

Comparative Effect of Telerehabilitation and Manual Physical Therapy in the Management of Shoulder Impingement Syndrome

ADNAN WASI¹, RABAB KAUR², HOORIYA AFSAR³

ABSTRACT

Introduction: Shoulder Impingement Syndrome (SIS) is one of the most prevalent causes of shoulder pain and functional dysfunction. While conventional manual physical therapy remains a cornerstone of conservative management, digital health infrastructure has introduced telerehabilitation as a highly flexible alternative. However, direct comparative evidence regarding their clinical efficacy in localised setups remains limited.

Aim: To evaluate and compare the clinical effectiveness of a structured telerehabilitation program versus conventional manual physical therapy on pain intensity and functional disability in patients with shoulder impingement syndrome.

Materials and Methods: A randomised comparative clinical trial enrolled 40 participants diagnosed with SIS (age 20-50 years; symptoms >4 weeks). Participants were randomly allocated into two equal groups (n=20 each): Group A (telerehabilitation) received a 6-week technology-assisted therapeutic exercise and scapular stabilisation protocol via online video conferencing, while Group B (manual physical therapy) received a 6-week in-person, hands-on joint and soft-tissue mobilisation protocol. All interventions were delivered over 6 weeks at a frequency of 3 sessions per week (approximately 45-60 minutes per session). The primary outcome measures were pain intensity assessed via the Numeric Pain Rating Scale (NPRS) and functional disability quantified via the Shoulder Pain and Disability Index (SPADI) percentage score. Data analysis was executed using paired and independent sample t-tests.

Results: Both groups demonstrated statistically highly significant within-group improvements ($p < 0.001$). Group A (n=20): Mean SPADI score decreased significantly from a baseline of $60.59 \pm 2.37\%$ to a post-intervention phase of $36.03 \pm 6.84\%$ (Cohen's $d = 4.86$), while the mean NPRS score dropped from 7.15 ± 0.75 to 3.10 ± 1.52 ($d = 3.39$). Group B (n=20): Mean SPADI score decreased significantly from a baseline of $60.46 \pm 2.29\%$ to a post-intervention phase of $36.68 \pm 7.36\%$ ($d = 4.39$), while the mean NPRS score dropped from 7.15 ± 0.75 to 3.05 ± 1.61 ($d = 3.25$). Crucially, inter-group independent sample t-tests revealed no statistically significant differences between the two modalities at the post-intervention phase for either the final SPADI ($p = 0.774$) or the final NPRS ($p = 0.920$), indicating equivalent clinical efficacy.

Conclusion: Both multimodal protocols produced clinically meaningful and statistically significant gains in pain alleviation and upper-limb function following 6 weeks of structured rehabilitation. The study demonstrates that structured telerehabilitation is clinically non-inferior and achieves functional recovery fully comparable to traditional, hands-on manual physical therapy. Remote digital delivery models represent a scientifically validated, accessible, and cost-effective paradigm for the conservative management of Shoulder Impingement Syndrome.

Keywords: Numerical pain rating scale, Post-intervention mean, Shoulder Pain and Disability Index.

PARTICULARS OF CONTRIBUTORS:

1. MPT Student, Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University, Noida, Uttar Pradesh, India.
2. Assistant Professor, Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University, Noida, Uttar Pradesh, India.
3. Physiotherapist, Balance and Move Physiotherapy Clinic, Zakir Nagar, New Delhi, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Rabab Kaur (PT),
Assistant Professor, Department of Physiotherapy, Amity Institute of Health Allied Sciences, Amity University, Sector-125, Noida-201313, Uttar Pradesh, India.
Email: rkaur4@amity.edu