

Original Research Article

Objective functional mobility and functional disability in patients with rheumatoid arthritis: a cross-sectional study

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ABSTRACT

Background: Rheumatoid arthritis (RA) is linked to ongoing inflammation, disability and reduced physical performance. Conventional measures of disease activity may not properly reflect patients realized functional capacity. The goal of this study was to explore whether objective functional mobility adds information on functional disability beyond inflammatory disease activity.

Methods: A cross-sectional study involving 382 RA patients. Disease activity, functional disability and mobility were assessed using DAS28-ESR, HAQ-DI and 8-foot up-and-go test. Spearman's rank correlation and multiple linear regression were used to evaluate relationships between the variables and the independent association of functional mobility with HAQ-DI after adjustment for disease activity.

Results: The mean age was 51.99±8.48 years with females comprising 91.6%. Participants of 61-70 years had significantly higher disability, disease activity and poorer functional mobility than younger group ($p=0.036$, <0.001 and 0.025 respectively). HAQ-DI correlated strongly with 8-foot up-and-go time ($\rho=0.877$, $p<0.001$), but weak correlation with DAS28-ESR ($p=0.235$ and $p<0.001$). The regression model explained 78.4% of the variance of HAQ-DI ($R^2=0.784$; adjusted $R^2=0.783$). 8-foot up-go was independently associated with HAQ-DI ($t=35.94$, $p<0.001$), whereas DAS-28 ESR was not ($p=0.078$).

Conclusions: Objective functional mobility was more strongly associated with functional disability than inflammatory disease activity and independently associated with HAQ-DI. Adding performance-based assessment of mobility to disease-activity and patient-reported measures may provide a more comprehensive functional assessment of RA and help guide rehabilitation planning.

Keywords: DAS28-ESR, Functional disability, Functional mobility, HAQ-DI, Rehabilitation, Rheumatoid arthritis

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic systemic autoimmune disease characterized by persistent synovial inflammation, pain, stiffness and progressive joint damage leading to substantial limitations in physical function, activities of daily living, participation and quality of life.¹ RA affects approximately 0.5-1% of the adult population globally and has a substantial impact on individuals and society because of the use of healthcare,

inability to work, and loss of functional independence.² Although functional limitations are still a significant component of the overall disease burden, substantial progress in the control of inflammatory disease has been made thru advances in disease-modifying antirheumatic therapy.³

Assessment of disease activity is an essential component of modern RA management and should be performed regularly with the Disease Activity Score in 28 joints

using the erythrocyte sedimentation rate (DAS28-ESR), a validated composite index that includes the number of tender and swollen joints, the erythrocyte sedimentation rate, and the patient's global assessment.⁴⁻⁶ Monitoring of treatment response and therapeutic adjustment according to treat-to-target recommendations, aiming for remission or low disease activity, can be achieved thru regular assessment of disease activity.^{7,8} However, reaching an inflammatory treatment target does not necessarily mean that optimal physical functioning returns. Functional disability may reflect both potentially reversible consequences of active inflammation and more persistent components related to cumulative disease burden, structural damage, and other physical determinants.^{9,10} Thus, assessment of inflammatory activity alone may not provide a full picture of the functional consequences of RA for the patient.

The health assessment questionnaire disability index (HAQ-DI) is one of the most widely validated patient-reported measures of functional disability in RA and measures the difficulty of performing activities of daily living. Higher HAQ-DI scores have been associated with increased functional impairment, more severe disease and adverse clinical outcomes including increased healthcare utilization and work disability.¹¹⁻¹³ However, patient reported disability and objectively observed physical performance are related, but conceptually different constructs. Self-reported measures (e.g. pain, perceived effort, psychological influences, adaptation and individual expectations) may be influenced by adaptation and individual expectations, but may also reflect pain, perceived effort and psychological influences.¹⁴ Therefore, the use of both patient-reported and performance-based measures may contribute to a more complete assessment of functional health in RA.

