs sham: 35 Drop-outs: 5 Completed: 61</td>
<td>IFC vs IFC sham</td>
<td>5x a week for 3 weeks</td>
<td>Knee pain: VAS (0-100) Evaluation at baseline, 1 month, 3 months, &amp; 6 months</td>
<td>Paracetamol use: in grams/week</td>
<td>At 1 month VAS-pain Mean Difference (95%CI): IFC 24 (17.6-30.4) Sham IFC 19.8 (13.0-26.6) P=1.00 WOMAC-pain Mean Difference (95%CI): IFC 2.7 (1.8-3.6) Sham IFC 2.7 (1.8-3.7) P=1.00 WOMAC-function Mean Difference (95%CI): IFC 6.4 (3.8-9.2) Sham IFC 8.3 (4.9-11.7) P=1.00 Paracetamol intake IFC Mean ±SD 2.8±5.4 P&lt;0.05 Sham Mean ±SD10.4±14.7 P&lt;0.05 *Data for paracetamol intake provided by author</td>
</tr>
<tr>
<td>Adedoyin, 2002 Nigeria</td>
<td>Controlled Trial, Single blind</td>
<td>N= 30 IFC: 15 Placebo: 15</td>
<td>IFC vs Placebo</td>
<td>8 20-min treatment sessions in 4 weeks</td>
<td>Pain perception: VAS (0-10) Evaluation at baseline and after 4 weeks</td>
<td>Experimental Group: Mean±SD 1.23±1.16 P&lt;0.05 Control Group: Mean±SD 3.13±1.6 P&lt;0.05 * Provided by author</td>
<td></td>
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<tr>
<td>Gundog (2012), Turkey</td>
<td>RCT Single blind study</td>
<td>N=30 IFC: 15 Sham: 15</td>
<td>IFC vs Sham</td>
<td>5 times a week for 3 weeks</td>
<td>Visual analog scale (0-100) Evaluation at baseline, after treatment and at first month</td>
<td>Western Ontario and McMaster University Osteoarthritis Index (WOMAC) Paracetamol intake (g/wk) IFC Mean ±SD 17.0±10.7 P&lt;0.05 Sham IFC Mean ±SD 58.8±15.4 P&lt;0.05 WOMAC–pain IFC Mean ±SD 6.7±1.2 P&lt;0.05 Sham IFC Mean ±SD 16.1±1.5 P&lt;0.05 WOMAC-function IFC Mean ±SD 26.2±3.5 P&lt;0.05 Sham IFC Mean ±SD 57.9±6.1 P&lt;0.05 Paracetamol intake (g/wk) IFC Mean ±SD 5.9±9.9 P&lt;0.05 Sham IFC Mean ±SD 15.4±5.6 P&lt;0.05</td>
<td></td>
</tr>
<tr>
<td>Adedoyin (2005), Nigeria</td>
<td>RCT, Single blind</td>
<td>N=31 IFC: 16 Exercise: 15 Drop-outs: 5 Completed: 46</td>
<td>IFC•Exercise vs Exercise</td>
<td>Twice a week for 4 weeks</td>
<td>VAS (0-10) Evaluation at baseline and after 4 weeks</td>
<td>WOMAC Experimental Group: Mean±SD 1.67±0.91 P=0.001 Control Group Mean±SD 1.67±0.72 P=0.001 WOMAC Experimental Group: Mean±SD 16.67±4.34 P=0.001 Control Group Mean±SD 18.67±4.70 P=0.001</td>
<td></td>
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</tbody>
</table>
Study description and Subjects
All included studies were published from 2002 to 2012. Two studies were done in multiple centers in Turkey while the other two were done in a teaching hospital in Nigeria. A total of 157 patients were included in the studies with similar inclusion criteria, i.e. ages 40-80 years old, meeting the clinical criteria of the American College of Rheumatology for knee osteoarthritis and/or a radiologic evidence (Kellgren-Lawrence grade 2 or 3) of knee osteoarthritis, with knee pain for at least 6 months. Females (73%) were the more predominant gender in all studies. Exclusion criteria were also indicated in the studies, which included participants with previous use of electrical stimulation or with contraindication to electrotherapy, those who underwent intra-articular injection within six months prior to the study or had previous surgery, had ongoing infection, or was pregnant or lactating at the time of study. There were reported dropouts in two studies. In the study done by Atamaz (2012), there were five drop outs with reasons including worsening of symptoms or not enough time to attend. In the study of Adeoyin (2005) five were also excluded from the study due to non-completion of treatment. No adverse effects were reported in both studies during the research period.

