



## OLGU SUNUMU / CASE REPORT

# Efficacy of physiotherapy in foot and ankle problems related to rheumatoid arthritis

Romatoid artritle ilişkili ayak ve ayak bileği problemlerinde fizyoterapinin etkisi

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### Abstract

Foot and ankle -related problems are seen at all stages of rheumatoid arthritis. The efficacy of manipulative treatment approaches and therapeutic exercises applied to foot-related problems in physiotherapy programs has not been sufficiently researched. The case is here presented of a 57-year old female rheumatoid arthritis patient with chronic foot and ankle problems who was successfully treated with a physiotherapy program of manipulative treatment approaches and therapeutic exercises.

**Key words:** Rheumatoid arthritis, foot, ankle, physiotherapy.

### Öz

Ayak ve ayak bileğine ilişkin problemler romatoid artritin her döneminde görülür. Fizyoterapi programlarında ayakla ilişkili problemlere yönelik manuplatif tedavi yaklaşımları ve terapatik egzersizlerin etkisi yeterince araştırılmamıştır. Romatoid artrite bağlı kronik ayak-ayak bileği problemi olan 57 yaşındaki bayan hasta, manuplatif tedavi yaklaşımları ve terapötik egzersizlerden oluşan fizyoterapi programı bu olguda başarı göstermiştir.

**Anahtar kelimeler:** Romatoid artrit, ayak, ayak bileği, fizyoterapi.

## INTRODUCTION

Rheumatoid arthritis (RA) is a chronic inflammatory disease, particularly involving the synovial joints, which is symmetrical and generally progressive in nature<sup>1</sup>. The feet and ankles are usually affected<sup>2</sup>. Synovial hypertrophy and capsular tension in RA have a role in the development of foot problems causing hyperplasia, ligamentous laxity and muscular imbalance and finally joint subluxation and dislocation<sup>3</sup>. With the progression of RA, gait abnormalities are seen particularly associated with pain, difficulties in self-care and restrictions and disabilities in daily living activities<sup>2</sup>. While disability is seen in 42% of RA patients within 3 years of diagnosis,<sup>4</sup> disability progresses from moderate to severe in 80% within 20 years<sup>5</sup>. The aim of this case report was to evaluate the efficacy of the physiotherapy program comprising a manipulative treatment approach and therapeutic exercises which

was applied in addition to medical treatment to a patient with RA and chronic foot and ankle problems.

## CASE

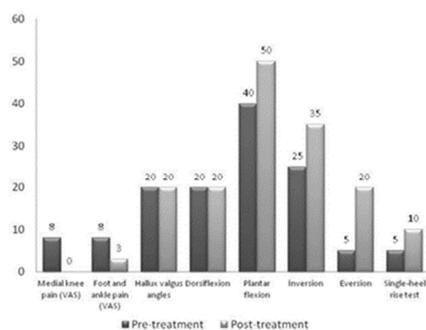
A 57-year old female with a 16-year history of RA was being followed up with medical treatment in the Rheumatology Department of Pamukkale University Medical Faculty. The patient was referred to a physiotherapy program because of swelling in the ankles, pain and difficulties in walking. The patient had a history of 2-3 falls per month, was 160 cm in height, weighed 65 kg, was a housewife and had no disease other than RA. She had not previously undertaken any physiotherapy program related to the foot problems. No change was made to the medical treatment during implementation of the physiotherapy program. Informed consent was obtained from the study participant.

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Before and after the physiotherapy program, foot and ankle pain and medial knee pain were measured with a visual analog scale (VAS),<sup>6,7</sup> bilateral hallux valgus angles were measured, the normal range of movement of the ankle was measured with a goniometer and tibialis posterior tendon insufficiency was evaluated with the single-heel rise test.

Measurements; when the subject stood barefoot in the flat and hard surface, the goniometer was directly located over the first metatarsophalangeal joint (MPJ) with one arm touching the prominence of hallux and the remaining arm being stretched against the mid line of the medial surface of the first metatarsal shaft. The angle can increase with hallux valgus deformities<sup>8</sup>.

The single-heel rise test generally involves repetitive concentric-eccentric muscle action of the plantar-flexors in unipedal stance and is quantified by the number of raises performed. The test consisted of the participant facing a wall and placing fingertips against the wall for support while elbows were flexed to 90 degrees. Starting position of the knee was extended. Height was done as high as possible. Termination criteria was that the patient could not continue. Outcome measurement was number of raises<sup>9</sup>.



