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When feeling active is not enough: the gap between perceived and real-world physical activity in axial spondyloarthritis

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Abstract

Objective. To assess physical activity (PA) in patients with axial spondyloarthritis (axSpA) using both self-reported and objectively measured parameters, quantify discordance between these measures, and identify factors associated with discrepant activity patterns.

Methods. In this exploratory cross-sectional study, 63 patients with axSpA in remission or low disease activity according to ASDAS criteria were included. Self-reported PA was assessed using the International Physical Activity Questionnaire (IPAQ), while objectively recorded ambulatory activity was assessed using daily step count over seven consecutive days. A threshold of 7000 steps/day was applied. Patients reporting moderate-to-high IPAQ levels were stratified into concordant (≥7000 steps/day) and discordant (<7000 steps/day) activity patterns. Fatigue (FACIT-F), depressive symptoms, kinesiophobia (Tampa Scale), and sarcopenia risk (SARC-F) were assessed. Multivariable logistic regression was used to identify factors independently associated with discordance.

Results. The cohort included 40 men (63.5%) and 23 women (36.5%), with a median age of 46 years [interquartile range (IQR) 37-53]. Median daily step count was 5924 steps/day (IQR 4138-8112), and 41 patients (65.1%) performed <7000 steps/day despite most reporting moderate-to-high PA by IPAQ. Lower objectively recorded ambulatory activity was associated with older age, longer disease duration, greater fatigue, depressive symptoms, and higher SARC-F scores (all $p<0.05$). Step count correlated positively with FACIT-F and inversely with SARC-F. Among patients reporting moderate-to-high PA (n=56), 35 (62.5%) demonstrated a discordant activity pattern. Peripheral arthritis was independently associated with discordance after adjustment for age and disease duration (odds ratio 8.98, 95% confidence interval 1.99-40.58; $p=0.004$).

Conclusions. A substantial proportion of patients with axSpA in remission or low disease activity demonstrated discordance between self-reported PA and objectively recorded ambulatory activity. The history of peripheral arthritis and psychobehavioral factors were associated with reduced real-world movement despite inflammatory control.

Introduction

Physical activity (PA) is recognized as a core component of non-pharmacological management in patients with axial spondyloarthritis (axSpA) and is consistently recommended by international societies, including the European Alliance of Associations for Rheumatology (1, 2). Regular engagement in aerobic, strengthening, flexibility, and balance exercises has been associated with improved physical function, reduced disease burden, and enhanced quality of life in this population (3-5). Despite these recommendations, real-world PA levels in patients with axSpA remain suboptimal, even in the context of controlled inflammatory disease activity (6, 7).

Assessment of PA in both clinical practice and research settings commonly relies on self-reported questionnaires, such as the International Physical Activity Questionnaire (IPAQ) (8). While these instruments are practical and widely used, they are inherently subject to recall bias, social desirability bias, and misclassification of activity intensity. Several studies in rheumatic and non-rheumatic populations have demonstrated that self-reported PA may not accurately reflect objectively recorded movement, with a tendency toward overestimation of actual activity levels (9, 10). This discrepancy may be particularly relevant in axSpA, where symptoms such as pain, stiffness, fatigue, and fear of movement may influence both reported activity and engagement in everyday movement.

Device-based step counting has emerged as a feasible and scalable approach for objectively recording ambulatory activity in free-living conditions (11, 12). Daily step count provides a simple and clinically interpretable measure of accumulated ambulatory movement and may complement questionnaire-based assessment of PA (13, 14). Importantly, self-reported PA and daily step count should not be regarded as interchangeable measures. While the IPAQ captures the reported frequency, duration, and intensity of activity across different domains, step count primarily reflects ambulatory movement accumulated during daily life. Accordingly, discordance between these measures may represent a clinically relevant mismatch between reported PA and objectively recorded real-world ambulatory activity rather than simple measurement error. However, data on such discordance in axSpA remain limited, particularly among patients with controlled inflammatory disease.

