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Effects of supervised versus non-supervised treatment in the frozen shoulder patients-reported functional pain, quality of life and performance-based function

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Abstract
Background: Shoulder joint has the greatest range of motion so shoulder instability, pain and stiffness occur most commonly after the injury, post diabetic complications, or immobilization.
Objective: The purpose of the study is to investigate the effect of supervised versus non- supervised treatment in the frozen shoulder patients reported functional pain, quality of life and performance- based function.
Study Design: comparative study.
Method: The study is comparative in nature, the total subjects were fifteen for each group. The assessment of pain and ROM were taken before starting the treatment of both the groups. The patients were randomly assigned by lottery method for both the groups, assessment were taken on 0 day and at the end of 3rd week by VAS, ROM by goniometer.
Result: The scores of variables VAS and ROM were improved significantly better in the subjects treated under the supervision of physical therapist.
Conclusion: The study concludes that the supervised treatment in frozen shoulder is more beneficial than the non-supervised treatment to improve the functional pain, quality of life and performance-based function.

Keywords: shoulder pain, frozen shoulder, adhesive capsulitis, functional exercises, range of motion, visual analog scale

Introduction

Design: Comparative study
Study setting: Ikon multispeciality hospital, Aurangabad.
Number of subjects
Thirty subjects between the age group of 38-45 years were taken.
Total number of subjects n=30 were divided based on random sampling and divided into two groups consisting of 15 subjects each and named as control group and experimental group. 15 subjects in group A were advised home exercise program for 20 mins and 15 subjects were treated with supervised exercise program in physiotherapy OPD.

Selection criteria
- **Inclusion criteria**
- Subjects between age of 38-45 years.
- Patients of both male and female sex.
- Diagnosed case of frozen shoulder.
- Patients who are willing to participate in the study.

Exclusion criteria
- History of no traumatic injury.
- Neurological Symptoms related to arm and hand.
- Patients who are contraindicated to exercise protocol.
- Patients with chronic instability of the joint.
- Patients who are having kinesthetics sensations.
- Patients with malignancy.
- Patients with chronic infections of the joint.

Outcome Measures
- Universal Goniometer
- Visual analog scale

Duration of Study
Three weeks

General Introduction about frozen shoulder
Frozen shoulder or adhesive capsulitis is the common shoulder condition characterized by pain and limited range of motion[1]. In this condition, patient typically demonstrate a characteristic history, clinical presentation and recovery[2].
Its etiology can be both primary and secondary to other conditions[3]. The literature indicates that the incidence of frozen shoulder is 2 to 5 % worldwide[4]. The prevalence among the diabetic's population and those sufferings from pathologies of thyroid gland esp. hypothyroidism increases as high as 10 to 38% [5]. The incidence among women is four-fold higher than in men[4].

Pathogenesis of frozen shoulder
Mechanism of development of frozen shoulder is accumulation of advanced glycation end products (AGE) in the shoulder which is associated with insulin resistance[6,7]. Frozen shoulder is characterized by the spontaneous onset of symptoms such as pain, stiffness and progressive loss of range of motion[8,9]. Data suggest about the recent studies using biopsies of patient with frozen shoulder have shown a chronic presence of immune cells i.e. macrophages, T and B lymphocytes in the affected shoulder. These pathological mechanisms appear to be responsible for the activation of fibroblast and deregulation in collagen synthesis in people suffering from frozen shoulder.
The cited data help to better understand the development of frozen shoulder and shows that progression has been made in regards to the knowledge of possible risk factors and underlying pathological mechanism causing frozen shoulder.

Aim of Study
The aim of the study is to investigate the effects of supervised physiotherapy treatment versus non – supervised physiotherapy treatment in frozen shoulder.

Methodology
Control group methodology
- Control group exercise session consisted of home program of duration of 20 min per session, 1 session per day and 5 session per week for total period of 3weeks.
- Before treatment hot fomentation and after exercises ice pack is advised[14-15].

