The Effect of Different Exercise Types on Migraine Frequency in Individuals with Migraines

NCT05568004

Migraine is a neurological disorder characterized by recurrent, throbbing headache attacks and accompanying symptoms, associated with significant loss of quality of life and workforce. The diagnosis of migraine is made by anamnesis. Diagnostic criteria of the International Classification of Headache (ICHD-3 beta) published in 2013 are used for diagnosis. According to the World Health Organization (WHO), migraine is ranked as the third most common medical condition in the world and the second most common neurological disorder that causes disability. The one-year prevalence of migraine in the general population is 12%. In a large population-based epidemiological study, the frequency of migraine in our country was found to be 16.4%. Migraine is 2-3 times more common in women than men. Headache in migraine comes in attacks, the frequency of attacks varies from person to person and may be different in the same person. Neck pain is also observed during migraine attacks in approximately 75% of patients. In about one-third of individuals with migraine, reversible neurological symptoms (migraine aura) may occur, usually before the onset of pain. Aura symptom is more than 90% probable visual complaints. Chronic migraine (CM); It was defined as headaches that lasted more than 15 days a month for at least 3 months and at least 8 of the attacks met the criteria for migraine headache. It is estimated that CM has a frequency of 1-3% in the society and constitutes more than 10% of all migraine patients. CM includes patients with headache-related disability, loss of work force, overuse of medication, and marked deterioration in quality of life. CM is responsible for approximately 1% of disability worldwide and is among the major disabling diseases according to life-year-based assessments. Headache attacks in CM adversely affect the patient's work life, education, academic and social life. Numerous studies with the standardized Migraine-Specific Quality of Life Questionnaire and Migraine-Related Disability Questionnaire (MIDAS) have shown that CM is associated with significant work loss. In the International Burden of Migraine Disease (IBMS) study, more than half (57%) of CM patients reported that they were absent from work or school for 5 or more days in a three-month period, while 58% stated that they had difficulty in housework. Although the pathophysiology of CM and the mechanism of conversion to CM are not fully understood, atypical pain processing, central sensitization, cortical hyperexcitability and neurogenic inflammation are emphasized. MIDAS scores were found to be higher in patients with CM compared to those with episodic migraine (EM, headache less than 15 days a month) and the limitation was 2 times higher. The reason for this is that the number of painful days in CM is high, the number of comorbid diseases is high, and psychiatric and chronic pain syndromes are more associated with CM. Depression; It is the most common psychiatric comorbidity in CM (8.6-47.9%), and the migrainedepression relationship is bidirectional. Migraine is associated with a 2.5-fold increase in lifetime risk of depression. Depression is reported more frequently in migraine and CM patients with aura, and depression is one of the known risk factors for chronicity of migraine. Depression in CM is accepted as a poor prognosis indicator. The close relationship between anxiety disorders and migraine has been demonstrated in population and clinical studies . General anxiety disorders, obsessive compulsive disorder and panic disorder are 2-5 times more common in CM. Anxiety disorders are more common in CM than in EM cases (30.2% and 18.8%, respectively), and anxiety disorder is a risk factor for CM. Physical Activity is bodily movements that occur with the contraction of skeletal muscles and result in energy expenditure. Exercise is planned, structured, repetitive body movements to increase or maintain physical fitness. Exercise; can be

