



Original Research Article

## Effect of Tanzberger Exercises in Women with Stress Urinary Incontinence

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Received: 17/02/2013

Revised: 23/03/2013

Accepted: 26/03/2013

### ABSTRACT

**Background:** Urinary Incontinence is an unpleasant and most common problem for many adults, mainly majority of the women in today's fast life, stress incontinence being the commonest. Weak pelvic floor muscles are mainly responsible for urinary incontinence. It is a distressing and disabling condition mainly affecting the social and psychological well being of an individual. Various forms of pelvic floor muscle exercises are used to reduce the severity of stress urinary incontinence by improving the strength of the pelvic floor muscles. Thus, this study was done to check the effectiveness of the use of Tanzberger Exercises in women with urinary incontinence and their impact on the quality of life of the women.

**Method:** Twenty women suffering from stress urinary incontinence were selected by convenient sampling method. Modified Oxford Scale (MOS) was used to assess the pelvic floor muscle strength. Kings Health Questionnaire (KHQ) was used to assess the Quality of Life (QOL) and Tanzberger Exercises for the rehabilitation of the pelvic floor muscles.

**Study Design:** Pre-Post Test Design

**Results:** Result showed significant improvement in the pelvic floor muscle strength and the quality of life after treatment with the Tanzberger Exercises.

**Conclusion:** There is significant difference in the pelvic floor muscle strength and the quality of life after using Tanzberger Exercises as a treatment approach.

**Keywords:** Stress Urinary Incontinence, Pelvic Floor Muscle Strength, Quality of Life, Kings Health Questionnaire, Tanzberger Exercises.

### INTRODUCTION

According to the World Health Organization (WHO), urinary incontinence is a "wide spread global disease and one of the last medical taboos to many people" <sup>(1)</sup> International Continence Society (ICS) has defined Urinary Incontinence as the involuntary loss of urine which is a social or hygiene problem. <sup>(2-6)</sup> It is not a life

threatening disease but affects all the strata of the society, having many medical and social ramifications. <sup>(2)</sup> Approximately, 50 million people worldwide suffer from urinary incontinence wherein women to men ratio is 2:1 <sup>(3)</sup> and an estimated of 41% - 57% of older women above 40 years of age in the US suffer from this disabling condition. <sup>(7)</sup> In a survey done in Asia, the

prevalence of urinary incontinence in India was 12%.<sup>(8)</sup>

As a result of the various etiological factors mainly being weak pelvic floor muscle strength, there are three types of urinary incontinence namely Urge Incontinence (UI), Stress Incontinence (SUI), and Mixed Urinary Incontinence (MUI). The pelvic floor muscles consist of 67-76% of slow twitch fibers and 23-30% of fast twitch fibers.<sup>(9)</sup> The layers of the pelvic floor are; Outer most layer: Anal Sphincter, Second layer: Urogenital Triangle, Third layer: Urovaginal Sphincter, Fourth layer: Levator Ani muscles (pubococcygeus, puborectalis, iliococcygeus and coccygeus). In which the superficial layers consisting of fast twitch fibres and the deepest layers consisting of slow twitch fibers.

In SUI, there is involuntary leakage of urine on effort or exertion (e.g. coughing or sneezing) with increased intra-abdominal pressure due to insufficient urethral support from the endopelvic fascia and muscles or the deficiency of the intrinsic muscles.<sup>(1)</sup> As the levator ani muscles are responsible for the continence by supporting the pelvic organs and enhancing the urethral closure, pelvic floor muscles (PFM) exercises are recommended for the treatment of SUI.<sup>(10)</sup>

Rehabilitation of the PFM in the form of Kegel's Exercises is done which helps in stabilizing the urethra by increasing the PFM strength (force-generating capacity).<sup>(11)</sup> This traditional method brings about the contraction of only the pubococcygeus muscles. In order to bring about the contractions of the other group of muscles, Tanzberger Exercise Concept found by a German Physical Therapist, Renate Tanzberger is used. The goal of this programme is to integrate the function of the muscles as a procedural program by improving the sensory awareness and functional retraining using a Swiss Ball.<sup>(9)</sup>

Urinary Incontinence affects the physical activities, self perception, self confidence and social activities, thus, presenting with low Quality of Life rates.<sup>(5)</sup> Thus, King's Health Questionnaire, recommended by the ICS is used to measure the impact of urinary incontinence on quality of life of women. As a result, the present study was undertaken to assess the effect of Tanzberger Exercises on pelvic floor muscle strength and quality of life in women with stress urinary incontinence.