Patients with axSpA may also experience clinical and psychosocial factors that are associated with everyday movement despite adequate inflammatory control. A history of peripheral arthritis may be relevant to long-term movement behavior, while fatigue, depressive symptoms, and kinesiophobia may further characterize patients with lower real-world ambulatory activity. Examining these characteristics alongside self-reported PA and objectively recorded movement may help identify factors associated with discordant activity patterns and provide a basis for more individualized non-pharmacological interventions (7, 14-16).

Therefore, this exploratory study aimed to assess PA in patients with axSpA using self-reported and step count–based measures, to quantify discordance between these assessments, and to identify clinical and patient-reported factors associated with discordant activity patterns.

Materials and Methods

Study design and participants

This exploratory cross-sectional study was conducted at the Institute of Rheumatology, Belgrade, Serbia, between December 2025 and May 2026.

Consecutive patients with axSpA fulfilling the Assessment of SpondyloArthritis International Society (ASAS) classification criteria were screened for eligibility. Only patients in remission or with low disease activity (LDA) were included. Disease activity was assessed using the Ankylosing Spondylitis Disease Activity Score (ASDAS). Remission was defined as ASDAS<1.3 and LDA as ASDAS≥1.3 and <2.1.

A total of 130 patients were approached for participation, of whom 100 provided written informed consent and 30 declined. After exclusion of 37 participants with incomplete datasets, 63 patients were included in the final analysis (Figure 1). The study was approved by the institutional ethics committee, and written informed consent was obtained from all participants.

Assessment of self-reported physical activity

Self-reported PA was assessed using the short version of the IPAQ. The instrument captures the frequency (days per week) and duration (minutes per day) of walking, moderate-intensity, and vigorous-intensity PA performed during the preceding seven days.

Total PA was expressed in metabolic equivalent (MET)-minutes per week according to the standard IPAQ scoring protocol. Walking, moderate-intensity, and vigorous-intensity activities were assigned MET values of 3.3, 4.0, and 8.0, respectively. For each activity category, MET-minutes per week were calculated as the product of the corresponding MET value, activity duration (minutes per day), and frequency (days per week), and subsequently summed to obtain total weekly MET-minutes.

Participants were classified as having low, moderate, or high PA according to established IPAQ criteria. Moderate PA was defined as achieving at least 600 MET-minutes per week, whereas high PA corresponded to either ≥3000 MET-minutes per week or vigorous activity performed on at least three days accumulating ≥1500 MET-minutes per week.

Assessment of objectively recorded ambulatory activity

Ambulatory activity was objectively assessed using daily step counts recorded by participants' personal smartphones over seven consecutive days. Because participants used their own devices, smartphone models and operating systems were not standardized. Step counts were obtained from the native or routinely used health applications available on each device (*e.g.*, Samsung Health, Google Fit, or Apple Health), which use built-in motion sensors to record ambulatory movement.

Participants were instructed to carry their smartphones during waking hours and routine daily activities throughout the seven-day monitoring period and to avoid prolonged periods without the device. They were also instructed not to change their usual PA specifically because of study participation. Daily step-count records were reviewed for completeness, and participants with incomplete monitoring data were excluded from the final analysis. The mean daily step count was calculated for each participant across the seven-day monitoring period.

A threshold of 7000 steps/day was used to distinguish lower from higher objectively recorded ambulatory activity. This threshold was selected a priori based on epidemiological evidence demonstrating clinically meaningful health benefits around this level of daily ambulatory activity in adult populations (17, 18). As this threshold was derived from general adult populations and has not been specifically validated in axSpA, it was considered a pragmatic activity threshold rather than an axSpA-specific clinical target.

