

## Executive summary

Low level laser (Low Level Laser Therapy, LLLT) is sometimes used as a treatment method in connection to neck problems. The method is used both by qualified medical personnel and by occupational groups outside of healthcare. There is no consensus on how the treatment is to be administered. As an outcome measure for pain a visual analogue scale is often used (VAS 0–100 mm), but other measuring scales are also used. The aim of this report is to investigate if there is any scientific basis for treatment with low level laser therapy, as opposed to placebo treatment, decreasing the perception of pain in individuals 16 years of age or older with acute or chronic neck pain.

### Conclusions

- ▶ In cases of chronic neck pain, low effect laser therapy can provide relief from pain for 2–6 months after the completion of treatment.
- ▶ The studies have not especially focused on side effects, but no serious complications or side effects have been reported.
- ▶ One treatment programme of ten treatments with low level laser costs between SEK 2200 and 4600, depending on whether the treatment is administered by a physiotherapist or a physician. There are no cost-effectiveness studies comparing low level laser to other treatments.
- ▶ Several well-executed studies are necessary to determine with certainty the effects of treatment with low level laser compared to placebo and other methods, above all in cases of acute pain, and with regard to function and working capacity, and to long-term effects.

### Benefit to the patient

The balanced effect in the studies under consideration is an approximately 20 mm lesser pain estimation on

the VAS scale. This is a difference considered to be clinically relevant.

- There is limited scientific basis for treatment with low level laser, compared to placebo, leading to a decrease in neck pain immediately after the completion of a treatment programme (5–15 treatments) (⊕⊕○○).
- There is limited scientific basis for treatment with low level laser, compared to placebo, leading to a decrease in chronic neck pain at the time of follow-up after the completion of a treatment programme (10–24 weeks) (⊕⊕○○).
- There is insufficient scientific basis for treatment with low level laser, compared to placebo, leading to decreased pain when estimated with global measuring methods after the completion of a treatment programme in the case of acute neck pain (⊕○○○).
- There is a limited scientific basis for treatment with low level laser, compared to placebo, leading to decreased pain when estimated with global measuring methods after the completion of a treatment programme in the case of chronic neck pain (⊕⊕○○).

### Ethical aspects

Neck pain can be disabling with consequences for both mental health, and for working capacity. The condition is common. Treatment with low level laser is painless, non-invasive and does not appear to cause any serious side effects. Additionally, the method is simple to administer and quick and has a low cost per treatment. Decreased pain can lead to more equal opportunities to participate in society. There may be risks of unequal access to the treatment, since low level laser is often given by actors outside of publicly funded health care.

## Economical aspects

Treatment with low level laser costs approximately SEK 2200 to 4600 per treatment programme (of ten treatments), depending on if it is carried out by a physiotherapist or a physician. The greater part of the expense is made up of personnel time. To assess whether treatment with low-effect laser is cost-effective as a separate treatment, the increased cost must

be weighed against the treatment's effects on pain (pain reduction corresponding to 20 mm on the VAS scale). Regarding treatment with low level laser as a complement to or compared with other active treatments, the effects have not been sufficiently compared, which makes it difficult to assess which of the alternatives are cost-effective.

This Alert report is a collaboration between CAMTÖ and SBU

### Project group

#### CAMTÖ

Georg Lohse, physiotherapist  
Ylva Nilsagård, PhD, physiotherapist  
Håkan Geijer, Associate Professor, Chief Physician  
Mia Svantesson, PhD, Registered Nurse

Clinical Epidemiology and Biostatistics,  
Örebro University Hospital  
Ruzan Udumyan, epidemiologist

### SBU

Mikael Nilsson (Project Director)  
Sofia Tranæus (Assistant Project Director)  
Anna Granath (Project Administrator)  
Emelie Heintz (Health Economist)  
Laura Lintamo (Analyst)  
Hanna Olofsson (Information Specialist)

### Scientific reviewers

Jane Carlsson, Professor, The Sahlgrenska Academy, University of Gothenburg  
Björn Rydevik, Professor, The Sahlgrenska Academy, University of Gothenburg

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[www.sbu.se/en](http://www.sbu.se/en) • [registrator@sbu.se](mailto:registrator@sbu.se)

Study quality. Assessment of to what extent the outcome of an individual study is sensitive to methodological weaknesses. SBU uses only studies with low or moderate risk of bias in the assessment of quality of evidence.

Strength of evidence. SBU uses GRADE, an international evidence grading system. Study design is the primary factor considered in the overall appraisal which is performed for each outcome of interest. The quality of evidence is rated down if one or several limitations are present: study limitations, inconsistency of results, imprecision of the estimated result, indirectness of evidence and risk of publication bias. Quality of evidence may also be rated up if there is a strong effect or a dose-response relationship.

The quality of evidence in GRADE has four levels:

- **High quality of evidence** (⊕⊕⊕⊕). Based on studies of high quality with no factors that weaken the overall assessment.
- **Moderate quality of evidence** (⊕⊕⊕○). Based on studies of high or moderate quality with a single factor that weakens the overall assessment.

- **Low quality of evidence** (⊕⊕○○). Based on studies of high or moderate quality with some factors that weaken the overall assessment.

- **Very low quality of evidence** (⊕○○○). SBU considers that when the quality of evidence is very low, it is in practice insufficient. Very low quality of evidence could be due to weaknesses on several areas or that all studies have high risk of bias.

The stronger the quality of evidence, the lower is the likelihood that new research findings would affect the documented results within the foreseeable future.

Conclusions imply an overall assessment of benefits, risks, ethical considerations and cost effectiveness.

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Read more about SBU:s method:  
[www.sbu.se/Strength-of-evidence](http://www.sbu.se/Strength-of-evidence)