



Exploring the Effects of Kegel Exercises on Pelvic Floor Muscle Problems

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Abstract

Therapeutic exercises play a fundamental role in disease control and treatment. In particular, all the exercises that are used to strengthen the supporting floor muscles include Kegel exercises, the purpose of this study is to clarify the problems caused by the weakness of the pelvic floor muscles and to investigate the effects of Kegel exercises on them to investigate the subject, data were collected through observation and a semi-experimental method, and then analyzed using SPSS 26. This study was conducted on 40 participants from Beijing Sport University (BSU) in China. Their exercise norms were recorded over eight weeks, before and after the intervention. The comparison between the pre-intervention and post-intervention exercise norms was performed using an independent samples test. The results of the study indicate that the health problems caused by the weakening of the pelvic floor muscles include urinary incontinence, hypertonus, and Prolapse. An average of 10.45 percent of pelvic floor muscle health problems were reduced by eight weeks of Kegel exercises, specifically 17.02 percent of urinary incontinence, 9.6 percent of hypertonia and 4.73 percent of Prolapse. The results of the study show that Kegel exercises can be used to treat pelvic floor muscle disorders.

Keywords: Exercises, Floor, Hyper tonus, Kegel, Muscles, Pelvic, Prolapse.

Introduction

Muscle weakness occurs throughout life, but the weakness of some muscles has effects on a person's social life. The most common is urinary incontinence. In Western countries, approximately 25% of women and 10% of men suffer from this disease(Saini et al., 2009). Muscle weakness can affect men and women of all ages, but it affects older people more than young people (Ryall et al., 2008). Urinary incontinence has a huge impact on a person's life. It may prevent them from participating in social life because they are afraid that someone might find out about their embarrassing disease. The lack of control also has a negative effect on a person's status and reduces their self-confidence. Prolapse: An organ or tissue that herniates into a different cavity or space from its natural anatomical place is

referred to as a prolapse. It is the fall of the uterus, bladder, or rectum into the vaginal canal in the setting of pelvic organ prolapse (POP), frequently as a result of the surrounding support tissues becoming weaker (Iglesia & Smithling, 2017). Hypertonus: Elevated intra-abdominal pressure (IAP), another name for hypertonus, is a condition when there is an increase in pressure inside the abdominal cavity. Numerous things, such as hard exercise, heavy lifting, or other activities involving strong muscular contractions, might contribute to this elevated pressure (Chhatani & Pitre, 2024). Kegel Exercise: The Kegel exercise was developed by Dr. Arnold H. Kegel, an American gynecologist, a straightforward, nonsurgical technique, to strengthen the pelvic floor muscles. These exercises work the muscles that form a hammock-like structure at the base of the pelvis, supporting the uterus, rectum, and bladder by contracting and releasing them (TAREK & YUSRA, 2017).

Just like other muscles in the body, the supporting pelvic floor muscles can be strengthened through exercise. These muscles are not visible and are difficult to touch. Before patients can exercise effectively, they must first identify the pelvic floor muscles. Patients need to gain awareness of these muscles, including their position and movements. They should consistently share their experiences with the physiotherapist by answering questions such as: What are you feeling? Where do you feel it? How do you feel? Has this feeling increased or decreased? If the pelvic floor muscles cannot contract properly, strengthening exercises are ineffective (Tarek & Yusra, 2017).

Strengthen the pelvic floor muscles and improve overall quality of life. Regular Kegel exercises not only strengthen the pelvic floor muscles but also strengthen the back muscles, reducing chronic back pain (Kumar et al., 2015). McGill (1998), in the experimental study "Control of Urinary Incontinence due to Stress," reports that Kegel exercises benefit the leg muscles, pelvic floor muscles, and spine, helping to maintain overall muscle health (Kegel, 1948).

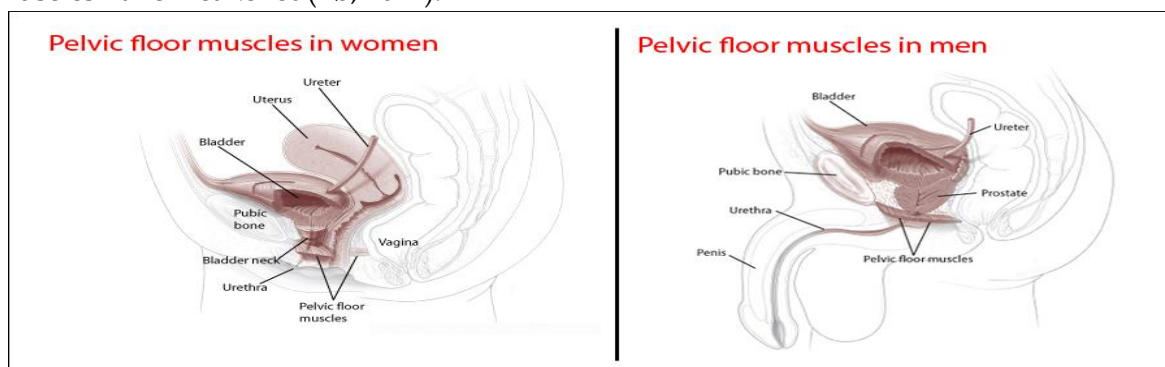
Material and Method

The research was carried out quantitatively and qualitatively using bibliographic and semi-experimental methods, so that the topics, about which there was not enough information before the research, were well clarified. Reliable scientific books, scientific journals, and websites have been used in the collection of topics. For accuracy of content, relevant sources are cited at the end of almost every paragraph. This study was conducted on 40 male and female participants of Beijing Sports University, China, whose exercise norm was measured before and after eight weeks of exercise. Independent t-test was performed by T- All primary data were analyzed by SPSS.26 program.