Clinical and patient-reported outcomes

Fatigue was assessed using the Functional Assessment of Chronic Illness Therapy–Fatigue (FACIT-F), a 13-item questionnaire with total scores ranging from 0 to 52, with lower scores indicating greater fatigue. A score <30 was considered indicative of severe fatigue. Depressive symptoms were evaluated using the Patient Health Questionnaire-9 (PHQ-9), with total scores ranging from 0 to 27. A score ≥10 was considered indicative of clinically relevant depressive symptom burden. Kinesiophobia was assessed using the Tampa Scale for Kinesiophobia, with total scores ranging from 17 to 68. Scores >37 were considered indicative of high levels of movement-related fear. Risk of sarcopenia was evaluated using the SARC-F questionnaire, ranging from 0 to 10, with a score ≥4 indicating increased risk of sarcopenia. Demographic characteristics, disease duration, treatment exposure (including biologic and targeted synthetic disease-modifying antirheumatic drugs), and a history of peripheral arthritis and extra-articular manifestations were obtained from electronic medical records. The history of peripheral arthritis was defined as physician-documented peripheral joint involvement occurring at any time during the disease course and confirmed by ultrasonography and/or conventional radiography.

Definition of physical activity patterns

Among patients reporting moderate-to-high PA according to the IPAQ, participants were further stratified according to objectively recorded daily step count. Based on the predefined threshold of 7000 steps/day, two activity patterns were defined. Patients reporting moderate-to-high PA by IPAQ but accumulating <7000 steps/day were classified as having a discordant activity pattern (low steps/high IPAQ), representing a mismatch between self-reported PA and objectively recorded ambulatory activity. In contrast, patients reporting moderate-to-high PA and achieving ≥7000 steps/day were classified as having a concordant activity pattern (high steps/high IPAQ). Patients categorized as having low PA according to the IPAQ were not included in pattern-based comparative analyses, as the primary aim of this stratification was to investigate discordance between self-reported PA and objectively recorded ambulatory activity among individuals reporting moderate-to-high PA.

Statistical analysis

Continuous variables were expressed as mean ± standard deviation or median with interquartile range, depending on data distribution. Between-group comparisons were performed using the Mann–Whitney U test or independent-samples t-test, as appropriate. Categorical variables were analyzed using the chi-square test or Fisher's exact test, as appropriate. Multivariable binary logistic regression analysis was performed to identify factors independently associated with the discordant activity pattern. Statistical significance was defined as $p<0.05$. All analyses were performed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA).

Results

A total of 63 patients with axSpA were included, all in remission or low disease activity. The cohort comprised 40 men (63.5%) and 23 women (36.5%), with a median age of 46 years [interquartile range (IQR) 37-53]. Median disease duration was 13 years (IQR 5-27). At the time of assessment, 60 patients (95.2%) were receiving biologic therapy.

The median objectively recorded daily step count was 5924 steps/day (IQR 4138-8112), while the median IPAQ total PA was 1710 MET-min/week (IQR 1034-3780). According to IPAQ classification, 7 patients (11.1%) were categorized as having low PA, 36 (57.1%) as moderate, and 20 (31.7%) as high PA.

Using the predefined threshold of 7,000 steps/day, 41 patients (65.1%) accumulated <7000 steps/day, whereas 22 (34.9%) achieved ≥7000 steps/day. Patients accumulating <7000 steps/day were significantly older and had longer disease duration compared with those achieving ≥7000 steps/day (both $p<0.05$). In addition, they demonstrated greater fatigue, higher depressive symptom scores, and higher SARC-F scores (all $p<0.05$). Tampa scores suggested greater kinesiophobia in patients accumulating <7000 steps/day, although the between-group difference was not statistically significant ($p=0.091$). The history of peripheral arthritis was significantly more frequent among patients accumulating <7000 steps/day ($p=0.004$). No significant differences were observed between groups with respect to sex distribution, body mass index, functional status (BASFI), or treatment exposure. Detailed comparisons are presented in Table 1.

