

**National Institute of Arthritis and Musculoskeletal and Skin Diseases  
Duration of Rheumatoid Arthritis and Functional Improvement in  
Clinical Trials**

*Rheumatoid arthritis patients often experience limitations in physical function, due to joint pain and swelling during active inflammation, or residual joint damage and deformity in the absence of active inflammation. Because joint damage is irreversible and increases over time, patients with longstanding rheumatoid arthritis would be expected to display less physical function improvement with treatment than patients with early rheumatoid arthritis.*

**Lead Agency:**

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)/  
National Institutes of Health (NIH)

**Agency Mission:**

The mission of the National Institute of Arthritis and Musculoskeletal and Skin Diseases is to support research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases, the training of basic and clinical scientists to carry out this research, and the dissemination of information on research progress in these diseases.

**Principal Investigator:**

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**Partner Agency:**

Austrian Science Foundation

**General Description:**

**Duration of Rheumatoid Arthritis and Functional Improvement in Clinical Trials**

Limitations in physical function are common in patients with rheumatoid arthritis, occurring either because of joint pain and swelling in patients with active inflammation, or due to residual joint damage and deformity in patients without active inflammation. Current measures of physical limitations do not reveal the cause of the limitations, or whether the limitations are due to inflammation or joint damage. Because joint damage is irreversible and increases over time, less physical function improvement with treatment would be expected in patients with longstanding rheumatoid arthritis, in comparison with patients with early rheumatoid arthritis. NIH-supported researchers studied reports of patients enrolled in rheumatoid arthritis clinical trials to determine whether there was a

lower degree of physical function improvement among patients with a longer duration of the disease. They selected articles from all clinical trials of disease-modifying anti-rheumatic medications in rheumatoid arthritis published from 1980 to 2004. Thirty-six trials that measured physical function using the Health Assessment Questionnaire Disability Index (HAQ: the most common measure of physical function for arthritis patients) were studied. The average duration of rheumatoid arthritis in these trials ranged from 2.5 months to 12.2 years. Physical function, as measured by the HAQ, improved in all trials, but improved more in trials that studied patients with early rheumatoid arthritis. Each additional year of rheumatoid arthritis was associated with about a 7 percent decrease in physical function improvement; among trials of more contemporary medications, this decrease was approximately 14 percent per additional year of rheumatoid arthritis. These findings indicate that physical function is less responsive to treatment in late rheumatoid arthritis than early rheumatoid arthritis. This difference is probably due to the various causes of physical limitations in early and late arthritis.

***Excellence:*** What makes this project exceptional?

Physical function is an important component of health; it includes one's mobility and ability to wash, dress, and eat, and is often limited in patients with rheumatoid arthritis.

***Significance:*** How is this research relevant to older persons, populations and/or an aging society?

Current measures of these physical limitations do not distinguish whether they are due to active inflammation or joint damage. Because joint damage is irreversible and increases over time, it would be expected that older patients with longstanding rheumatoid arthritis would show less improvement than patients with early rheumatoid arthritis.

***Effectiveness:*** What is the impact and/or application of this research to older persons?

This study is a significant contribution to the development of treatments aimed at improving physical function. The results indicate that it is important to consider the degree of joint damage when evaluating the ability of different treatments to improve physical function. This could lead to better targeting of treatments for older rheumatoid arthritis patients with longstanding disease.

***Innovativeness:*** Why is this research exciting or newsworthy?

Physical function is a major driver of health care costs. Confounding factors in evaluating treatments, such as differences in the degree of joint damage and the sensitivity of physical function measures to change, may affect estimates of the relative cost-effectiveness of different rheumatoid arthritis medications.