Exercises
- Pendulum exercises
- Wand exercises
- Multiple angle isometrics with the help of wall slides
- Range of motion exercises

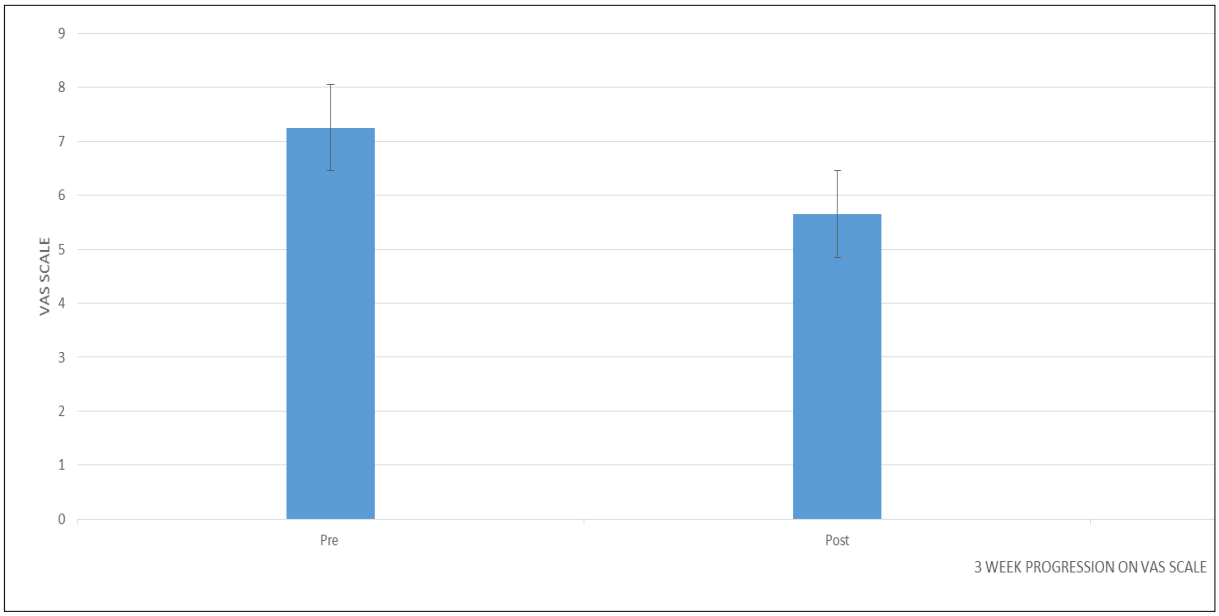
Experimental group methodology
- Experimental group exercises session consisted a duration of 20 min per session. 1 session per day and 5 sessions per week for a period of 3 weeks.

Exercises
- shoulder wheel
- shoulder pulley
- multiple angle isometrics
- range of motion exercises