Among patients reporting moderate-to-high PA according to IPAQ (n=56), 35 (62.5%) accumulated <7000 steps/day and were classified as having a discordant activity pattern (low steps/high IPAQ), while 21 (37.5%) achieved ≥7000 steps/day and were classified as having a concordant activity pattern (high steps/high IPAQ). Compared with patients with a concordant activity pattern, those with a discordant activity pattern were significantly older and had longer disease duration (both $p<0.05$). Moreover, patients with a discordant activity pattern demonstrated greater fatigue, higher depressive symptom scores, greater kinesiophobia, and higher SARC-F scores, indicating a higher risk of sarcopenia (all $p<0.05$; Figure 2). The history of peripheral arthritis was markedly more prevalent among patients with a discordant activity pattern (60.0% *vs*. 14.3%, $p=0.001$). No significant differences were observed with

respect to sex, socio-demographic characteristics, extra-articular manifestations, or comorbidities (Table 2).

Spearman correlation analysis demonstrated a moderate positive association between daily step count and FACIT-F scores ($r=0.366$, $p=0.003$), indicating lower fatigue levels with higher daily step counts. Step count was inversely correlated with SARC-F scores ($r=-0.273$, $p=0.031$), suggesting lower sarcopenia risk with higher daily step counts. No statistically significant correlations were observed between daily step count and depressive symptoms (PHQ-9; $r=-0.206$, $p=0.105$) or kinesiophobia (Tampa Scale; $r=-0.142$, $p=0.267$). Fatigue demonstrated strong associations with depressive symptoms and sarcopenia risk (Table 3).

Multivariable binary logistic regression analysis was performed to assess factors independently associated with the discordant activity pattern. The model included age, disease duration, and a history of peripheral arthritis and was statistically significant (Omnibus $\chi^2=17.486$, $df=3$, $p=0.001$; Nagelkerke $R^2=0.366$). The Hosmer–Lemeshow goodness-of-fit test was non-significant ($\chi^2=11.696$, $df=7$, $p=0.111$), indicating no evidence of poor model fit. After adjustment for age and disease duration, a history of peripheral arthritis was independently associated with the discordant activity pattern [odds ratio (OR) 8.98, 95% confidence interval (CI) 1.99-40.58; $p=0.004$]. Age (OR 1.05, 95% CI 0.97-1.13; $p=0.219$) and disease duration (OR 1.04, 95% CI 0.95-1.13; $p=0.438$) were not independently associated with discordance in the adjusted model.

Discussion

In this exploratory study of 63 patients with axSpA in remission or LDA, we identified substantial discordance between self-reported PA and objectively recorded ambulatory activity. Among patients reporting moderate-to-high PA, 62.5% demonstrated a discordant activity pattern. The history of peripheral arthritis was independently associated with this pattern after adjustment for age and disease duration, while patients with discordance also demonstrated longer disease duration, greater fatigue, more depressive symptoms, greater kinesiophobia, and higher sarcopenia risk. These findings highlight that self-reported PA and daily step count provide related but non-interchangeable information on activity behavior in patients with axSpA.

The PA in axSpA has traditionally been assessed using self-reported questionnaires, which capture multiple domains of activity but may be influenced by recall and reporting biases. In contrast, daily step count provides an objective measure primarily of ambulatory movement accumulated during everyday life. Importantly, these approaches assess partially different dimensions of PA and should therefore not be regarded as interchangeable. Activities such as cycling, swimming, resistance exercise, and other non-ambulatory forms of exercise may contribute substantially to IPAQ-derived PA estimates without being adequately reflected by daily step count. Accordingly, the discordance observed in our study should not necessarily be interpreted as inaccurate self-perception or overestimation of PA, but rather as a mismatch between self-reported multidomain PA and objectively recorded ambulatory activity.

