



ROLE OF YOGA PRACTICE AND LIFE STYLE MODIFICATION IN OSTEOPOROSIS

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ABSTRACT

Osteoporosis literally means 'porous bones'. Bones become less dense, lose strength and break more easily. Most people don't realize that they have osteoporosis until a fracture happens, as there are usually very few signs and symptoms. Many times calcium and other tablets also cannot give result to the patient, because the physiology is disturbed and absorption of these things doesn't take place. At this stage some Yoga practice and lifestyle modification plays an important role to relieve symptoms like low back ache, joint pain etc. The line of treatment is to correct bone mineralization process, to provide nourishment to the bone, to start regeneration process in the bones.

This can be possible by certain Yoga practice. Also lifestyle changes like Stop smoking – smokers have lower bone density than non-smokers. Get some sun – exposure to allow enough vitamin D production. For alcoholic persons; drink alcohol in moderation – excessive alcohol consumption increases the risk of osteoporosis. Limit caffeinated drinks – excessive caffeine can affect the amount of calcium that our body absorbs. Thus Yoga practice and modification of life style helps in the improvement of bone physiology and prevent osteoporosis.

Context

Yoga means excellence at work. If we work with elegance, fortitude and skill our body-mind-soul will co-operate with our hand. Regular Yoga practice improves our bony strength, bone mineralization and bone density. Therefore it improves the bone mineral density in Osteoporosis.

KEYWORDS: Osteoporosis, Yoga practice.

Key Message

The day today life of the people become so busy and hectic, either they go to work or doing house hold work. Also the changing lifestyle hampers the bone health. Therefore only taking the medicines for bone mineralization is not enough as they may create some complication like stone formation, calcification etc. in later life. Hence yoga practice is better for strengthening bone.

INTRODUCTION

Orthopedic branch deal with mechanical failure of the body from age related or trauma. In which one of the important metabolic bone disease is Osteoporosis. This study is concern to be correction of bone mineralization, to provide nourishment of the bone, and to start regeneration process in the bone. The number of people affected by Osteoporosis has become more significant worldwide; it is now recorded by WHO as one of the 10 most serious global diseases.^[1] The prevalence rate of Osteoporosis at a given time will probably rise within 23.7 million in 2000 to 37.3 million in 2050.^[2] International Osteoporosis Foundation (IOF) estimated that the number of osteoporosis patients in India was approximately 26 million in 2003, would rise to 36 million patients by 2013.^[3] Now, in 2013, 50 million people in India are either osteoporotic (T-score lower than -2.5) or have low bone mass (T-score between -1.0 and -2.5).^[4] Many times calcium and other tablets also cannot give result to the patient, because the physiology is disturbed and absorption of these things doesn't take place. At this stage some Yoga practice and lifestyle modification plays an important role to relieve symptoms.

Aims and Objectives

1. To study the probable mode of action of Yoga practice in Osteoporosis.
2. To study the effect of Yoga practice and lifestyle modification in osteoporosis.

MATERIALS AND METHODS**A. Criteria for selection****1. Inclusive criteria**

- 1) Age: 40- 60 years.
- 2) Sex: Both male and female.
- 3) Patients with low back ache.
- 4) Bone mineral density t score < or = - 2.5.

2. Exclusive criteria

- 1) Patients having any congenital bone disease.
- 2) Patients having tuberculosis, endocrinal disease, any malignancies, bone tumor, other metabolic bone disease.
- 3) New and old fracture of any bone.
- 4) Patients immediately require any surgical or medicinal interventions for their bone and joint disease.
- 5) Patients having severe acute low back ache.
- 6) ANC and PNC female.

3. Withdrawal criteria

- 1) If any patient is failed to give further follow up during the study.
- 2) If any adverse reaction occurs then subject was taken out from the study.
- 3) Any complication arises during the clinical trial, the complications were treated and the volunteers were withdrawal from study.

B. Selection of The Participants

All the participants included in the Study were selected from 35 days free yoga camp organized by *Yoga-vidyadham* branch. The participants were advised the common Yoga protocol:

1. Initially for 10min. warm up like neck movements, trunk movements, shoulder and knee movements etc.
2. Yoga practice in supine position- *Pavanmuktasana*, *Dwi-pduttanpadasan* -2min.each
3. Yoga practice in prone position- *Bhujangasana*, *Shalabhasana* - 2min.each
4. Each *Aasana* followed by 1 min. *shavasana*.
5. Finally mantra of peace and harmony.
6. Also patient told about life style modification as- for smokers and alcoholic patients stop smoking and alcohol respectively.
7. Get some sun exposure 15 min daily.
8. Avoid night awakens and day sleeping and caffeine drinks.

