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Effect of Eight Weeks Central Stability Exercise, Powerful, Knee Power, Power of Muscles, Pain, Osteoarthritis Woman Performance

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ABSTRACT

Background: Osteoarthritis, also called degenerative joint, is common in human joints. Between big joints, knee is a common joint to have pain and the most drug that is use, is .treatment exercise is a useful component of the management of knee osteoarthritis in the elderly Due to sign of disease that cause limitation of motion, illness, treatment goals should include reducing pain. Most of the drugs are used for pain are medications that have often secondary effects and are effective in reducing pain. According to effect of disease in life quality of people in society and also drug prices, this disease in a society can affect on person's health, economy and workers, and among osteoarthritis treatment method, exercise therapy is so profitable. **Objective:** The aim of the present study was to Effect of eight weeks central stability exercise, powerful, knee power, power of muscles, pain, and Osteoarthritis woman performance. **Results:** The results of research showed that both strength training and central stabilization can reduce pain and have significant role on functional recovery of patients with Osteoarthritis in elderly women. **Conclusion:** According to the findings of its review the background and related research it can be stated that the proper functioning of the muscles being a central role in the state of neutral pelvic obliquity. This situation can make leg bone normal and make joint knee good. If knee joint place in a good status can reduce pressure on joint muscles and also reduce pain and performance of knee joint. Moreover because knee joint in between two long leg bone and big bone, stability of upper on lower bone is more effective than when only joint stability is mentioned.

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INTRODUCTION

Osteoarthritis, also called degenerative joint, is common in human joints. Poos et al(2009). Between big joints, knee is a common joint to have pain and the most drugs that is use, is treatment exercise is a useful component of the management of knee osteoarthritis in the elderly. Rahim Zadeh(2005).Due to sign of disease that cause limitation of motion, illness, treatment goals should include reducing pain Panjabi (1989) .Most of the drugs are used for pain are medications that have often secondary effects and are effective in reducing pain.Niemann(1993). According to effect of disease in life quality of people in society and also drug prices, this disease in a society can affect on person's health, economy and workers, and among osteoarthritis treatment method, exercise therapy is so profitable. Osteoarthritis is a joint not-boiled disease which is because joint cartilage destroyed with new bone in surface and margin in movable joints. Nasabet al (2001) This condition can result in the loss of physical performance to limit individual autonomy and can affect on the quality of life (Van Goul *et al*, 2000). The most common site of osteoarthritis after fingers and vertebrae are knee so that one-third of the world's population over 65 years is with radiological changes of knee osteoarthritis (Burnham, 2000). The aging process involves changes in erosion, gradual and irreversible loss of body systems that are functioning and quality of life of older people (Hetkowl *et al*, 2000).

Having a healthy lifestyle is essential in all age groups. People may be due to various reasons such as bad posture, muscle weakness and bad habits and etc which create problems in their extremities (Nourkeen *et al*, 2005) knee is the largest and most complex joint of the body. These joint in addition to mobility, has stability in the structure. Joint is hang type and a synovial joint. Knee set is a combination of two separate joint that are in a joint capsule, big neo leg joint and patellofemoral leg joint. Big neo leg joint in between the distal femur and proximal tibia. Montazeri et al(2005). Patellofemoral- leg joint is between patella femoral and leg To protect the

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articular surfaces, internal and external mouthful leg and the inner surface of the patella, femur and tibia are covered by articular cartilage (Yasin, 2009). Osteoarthritis is known as degenerative arthritis and can be characterized with progressive loss of articular cartilage and bone repair with Sup Kendral and detailed annotation and a series of biological changes in the synovial membrane which its features can be seen in knee and leg and hand joint. Montazeri(2005). Because knee is a weight-bearing is exposed to direct heat and accounts for the highest incidence of osteoarthritis (Flowgesroud 2010). According to radiology results in west country osteoarthritis in under 45 years old people 2% and 64-45 years old people 35 % and in older than 65 year old 68% has increase of risk factors for this disease (Flowgesroud 2010).