Data Analysis
N= Number of patients
M= Median
S.D= Standard deviation

Table 1: Analysis of Pre-Post Data of Visual Analogue scale for home program

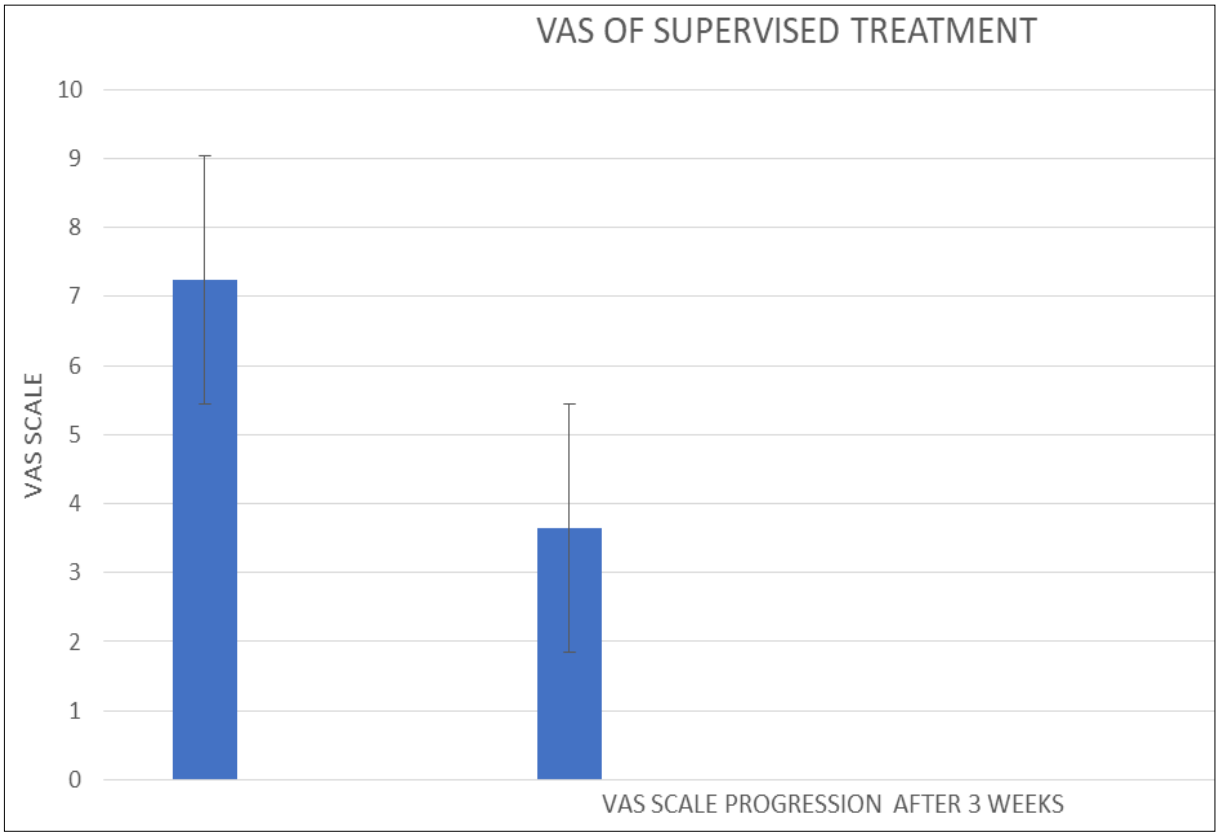
	Mean	Sandard Deviation	P value
Pre	7.25	1.07	0.031
Post	5.65	0.91	



Graph 1: Visual Analogue Scale of Home Program

Table 2: Analysis of visual analog scale on supervised treatment

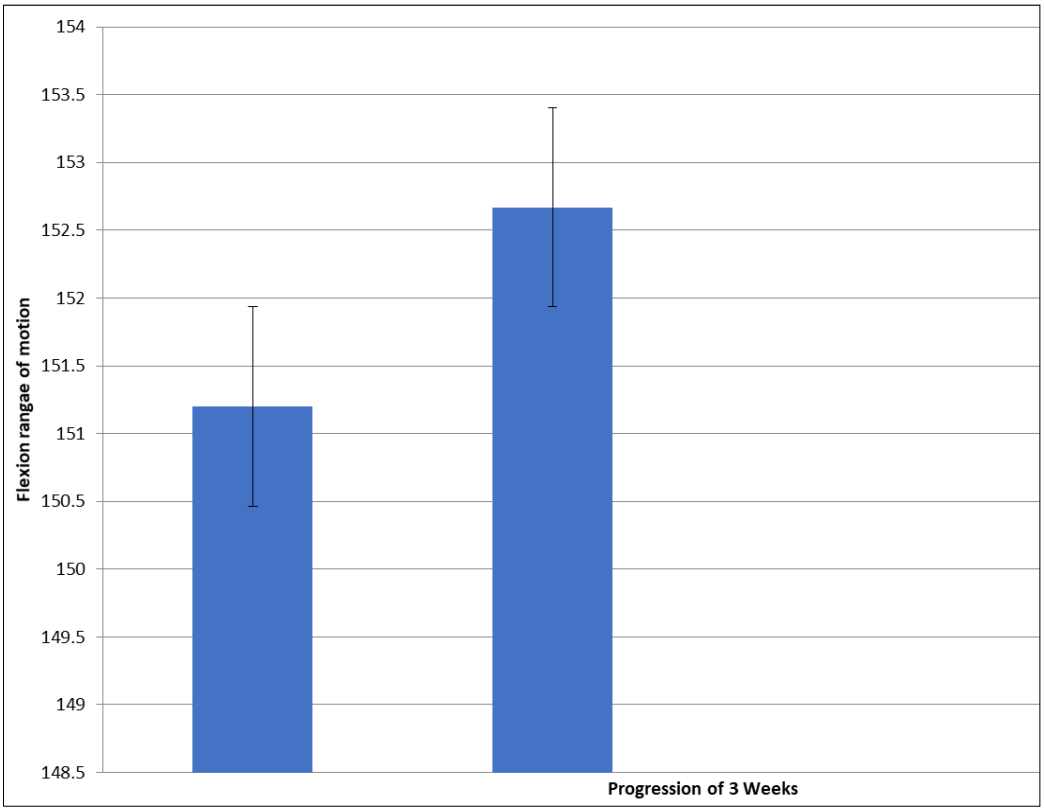
	Mean	Standard deviation	P value
Pre	7.25	1.07	0.001
Post	3.65	0.93	



