



## Octogenarian with Chronic Low Back Ache, Decreased Balance Unilateral Leg Muscle Atrophy Treated with Physiotherapy – Evidence Based Case Study Report

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### Abstract

*Octogenarian subject with chronic lowback ache, disturbed balance, requiring hand support for walking and moderate dependence for his daily activities was treated with evidence based physiotherapy on clinical evaluation. With a frequency of twice a week in 4 months duration he is able to walk unaided, improved balance and Oswestry functional subjective score from 70% to 40%. Chronic pain, decrease in balance and increased dependence for daily activities can be enhanced with physical therapy with due clinical evidence, an 84 year old patient exhibiting adequate prognosis is the major outcome of this case report.*

**Keywords:** *Oswestry Disability Index, Visual Analogue Scale, British Geriatric Society (BGS), American Geriatric Society (AGS) Sarcopenia.*

### Introduction

Geriatric population is increasing globally (ACSM 2009). This is of serious concern to both government and the general population because aging changes the profile of a society and necessitates the adoption of the entire sociopolitical system to a new reality of a increasing demand for geriatric services (Ciolac 2013). As there is structural and functional deterioration of almost all physiological systems during aging, even in the absence of discernible (Chodzko etal 2009) and increased incidence and progression of chronic diseases in older adults (Ciolac etal 2002). Regular physical activity or exercise participation

to promote older adult health and disease prevention.

ACSM 2009 on exercise and physical activity for older adults has emphasized the importance of exercising throughout life, with practice of regular aerobic, resistance, balance, stretching exercises.

### Aims & Objectives of this study was to

- Evaluate the efficacy of exercises on balance and walking
- Analyse the impact of physical exercises on muscle atrophy
- Effects of physical therapy on a geriatric subject on his functional activities

**Background Information**

Mr. XXX, Aged 84 years, was normotensive, non diabetic, mesomorph, non alcoholic was independent for all his daily activities till June 2016, his past medical history in 2013, with complaints of lowback ache NMRI has revealed cortical atrophy and sacroiliitis was then treated with infrequent course of NSAID and lumbo sacral support.

**Materials & Methodology**

His present complaints includes sticky, slippery feet, pain in lowback region, and difficulty in walking.

Anthropometric Findings BMI: 28 kg/ m<sup>2</sup>, Waist Circumference: 106 Cm

O/E

- Foot drop (Right)
- Tightness of tendo Achilles (Right)
- Oedema of both lower extremities right > left
- Paresthesia feet
- Patellar glide (Right) painful
- Atrophy anterior and posterior muscles of thigh, gluteal muscles right > left
- Transfer with in bed independent but other transfer and mobility activities requires moderate support.

- Romberg’s sign positive with closed eyes
- Balance in standing requires moderate support
- Able to walk with one hand and moderate support
- Exaggerated lumbar lordosis
- Abdominal muscle weakness II/ V
- Pain over right knee SI and lumbar sacral region
- Limb length discrepancy → right < left by 2cms
- Has moderate exercise tolerance.

**Provisional Diagnosis:** pain in lumbar and sacroiliac joint, decreased balance.

**Treatment Given:**

Weekly two sessions of 25 minutes of physiotherapy for 4 months period from February 2016 to May 2016

- a) Exercises using Physioball in supine, side and sitting
- b) Balance training in standing
- c) Proprioceptive exercises using Physioball
- d) Walking retraining
- e) Passive stretching of right tendo achilles
- f) Care of the feet against Paresthesia

Resting heart rate: 82/ mt

Post exertion heart rate: 144/mt

**Table: 1** Results of Circumference of hamstrings, quadriceps, gastrocnemius, balance cadence, VAS, Oswestry score, walking

	Pre Cm		Post Cm		Waist Circumferences Cm		BMI Kg / m <sup>2</sup>		VAS		Oswestry Score %	
	Right	Left	Right	Left	Pre	Post	Pre	Post	Pre	Post	Pre	Post
					106	94	28	24	8	2	70	40
Hamstrings X	36	39	37	39								
Quadriceps XX	37	39	38	39								
Gastrocnemius XXX	34	32	35	33								

X – Measured using inch tape 3” above knee joint line

XX – 1” above base of patella

XXX – 3” below tibial tubercle

Cadence - Pre: 40/ minute with monitoring  
Post: 52/ minute, but unaided

Pre: Able to walk with one hand support, Post:  
Able to walk unaided with monitoring

Pre: Able to stand with minimal support, Post:  
stand without support for a count of 20

- However paramedical of the feet, foot drop and tendo achilles tightness of right foot persists with negligible prognosis.

