



EFFECT OF POSITIONAL RELEASE TECHNIQUE VERSUS DEEP TRANSVERS FRICTION MASSAGE ON RANGE OF MOTION AND QUALITY OF LIFE IN INDIVIDUAL WITH PLANTAR FASCIITIS ASSOCIATED WITH PROLONG STANDING OCCUPATION. – INTERVENTIONAL COMPARATIVE STUDY

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ABSTRACT

Approximately 90% of the workers had suffered from various degrees of work related Musculoskeletal pain in industries. This condition is commonly affecting a population who are working in prolonged standing if he/ she spent over fifty percent of the total working hours during a full work shift in standing position like Teachers, Construction workers, Cooks, Nurses, Military personnel, and Athletes

KEYWORDS : Non Specific Low Back Pain, Back school programme, Theraband, Ergonomics, Functional Disability

INTRODUCTION

Plantar fasciitis is a non-inflammatory degenerative condition of the plantar fascia resulting from repeated trauma at its origin on the calcaneus.^[1] Plantar fasciitis is one of the most common musculoskeletal pathologies of the foot and estimated to affect 10% of the population at some time in their life^[2]. Faulty mechanics of the foot due to structural abnormalities, age-related degenerative changes, overweight, training errors, and occupations involving prolonged standing are the responsible for the development of planter fasciitis. A worker is considered to be exposed to prolonged standing if he/ she spent over fifty percent of the total working hours during a full work shift in standing position^[3] like Teachers, Construction workers, Cooks, Nurses, Military personnel, and Athletes training for long distance running events those falling into this category.^[4,5,6,7]

The chief initial complaint is typically a sharp pain in the inner aspect of the heel and arch of the foot with the first few steps in the morning or after long periods of non-weight bearing. Pain in foot may reduces work efficiency as well affects various activities of daily living which further compromised their quality of life.

Various treatment options are available from Medicine to Physiotherapy. Physical therapy includes electrical modalities, soft tissue massage, night splints, orthotics, stretching, ice, heat, strengthening, rest, taping, silicon heel cups, stretching, myofascial release and positional release therapy^[8,9,10].

Positional release technique or strain counter strain technique (PRT or SCS) is PRT is the opposite of stretching.^[11] It is a technique proposed to increase muscle flexibility by placing the muscle in a shortened position to promote muscle relaxation in contrast to placing the muscle in a lengthened or stretched position. It is an indirect myofascial technique focused on the neurologic component of the neuro-vascular myofascial somatic dysfunction.^[12] DTFM is a technique that attempts to reduce abnormal fibrous adhesions and makes scar tissue more mobile in sub-acute and chronic inflammatory conditions by realigning the normal soft tissue fibres.^[13]

Both PRT and DTFM found separately to be effective in improving range of motion and quality of life in individuals with planter fasciitis. Thus we set out to examine which amongst these techniques is most effective. Therefore the purpose of the present study was to compare the effects of Positional Release Therapy and Deep Transverse Friction Massage on range of motion and quality of life in individuals with plantar fasciitis associated with prolong standing occupation.

MATERIALS AND METHODS

Sixty orthopedic Referred case of planter fasciitis were taken from Physiotherapy OPD at Parul Sevashram Hospital based on the inclusion criteria divided into 2 groups Group A (n=30), and Group B (n=30). Subjects presenting with heel pain which is worse in morning, clinically diagnosed patient with plantar fasciitis, Individual stands for more than 50 % of their working hours and Participants willing to receive treatment between the ages of 40-60 years were included. Subjects were excluded from the participation like foot infection like dermatitis, calcaneal spur, foot ulceration, history of hydrocortisone injection to the plantar fascia and an inability to understand instruction and a complete questionnaire. Informed consent & baseline Data were taken before giving Intervention. Ankle ROM was measured by Universal Goniometer. All four range of motion that is Planter flexion, Dorsiflexion, Inversion, Eversion were taken. Quality of life (QOL) was assessed by SF36 questionnaire.

Group A: Subject was given supine position, with foot outside the plinth. Therapist stands besides the foot. First the tender point was palpated over the planter fascia and then foot was placed in planter flexion. Continues pressure was given over the tender point until the subject feels maximum pain for 90 seconds. When pain sensitivity was reduced by 70%, the foot was placed back to starting position. This technique was given for 3 times/ sessions, 3 sessions / week. After 1 week Post intervention data were recorded.

Group B: Deep Transverse Friction Massage :- (1 week) the treatment area must be clean and dry before applying technique. Subject was given prone position with pillow placed below thigh region. The tender point was palpated with the use of thumb over the planter fascia with the foot placed in planter flexion. The transverse friction was applied across the fibres of fascia as much as subject can tolerate. This technique was given for 10 min/ session, 3 sessions / week. After 1 week Post intervention data were recorded.

