

# Case Study of Four Year Follow Up on Bilateral Osteoarthritis Knee of a Geriatric Subject Treated with Regular Physiotherapy

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**Abstract:** *A geriatric subject with bilateral osteoarthritis with strengthening of hip, knee, core muscles and weight reduction following regular physiotherapeutic means, home exercises and walking exhibited an improved womac score from 48% to 20% both knee joints and an enhanced quality of life as well postponed the necessity of undergoing total knee arthroplasty.*

**Keywords:** OA – Osteoarthritis, TKA – Total Knee Arthroplasty, AOA – Australian Orthopaedic Association, BMI – Body Mass Index, WC – Waist Circumference, Womac Score – Subject Rating Scale on 10 Functional Activities on a 5 Point Scale, ROM: Range of Motion of Joint

## 1. Introduction

Osteoarthritis is a degenerative joint disease, occurring in older person characterized by the erosion of the articular cartilage, hypertrophy of bone at the margins and a range of biochemical and morphologic alteration of the synovial membrane and joint capsule typical clinical symptoms being pain and stiffness particular after prolonged activity (Sellam & Berenbaum et al 2010). Osteoarthritis is the second most common rheumatological problem next to soft tissue rheumatism. It is one of the leading causes of disability among elderly population (Nevit & Felson et al 2012). Knee osteoarthritis is a common musculoskeletal condition affecting the people causing pain, physical disability and reduced quality of life (Hoch Berg et al 1995). Risk factors associated with osteoarthritis include age, obesity, low bone mineral density, joint instability and hyper mobility etc (Cooper et al 2000). Osteoarthritis knee imposes huge health care burden (Altman et al 2010). Non pharmacological conservative interventions are considered the first line approach to symptom management and exercises are recommended by all clinical guidelines (Conahan et al 2008). The condition progress is slow and joints involved are bilaterally (Mahbidazin 2008) and symptoms include pain, stiffness, decreased range of motion which results in lowered physical activity and reduced quality of life (Bukowski et al 2006).

The quadriceps muscle strength in patients with osteoarthritis have impaired muscle proprioceptive activity (Baker et al 2001) along with a decline in activities of daily living and mobility, increases the chance of falling due to further decreases in proprioception and balance (Zazulak et al 2007). Total joint replacement of hip and knee are among most common surgical procedure in United States (Weingarten et al 1994). Total knee arthroplasty helps to reduce pain, restore function and mobility for arthrosis pain sufferers (AOA 2013) but 25% of patient dissatisfaction after total knee arthroplasty were recorded (Bourne et al 2010). This case study subject who was advised by

orthopaedic surgeon for total knee arthroplasty was conservatively treated for three years and hence the need for undergoing total knee arthroplasty was delayed and postponed as the core of this study.

Mrs. XXXX, Aged 78 years was known to be hypertensive and on medication, mesomorph, graduate, vegetarian, mother of 3 adult children with no history of major surgeries. Right lower leg oedematous with filariasis.  
C/O: Pain while walking, difficulty in getting up from bed, chair and floor level activities.  
O/E as on 16-05-2016

X- Ray in Standing: decreased medial articular spaces on both knee joints

- Varicosities of right lower extremity.
- Ambulant unaided with antalgic gait and list to left.
- Obliterated lumbar and cervical lordosis.
- Abdominal and spinal muscles grade II/ V.
- Pain increases on weight bearing activities such as standing walking and transfer (from sitting to standing) activities.
- Tenderness positive over medial joint line of both knees right > left.
- An increased laxity of left knee was recorded.
- Bilateral Vastus Medialis lag positive.
- Bilateral hip and knee muscles 3/5.
- Active range of motion of right knee Flexion:  $0^{\circ}$  –  $95^{\circ}$ , Left Knee -  $0^{\circ}$  -  $90^{\circ}$
- Crepitus – increases on movements of both knee joints within the available range.

