

## Conference Paper

# Addition of Neuromuscular Taping in Kegel Exercise For Increasing Pelvic Floor Muscles of the Urine Incontinence in Middle-aged Individuals

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**Abstract**

Urine incontinence is the loss of bladder control, or leaking urine. The current study aimed at providing a physiotherapy intervention such as adding neuromuscular taping to Kegel exercises for increasing the pelvic floor muscles. The study was conducted at the Wredha Khusnul Khotimah house in Pekanbaru. The study is an experimental research with a randomized pre- and post-test group design, and made a comparison between the two groups. The study compared the RUIS (Revised Urinary Incontinence Scale) scale value before and after the intervention. The study sample comprised of 20 middle-aged people with urine incontinence condition who were recommended neuromuscular taping in addition to their Kegel exercises for six weeks. Mann Whitney test found  $p$ -value  $< 0.05$ , so it could be concluded that there was a difference between the RUIS value before and after the intervention in both groups. The addition of neuromuscular taping to Kegel exercises is more effective than Kegel exercise alone for urine incontinence condition in middle-aged individuals.

**Keywords:** Neuromuscular taping, elderly, urine incontinence

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## 1. Introduction

Urine incontinence is defined by International Continence Society (ICS) as the gripe of the accidental urine leakage. Urine incontinence is often happened on the woman than man and influencing for all age women. The prevalence degree has the variety between 9% and 72% for the 17 until 72 years old woman. The most general of urine incontinence on the woman is stressed [1]. Urine incontinence influences the woman for all ages. On the middle age, prevalence estimation is about 30% until 40% and increasing through 50% for the older woman. Urine incontinence is synchronized to the shame and anxiety which can be the negative effect on participation of the social, sexual

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intercourse, and pride [2]. The Neuromuscular taping addition method on the Kegel exercise intervention is one intervention application in the skin accepts the variant stimulation types (Mechanic, thermal, and pain) which is known through the specific receptor activation (mechanoreceptors, and nociceptors). Mechanoreceptors responds the perpendicular increasing. (discmerkel) through the change in the mechanical which is applied and to the ways (meissner cells), to the mechanical deformation in the field which intersects to the skin surface (Ruffini's cells) to change the little movement (until 10 mms in the length), and variant in the very quick movement (reaching 400 Hz) (vater-pacini corpuscles). The proprioceptors as transducer, modified with stretching the muscle tendon and contraction, then there is the muscle length change where they sustain the nerve impulse which is transmitted to the backbone nerve or brain stem as long as the conductive nerve fibres highness [3]. Problem formulation as is the neuromuscular taping addition on the Kegel exercise intervention more increases pelvic floor muscle strength than given exercise Kegel intervention only on the middle age urine Incontinence. Purpose of the study was to prove the neuromuscular taping addition on the Kegel exercise intervention increased more on the basic floor muscle strength than only given the Kegel exercise intervention on the middle age urine Incontinence.

## 2. Material and Method

The material that was used in this study were gymnastics/gym mat taping (neuromuscular taping), scissors, drawings, water, and stationery. This experimental study was conducted by using Randomized Pre and Post Test Two Group Design. They were comparing between treatments in two groups. Each group was according to 10 middle age elderlies with the urine incontinence. The first group treatment was given the Kegel exercise intervention and the second group treatment was given the neuromuscular taping addition on the Kegel exercise. The measurement was operated by using RUIS (Revised Urinary Incontinence Scale).

This study was conducted in "Khusnul Khotimah" nursing home, Pekanbaru for six weeks on August until September of 2020. Population of the research was elderly affordable population with criteria: 1) Woman elderly for middle age (45 until 59 years old), 2) elderly who has the urine incontinence, 3) respondent is aware and able to communicate actively, 4) drink as much as 6 until 10 glasses, 5) being ready to be the research subject from beginning until ending of the research with the agreement can fulfil informed consent, signing and re-collecting inform consent to the research. The

middle age elderly which fulfilled the inclusion and exclusion criteria. Then operated the sample taking with the simple random sampling technique was found as many as 20 people which were divided then to two groups and then sample in every group. The first group will get the single Kegel exercise intervention and the second group will get the neuromuscular taping addition on the Kegel exercise intervention.

Descriptive statistic to analyse the research subject characteristic is synchronized by age, length, weight, sample distribution according to RUIS of which data is taken on the assessment and first measurement or early test. The data comparison test on two treatment groups before using the independent T Test, and found the p-value is > 0.05, then the data is called with comparable. Hypothesis and or data different test through the post-test value after the treatment from two treatment groups is addition of neuromuscular taping to the Kegel exercise intervention and only giving Kegel exercise alone aims to compare the average result of the decline in the value of the RUIS scale from after intervention of the middle age elderly or treatment in each of these group because the data doesn't distribute normally then using Mann-Whitney U test.

### 3. Results

The characteristics of the subjects was presented in the Table 1.

TABLE 1: Subject characteristics.

