

# Nonsteroidal Anti-inflammatory Drugs for Sciatica

*An Updated Cochrane Review*

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**Study Design.** Systematic review and meta-analysis.

**Objective.** To determine the efficacy of nonsteroidal anti-inflammatory drugs (NSAIDs) on pain reduction, overall improvement, and reported adverse effects in people with sciatica.

**Summary of Background Data.** NSAIDs are one of the most frequently prescribed drugs for sciatica.

**Methods.** We updated a 2008 Cochrane Review through June 2015. Randomized controlled trials that compared NSAIDs with placebo, with other NSAIDs, or with other medication were included. Outcomes included pain using mean difference (MD, 95% confidence intervals [95% CI]). For global improvement and adverse effects risk ratios (RR, 95% CI) were used. We assessed level of evidence using the Grades of Recommendation, Assessment, Development and Evaluation approach.

**Results.** Ten trials were included (N = 1651). Nine out of 10 trials were assessed at high risk of bias. For pain reduction (visual analog scale, 0 to 100) NSAIDs were no more effective than placebo (MD -4.56, 95% CI -11.11 to 1.99, quality of evidence: very low). For global improvement NSAIDs were more effective than placebo (RR 1.14 [95% CI 1.03 to 1.27], low

quality of evidence). One trial reported the effect of NSAIDs on disability with very low-quality evidence that NSAIDs are no more effective than placebo. There was low-quality evidence that the risk for adverse effects is higher for NSAID than placebo (RR 1.40, 95% CI 1.02 to 1.93).

**Conclusion.** Our findings show very low-quality evidence that the efficacy of NSAIDs for pain reduction is comparable with that of placebo, low-quality evidence that NSAIDs is better than placebo for global improvement and low-quality evidence for higher risk of adverse effects using NSAIDs compared with placebo. The findings must be interpreted with caution, due to small study samples, inconsistent results, and a high risk of bias in the included trials.

**Key words:** analgesics, Cochrane Review, low-back pain/drug therapy, medication, meta-analysis, nonsteroidal anti-inflammatory drug/adverse effects, pain management, rehabilitation, sciatica/drug therapy, systematic review.

**Level of Evidence:** 1

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The device(s)/drug(s) is/are FDA-approved or approved by corresponding national agency for this indication.

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Low back pain (LBP) is one of the most common medical disorders in the world,<sup>1,2</sup> affecting functional capacity and work absence and resulting in personal suffering and huge socioeconomic cost.<sup>1,3</sup> Sciatica is an important subgroup of LBP. The prevalence of sciatica varies depending on the time period studied: lifetime prevalence is reported as between 12.2% and 43%, period prevalence between 2.2% and 34%, and point prevalence between 1.5% and 13.4%.<sup>4</sup> The prognosis is considered to be worse and more disabling than common LBP.<sup>4–6</sup> The clinical course of acute sciatica, however, is in general considered to be favorable, and most pain and disability resolve within a couple of weeks.<sup>6</sup> The term “sciatica” describes a symptom and not a specific diagnosis.<sup>5–10</sup> Clinical symptoms associated with sciatica are leg pain radiating below the knee and into the foot and toes, muscle weakness, sensory changes such as pins and needles or numbness following the dermal pattern, impaired reflexes, or the presence of a positive straight leg raising test.<sup>4–6,11</sup>

Medication plays an important role in the management of sciatica. NSAIDs are one of the most frequently prescribed

pain drugs worldwide for treating sciatica.<sup>12</sup> Many different NSAIDs exist based on six major chemical structures that differ in their dose, drug interactions, and adverse effects. The main anti-inflammatory, antipyretic, and analgesic effect of NSAIDs is based on the suppression of the cyclooxygenase (COX)-1 and COX-2 enzymes. By blocking the COX enzymes, vasodilation is reduced and inflammation relieved. Furthermore, the synthesis of prostaglandins is blocked, leading to reduced pain.<sup>13,14</sup> The NSAIDs block the prostaglandin synthesis similar to steroids but without adverse effects observed in steroids. However, NSAIDs are responsible for various adverse effects; gastrointestinal, cardiovascular, renal, and hepatotoxic adverse effects are described.<sup>15</sup> The well-known gastrointestinal adverse effects of NSAIDs are caused by blocking of the COX-1 enzyme, which leads to a reduction in mucosal prostaglandin synthesis, and its protective effects. NSAIDs are therefore associated with an increased risk for early gastrointestinal complications.