Per resting heart rate: 84/mt  
Blood Pressure: 132 / 78 mm/hg  
Anthropometric Measurements:  
Waist Circumference: 89cm  
Height: 158cm  
Weight: 58 Kg, BMI: 23 kg/m<sup>2</sup>

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## 2. Provisional Diagnosis

Obesity, Bilateral Osteoarthritis knee joint treatment adopted.

Treatment Given as Below:

- 1) Core muscle strengthening progressed gradually using Physioball.
- 2) Resisted exercises to hip, knee, spine.
- 3) Proprioceptive exercises using Physioball.
- 4) Resisted exercises for obesity.
- 5) Plank exercises in spine, side and prone lying using Physioball.
- 6) Regular walking for 20-25 minutes.
- 7) Set of exercises as home programme each session lasts for 25-30 minutes at an intensity of 70% of her maximal heart rate, she is attending the centre for exercises twice a week, no untoward incidents was reported till today.

The following were the major findings recorded as on 30-09-2016

A drop in body weight, waist circumference and an improved range of motion of both knee joints, better quality of life as shown in womac score as we could infer from the below Table: 1

Apart from these the following clinical changes were recorded:

- An improved cadence, balance and gait, self confidence has increased as she could manage house activities, shopping and social activities by herself.
- Crepitus on movements of both knees have decreased markedly.
- She can walk with ease for 25-30 minutes regularly.
- With a drop in body weight and enhanced quality of life the subject's fear of undergoing total knee arthroplasty surgery is reduced.

**Table 1:** Results of BMI, Body Weight, Waist Circumference, Range of Motion of Joint, Womac Score before and four years after physiotherapy

	Body Weight Kg	BMI Kg/m <sup>2</sup>	Waist Circumference Cm	ROM of Knee 0		Womac Score %
				Right	Left	
Pre	58	23	89	0-95	0-90	48
Post	51	20	83	0-108	0-115	20

## 3. Discussion

- 1) The benefits of exercise are additive when delivered with other interventions such as weight loss (Messier et al 2004). (Felson et al 1992) have concluded that a loss of body weight by 5kg, reduced osteoarthritis knee complications by 50%. This study subject with a loss of body weight by 7kg, **hence in concurrence with the above study subject was shielded from complications associated with osteoarthritis with regular physiotherapeutic means of weight reduction.**
- 2) **Decreased pain and Crepitus of both knee joints on movements examination presently felt only during inner range of knee extension indicates an improved**

**cartilage.** Quality of this subject as reported by (Anado et al 2012) have recorded that weight loss in obese subjects may gain with structure modifying benefits, moderate weight loss in obese subjects can improve cartilage quality.

- 3) **This study subject was treated with resisted exercises using Physioball and subjects own body weight having provided resistance, has recorded an increased strength of core muscles bilateral hips and knees,** Which was supported by (Pelland et al 2004) in a meta analysis of 22 trails of strengthening exercises on individuals with knee Osteoarthritis, have found resisted exercises were effective in terms of improving pain and function, this was supported by Lange et al 2008 who have concluded with resisted exercises,
- 4) An 8 week strengthening programme among knee Osteoarthritis found beneficial for pain, function, walking time and muscle strength (Jan et al 2008). **An improved quality of life of this subject with subjective womac score has improved from 48% to 20%.**
- 5) Misky et al 2006 in a 30 month clinical trial the effect of strengthening exercise with X- ray, have recorded that it is possible to slow structural joint deterioration over time with exercise, but with higher continued adherence rate. **Pre and post X-rays taken of this study subject have shown no deterioration for the last four years with regular physiotherapy, she is attending till today of twice week duration along with regular walking and home exercises, hence reflective of the above study findings with higher adherence rate of exercises,** the subjects has benefited with radiological evidence.

## 4. Conclusion

With an increasing longevity, major issues with geriatric population is osteoarthritis. This original case study with enthusiastic participation by the subject resulting in a drop of body weight, an improved quality of life are the key outcomes. This can be extended on a larger population with Osteoarthritis and with other variables.

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