

ABSTRACT

INTRODUCTION: Frozen shoulder is a painful and disabling condition which typically progresses through three overlapping stages, with each stage having its particular dominant feature/s. No specific conservative treatment has been proven to be superior. There is some consensus on that the choice of treatment should align with the predominant symptomology of the relevant stage. Hydrotherapy has shown promising results in other conditions, however there is a dearth of research on its role in frozen shoulder. Geron Hydrotherapy is a novel, multimodal hydrotherapeutic approach which comprises of both active and passive components. This study evaluated the effects of Geron Hydrotherapy on pain, range of movement and function in patients with frozen shoulder and determined if there was a nexus between the effects of any of the outcomes measured and the stage of shoulder the participants were experiencing.

METHODS: This was a pre-test/post-test single cohort study (n=31). Participants of any gender with confirmed diagnosis (by an orthopaedic surgeon) of either type of frozen shoulder (primary or secondary) were eligible and participation was not restricted to any stage of frozen shoulder. Participants were referred predominantly by Orthopaedic surgeons. Each participant completed an information form to ensure eligibility for the study, but also to gain information with regard to age, gender, symptom duration, type of frozen shoulder and whether the participants had received any prior corticosteroid injections. Pain was measured using the Numerical Pain Rating Scale (NPRS), range of shoulder flexion, abduction and external rotation were measured using the DrGoniometer app and function was assessed using the Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire. All the participants completed the questionnaires themselves, and all ranges of movement were measured by a research assistant to limit bias. All outcomes were measured prior to undergoing treatment and after 6 weeks. The participants received a weekly 1-hour Geron Hydrotherapy session for a duration of 6 weeks.

RESULTS AND DISCUSSION: 64,52% of the participants were female and 35,48% were male. The mean age of the participants was 52 (SD = 12.2). The majority of the participants presented with primary frozen shoulder (64,52%). There were equal numbers of participants who were experiencing the freezing and thawing stages (34,48%), with the remainder of the participants (31,03%) experiencing the frozen stage. The mean improvement in the Numerical Pain Rating Scale (NPRS) score was 4,6 (SD = 2,03). The mean improvement in the shoulder ranges measured were: flexion 38,3° (SD = 16,8), abduction 39,5° (SD = 19,1) and external rotation 28,3° (SD = 14,5). There was a mean improvement in Disabilities of the Arm, Shoulder and Hand (DASH) scores of 35.59 (SD = 17,82). All results were statistically and clinically significant with a large effect size, with the lowest Cohen's d value being 1,10. The only outcome that correlated with stage was pain, in which participants in the freezing stage showed the least improvement in pain. There was difficulty in accurately comparing the results of this study with the results of the two available studies on the effects of hydrotherapy on frozen shoulder due to either different outcome measurement tools, insufficient statistical detail, differing dosages and periods between baseline and follow-up measurements.

CONCLUSION: Geron Hydrotherapy produced statistically and clinically significant improvements (with large effect sizes) in pain, range of movement and function in a single cohort of 31 participants with frozen shoulder. These findings support the potential for Geron Hydrotherapy to be a viable conservative treatment approach for frozen shoulder and potentially for other shoulder conditions that share similar symptomology. Further comparative trials would be required to confirm generalisability.

Keywords: frozen shoulder, aquatic therapy, aquatic exercise, Geron Hydrotherapy