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Interventions for Adults with Rheumatoid Arthritis to Increase Quality of Life and Motivation in Activities of Daily Living and Instrumental Activities of Daily Living: A Critically Appraised Topic

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PICO:

P: Adults with a chronic condition of Rheumatoid Arthritis
I: Programs and interventions most effective to improve participation in ADL & IADL
C: Motivation levels & QOL
O: Increased participation in ADL & IADLS

Focused Question

What occupational therapy (OT) intervention approaches are best for Rheumatoid arthritis (RA) patients struggling with motivation, quality of life, as evidenced by the ability to participate in ADLs and IADLs?

Clinical Scenario

Rheumatoid arthritis (RA) is a progressive and chronic form of arthritis that affects all joints by causing swelling pain, stiffness, and a loss of function, but is most common in hands and fingers (Tonga et al., 2015). When living with a chronic condition, it can become difficult for adults to be motivated to participate in activities of daily living (ADLs) and instrumental activities of daily living (IADLs), such as cooking, bathing, dressing, exercising, driving, and participating in hobbies (Archenholtz & Dellhag, 2008; Dellhag & Bjelle, 1999). The pain and discomfort RA brings can decrease motivation, quality of life, and ability to perform one's ADLs and IADLs (Benka et al., 2016).

The population addressed in this critically appraised topic, are adults (18 years and older) with RA who are utilizing occupational therapy (OT) services. OT is a branch of health care that helps people of all ages regain independence, build confidence, and bring meaning into all areas of their lives. Limited research or evidence is found for how beneficial OT interventions are in improving one's motivation and quality of life in performing ADLs and IADLs. Because of lack of evidence, the literature review will explore effective OT intervention strategies to improve motivation and quality of life in the engagement of ADLs and IADLs.

A cultural aspect to consider within the adult population with a chronic condition, such as RA, is how the individual views their condition. Additional aspects to consider are what individuals deem as meaningful activities in their daily lives and their desire to perform and engage in those activities. There may be generational and cultural differences in the ways an individual engages in certain interests. For example, an elderly woman who has lived with RA for many years compared to a young twenty-year-old just diagnosed may still experience the same amount of pain despite the duration of the disease when performing similar ADLs and IADLs. Both individuals may have varying routines that take different amounts of time, but the physical demands and the ability to participate in their routines may be limited.

The model of human occupation (MOHO) was used to guide our research. O'Brien (2017) "purposes that human occupational performance is a result of an interaction of personal factors and environment" (p. 96). The MOHO emphasizes that if a person's factors or environment change, then a decrease in behavior and performance patterns can transpire (O'Brien, 2017). Using the MOHO framework helps focus on the concept of volition (motivation and quality of life) within a person's ability to perform meaningful ADLs and IADLs.

Problem Statement

The American Occupational Therapy Foundation recognizes the need of research priority in managing chronic pain. The foundation listed arthritis as being one of the most common

chronic diseases in the United States (Ross, 2018). Chronic disease limits activities of daily living (ADL), motivation, and quality of life, and is in need of more research. The critically appraised topic will focus on finding interventions to assist with ADLs and quality of life in individuals diagnosed with RA.

Purpose Statement

For the purpose of this critically appraised topic, motivation and quality of life will be discussed in-depth in regards to participation in ADLs and IADLs of patients with RA. The evidence found from the articles reviewed will provide ideas and intervention strategies for practicing occupational therapists to implement with their RA patients experiencing decreased motivation and quality of life.

Summary of Key Findings

Inclusion and exclusion criteria for articles

The critically appraised topic included studies conducted within the last 23 years that were published in the English language. There was not sufficient literature on the subject within the last five years, so we had to expand our search for greater results. The participants in the studies were male and female adults, above the age of 18, who had a diagnosis of RA. The search was narrowed down to further focus on the quality of life and motivational factors involved with participating in activities of daily living (ADLs) and instrumental activities of daily living (IADLs). Studies with participants who were not experiencing symptoms from RA and those not struggling with motivation to participate in meaningful ADLs and IADLs were excluded.