NSAIDs are recommended in clinical guidelines for sciatica,<sup>6,12,16</sup> but a previous Cochrane review<sup>12</sup> showed limited evidence to support the efficacy of NSAIDs in sciatica. Our primary objective was to update a previous Cochrane review<sup>12</sup> to determine the efficacy of NSAIDs in pain reduction, overall improvement, and reported adverse effects in people with sciatica.

## MATERIAL AND METHODS

### Types of studies

We included randomized controlled trials (RCTs) (double-blind, single-blind, and open-label). We used no language restriction. Trials included participants aged 16 years or older with acute, subacute, and chronic (>12 weeks) sciatica.

Sciatica was defined as pain radiating to one or both legs below the knee with some of the following signs; positive straight leg raising test, or Lasègue sign presenting with numbness, pins or needles in a dermatomal distribution; and muscle weakness or reflex changes or both in a myotome distribution. We excluded people with sciatica caused by specific pathological entities such as infection, neoplasm, metastasis, osteoporosis, rheumatoid arthritis, or fractures.

We included RCTs that investigated one or more types of NSAIDs. Additional interventions were allowed if there was a contrast for the treatment with NSAIDs in the trial. We considered the following comparator groups: (1) placebo, (2) other NSAIDs, and (3) other pharmacological agents, alone or in combination (*e.g.*, corticosteroids, muscle relaxants, antidepressants). We excluded trials that compared NSAIDs in combination with other pharmacological agents or non-pharmacological treatments compared with another intervention and NSAIDs compared with nondrug treatments.

### Primary Outcomes

Included trials reported on (1) change in pain intensity (*e.g.*, visual analog scale [VAS] or numerical rating scale), (2) change in disability or functional status (*e.g.*, Oswestry

Disability Questionnaire or Roland Morris Disability Questionnaire, and (3) global measures (*e.g.*, overall improvement).

### Secondary Outcomes

Secondary outcomes were reported adverse effects (proportions of participants experiencing adverse effects of NSAIDs) and the use of additional medication.

### Search Methods for Identification of Studies

We searched Cochrane Central Register of Controlled Trials (CENTRAL, the Cochrane Library, Issue 5, 2015; includes the Cochrane Back and Neck [CBN] Review Group's Trials Register), MEDLINE, EMBASE, ClinicalTrials.gov, World Health Organization International Clinical Trials, Registry Platform (WHO ICTRP), and PubMed up until June 2015 for RCTs meeting the inclusion criteria. Additional trials were identified through examination of references from identified trials and systematic reviews. The complete search strategy is presented in Appendix 1, <http://links.lww.com/BRS/B256>.

### Selection of Studies

Several authors independently screened titles, abstracts, and keywords to identify trials that met the inclusion criteria. We obtained and screened full texts of trials if either the study seemed to meet the inclusion criteria or if inclusion was uncertain. Disagreements were solved by consensus of the review authors or third-party arbitration.

### Data Extraction and Management

Three authors extracted the data from the trials on characteristics of participants, interventions, primary and secondary outcomes, adverse effects, and industry sponsorship of the trial. Three authors extracted the mean difference (MD) scores, standard deviations, and sample size using a data extraction form. All disagreements were resolved through discussion. In the case of potentially relevant missing information in the papers, we contacted the corresponding authors.

### Data Synthesis

We analyzed dichotomous outcomes by calculating the risk ratio (RR) with 95% confidence intervals (CI). We analyzed continuous outcomes by calculating the MD with 95% CI. We considered a *P*-value of less than 0.05 to be statistically significant. We pooled data if two or more studies investigated comparable outcome measures. For the meta-analyses (both the fixed- and the random-effects approach), we considered only studies that used medications currently on the market.

We assessed the quality of the evidence for all outcomes regardless of whether there were sufficient data available to use quantitative analyses to summarize the data. We rated the quality of the evidence according to the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) approach,<sup>17</sup> recommended in the

*Cochrane Handbook*<sup>18</sup> and adapted in the updated CBN guidelines.<sup>19</sup> We graded trials on specific domains recommended by the Cochrane CBN tool: (1) risk of bias, (2) inconsistency, (3) indirectness, (4) imprecision, and (5) other factors (e.g., publication bias).<sup>19</sup> We used the statistical software Review Manager (RevMan) Version 5.3 (The Nordic Cochrane Centre, The Cochrane Collaboration, Copenhagen).

