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Original Research Article

AN INTEGRATED APPROACH OF RESEARCH THROUGH YOGA, NATUROPATHY, HEALING AND PHYSIOTHERAPY IN REDUCING PAIN AND IMPROVING FUNCTIONAL STATUS OF OSTEOARTHRITIS PATIENTS IN EFFICIENTLY AND SAFELY.

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Abstract: Osteoarthritis of Knees (OA Knees) also known as degenerative arthritis or degenerative joint disease is a group of mechanical abnormalities involving degradation of joints, including particular cartilage and subchondral bone. The aim of the study focuses on reduction of symptoms and increase in functional activities of elderly patients with osteoarthritis of knees before and after modalities of yoga, naturopathy and physiotherapy. A total 53 patients were recruited .All human participants were treated on Yoga, Healing, Naturopathy, Physiotherapy and diet control. The study parameters were assessed at baseline and at 12th month follow-up. Results found in this study shows an *improvement in pain*, *50 foot walk test*, *morning stiffness*, *swelling*, *SF-12*, *Vitamin D3 level*, *MMT and ROM* after taking one year Yoga, Naturopathy and Physiotherapy Healing treatment with diet control . In conclusion, a combined package of Yoga, Naturopathy and Physiotherapy with diet control is found to be effective in reducing pain, facilitating improvement in functional status of elderly people suffering from Osteoarthritis of Knees.

Keywords: Osteoarthritis of Knees, Yoga, Naturopathy, Physiotherapy, Healing

1. **Introduction –**Osteoarthritis (OA) is considered to be the most common form of arthritis in a large number of people older than 60 years. This results in structural and functional failure of synovial joints. The clinical features of OA include joint pain with limited activity, morning stiffness, restricted motion, joint credits, particular tenderness, bony swelling and functional disability. Knee OA is more commonly associated with disability than OA of any other joint. Risk factors of OA of the knee include older age, females, obesity, osteoporosis, occupation, sports activities,

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previous trauma, muscle weakness or dysfunction and genetic factors. Osteoarthritis of the hip or knee is particularly disabling activities because it limits ambulation, but the affliction also strikes the hands, the spine and the feet with the same destructive joint process. The end point of the OA disease process is total loss of joint cartilage in the affected area and the need for joint replacement. Recent studies have focused on etiological factors and separated them into three main subgroups: sex, anatomy and body mass. The clinical manifestations of OA knees include joint pain, stiffness, decreased range of joint movement, weakness of the quadriceps muscle and alterations in proprioception. Decreased strength in the joint muscle significantly causes a progressive loss of function. These symptoms restrict an individual's ability to get up from a chair, walk or climb stairs .There is indication that muscle dysfunction is involved in the pathogenesis of knee OA.

Globally, OA is the eighth leading cause of disability and Knee OA is more commonly associated with disability than OA of any other joint. OA is affecting quality of life extensively with increase in mood impairment, sleep disturbance, co morbid diseases, and risk for falls and substantial economic and health care burdens. Till now, there is no cure for OA, as it is extremely difficult to restore the lost cartilage. The aim of treatment is to reduce pain, improve joint mobility, increase the muscle strength of the joints and minimize the disabling effects of the disease. The WHO Scientific Group on Rheumatic Diseases estimates that 10% of the world's population who are 60 years or older have significant clinical problems that can be attributed to OA. Worldwide prevalence rate of OA is 20% for men, 41% for women; however, in India overall prevalence of OA is 22-39%. The purpose of the present study was to assess the effect of Yoga, Naturopathy and Physiotherapy with diet control in reducing pain and improving functional status in patients with OA of Knees. Recent studies show that mind-body therapies may alleviate the symptoms associated with OA of Knees. There is growing evidence which suggest that meditative practices can decrease pain, reduce other distressful symptoms, and enhance both physical and physiological functions in a broad range of populations.

