



## Treatment of Osteoarthritis of the Knee with a Combination of Autologous Conditioned Serum and Physiotherapy: A Two-Year Observational Study

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**Background:** Autologous conditioned serum (ACS) is an autologous blood product that has shown efficacy against knee osteoarthritis (OA) in randomized controlled trials. However, there are few reports of its effectiveness in everyday practice. Here, we report clinical efficacy results from a two-year prospective observational study of patients with highly symptomatic knee OA who received ACS in conjunction with physiotherapy.

**Methods:** 118 patients with unilateral knee OA (Kellgren-Lawrence grades I–IV), who were candidates for surgery but instead chose conservative treatment, were treated with a combination of four intra-articular injections of ACS (2 mL each) once weekly over four weeks and subsequent physiotherapy applied 4 weeks after ACS injection. Main endpoints of the study were pain (Numeric Rating Scale [NRS]) assessed at 0, 3, 6, 12 and 24 months, and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) global score, assessed at 0 and 24 months. The effect size (Cohen's *d*) was calculated for pain and WOMAC outcomes, with effect sizes >0.8 considered large.

**Results:** By 3 months, there were significant improvements in pain (NRS) from baseline (-63.0%,  $p < 0.001$ ), which were maintained over 24 months. Mean WOMAC global score was reduced at 24 months compared to baseline (-56.9%,  $p < 0.001$ ), as were WOMAC subscores of pain (-86.0%,  $p < 0.001$ ) and function (-51.3%,  $p < 0.001$ ). Effect sizes for pain (>5) and WOMAC improvement (8.0–13.6) were very large. Only one patient received total knee joint replacement during the study. Clinical improvement did not correlate with gender, age, Kellgren-Lawrence grade, or body mass index.

**Conclusion:** Treatment with ACS and physiotherapy produced a rapid decline in pain, which was sustained for the entire two years of the study. This was accompanied by a large improvement in WOMAC scores at two years. These results confirm that ACS combined with physiotherapy is an effective treatment for OA of the knee.