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Journal of Aging Science

Commentary

Exercise Therapy for Chronic Musculoskeletal Pain in Elderly Individuals

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ABOUT THE STUDY

Elderly individuals have a high risk of experiencing chronic musculoskeletal pain, such as low back pain and osteoarthritis, due to degenerative motor system changes that accompany aging. In addition to musculoskeletal problems affecting the pain area, elderly individuals may have reduced function of pain modulatory systems, such as descending pain inhibition, compared to that in younger individuals. Exercise and physical activity are useful for pain management. Meanwhile, pain interferes with exercise and physical activity, and it is not easy to appropriately increase exercise and physical activity levels in elderly individuals who experience pain. This article describes how exercise may be prescribed and physical activity may be maintained or increased in elderly individuals as part of pain management.

VICIOUS CYCLE OF PAIN AND FRAILTY

Understanding the fear-avoidance model is essential for pain management [1,2]. The experience of pain, unnecessary illness information, and excessively negative emotions can lead to pain catastrophizing. Pain catastrophizing is the process of overestimating the present and future disabilities caused by pain and being unable to disregard such thoughts [3]. It is involved in the intensity of pain and disability caused by pain and is known to be a predictor of prognosis. A high degree of catastrophizing can lead to anxiety and fear of pain and painful behaviors, leading to excessive awareness of pain and unnecessary avoidance of behaviors that may lead to pain. The result is local and general inactivity and associated functional impairment, depression, and even maladjustment to social life. All of these are exacerbators of pain, further exacerbating the original pain, and this process is repeated, creating a vicious cycle of pain that leads to chronic and intractable pain. Therefore, pain management requires that we avoid this vicious cycle or break free from it. It is necessary to correct false perceptions of pain and biased emotions, promote exercise and physical activity that can be performed despite pain, and increase physical activity levels. Inactivity, dysfunction, depression, and maladjustment to social life, which form a vicious cycle of pain, coincide in many ways with the state of "frailty," and efforts to prevent and ameliorate pain in elderly individuals have many aspects in common with efforts to prevent and ameliorate frailty. Specifically, low activity levels, low nutrition intake, and inactive lifestyles must be corrected, and exercise and nutritional therapy, as well as a combination of these, are the basis of lifestyle management.

GUIDELINES FOR PAIN PREVENTION EXERCISES IN ELDERLY INDIVIDUALS

When considering exercise for pain prevention, it is important to consider how higher levels of physical activity may be maintained in daily life. According to the Japanese Ministry of Health, Labour and Welfare's "Physical Activity Standards for Health Promotion 2013," elderly individuals are recommended to engage in physical activity of any intensity (i.e., activities of daily living plus exercise) for 40 minutes a day. In other words, any movement is acceptable as long as they are not lying down or sitting, and it is recommended that elderly individuals aim to increase the amount of time they spend moving, even if it is only a little more than the time spent currently, and try to form an exercise habit. Older adults have the risk of experiencing pain triggered by degenerative changes in musculature, but muscles, regardless of age, can be maintained and increased through appropriate exercise and nutrition. In addition to aerobic exercise, resistance exercise is effective in strengthening muscles. Resistance exercises such as tubing and strength training using one's body weight are suitable, and it is desirable to increase the frequency rather than intensity of the exercises gradually. Exercises for locomotive syndrome [4], recommended by the Japanese Orthopaedic Association, are also easy exercises to perform. For elderly individuals, it is important to strengthen the muscles of the legs and feet and balance, while not placing excessive stress on the knees and hips. It recommends that "Standing on one leg" (three sets of one minute each) and "Squats" (three sets of five to six breaths at a pace of deep breathing) to strengthen the muscles of the lower limbs. In addition, the "Heel Raise" (2-3 sets of 10-20 repetitions), which

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Received: December 21, 2020; **Accepted**: January 04, 2021; **Published**: January 11, 2021

Citation: Shimo K, Hattori T, Matsubara T (2021) Exercise Therapy for Chronic Musculoskeletal Pain in Elderly Individuals. J Aging Sci. 1: 244.

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strengthens the triceps by standing on toes, and " Front Lunge" (2-3 sets of 5-10 exercises), which build flexibility, balance, and strength of the lower limbs by squatting with the legs open from front to back, are recommended as additional exercises for locomotor training. Strength training is recommended from for locomotor training as well since it is necessary to maintain mobility to maintain physical activity; however, strength training itself is known to reduce pain, and the pain-reducing effect extends to the entire body, not just the motor site (the trained muscles) [5]. This should be considered even for older adults who are already experiencing pain.

Along with strength training, aerobic exercise is an effective form of exercise to prevent and alleviate pain [6]. Walking is the most typical aerobic exercise for elderly individuals who can safely walk and maintain muscle strength and stamina of their lower limbs and does not require special equipment or skills. However, it is difficult to maintain motivation if the medical staff says, "Let's walk as much as possible," and it is easy to overload the body by walking excessively. When interventions are provided to maintain or increase physical activity levels, it is necessary to understand the current levels of physical activity and set specific goals based on this information. If walking as an exercise is difficult due to physical function or pain problems, it is not necessary to focus on walking. As mentioned above, it is recommended that elderly individuals perform physical activity of any intensity for 40 minutes every day and consider performing household chores, hobbies or creative activities, and daily activities and exercises such as stretching in the home. The Japanese Ministry of Health, Labour and Welfare's "Active Guide to Physical Activity for Health Promotion" recommends that we first aim to extend the time spent performing physical activity by 10 minutes from the current lifestyle, and then gradually strive to achieve 40 minutes of physical activity per day. The physical activity to be engaged in is determined according to an individual's lifestyle and level of physical functioning, and when an individual can secure sufficient time for physical activity in the course of his or her life, consideration is then given to increasing the intensity of physical activity and to changing or adding physical activity to be engaged in.

DISCUSSION

Older adults tend to have more significant individual differences in physical functioning than those in younger adults. It is necessary to select exercises and physical activities that are appropriate for individuals. In addition, it is necessary to explain that exercises and physical activities contribute to the prevention and alleviation of pain and promotion and improvement of health and to perform them only after individuals understand and are convinced that they will contribute to the prevention and alleviation of pain.

In addition, to maintain exercise habits, it is essential to increase individuals' motivation and self-efficacy for exercise by monitoring the status of implementation, evaluating how physical function and lifestyles have changed as a result of exercise and physical activity, and providing feedback to individuals. The goal of exercise therapy for pain is to learn to control one's exercise and physical activity levels and self-management to prevent and alleviate pain.

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