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Integration of Yoga Into Exercise and Its Relationship With Core Stabilization

Yoganın Egzersize Entegrasyonu ve Core Stabilizasyon ile İlişkisi

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ÖZET

Yoga, günümüzde birçok klinisyen ve fizyoterapist tarafından genel rehabilitasyon programlarını desteklemek için kullanılan tamamlayıcı yöntemlerden biridir. Ayrıca depresyon, anksiyete gibi psikolojik rahatsızlıklar ve omurgayı etkileyen ağrı, kas-iskelet sistemi bozuklukları ve kanser ve astım gibi hastalıklar dahil olmak üzere çeşitli tıbbi durumların semptomları için tamamlayıcı bir tedavi olarak giderek daha fazla kullanılmaktadır. Bu faydalarının yanı sıra yoganın bilişsel sistem üzerinde de olumlu etkileri olduğu bildirilmektedir. Bu mini derlemede, bu çalışmanın amacı yoga ve yoga uygulamasının core stabilitesi üzerindeki etkilerini incelemektir. Klinik önerimiz, lumbopelvik stabiliteyi ve çekirdek bölge kaslarını geliştirmek için core odaklı Yoga ve Yoga yönteminin kullanılabileceği yönündedir.

Anahtar Kelimeler: Kor stabilite, Egzersiz, Yoga

ABSTRACT

Yoga is one of the complementary methods used by many clinicians and physiotherapists today to support general rehabilitation programs. It is also increasingly used as a complementary treatment for psychological disorders such as depression, anxiety, and symptoms of various medical conditions, including pain affecting the spine, musculoskeletal disorders, and diseases such as cancer and asthma. In addition to these benefits, it is also reported that yoga has positive effects on the cognitive system. In this mini review, the purpose of this study is to examine the effects of yoga and yoga practice on core stability. Our clinical suggestion is that core-focused Yoga and Yoga method may be used to enhance the lumbopelvic stability, and core region muscles.

Keywords: Core stability, Exercise, Yoga

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INTRODUCTION

Core stabilization is one of the important parameters to increase physical levels , to stay away from injuries and to be healthy. The term ‘core stability’ has no clear definition, it may vary according to researchers and authors. Core stability muscles are mainly considered abdominal, back muscles, diaphragm and pelvic floor muscles (1). Core stability ” was defined as the capacity to control the position and movement of the trunk for optimal production, transfer and control of forces from the trunk to the extremities during functional movements (2). There are also anatomical definitions expressing that it is a structure surrounded by muscles that function synergistically to generate power, reduce power and provide dynamic stabilization (3). Therefore, Core Stabilization Exercises (CSE) emphasize the co-activation of the transversus abdominis (TrA) and Lumbar Multifidus (LM) muscles. These deep stabilization muscles attach to the thoracolumbar fascia and increase intra-abdominal pressure, creating a stiffening effect on the lumbar spine and providing segmental stability of the spine. An important aspect of core stabilization is that CSE can reverse pain-related remodeling in the motor cortex, improve muscle behavior, and retrain the important function of local trunk muscles for neuromuscular control of spinal stability (4). Some of the exercises that can be added for the development of core stabilization in this regard; trunk flexion/extension exercises, strengthening of the abdominal muscles, McKenzie, stretches or Williams exercises. Specifically, pressure feedback core exercise in supine & prone, Multifidus exercise, Frontal & Side Plank exercise, Pelvic floor exercises can be used (5). To obtain and maintain strength, working and strengthening all relevant muscles in the lumbopelvic region contributes to the formation of the appropriate movement. This requires adequate neural input and output, expressed as proprioceptive neuromuscular facilitation, achieved by the proper functioning of the muscles (6). Yoga comes from the Sanskrit word "yuj", which means "unity", describing the union between body, mind and spirit (7). Although yoga as a spiritual practice originated in India, it became a popular tool in the western world in the 19th century to improve physical and mental well-being (8,9).