Overview of Level I, III, and N/A Studies

Of the 31 articles reviewed from CINAHL, PubMed, Elsevier, and SpringerLink, seven research studies were specifically chosen to be critically reviewed. These seven articles met all inclusion criteria that were mentioned above. Four of the articles were level I randomized control trials (Baillet et al., 2009; Ellegaard et al., 2019; Macedo et al., 2009; Tonga et al., 2015). There was one level I systematic review (Ekelman et al., 2014), two level III questionnaires (Archenholtz & Dellhag, 2008; Dellhag et al., 1999), and one N/A article (Benka et al., 2016).

Level I Studies

Baillet et al. (2009) focused on whether a standardized dynamic exercise programme (DEP) could provide beneficial effects with regard to functional ability, physical capacity, and quality of life. Patients who matched the medico-social parameters were randomly assigned to either the DEP or the conventional joint rehabilitation group. A sample size of 50 patients were treated with disease-modifying antirheumatic drugs at the time of the study. During the four-week period, the DEP patients received a "training programme designed to improve muscle strength, flexibility, endurance and balance" (Baillet et al., 2009, p. 411). The exercises were prescribed for upper and lower limbs, performed five times a week, and included cycling, running, or resisting a pulley cord for 45 min/day and also included the use of a hydrotherapy pool for 60 min/day. Patients were asked to keep a daily diary of their training. The control group received a multidisciplinary programme alongside a rheumatologist, a physiotherapist, an occupational therapist, a social worker, a pharmacist, and a psychologist. This was a three-day

intervention designed to improve knowledge about the pathogenesis of the disease, RA management, and joint protection. Lectures covered mechanisms of RA, benefits and limitations of drug therapy, the psychological impact of the disease, dietetic counseling and the use of splints, surgical perspective, and counseling on activities of daily living or work. Patients utilized the hydrotherapy pool for 45 min on the first day and relaxation exercises on the second day. Prior recording of patients' current level of physical activity or experience with rehabilitation was not completed and marked as a limitation in this study. Results were measured on the health assessment questionnaire and indicated improvement in aerobic fitness and muscle strength after exercise interventions in RA. The DEP exercise interventions indicated better effects on quality of life than conventional joint rehabilitation.

Ekelman et al. (2014) appraised six systematic reviews published from 2007 to 2014 that assessed the efficacy of interventions used by occupational therapists for adults with RA (Ekelman et al., 2014). Interventions examined consisted of exercise, splinting, joining protections, and assistive devices. The purpose of this review was "to identify and examine systematic reviews that assessed the evidence of interventions used by occupational therapists or relevance to occupational therapy for individuals with RA" (Ekelman et al., 2014, p. 348). Interventions that met the inclusion criteria for the six systematic reviews were therapeutic exercise (resistance and aerobic), Tai-Chi, splinting, and patient education through joint protection. Resistant therapeutic exercises examined the efficacy to improve muscle strength, range of motion (ROM), functional capacity, joint pain, and exercise tolerance. Aerobic exercise examined the quality of life (QOL), function, pain, joint mobility, disease activity, radiologic damage, and exercise tolerance. Tai-Chi interventions showed small benefits in improving disability index, QOL, depression and mood, however, results were insufficient in improving strength, aerobic capacity, or function. Splinting was shown to reduce pain and inflammation in the hands. There was a negative effect on dexterity and grip strength after immediate use of wearing a splint. Overall, splinting needs further research on being an effective intervention approach for individuals with RA. Education on joint protection positively affects function but does not impact pain. Patient education is effective in managing morning stiffness, pain, and functional capacity. OT intervention approaches such as therapeutic exercise, Tai-Chi, splinting, and patient education have been found to be helpful in some ways for maintaining well-being and quality of life while performing ADLs and IADLs in RA patients. Practitioners should utilize these intervention approaches in order to take an active role in managing RA pain.

Ellegaard et al. (2019) explored problems that individuals with hand-related RA experienced while performing ADLs, as well as the compensatory strategies that were shown to be most effective. The purpose of this study was to determine whether or not hand exercises in addition to compensatory intervention (CIP) would improve observed ADL abilities in RA over an eight-week period. A sample size of 55 women with hand-related RA were randomly assigned to either CIP exercises or CIP control groups, consisting of 28 and 27 individuals, respectively. The individuals that received the CIP exercises focused on joint protection, muscle strength, ROM, assistive devices, and other alternatives to ADL performance. Changes in observed ADL motor ability were measured by the Assessment of Motor and Process Skills (AMPS) upon the individual selecting two ADL tasks that best reflected their challenges, with the baseline measures being repeated after eight-weeks. The inclusion criteria consisted of women being over the age of 18-years-old, diagnosed with RA, having received stable medication at least three months prior, self-identified a decreased ability to perform ADLs involving hands, understanding the Danish language, as well as reporting either a tender wrist or joints. The exclusion criteria