### Risk of Bias

Three review authors (E.R.B., M.W., W.G.) independently assessed the risk of bias of the included trials based on criteria described in the CBN's tool for assessing risk of bias.<sup>19</sup> We defined high-quality studies as fulfilling six or more of the validity criteria. We assessed the following factors for other sources of potential bias: funding and other biases such as (low) sample size and how the data were presented.<sup>19</sup> We did not downgrade the evidence when all trials were judged as low risk of bias for all five categories. We downgraded the evidence by one level when more than three categories had a high or unclear risk. We downgraded the evidence by two levels when four or more categories had a high or unclear risk.

### Inconsistency

We downgraded the quality of evidence by one level when heterogeneity or variability in results was large ( $I^2 > 80\%$ ) and two levels when there was in addition inconsistency arising from populations, interventions, or outcomes.<sup>17,19</sup>

### Indirectness

We downgraded one level whether there was an uncertainty about generalizability of the results in one area (e.g., population, intervention, comparator, or outcome), and we downgraded two levels when there was indirectness in two or more areas.<sup>17,19</sup>

### Imprecision

We downgraded by one level when trials included relatively few participants and few events or had wide confidence intervals around the estimate of the effect and when there was only one trial and when there was more than one trial and the total number of events was lower than 300 for dichotomous data and 400 for continuous data.<sup>17,19</sup> We downgraded two levels if there were both few events, few patients, and wide confidence intervals.

### Publication Bias

The quality of evidence was downgraded by one level if the funnel plots suggested publication bias.

## RESULTS

We identified 2629 references, obtained full-text articles for 37 references with 10 RCTs<sup>20–28</sup> (nine publications) meeting the inclusion criteria (N = 1651) of which two trials<sup>27,28</sup> were added compared with the original review<sup>29</sup> (Figure 1, Appendix 2, <http://links.lww.com/BRS/B257>).

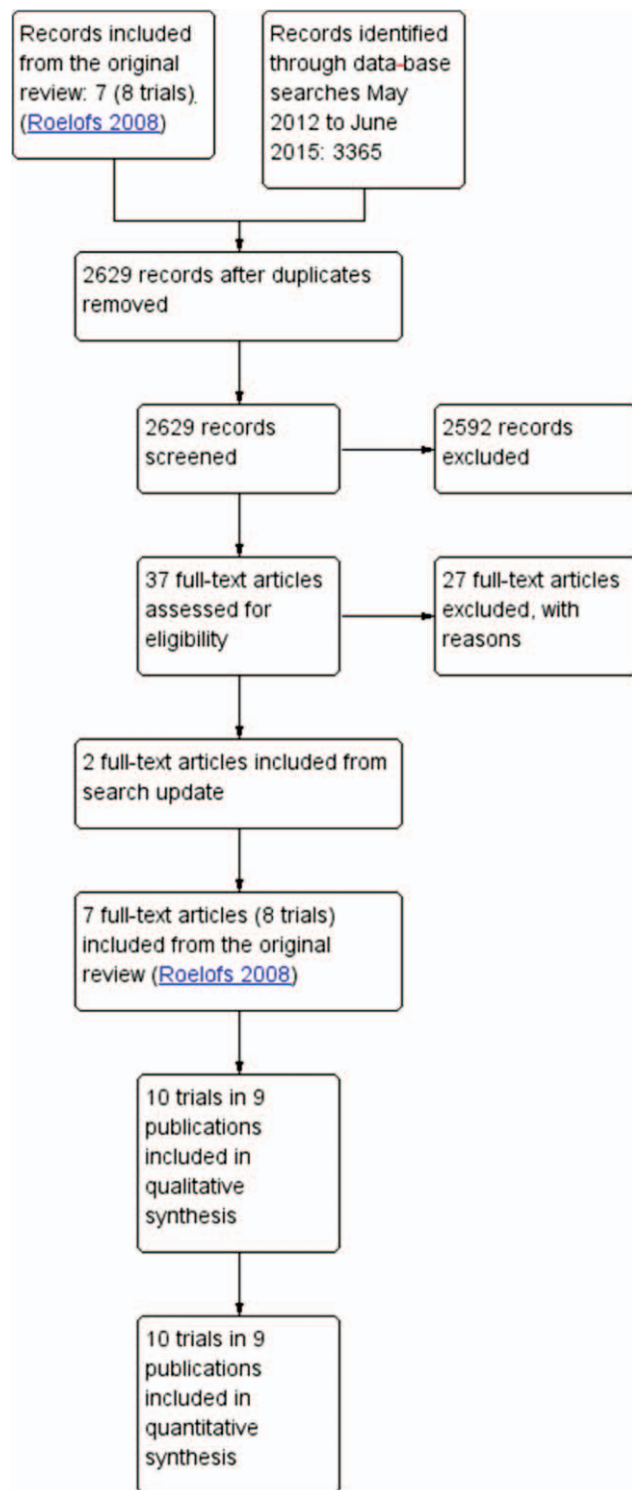


Figure 1. Study flow diagram.