The mechanism of osteoarthritis of the knee follows the onset, which with start of lower end of the femur cartilage and Tibia upper cartilage gradually becomes destructive changes. Similarly patellar cartilage involvement and damage to this area leads to osteoarthritis. So knee osteoarthritis can a created in 2 place, big neo leg and leg patella femoral. The main cause of joint damage in this disease is no blood vessels to nourish area (Yasin 2009). Osteoarthritis is a complex disorder in which one or more risk factors, including age, gender, height and etc can be identified.

In industrialized countries attention to osteoarthritis was grow as a major cause of pain and disability and deformity of body (Flowgesroud, 2010). Knee joints not only bear weight but also during exercise and daily activities were under stress.

Knee injuries during sports, as well as aging and being overweight can lead to a permanent loss like effect of eight weeks central stability exercise, powerful, knee power, power of muscles, pain, Osteoarthritis woman performance (Yasin 2009).

According to this research, researchers effort to prevent and reduce the impact of symptoms eight weeks, core stabilization and strengthening exercises on pain and performance in women with osteoarthritis of the knee. In last studies said that core stabilization is reduces with backache and under body pain, also core stabilization program reduce injury in woman (Hadad nezhad 2009).

Prevalence and epidemiology of osteoarthritis:

Osteoarthritis is the most common joint diseases in humans. Knee osteoarthritis is cause of chronic disability among elderly people in developed countries. About 100,000 people in the United States cannot move from his bed independently due to osteoarthritis of the leg or knee. In aged less than 55 years, osteoarthritis joint distribution between men and women are similar. In older people, leg osteoarthritis is more common in males, while thumb osteoarthritis is more common in women.

Similarly, evidence of radiographic of knee osteoarthritis, especially symptomatic osteoarthritis of the knee, is more common among women than men (Montazeri, 2005). The prevalence of knee osteoarthritis in Helena in 2007, 14.3 of per 1,000 populations for males and 23.8 of per 1,000 women have been reported. While the prevalence of hip osreoarthritis 10.2 of per 1,000 for men and 18.9 of per 1,000 for women have been reported (Pous, 2009).

The percentage of incidence of knee osteoarthritis into the country in 2004 in Kashan, among 1000 patients with knee pain who visited treatment clinic, obtained the 350 patients (35%) were diagnosed with osteoarthritis of the knee. Of these, 307 patients (87.7) were female and 43 (12.3) were male (Zamani *et al*, 2005).

Osteoarthritis risky factors:

Age: age is the biggest risk factor for osteoarthritis. In a radio graphic study in women aged less than 45 years, only 2 % had osteoarthritis, but between the ages of 45 to 65 years, the prevalence was 30%, while among those over 65 years had a rate of 65 %. The figures were similar in men, but this figure is somewhat lower for older age groups. With the increasing prevalence of osteoarthritis is higher in women than men (Adams, 2001; Thomas *et al*, 2004). In a study in 2009 to assess the prevalence of risk factors in people with knee osteoarthritis, the researchers stated that individuals with osteoarthritis, 132 (30.5%) aged 40 to 60 years and 278 patients (69.5 %) were older than 60 years (Mehdi Nasab *et al*, 2009).

Weakness of muscles: the weakness of quadriceps has an important role in knee osteoarthritis. Women who are suffering from this disease, weak quadriceps muscles can cause disease. Muscle weakness may increase the pressure on the joints, especially when climbing uphill (Salmenda *et al*, 1951). In people with osteoarthritis of the knee, relation of weakness with disability of quadriceps is more than joint pain or drastically changes of radio graphic (Montazeri *et al*, 2005).

- Racial difference: racial differences are involved in the prevalence and the mode of conflict of osteoarthritis of joints. Chinese who live in Hong Kong have leg joint osteoarthritis less than Caucasian. Osteoarthritis is more prevalence in national Americans more than Caucasian. Joints osteoarthritis of between joints, especially the leg joint osteoarthritis, much less common in blacks than whites in South Africa have the same population (Montazeri *et al*, 2005; Ahmadi, 2004).

