

# Virtual Versus in-Person Physiotherapy Consultations Following Shoulder Pain

**Laran Chetty**

Senior Physiotherapist, Occupational Health and Wellbeing Centre, National Health Service, London, United Kingdom

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**ABSTRACT:** *The purpose of this evaluation was to analyse and compare the outcomes of virtual physiotherapy consultations versus in-person physiotherapy consultations following shoulder pain. The outcomes of 104 patients (49 virtual vs. 55 in-person) were reviewed. Shoulder function and pain scores were captured. Comparative analysis was performed using a two-tailed Student's t-test. Total number of physiotherapy sessions and patient satisfaction scores were also recorded. Both modes of consultations showed significant improvements in shoulder function and pain scores when analyse separately, and when compared virtual physiotherapy consultations led to significant improvements in shoulder function and in-person physiotherapy consultations led to significant improvements in pain scores. Future research should focus on randomised controlled trials to directly compare virtual physiotherapy consultations and in-person physiotherapy consultations to confirm the findings of this evaluation.*

**KEYWORDS:** virtual consultations, in-person consultations, physiotherapy, shoulder, pain

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## INTRODUCTION

Shoulder pain is estimated to be the third most common musculoskeletal presentation after low back pain and knee pain and generates high costs to society (Ager et al., 2020; Santello et al., 2020). The prognosis for people presenting with shoulder pain varies between individuals, however, it is estimated that on average 50% of people with shoulder pain will still report symptoms 6 months later (Hodgetts et al., 2021). The functional disability due to shoulder pain can impact work, social, hobbies and sporting activities (Chetty, 2011). Furthermore, shoulder pain may be associated with psychological distress and reduced quality of life (Ackerman et al., 2022).

The main purpose of physiotherapy intervention for shoulder pain is to reduce pain and improve function. Traditionally, physiotherapy has been conducted in-person because the evidence shows that the most important factors for treatment success and satisfaction is patient perceptions of the therapist and treatment, communication and interpersonal skills (Chetty, 2022). However, during the COVID-19 pandemic, safety measures and social distancing

guidelines necessitated virtual physiotherapy consultations. Virtual consultations offer several benefits compared to in-person consultations such as reduced exposure to healthcare environments, reduced travel costs for patients and greater access for remote communities to access care (Kilvert et al., 2020). However, it is important for physiotherapy services to understand from a local perspective if interventions can be delivered effectively through virtually consultations.

The purpose of this evaluation was therefore to evaluate the effectiveness of virtual physiotherapy consultations (2021-22) compared to in-person physiotherapy consultations (2022-23) by comparing pre- and post-outcome measurement scores. The specific objectives of this evaluation are:

- To evaluation the efficacy of the 2021-22 virtual physiotherapy consultations
- To evaluation the efficacy of the 2022-23 in-person physiotherapy consultations
- To compare the efficacy of the 2021-22 virtual physiotherapy consultations and the 2022-23 in-person physiotherapy consultations
- To evaluate the total number of physiotherapy sessions of both modes of consultations
- To evaluate the patient satisfaction scores of both modes of consultations.

## **METHODS**

A retrospective evaluation of the physiotherapy consultations at an NHS Trust in North London, United Kingdom, began in March 2024 and included from two cohort of patients from 2021-22 (virtual consultations) to 2022-23 (in-person consultations) using outcome measurement data collected previously by the physiotherapist leading the consultations.

### **Patients**

Patients that were referred to the physiotherapy clinic for shoulder pain during 2021-22 received virtual physiotherapy consultations due to the safety measures and social distancing guidelines necessitated by COVID-19. Patients that were referred to the physiotherapy clinic for shoulder pain during 2022-23 received in-person physiotherapy consultations when safety measures and social distancing guidelines were removed.

### **Data collection**

The outcome measurements used were shoulder flexion range-of-motion (ROM) and pain scores which were collected as part of routine clinical practice at the initial and final physiotherapy consultation by the physiotherapist leading the consultations. All patients were also required to complete a satisfaction questionnaire at their final physiotherapy consultation. The total number of physiotherapy consultations was also recorded.

All shoulder flexion ROM measurements reflect active ROM. Shoulder flexion was measured using a goniometer. The use of a goniometer to measure ROM has been demonstrated to be both reliable and valid (Kilber and Hanney, 2012). The procedure involved asking the patient, while in a seated position, to move their affected shoulder forwards and upwards as much as

they can comfortably, moving with one arm of the goniometer, while the other arm of the goniometer remained vertical and parallel with their torso. The angle at the hinge of the goniometer indicated the amount of flexion and was recorded in degrees. Virtually, shoulder flexion ROM was measured with a hand-held goniometer by the physiotherapist on the computer screen. Normal range of active movement of the shoulder has been reported to be 180° for flexion (Gill et al., 2020).

Pain scores were measured using a numeric pain rating scale (NPRS). The NPRS use numbers from 0 to 10. A score of 0 means no pain, 5 means moderate pain and 10 means the worst pain. This scale is both validated and reliable (Ferraz et al., 1990). All patients were required to complete a satisfaction survey at discharge. Satisfaction scores were measured using a numeric satisfaction rating scale. The numeric satisfaction rating scale use numbers from 1 to 5. A score of 1 means very dissatisfied and 5 means very satisfied. A satisfaction scale with a 1-5 numeric range is simple and quick to complete (Bayrak and Altun, 2020).

### Statistical analysis

Data were analysed using the Statistical Software for Excel package. The data within the consultation were analysed using a two-tailed paired t-test and between consultations were analysed using an independent t-test. The level of significance was considered at  $P < 0.05$ .