Age (yr)	Treatment group I		Treatment group II		Total	
	<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)
56	1	10	0	0	1	5
57	0	0	1	10	1	5
58	0	0	2	20	2	10
59	9	90	7	70	16	80
Amount	10	100	10	100	20	100

Source: Author's own work.

Based on the Table 1, majority of the subjects were 59 years old.

TABLE 2: Score of RUIS scale before and after training.

Data Group	Normality with Shapiro--Wilk test			
	Treatment group I		Treatment group II	
	Mean ± SD	<i>P-value</i>	Mean ± SD	<i>P-value</i>
Before	10.70 ± 1.05	0.11	10.90 ± 1.10	0.067
After	7.30 ± 0.82	0.01	5.10 ± 0.88	0.017

Source: Author's own work.

Table 2 above shows a significant decrease in the value of the RUIS scale. from the result of normality test with the Sapiro–Wilk test before and after training treatment group I it is known that the values of  $p > 0.05$  means that the data is normally distributed while in the treatment group II the values before treatment is known  $p$  value  $> 0.05$  which means the data is not normally distributed. The mean value before giving neuromuscular taping and Kegel exercise in treatment group I obtained a mean value of  $10.70 \pm 1.05$  and the mean value after giving neuromuscular taping and Kegel exercise in treatment group I obtained a mean values of  $7.30 \pm 0.82$ . in the treatment group II before the Kegel exercise, the mean value was  $5.10 \pm 0.88$  which means that there was a difference in the decrease in the values of the RUIS scale in group I that was more decreased than that in group II. Resulting in a decrease in the RUIS scale with the criteria for moderate urinary incontinence to mild urinary incontinence.

## 4. Discussion

Based on the hypothesis test by using different test of two averages with Mann Whitney U Test was found value  $p = 0,000$  ( $p < 0,05$ ) with meaning that there was the significant difference with average of the RUIS scale on the Kegel exercise intervention and the neuromuscular taping addition. This showed that the neuromuscular taping addition is better than intervention only giving the single Kegel exercise giving in reducing the urine insentience degree on the middle age elderly. *Neuromuscular Taping* (NMT) is the specific application from the elastic adhesive tape in the skin surface with the eccentric stimulation technique outcomes the decompression and dilatation on the closed area which is used to therapeutic purpose in the rehabilitee, NMT was applied to use the designed protocol to reduce the body's liquidity blockage, increasing the blood vessel circulation and lymph gland, repairing the network homeostasis, reducing the inflammation and pain receptor hypersensitive. NMT can also affect on the muscle and mechanic conditioning from headband and 4 receptors, thus changing the muscle working, and affective influents the posture [4]. It is needed for the new method for healing the conservative to overcome stress on the urine incontinence on the woman. In this research adds the intervention such as the mechanic signal which is given together to Kegel exercise to reduce the urine leaks number after four and six weeks in giving the intervention. Every exercise session is according to 15 contractions of the floor basic muscle maximal as long as 5 seconds [5].

## 5. Conclusion

The test analyse outcome is different to use Mann-Whitney was found outcome of the p value = 0,000 which is  $< 0,05$  so it could be concluded that there was the difference between RUIS value after intervention on the each groups.in the treatment group I obtained a mean value before  $10.70\pm 1.05$  to a mean value of  $7.30\pm 0.82$ .in the treatment group II before obtaining a mean value of  $10.90\pm 1.1$  and a mean value after  $5.10\pm 0.88$ ,which means that there is a difference in the decrease in the RUIS scale with the criteria of moderate urinary incontinence being mild urinary incontinence.it can be concluded that the addition of neuromuscular taping to Kegel exercises is more effective than Kegel exercise alone interventions in the condition of urine incontinence in middle age elderly.

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## Conflict of Interest

The authors state that there is no conflict of interest.

## References

- [1] Kari, B.,et al. (2017). An International Urogynecological Association (IUGA)/International Continence Society (ICS) Joint Report on the Terminology for the Conservative and Non-Pharmacological Management of Female Pelvic Floor Dysfunction. *International Urogynecology Journal*, vol. 28, issue 2, pp. 191-213.
- [2] Danfort, K. N., et al. (2006). Risk Factor for Urinary Incontinence among Middle-Aged Woman. *American Journal of Obstetrics and Gynecology*, vol. 194, issue 2, pp. 339-45.
- [3] Blow, D. (2012). Neuromuscular Taping from Theory to Practice. Milan: Edi-Ernes Medical Publisher.

- [4] Costantino C., et al. (2016). Neuromuscular Taping Versus Sham Therapy on Muscular Strength and Motor Performance in Multiple Sclerosis Patient. *Disability and Rehabilitation*, vol.38, issue 3, pp. 277-81.
- [5] Nilsen, I., et al. (2018). Mechanical oscillations superimposed on the pelvic floor muscles during Kegel exercises reduce urine leakage in women suffering from stress urinary incontinence: A prospective cohort study with a 2-year follow up. *Acta Obstetrica et Gynecologica Scandinavica*, vol. 97, issue 10, pp. 1185-91.