



**Cochrane**  
**Library**

Cochrane Database of Systematic Reviews

## Magnesium for skeletal muscle cramps (Review)

Garrison SR, Allan GM, Sekhon RK, Musini VM, Khan KM

Garrison SR, Allan GM, Sekhon RK, Musini VM, Khan KM.  
Magnesium for skeletal muscle cramps.  
*Cochrane Database of Systematic Reviews* 2012, Issue 9. Art. No.: CD009402.  
DOI: [10.1002/14651858.CD009402.pub2](https://doi.org/10.1002/14651858.CD009402.pub2).

[www.cochranelibrary.com](http://www.cochranelibrary.com)

## [Intervention Review]

# Magnesium for skeletal muscle cramps

Scott R Garrison<sup>1</sup>, G Michael Allan<sup>2</sup>, Ravneet K Sekhon<sup>3</sup>, Vijaya M Musini<sup>3</sup>, Karim M Khan<sup>4</sup>

<sup>1</sup>Therapeutics Initiative, University of British Columbia, Vancouver, Canada. <sup>2</sup>Department of Family Medicine, University of Alberta, Edmonton, Canada. <sup>3</sup>Department of Anesthesiology, Pharmacology and Therapeutics, University of British Columbia, Vancouver, Canada. <sup>4</sup>Centre for Hip Health and Mobility, University of British Columbia, Vancouver, Canada

**Contact address:** Scott R Garrison, Therapeutics Initiative, University of British Columbia, 307-2176 Health Sciences Mall, Vancouver, BC, V6T 1Z3, Canada. [sgarrison@shaw.ca](mailto:sgarrison@shaw.ca).

**Editorial group:** Cochrane Neuromuscular Group.

**Publication status and date:** New, published in Issue 9, 2012.

**Citation:** Garrison SR, Allan GM, Sekhon RK, Musini VM, Khan KM. Magnesium for skeletal muscle cramps. *Cochrane Database of Systematic Reviews* 2012, Issue 9. Art. No.: CD009402. DOI: [10.1002/14651858.CD009402.pub2](https://doi.org/10.1002/14651858.CD009402.pub2).

Copyright © 2012 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

## ABSTRACT

### Background

Skeletal muscle cramps are common and often presented to physicians in association with pregnancy, advanced age, exercise or disorders of the motor neuron (such as amyotrophic lateral sclerosis). Magnesium supplements are marketed for the prophylaxis of cramps but the efficacy of magnesium for this indication has never been evaluated by systematic review.

### Objectives

To assess the effects of magnesium supplementation compared to no treatment, placebo control or other cramp therapies in people with skeletal muscle cramps.

### Search methods

We searched the Cochrane Neuromuscular Disease Group Specialized Register (11 October 2011), the Cochrane Central Register of Controlled Trials (CENTRAL) (2011, Issue 3), MEDLINE (January 1966 to September 2011), EMBASE (January 1980 to September 2011), LILACS (January 1982 to September 2011), CINAHL Plus (January 1937 to September 2011), AMED (January 1985 to October 2011) and SPORTDiscus (January 1975 to September 2011).

### Selection criteria

Randomized controlled trials (RCTs) of magnesium supplementation (in any form) to prevent skeletal muscle cramps in any patient group (i.e. all clinical presentations of cramp). We considered comparisons of magnesium with no treatment, placebo control, or other therapy.

### Data collection and analysis

Two authors independently selected trials for inclusion and extracted data. Two authors assessed risk of bias. We attempted to contact all study authors and obtained patient level data for three of the included trials, one of which was unpublished. All data on adverse effects were collected from the included RCTs.

### Main results

We identified seven trials (five parallel, two cross-over) enrolling a total of 406 individuals amongst whom 118 cross-over participants additionally served as their own controls. Three trials enrolled women with pregnancy-associated leg cramps (N = 202) and four trials enrolled idiopathic cramp sufferers (N = 322 including cross-over controls). Magnesium was compared to placebo in six trials and to no treatment in one trial.

For idiopathic cramps (largely older adults presumed to have nocturnal leg cramps), differences in measures of cramp frequency, magnesium versus placebo, were small, not statistically significant, and without heterogeneity ( $I^2 = 0\%$ ). This includes the primary endpoint, percentage change from baseline in the number of cramps per week at four weeks (-3.93%, 95% confidence interval (CI) -21.12% to 13.26%, moderate quality evidence) and the difference in the number of cramps per week at four weeks (0.01 cramps/week, 95% CI -0.52 to 0.55, moderate quality evidence). The percentage of individuals experiencing a 25% or better reduction in cramp rate from baseline was also no different, being 8% lower in the magnesium group (95% CI -28% to 12%, moderate quality evidence). Similarly, no statistically significant difference was found at four weeks in measures of cramp intensity (moderate quality evidence) or cramp duration (low quality evidence).

Meta-analysis was not possible for trials of pregnancy-associated leg cramps. The single study comparing magnesium to no treatment failed to find statistically significant benefit on a three-point ordinal scale of overall treatment efficacy. The two trials comparing magnesium to placebo differed in that one trial found no benefit on frequency or intensity measures while the other found benefit for both.

Withdrawals due to adverse events were not significantly different than placebo. While we could not determine the number of subjects with minor adverse events, studies of oral magnesium generally described potential side effects as similar in frequency to placebo.

### Authors' conclusions

It is unlikely that magnesium supplementation provides clinically meaningful cramp prophylaxis to older adults experiencing skeletal muscle cramps. In contrast, for those experiencing pregnancy-associated rest cramps the literature is conflicting and further research in this patient population is needed. We found no randomized controlled trials evaluating magnesium for exercise-associated muscle cramps or disease state-associated muscle cramps (for example amyotrophic lateral sclerosis/motor neuron disease).

## PLAIN LANGUAGE SUMMARY

### Magnesium for muscle cramps

Muscle cramps are common and can occur in a wide range of settings. Older adults and pregnant women commonly complain of leg cramps while they are resting, athletes can cramp when they are pushing the limits of their endurance, and some people develop muscle cramps as a symptom of other medical conditions. One potential treatment that is already being marketed to prevent muscle cramps is magnesium supplementation. Magnesium is a common mineral in our diets and extra oral supplements of this mineral are available either over the Internet or in health food stores and pharmacies (usually in the form of tablets or powders to be dissolved in water). We searched for all high quality published studies evaluating the effectiveness of magnesium to prevent muscle cramps and found four studies in older adults and three studies in pregnant women. There were no studies of people who cramp while exercising and no studies on people who cramp because of underlying medical problems. The four studies in older adults (a total of 322 participants including controls in cross-over studies) collectively suggest that magnesium is unlikely to provide a meaningful benefit in reducing the frequency or severity of cramps in that population. We consider this evidence to be of moderate quality. In contrast, the three studies in pregnant women (202 participants) are collectively inconclusive since one study found benefit in reducing both cramp frequency and cramp pain while the other two found no benefit. More research on magnesium in pregnant women is needed; however, older adult cramp sufferers appear unlikely to benefit from this therapy. While we could not determine the rate of unwanted side effects, the study withdrawal rates and adverse event discussions suggest the treatment is well tolerated.