The assessment of functional mobility based on performance is of particular importance from a rehabilitation perspective, as it challenges physical ability beyond that indicated by self-report of disability.¹⁵ The 8-foot up-and-go test measures functional mobility, dynamic balance, agility, and lower-extremity performance and has shown clinical utility in assessing physical function.¹⁶ Performance-based assessments may supplement traditional clinical and patient-reported measures by revealing mobility limitations not fully captured by subjective assessment. RA is characterized by persistent inflammation, pain, joint damage, muscle weakness and reduced physical activity, which may negatively influence physical performance. Functional limitation may also contribute to reduced independence and physical capacity.^{1,6,17} It is therefore clinically relevant to understand the interrelationship between disease activity, functional disability and objective mobility in identifying patients at greater risk of functional decline and for informing comprehensive rehabilitation strategies.

The 8-foot up-and-go test is a quick, easy to perform, performance-based test that involves the participant standing up from a chair, walking, turning, walking back, and sitting down, thus involving several components of functional mobility and physical performance.¹⁶ Importantly, evidence in RA patients has shown its association with other objective measures of physical function and supports its clinical utility as a measure of realized physical performance. This is important as objective mobility may be a reflection of aspects of functional limitation not fully captured by inflammatory disease activity or patient-reported disability alone.

A functional perspective beyond inflammatory disease activity

The relationship between inflammation, disability and physical performance can be further conceptualized within the framework of the International Classification of Functioning, Disability and Health (ICF).¹⁸ The ICF is based on a biopsychosocial model and not solely on disease pathology in which functioning and disability are the result of interactions between the health condition, body functions and structures, activities, participation and contextual factors. In RA, this framework is an important conceptual basis to differentiate between current inflammatory disease activity, patient-perceived activity limitation and actual physical performance. In this ICF-informed perspective, DAS28-ESR mainly captures disease activity, HAQ-DI measures perceived limitations in activities of daily living, and the 8-foot up-and-go test provides an objective evaluation of functional mobility and physical performance. Thus, these measures may be complementary dimensions of the functional health of the patient rather than interchangeable indicators of disease severity.

Importantly, functional limitation in RA may persist thru mechanisms that are only partially captured by contemporaneous inflammatory activity. Pain, cumulative joint damage, muscle weakness, reduced activity, deconditioning, impaired balance and age-related declines in physical reserve may contribute to impaired physical functioning even with relatively well controlled inflammatory activity.^{9,10,17} Thus, the association between disease activity and functional capacity may not be linear or exhaustive. Objective assessment of mobility may thus add information on the patient's realized functional capacity that cannot be obtained from disease activity assessment alone. This perspective allows the simultaneous evaluation of inflammatory, patient-reported and performance-based domains in assessing the functional consequences of RA.

Research gap

Despite growing evidences, objective functional mobility, disease activity and patient reported impairment have not been studied together in the same cohort, especially in

Indian RA patients, despite increased awareness of performance-based evaluation in RA.¹¹ Moreover, the independent association of objective mobility with functional impairment after adjustment for disease activity has not been proven. This vacuum leaves us with little understanding of whether performance-based mobility evaluation delivers clinically useful information beyond standard markers of inflammation and patient-reported outcomes.

The aim of the present study was therefore to study the relationship between DAS28-ESR, HAQ-DI and the 8-foot up-and-go test in patients with RA, and to determine the independent association of objective functional mobility with functional disability after accounting for disease activity using multiple linear regression.