### Included Studies

Five trials used the currently recommended daily dose of NSAIDs,<sup>20,21,26,27</sup> whereas two<sup>22,28</sup> used lower doses (Table 1). Three trials investigated NSAIDs no longer approved for human use.<sup>23–25</sup> Most trials included smaller samples (n = 25–59), whereas some<sup>21,26,27</sup> included larger samples (n = 171–532). Most trials included participants seeking care for acute sciatica of less than 3 weeks' duration.

TABLE 1. Summary of Trials and Substances Used

ATC Group, Trial	Substance	Daily Dose	Recommended Maximum Dose	Treatment Duration	Sample Size Calculation	Participants Per Group (n)
Butylpyrazolidin						
Grevsten 1975	Phenylbutazone (Butazolodin) IM day 1; phenylbutazone (Butazolodin Alka) orally day 2 to 4	0.6 g IM day 1, 0.6 g day 2 to 4 by mouth, 0.3 g day 5 to 14	No longer approved for human use	14 days	No	36
Weber 1980	Phenylbutazone (Butazolodin Alka)	600 mg day 1 to 3, 300 mg day 4 to 5	No longer approved for human use	5 days	No	59
Radin 1968	Phenylbutazone	600 mg day 1 to 2, 300 to 800 mg day 3 to 8	No longer approved for human use	8 days	No	25
Acetic acid derivatives						
Goldie 1968	Indomethacin	75 mg	225 mg	14 days	No	25
Herrmann 2009	Diclofenac	100 mg day 1 and 5; 150 mg day 2 to 4	150 to 200 mg	4 days	50 per group	57
Dreiser 2001	Diclofenac	150 mg	150 to 200 mg	14 days	150 per group	162
Kanayama 2005	Diclofenac vs. active treatment	75 mg	150 to 200 mg	14 days	20 per group	20
Oxicams						
Dreiser 2001 (placebo-controlled trial)	Meloxicam 7.5/15 mg	7.5/15 mg	15 mg	7 days	150 per group	171/181
Dreiser 2001 (diclofenac-controlled trial)	Meloxicam 7.5/15 mg	7.5/15 mg	15 mg	14 days	150 per group	164/163
Weber 1993	Piroxicam	100 mg day 1 to 2, 20 mg day 3 to 14	20 mg	14 days	No	120
Herrmann 2009	Lornoxicam	24 mg day 1; 16 mg day 2 to 4; 8 mg day 5	16 mg	5 days	50 per group	57
Propionic acid derivative						
Braun 1982	Ketoprofen vs. active treatment	200 mg IM day 1 to 3, 300 mg orally + supp day 4 to 8	200 (max 300) mg	9 days	No	17
Fenamates, coxibs, or others						
No studies	—	—	—	—	—	—

The follow-up duration varied from 3 to 8 hours to 1 year. The trials were conducted in the USA,<sup>24</sup> Japan,<sup>28</sup> Germany,<sup>20,27</sup> Sweden,<sup>22,23</sup> and in Norway.<sup>25,26</sup>

## Description of Studies

### NSAID Versus Placebo

Four trials<sup>20,21,26,28</sup> reported on pain relief (VAS 0 to 100), one<sup>26</sup> on functional outcome (Roland Morris Disability Questionnaire [RMDQ]) at 14 days and 4 weeks. Five trials<sup>21,23,25-27</sup> reported on global improvement. Radin and Bryan<sup>24</sup> did not report how global improvement was measured and was

therefore not included. In all trials except one<sup>28</sup> the use of additional medication was allowed: paracetamol with or without codeine, promethazine<sup>25</sup> and levomepromazine.<sup>26</sup>

### NSAID Versus NSAID

One trial<sup>27</sup> compared lornoxicam with diclofenac, whereas one<sup>21,27</sup> compared meloxicam (7.5/15 mg) with diclofenac (150 mg).