was determined by reporting significant osteoarthritis of the hand, having received hand surgery at least six months prior, other pain conditions involving muscles or joints, receiving other medical treatments during the study, not understanding the Danish language, and possessing any other contraindications determined by their rheumatologist. Results gathered described an improvement in observed ADL motor ability. There were no significant differences between the groups recorded. This suggests that hand exercise programs may provide benefits and improvement in hand strength or grip, but this doesn't necessarily translate into a guaranteed improvement in ADL performance. In conclusion, the addition of hand exercises to a compensatory intervention did not yield additional benefits in women diagnosed with hand-related RA.

Macedo et al. (2009) examined the serious consequences RA patients experience regarding loss of function, loss of work, their coping strategies, and how their disease impacts everyday activities. The study was a randomized control trial of 32 participants, 93% of the participants were women, the mean age of the sample size was 50.6 years old, and the mean disease duration was around ten years. The RCT examined patients who were receiving occupational therapy interventions and compared that group to individuals receiving usual care for RA. Inclusion criteria for the study consisted of meeting the American College of Rheumatology criteria, being employed in work, living locally in the area of the study, meeting the criteria for medium or high work disability, and being fluent in English. Participants were excluded from the study if they were participating in other research studies, had major comorbidities, were pending any major surgeries, or if an individual were/had received occupational therapy intervention within the past 18 months. Every participant received services from the same OT who examined each participant's medical history, a work assessment, a functional assessment, and a psychosocial assessment, then made an individualized treatment plan for six to eight sessions. Each individualized intervention was aimed to focus on function, work productivity, coping, and RA disease activity. Common interventions in the study were education, self-advocacy, ergonomic reviews, discussions about potential accommodations, sleep posture and hygiene recommendations, exercise, footwear education, splinting, and learning assertive communication techniques. The study showed that comprehensive occupational therapy intervention significantly improves the functional abilities of RA individuals who are working and increases their overall wellbeing and quality of life. Overall, the functional status of RA patients improved while receiving OT services compared to the group not receiving OT services in the study.

Tonga et al. (2015) examined the effectiveness of client-centered OT in individuals with RA throughout a 10-session program. The sample size consisted of 40 individuals, two males, and 38 females, that ranged in age from 39-60-years-old, and were diagnosed with RA. Through random sampling, the individuals were split into either an intervention or control group, with the intervention group receiving both OT and physical therapy (PT) and the control group only receiving PT. Control group sessions consisted of pain management techniques, such as hot-packs, cold-packs, and electrotherapy, as well as stretching, strengthening, and education on protection techniques, energy conservation, and the use of assistive splinting devices. The same PT process was followed for the intervention group, in addition to incorporating the occupational performance components of personal care, functional mobility, community or household management, work, active or passive recreation, and socialization, as identified by their individualized rankings during the Canadian Occupational Performance Measurement (COPM). Individuals were evaluated with the Turkish versions of the Arthritis Impact Measurement Scales

2, RA Quality of Life Questionnaire, the COPM, the Short-Form McGill Pain Questionnaire, and a health assessment questionnaire. The inclusion criteria consisted of an RA diagnosis as determined by a rheumatologist, being between the ages of 18-65 years, not prescribed any drug therapies during the 6-month trial, at stage two or three according to the American College of Rheumatology criteria, and not in the inflammatory stage of this disease. The exclusion criteria included individuals with cognitive impairments that would impact the ability to understand or complete the study questionnaires, completion of a cardiopulmonary, neurological, or orthopedic procedure within the last year, and any other health contraindications with RA that would moderately or severely limit participation. Upon completion of the study, scores demonstrated a significant decrease in pain, activity limitation, and participation restriction. Quality of life increased significantly in the intervention group in comparison to the control group. While differences in scores were present in both the intervention and control groups, it was noted there were more substantial changes in the intervention group. Tonga et al. (2015) supported the notion that OT intervention reduced activity limitations and participation restrictions in individuals diagnosed with RA.