It is increasingly recognized that in complex and personal health practices based on ancient Indian traditions Yoga is a form of mind-body fitness that involves a combination of poses, breathing techniques and meditation which can reduce pain and stiffness associated with OA by realigning the skeletal structure, strengthening muscles around the joints and stretching tight joint structures . It is believed that frequent joint motion during yoga practices has physiological effects at the cellular level. Massage therapy may reduce symptoms and improve the course of OA by increasing local circulation to the affected joint, musculature improvement, increasing joint flexibility and relieving pain. Massage therapy has been found to be effective after evaluating for various painful musculoskeletal conditions. So far, no study has specifically evaluated the effectiveness of massage therapy for OA knees. Unfortunately, medications used to control OA pain have significant side-effects in older adults which increase the health risk extensively. The Yoga, Natural Healing, Naturopathy and Physiotherapy supported by diet control are safe and feasible self-manageable interventions that will help in improving their quality of life by making it a part of their daily living. The practice of Naturopathy, Healing, Yoga and Physiotherapy may play an important role in reducing stress and frustration that results from pain and disability by increasing positive

feelings and wellbeing. Present study aimed that combined application of Healing, Yoga, Naturopathy, Diet and Physiotherapy may provide physical and psychological health benefits for OA of knees patients. Hospital and about the parameters to be investigated during the study period.

Objectives:

I) To ameliorate the clinical features of Osteoarthritis and increase the work ability.

II) To minimize the periodic Age fluctuation of the disease.

III) To assess the effect of the Combined application of Yoga management in the Osteoarthritis

Methodology: Present study was conducted at Science, Research and Development section of PSD. The patients were selected from the OPD of the Population and Social Development for Yoga Naturopathy Education and Research, Durgapur, Bardhaman, West Bengal. All patients were more than 60 years of age. Adequate counseling was carried out for the disease awareness as well as about the study trial. Eligible patients were recruited after taking consent according to the inclusion and exclusion criteria as per American College of Osteoarthritis Association guidelines. The total period of recruitment of patients was 12 months.

I) Inclusion criteria –

 Patients belonging to the age groups 18 to 60 years (both genders)

 The patients fulfilled the clinical features of Osteoarthritis.

II) Exclusion criteria

 Rheumatoid arthritis, Rheumatic arthritis, Septic arthritis, Gouty arthritis, Psoriatic arthritis, Traumatic arthritis, SLE (Systemic lupus erythematosus).

 Diabetes Mellitus, Hypertension, Tuberculosis, Thyroid disorders, Cardiac problems, renal problems, Liver problems, HIV and any Malignancy.

 Without application of Pharmacology.

Design of the study: This was a Case Control study in which Yoga, Healing, Naturopathy and Physiotherapy treatments were provided to the intervention group twice in a week for first 4 months and once in a week for next 8 months. The total number of visits by a patient in one year follow-up was 53. Medicines provided to the control group were called once in a month for one year follow-up. The study parameters i.e. Symptoms score (morning stiffness, joint pain, swelling), Physical examination using manual muscle testing (MMT), Range of Motion (ROM), 50 foot walk test, functional status by using SF-12 and Serum Vitamin D3 level were assessed at baseline and at 12th month follow-up.

Randomization – A total number of **53** (Male-38 and Female- 15) patients were recruited from different localities and different ethnic group. These patients were observed randomly into one Group. Group was observed through Healing and therapy i.e. Yoga, Naturopathy, Physiotherapy and diet control. Before starting the trial, intensive counseling was done to educate them about the disease and its risk factors, about the benefits of the treatment of Yoga, Naturopathy, Physiotherapy and diet control, X-ray, number of treatment visits to the Hospital and about the parameters to be investigated during the study period.

Treatment: Yoga & Naturopathy modalities with Physiotherapy modules were provided to the intervention group not only to control the disease but also to maintain the healthiness and fitness. Apart from baseline investigations, intensive information, education and counseling have been done about the disease and the benefit of above treatment was given to all the patients. They were also explained about the factors responsible for the causation of the disease and how it affects different systems of the body. The total treatment duration of yoga, naturopathy and physiotherapy was 1 hour and 11 minutes per sitting21 seating for 12 months.

Yoga Duration of Yoga practices was for 15 minutes. The expected benefits of yoga on such diseases are to reduce inflammation, joint

stiffness, and joint pain and to increase the range of motion and blood circulation.

