Painful debilitating inflammatory joint conditions that can affect both the young and the elderly.

**Plica syndrome** is characterized by supra- and mid-patellar (knee cap) pain with knee extension as well as the presence of audible cracking noises with knee flexion and extension.

**Osgood-Schlatter Disease** is a common cause of knee pain in adolescents. It is characterized by inflammation of the area just below the knee where the tendon from the kneecap (the patellar tendon) attaches to the shinbone (the tibia). Painful symptoms are often brought on by running, jumping, and other sports-related activities. Specific symptoms include knee pain and tenderness at the tibia.

Psoriasis is an auto-immune disease that not infrequently produces painful joints. In **Psoriatic Arthritis**. The immune system attacks single to multiple joints causing inflammation which can produce pain, swelling and disfigurement. The common thread of debility in these conditions is largely due to inflammation.

**References:**


The Bjordal (2006), Chung, (2012) and Alves (2013) reports demonstrated that LLLT is effective in treating the symptoms of inflammation. Bjordal found strong evidence that LLLT modulates biochemical inflammatory markers and produces local anti- inflammatory effects in cells and soft tissue. Specifically, the review found strong evidence from 18 out of 19 studies that red and infrared wavelengths of LLLT can act locally and rapidly to modulate the inflammatory processes in injured tissue. These anti-inflammatory effects include changes in biochemical markers, altered distribution of inflammatory cells, and reduced formation of edema, hemorrhage, and necrosis. show that LLLT can suppress inflammation, as measured by a reduction in the inflammatory marker PGE2. In addition, clinical indices of small, but significant improvements in pressure pain and single hop function were observed. Supporting evidence from Chung reveals Immune cells, in particular, appear to be strongly affected by LLLT. Mast cells, which play a crucial role in the movement of leukocytes, are of
considerable importance in inflammation. LLLT also enhances the proliferation, maturation, and motility of fibroblasts, and increases the production of basic fibroblast growth factor. Lymphocytes become activated and proliferate more rapidly, and epithelial cells become more motile, allowing wound sites to close more quickly. The ability of macrophages to act as phagocytes is also enhanced under the application of LLLT.

The Alves study examined inflammation via histopathological analysis, differential counts of inflammatory cells, gene expression of inflammatory markers interleukin 1- beta and 6 (IL-1β and IL-6), and protein expression. Alves found that the LLLT group experienced a statistically significant reduction in expression of IL-1β and IL-6 (inflammatory markers) as compared to values obtained in the control group, which indicates a reduction in inflammation (p < 0.05). Also, this would therefore be expected to reduce swelling.

Thus, the Bjordal, Chung, and Alves studies provide competent and reliable scientific evidence that LLLT has a beneficial effect in those with Plica syndrome, Osgood-Schlatter Disease, and Psoriatic Arthritis.