Level III Study

Dellhag and Bjelle (1999) focused on hand functions and ADL capacity during a five-year period for individuals diagnosed with RA. A sample size of 43 participants with a mean age of 53.7 years and a disease duration of 7.5 years gave consent to participate in a variety of grip strength, hand function, and ROM tests. A pre-examination was conducted to determine a baseline and followed up after five-years to determine if there was any progress in hand functioning. Evaluations completed were the Grip Ability test, which examines hand function in RA patients, and included three practical task tests. The Self-Estimated Hand Function Test is a self-reported measure of the ability to use hands to perform activities. The Keitel FunctionTest assesses ROM in fingers, wrists, and shoulders. A health assessment questionnaire was used for measuring ADL ability using a disability index (Dellhag & Bjelle, 1999). The five-year follow-up indicated that women were at a greater risk for hand function deterioration, and the demand for assistive devices was high. With a lack of resources in RA interventions, there is a high priority for educational programs tailored toward RA patients, enabling a client-centered approach.

Level N/A Study

Benka et al. (2016) recruited two separate samples through rheumatology outpatient clinics. One group was diagnosed with RA for four years or less while the other group had a diagnosis of twelve years or more. Both groups met the inclusion criteria by having at least four of the American College Rheumatology requirements. The groups met the specified timeline for the diagnosis (four years or less or twelve years or more) and had an absence of any additional chronic diseases. There was an initial group of 222 patients approached at the beginning of the study. A total of 125 participants were excluded due to missing data or refusal to participate, leaving a sample size of 97 participants. The participants completed a structured interview and self-report questionnaire about their pain, fatigue, functional disability, social participation, depression, and quality of life due to RA disease. “The aim of the study was to explore the associations between perceived restrictions in social participation and health-related quality of life in early and established rheumatoid arthritis patients” (Benka et al., 2016, p. 387). The results of the study concluded that the loss of social participation after diagnosis was found to

have a significant and negative effect on both the mental health and the physical components of one's health-related quality of life. The results are important as healthcare providers need to be consciously aware of an RA individual's participation and how it may be hindering their overall health, well-being, and quality of life.

Analysis of Study Results

The supporting articles have found that RA patients have a decreased well-being and quality of life due to struggles that come with the diagnosis, such as pain and stiffness which limits their participation in everyday ADLs and IADLs (Baillet et al., 2009; Benka et al., 2016; Ekelman et al., 2014; Macedo et al., 2009; Tonga et al., 2015). Six studies addressed the benefit of interventions that focus on ROM, education, splinting, and strengthening (Baillet et al., 2009; Dellhag & Bjelle, 1999; Ekelman et al., 2014; Ellgard et al., 2019; Macedo et al., 2009; Tonga et al., 2015). Benka et al. (2016), addressed additional issues, such as decreased quality of life and increased depression rates. The results of Benka et al. (2016) were found to be important for the critically appraised topic as it supports the problem that patients with RA experience a significant impact on their physical and mental health. Through the process of this critically appraised topic, it was found that having a diagnosis of RA potentially leads to negative impacts on performance in ADLs and IADLs.

Tonga et al. (2015) performed their research study using random sampling to establish a control and intervention group. The control group utilized PT services alone which consisted of addressing pain management by using hot and cold packs, electrotherapy, stretching, strengthening, education and protection techniques, energy convention strategies, and assistive splinting devices. The intervention group utilized the same PT process and incorporated OT services. Individualized occupational performance components for the intervention group were found to provide more beneficial outcomes than just receiving PT services alone. Baillet et al. (2009) used a control and experimental group, but took a different approach by splitting the intervention approaches into two separate programmes that had no overlapping components. The experimental group used a four-week training programme designed to improve muscle strength, flexibility, endurance, and balance for the upper and lower limbs. The control group utilized a three-day multidisciplinary programme designed to improve knowledge about the pathogenesis of the disease, RA management, and joint protection. The exercise interventions used within the experimental group showed better effects on quality of life when compared to the conventional joint rehabilitation approach.

Education on joint protection was evident in several articles, as well as maintaining functional capacity and proper use techniques (Ekelman et al., 2014; Macedo et al., 2009; Tonga et al., 2015). Ekelman et al. (2014) concluded that instruction on joint protection techniques demonstrated positive effects on overall joint function, however, did not impact pain levels. These joint protection techniques included education on joint strain, preventing deformity, and how to adapt to the individual's environment. Education involving medication compliance and management, self-advocacy, and workplace rights were explored by Macedo et al. (2009) with the aim of developing coping strategies and encouraging further involvement in everyday life.