## **MATERIALS AND METHODS**

Twenty females diagnosed with stress urinary incontinence at the Obstetrics and Gynecology Department, Loni participated in the study. The study was conducted at the Community Physiotherapy Dept, College of Physiotherapy, PMT, Loni. Participants were explained about the procedure of the study and an informed written consent was taken.

### **Inclusion Criteria:**

- Women suffering from stress urinary incontinence
- Women above 40 years of age

### **Exclusion Criteria:<sup>(12)</sup>**

- Diabetic Neuropathies
- Congenital Urological Disease
- Urinary Tract Infection
- Neurogenic Bladder
- Tumors of the Bladder
- Women with Prolapse

### **Materials Used:**

- Swiss Ball (approx. 68-70 cm in diameter)
- Chair (firm surface)
- Paper
- Pen

Prior to giving the first treatment session, assessment of the pelvic floor muscle strength and quality of life was done.

Assessment of the Pelvic Floor Muscle Strength: The strength of the pelvic floor muscles was done manually using the Modified Oxford Scale (MOS) (Laycock and Jerwood, 2001). It is a 6- point scale described as: grade zero- no contraction, grade one- flicker of contraction, grade two- weak contraction, grade three- moderate contraction (with lift), grade four- good contraction (with lift), grade five- strong contraction (with lift). The participant was asked to lie on her back, with the lower body exposed and the legs abducted. The labium was separated and the gloved index finger was used to palpate the walls of the vagina. The participants were then asked to contract the pelvic floor muscles by squeezing on the finger and the pelvic floor strength was graded accordingly.

Assessment of Quality of Life: The effect of stress urinary incontinence on the participant's quality of life was assessed by the Kings Health Questionnaire (KHQ). It comprises of 21 questions, divided into 8 domains: general health perception (one item), UI impact (one item), role limitations (two items), physical limitations (two items), social limitations (two items), personal relationships (one item), emotions (three items) and sleep/energy (two items). The score for each domain ranges from 0-100; higher the score, worst the QOL related to that domain.<sup>(5)</sup>

Rehabilitation of the Pelvic Floor Muscles: Rehabilitation was done using the Tanzberger Exercises, given by German Physical Therapist, Renate Tanzberger. The participant was made to sit on a Swiss Ball

(approx. 68-70cm in diameter), with the hip and the knee flexed to 90° and the feet properly placed on the ground. The participants were explained in detail about the PFM. The landmarks were explained by making them sit on a firm surface (chair) and by making them feel for the contraction and relaxation of the gluteal, anal and the vaginal muscles.

1. Exercise 1- Rolling the Ball

Forward: The participant was asked to roll the ball forward towards the knee without lifting off the feet and keeping the lumbar spine erect. While rolling, contraction of the PFM was to be done and while returning, relaxation. (Figure 1)

2. Exercise 2-Back to Back Sitting:

The participant and the therapist sat on the Swiss Ball back to back. The participant was asked to pull the ball towards the knees which do not move and this activity was restricted or slowed down by the therapist who tried to pull the ball in opposite direction. This brings about the isometric contraction of the pelvic floor muscles. (Figure 2)

The participant was asked to contract the pelvic floor muscles (50 contractions for each exercise) while exhaling and relax while inhaling. Treatment was given for 4 weeks, 3 sessions per week. Each session continued for about 20-30 minutes depending upon the fatigue level of each individual subject with sufficient rest break in between each exercise. At the end of the last session, the pelvic floor muscle strength and the quality of life were again assessed. The data collected was analyzed and interpreted and final conclusion was made.