Yoga therapies

1) Tadasana
2) Utakatasana
3) Konasana
4) Uttanpadasana
5) Salabhasana
6) Nadi Shodhana Pranayama
7) Brahmari Pranayama

Naturopathy treatments Duration of Naturopathy treatment was for 33 minutes. Following are the treatments:

1) Leg Massage (15 mins)

Massage is a therapeutic manoeuvre which is skillfully applied to the joint muscles of the knees and other parts of the legs. Massage promotes:

i. Nourishment and development of the muscles & bones.
ii. Excites muscular contractions.
iii. Removes the effects of muscular fatigue.
iv. Decreases the stiffness and soreness of muscles.

2) Hot and Cold Compress (Temp Hot 420-450C, Cold 18- 270C) for (18 min) Hot water bag cotton cloth wrung in hot water, a cold compress and a dry cloth were used.

Physiotherapy treatments: Duration of Physiotherapy treatment was for 22 minutes.

1. Interferential therapy
2. Ultrasonic therapy
3. Isometric exercise
4. Strengthening exercise

Dilatory Control =

Timing	Instruction
6.00 am Wake up, tooth brash, mouth wash and take two glass of water.	6.30 am to 7.30 am Natural urges, bathing with luke warm etc.
7.30 am Prayer	7.45 am Intake 1 cup luke warm *Shunthi fant* (*Zingiber officinale*) (1 gm dry ginger powder boiled with 1
glass of water)	8.15 am to 8.30 am Breakfast (*dalia/mamra/upma* etc. with toned milk.)
6.00 am Wake up, tooth brash, mouth wash and take two glass of water.	6.30 am to 7.30 am Natural urges, bathing with luke warm etc.
7.30 am Prayer	7.45 am Intake 1 cup luke warm *Shunthi fant* (*Zingiber officinale*) (1 gm dry ginger powder boiled with 1
11.30 am to 12.30 pm	Light Lunch [Boiled rice, *dal* (pulses), vegetable soup or vegetable *khichidi* or *roti, dal* (pulses),
vegetable soup], then *Shatapad gaman* (slow walking for 100 steps).	Never sleep in day time.
1.00 pm to 1.15 pm Intake fresh seasonal fruit (e.g. apple, pear, pomegranate, guava etc.) never take ripe banana &	mango.
4.30pm to 5pm Evening snacks, if needed, take toned milk with rice puff or rice flacks in moderate quantity.	7.30 pm to 8.00 pm Light dinner (Boiled rice, *dal* (pulses), vegetable soup or vegetable *khichidi or roti, dal* (pulses),
vegetable soup), then *Shatapad gaman* (slow walking for 100 steps).	9.45pm Prayer & intake of 5ml *Eranda taila* (*Ricinus communis*) with 1 glass luke warm toned milk.
10.00pm Go to sleep [first *Vamkukshi shayan* (left lateral posture)-10 to15 min, then as usual].	The above diet plan was strictly followed for continuous three weeks (21 days).
11.30 am to 12.30 pm	Light Lunch [Boiled rice, *dal* (pulses), vegetable soup or vegetable *khichidi* or *roti, dal* (pulses),

Healing –Healing Touch is an energy therapy in which practitioners consciously use their hands in a heart-cantered and intentional way to support and facilitate physical, emotional, mental and spiritual health.

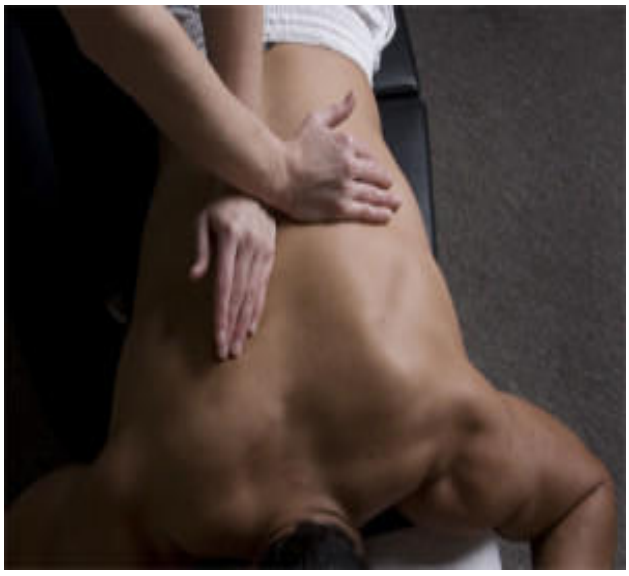
Healing Touch is a bio field (magnetic field around the body) therapy that is an energy-based approach to health and healing.