### NSAID Versus Other Drugs

Braun and Huberty<sup>20</sup> compared ketoprofen orally with a combination of steroids and phenylbutazone (intramuscular

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding of participants and personnel (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Group similarity at baseline	Influence of co-interventions	Compliance with interventions	Funding	Other bias
Braun 1982	?	?	?	?	?	+	-	+	?	?	-
Dreiser 2001a	?	?	+	?	+	+	+	-	?	?	+
Dreiser 2001b	?	+	?	?	+	+	+	-	?	?	?
Goldie 1968a	?	+	+	+	?	+	?	+	?	?	-
Grevsten 1975	?	?	?	?	-	+	-	?	?	?	-
Herrmann 2009	+	+	+	+	+	?	+	+	?	-	+
Kanayama 2005	+	+	?	?	+	+	?	+	?	?	?
Radin 1968	?	?	?	-	?	-	-	?	?	?	?
Weber 1980	?	?	?	?	-	+	?	+	?	?	?
Weber 1993	?	?	+	?	?	+	?	+	+	?	?

Figure 2. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.

followed by oral), whereas one trial<sup>28</sup> compared diclofenac (75 mg/day) with a serotonin or 5-hydroxytryptamine (5-HT) inhibitor.

**Excluded Studies**

We excluded 27 studies during full-text review (Figure 1). The main reasons for exclusion were either that the participants were not suffering from sciatica or that the study design was not an RCT.

**Risk of Bias in Included Studies**

Risk of bias assessment is presented in Figure 2. One<sup>27</sup> of the 10 trials fulfilled six or more criteria and was judged at low risk of bias. The other studies had selection bias, detection bias, and lack of clarity regarding compliance. All studies had either a high risk of bias or an unclear risk of bias regarding industry funding, compliance with the study medication, or small sample sizes.

**Effects of Interventions**

**Change in Pain Intensity**

**NSAIDs Versus Placebo.** Three trials (four treatment arms)<sup>21,26,27</sup> (N=918) reported on pain reduction (VAS) and were included in the meta-analysis (Figure 3). Dreiser *et al*<sup>21</sup> found meloxicam 7.5 mg superior to placebo, but 15 mg did not increase the effect. We found very low-quality evidence that NSAIDs are no better than placebo (MD -4.56, 95% CI -11.11 to 1.99, random-effects model, I<sup>2</sup> = 82%). When excluding one trial<sup>27</sup> with a very short follow-up duration, the pooled MD was -0.09 (95% CI -9.89 to 9.71, I<sup>2</sup> = 86%). We downgraded the evidence two levels due to high risk of bias and one level due to inconsistency.

**NSAIDs Versus NSAID.** Two trials<sup>21,27</sup> compared the effect of two types of NSAIDs. There was no difference in mean pain reduction between lornoxicam<sup>27</sup> and meloxicam (7.5/15 mg)<sup>21</sup> compared with diclofenac.

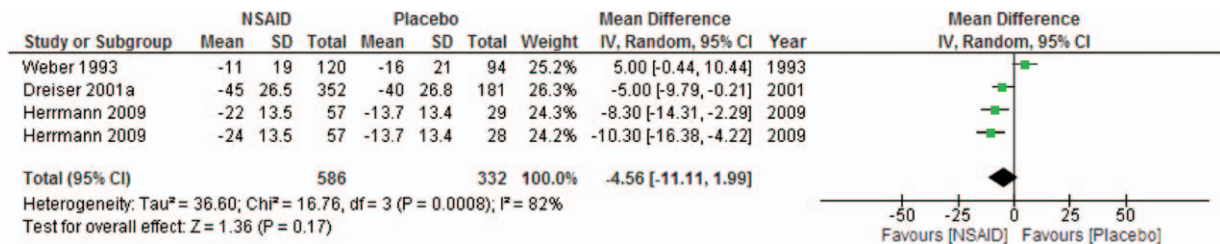


Figure 3. Forest plot of comparison: nonsteroidal anti-inflammatory drug (NSAID) versus placebo. Change in pain intensity summary.

**NSAIDs Versus Other Drugs.** Two trials<sup>20,28</sup> compared NSAIDs with other drugs. Braun and Huberty<sup>20</sup> compared ketoprofen intramuscular injection followed by oral ketoprofen with corticosteroids in addition to phenylbutazone intramuscular followed by oral corticosteroid in addition to phenylbutazone. Kanayama *et al*<sup>28</sup> compared a serotonin or 5-HT inhibitor with diclofenac (75 mg/day). No difference in pain reduction was found between the treatments in either of the trials.

