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Review

The Role of Physical Therapy in the Management of Rheumatoid Arthritis

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Abstract

Rheumatoid arthritis is a persistent and severe clinical condition that causes gradual joint degeneration, impairs quality of life, and shortens life expectancy. Even mild inflammation is responsible for causing permanent disability and impairment. Patients with rheumatoid arthritis may experience an intermittent or progressive clinical course, depending on their symptoms. The primary objective of managing rheumatoid arthritis is to relieve discomfort while avoiding joint deterioration and functional loss. Physical therapy plays a vital role in the management of rheumatoid arthritis, as physical therapy considerably supplements pharmacological therapy by enhancing the management of rheumatoid arthritis and lowering the limitations on daily life for rheumatoid arthritis patients. Among physical therapy modalities, physiotherapy treatments are frequently employed, which include hydrotherapy, electrical stimulation, and cold/hot treatments. Furthermore, it has been demonstrated that exercise training for rheumatoid arthritis patients is effective in reversing cachexia, significantly increasing function without escalating disease activity, and likely lowering cardiovascular risk. For rheumatoid arthritis patients, physical therapy, including exercise, is safe and effective. Exercise and increased physical activity have been shown to reduce disease symptoms such as pain and exhaustion, enhance physical function, and improve mental health, ultimately leading to an improved quality of life. The purpose of this research is to review the available information about the role of physical therapy in the management of rheumatoid arthritis.

Keywords: *rheumatoid, arthritis, physical, therapy, management*

Introduction

Rheumatoid arthritis (RA) is a symmetrical, chronic inflammatory autoimmune disease that primarily affects small joints before involving other organs, including the skin, eyes, heart, kidneys, and lungs. Joint bones and cartilage are frequently damaged, and tendons and ligaments become more fragile. All of this joint degeneration results in deformities and bone erosion, which are typically excruciatingly painful for the patient. The disease typically begins between the ages of 35 and 60, with periods of remission and exacerbation. It can also affect children and young adults even before the age of 16, which is referred to as juvenile RA and is comparable to RA but lacks the rheumatoid factor (1). RA prevalence estimates range from 0.24% to 1% globally, with geographical variation in percentages. By impairing mobility and altering a patient's capacity to work, RA has an impact on many facets of daily life. In addition, RA patients have shorter life expectancies than the general population. Higher death rates are linked to more severe disease types, such as reduced functional status and increased radiologic damage. Although comorbidities, socioeconomic level, level of education, and marital status have all been linked to an increased risk of mortality, it is also known that disease treatment affects patient outcomes (2).

Rheumatic diseases significantly lead to chronic disability hence, to keep the musculoskeletal system functioning normally while treating rheumatic disorders, physical therapy and rehabilitation are essential components of the treatment plan. Early disability identification allows for a more effective application of all physiotherapy treatment strategies. The most important type of physical treatment is exercise. Exercise can only have a long-term impact on people who adhere to the regimen. All published guidelines for the management of RA, spondylarthritis, osteoarthritis, osteoporosis, chronic back pain, chronic non-malignant pain, and fibromyalgia include methods of physical therapy and rehabilitation (3). The treatment of patients with RA is intricate and frequently involves medical professionals from several specialties. Patients with RA commonly receive physical therapy as a form of treatment. Physical therapy's effectiveness in treating RA has been the subject of expanding research in recent years. As per the evidence from various research studies, between 25% and 45% of RA patients receive physical therapy in a 12-month period, and over 70% of RA patients interact with a physical therapist at some point during the course of their disease (4).

The evidence supporting the efficacy of various physical therapy applications is growing owing to the findings of recent studies. Physical activity, including aerobic activity, reduces exhaustion in RA patients. Pain and grip strength are improved by wrist splints and static resting splints. Splints for static resting lower the likelihood of hand abnormalities. Additionally, cryotherapy for both localized pain and the entire body has been shown to reduce inflammation and discomfort temporarily, while physiotherapy may enhance strength, joint mobility, and activity in people with RA without increasing their risk of discomfort or inflammation (5). The purpose of this research is to review the available information about the role of physical therapy in the management of RA**.**

Methodology

This study is based on a comprehensive literature search conducted on May 12, 2023, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed the information about the role of physical therapy in the management of RA. There were no restrictions on date, language, participant age, or type of publication.