Genetics: genetic has a less ambiguous with osteoarthritis. For example, if a woman is diagnosed with osteoarthritis of the interphalangeal joints, diagnosed that risk of osteoarthritis with his mother and his sister is

twice to three times more likely than those in the mother and sister of a woman (Montazeri *et al* 2005; Ahmadizadeh, 2004).

Intense beats and frequent use of joint: Despite the fact that articular cartilage is highly resistant to exhaustion, but repeated exposure to stress can quickly lead to disability and joint erosion. In general, the earliest changes in osteoarthritis occurs in areas where bear the greatest pressure (Montazeri *et al*, 2005 ; Ahmadi, 2004). Stereotyped and repetitive behaviors of joints leading to osteoarthritis of joints. Research has shown that activities such as those by manual workers who drill holes in stone work, shipyard workers and coal miners can cause osteoarthritis in joints which are doing frequent Occupational men whose careers is by bunting, had higher rates of radiographic evidence of knee osteoarthritis (Montazeri *et al*, 2004 ; Ahmadi, 2004).

Overweight: overweight is a risk factor for knee osteoarthritis. For those in the baseline examination, had the highest level of BMI, are at the relative risk of knee osteoarthritis in Genesis 36 next year, 1.5 for the men and 2.1 for women, respectively. For intense osteoarthritis of the knee, the relative risk is about 1.9 for the men and two thirds of women increased 2.3 for women. Overweight plays an even larger role in the etiology in the most severe cases of osteoarthritis of the knee. People who have overweight and have no osteoarthritis can decrease its risk. Research has shown that a weight loss of 5 kg is associated with 50% reduction in the risk of symptomatic knee osteoarthritis (Montazeri *et al*, 2005). Weight loss in a 6 month period in a group of fat patients with knee osteoarthritis with exercise intervention led to an improvement in pain and disability in these individuals. Biomechanical data suggest that combination of exercise with diet in comparison with only exercise can have best performance in patients walking (Maseer *et al*, 2000).

Gender: women make up a higher percentage of patients with osteoarthritis than men (Solomon, 2000). Although its reason is not clear, but the effects of estrogen in postmenopausal women has been reported as a risk factor. However, the relationship between estrogen 3.4 % of patients with osteoarthritis of the knee, are women (Shana, 2001).

Definition of Core Stability:

District of waist - hip – leg with around muscles are called central area of the body. Central consistency as motor control and muscular capacity of the central region, to maintain the stability of the region in various postures and external forces acting on it (Punjabi *et al*, 1989). Core Stability as a movement control and central muscles capacity, is to save this area stability in different posture and its external power (Panjabi *et al* 1989). Strengthen core stabilization is became a known methods in the world of sports medicine. Health programs such as Pilates, Somatics, Tai Chi, yoga, follow principles of strengthen core stabilization. Strengthen the core stabilization muscles and related muscles as a method for the prevention and rehabilitation of musculoskeletal injuries - muscle and back pain as well as a method for run is used to enhance athletic performance and significant (Hubrit *et al*, 1984, Stewart *et al*, 1994; Keriskow *et al*, 1992). Core (center) is considered as a muscular box, which stomach muscles are in front, para- spinal and gluteal muscles on the front, the posterior aperture in the roof and floor are the pelvic floor muscles and pelvic girdle are in the roof. This group of muscles, are like a girdle muscular body and a motor unit to stabilize the spine (Riparedsoun *et al*, 1999).

Sarvestani (2010) compare two methods of hand and taping payment on 36 middle-aged patients with knee pain. and he achieved that both methods in the recovery of patients is effective. But handy payment is more effective than taping to reduce pain and morbidity.

In a research Ahadi (2009) compared the effects of isometric exercise and physical modalities for patients with osteoarthritis symptoms. The researchers of this study reported that physical modalities and isometric exercise in patients with osteoarthritis knee pain has a reduced rate. Physical therapy modalities can recover daily activities of life compared with isometric exercise with therapeutic method.

Hadad nezhad *et al* (2009 & 2009) examine the relationship between core stability of trunk and lower extremity injuries in college women. The researchers use test such maintaining the status Plank, Kobra, supine bridging the heel, open arch bridge and stomach muscle endurance test and step - down test to assess functional strength to evaluate core stabilization of muscles. Results of Step down and other test show that there is a negative significant relation between core stabilization of muscle and under body injury of women.