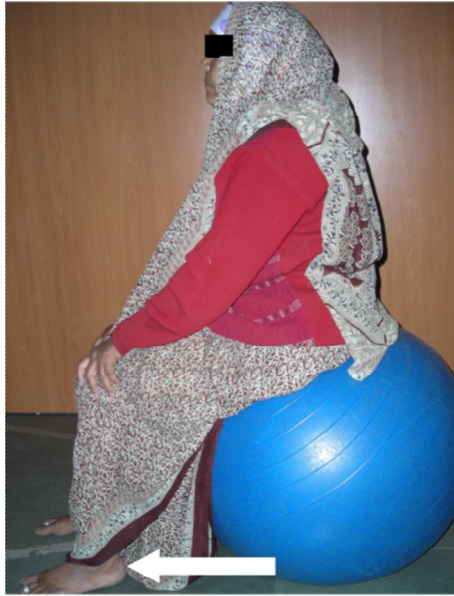


Figure 1

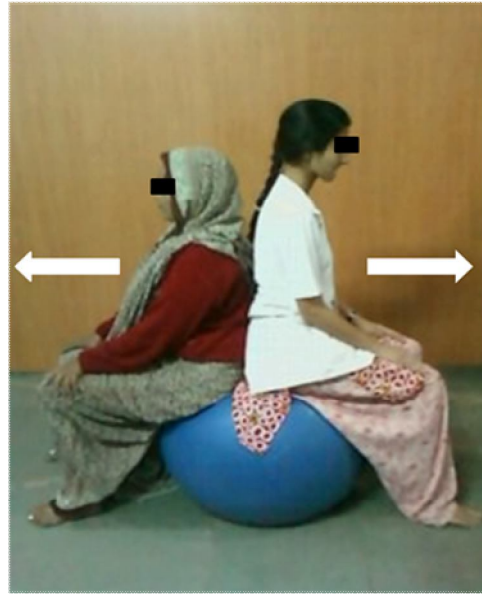


Figure 2

### DATA ANALYSIS AND RESULTS

Statistical analysis was done by GraphPad InStat software (Trial version 3.03) using the paired 't' test. The results were concluded to be very significant. Paired 't' test was used to compare the mean of the pelvic floor muscle strength and quality of life scores before and after treatment.

There was a significant difference found in the mean of the PFM strength in 20

women with stress urinary incontinence ( $t=3.684$ ,  $P=0.0016$ ) before and after treatment with Tanzberger Exercises. (Table 1) (Graph 1)