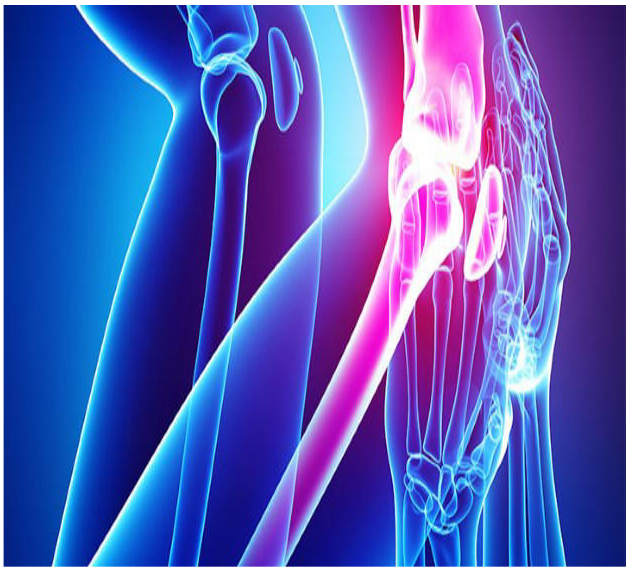
Healing Touch uses the gift of touch to influence the human energy system, specifically the energy field that surrounds the body, and the energy centers that control the flow from the energy field to the physical body.

These non-invasive techniques employ the hands to clear, energize, and balance the human and environmental energy fields, thus affecting physical, mental, emotional and spiritual health. It is based on a heart-cantered, caring relationship in which the practitioner and client come together energetically to facilitate the client's health and healing.

The goal of Healing Touch is to restore balance and harmonies in the energy system, placing the client in a position to self heal.

Duration of healing 30 minutes per day total 21 seating in entire for 12 months period.





Statistical Methods: The data obtained in the study was analyzed by using SPSS. For comparison from 12th month to baseline, Paired T Test was performed. For non parametric method Chi-square test was performed. Results of Pain (VAS) & Vitamin D3 are expressed as mean ± standard deviation (SD). The p value (<0.05) was considered to be statistically significant.

Results or Findings - Fifty three (53) OA Knees patients were recruited in this study. All the patients have completed their one year follow-up.

Morning stiffness: There was significant improvement observed in morning stiffness of Intervention group where patients had shifted from mild, moderate and severe to normal category at 12th month as compared to baseline ($p<0.001$). In Control group, patients were shifted from severe category to normal category, however, the difference was not statistically significant at 12th month as compared to baseline ($p=0.06$) Table 1.

SF-12: On comparing SF-12 status in both the groups, significant improvement ($p<0.001$) was observed in intervention group as more patients were shifted from moderate and severe category to mild category at 12th month as compared to 0 day in (Table 1).

Table I: Comparison of morning stiffness and SF-12 at baseline and after 12th month among 53 the Human Participants

Morning Stiffness	Total No of Patients	Baseline	After one year treatment	P value
	Normal (%)	11	44	<0.001
	Mild (%)	9	9	
	Moderate (%)	23	0	
	Severe (%)	10	0	
SF-12	Mild (%)	6	40	<0.001
	Moderate (%)	36	13	
	Severe (%)	11	0	

Pain (VAS): Pain reduction was observed at 12th month times compared to baseline work in among the human participants.

Table 2: Comparison of Pain (VAS) at baseline and after 12th month Follow-up.

VAS % (Mean ± SD)	Baseline	12th Month	P value
	54.64± 15.51	8.57± 7.55	<0.001

Swelling: Participated human the groups, significant improvement was observed at 12th month patients (p<0.001). (Table 3).

Table 3: Comparison of Swelling at baseline and after 12th month Follow-up

Indicators	Baseline	12th month	P value
Present	28	2	<0.001
Absent	25	51	

Vitamin D3: Significant improvement in Vitamin D3 level was also observed at 12th month (29.41±14.72) at 12th month compared to (21.07±13.96) at baseline in human participants group II patients (p<0.003), (Table 4).