Discussion

The principal objectives of physical therapy, which is a significant part of the treatment plan for RA, are to lessen discomfort and maintain function. Physiotherapy, ergotherapy, hydrotherapy, heat

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treatment, massage, and electrotherapy are all possible treatments depending on the disease's severity and the clinical picture. These treatments have the benefit of having no adverse effects when used appropriately (6). Exercise has been demonstrated to provide particular health advantages for people with RA, in addition to the general impacts on health for the general population. In fact, exercise is thought to be fundamentally beneficial to RA patients, as evidenced by earlier research, including results from randomized controlled studies. Furthermore, it emerged that high-intensity exercise training was more effective than low-intensity exercise training in improving aerobic capacity, muscle strength, joint mobility, and physical function in patients with controlled and active RA while having no negative effects on disease activity. There is currently no accepted treatment for rheumatoid cachexia, even though the diminished muscle mass is directly connected with the impaired physical function that is distinctive to RA. High-intensity resistance training has been demonstrated to safely reverse cachexia in RA patients, and as a result of this restoration of muscle mass, RA patients' physical function and level of impairment are significantly improved (7). Physical therapy for the management of RA in the literature is discussed in two aspects, which are briefly described below.

Physiotherapy

In the management of RA, physiotherapy treatments are frequently employed. These include hydrotherapy, electrical stimulation, and cold/hot treatments. The most prevalent physical treatments for arthritis are cold/hot modalities. It is generally known that in the acute stages of RA, the cold application is typically employed, whereas heat application is used in the chronic stages. Heat is used to achieve analgesia, reduce muscle spasms, and increase the flexibility of the periarticular structures. For pain relief in RA patients, electrostimulation is used. The most common technique is transcutaneous electrical nerve stimulation therapy. Several studies have shown that utilizing transcutaneous electrical nerve stimulation therapy once a week for three weeks reduces pain and increases hand grip strength after applying it daily for 15 minutes (8). Al-Qubaeissey et al. demonstrated in their review findings that, in comparison to no treatment or other interventions, the majority of studies found that hydrotherapy was more effective for RA patients. In the short term, hydrotherapy treatment showed improvement in lowering pain, joint soreness, mood, and tension symptoms, enhancing grip strength, and improving patient satisfaction. Hydrotherapy appears to be more effective than no treatment or other interventions in the short term at reducing pain and enhancing health status in RA patients, according to various research studies. The authors further suggested that the long-term advantage, however, is unknown hence more research is required (9).

Briggs described that strong evidence supporting the importance of physiotherapy in RA management is documented in clinical practice guidelines. The primary targets of physiotherapy modalities for individuals with RA are to lessen disability caused by articular and peri-articular disease symptoms and to offer guidance and education to enhance functional capacity and quality of life. Physiotherapists must be able to recognize potentially significant articular and peri-articular signs of RA, such as cervical spine instability, in order to provide patients with safe and effective management. According to recent research studies outcomes, professional development is necessary for the physiotherapy workforce in order to perform clinical physiotherapy services safely and efficiently (10).

Exercise

Metsios and Kitas narrated that over the past two decades, high-quality data has emerged indicating amplifying physical activity is a behaviour that can considerably enhance a variety of disease-related and systemic outcomes as well as have a positive influence on RA expenses. Increased physical activity in RA is specifically linked to fewer hospital admissions and length of stay, which has a positive financial impact. Increased physical activity significantly improves functional capacity, cardiorespiratory fitness and strength, cardiovascular health, and weariness, as per the

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findings of studies on health-related outcomes. Furthermore, increased levels of physical activity participation have been linked to decreased cardiovascular disease risk and favourable changes in body composition that can reverse rheumatoid cachexia. These results are consistent across randomized and controlled clinical trials. A sedentary lifestyle in RA can further increase the risk of the development of cardiovascular disease in the future. It is important to note that increasing physical activity or participating in different types of exercise, even high-intensity exercise, is safe in RA, with no studies reporting any adverse effects (11).