Introduction to Kegel Exercises

Kegel Henry Arnold is the name of an American doctor who was born on February 21, 1894, in Lansing, Iowa, and died on March 1, 1972, at the age of 78. he was working in the Maternity Department of Cook University's Kadri Hospital. Performing exercises on it, which became known as Kegel Exercises, meant that these exercises were performed specifically on the muscles of the supporting floor. Therefore, these muscles are called pelvic floor muscles in English, so they are also called exercises for pelvic floor muscles (Kegel, 1948).

The supporting floor muscles are located in the pelvic floor; in English, they are called pelvic floor muscles. They are attached to the pubic bone in the front and the coccyx bone in the back, which protects the intestines and bladder in men and the intestines, bladder, and uterus in women (Cammu et al., 2000). The supporting floor muscles are shown in the figure below (1). There are many factors that weaken the pelvic floor muscles, such as pregnancy, childbirth, surgery, aging, constipation, chronic cough, weight gain, and lifting heavy weights (Bø, 2014). If you experience urinary incontinence during sneezing, laughing, stress, weight lifting, jumping, or weight lifting, then your supporting floor muscles have weakened (Bø, 2014).



Weakening of the supporting floor causes health problems in hypertonus and Prolapse, which results in urinary incontinence (Clemons et al., 2004). Prolapse: The uterus lies behind the bladder, which reduces the space in the bladder to hold urine and causes bladder irritation, creating an overactive bladder (Olsen et al., 1997). The supporting floor muscles must be able to contract and support other structures as well as be able to relax (Gilpin et al., 1989). Hypertonus of the supporting floor muscles causes supporting floor dysfunction (Snoeker et al., 2013).

The ability to protect urine means that one does not pass urine involuntarily and does not wet oneself. There are two mechanisms for the ability to conserve urine:

1. Internal mechanisms of ankle closure, including intrinsic (smooth muscle) and extrinsic (striated muscle).
2. Auxiliary external mechanism, which involves the supporting floor muscles.

During exercise, 60% of the stress on the ankle joint comes from the internal mechanism of the ankle joint and 40% from the active external contribution of the supporting floor muscles (Hall, 2005).

The table. (1) Kegel Exercise Protocol Table (8 Weeks Training Plan)

Week	Frequency (Sessions/Day)	Repetitions per Session	Hold Duration	Relax Duration	Body Position	Instructions
1 - 2	2 (Morning & Evening)	10	3 seconds	3 seconds	Lying Down	Focus on correct muscle engagement; avoid other muscles; breathe normally
3 - 4	3 (Morning, Noon, Evening)	15	5 seconds	5 seconds	Sitting/Standing	Increase awareness of contraction; use a daily logbook

5 – 6	3 (Morning, Noon, Evening)	20	7 seconds	7 seconds	Sitting/Standing	Ensure proper technique; light core activation
7 – 8	3 (Morning, Noon, Evening)	25	10 seconds	10 seconds	Standing	Simulate real-life function; maintain consistency

Additional Notes:

- Total Duration: 8 Weeks
- Supervision: Weekly follow-up (in-person or virtual)
- Monitoring Tool: Daily exercise log maintained by each participant
- Assessment: Pre- and post-exercise evaluation using Independent Samples T-Test
- Main Outcome Variables:
 - Reduction in urinary incontinence
 - Improvement in hypertonia
 - Decrease in pelvic organ prolapse symptoms

Data Analysis:

The table. (2) presents the general information of the participants

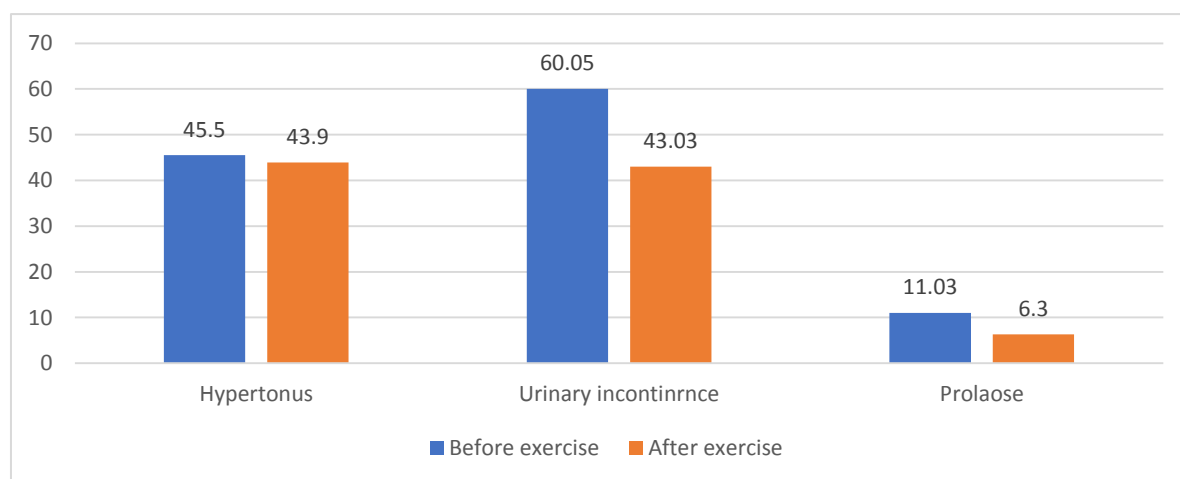
Type	middle range	limit of variation	normal range
Age	28.8	±9.9	0.322
height (cm)	157.2	±8.4	0.412
Weight (kg)	72.5	±10.02	0.345
BMI	28.9	±2.8	0.6
Time of illness (years)	5.2	±01.03	0.267

From the above (2) table, it can be seen that the average age of the participants is 28.8 years, the average height is 157.2 cm, their average body weight is 72.05 kg and BMI is 28.9, so it is known that the weight of the participants is relatively high. Or they were on the rise and problems with the supporting floor muscles in young people. From this place, it became clear that urinary incontinence does not only occur in old people but also in young people.

Table. (3) below shows the results of the T-test

type	Before exercise		After exercise		Changes		P
	Middle limit	Deviation	Middle limit	Deviation	Middle limit	Deviation	
A	53.5	±14.6	43.9	±12.6	8/4	±1/8	0.10
B	60.05	±19.9	42.02	±21.1	18/03	±3/1	0.18
C	11.03	±5.9	6.03	±4.7	5.03	±2/7	0.06

The results of the T-test in Table 3 above show that the exercise is beneficial because the data obtained about hypertonus, polyps, and urinary incontinence before and after the exercise are different. For better clarity, the graph below clearly shows the difference between these three areas before and after exercise. Exercise can significantly raise intra-abdominal pressure (IAP), especially high-intensity workouts like deadlifts and squats. This elevated pressure may have a detrimental effect on the support provided by the pelvic floor and may have a role in the development of POP. It has been shown that not every activity has a detrimental effect on pelvic floor support. For instance, PFMT (pelvic floor muscle training) has been demonstrated in certain trials to be useful in enhancing pelvic floor support and lowering POP symptoms. Exercise and high-intensity physical activity have been associated with a higher incidence of pelvic organ prolapse (POP). Research has indicated that physically demanding activities, such as powerlifting and Olympic weightlifting, may increase the occurrence of POP symptoms, which can range from 0 to 23%. Extensive exercise has been shown to decrease pelvic floor support and exacerbate POP symptoms in both experimental and prospective investigations. Exercise can lead to increased intra-abdominal pressure, which can further weaken pelvic floor support, and raise the risk of pelvic organ prolapse by reducing pelvic floor support. These effects can influence Prolapse and hypertonus.



The graph above (1) shows the effects of Kegel exercises on the supporting floor muscles.

Discussion

Urinary incontinence is a common issue among women, particularly during pregnancy, and can be mitigated through regular Kegel exercises. These exercises help maintain the strength and functionality of the pelvic floor muscles, preventing their weakening and associated complications (Aslan, 2008). Additionally, Kegel exercises promote the production of antidiuretic hormone, which contributes to better regulation and control of urinary function. Kumar (2015) clarified that Kegel exercises strengthen the muscles of the supporting floor. Regular performance of these exercises makes the muscle fibers stronger and more organized. Similarly, Bump and Wyman (1991), in their study "Evaluation of the Supporting Floor Muscles," concluded that consistent Kegel exercises can prevent problems associated with the supporting floor muscles in women and play an important

preventive role. This study extended previous research by examining the effects of Kegel exercises on men as well as women. It was found that men also benefit from Kegel exercises, even though prior studies focused primarily on women and did not mention supporting floor muscle problems in men. Furthermore, this study identified specific problems arising from weakness of the supporting floor muscles, highlighting the importance of strengthening exercises for both sexes.

Conclusion

In the process of research, it was found that urinary incontinence, hypertonus, Prolapse, and other such problems arise from the weakening of the pelvic floor muscles. Kegel exercises can strengthen the pelvic floor muscles. By becoming stronger, all health problems caused by the weakening of these muscles are treated, such as muscle weakness, urinary incontinence, Prolapse, and hypertonus. Eight weeks of Kegel exercises on men and women reduced an average of 10.45 percent of supporting floor muscle health problems, specifically 17.02 percent of urinary incontinence, 9.6 percent of hypertonia and 4.73 percent of prolapse. Supportive floor muscle disorders can be treated with Kegel exercises. These problems do not only occur in women and older adults, but there is a possibility of them occurring in all those who carry heavy weights, are overweight, and have a constant cough.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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