Table 4: Comparison of Vitamin D3 level at baseline and at 12th month follow-up

Category	Baseline	12th Months	P value
Baseline Median Range	21.07±+13.96	29.41±14.72	<0.014

MMT: MMT parameters like quadriceps and hamstring shows statically significant improvement in intervention group patients after 1 year of treatment (p<0.001). In control group, significant difference was observed in right Quadriceps (p=0.03) and Fight Ham stating (p+0.02) at 12th month fallow –up as compared to 0 days

Table-5

MMT	Category	Baseline	12th months	P value
Quadriceps Right	Very	4	0	<0.001
	Fair	21	0	
	Very Fair	17	0	
	Good	9	0	
	Very	2	11	
	Normal	0	42	
Quadriceps Left	Very	9	0	<0.001
	Fair	19	0	
	Very Fair	13	15	
	Good	8	38	
	Very	4	7	

	Normal	0	17	
Hamstring Right	Very	0	0	<0.001
	Fair	32	0	
	Very Fair	13	0	
	Good	8	0	
	Very	0	4	
	Normal	0	49	
Hamstring Left	Very	8	0	<0.001
	Fair	27	0	
	Very Fair	17	0	
	Good	0	0	
	Very	1	4	
	Normal	0	49	

ROM: On analyzing ROM for knee joints, it was observed that significant number of patients have to 0-360o in flexion left and flexion right and 130-0o in extraction left and extension right at 12th month as compared to baseline in participant group.

Table-6

ROM	Category in ranch (n=53)	Baseline	12th months	P value
Flexion Left	0-50	6	0	<0.001
	0-80	38	0	
	0-120	9	1	
	0-130	0	42	
Flexion Right	0-50	6	0	<0.01
	0-80	34	0	
	0-120	13	45	
	0-130	0	3	
Extension Left	50-0	6	0	<0.01
	80-0	38	0	
	120-0	9	34	
	130-0	0	19	
Extension Right	50-0	6	0	<0.01
	80-0	34	0	
	120-0	13	13	
	130-0	0	40	

50 Foot Walk teas : On comparing 50 foot walk test on human participants , significant number of patients were able to complete the walk in <15 seconds at 12 months time point as compared to baseline, however , in group I patients significant number of patients were able to complete the walk between 15.1-20 seconds at 12th month as compared to baseline

50 foot walk test status at 12th months follow – up compared to baseline in group of human participants.

Table-7

50 foot walk test	Baseline	12trh month	P value
Unable	4	0	<0.001
>25 seconds	11	0	
20.1-25 seconds	21	0	
15.1-20seconds	15	8	
<-15 seconds	2	45	

Discussion: Result obtained in this study shows an improvement in pain, 50 foot walk teas , morning stiffness, swelling, SF-12, Vitamin D3 level , MMT and ROM after taking one year of Yoga , Naturopathy, Healing, Physiotherapy treatment with diet Control Human Participants These observations indicate that Yoga, Naturopathy, Healing, Physiotherapthy and Diet Control when used combined and adopt as a way of life is safe and efficient in reducing pain, improving the functional capacity status. Previous studies also support our result .Recent evidence suggests that massage therapy may be helpful in the treatment of symptomatic knee OA. The mechanisms of potential action of massage reaming unclear; however, the proposed mechanisms include improving local blood flow, promoting Venus circulation, improving the mobility of ligaments, tendons and muscles, as well as muscles relaxation.

Massage therapy may significantly reduce the symptoms and improve the course of OA by increasing local circulation to the affected joint, improving musculature tone, enhancing joint flexibility, and reliving pain. Massage therapy has been evaluated and found to be effective in reducing pain for various musculoskeletal conditions. Studies support the effectiveness of massage in management of pain caused by musculoskeletal disorders including OA of the knee.

Similar findings were observed in the results of our study on OA keens. It is evident that massage as well as joint therapy or alternative therapy is very effective for OA knees patients. Current modern medicine treatments available for OA are associated with high rate of adverse reaction due to their toxic effect in patients. Therefore, increasing trend has been observed that patients are giving preference to the massage therapy as an alternative treatment for OA of Knee.

Massage therapy not only enhances blood circulation, however, tone up the muscles while improving structural as well as functional status. It also helps in mobilizing fat and, therefore, reducing the Wight. All the movements of massage make muscles and fat tissues more functioning and sensitive. Massage also and bringing down all the impurities to the channel and recent studies support these effects

Massage therapy's potential outcomes and effectiveness comprise decrease muscle strain, positive mechanical changes in muscles and balancing of muscle tension across the joints, increased joint flexibility, increased lymphatic circulation, changed in immunological and inflammatory markets, improvement in sleep and blocking of pain singles.