**Change in Disability.** Weber *et al*<sup>26</sup> (n = 214) compared NSAIDs (piroxicam) with placebo for change in functional outcomes (RMDQ = after 14 days and 4 weeks. There was very low-quality evidence that NSAIDs are no better than placebo, due to high risk of bias and imprecision.

**Global Improvement**

**NSAID Versus Placebo.** Five trials<sup>21,23,25-27</sup> with a total of 846 participants reported on global improvement. We used three<sup>21,26,27</sup> of the five trials (N = 753) in the meta-analysis as two trials<sup>23,25</sup> used medications no longer on the market (phenylbutazone) (Figure 4). We found low-quality evidence that NSAIDs are more effective than placebo for global improvement (RR 1.14, 95% CI 1.03 to 1.27; fixed-effect model, I<sup>2</sup> = 0%). The corresponding number needed to treat for an additional beneficial outcome (NNTB) was 12 participants based on the absolute risk difference of 0.09 (95% CI 0.02 to 0.16). We downgraded the evidence two levels due to high risk of bias.

**NSAID Versus NSAID.** Two trials<sup>21,27</sup> showed no difference in global improvement when lornoxicam and meloxicam were compared with diclofenac.

**NSAID Versus Other Drugs.** Two trials<sup>20,28</sup> compared NSAIDs with other drugs. Ketoprofen intramuscular injection followed by ketoprofen oral compared with corticosteroids in addition to phenylbutazone intramuscular followed by oral corticosteroid in addition to phenylbutazone was comparable effective.<sup>20</sup> No differences were found between serotonin or 5-HT inhibitor and diclofenac (75 mg/day).<sup>28</sup>

**Adverse Effects**

**NSAID Versus placebo.** The meta-analysis included four trials<sup>21,22,26,27</sup> (N = 967), one with two treatment arms<sup>27</sup> that used NSAIDs currently on the market (Figure 5). Two trials did not report adverse effects,<sup>20,28</sup> whereas one trial<sup>25</sup> found no adverse effects. The pooled analyses showed low-quality evidence for increased risk of adverse effects of NSAIDs compared with placebo (RR 1.40, 95% CI 1.02 to 1.93). When excluding one trial<sup>26</sup> assessed with a high risk of bias the summary estimate was similar (RR 1.42, 95% CI 0.98 to 2.07). The corresponding number needed to harm was 20 participants for one adverse effect based on an absolute risk difference of 0.05 (95% CI 0.00 to 0.10).

Most adverse effects were reported to be mild and comprised gastrointestinal problems described as nausea, dyspepsia, epigastric burning, abdominal pain, and in addition headache and dizziness. No perforation, ulceration, or bleeding of the upper gastrointestinal tract was reported. One life-threatening adverse event occurred: an anaphylactic shock requiring steroid therapy in the meloxicam 7.5 mg group (treatment related), and there was one serious adverse event with deterioration of back

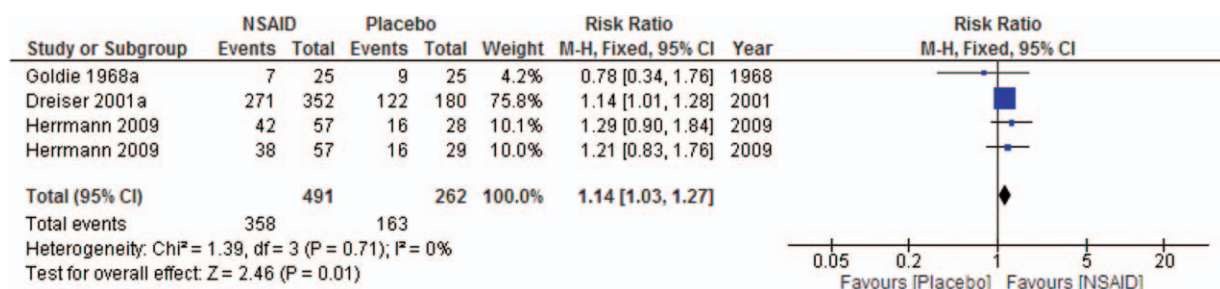


Figure 4. Forest plot of comparison: nonsteroidal anti-inflammatory drug (NSAID) versus placebo. Global improvement.