Ellegaard et al. (2019) utilized a hand-exercise program that addressed proper joint preparatory exercises to improve hand and grip strength. Grip strength was mentioned in multiple articles (Baillet et al., 2009; Dellhag & Bjelle, 1999; Tonga et al., 2015) and addressed the need for interventions to decrease symptoms and improve functioning in ADLs and IADLs. However, there were no further explanations as to what interventions were most effective for

improving grip strength in individuals with RA. Dellhag and Bjelle (1999) determined that improvement in grip strength positively correlated with the keitel function test and the self-estimated hand function test. The two functioning test results advocate for the need to implement hand exercise programs into interventions.

Splinting interventions were mentioned in multiple articles (Ekelman et al., 2014; Macedo et al., 2009; Tonga et al., 2015) however, their implementations were not further addressed. Tonga et al. (2015) gave advice or instruction on the use of splints and provided training in self-care activities while utilizing splints but did not further explain this intervention approach within the research results. When Macedo et al. (2009) addressed splinting needs, they referred as required to appropriate personnel. An article by Christie et al. (2007) reviewed by Ekelman et al. (2014) explained that splints reduce pain and swelling both immediately and after wearing for a long period of time, which leads to a potential decrease in grip strength and dexterity. The article stated there is a need for further research to determine the effectiveness of splinting in RA individuals as an intervention approach.

While critically evaluating the articles, some limitations were identified. Benka et al. (2016) and Dellhag and Bjelle (1999) addressed the use of self-report as being a limitation as each individual who completed the questionnaires could have perceived the question or statement differently. A limited sample size for generalizability was addressed and is a concern in a few of the articles (Baillet et al., 2009; Ellegaard et al., 2019; & Macedo et al., 2009). Therefore, the studies were unable to generalize their findings, increasing an external threat to validity by not being able to develop causal conclusions regarding the information gathered. Lastly, Tonga et al. (2015) identified the main limitation as not being able to show any long-term effects from their study that was concluded. Every article gave suggestions on how to fill the gap by addressing their need for further research.

Overall, Dellhag and Bjelle (1999) and Ellegaard et al. (2019) determined that although ROM exercises were successfully utilized within the interventions, their implementations should be further addressed. A similar conclusion was drawn regarding the benefits of using splinting for short-term and long-term effects, as well as the type of usage that allows for the most effectiveness (Ekelman et al., 2014; Macedo et al., 2009; Tonga et al., 2015). Exercise programs consisting of aerobic, resistance, strengthening, and individual education were determined to be beneficial and widely used throughout RA interventions (Baillet et al., 2009; Dellhag & Bjelle, 1999; Ekelman et al., 2014; Ellegaard et al., 2019; Macedo et al., 2009; Tonga et al., 2015).

Clinical Bottom Line

Through research, it has been determined that occupational therapy (OT) interventions are effective in improving participation in activities of daily living (ADLs) and instrumental activities of daily living (IADLs) for individuals diagnosed with Rheumatoid arthritis (RA). Evidence shows that adults with RA participating in exercise programs have an increase in quality of life and motivation (Baillet et al., 2009). When education and effective OT interventions begin early in disease diagnosis, there can be a significant improvement in hand strength and capability of performing everyday activities. There is inconclusive evidence on the effectiveness of splinting for RA patients and beneficial interventions for improvement in ROM. There has been no prior research evaluating the long-term effects that explore the positive outcomes of splinting, which OT can implement into practice with RA patients. This requires additional validation to determine the effectiveness of splinting within OT services. Occupational

therapists need to take the lack of evidence into consideration when choosing to use interventions of splinting in practice, especially with individuals with RA.

Occupational therapists who focus on using RA interventions to improve performance in ADLs and IADLs should recognize how culture can impact pain, strength, and ability when intervening to promote quality of life and motivation. Further research should be explored within various cultures to examine OT interventions in RA patients and the impact the diagnosis has on quality of life and motivation. When working with RA patients, implications of bias are prevalent when considering the amount of pain someone expresses or is experiencing, and the capability of the individual to perform their activities.