The result of a clinical trial showed that after the 3-week trial period, most of the observed indices from baseline parameters in the physical therapy-treated group showed statistically significant improvement ($P< 0.01$ and $P< 0.005$). Clinical improvements in erythrocyte sedimentation rate and proximal interphalangeal joint size did not, however, attain statistical significance. The patient's activities of daily living score, joint soreness, and hand pain all improved more significantly than their range of motion. Over the course of the trial, all indicators in the control group slightly declined (12). Results of another clinical trial concluded that physical activity is advised as an essential tool in the comprehensive care of individuals with chronic inflammatory joint disease since it is both safe and beneficial in treating this condition. In stable RA patients, exercise lowers fatigue levels and raises cardiovascular fitness (13).

Similarly, Katz, Andonian, and Huffman reported that for RA patients, exercise is both safe and extremely beneficial. Exercise has repeatedly demonstrated RA-specific benefits in addition to its well-known advantages, such as enhancing cardiovascular health, lowering obesity, and decreasing the metabolic syndrome. Exercise and increased physical activity reduce disease symptoms, including pain and exhaustion, enhance function and mental health, objectively determine the function and mental health, and objectively determine disease activity. Despite these advantages, most RA patients are inactive. The authors further described barriers to engagement in physical activity for RA patients, which may include fear of joint injury, RA symptoms, and a lack of knowledge that physical activity reduces symptoms. However, the lack of guidance from medical professionals nevertheless seems to be the primary barrier to RA patients engaging in recommended levels of physical exercise (14). Exercise programs that focus on cardiovascular fitness and muscle strength can help RA patients become more physically active and likely improve their overall health. Patients with RA appear to make more convincing improvements in comparison to those with osteoarthritis; this is likely because of their worse physical condition prior to exercise (15).

Patients with RA may experience muscle weakness as a result of immobility or a decrease in everyday activity. Maintaining adequate muscle strength is essential for physical performance as well as joint stabilization and the avoidance of traumatic injuries. Instead of diminishing the activity of the disease, it may be argued that exercise therapy improves physical capacity (16). Hernandez and Gonzalez described that the benefits of consistently conducting aerobic and resistance workouts in RA patients include an improvement in quality of life, functionality, discomfort, and the number of swollen joints. Additionally, physical activity for these patients is safe. It's interesting to note that a few recent research studies indicate an inverse relationship between changes in physical activity as measured by accelerometry and changes in disease activity in RA patients. Therefore, regularly tracking physical activity in RA patients may enable a more objective assessment of changes in disease activity, assisting clinicians in formulating general and therapeutic suggestions that would enhance both the patient's health condition and joint functionality (17).

Li and Wang described that exercise therapies are successful at enhancing physical function, reducing pain, and enhancing aerobic capacity in RA patients. Exercise can also be beneficial for improving quality of life, mental health, sleep quality, and level of exhaustion, and it doesn't worsen disease activity or the severity of some conditions such as swollen joints and joint stiffness. Relatively longer periods

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of exercise training can reduce disease activity or clinical severity. Effective activities can last anywhere between two weeks and 96 weeks, indicating that even brief workouts can have a positive clinical impact on RA patients. Most exercise plans use moderate intensities for strengthening and aerobic training out of safety concerns. However, numerous studies have demonstrated that people with RA can benefit from high-intensity strengthening and aerobic workouts, and no detrimental exercise-related events have been documented. Exercises with moderate to high intensities are therefore clinically beneficial as well as safe for RA patients. Furthermore, in people with very early stages of RA, exercise can successfully promote clinical remission. Exercise therapies, therefore, offer a window of opportunity for the early management of RA in first-line treatment and are efficient and economical methods (18). The literature strongly emphasizes the beneficial role of physical therapy in the management of RA. However, clinical studies available are quite scarce and limited to past times, hence necessitating the need for further research involving clinical trials and population-based cohort studies to elaborately study the advantages and outcomes of physical therapy in RA management to generate more evidence-based results and add to existing literature.

Conclusion

Physical therapy, including both physiotherapy and exercise, is one of the vital components of the management of RA. Hence, health education and promotion regarding the beneficial effects of physical therapy shall be provided by healthcare professionals at rheumatology clinics as routine to enhance patient's quality of life and achieve optimal outcomes in addition to the provision of pharmacological therapy.

Disclosure

Conflict of interest

There is no conflict of interest

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Data availability

Data that support the findings of this study are embedded within the manuscript.

Author contribution

All authors contributed to conceptualizing, data drafting, collection and final writing of the manuscript.

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