Graph 2: Visual Analog Scale of supervised treatment

Table 3: Pre and post comparison of shoulder flexion ROM in control group

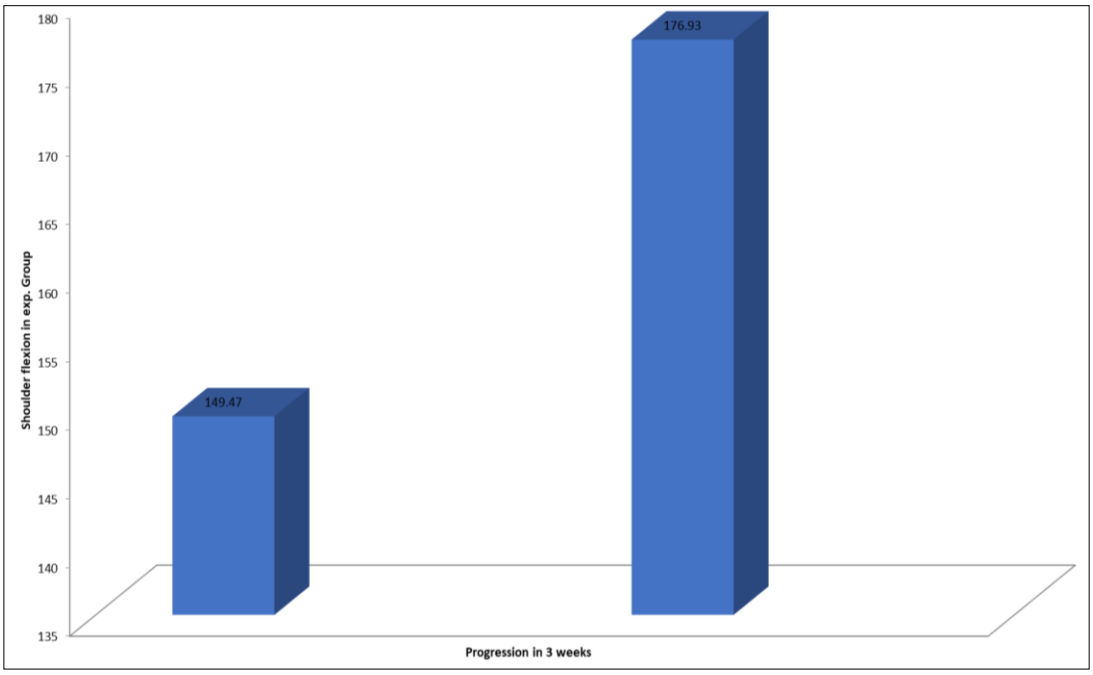
	M	S.D.	P value
Pre test	151.20	93.45	0.01
post test	152.267	88.38	