Occupational therapists are specialized in implementing education, making adaptations, and developing individualized exercise programs to enhance performance in ADLs and IADLs that correlate with the individual's desired outcomes. This makes OT a critical asset within multiple settings when addressing treatment for individuals with RA while collaborating with interdisciplinary teams. Because occupational therapists follow a holistic and client-centered approach, they understand the importance of QOL and motivation an individual needs in their life. It is critical for occupational therapists to be able to assess the stress, pain, and limitations RA brings to their patients in order to intervene at appropriate times. With the occupational therapy interventions of education, adaptations, and implementation of exercise for RA patients, there will be an increase in volition in clients, which inspires the motivation to perform ADLs and IADLs resulting in improvement in quality of life and well-being.

References

Archenholtz, B., & Dellhag, B. (2008). Validity and reliability of the instrument Performance and Satisfaction in Activities of Daily Living (PS-ADL) and its clinical applicability to adults with rheumatoid arthritis. *Scandinavian Journal of Occupational Therapy*, *15*(1), 13–22. https://doi-org.ezproxylr.med.und.edu/10.1080/11038120701223165

Baillet, A.B., Payraud, E., Niderprim, V-A., Nissen, M. J., Allenet, B., Francois, P., Grange, L., Casez, P., Juvin, R., & Gaudin, P. (2009). A dynamic exercise programme to improve patients' disability in rheumatoid arthritis: A prospective randomized controlled trial. *Rheumatology, 48,* 410-415. https://doi.org/10.1093/rheumatology/ken511

Benka, J., Nagyova, I., Rosenberger, J., Macejova, Z., Lazurova, I., Klink, J. L. L., Groothoff, J. W., & Dijk, J. P. (2016). Social participation and health related quality of life in early and established rheumatoid arthritis patients. *Springer Science, 28,* 381-392. https://doi.org/10.1007/s10882-016-9475-3

Dellhag, B. & Bjelle, A. (1999). A five-year follow-up of hand function and activities of daily living in rheumatoid arthritis patients. *American College of Rheumatology, 12*(1), 33-41. https://doi.org/10.1002/1529-0131(199902)12:1%3C33::aid-art6%3E3.0.co;2-4

Ekelman, B. A., Hooker, L., Davis, A., Klan, J., Newburn, D., Detwiler, K., & Ricchino, N. (2014). Occupational therapy interventions for adults with rheumatoid arthritis: An appraisal of the evidence. *Occupational Therapy in Health Care*, *28*(4), 347–361. https://doi-org.ezproxylr.med.und.edu/10.3109/07380577.2014.919687

Ellegaard, K., von Bülow, C., Røpke, A., Bartholdy, C., Hansen, I. S., Rifbjerg-Madsen, S., Henriksen, M., & Wæhrens, E. E. (2019). Hand exercise for women with rheumatoid arthritis and decreased hand function: An exploratory randomized controlled trial. *Arthritis Research & Therapy*, *21*(1), 158. https://doi.org/10.1186/s13075-019-1924-9

Macedo, A. M., Oakley, S. P., Panayi, G. S., & Kirkham, B. W. (2009). Functional and work outcomes improve in patients with rheumatoid arthritis who receive targeted, comprehensive occupational therapy. *Arthritis and Rheumatism*, *61*(11), 1522–1530. https://doi-org.ezproxylr.med.und.edu/10.1002/art.24563

O'Brien, J. C. (2017). Model of Human Occupation. In J. Hinojosa, P. Kramer, & C. Brasic Royeen (Eds.), *Perspectives on Human Occupation: Theories Underlying Practice* (2nd ed., pp. 93-136). F.A. Davis Company.

Ross, H. (2018, November 7). *Health behaviors to prevent and manage chronic conditions.* American Occupational Therapy Foundation. https://www.aotf.org/About-AOTF/Research-Priorities/Research-Priorities-Initiatives/health-behaviors-to-prevent-and-manage-chronic-conditions

Tonga, E., Düger, T., & Karataş, M. (2015). Effectiveness of client-centered occupational

therapy in patients with rheumatoid arthritis: Exploratory randomized controlled trial. *Archives of Rheumatology*, *31*(1), 6–13. https://doi-org.ezproxylr.med.und.edu/10.5606/ArchRheumatol.2016.5478