METHODS

Study design, duration and setting

A cross-sectional observational study was conducted at a tertiary rheumatology outpatient clinic in north India, from August 2025 to June 2026. The study was designed and reported according to STROBE criteria for cross-sectional studies.¹⁹

Study participants and sample size

Patients attending the outpatient rheumatology clinic who fulfilled the predefined eligibility criteria were screened for participation. A total of 382 patients with rheumatoid arthritis were enrolled using a convenience sampling technique. Sample size was estimated based on the point estimate prevalence of rheumatoid arthritis with 95% confidence limits so that a high degree of statistical power can be obtained to allow for the proposed statistical tests.²

Participants selection

Inclusion criteria

According to the 2010 ACR/EULAR Classification Criteria, participants had to be between the ages of 40 and 70 and have a verified diagnosis of RA.⁴ Prior to enrolment, patients had to have chronic RA (disease duration ≥ 2 years or documented clinical/radiological progression), be positive for anti-cyclic citrullinated peptide (anti-CCP) antibodies and/or rheumatoid factor (RF), and have taken disease-modifying anti-rheumatic drugs (DMARDs) for ≥ 6 months. Additionally, participants had to be able to understand, complete, and provide written informed consent for all study assessments.

Exclusion criteria

Exclusion criteria included age <40 or >70 years, autoimmune rheumatic diseases other than RA, active malignancy, or participation in another interventional

clinical trial. Patients with significant systemic comorbidities (e.g., advanced cardiac, renal, respiratory, or neurological disease), serious psychiatric illness, or cognitive impairment that would interfere with participation in the study were also excluded. Those who were unwilling or unable to provide written informed consent have been not eligible for inclusion.

Data collection procedure

Each eligible participant recruited from the rheumatology outpatient clinic provided written informed consent. Medical records and participant interviews provided baseline demographic and clinical data. During a study visit, the DAS28-ESR was used to determine disease activity.⁵ The HAQ-DI was used to assess functional disability.^{12,13} The 8-foot up-and-go test was used to gauge functional mobility. To minimise inter-observer variability, all evaluations were carried out by the same trained investigator using standard standardised procedures.¹⁶

Outcome measures (disease activity)

The patients were screened with the disease activity score in 28 joints with erythrocyte sedimentation rate (DAS28-ESR), which includes tender and swollen joint count and pain severity as judged by patient global health along with patient and physician assessment of global health, erythrocyte sedimentation rate. Higher DAS28-ESR scores indicated higher severity of disease.^{5,6}

Physical functional status

Functional disability was measured by health assessment questionnaire disability index (HAQ-DI). Limitation of everyday living function in 8 functional areas was measured by HAQ-DI (HAQ scores range from 0 to 3, higher value= worse functional disability).^{12,13} Functional mobility was assessed using the 8-foot up-and-go task from the senior fitness test. Participants were asked to stand up from a chair, walk around a marker 8 feet (2.44 m) away, and return to the chair and sit down as quickly and safely as possible. Total time to complete the test (in seconds) was recorded using a digital stopwatch. Longer times to completion are related to poorer functional mobility and poor dynamic balance.²⁰

Statistical analysis

The statistical study uses IBM SPSS Statistics 32.0.0 (IBM Corp., Armonk, NY, USA).²¹ Both the Shapiro-Wilk test and Q-Q plots were employed to determine if continuous variables were normal. Several variables were not normally distributed, so non-parametric methods were used to compare groups (Shapiro-Wilk $p < 0.05$).²² Frequencies and percentages represent categorical variables, while mean $\pm$ standard deviation (SD) represents continuous variables. Age groups, ESR categories, and RA stages were compared using the Kruskal-Wallis test.²³

Post hoc pairwise comparisons were adjusted for multiple testing.

The Spearman rank correlation coefficient assessed associations between continuous variables.²⁴ Multiple linear regression analysis was used to find independent predictors of functional disability. Regression's fundamental assumptions linearity, independence of observations, homoscedasticity, lack of multicollinearity, and approximately normal residuals were adequately met. Regression coefficients, 95% confidence intervals (CI), coefficient of determination (R^2), adjusted R^2 , F-statistics, and their corresponding p-values were used to present the regression results. In all two-tailed statistical tests, $p < 0.05$ was considered statistically significant.²⁵

RESULTS

A total of 400 patients with rheumatoid arthritis were screened for eligibility during the study period. Eighteen patients were excluded; 13 did not meet the inclusion criteria and 5 declined to participate. A total of 382 eligible participants were enrolled and included in the final analysis. The participant recruitment and selection process is shown in Figure 1.