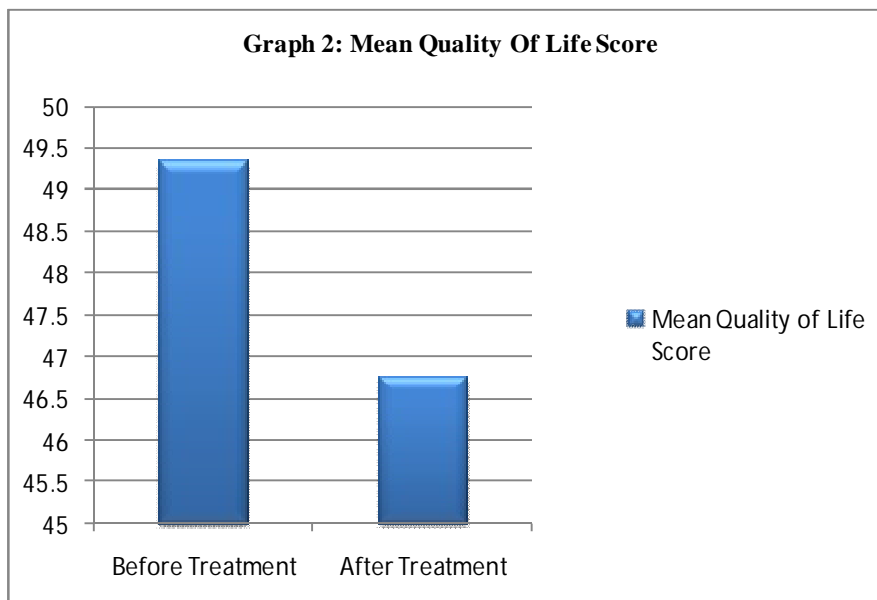
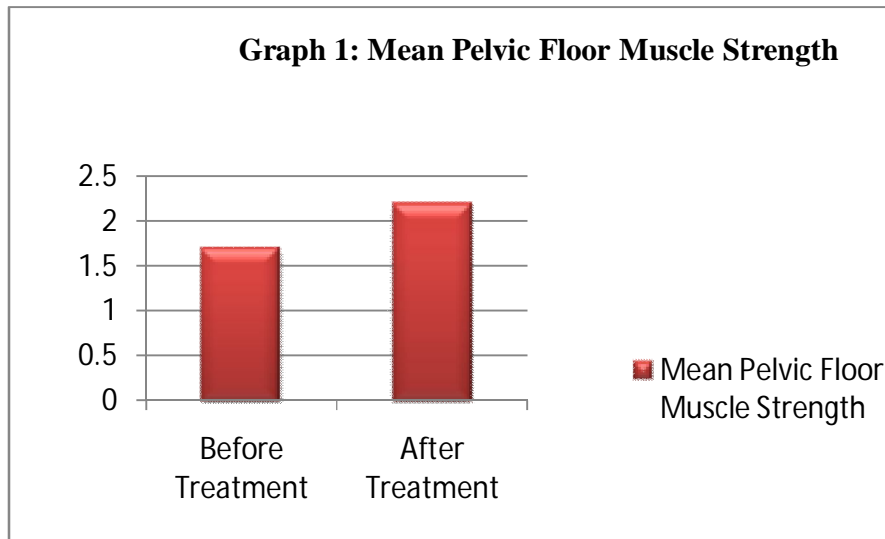
There was a significant difference found in the mean of the QOL score in 20 women with stress urinary incontinence ( $t=3.833$ ,  $P=0.0011$ ) before and after treatment with Tanzberger Exercises. (Table 2) (Graph 2)

**Table 1:** Comparing the mean of the Pelvic Floor Muscle (PFM) Strength in 20 women with stress urinary incontinence before and after treatment.

Pelvic Floor Muscle Strength	Before Treatment	After Treatment	'P' value	't' value	Result
Mean	$1.7 \pm 1.081$	$2.2 \pm 1.056$	0.0016	3.684	Considered very significant

**Table 2:** Comparing the mean of the Quality of Life (QOL) Score in 20 women with stress urinary incontinence before and after treatment.

Quality of Life (King's Health Questionnaire) Score	Before Treatment	After Treatment	'P' value	't' value	Result
Mean	$49.35 \pm 10.419$	$46.75 \pm 11.078$	0.0011	3.833	Considered very significant



**DISCUSSION**

Results from the study supported the hypothesis that the 20 women participants who had stress urinary incontinence and were treated with Tanzberger Exercises would have improved pelvic floor muscle strength and improved quality of life. The pelvic floor muscle strength improved after the treatment sessions, whereas, the severity of the quality of life decreased after the

treatment sessions. The daily activities that were hampered due to stress urinary incontinence also improved after rehabilitation with Tanzberger Exercises.

Bushnell et al. proved that Urinary Incontinence (UI) is a common problem among women. <sup>(12)</sup> The woman’s physical well being is not only affected by UI, but there is also a significant impact on the psychological and socio-economic aspect of the woman’s life. <sup>(4)</sup> Approximately half of the incontinent women between 18-90 years

of age suffer from SUI. The urinary leakage in stress urinary incontinence can be due to the insufficient urethral support from the endopelvic fascia and muscles, resulting from increased intra abdominal pressure and the intrinsic sphincter deficiency.<sup>(1)</sup>

Tanzberger Exercises incorporate the use of a Swiss ball for the retraining of the weak pelvic floor musculature. Exercises are functional because they activate the pulmonary diaphragm, the abdominal and back muscles which results in the restoration of the pelvic floor and with each movement the sensory awareness of the pelvic floor is also improved.<sup>(13)</sup> Strengthening is done for the fibres running in all direction whereas, Kegels exercises help in strengthening of the muscle fibres running in only one plane. The exercise “Rolling the ball forward” helps in activating and strengthening of the slow twitch fibres running in the anterior-posterior direction.