According to the National Health Interview Survey (NHIS), the rate of use of yoga by adults in the USA increased from 9.5% to 14.3% between 2012 and 2017 (10). There are four main components of yoga: physical postures (asanas) to improve the strength and flexibility of the body, breathing exercises (pranayama) to increase respiratory function, deep relaxation techniques to reduce anxiety, meditation practices to calm the mind (7,11,12). These holistic practices support body-mind coordination (13). Yoga is embraced as an integrative therapy in

traditional physical therapy practice (14). In studies conducted with adults, it was determined that alternative and complementary therapy methods increased by approximately 33.2% in people aged 18 and over (15). Yoga is defined as "a combination of breathing exercises, physical postures and meditation used to calm the nervous system and balance the body, mind and spirit" (14). About 55% of physiotherapists regularly use with breathing as a common alternative strength training, which may reflect its adaptability to various musculoskeletal problems, has been demonstrated in the literature. (16,17).

Objective

To examine the effects of yoga and yoga practices on core stability in the population and to provide information on how these effects contribute to the individual.

MATERIAL and METHOD

A literature search was conducted with existing search engines to obtain information about studies and reviews about yoga practices and their effects on core stability. There were no inclusion or exclusion criteria for studies and reviews. Reachables, including opinions, were reviewed and self-observations were added. Key words used in the search were: Yoga, Yoga and Core Stabilization, Yoga and Exercise, Yoga and Physical Activity, Yoga Types, Yoga Poses, Yoga poses and Core Stabilization.

DISCUSSION

The Relationship Between Yoga and Core Stabilization

Yoga often includes physical postures and breath control, and often has a relaxation or meditation component as well. It is thought that practicing yoga can improve flexibility, strength, and body awareness, which can reduce back pain, strengthening core muscles and improve quality of life (18). Deeper meaning of yoga is,"to act in a way that directs our full attention to the activity we are currently engaged in (19). Considering the role of Yoga Therapy in the health, function and well-being of the lumbar spine, an important component of its success is the application of the concept of spinal stability. Spinal stability comes not from isolating individual muscles such as the transverse abdominis (TrA) and multifidi, but from proprioceptive awareness and co-contraction of the abdominal muscles and back muscles as a unified unit (20). Asana poses increase core stability, which is essential for both sportive performance and injury prevention because the practice of yoga requires the movement of many

large and small muscle groups simultaneously and focuses on proper musculoskeletal alignment, it tends to differ from other conditioning methods that emphasize the active involvement of only certain areas of the body. A result of practicing asana postures is a marked increase in strength and balance in all body movements (21).

Examining the relationship between yoga poses and the activation of the muscles that make up the core stability, Ni et al. studied the activation of trunk and hip muscles for 11 poses commonly used during Yoga. The authors concluded that, particularly in the "half-fold pose", the external oblique abdominis and gluteus maximus muscle activities were significantly increased, and in the downward facing dog, low plank, and mountain pose, the external oblique abdominis muscle produced significantly higher muscle activities (22). On the other hand, Omkar et al. revealed that core-focused yoga postures are an effective way to improve muscle activity, intra-abdominal pressure, and stability of the lumbopelvic region (23). Carpes et al., in their study, performed 6 types of exercises for lumbar stabilization, and as a result, they revealed that lumbar muscle strength and body balance capacity increased (24). Also Miyake et al. reported that a lumbar exercise called core noodles led to an increase in dynamic postural control ability (25). In another study, it was revealed that core stability-based gluteus medius and proprioceptive balance exercises together can be beneficial for improving postural control in all female university level netball players (26).

Garcia-Vaquero et al. evaluated the effects of 10 types of bridge exercises and bird-dog exercises on muscle activities. They revealed that muscle activity of the internal oblique and erector spinae is greatly increased during bird-dog stance, and that bird-dog exercise and other movements significantly contribute to the activity of trunk rotators and erector spinae, especially when compared to bridge movements (27). Mayhew et al. evaluated the effects of hip extensors and abdominal muscles during unilateral straight leg raises on an individual. As a result of the study examining the quantitative changes in pelvic stabilization pattern when the individual is instructed to relax the opposite limb, the authors noted that abdominal muscle activity was significantly increased when the contralateral limb was instructed to relax for the relaxation mode (28).

Carneiro et al. evaluated the effects of Isha Hatha Yoga on core stability and standing balance. The plank test was used to evaluate core stability and the single-leg stork test was used to evaluate standing balance in subjects who received a 21-day Hatha Yoga session. As a result, the authors revealed that there were significant increases in core strength and standing balance as a result of this practice in healthy individuals (29).