Javadian *et al* (2005) evaluate the effects of stabilization exercise on pain, muscle endurance and functional disability in patients with suspected lumbar segmental instability issues and reported that these exercises are more effective than conventional training, muscle endurance and extended range of motion trunk is the most common practice leads to improved performance of patients with suspected segmental instability of the lumbar spine.

Hesari *et al* (2005) examined the effects of eight weeks of exercise on balance, core stabilization, and the deaf boy students and use star spine test to assess dynamic balance. These results showed that the core stabilization exercises improve dynamics balance in testers.

Shirazi *et al* (2005) examined the impact of a 12-week training program on improving knee osteoarthritis. Results showed that recommended exercises includes stretching and resistance can improve knee osteoarthritis patients status in all three factor measured by the WOMAC, means pain of stiffness and physical function.

In a research Jancen *et al* (2012) do three methods of strength training, exercise therapy (a combination of strength training, aerobic exercises, range of motion) and exercise therapy with the mobilization, and disable reduce pain and disability in people with knee osteoarthritis. First pain and patient performance was measured. After completion of the training results show that comparison between 3 interventions for pain and physical function was significant. But the practice of manual therapy combined with more effective mobilization on pain compared to strength training alone and training alone.

Several studies was reported the improved performance and reduced pain in patients with knee osteoarthritis as a result of resistance training including Ettinger and Afabel (1994), Toup *et al* (2001), Bosomworth *et al* (2009), Pollard *et al*. (2008) kim bennell *et al* (2005).

This research reveals that resistance exercises including variety of subjects. Training with free weights and exercise are the most commonly used pesticides. In a study by Andersen *et al* (2011) examined the pressure in muscle activity during rehabilitation exercises compared with stretching exercises and free weight training. They reported that the increase in EMG in resistance training with weights and exercise are the same. With this theme, we can conclude that training with free weights, have the same effect on increasing muscle strength with stretching and exercise. So with regard to the safety and cost of practice with pesticides, the use of resistance training in rehabilitation of patients has a priority.

Macnight *et al* (2010) studied Compare power program, self-management, and combining both exercise on knee osteoarthritis and reported that in this 3 group, we have significant in physical performance, moreover reduction of pain was seen and there s no significant difference between groups.

In another research Thorpe *et al* (2010) examined the effects of lower extremity biomechanics training program focused on the internal pressure of knee osteoarthritis: 6 patients with osteoarthritis of the leg have abductor exercises in the knee for 4 weeks in combination with traditional exercises, hamstring and quadriceps. He reported a78% reduction in pain grade WOMAC of knee and also suggested that in knee osteoarthritis recovering besides strengthening the muscles around the leg muscles around the knee was strengthened.

Methodology:

The population of this study is women with osteoarthritis of the knee in Mashhad. Statistical sample is available women with age range 40-70 years, mean weight 10.52 ± 70.71 and Height 6.12 ± 156.34 .

This research was "semi-empirical "because lack of control of some other intervening variable, which was conducted by uses pre-test - post-test. We attempted to apply this concept to the independent variables, including the effect of core stabilization and strengthening exercises for eight weeks in women with osteoarthritis of the knee.

Measuring Tools:

This first tool of this study is dynamometer. This device is made of England and has a pressure sensitive pad and ruler to connect the anchor leg on one side and the other side of the bed.

Visual questionnaire of pain VAS:

This scale show pain of patient in total status which includes section: first pain intense, second dryness in knee joint and third rigid in doing daily activities which is dare by a 10 CM ruler and for understood by the patient's pain is graded from zero to 10 cm. On this scale, zero represents no pain, 1 to 3 indicate mild pain, 4 to 6 moderate and 7 to 10 indicates severe pain.

WOMAC functional questionnaire:

This questionnaire reveals what knee pain affects your ability to perform daily activities. The questionnaire consisted three parts: pain, stiffness, difficulty of performing daily activities

Methods of statistical analysis:

After data in SPSS and selecting tags for variables, by this software rare data can be analyze with descriptive statistic.

