

6 Months Case Study Report on a subject with Muscular Weakness, Obesity, osteoarthritis Knee and Treatment with Physiotherapy.

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Abstract:

Obesity and osteoarthritis of knee joint can limit mobility and function, due to pain and muscular weakness. This non pharmacological treatment where along with weight loss, decrease in waist circumference, strengthening of muscles around hip, knee, abdominal and spinal plays a vital role in the 6 month rehabilitation of this case study subject with improved quality of life as reflected in the Woomac subjective rating score.

Introduction:

Osteoarthritis is the most common chronic condition among older adults. The degeneration of the joints cartilage leads to pain, swelling and limited range of motion. Osteoarthritis is a chronic prevalent condition that affects the synovial joints and can lead to disability (Lawrence et al 1998). In Canada 10% adults reported a long-term health problem due to osteoarthritis society, Canada 2002).

Knee osteoarthritis, primarily affecting the medial tibiofemoral joint compartment is a chronic joint disorder that imposes a significant health care burden. As there is no cure, traditional management aims to reduce pain, improve function and enhance quality of life, while minimizing adverse effects of therapy. Non pharmacological conservative interventions are considered the first line approach to symptom management and exercise is recommended by all clinical guidelines (Conaghan et al 2008).muscle weakness may be precursor to knee osteoarthritis (Radin et al 1991). In addition, muscles may play a significant role in absorbing and dissipating loads across the joints, maintain adequate strength and fitness of lower extremity muscles is an important component of rehabilitation (Salmen da et al 1998).

Mr. XXX Aged 53 Years

Waist Circumferences -114cm, Weight – 96 Kg, Height- 160Cm

BMI: 27^{m2}/kg Resting Heart Rate: 108/mt Blood Pressure: 132/76 mm/ng

Medical History: Obese with being Endomorph, employed with deskwork nature in a Nationalised Bank, known hypertensive on tablet Amlong 2.5 mg since 10 years.

Past Medical History: No surgeries or any untoward Trauma encountered, but takes Un- prescribed NSAID occasionally.

C/O - Pain over both knees, increasing on walking, after prolonged sitting and standing with occasional low back pain.

O/E as on October 2015 as below:

- Antalgic gait with lumbar list to left.
- Vericosities of both lower extremities.
- Crepitus increases on movements of right greater than left.
- Mild pre patellar effusion right greater than left.
- Medial joint line tenderness on right knee.
- Genu Varum right greater than left.
- Restricted inner range hip flexion and flexion of knee.

Motor Power	Right	Left
Hip abductors	3/5	3+/5
Extensors	3/5	3+/5
Knee Extensors	3/5	3+/5
Flexors	3/5	3+/5

- Exagrated lumbar lordosis, abdominal muscles II/V, lumbar spinal muscle atrophy.
- Pain increases on standing walking over right knee, especially with long sitting.
- Vastus Medialis weakness bilateral.
- Anteverted pelvis,
- ROM: Left Knee:115⁰ Right Knee : 105⁰
- Floor Level Activities: Painful and unable to perform.

Provisional Diagnosis:

Bilateral osteoarthritis knee, obesity,

Treatment given:

- i. Strengthening of both lower extremities, core exercises, Physioball exercises, dietary advice, walking daily with duration gradually increases, specific yoga postures.
- ii. For first 6 months weakly thrice the subject was treated at the center with Each Session of 30Minutes. At present he is attending once a week.

Table:

Results of anthropological parameters, ROM and subjective knee (Woomac) Score:

	Pre		Post		Outcome %	
Woomac	70%		18%		Decreased by 74%	
Waist Circumference	115cm		102cm		Decreased by 12%	
BMI	27 m ² /Kg					
Body Weight	96kg		91 kg		Decreased by 5%	
ROM at knee	Right	left	Right	left	Right	Left
	0 to 105	0 to 115	0 to 120	0 to 130	Decreased by 14%	Decreased by 13%
Strength of Hip, Knee Muscles	Hip Abductors, Extensors, Flexors, and Extensors.		Improved Substantially with motor power and functional activities.			