In day to day life, very less attention is paid to the problem of SUI, mainly due to lack of education, hesitancy and embarrassment. The quality of life of women living in rural area is hampered because of incontinence and results from this study prove that treatment with Tanzberger Exercises helps to improve the quality of life.

Limitations of the study were that a Perineometer was not used to check the strength of the pelvic floor musculature, but was done manually and the sample size selected was small consisting of only 20 participants.

## CONCLUSION

Tanzberger Exercises help in improving the strength of the pelvic floor musculature and the quality of life in women suffering from stress urinary incontinence. Thus, this study helps a community physiotherapist, to take into account the problem of stress urinary incontinence and

focus on the rehabilitation as well as to create awareness amongst the women of rural population.

## ACKNOWLEDGEMENT

We would like to thank all the female participants who have participated in the study.

## REFERENCES

1. Abdool Z. 2007. Female urinary incontinence: A review. SA Fam Pract. 49(6): 34-39.
2. K. S. Coyne, Z. Zhou, C. Thompson et al. 2003. The impact on health-related quality of life of stress, urge and mixed urinary incontinence. BJU International. 92, 731-735.
3. Izzet Kocak, Pinar Okyay, Mehmet Dundar et al. 2005. Female urinary incontinence in the West of Turkey: Prevalence, risk factors and impact on quality of life. European Urology. 48, 634-641.
4. Bo Eun Kwon, Gi Yon Kim, Youn Jung Son et al. 2010. Quality of life of women with urinary incontinence: A systematic literature review. International Neurourol Journal. 14(3): 133-140.
5. Joao Bosco Ramos Borges, Larissa Neri, Rosa Maria Silveira Sigrist et al. 2009. Assessing quality of life of women with urinary incontinence using the Kings Health questionnaire. Einstein. 7 (3 Pt 1): 308-313.
6. Stavros Charalambous, Argyrios Trantafylidis. 2009. Impact of urinary incontinence on quality of life. Pelviperineology. 28: 51-53.
7. Alison J. Huang, Jeanette S. Brown, Alka M. Kanaya et al. 2006. Quality-of-life impact and treatment of urinary incontinence in ethnically



- diverse older women. Arch Intern Med. 166: 2000-2006.
8. Ananias C. Diokno. 2003. Incidence and prevalence of stress urinary incontinence. Advanced Studies in Medicine. 3(8E), S824-S828.
  9. Bhamini K. Rao. 2009. Tanzberger approach in prevention and treatment of urinary incontinence in sports women. Physiotherapy- The Journal of the Indian Association of Physiotherapists. 6(2): 25-28.
  10. Diane F. Borello-France, Halina M. Zyczynski, Patricia A. Downey et al. July 2006. Effect of pelvic-floor muscle exercise position on continence and quality-of-life outcomes in women with stress urinary incontinence. Physical Therapy. 86(7): 974-986.
  11. Jose Mary Sangeetha, Sheela Rao. 2010. The efficacy of a Comprehensive pelvic floor muscle rehabilitation program of stress urinary incontinence in women. The Indian Journal of Occupational Therapy. XLII (1): 3-6.
  12. Dedicacao AC, Haddad M, Saldanha MES et al. 2009. Comparison of quality of life for different types of female urinary incontinence. Revista Brasileira Fisioterapia. 13(2): 116-122.
  13. Beate Carriere. 1998. The Swiss Ball: Theory, Basic Exercises and Clinical Application. 327-358.

How to cite this article: Bhatt HA, Hande DN, Shinde N et. al. Effect of tanzberger exercises in women with stress urinary incontinence. Int J Health Sci Res. 2013;3(3):44-50.

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