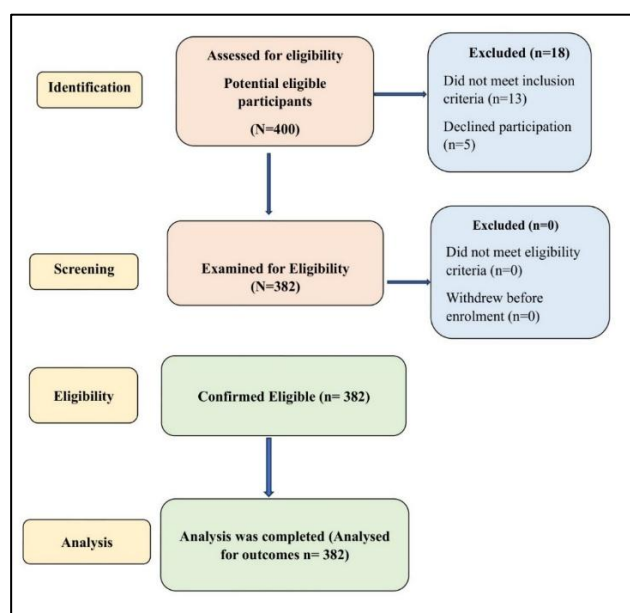


Figure 1: Flow diagram illustrating the selection and inclusion of study participants in the cross-sectional study.

The average age was 51.99 ± 8.48 years, with the majority of participants aged 40-50 years (46.6%) (Table 1). Women comprised 91.6% of the cohort. The majority of the patients had ESR 20-39 mm/hours (44.8%) and stage

II RA in 55.2%. Overall, the cohort consisted mainly of middle-aged females with moderate inflammatory activity and intermediate-stage disease.

Table 1: Baseline demographics and clinical characteristics.

Variables	Categories	N (%)
Age (years)	40-50	178 (46.6)
	51-60	147 (38.5)
	61-70	57 (14.9)
Age (Overall)	Mean $\pm$ SD	51.99 $\pm$ 8.48
Gender	Male	32 (8.4)
	Female	350 (91.6)
ESR category (mm/hour)	0-19	112 (29.3)
	20-39	171 (44.8)
	40-69	91 (23.8)
	≥ 70	8 (2.1)
RA Stage	Stage I	99 (25.9)
	Stage II	211 (55.2)
	Stage III	76 (19.9)

BMI, Body Mass Index; ESR, Erythrocyte Sedimentation Rate; RA, Rheumatoid Arthritis; SD, Standard Deviation.

Table 2 shows the distribution of HAQ-DI, DAS28-ESR and 8-foot up-and-go test scores in demographic and clinical subgroups. Functional disability and mobility did not differ significantly between males and females, but male participants had a marginally higher disease activity. Worst clinical outcomes were observed with increasing age, with participants aged 61-70 years having the highest HAQ-DI and DAS28-ESR scores and longest 8-foot up-and-go times, indicating greater disability, higher disease activity and reduced functional mobility. Comparing patients with low and moderate disease activity to those with high RA disease activity, the former showed significant impairment across all three outcome criteria. Performance on the 8-foot up-and-go, HAQ-DI, and DAS28-ESR varied significantly between age groups (Kruskal-Wallis test, $p=0.036$, $p<0.001$, and $p=0.025$).

Table 3 illustrates additionally, there were significant differences between RA disease activity groups in HAQ-DI ($p=0.001$), DAS28-ESR ($p<0.001$), and 8-Foot Up-and-Go time ($p=0.015$). The only outcome that differed significantly between ESR categories ($p=0.003$) was DAS28-ESR; functional mobility and HAQ-DI did not. The oldest age group and patients with high disease activity were the primary causes of the largest between-group differences, according to a Bonferroni-adjusted post hoc analysis, suggesting that age and disease activity are the primary determinants affecting disability and reduced mobility in RA.