Discussion:

- In addition to weakness of the quadriceps muscle, people with osteoarthritis knee exhibit significant strength deficits of the hip muscles (Hinman et al 2010). In a Meta-analysis published in 2004, 22 trails of strengthening exercises on individuals of knee osteoarthritis, with a variety of models, The results found that resistance exercises were effective in terms of improving pain and function (Pollard et al 2004). Muscle fibre atrophy and inhibition of muscle activation are important mechanisms underlying muscle weakness in osteoarthritis (Bennell et al 2008). Atrophy may result from relative disuse due to reduced activity levels in people with osteoarthritis (Farr et al 2008). Strengthening of the lower extremity muscles

is an important component of an exercise program for persons with knee osteoarthritis, as muscle weakness has been shown to be associated with greater levels of disability in patients with knee osteoarthritis (Hurley et al 1997), Lange et al 2008 have concluded that resistance training improved pain and function by clinically meaningful in people with knee osteoarthritis.

➤ Benefit of resistance trainings include the following:

Found to increase in overall habitual physical activity levels (Farr et al 2010) beneficial for general health; particularly given that many people with knee osteoarthritis are overweight or obese and have a number of co-morbidities such as diabetes and heart disease (Reeuwijk et al 2010) are important to minimize loss of lean muscle mass that would otherwise exacerbate muscle weakness in overweight patients with knee osteoarthritis undergoing dietary induced weight loss (Toda 2001).

This study subject in line with the above study reports apart from improved quality of life, weight loss shall benefit for his existing hypertension also.

- Fransen and MC Connel 2009 have recorded greater improvements in pain and function with 12 directly supervised exercise sessions. An 8 week strengthening programme among osteoarthritis subjects found beneficial for pain, function, walking time and muscle strength (Jan et al 2008). Mikesky et al 2006 in a 30 month clinical trial have evaluated the effect of strengthening exercise on structural disease progression as measured by X-ray in people with established osteoarthritis knee have shown that it is possible to slow structural joint deterioration over time with exercise, but with higher continued adherence rate. This case study subject having improved with pain and physical function is continuing with home programme, regular walking for twenty minutes daily and attends the center weekly once to adhere and sustain the progress and to prevent further complications associated obesity and osteoarthritis.
- The benefits of exercise are additive when delivered with other interventions such as weight loss (Meisser et al 2004). This concurs with this study findings where along with strengthening exercises, a drop in body weight by 5% and 12% decrease in waist circumference.
- Sharma et al 2003 have recorded increased risk of disease progression in association with knee malalignment or laxity, with six month treatment this study subject has moderate improvement with genu varum with however specific exercises for alignment corrections.
- Amin et al 2009 have recorded a negative relationship between quadriceps muscle strength and subsequent structural disease progress. Two clinical trial by Zhao et al 2007; (Miya Zaki et al 2002) found that strengthening quadriceps did not alter the knee adduction moment in people with knee osteoarthritis and also with malaligned knees (Lim et al 2008).
- Felson et al 1992 have concluded that a loss of 5 kg reduced osteoarthritis knee complications by more than 50%. This study subject where a drop of 5 kg body weight benefits risk associated with osteoarthritis in line with the above study.
- Anando 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. In this case study subject with 5% drop in body weight have gained an improved articular cartilage.

Conclusion:

Appropriate exercise prescription by the therapists for patients taking into account individual symptoms, problems and preferences. Encouraging to adhere with exercises and reinforcing healthy life style habits will assist in enhancing better outcomes of the treatment. Further exercise programs should be combined with education and behavioural strategies to promote positive lifestyle change and increase overall insist an associated obesity treatment along with strengthening of muscles, mobilising joints for any clinical condition.

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