The key characteristics of the included studies are shown in Table 2.

Intervention
All studies were RCTs and a CCT comparing IFC with sham IFC or with a control group. In the studies by Atamaz (2012) and Gundog (2012), IFC was applied using two electrodes at the knee region, with an amplitude modulated frequency setting of 100Hz for 20 minutes by the same physiotherapist which was done 5 times a week for three weeks. Atamaz (2012), also used other physical modalities, such as TENS and short wave diathermy (SWD), aside from IFC, and compared its effectiveness in knee osteoarthritis. Only the data from the IFC group was included in the data analysis. In the study of Adeoyin (2002), IFC of the same amplitude modulated frequency was applied using two pairs of electrodes for 15 minutes, and was reduced to 80Hz for 5 minutes, for 8 sessions in 4 weeks, while IFC of 80Hz beat frequency applied using two electrodes for 20 minutes was used twice a week for a total of 8 sessions in the study he did in 2005. All studies used IFC with two 8cmx6cm electrodes applied at the knee region.

The program for the control or sham group and intervention group in the studies of Adeoyin (2002), Adeoyin (2005), and Atamaz (2012) included an exercise program which were either jogging, riding a bicycle ergometer, performing stretching exercises and isometric exercises of the quadriceps. However, in the study by Gundog (2012), only sham IFC was used and no exercise program was given. In all of the studies, evaluation of the participants were done at baseline and after one month of treatment. Only the study of Atamaz included evaluation after three months and after six months of treatment. In this regard, the researchers were not able to include the assessment of the long term effect of IFC, since only the article of Atamaz evaluated its chronic effect on knee pain.

Outcome Measures
The following outcome measures were evaluated in all studies: VAS and WOMAC Osteoarthritis Index. The studies of Atamaz (2012) and Gundog (2012) included intake of paracetamol in grams per week as an outcome measure. Other outcome measures in the studies of Atamaz (2012) and Gundog (2012) were 15-m walking time in minutes, range of motion (ROM) of the knee. Physician and patient judgments regarding treatment effectiveness were also used as outcome measures in the study by Gundog (2012) while treatment satisfaction and Nottingham Health Profile (NHP) were also used in the study of Atamaz (2012).

Meta-analysis
The mean and standard deviation were available in tabulated form in the studies of Gundog and Atamaz. However, Adeoyin presented the data in both the 2002 and 2005 studies in graphical form. The paracetamol intake was also presented in graphical form in the study of Atamaz. The raw data, including the mean and standard deviation, were requested by the researchers and were provided for by the authors of the studies. The data were pooled and analyzed using the RevMan 5.2 software.

The Visual Analog Scale
The VAS evaluated the severity of knee pain prior to and one month after treatment with the intervention. There

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**Figure 1:** Study Screening Process.

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was a significant difference between intervention group and control group in decreasing pain in the osteoarthritic knee with a standard mean difference of -1.14 (95% CI: -2.18, -0.09) with a p value of 0.03 (Figure 2).

The WOMAC subscale for Pain
The WOMAC subscale for pain also evaluated the severity of knee pain prior to and after one month of treatment with the intervention. There was also a significant difference between intervention group and control group in decreasing pain in the osteoarthritic knee with a standard mean difference of -2.14 (95% CI: -4.27, -0.01) with a p value of 0.05 (Figure 3).

The WOMAC subscale for Physical Function
The WOMAC subscale for function evaluated the physical functional disability of participants with knee osteoarthritis at baseline and at one month after intervention. There was no significant difference between intervention group and control group in improving function in the osteoarthritic knee with a weighted mean difference...
difference of -16.29 (95% CI: -46.57, 13.99) with a p value of 0.29 (Figure 4).

**Paracetamol Intake**

Intake of paracetamol in grams per week was monitored in both studies of Atamaz 2012 and Gundog 2012. There was a significant difference between intervention group and control group in decreasing the amount of paracetamol intake in the IFC groups with a weighted mean difference of -9.12 (95% CI: -12.66, -5.99) with a p value of 0.00001 (Figure 5).