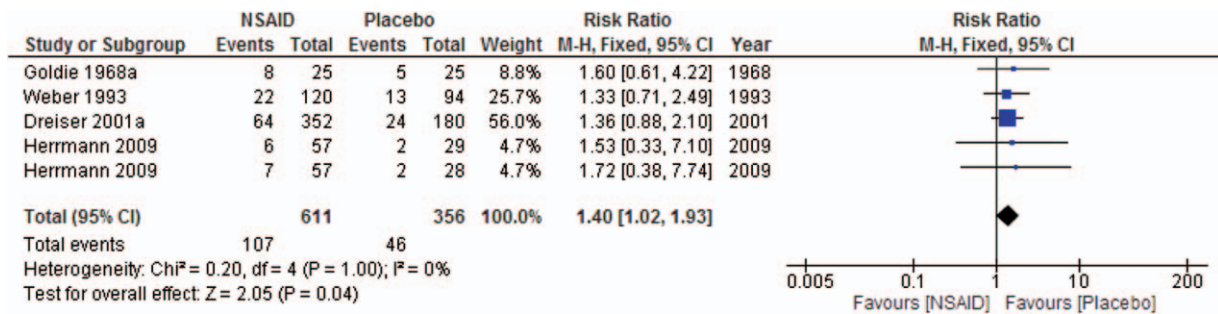


Figure 5. Forest plot of comparison: nonsteroidal anti-inflammatory drug (NSAID) versus placebo. Adverse effect summary.

pain in the placebo group (not treatment related). Both participants recovered.

**NSAID Versus NSAID.** Two trials<sup>21,27</sup> comparing NSAIDs to NSAIDs reported no difference in adverse effects.

**NSAID Versus Other Drugs.** One trial<sup>20</sup> did not report on adverse effects, whereas one trial<sup>28</sup> reported no adverse effects.

**Additional Use of Pain Medication.** In participants treated with meloxicam 7.5 mg less pain medications was used.<sup>21</sup> An increase in the dose of meloxicam to 15 mg did not decrease the need of additional pain medication. Two trials<sup>25,26</sup> found no difference in the use of additional pain medication between NSAIDs and placebo and one<sup>20</sup> no difference compared with other medication.

## DISCUSSION

This updated Cochrane Review included 10 trials reported in nine publications.<sup>20–28</sup> Only two additional trials<sup>27,28</sup> were included compared with the original review.<sup>29</sup> Given the high risk of bias in all trials but one,<sup>27</sup> there is low to very low-quality evidence of the efficacy of NSAIDs compared with placebo or other drugs in the treatment of sciatica. Small study samples, incomplete outcome reporting, and inconsistency affected the grading of the quality of the evidence. Even if more participants with NSAIDs experienced global improvement compared with placebo, the grading of the evidence of the pooled analyses was low.

Recent reviews<sup>29–31</sup> have included trials reporting on the efficacy of NSAIDs in acute and chronic LBP and with or without sciatica. Pinto *et al*<sup>30</sup> included five of the trials included in our review, whereas excluding three<sup>20,24,25</sup> due to unclear randomization and concluded that the graded evidence for the efficacy of NSAIDs is low due to limitations of study design and inconsistency. We chose to include and report on all trials even if assessed with a high risk of bias for full transparency on the efficacy of NSAIDs and sciatica. We, however, excluded two trials<sup>24,25</sup> from the meta-analyses as these trials used NSAIDs no longer on the market. Furthermore, we excluded Weber *et al*<sup>26</sup> due to high risk of bias to conduct a sensitivity analysis for the outcome of adverse effects. Even so, the finding of the sensitivity analysis did not change the results. In all, our

findings are consistent with those of Pinto *et al*<sup>30</sup> for the effect of overall pain reduction. Furthermore, Wong *et al*<sup>31</sup> concluded in a review that there was inconsistent evidence for the treatment of recent onset LBP with radiculopathy. Based on our thorough literature search, and other recently published reviews in the same area<sup>30,31</sup> we find our evidence applicable. In addition, our results are in line with the original Cochrane Review<sup>29</sup> on the efficacy of NSAIDs on sciatica.

Eight of the included trials reported on acute sciatica of less than 3 weeks' duration, whereas two<sup>24,25</sup> provided no information on the duration. The external validity of our review thus only extends to those suffering from sciatica for less than 3 weeks. In addition, only one trial<sup>26</sup> reported on the effect of NSAIDs on disability,<sup>26</sup> with very low-quality evidence that NSAIDs are no more effective than placebo.