Graph 3: Pre and post-test comparison of shoulder flexion ROM in control group

Table 4: Pre and post comparison of Shoulder flexion ROM in experimental group

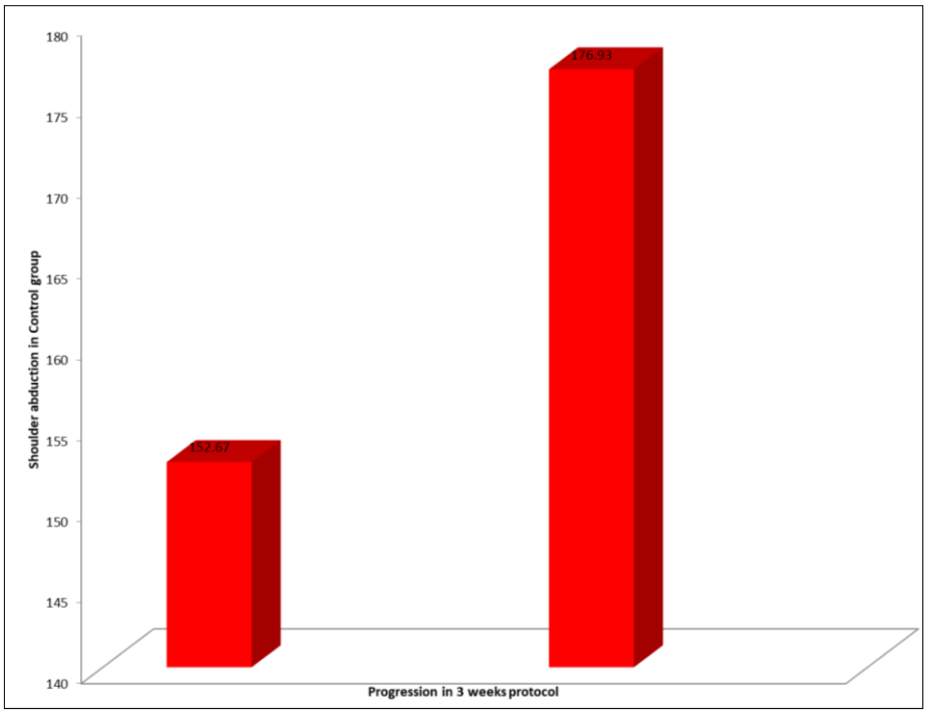
	N	M	S.D.	p value
Pre test	15	149.47	40.69	0.01
Post test	15	176.93	11.49	



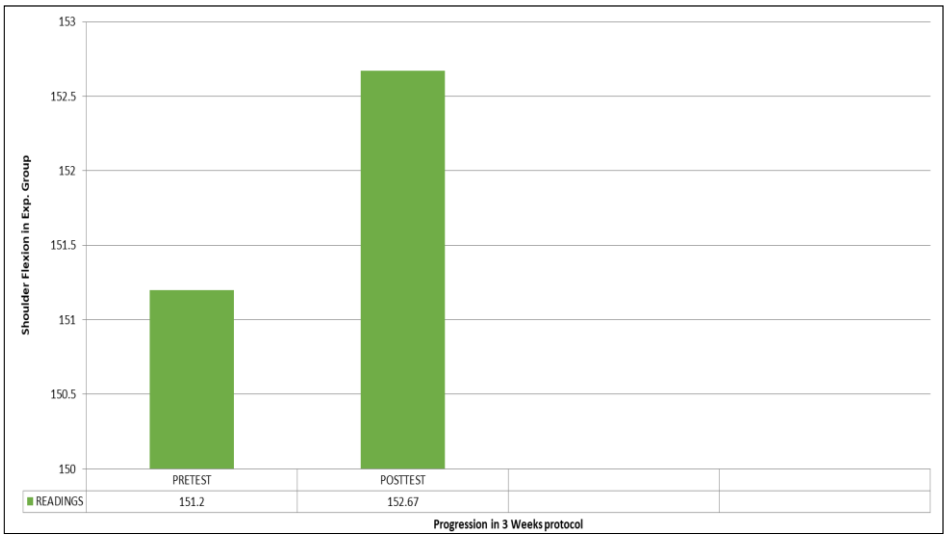
Graph 4: Pre and post comparison of Shoulder flexion ROM in experimental group

Table 5: Post comparison of shoulder flexion ROM between control and experimental groups