B. to calculate index of central tendency (median and mean), index of dispersion (standard deviation, minimum and maximum), points and percentile rank, frequency tables and charts and descriptive statistics were used.

The research data was collected using semi-empirical method with questionnaire and for determining normality of data K-S test was done, and to compare groups, one-way Variance analysis test (ANOVA) and post Tukey hoc test was done.

Results:

" Eight weeks of strength training have effect in women with knee osteoarthritis.

According to significant differences between the groups, Tukey test was conducted to determine place of differences and hypothesis testing, the results are presented in Table 7.

Table 1: Tukey test to determine if the mean difference between paired.

Group	Average	Significant level
Control	6.56±2.34	P=0.023
Strengthen exercise	2.88±1.35	

According to table 12-4, comparison of difference between control group and strengthen exercise group of knee was significant about performance (P=0.023).

There is a significant difference between effects of eight weeks central strengthen and stability exercise of knee on performance of women who have osteoarthritis.

According to difference between groups, chasing test of Toki was Done to select difference place and theory 8 test, and results show in table 2.

Table 2: Determine Tukey test to the mean difference between paired.

Group	Average	Significant level
Core stabilization	6.12±1.75	P=0.591
Strengthen exercise	4.91±1.41	

According to the data from Table 2, the eighth hypothesis that the core stabilization exercises and strength training effects on knee function is non-significant, so the hypothesis is rejected. (P=0.591).

There is a significant difference between the effects of an eight-week core stabilization exercises, knee strength to strength in the muscles around the knee of women with osteoarthritis.

Table 3: Mean differences in the three study groups at post-test knee.

Group	F	Significant level
Between groups	9.254	P=0.001
Into groups		

According to information contained in Table 3, between three groups under study, there is a statistically significant differences in the average muscle strength around the knee (P=0.001) so the hypothesis of significant differences between the groups of core stabilization exercises, strengthening the knee and control of muscle strength around the knee is accepted.

Discussion and Conclusion:

The results showed that eight weeks of strength training in women with knee osteoarthritis affect the performance of the knee ($p \leq 0.05$). Several studies improved performance and reduced pain in patients with knee osteoarthritis were reported as a result of resistance training including Ettinger and Afabel (1994), Toup *et al* (2001), Bosomworth *et al* (2009), Pollard *et al* (2008) kim bennell *et al* (2005). This subject revealed that resistance including a variety of section. Training with free weights and exercise are the most commonly used pesticides.

In a study by Andersen *et al* (2010) examined the pressure and muscle activity during rehabilitation exercises compared with stretching exercises and free weight training. They reported that the increase in EMG resistance training with weights and exercise the same amount of cache. With this in mind, we can conclude that training with free weights; stretching and exercise have the same effect on increasing muscle strength. So with regard to the safety and cost of practice with pesticides, the use of resistance training in rehabilitation of patients is a priority.

Results showed that there is a difference between the effects of an eight-week core stabilization exercises, strengthening women with knee osteoarthritis ($p \leq 0.05$). Most research has been done to study the effects on performance or strengthen of knee and research has comparing the two types of paid training. And can be concluded that there is no difference between the effects of these two types of exercise.

Results showed that there are differences between the effects of an eight-week core stabilization exercises, knee strength to strength in the muscles around the knee of women with osteoarthritis ($p \leq 0.05$). Last research of Mioulman *et al* (2000) Mac Karteni *et al* (1996) show that strength training can cache the traditional strength training to increase strength will affect the elderly. Jette *et al* (1999) reported that 3-6 month exercise with spring with different resistant of under body power increase 6 012% in reduce patient disability 15-18%. According to the findings of its review the background and related research it can be stated that the proper functioning of the muscles being a central role in the state of neutral pelvicobliquity. This situation can make leg bone normal and make joint knee good. If knee joint place in a good status can reduce pressure on joint muscles and also reduce pain and performance of knee joint. Moreover because knee joint in between two long leg bone and big bone, stability of upper on lower bone is more effective than when only joint stability is mentioned.

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