## RESULTS

A total of 49 patients completed the 2021-22 virtual physiotherapy consultations and 55 patients completed the 2022-23 in-person physiotherapy consultations. Tables 1 and 2 depict the demographic data of the respective consultations.

**Table 1:** Demographic data of the 2021-22 virtual physiotherapy consultations

Variables	<i>n</i> =49
Male/female/unknown (n)	28/15/6
Age (mean years)	46
Diagnosis - impingement (%)	100

**Table 2:** Demographic data of the 2022-23 in-person physiotherapy consultations

Variables	<i>n</i> =55
Male/female/unknown (n)	41/10/4
Age (mean years)	52
Diagnosis - impingement (%)	100

### **Evaluation of the efficacy of the 2021-22 virtual consultations**

There was an increase in initial shoulder flexion ( $124^{\circ}$ ) to final shoulder flexion ( $176^{\circ}$ ) representing a significant increase of  $52^{\circ}$  ( $P = 0.001$ ). Similarly, there was a significant improvement in NPRS scores from 3 (pre-consultation) to 8 (post-consultation) representing a mean change of 5 ( $P = 0.002$ ).

### **Evaluation of the efficacy of the 2022-23 in-person consultations**

There was an increase in initial shoulder flexion ( $132^{\circ}$ ) to final shoulder flexion ( $179^{\circ}$ ) representing a significant increase of  $47^{\circ}$  ( $P = 0.001$ ). Similarly, there was a significant improvement in NPRS scores from 2 (pre-consultation) to 9 (post-consultation) representing a mean change of 7 ( $P = 0.003$ ).

### **Comparison of the efficacy of the 2021-22 virtual consultations and the 2022-23 in-person consultations**

There was a significant difference in improvement of shoulder flexion between the 2021-22 virtual consultations and the 2022-23 in-person consultations ( $52^{\circ}$  vs.  $47^{\circ}$ ,  $P = 0.001$ ). Similarly, there was a significant difference in NPRS scores between the 2021-22 virtual consultations and 2022-23 in-person consultations (5 vs. 7,  $P = 0.004$ ).

### **Evaluation of the total number of physiotherapy sessions of both consultations**

There was a significant difference in the total number of physiotherapy sessions between the 2021-22 virtual consultations and the 2022-23 in-person consultations (4.4 vs. 5.9,  $P = 0.025$ ).

### **3.5 Evaluation of the patient satisfaction scores of both consultations**

For the 2021-22 virtual consultations, the mean satisfaction score was 91.3%, and for the 2022-23 in-person consultations the mean satisfaction score was 94.1%.

## **DISCUSSION**

The first objective of this evaluation was to evaluate the efficacy of the 2021-22 virtual physiotherapy consultations. The findings indicated that both shoulder function and pain scores improved significantly. Previous research has evaluated the role of virtual physiotherapy consultations in various settings, particularly during COVID-19, and was found to be both safe and effective (Cavagna et al, 2021; Chetty, 2012a; 2012b, 2022)

The second objective of this evaluation was to evaluate the efficacy of the 2022-23 in-person physiotherapy consultations. Similar to the virtual physiotherapy consultations, the findings indicated that both shoulder function and pain scores improved significantly. As both modes of consultations demonstrated improvements in pain and function, this begs the question as to which mode should be offered to patients. This led to the third objective of this evaluation which was to compare the efficacy of the 2021-22 virtual physiotherapy consultations and the 2022-23 in-person physiotherapy consultations. The findings indicated that virtual physiotherapy consultations led to significant improvements in function compared to in-person

physiotherapy consultations, and in-person physiotherapy consultations led to significant improvements in pain compared to in-person physiotherapy consultations. These findings are similar to a systematic review and meta-analysis of real-time telerehabilitation, for a range of musculoskeletal conditions, which demonstrated that telerehabilitation can provide significant improvements in physical function (Cottrell et al., 2017). Furthermore, patients attending in-person physiotherapy consultations usually receive hands-on treatment in the form of pain-relieving modalities, such as acupuncture, electrotherapy, heat therapy, cryotherapy etc., which can significantly impact pain scores.

Patients attended significantly more sessions of in-person physiotherapy consultations compared to virtual physiotherapy consultations. This possibly due to the additional sessions needed to deliver hands-on treatment provided with in-person physiotherapy consultations which cannot be recreated virtually. The patient satisfaction scores of both modes of consultations were high. Consistent with the literature, the patient satisfaction scores for virtual physiotherapy consultations were slightly higher when compared to in-person physiotherapy consultations (Chetty, 2022). This is because with in-person physiotherapy consultations clients faced inconveniences such as cost, travel, carer and childcare responsibilities and an increased risk of exposure to COVID-19 (Chetty, 2022). The strength of this evaluation was that it offers a pragmatic, real-time comparison of a physiotherapy programme which was implemented during the COVID-19 pandemic. The evaluation is limited because the data was collected at only one clinical site which limits generalisability.

## CONCLUSION

This evaluation compared virtual physiotherapy consultations with in-person physiotherapy consultations following shoulder pain. The evaluation showed that although both modes of consultations demonstrated improvements in pain and function, the virtual physiotherapy consultations demonstrated significantly more improvements in function, and the in-person physiotherapy consultations demonstrated significantly more improvements in function. Future research should focus on randomised controlled trials to directly compare virtual physiotherapy consultations and in-person physiotherapy consultations to confirm the findings of this evaluation.

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