**Figure 1. Pre to post-treatment values of right foot and ankle.**

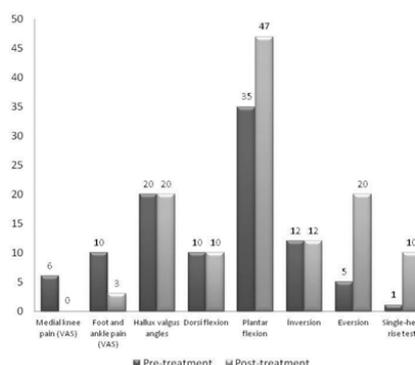
VAS: visual analog scale

Functional evaluation was made with the Manchester-Oxford Foot Questionnaire (MOXFQ) and the Foot and Ankle Outcome Score (FAOS)<sup>10-12</sup>. The MOXFQ is a 16-item instrument answered on a five-point Likert scale (each item is scored from 0 to 4, with 4 denoting ‘most severe’). Scores for each item are summed to form three separate

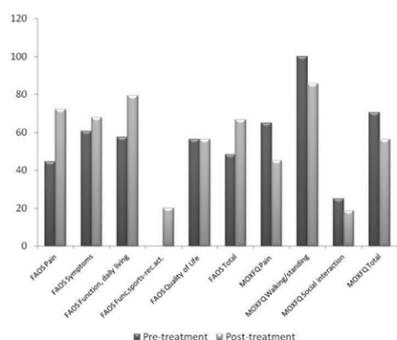
subscales representing underlying domains: walking/standing problems (seven items), foot pain (five items), and issues related to social interaction (four items). Raw scale scores are then each converted to a metric from 0 to 100, where 100 denotes the most severe<sup>13,14</sup>.

The FAOS consists of 42 items, including five subscales: Pain, other symptoms (stiffness, swelling and range of motion), activity of daily living, sport and recreational activities, and foot and ankle-related quality of life. To answer each question, five Likert boxes were used (no, mild, moderate, severe, extreme) and all items are scored from zero to four. Each of the five subscale scores is calculated as the sum of the items included. Raw scores are then transformed to a 0–100, worst to best, scale. We used the Turkish version of the FAOS in this study. These scales have been translated and/or cross-culturally adapted to the Turkish language.<sup>15</sup> All the results of the evaluations are shown in Figures 1, 2 and 3.

The physiotherapy program consisted of patient education, manipulative treatment approaches and therapeutic exercises and was applied for a total of 16 sessions over 2 months at 2 days per week with each session lasting 1 hour. The manipulative treatment approach comprised therapeutic massage and mobilisation methods for the foot and ankle joints. The therapeutic exercises included proprioceptive neuromuscular facilitation, theraband, stabilisation and weight-transfer exercises. The patient was also instructed in a home program of isometric, active and ball-related exercises and was encouraged to perform this program twice a day on a regular basis every day.



**Figure 2. Pre to post-treatment values of left foot and ankle. VAS: visual analog scale**



**Figure 3. Pre to post-treatment values of total and sub-scales of FAOS and MOXFQ.**

FAOS: Foot and Ankle Outcome Score, MOXFQ: Manchester-Oxford Foot Questionnaire

## DISCUSSION

This case report aimed to present the results of a physiotherapy program comprising patient education, manipulative treatment and therapeutic exercises, which was applied in addition to medical treatment for chronic foot and ankle problems to a female RA patient. In literature, apart from medical treatments, studies have generally been made on the surgical treatment of foot problems associated with RA, conventional treatment applications directed towards orthoses and orthopaedic shoes and recently, interest has increased in foot care. In a systematic review of 33 studies, 25 were on surgical intervention and 8 investigated non-surgical interventions<sup>16</sup>. Although exercise has been recommended in literature to provide improvements in many diseases without incurring side-effects, there do not seem to be any studies supporting exercise for the foot and ankle region<sup>17</sup>.

Foot treatment in RA mostly focusses on reducing pain and disability<sup>18</sup>. It has been reported that 68% of RA patients experience moderate to severe foot pain every day<sup>19</sup> and in 94%, foot symptoms have a negative effect on quality of life, reduce independence and cause a tendency to depression and social isolation.<sup>20</sup> Foot pain in RA is the most common cause of disability and is one of the conditions that leads patients to seek specialist help.<sup>21</sup> Pain was the most significant complaint of the current patient. The increase in pre to post-treatment values showed a positive effect in both the VAS values and the pain sub-scales of FAOS and MOXFQ and in the symptom, daily living activities and sport points of FAOS and the

walking/standing and social interaction points of MOXFQ. According to the patient's own statement, she was able to walk more comfortably and for a longer distance, the sensitivity she had felt in the left foot as far as the knee had disappeared and she was able to wear socks in comfort.

In a study which examined foot and ankle muscle strengths in patients with and without RA, it was reported that the strength of the muscles making dorsiflexion, eversion and inversion movements in RA patients was significantly low and this could affect the pathology process in the foot in RA<sup>22</sup>. In the current patient, the increase seen in the heel raise test examining the muscle strength post-treatment can be considered to have had a positive effect on the functional status of the patient.

Another complaint of the patient before treatment was that of 2-3 falls per month. Previous RA-related studies have reported the incidence of falls at 10%-54% and it has been shown that reduced muscle strength in the lower extremity and impaired balance when standing are among the causes of falls<sup>23</sup>. The current patient reported no falls after treatment.

In RA, patients are walking on an unstable foot because of problems such as capsular tension because of chronic synovitis, soft tissue pathologies and muscle imbalance<sup>21</sup>. Pre-treatment, the patient was walking with more pressure on the medial side of the sole of the foot because of pain, which she realised after the exercises transferring weight to all areas of the sole and she stated that the gait education had made a significant contribution to the reduction of pain and her ability to walk more comfortably.

This case report shows that positive results were obtained from the long-term physiotherapy program of patient education, manipulative treatment approaches and therapeutic exercises applied to a patient with chronic foot problems associated with RA.

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