**Discussion**

The results of the meta-analysis revealed that the use of IFC can decrease pain in patients with knee osteoarthritis after 4 weeks of treatment. The use of IFC also led to a decrease in paracetamol intake when compared to sham IFC. Thus it can be recommended that the use of physical therapy agents in knee OA provided additional benefit in alleviating pain. In terms of physical function, IFC showed improvement of the WOMAC scores over a 4-week treatment in the studies of Atamaz (2012) and Gundog (2012). However, upon pooling of data and meta-analysis, it did not show any significant difference with placebo. A systematic review of the physical interventions used in the treatment of knee osteoarthritis done by Bjordal et al. in 2007 concluded that for patients with X-ray grade 2–4 and pain intensity levels above 50 mm on VAS, an intensive regimen of 2–4 weeks with TENS, electro-acupuncture and low level laser therapy seems to safely induce statistically significant and clinically relevant short-term pain relief. However, only 2 studies using IFC were included in the meta-analysis and were analyzed along with studies using TENS. Aside from knee osteoarthritis, IFC has been used to decrease pain in other musculoskeletal conditions. In a meta-analysis done by Fuentes et al., they concluded that IFC included in a multimodal treatment plan produced a pain relieving effect in acute and chronic painful musculoskeletal conditions, such as back pain, knee pain and shoulder pain, compared with no treatment or placebo. They found out that combined with other interventions, IFC was shown to be more effective than placebo.

Currently, use of electrophysiologic agents, including IFC, is only given a conditional recommendation by the ACR since the included studies compared IFC to other modalities and exercise, not as an adjunct to the standard of care. Also, the Cochrane reviews on the use of electrotherapy on chronic low back pain (2008) and neck pain (2013) were inconclusive because of the conflicting evidence and the quality of the included trials were poorly conducted studies, thus further research was recommended.

In the authors’ setting, guidelines published by the Philippine Academy of Rehabilitation Medicine on low back pain recommended the use of interferential therapy. This is the first meta-analysis, to the authors’ knowledge, on the use of IFC as a co-intervention with exercise, specifically on the treatment of osteoarthritic knee pain, which showed its effectiveness in the pain alleviation and reduction on pain medication intake. This meta-analysis showed that IFC, in conjunction with exercise, is effective in decreasing pain and in taking of rescue medications in patients with knee osteoarthritis. This study concurred with the result of the meta-analysis of Fuentes in 2010 where the efficacy of IFC on musculoskeletal pain showed that when included in a multimodal treatment, IFC has a pain relieving effect compared with a control condition and with the meta-analysis of Bjordal in 2007, where different

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**Figure 4:** Forest plot of comparison: 1 Interferential Therapy vs Placebo/Control, Outcome: 1.3 Physical Function - WOMAC.

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physical modalities which included IFC used for treatment of osteoarthritic knee pain showed clinically relevant short-term pain relief. Exercise therapy, education and weight loss still remain to be the cornerstones of long-term management of knee osteoarthritis, but there is evidence that IFC is a useful co-intervention in pain management. The results of this meta-analysis will help the field of Physical Medicine and Rehabilitation in establishing the effectiveness of modalities being used in musculoskeletal pain. There is scientific soundness in using electrophysiologic agents as one of the treatment armamentarium. With the results of this meta-analysis, there is evidence in the effectiveness in decreasing pain in OA when multimodal treatment approach is utilized.

**Conclusion**

IFC, in conjunction with standard of care, which is therapeutic exercise, is effective in reducing pain and decreasing paracetamol intake in patients with knee osteoarthritis after a month of treatment. The therapeutic regimen of IFC with beat frequency of 80-100Hz for 20 minutes for two to five times a week can also be recommended. It is best to combine physical agents, such as IFC, with exercise in managing pain and improving function in patients with knee osteoarthritis. More studies with a larger sample size, longer treatment and follow up periods may be beneficial for future randomized controlled studies on the effect of IFC on knee pain and function in patients with osteoarthritis.

**References**


**Figure 5:** Forest plot of comparison: 1 Interferential Therapy vs Placebo/Control, Outcome: 1.4 Paracetamol Intake.


17. Adedoyin RA, Olaogun MOB, Onipede TO, Ikem IC, Egwu MO, Bisiriyu LA.


