

A Comparative Study of Intermittent Lumbar Traction and Massage for Low Back Pain

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ABSTRACT In the present paper 40 patients who were referred to Centre for Excellence in Sports Physiotherapy of Guru Nanak Dev University, Amritsar and Physiotherapy Centre of Amritsar Sewa Samiti, Amritsar, for low back pain were taken into account as subjects. Intermittent lumbar traction and massage techniques were used as therapeutic means. Oswestry Disability Index (O.D.I.) was applied for the assessment of disability as it is an important component of the clinical evaluation of all musculoskeletal complaints. Lumbar traction was applied on 20 patients suffering from low back pain and significant differences were observed in regard to pain scores of O.D.I. before and after treatment ($P < 0.001$). Similarly, when massage technique was applied on other 20 patients with low back pain, significant difference was noted scores of O.D.I., before and after treatment ($P < 0.001$). Further the results showed highly significant differences ($P < 0.001$) in comparison to differences of pain scores in lumbar traction and massage. Though lumbar traction appears to be more effective, still it can be suggested that both the techniques are useful and may be applied simultaneously.

INTRODUCTION

Most people suffer incapacitating back pain at some point in their lives. On any given day, an estimated 6.5 million people in the United States are bed-ridden because of back pain and approximately 1.5 million new cases of back pain are seen by physicians each month. There has been growing concern about the low back disability in western society (Nachemson, 1976). In India occurrence of low back pain is also alarming, nearly 60 per cent of the people in India have significant back pain at some time or the other in their lives, (Suryapani, 1996). The lack of definitive diagnostic procedures in the past often made treatment of low back pain frustrating and unrewarding, but today, most patients with low back pain can return to active, normal lives applying several physical modalities.

Traction is technique in which a tractive

force is applied to a part of the body to stretch soft tissues and separate joint surface or bone fragments. Lumbar traction has been increasingly used in physical therapy for relief of acute and chronic low back pain (Judovich and Nobel, 1957; Erhard, 1983; Onel et al., 1989; Bridger et al., 1990; Beurskens et al., 1995 and Heijden et al., 1995). On the other hand, Dubrovsky (1983), Melzack et al. (1983) and Cafarelli (1990) opined that massage techniques were equally important in relieving low back pain. In the present paper an attempt has been made to compare the efficacy of these two modalities in relieving low back pain.

SUBJECTS AND METHODOLOGY

The subjects were 40 patients (16 males and 24 females) who were referred to Centre for Excellence in Sports Physiotherapy of Guru Nanak Dev University, Amritsar and Physiotherapy Centre of Sewa Samiti, Amritsar for treatment of low back pain. The average age of the patients was 32 years and the average duration of pain was 16 weeks. All the patients were ambulatory and were judged to be sufficiently intelligent to understand the instructions of the experiment.

The average time period of lumbar traction used in the patients was 20 minutes, half of the body weight and 7 seconds hold 4 seconds rest as described by Cyriax (1982). Deep friction massage technique established by Cynics and Russell (1980) were used in the present paper for superficial friction applied to the back by using the heel of the hand.

The Oswestry low back pain Disability Questionnaire (ODQ) was developed as a self-administrated questionnaire (Fairbank et al., 1980) to measure the disability. It was applied

before and after each treatment so that the percentage change in pain could be calculated. Standard statistical calculations were also made.

RESULTS AND DISCUSSION

Comparisons of scores of Oswestry Disability Index between lumbar traction and massage in patients with low back pain are shown in table 1. Before treatment, mean score of ODI was noted 57.22 in case of lumbar traction and after treatment it was 16.00. Statistically highly significant difference ($P<0.001$) was observed in before and after treatment with lumbar traction. In case of massage, mean score of ODI as 46.67 in before treatment and 20.00 in after treatment. Here, too, highly significant differences ($P<0.001$) was found in before and after treatment with massage.

Table 1: Comparison of scores of Oswestry Disability Index between lumbar traction and massage in patients with low back pain

Treatment group	Before treatment		After treatment		t' value
	Mean	S.D.	Mean	S.D.	
Lumbar traction	57.22	22.48	16.00	8.90	7.63*
Massage	46.67	17.69	20.00	9.86	5.89*

* indicates $P<0.001$

noted in travelling section and minimum decreases of pain scores (140.00% and 85.00%, respectively), were found in sleeping section. Decrease of pain scores in other sections fall within this range.

