

# Approaching Laser Therapy for Pressure Ulcers

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## ABSTRACT

The high prevalence of pressure ulcer (PU) might be considered as a negative determinant of quality of care. To prevent PU complications, different appropriate treatments should be utilized, and nowadays non-invasive treatments such as laser therapy are more recommended.

Low level laser therapy (LLLT) was initiated since 1960 and its medical utilization has been more noticeable in recent years. LLLT is a continuous wave or pulsed light that contains a fixed beam with a relatively low density of 0.04 – 5 joules per square centimeter, it is applied as a low power laser by use of red or infrared beams with wavelength 600-1100 nanometer and power outlet of 1-500 MW. Low density laser therapy could accelerate cell proliferation through biochemical, bioelectrical and bioenergetics effects, whereas high density laser therapy could be a suppressive measure. Healing process of the tissues is an innate immune response to restore the integrity of the tissue through consequences of coagulation, inflammation, granulation tissue formation, and epithelial tissue regeneration. Outcomes of LLLT are including: 1) increase in the production of adenosine triphosphate (ATP), 2) stimulate blood flow in small vessels, and 3) formation of new vessels on previous vessels.

**Material and Methods:** According to the inclusion criteria, Databases Pubmed, ScienDirect, Proquest and Google Scholar were searched between 2003-2016 by key words including pressure ulcer, pressure sores, laser therapy, low level laser therapy, PU healing, PU treatment. Totally 32 original articles and systematic reviews had including criteria and they were assessed.

**Results:** According to 29 studies LLLT has positive effects on healing of Pressure ulcers in comparison to other treatments. LLLT has been effective on pressure ulcers' healing process according to its wavelength and dosage, pressure ulcer site, and duration of the treatment. But there were three studies which did not support considerable effect of application of LLLT on pressure ulcers' healing.

**Conclusion:** The results showed that more studies and meta-analysis need to make decision about application of LLLT as an exact treatment to accelerate healing of pressure ulcers.

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