

# Biophysical Approaches for Wound Healing

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## ABSTRACT

Data from the United States indicate that chronic wounds affect around 6.5 million patients with an estimated US\$25 billion annual expenditure on their treatment. Wound healing is a complex, dynamic process required for maintaining homeostasis in an organism. Besides many biological and pharmaceutical methods being investigated, there is growing interest in exploring various biophysical technologies (ultrasound, electrical stimulation, phototherapy, and negative pressure wound therapy) believed to be beneficial for managing wound and support healing. Electromagnetic and electrical stimulation appear to modulate the disrupted endogenous electromagnetic fields and aid in reestablishment of trans epithelial potential (TEP). The other three biophysical therapies, namely ultrasound (US), pressure, and light therapies, have been demonstrated to have clinical benefits and their molecular mechanisms appear to involve both biophysical and biochemical perturbations. The scope of this abstract focuses on findings from current literature related to four biophysical technologies believed to be advantageous for wound healing.

**Keywords:** Wound Healing, Biophysics, Ultrasound, Electrical Stimulation, Phototherapy, Negative Pressure