grouped under three groups as aerobic exercise, anaerobic exercise and flexibility, coordination and relaxation exercises. Aerobic exercises are low-intensity exercises (walking fast, running, cycling, etc.) in which the muscular activity energy required to perform the movement is produced by the system using oxygen. Anaerobic exercise is a medium and high intensity exercise (resistance exercises, etc.) aimed at increasing muscle strength in the foreground, in which the energy to be produced in order to perform the movement with muscle contractions is produced without the use of oxygen or by using a very small amount of oxygen. Several large population-based studies have concluded that low levels of physical activity are associated with higher migraine prevalence and frequency. Conversely, higher physical activity levels were associated with reduced migraine headache frequency and less migraine-related disability. There are several studies in the literature investigating the effect of aerobic exercise on the frequency of headaches in migraine patients. Varkey et al. showed that exercise capacity can be improved, frequency and severity of migraine attacks can be improved safely without worsening migraine symptoms, with a 12-week, 3 times a week, aerobic exercise program consisting of warmup and cool-down periods for untrained migraine patients. In the systemic review and meta-analysis (consisting of five randomized controlled and one clinical controlled studies), which included all studies in the literature investigating the effect of aerobic exercise on migraine, published in 2018, a significant reduction in the number of days with migraine in favor of the exercise group was found at the end of 10-12 weeks. CM patients were evaluated in only one of these studies, while EM and CM patients were included together in the others. When the literature is examined, aerobic exercise programs were previously performed by Varkey et al. It consisted of different types (walking, cycling, jogging, cross training including a combination of all) similar to the exercise protocol that has been shown to be safe and effective in migraine patients. No side effects related to aerobic exercise have been reported in the literature. In studies, the effects of aerobic exercise on migraine were frequently evaluated through migraine diaries. The mechanism of action of exercise is explained in two ways, biological and psychological. Biological mechanisms include the decrease in the amount of inflammatory markers (CRP, CGRP, Substance P, etc.) that are detected to be high in migraine patients as a result of regular aerobic exercise, increase in β-endorphin levels, which were previously shown to be low in migraine patients, with exercise, suppression of neurological inflammation by exercise, and neurovascular improvement. Among the psychological mechanisms, the increase in self-efficacy brought by exercise, the reduction of depression and anxiety symptoms that often accompany migraine, and its effects on mood and sleep are at the forefront. There are not enough studies in the literature investigating the effects of non-aerobic exercise types on migraine. There is a study evaluating the effect of yoga on migraine, and this study showed a significant decrease in migraine frequency in the yoga group. There is no study in the literature investigating the effect of resistance exercises on migraine. In studies in the literature, in which the effects of this group of exercises were evaluated, participants with headaches (including other pathologies besides migraine) were evaluated, and neck and shoulder exercises showed a reduction in headache and neck pain . Successful results have been obtained in studies on chronic pain syndromes using anaerobic (resistance) exercise in the literature . Considering that migraine headache is often accompanied by neck pain and chronic pain syndromes are common in this patient group, besides the direct effect of aerobic exercise on migraine frequency, by adding neck and shoulder resistance exercises to aerobic exercise, indirect effects of resistance exercise can also be observed. The research aimed to evaluate the effect of different exercise methods on the frequency of migraine attacks in participants between the ages of 18-50 who were diagnosed with chronic migraine according to the International Classification of Headache Disorders, 3rd edition (ICHD3beta), by a specialist neurologist. For

this purpose, a total of 90 people will be included in the study and three groups will be formed. Combined exercise consisting of aerobic and resistance exercises will be given to the first group, only aerobic exercise will be given to the second group, and the third group will be the control group. The aerobic exercise content is the same in the combined (first group) and isolated aerobic exercise group (second group), for a total of 45 minutes 3 days a week; It will consist of 15 minutes of warming up, 5 minutes of cooling down, 25 minutes of aerobic heart rate (60-80% of the maximum heart rate) at the same metabolic equivalent and with the same energy expenditure, cycling / brisk walking / jogging (low tempo jogging) exercises. Exercise groups will be shown face-to-face in detail before the study, and then the patients will be followed up at regular intervals with appropriate communication tools (phone, mail, etc.). Exercise intensity will be regulated using the perceived effort level (Borg Rating of Perceived Exertion Scale, RPE). During warm-up and cool-down, exercise intensity will be adjusted to be between RPE 11-13, and during aerobic exercise, RPE will be set to be between 14-16. In the combined group (first group), 3 sets x 12 repetitions gradually, after 2 sets x 8 repetitions in the first 2 weeks, using the resistance band (theraband) on other 3 days of the week, every other day; There will be five different resistance exercises(Craniocervical flexion-cervical retraction, reverse flies, shrugs, frontal rise, lateral rise) targeting the neck, upper back and shoulder muscles. Resistance exercise intensity will be adjusted using the OMNI-resistance exercise scale (keeping it between 6 and 8 on the scale). The third group will be asked to continue their normal lives. The exercise will take a total of 12 weeks. After the exercise, an 8-week follow-up period was planned to evaluate the continuation of the exercise effect. Patients will be asked to keep migraine diaries containing the frequency, severity, and duration of migraine attacks for at least 4 weeks before exercise, during 12 weeks of exercise, and during the 8week follow-up period after exercise. The change in the number of days with migraine (in migraine frequency) will be evaluated as a primary outcome measure. Headache severity based on migraine diaries as a secondary measure. At the end of the follow-up period, the surveys will be repeated. Astrand submaximal bicycle ergometer test will be used to measure aerobic capacity. At the end of this process, the effects of combined exercise and isolated aerobic exercise on migraine in patients with chronic migraine will be investigated compared to the control group. In addition, the positive effects of exercise on diseases such as anxiety and depression, which are frequently associated with migraine, and its effects on body aerobic capacity will also be evaluated in the study. Participants will be administered the Hospital Anxiety and Depression Scale(HADS) to compare their anxiety and depression levels, the Migraine Disability Assessment Scale(MIDAS) to assess migrainespecific quality of life, and the International Physical Activity Questionnaire(short form)(IPAQ-short) to compare physical activity status at baseline, at 12 weeks and at the end of the follow-up period Aerobic capacity will be measured indirectly with a bicycle ergometer. This method is the Astrand test, which is a 6-minute cycling test. Pedal resistance is adjusted to be 0.5-1 watt/kg. The speed is adjusted to 60 pedal cycles per minute. Heart rate tracking is measured by a heart rate monitor. The test is terminated when the desired heart rate is reached in the 6th minute. Calculating from the values, aerobic capacity is found