RESULTS: Study design: A comparative study consisting of 57 subjects who randomized in to 2 groups, 30 subjects in Positional release therapy (PRT) group and 27 subjects in Deep transverse friction massage group. Paired t test was used to find the significance of parameters pre and post test. Unpaired t test was used for the comparing both the groups. Data were reported as a mean and standard deviation and Maximum values of variables were analysed by the statistical package for social science (SPSS) version 23.0 (IBM, Corporation)

TABLE-1: Baseline Characteristics Data

Groups	M	F	Age(Mean ± SD)
Group-A	10	20	48.60±6.57
Group-B	7	23	47.73±5.75

TABLE 2-Mean difference in Range of Motion within Group-A

With in Group A	Pre T		Post T		Test	P Value
	MEAN	SD	MEAN	SD		
DF	16.9	1.9	18.6	1.3	T=8.3	0.0001
PF	46.5	2.1	49.1	1.2	t 7.6	0.0001
IN	42.8	1.1	44.5	0.6	t-5.1	0.0001
ERV	23.6	0.9	25.2	1.1	t-6.3	0.0001

TABLE 3- Mean difference in ROM within Group-B

With in Group B	Pre T		Post T		Test	P Value
	Mean	SD	Mean	SD		
DF	17.6	1.7	18.7	1	T=6.3	0.0001
PF	47.1	1.4	48.9	0.8	t 6.8	0.0001
INV	43.5	1.1	44.6	0.7	t-7.1	0.0001
ERV	23.6	1	24.3	0.8	t-5.4	0.0001

TABLE 3 -Mean difference in PCS & MCS Score of SF-36 within Group-A & Group-B

Groups		Pre		Post		Test	P value
		Mean	SD	Mean	SD		
Group A	Pcs	37.83	2.7	40.7	3.4	t=5.85	<0.001
	Mcs	66.9	7.1	67.17	7.8	W=-46	0.11
Group B	Pcs	36.82	5.9	37.54	6.3	t=0.10	0091
	Mcs	57.69	8.4	57.83	8.4	0.36	0.72

DISCUSSION

Present study was aimed to compare the positional release technique and deep transverse friction massage on plantar fasciitis associated with prolongs standing occupation. Present study showed that Positional Release Technique and Deep Transverse Friction Massage both were equally effective for improving ankle range of motion. While, Positional Release technique was more significant to improve quality of life.

Group A suggested that positional release technique was effective for improving ankle joint range of motion and quality of life. Improvement in present study can be explained by study, done by Renu B. Pattan shetty et al (2015) who suggested that PRT Restricted movement may be due to hyperactivity of the myotic reflex arc, which is caused by excessive gamma gain. By positioning the patient's muscle in the position of ease for a short period of time, the gamma gain decreases, thereby allowing the hyperactive reflex arc to return to its original state and range of motion to increase.⁽¹⁴⁾ While Sweet yet. al (2014) also stated in their study PRT aims at removing restrictive barriers of movement from the body by decreasing protective muscle spasm, facial tension, joint hypomobility, pain, and swelling and increasing circulation and strength. As a result the patient begins to move more easily, with less pain and discomfort.⁽¹⁵⁾

Improvement in quality of life in present study can be explained by Carlos Alberto Kelencz et al suggested That PRT seems to relieve the muscle spasm and restore the appropriate painless movement and the tissue flexibility. With the reduction of pain, the treatment allowed the patients to move in an appropriate way in their daily life activities, and promoting the improvement of self-esteem. This may explain the reason for improvement in physical and mental component in quality of life.⁽¹⁶⁾

Group B suggested that deep transverse friction massage was also effective to improved range of motion. H. B Shivakumar suggested that Deep Transverse Friction causes traumatic hyperaemia which results in increased blood flow, decrease in pain and which encourages realignment and lengthening of these fibres ultimately improves range of motion. It also increases tissue perfusion and stimulates mechanoreceptors. So it might be the reason for improvement in range of motion.⁽¹⁷⁾

Group B was less effective to improve mental component as compare to physical component. Deep transverse friction massage results in the resets of sarcomere lengthening and

also helps in the proliferation of the fibroblast which thereby improves the soft tissue healing and realign the muscle fibres by offering the effective stretching and mobilization to the taut bands. DTFM take time to act as compared to PRT, as fibroblast proliferation will take time. So, here it might be the reason for improvement of PRT than DTFM.⁽¹⁸⁾

CONCLUSION

This study concluded that both the techniques were effective. Group A (Positional release technique) showed earlier improvement in range of motion & quality of life as compared to Group B (Deep transverse friction massage).

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