C. Methodology

1. Group – one.
2. No. of Patient- 30.
3. Duration- 35 days for 30 min. Early morning between 6:30am-7am.

4. Follow up- daily.
5. Diet do's- Rich with green leafy vegetables, milk.
6. Avoid- Spicy, sore food, caffeine drinks, alcohol, smoking, day sleeping, night awakens.

D. Parameters for Assessment

I) Scoring pattern for Osteoporosis

1. Objective parameter

Bone Mineral Density (B.M.D).

t-score (WHO criteria for assessing osteoporosis.)

- a) Normal - t score > -1 = Grade **0**.
- b) Osteopenia - t score between -1 to -2.5 = Grade **1**.
- c) Osteoporosis - t score $< \text{or} = -2.5$ = Grade **2**.
- d) Severe osteoporosis - t score < -2.5 with one or more fragility Fractures= Grade **3**.

2 . Subjective parameter: Results of the treatment can be assessed on the basis of relief in Symptoms of bone degeneration, most commonly at lower back

Low back ache

- a) No backache = Grade 0.
- b) Occasionally = Grade 1.
- c) Relieves by medicine = Grade 2.
- d) Dependent on painkiller = Grade 3.

Note: Visual Analogue Scale may be used to assess the severity of pain.

RESULT

The bone mineral density increases significantly from -2.5 ± 1 ($p=0.001$) after practicing Yoga and lifestyle modification. Also the participants get remarkable relief from subjective parameter like low back ache.

Tables and Figures

Table No. 1:

	Category	Symptom	Score
1)	No pain	No complaints of pain	0
2)	Mild pain	Pain complaints but bear pain	1
3)	Moderate pain	Patient complaints pain bear up to some extent	2
4)	Severe pain	Unbearable pain	3

*VRS (Verbal Rating Scale)

Table No. 2:

	Category	NRS Marking	Score
1)	No pain	0	0
2)	Mild pain	1-3	1
3)	Moderate pain	4-6	2
4)	Severe pain	7-10	3

†NRS (Numerical Rating Scale)

Patient asks to make marking over this scale according to severity pain.

Table No. 3:

Category	Score	BT		AT	
		No. of Patients	%	No. of Patients	%
No pain	0	0	0 %	21	70 %
Mild pain	1	0	0 %	09	30%
Moderate pain	2	19	63.33 %	0	0 %
Severe pain	3	11	36.67 %	0	0%