Table 2: Distribution of clinical outcome measures among patients with rheumatoid arthritis.

Grouping variables	Categories, (N)	HAQ-DI, median (IQR)	DAS28-ESR, median (IQR)	8-foot up-and-go, median (IQR), sec
Gender	Female, (350)	1.62 (1.25-2.38)	4.74 (4.04-5.75)	9.91 (8.25-12.41)
	Male, (32)	1.62 (1.12-2.50)	5.30 (4.30-6.04)	10.50 (8.45-12.50)
Age group, years	40-50, (178)	1.62 (1.12-2.50)	4.49 (3.40-5.22)	9.78 (8.04-12.23)
	51-60, (147)	1.50 (1.25-2.38)	4.80 (4.31-5.96)	9.90 (8.42-11.76)
	61-70, (57)	2.00 (1.50-2.62)	5.98 (5.04-6.72)	10.98 (9.09-13.90)
ESR, mm/hour	5-19, (112)	1.50 (1.12-2.00)	4.54 (3.80-5.04)	9.38 (8.06-11.02)
	20-39, (171)	1.62 (1.25-2.50)	4.79 (4.06-5.84)	10.20 (8.30-12.32)
	40-69, (91)	1.75 (1.38-2.56)	5.19 (4.31-6.20)	10.53 (8.61-13.34)
	>70, (8)	1.56 (1.25-2.31)	6.12 (4.45-6.67)	9.90 (8.40-12.13)
RA disease activity	0-3.99, (91)	1.50 (0.75-2.50)	3.19 (2.98-3.70)	9.14 (7.34-12.41)
	4-6, (215)	1.62 (1.25-2.25)	4.86 (4.46-5.28)	9.88 (8.67-11.77)
	6.01-10, (76)	2.12 (1.47-2.62)	6.58 (6.21-6.91)	11.34 (8.50-13.82)

Note- Values are presented as median [interquartile range (IQR)], followed by minimum–maximum. IQR is represented by the 25th–75th percentiles. HAQ-DI = health assessment questionnaire disability index; DAS28-ESR = disease activity score in 28 joints based on erythrocyte sedimentation rate; RA = rheumatoid arthritis; ESR = erythrocyte sedimentation rate.

Table 3: Analysis of HAQ-DI, DAS28-ESR, and 8-foot up-and-go test scores across age groups, erythrocyte sedimentation rate (ESR) categories, and rheumatoid arthritis (RA).

Outcomes	Grouping variables	H	df	P value	Significant Bonferroni comparisons
HAQ-DI	Age group	6.666	2	0.036	51-60 versus 61-70 (0.042)
	ESR category	59.311	46	0.090	None
	RA disease activity	13.196	2	0.001	Moderate versus high (p=0.004); low versus high (p=0.015)
DAS28-ESR	Age group	55.403	2	<0.001	40-50 versus 51-60 (p<0.001); 40-50 versus 61-70 (p<0.001); 51-60 versus 61-70 (p<0.001)
	ESR category	76.304	46	0.003	ESR 5-19 versus 40-69 mm/hr (p<0.001)
	RA disease activity	304.935	2	<0.001	Level 1 versus 2 (p<0.001); Level 1 versus 3 (p<0.001); Level 2 versus 3 (p<0.001)
8-foot up-and-go	Age group	7.374	2	0.025	40-50 versus 61-70 (p=0.028); 51-60 versus 61-70 (p=0.046)
	ESR category	56.159	46	0.145	None
	RA disease activity	8.414	2	0.015	Low versus high (p=0.038)

Table 4: Correlation analysis between HAQ-DI, DAS28-ESR, and 8-foot up-and-go test.

		HAQ-DI Score	DAS28- ESR Score
DAS28- ESR Score	Spearman's rho	0.235	—
	P value	<0.001	—
8 foot up and go time (seconds)	Spearman's rho	0.877	0.215
	P value	<0.001	<0.001

Table 5: Multiple linear regression analysis to find independent predictors of functional disability (HAQ-DI Score) in rheumatoid arthritis patients.