**Discussion****Hypothetical Question: 1****Chronic sacroiliac pain lead to atrophy of hip and knee muscles discussion with evidence:**

Individuals with sacroiliac joint dysfunction often complain of lumbar spine pain and may experience radicular symptoms consistent with sciatica (James Leone et al 2016). Age associated sarcopenia (loss of muscle, strength power and endurance) with reduced capacity to perform daily living activities (Fiatarone 2002), but regular resistance training has been shown to prevent and reduce, the loss of muscle mass during aging (Klitgaard et al 1990). Gait disorders may have a greater effect when leg weakness is super imposed on impaired balance (Rantanen et al 1999)

**Hypothetical Question: 2****Musculo skeletal disorders can lead to disturbed walking and balance?**

Sarcopenia, the loss of muscle mass that accompanies aging is associated with daily energy expenditure and bone mineral density reductions, which may have implications for the incidence of osteoporosis (Ciolac et al 2010) age related changes such as gait speed are most apparent after age of 75 years and most gait disorders appear in connection with understanding severity of the diseases (Gurulnik et al 2001)

**Hypothetical Question: 3****Does geriatric subject response with exercises on musculoskeletal system?**

Exercise training programmes improve the muscle strength (Ciolac et al 2010). Resistance training has been shown to significantly increase skeletal muscle mass and strength in the elderly men and women (Fiatarone 1990 & Mangione et al 2010). Among elders increase in the level of physical activities is associated with improved health outcomes (Sattelmair et al 2009).

Elderly individuals practicing resistance training have shown muscle strength improvements up to 150% (Ciolac et al 2010) and 10 to 30% improvements in the muscle fiber cross sectional

area in older subjects following 3- 6 months of resistance training (Binder et al 2002)

**Hypothetical Question: 4****Can we balance in standing and walking improves with physical therapy means of Physioball and proprioception?**

Exercises have beneficial effect on balance (Lord et al 1994) and stability (Chodzko et al 2009). Resisted exercise training and balance activities improves balance waling and also improves from prevention of falls (AGS and BGS 2001) Proprioceptive exercises.

**Hypothetical Question: 5****Does walking and independence with functional activities improve with exercises started late 3 years after the symptoms appear?**

Physical exercises improve psychological health (Sing et al 2001) and daily living activities of elderly people even those in their 80s or 90s (Binder et al 2002) with resistance training favourable effects on physical function and quality of life (Haykousky et al 2005)

**Uniqueness**

An octogenarian subject with lowback pain, difficulty in walking with balance disturbances and unilateral hip and high muscles atrophy with regular physical therapy measures improves significantly clinically and functional means.

**Critical Clinical Implications from this Case Study Report:**

- Balance and proprioception can be improved with absence of major underlying n disease in a geriatric subject
- Moderate improvement in muscle circumference can be achieved with resisted exercises in an octogenarian patient
- However Paresthesia of the feet and foot drop didn't show much improvement
- Irrespective of the age, physical exercises can promote over all metabolism, prevent fall and can enhance walking among elderly population.

**Conclusion**

While treating geriatric subjects reasonable, reachable goals should be formed based on evaluation. Evidence based physical therapy for major specific problems to be identified, applied and reevaluated. As major findings of this case study findings functional independence can be promoted irrespective of the age.

**Limitations of this study**

As being only a case study report of 4 months duration. A longer duration follow up with larger sample size with more variables on similar geriatric subjects are recommended for further studies.

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