Previous studies comparing questionnaire-based and device-based PA assessment have similarly demonstrated limited agreement between these approaches (9, 10). Although self-reported instruments may overestimate activity in some settings, methodological differences in the dimensions of PA captured by questionnaires and movement-based devices are also likely to contribute to this discordance. Our findings therefore support the complementary use of self-reported and objective measures when characterizing PA in patients with axSpA.

Accelerometer-based studies have previously demonstrated reduced levels of objectively recorded PA in patients with axSpA compared with healthy controls despite modern pharmacological treatment. For example, Swinnen *et al*. demonstrated significantly lower daily PA levels in patients with axSpA using wearable accelerometry compared with healthy population (6). Likewise, observational studies using activity trackers in inflammatory rheumatic diseases have shown that many patients fail to achieve recommended activity levels when objectively measured (11). Results in our cohort are consistent with

previously reported step counts in axSpA populations. Prior wearable-based studies have reported average daily step counts ranging from approximately 5600 to 7200 steps per day, suggesting that many patients with axSpA remain below recommended activity levels despite modern pharmacological treatment (15).

One of the most notable findings of our study was the independent association between a history of peripheral arthritis and the discordant activity pattern. After adjustment for age and disease duration, patients with a history of peripheral arthritis had substantially higher odds of demonstrating discordance between self-reported PA and objectively recorded ambulatory activity. Previous studies have suggested that peripheral manifestations in axSpA are associated with greater disease burden and poorer functional outcomes (19). Patients with axSpA who develop peripheral arthritis may demonstrate greater overall disease burden and functional impairment compared with those with predominantly axial disease (20).

Importantly, all participants were in remission or LDA at the time of evaluation. The association between a history of peripheral arthritis and discordant activity therefore raises the possibility that previous peripheral joint involvement may be related to longer-term alterations in movement behavior even when inflammatory disease activity is controlled. Potential mechanisms may include residual functional consequences, biomechanical adaptation, previous pain experiences, and fear-avoidance behavior. However, these mechanisms were not directly assessed in the present study and should therefore be considered hypothesis-generating. Although altered pain processing and central sensitization have been described in inflammatory rheumatic diseases and may contribute to persistent pain, fatigue, and functional limitation despite inflammatory control (21-23), central sensitization was not directly evaluated in our cohort.

Beyond peripheral arthritis, patients with a discordant activity pattern demonstrated greater fatigue, more depressive symptoms, greater kinesiophobia, and higher sarcopenia risk. These findings suggest that lower real-world ambulatory activity may coexist with a broader physical and psychological burden even when inflammatory disease activity is controlled. Ageing, fatigue, mood disturbances, fear of movement, physical deconditioning, and sarcopenia risk may interact with everyday movement behavior; however, the cross-sectional design of our study does not allow the direction of these relationships to be determined. Previous evidence showing beneficial effects of regular exercise on fatigue, mood, physical function, and pain-related outcomes further supports the importance of addressing these factors as part of comprehensive axSpA management (4, 24, 25).

Clinical implications and future directions

These findings support a broader clinical framework in which inflammatory disease control, although essential, may not be sufficient to restore real-world ambulatory movement in patients with axSpA. Combining self-reported PA assessment with objective monitoring of ambulatory activity may help identify patients who report moderate-to-high PA but accumulate relatively low daily step counts. Such discordant activity patterns may represent a relevant target for multidisciplinary interventions combining rheumatological assessment, individualized exercise prescription, physiotherapy, behavioral support, and wearable-based feedback. Wearable devices and mobile health applications may further facilitate longitudinal monitoring and support individualized activity goals (12, 26). Emerging digital platforms, such as the Axia application, aim to integrate disease monitoring, PA tracking, and patient engagement within a unified digital ecosystem (27, 28). Future longitudinal and interventional studies should evaluate the stability and clinical relevance of discordant activity patterns and determine whether supervised, wearable- or app-guided PA programs can reduce discordance and improve fatigue, fear of movement, physical function, and long-term health outcomes.