	R	R ²	Adjusted R ²	F	SE	t	P value	95 % CI (LL)	95 % CI (UL)
Model	0.885	0.784	0.783	688					
DAS28- ESR Score					0.01527	1.77	0.078	-0.00490	0.0909
8 foot up and go time (seconds)					0.00676	35.94	<0.001	0.82787	0.9237

Table 4 shows “significant positive correlations between disease activity, functional disability and functional mobility. HAQ-DI was highly positively correlated with the 8-foot up-and-go test (Spearman’s $\rho=0.877$, $p<0.001$), suggesting that worse functional mobility was closely linked to greater functional disability. DAS28-ESR was weakly correlated with the 8-foot up-and-go test ($p=0.215$, $p<0.001$), whereas HAQ-DI was weakly positively correlated with DAS28-ESR ($p=0.235$, $p<0.001$). Overall functional mobility had the greatest relationship with disability, which suggests that objective assessment of mobility may be a better representation of functional impairment than disease activity alone in patients with RA.

Table 5 displays a multiple linear regression analysis to identify independent predictors of HAQ-DI scores. The overall model for multiple linear regression was highly significant ($R=0.885$, $R^2=0.784$, adjusted $R^2=0.783$, $F=688$). The 8-foot up-and-go test independently predicted HAQ-DI score in the participants with RA in this study ($t=35.94$, $p<0.001$; 95% CI: 0.82787-0.92370); in other words, worse functional mobility predicted HAQ-DI in these patients. The other variables within the multiple regression model did not have a significant impact as independent predictors of HAQ-DI score; e.g. DAS28-ESR had a t-value of 1.77 and was not statistically significant in the multiple regression model ($p=0.078$; 95% CI: 0.00490-0.09090). This suggested that functional mobility predicted HAQ-DI more strongly in this group.

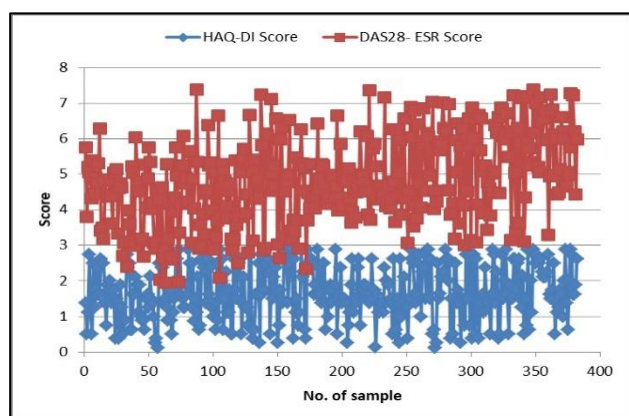


Figure 2: Scatter plot showing the association between DAS28-ESR and HAQ-DI.

Scatter plot and associated fitted regression line between DAS28-ESR and HAQ-DI in RA patients (Figure 2) showed that the data is dispersed along the diagonal suggesting a positive correlation, which can be interpreted as increase in disease activity correlates with a rise in patient functional disability.

The scatter plot shows an association between disease activity as indicated by the DAS28-ESR score, and functional ability measured by the 8-foot up-and-go test,

suggesting the worse the disease the worse is physical function / ability to walk test (Figure 3). The regression line fits the general form of this relationship observed in the study.

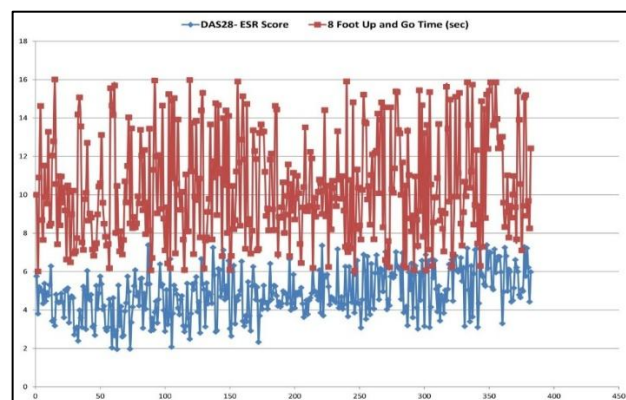


Figure 3: Scatter plot showing the relationship between DAS28-ESR and the 8-foot up-and-go test.