The risk for adverse effects of NSAIDs is well documented in the literature.<sup>32,33</sup> All but two trials,<sup>20,28</sup> reported on the risk of adverse effects for NSAIDs compared with placebo. Our finding of an increased risk for adverse effects was graded as low-quality evidence, and in addition the included trials did not have enough power to detect rare adverse effects. Thus, based on our findings we cannot draw any conclusion on the long-term effects of NSAIDs in sciatica. Although the GRADE quality of evidence was low due to the small study sample and a high risk of bias, the findings of risk for adverse effects in the present review are consistent with the literature. A recent guideline<sup>34</sup> recommend the use of NSAIDs for sciatica with the lowest effective dose for the shortest possible period of time and to take adverse effects into account.

Our review expands the current evidence on the treatment efficacy of NSAIDs in sciatica with regard to several aspects. In addition to pain reduction, we assessed the effect on global improvement, finding that NSAIDs are more effective than placebo for sciatica. However, this finding must be treated with caution as some of the trials<sup>27,28</sup> allowed the use of additional pain medication and showed inconsistent results. In addition, although three trials<sup>20,25,26</sup> found no difference between NSAIDs and placebo with regard to the use of additional pain medication, one trial<sup>21</sup> found less use of pain medication in the NSAID group.<sup>28</sup>

The main limitations of the current review are the number of trials available, the high risk of bias, and the small sample size of included trials. Moreover, only four<sup>21,22,27,28</sup> of the included publications reported on a power calculation. Another limitation is that we were not able to perform meta-analyses for all outcomes. For the outcome pain, heterogeneity of more than 80% between trials indicated that there was a wide range in treatment responses. As one study arm<sup>27</sup> reported a short follow-up of eight hours we conducted a sensitivity analysis excluding the short-term arm, finding that the effect on pain reduction further decreased. To be able to detect if subgroups of participants with sciatica benefit from NSAIDs, additional analyses may be conducted which in the present review were not feasible due to insufficient trials and specific treatment responses. A further limitation is that only five trials assessed the treatment efficacy of currently available drugs in the recommended daily dose.<sup>20,21,26,27</sup> Moreover, two trials used lower doses of NSAIDs (over the counter), which might explain less efficacy in those trials.<sup>22,28</sup>

Due to the low number of included trials (n = 10) in the present review, we decided to include all eligible trials in the analyses even if assessed with a high risk of bias, using various doses, or reporting different short treatment outcome. We however conducted sensitivity analyses excluding trials with a high risk of bias. A limitation for the outcome of adverse effects is that for the individual studies there was clearly not enough power to detect rare adverse events, which means that we cannot fully exclude that potentially rare event may occur.

## CONCLUSION

### Implications for Practice

We found that NSAIDs are no more effective than placebo in short-term pain reduction (very low-quality evidence). NSAIDs are associated with more global improvement for sciatica at short-term follow-up (low-quality evidence). One trial assessed disability, and found no difference in effects between placebo and NSAIDs with very low-quality evidence. When prescribing NSAIDs in people with sciatica, the increased risk for adverse effects (low-quality evidence), also in short treatment duration, needs to be taken into account in the treatment decision.

### Implications for Research

We found two additional trials for this updated review assessing the effect of NSAIDs compared to placebo or other drugs in sciatica, compared with the original review published in 2008. Most trials were assessed with a high risk of bias and included small study samples. For future studies on the efficacy of NSAIDs for sciatica, it might be important to investigate meta-regressions of defined subgroups of participants in methodologically sound RCTs.

## ➤ Key Points

- ❑ A systematic review assessed the efficacy of NSAIDs for sciatica.
- ❑ Ten randomized trials were included (N = 1651). Only one had a low risk of bias.
- ❑ For pain relief in sciatica the literature does not support the use of NSAIDs as there is very low evidence that the efficacy of NSAIDs is comparable to placebo treatment for sciatica in pain relief.
- ❑ For global improvement there is low-quality evidence that NSAIDs are more effective than placebo.
- ❑ Adverse effects are more commonly reported when using NSAIDs compared to placebo with low-quality evidence.
- ❑ The results of the review must be interpreted with caution due to the high risk of bias in the included trials and the overall low to very low-quality of the evidence.

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