The study suggests that massages therapy is safe and effective for reducing pain and improving functions in patients with symptomatic OA of the knee.

Healing uses the gift of touch to influence the human energy system, specifically the energy field that surrounds the body, and the energy centers that control the flow from the energy field to the physical body.

These non-invasive techniques employ the hands to clear, energize, and balance the human and environmental energy fields, thus affecting physical, mental, emotional and spiritual health. It is based on a heart-cantered, caring relationship in which the practitioner and client come together energetically to facilitate the client's health and healing.

In the study it is revel that application of healing process on the person who are suffering from

OA most effective and result oriented. It acts on human body to release anti oxidant materials from the human body and improve the working power and improve the flexibility of joints.

This process helps to improve the flexibility of the Knee Joint, reduce the stiffness of Walk. The periodical application of superficial hot and cold compress is a relatively safe and low cost treatment that can be recommended separately or in combination with other treatments for patients with knees OA. Contrast therapy involving the interval of heals and cold application within treatment session offers an additional option in the management of OA knee. Few studies are viable suggesting greater benefits of superficial heat, cold, or construct therapies. In the previous study, significant pain reduction was observed after using hot and cold compress, which is similar to the results we have observed in the patient study. It was also concluded that contrast therapy have wide affect on OA knees symptoms such as inflammation, decrees enema, pain, and stiffness. Contrast therapy has shown improvement in pain and stiffness in OA knees patients after using Cold and Warm Pack.

In the present study, yearlong yoga therapies brought significant improvement in functional status, pain and physical status in OA knees patients. Mind body therapies may improve specific outcomes related to osteoarthritis of the keen, particularly pain and physical function. Yoga improves physical, mental intellectual and spiritual health. It offers effective methods of managing and reducing stress, anxiety and depression. Numerous studies also demonstrate the efficiency of yoga on mood related disorders. One pilot study of OA of knees suggests significant reduction in pain, physical function, and improvement of the symptoms with no adverse effect. In comparative study, the significant improvement was observed in all the variables among human participants, i.e. pain, and joint tenderness, early morning stiffness, knee disability. Similar our study result have showed the positive effects of yoga in reducing symptoms of knee osteoarthritis.

The efficiency of integrated approach of yoga therapy in patients with chronic low back pain was observed and shown 48.8% reduction Numerical rating scale scores in the Yoga group. This control studies was conducted to observe the effect of yoga, naturopathy and physiotherapy modalities with diet control as a packages treatment for OA of elderly people. Our result shows significant improvement, in pain, morning stiffness, SF-12. VitamineD3 level, 50 foot walk test. A randomized control trial had shown pain reduction in physiotherapy group as well as placebo group (Only Yoga) after 24 weeks of intervention. Another study shows improvement in pain and ROM parameters after using Isometric quadriceps after taking 14 days of treatment. Similarly, significant reduction in pain in the OA knees was observed after taking one month Interferential therapy.

Several studies have been separately focused on effect of Yoga and Naturopathy in the treatment of Osteoarthritis of Knees. However, till now no study has been done to evaluate the effect the of Yoga, Naturopathy, Physiotherapy, Healing, along with the diet control altogether as the package of treatment for osteoarthritis of Knees. Therefore, it is felt to develop this package treatment for the benefit of elder people more than 60 years of age who are suffering from OA of Knees to improve their health status as these moderatlit is do not create any adverse effect, however, quite popular as no risk is associated with the treatment.

Conclusion – A combined package of Yoga and Naturopathy and Physiotherapy and Healing with a diet control is efficacious in reducing pain, facilitates improvement i functional status, therefore, well accepted the elderly people suffering from OA knees. Fin ending of this study suggest that combined package used is a safe, effective, and acceptance treatment for elderly people with OA knees.

It is the cost effective treatment with our any adverse effect and can be used effectively as an adjunct therapy in treatment of OA of Knee. Future scope of Yoga, naturopathy and

physiotherapy and Healing with diet control as package may offer the best hope of alleviating pain, movement in functional status in OA knees.

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