DISCUSSION

Correlation findings

The current cross-sectional study examined the association between RA patients’ functional mobility, functional disability, and disease activity. The findings showed that reduced functional mobility and increased functional disability were related to older age and increased disease activity. Disease activity was positively and strongly correlated with disability. After correction, functional mobility as determined by the 8-foot up-and-go test was the only independent predictor of functional disability and indicated the association with HAQ-DI. The findings indicate that objective measures of functional performance are a useful adjunct to traditional measures of inflammatory disease and provide clinically meaningful information about patients’ functional status.^{16,17} The study’s demographic profile was consistent with the established epidemiology of RA, with a significant female predominance and most of the subjects being in the middle-aged and older age groups.^{1,2} Indian and international cohorts indicate that women have a higher RA prevalence and that disability increases with age.^{2,9} Participants aged 61-70 showed considerably more disease activity, functional disability, and lower mobility. These findings are consistent with prior studies that older individuals with RA had worse functional outcomes because of cumulative inflammation, progressive joint damage, age-related sarcopenia, reduced balance, and decreasing physical capacity.^{9,10,15,20} Disease activity was significantly associated with decreased function. Patients with high DAS28-ESR and advanced disease stages experienced worse disability and mobility. Persistent inflammation, pain, synovitis and structural damage to the joints negatively impact physical performance and limit participation in activities of daily living.^{1,6,9,10} Even with significant improvements in disease control with current

treat-to-target strategies, inflammation suppression alone may not restore optimal physical function, highlighting the need for full rehabilitation in addition to pharmacological management.^{7,8}

A significant positive correlation was confirmed between DAS28-ESR and HAQ-DI, with an increase in disease activity resulting in increased disability. However, the relationship was fairly weak, suggesting that disability is influenced by several additional factors, including chronic pain, irreversible joint damage, muscle weakness, fatigue, physical inactivity and psychosocial factors.^{9,10,14,17} And so many patients still have functional limitations even with adequate control of inflammatory disease activity. This highlights the necessity to combine patient-reported outcomes with objective performance-based measures in order to provide a holistic evaluation of the impact of disease.^{14,16,18}

The strongest association found in this study was between HAQ-DI and the 8-foot up-and-go test, with longer times for completion consistently demonstrating greater disability. Performance-based assessments, unlike questionnaire-based measures, objectively measure mobility, balance, agility and lower-extremity function, thereby providing a more direct measure of physical capability. Current findings are in line with earlier reports showing that performance-based tests complement standard clinical measures and enhance the assessment of physical functioning in people with RA.^{16,17}

Functional mobility measures were analysed using multiple linear regression analyses. An overall, significant, predictive model was found for HAQ-DI on objective measures ($R=0.885$, $R^2=0.784$, adjusted $R^2=0.783$). The independent predictors were the 8-foot up-and-go test only ($t=35.94$, $p<0.001$) and the disease activity measures did not provide any statistically significant independent contributions ($p=0.078$). Thus, the measures of objective performance on the 8-foot up-and-go test appeared to explain a substantial proportion of variance in HAQ-DI, apart from disease activity.