Table 3 shows the comparisons of differences of pain scores in lumbar traction and massage. The differences of pain scores for nine sections were pooled in this table. Lumbar traction has the mean differences 41.56 and massage has the mean differences 27.56. Highly significant difference ($P<0.001$) was found in lumbar traction and massage in regard to differences of pain scores.

Comparisons of differences of pain scores in nine individual sectional between lumbar traction and massage are given in table 4. Significant differences ($P<0.05$) have been observed in section walking, standing and travelling (t-values 2.06, 3.25 and 3.31, respectively). In section pain, personal care, lifting, sitting, sleeping and social life, the differences were non-significant statistically.

Table 3: Comparison of differences of pain scores in lumbar traction and massage

Treatment group	Section	Mean	S.D.	t' value
Lumbar traction	9	41.56	7.33	
Massage	9	27.56	6.67	4.24*

* indicates $P<0.001$

Table 2: Percentage decreases in pain scores of nine sections in lumbar traction and massage

Section	Lumbar traction					Massage				
	B.T.		A.T.		% decrease	B.T.		A.T.		% decrease
	Abs.	Mean	Abs.	Mean		Abs.	Mean	Abs.	Mean	
Pain	63	3.15	14	0.70	245.00	56	2.80	17	0.85	195.0
Personal care	47	2.35	10	0.50	185.00	42	2.10	12	0.60	150.0
Lifting	56	2.35	18	0.90	190.00	45	2.25	18	0.90	135.0
Walking	56	2.80	19	0.95	185.00	36	1.80	15	0.75	105.0
Sitting	67	3.35	25	1.25	210.00	70	3.50	41	2.05	145.0
Standing	64	3.20	20	1.00	220.00	49	2.45	26	1.30	115.0
Sleeping	36	1.80	8	0.40	140.00	28	1.40	11	0.55	85.0
Social life	60	3.00	12	0.60	240.00	49	2.45	15	0.75	170.0
Travelling	65	3.25	14	0.70	225.00	44	2.20	16	0.80	240.0

B.T. Before Treatment A.T. After Treatment

In table 2 percentage decreases in pain scores of nine sections by lumbar traction and massage is given. Both in lumbar traction and massage, maximum decreases in pain scores (255.00% and 240.00%, respectively), were

In table 5 changing degree of pain (after treatment) in lumbar traction and massage is shown. In lumbar traction maximum frequency (40.00%) of patients was found in values 0.00 and 2.00 and in massage frequency (45.00%)

Table 4: Comparison of differences of pain scores in nine individual sections between lumbar traction and massage

Section	Treatment group	Mean	S.D.	t' value
Pain	Lumbar traction	2.60	1.23	1.49
	Massage	2.10	0.85	
Personal	Lumbar traction	1.85	1.27	0.95
	Care Massage	1.50	1.05	
Lifting	Lumbar traction	2.00	1.45	1.75
	Massage	1.35	0.81	
Walking	Lumbar traction	1.85	1.39	2.06*
	Massage	1.05	1.05	
Sitting	Lumbar traction	2.10	1.45	1.71
	Massage	1.45	0.89	
Standing	Lumbar traction	2.20	1.15	3.25*
	Massage	1.15	0.87	
Sleeping	Lumbar traction	1.40	1.39	1.59
	Massage	0.85	0.67	
Social Life	Lumbar traction	2.40	1.35	1.78
	Massage	1.70	1.31	
Travelling	Lumbar traction	2.55	1.19	3.31*
	Massage	1.40	0.99	

* indicates P<0.05

Table 5: Changing degree of pain (after treatment) in lumbar traction and massage

Treatment group	Value	Frequency	Per cent	Valid	Cum
Lumbar traction	0.00	8	40.00	40.00	40.00
	1.00	3	15.00	15.00	45.00
	2.00	8	40.00	40.00	95.00
	3.00	1	5.00	5.00	100.00
Total		20	100.00	100.00	
Massage	0.00	2	10.00	10.00	10.00
	1.00	9	45.00	45.00	55.00
	2.00	9	45.00	45.00	100.00
Total		20	100.00	100.00	

was observed in values 1.00 and 2.00. The results showed that both lumbar traction and massage were effective for relieving pain in patients with low back pain, though lumbar traction showed greater effectiveness ($t=7.63$), than massage ($t=5.89$) when scores of ODI were compared before and after treatment. Percentage dif-

ferences in pain scores of nine sections further showed more effectiveness in favour of lumbar traction (mean =41.56), than massage (mean =27.56) specially in the section of walking, standing and travelling.

It may be concluded that both lumbar traction and massage can be applied simultaneously for relieving pain in patients with low back pain.

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