Relationship of Yoga with Other Physical Parameters

Yoga is an exercise method that most health clubs, personal training studios and corporate fitness centers use as a preventive and health promotion tool in their programs today. In addition, it is used as a progressive training technique by many international football clubs, rugby, golf and cricket clubs, as it is an especially effective training tool for athletes. The protective and therapeutic effects of yoga on the body and mind are among the reasons why it is preferred in sports. Examples of these effects are increased muscle strength, improved balance, increased breathing control and body awareness, reduced stress and improved concentration (30,31).

Yoga has recently become one of the cross-training exercises used to increase athletic performance and reduce the risk of injury. Instructors who make use of yoga in sports usually focus on the components of yoga for the athlete asana (stretching postures), pranayama (breath control), dharana (inner focus) and dhyana (relaxation and meditation). They can use one component more than the other for specific purposes and sports, such as increasing flexibility, focus and balance, and improving functional strength. One of the basic yoga poses for runners is virabhadrasana and its variations; Various twisting/rotating asanas such as Markat asana, Ardha Matsendra asana, Vakrasana are preferred for tennis, golf and archers. In addition, with the adaptation of traditional yoga to different cultures and purposes, different yoga variations such as cardio-yoga, weight and yoga have emerged (32).

According to the results of a study investigating the effects of yoga and aerobic exercise on motor skills in cricketers, yoga exercise performed three days a week and for one hour a day for six weeks significantly increases leg muscle strength and agility (33). Polsgrove et al. In a study conducted in 2016, they aimed to examine the effect of yoga on male university athletes. In the study conducted on 26 athletes, the yoga group participated in additional yoga sessions held every two weeks for ten weeks, while the control group did not participate in additional yoga sessions. At the end of this period, while there were significant differences in balance and flexibility measurements in the yoga group, there was no difference in the control group; shows that a regular yoga practice can increase the athletic performances that require these characteristics in male college athletes (34). There are also studies showing that yoga can be successfully integrated into the athletic program of football players and is temporarily effective in alleviating three important antecedents of injury, namely the perception of propensity to sustain injury generalized fatigue and also increase abdominal strenth with yoga asana practices (35,36).

In addition, yoga is considered a low-intensity exercise that does not rely on physiological overload to strengthen the core muscles. A recent study showed that contractions of up to 70% MVC levels are needed to support strength gains in the abdominal muscles. It is unlikely that it will activate the abdominal muscles at this strength level during core stability exercises such as those practiced here. The core stability exercises tested by Stevens et al mostly included postures such as bridge exercises that could be considered part of the Yoga exercise regimen (37,38). Yoga is known to be a good exercise technique for muscle relaxation. It also reduces psychological anxiety. However, yoga has also been shown to reduce neurological reaction time and improve muscle strength and endurance of the expiratory and abdominal muscles. This has significant benefits in terms of expiratory disorders such as asthma. Current research has also revealed that there is significant muscle activity for the rectus abdominis and external oblique muscles during yoga exercise, which includes the core muscles of the body (39–41). In addition, clinicians should not ignore that gender differences may be important in these muscle activations (42).

CONCLUSION

As a summary of our study, it has been seen that yoga and core stability are closely related and yoga practices are one of the safe complementary methods that can be used to strengthen the superficial and deep muscles in the core area. The results of our study suggest that yoga and yoga-stabilization exercises have positive effects on lumbopelvic stability, and that it is one of the appropriate methods for raising awareness, correcting posture, and strengthening the core region muscles in cases such as non-specific low back pain, posture disorders, as well as in the healthy population. In conclusion, we suggest that yoga practice applications prepared for the needs of various age groups are a safe alternative and complementary method that can be used in physiotherapy and clinical conditions.

Clinical Suggestions

As a result of clinical studies in this field, it is important to use an approach that serves this review, such as yoga, in order to ensure that the lumbar region, hips and abdominal regions work together and to strengthen them in harmony or to achieve success. In this way, it is safe to apply this method in various age groups, individuals with various health problems or professional athletes when it is desired to achieve task-oriented, stability and optimal gains.

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Author contribution: ÇI: Conceptualization, Writing – original draft, Writing – review & editing.

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