Functional-inflammatory decoupling in rheumatoid arthritis

Beyond disease activity one key finding in this study was the apparently separate nature of functional inflammatory decoupling among objective mobility and measured inflammatory disease activity. Both measures were significant at a bivariate level with functional impairment and mobility and, respectively, although the relationship between the 8-foot up-and-go test and DAS28-ESR ($=0.215$) was considerably weaker than with the HAQ-DI ($=0.877$)- and, following its adjustment in multivariable models the functional mobility but not disease activity provided an independent link to physical functioning. This strongly implies that inflammatory load and demonstrated functionality may not be interchangeable and are best understood as separate (if perhaps indirectly

related) dimensions of the illness experience for those with RA.^{1,9,10,18} The implication is the concept that while inflammatory load can create accumulated physical consequences it does not mean there should remain a direct functional equivalent (which is lost only slowly and may be reversible) to current levels of disease.^{9,10}

Toward a functional phenotype of rheumatoid arthritis

It may be suggested that disability should be examined within this conceptual and functional framework. Function, then, rather than being a simple, negative consequence of current inflammatory disease load (even of established long term articular damage), can be viewed as an emergent phenomenon resulting from inflammatory activity itself, plus accumulating, cumulative articular damage, deconditioning and de-muscling, impairment of neuromuscular performance and coping strategy (adaptive capacity).^{9,10,17}

In this interpretation, the measurement in terms of actual achieved capacity of the 8-foot up-and-go test must offer a functional perspective whereas the disease score provides data pertaining to inflammatory load at this moment, the patient generated disability information with its more personal aspects (including subjective as well as objective limitations). The highly concordant nature of the patient self-report measures with objective data presented strongly suggests we captured similar functionality on either measure although not necessarily the same phenomenon.⁸ Within this, it must also offer an interpretation for why different individuals with what may appear identical disease load (in terms of severity indices) may have such different functional levels; the physical components of musculoskeletal degeneration, deconditioning and so on, also influence and produce their own separate influence, leading to non-equivalence and an approach where function and disease activity become complementary rather than equivalent forms of disease manifestation.^{12,14,16,18}

Physiotherapy implications

Taken from a physiotherapy perspective, these findings reaffirm that functional mobility is not only an outcome of disease severity, but also a potentially modifiable target through structured rehabilitation. Specific physiotherapy interventions focused on therapeutic exercise, progressive muscle strengthening, balance and gait training, aerobic conditioning, flexibility exercises, joint protection strategies, energy conservation techniques and patient education may help with mobility, maintain independence and reduce long-term disability. Routine rheumatology care can incorporate simple performance-based assessments to identify patients at risk of functional decline and allow for prompt multidisciplinary rehabilitation.^{16,17}

These results have important clinical implications. Nowadays, RA treatment is not only about suppression of

inflammation but also about preserving functional independence, participation and quality of life.^{7,8,18} The 8-foot up-and-go test is inexpensive, quick to administer, and requires minimal equipment, making it highly suitable for routine outpatient practice.¹⁶ It provides an overall assessment of disease burden and supports personalised treatment planning with DAS28-ESR and HAQ-DI.

Integration of rheumatological care with physiotherapy may offer an additional avenue to further optimise long-term functional outcomes by targeting impairments not fully explained by inflammatory activity alone. The main strengths of this study are the relatively large sample size and the simultaneous evaluation of disease activity, functional disability and objective functional mobility using validated clinical instruments.^{5,12,16,17} The use of both patient-reported and performance-based outcome measures allows for a comprehensive assessment of functional health and provides valuable data from an Indian RA population where such data is limited.

This study has few limitations. Causality could not be established due to the cross-sectional nature and single-centre, convenience sampling may have an influence on the generalization. Some relevant factors such as disease duration, radiographic damage and comorbidities were not assessed in the regression model. Further multicentre prospective studies could clarify the association between functional mobility and disability in rheumatoid arthritis.

CONCLUSION

To conclude, this paper offers support for the notion that objective measurements of functional physical performance in RA are better predictors of assessed disability than inflammatory disease activity alone. The 8-foot up-and-go test was highly correlated with HAQ-DI and was the only independent predictor in the multivariable model. These findings help to gain a better appreciation of RA functional disability and suggest that although inflammatory disease activity and realised function are correlated, they remain distinct domains, and as such should be considered together to allow for a better insight into 'realisable function' in RA; identification of patients at risk of higher disability and functional deficit and tailoring appropriate rehabilitative strategies.

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