Effect of Therapy on VRS PAIN SCORE * $p < 0.05$

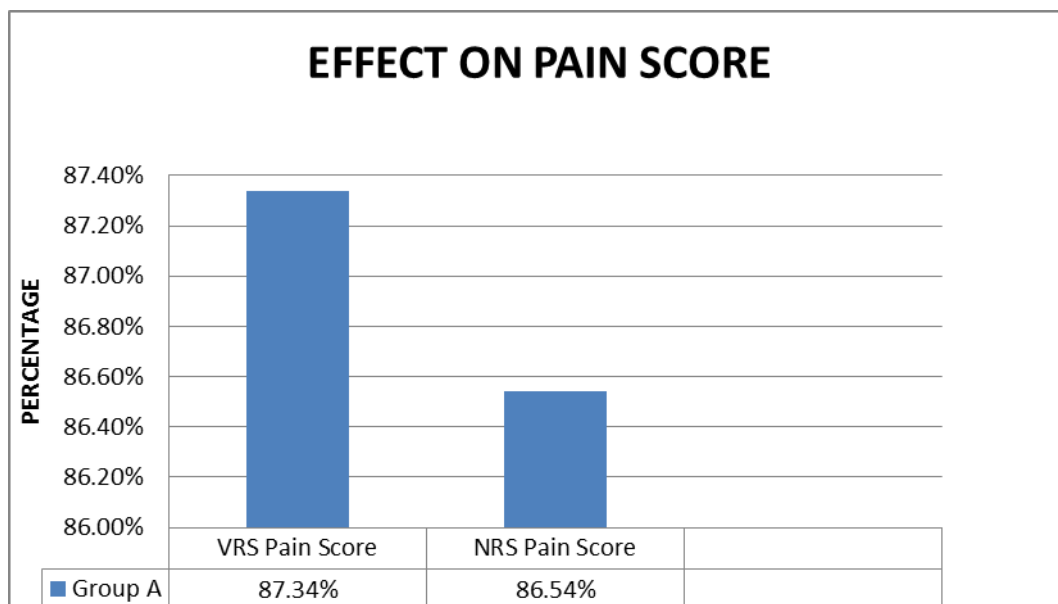
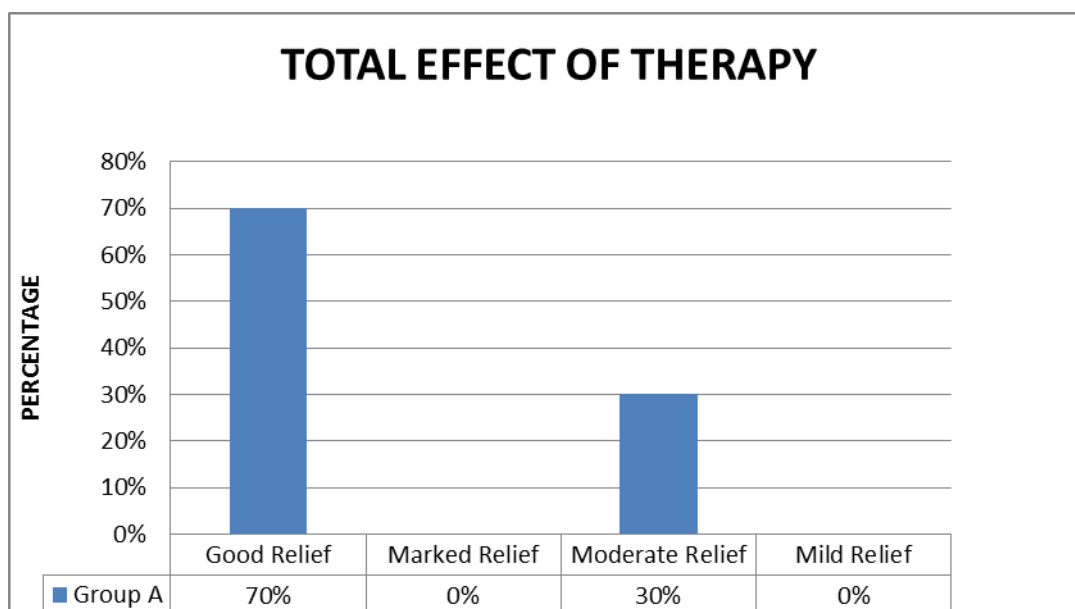
Table No. 4:

Category	Score	BT		AT	
		No. of Patients	%	No. of Patients	%
No pain	0	0	0 %	21	70 %
Mild pain	1	0	0 %	09	30 %
Moderate pain	2	23	76.67 %	0	0 %
Severe pain	3	07	23.33 %	0	0%

Effect of Therapy on NRS PAIN SCORE * $p < 0.05$

Table No. 5:

Sr. No.	Total effect		
		No. of Patients	%
1	Good Relief	21	70 %
2	Marked Relief	0	0 %
3	Moderate Relief	9	30 %
4	Mild Relief	0	0 %

Total Effect of Therapy**Figure no. 1:****Figure no. 2:****DISCUSSION**

1. The Yoga practice in prone and supine positions increases blood supply of the entire abdominal organs i.e. intestine, pancreas, liver ect. That improves the metabolic function of the body, improves the gut absorption of various minerals like calcium, magnesium and many more which are helpful in bone mineralization.
2. Due to increase blood supply to the liver, synthesis of vitamins A, D, E, K become

smoothly. Vitamin D helpful in absorption of calcium in the bone and improves the bone density.

3. The Yoga practice *in* prone and supine positions increase the flexibility of vertebral column, increase blood supply to para spinal muscles and prevent its spasm. Decreases the stiffness of vertebral column and also backache.
4. Also life style modification like Stop smoking – smokers have lower bone density than nonsmokers. Get some sun –allow enough vitamin D production. For alcoholic persons; no alcohol – excessive alcohol consumption increases the risk of osteoporosis. Limit caffeinated drinks – excessive caffeine can affect the amount of calcium that our body absorbs.

CONCLUSION

1. From the observations it is concluded that in this 21 participants out of 30 i.e. 70% get good relief from low back ache after completion of therapy. 09 numbers of patients i.e. 30% get moderate relief.
2. Thus Yoga practice and modification of life style helps in the improvement of bone physiology and prevent osteoporosis.

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