Polarized light therapy: Illuminating immunity

What is it?: Light has been used as an alternative mode for the treatment of diseases, since the ancient Egyptians basked in the sun to restore their energy. Phototherapies are modern treatments in which light is used to manage or prevent disease and injury, such as low-level laser therapy (LLLT) or ultraviolet therapy (UVT). Polarized Light Therapy (PLT) is a phototherapeutic intervention which utilizes specially filtered (polarized) light radiation to treat disease and injury. When light is polarized, it causes the individual photons (light particles) to vibrate and travel in the same direction, theoretically allowing for deeper penetration into the body. Whilst most phototherapies such as LLLT only utilize one specific wavelength (color) of light, PLT uses a broad spectrum more like natural daylight (Fig. 1.). PLT has been promoted by device manufacturers as a simple to use, safe and inexpensive method for the treatment of a wide range of conditions, however there are varying levels of evidence to support many of those claims.

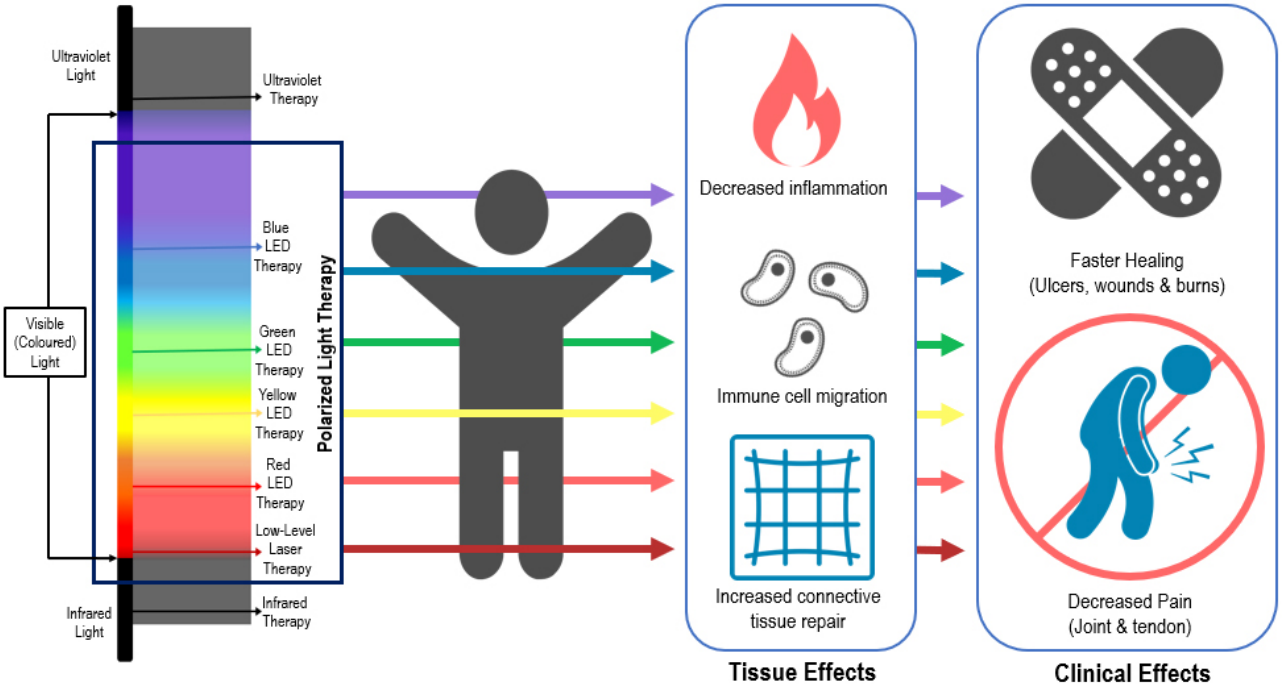

Fig. 1. Illustration of the effects of polarized light therapy on tissue and clinical effects.

What can it do?: While there is not a lot of research surrounding the use of PLT clinically, a small body of evidence supports its use in a handful of conditions. These include skin wounds such as ulcers, burns and surgical incisions, and musculoskeletal injuries to joints and tendons. Overall, PLT has been noted to accelerate and improve the healing process, decrease pain, and promote better patient outcomes in these conditions. Importantly, there have been no reported negative

effects on any participants in these studies, suggesting it to be a safe treatment. Presently however, the quality of research into PLT is generally poor, making it difficult to confidently recommend its use in a clinical setting. More high-quality studies with strong methodologies are needed to confirm the results of previous research and allow PLT to be applied more broadly.

How does it work?: While there is a small body of evidence exploring PLT's effectiveness, there is almost no research into the mechanisms by which it might work. Some studies have suggested that PLT can cause an increase in the amount connective tissue fibres (collagen) laid down after injury, and the number of immune cells moving into the area of effect. These effects are suggested to cause an acceleration of the healing process, however more research is required to confirm this. Given the lack of evidence surrounding the mechanisms underpinning the effects of PLT, the better understood LLLT may allow an insight to how light can cause physiological change. LLLT has been shown to cause an anti-inflammatory response, with a resulting decrease in pain. If PLT has a similar effect, then that could provide a much-needed mechanism for its clinical results.

What don't we know?: While there is a small body of generally positive evidence supporting the use of PLT, the knowns are far outweighed by the unknowns. Before PLT can be recommended and utilized fully by medical practitioners, a greater understanding of its physiological effects is needed to provide information on a broader range of conditions in which it could prove helpful. As many of the studies on PLT are of relatively low quality, their results also need to be verified and expanded to more patients in larger trials with appropriate controls. PLT is an exciting new treatment with a small, but growing research base indicating use in a range of debilitating conditions, but further research is required to translate its use from the experimental world into broader clinical use.

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