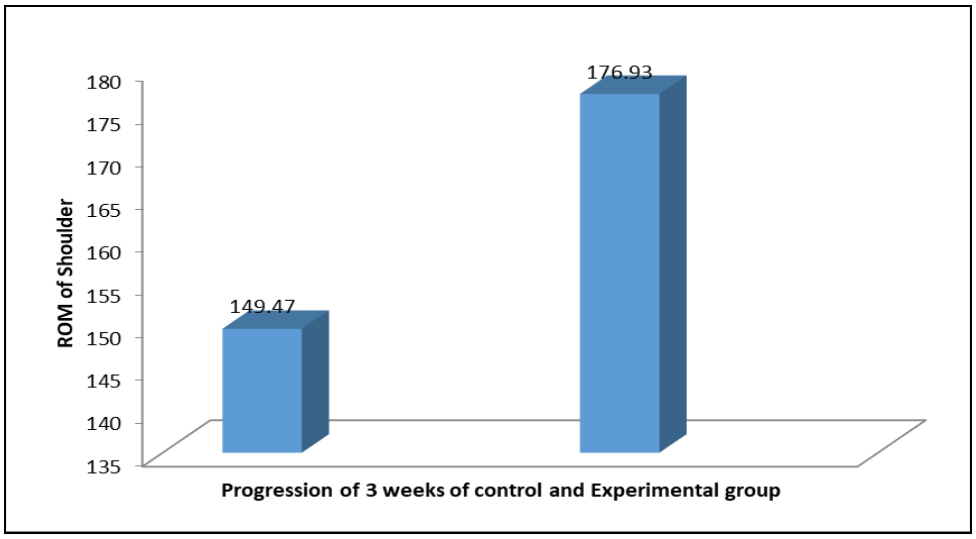
	N	M	S.D.	t value	p value
Post- test control group	15	152.67	88.38	16.14	0.01
Post –test experimental group	15	176.93	11.49	18.17	0.01



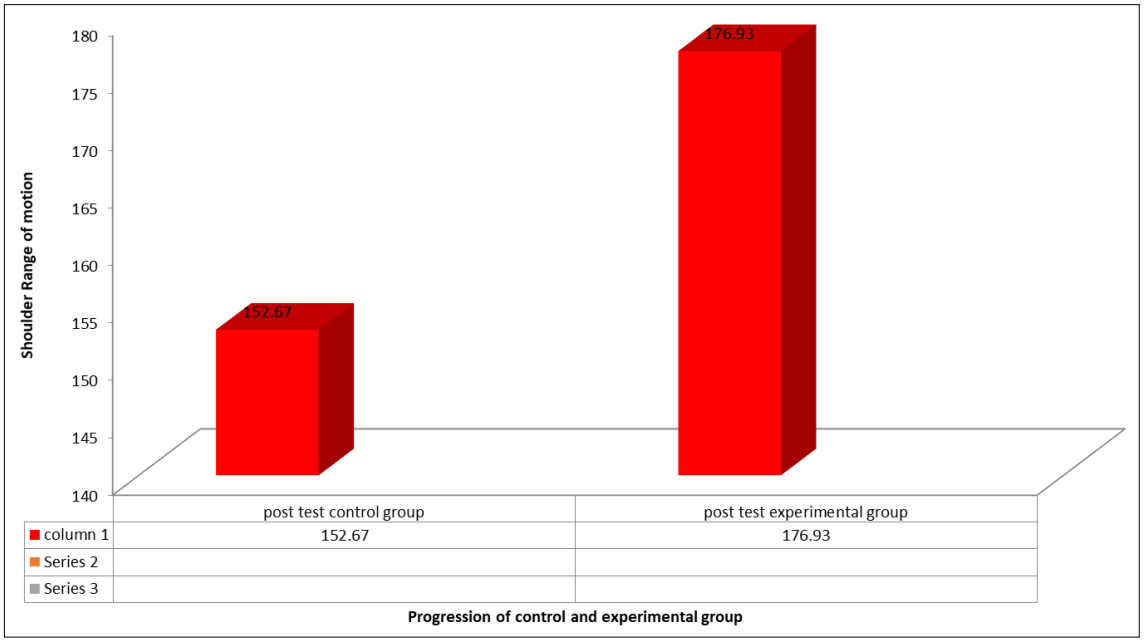
Graph 5: Pre and post test comparison of shoulder abduction ROM in control group



Graph 6: Pre and post comparison of Shoulder flexion ROM in experimental -group



Graph 7: Post comparison of Shoulder flexion ROM between control and experimental groups



Graph 8: Post comparison of Shoulder Abduction ROM between control and experimental groups

Conclusion

The study concludes that the supervised treatment in frozen shoulder is more beneficial than the non-supervised treatment to improve the functional pain, quality of life and performance – based function. The scores of variables VAS and ROM were improved significantly better in the subjects treated under the supervision of physical therapist.

Conflict of Interest

There is no conflict of Interest involved.

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