Strengths and limitations

This study has several strengths. It combines self-reported PA assessment with seven consecutive days of objectively recorded step counts, providing complementary information on multidomain PA and real-

world ambulatory movement. In addition, the assessment of fatigue, depressive symptoms, kinesiophobia, and sarcopenia risk enabled a multidimensional characterization of factors associated with discordant activity patterns.

Several limitations should also be acknowledged. First, the cross-sectional design precludes causal inference and does not allow the temporal relationships between peripheral arthritis, patient-reported factors, and ambulatory activity to be established. Second, the exploratory nature of the study and the relatively modest sample size may limit the statistical precision and generalizability of the findings, particularly in subgroup analyses, as reflected by the wide confidence interval for the association between peripheral arthritis and discordance. Third, daily step count primarily reflects ambulatory activity and does not adequately capture non-ambulatory activities such as cycling, swimming, or resistance exercise; therefore, discordance with IPAQ should not be interpreted as evidence that self-reported PA is necessarily inaccurate. Fourth, step counts were obtained using participants' personal smartphones, and heterogeneity in devices, operating systems, applications, proprietary step-detection algorithms, and device-carrying behavior may have introduced measurement variability. Finally, the 7,000-step/day threshold was derived from epidemiological evidence in general adult populations and has not been specifically validated as a clinical activity threshold in axSpA.

Conclusions

In patients with axSpA in remission or low disease activity, substantial discordance may occur between self-reported PA and objectively recorded ambulatory activity. In our cohort, patients with a discordant activity pattern demonstrated greater fatigue, more depressive symptoms, greater kinesiophobia, higher sarcopenia risk, and longer disease duration, while a history of peripheral arthritis was independently associated with discordance after adjustment for age and disease duration.

These findings suggest that assessment of PA in axSpA may benefit from combining self-reported measures with objective monitoring of ambulatory activity, as these approaches capture complementary dimensions of movement behavior. Patients demonstrating discordance may warrant further assessment of potentially modifiable factors such as fatigue, fear of movement, and sarcopenia risk. Larger prospective studies are needed to validate these findings, clarify the temporal relationships underlying these associations, and determine whether individualized exercise, behavioral, and digital health interventions can improve real-world movement and functional outcomes.

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Table 1. Demographic, clinical, and psychosocial characteristics of patients with axial spondyloarthritis stratified by average daily step count (<7000 *vs.* ≥7000 steps/day).

	<7000 steps/day (n=41)	≥7000 steps/day (n=22)	p-value
Age, years	47.2±11.0	40.0±10.2	0.015
Male sex, n (%)	26 (63.4)	14 (63.6)	0.986
BMI, kg/m²	27.0±4.7	26.7±5.3	0.793
Disease duration, years	15.3±10.9	8.5±8.4	0.013
Duration of bDMARD/JAKi therapy, years	4.5±4.1	4.0±4.0	0.628
BASFI	2.59±2.06	2.07±1.54	0.309
IPAQ, MET-min/week	2305 (1386-3054)	3730 (3186-5094)	0.045
FACIT-Fatigue	35.6±8.3	41.6±5.9	0.004
PHQ-9	6.34±4.65	3.86±2.14	0.021
SARC-F	1.88±1.86	0.77±1.15	0.014
Tampa	38.0±6.3	35.4±5.2	0.091
History of peripheral arthritis, n (%)	23 (56.1)	4 (18.2)	0.004
Enthesitis, n (%)	3 (7.3)	5 (22.7)	0.136
Psoriasis, n (%)	3 (7.3)	0 (0.0)	0.286
Inflammatory bowel disease, n (%)	3 (7.3)	2 (9.1)	1.000
Anterior uveitis, n (%)	8 (19.5)	5 (22.7)	0.748

PA, physical activity; BMI, body mass index; bDMARD, biological disease-modifying antirheumatic drug; JAKi, Janus kinase inhibitors; BASFI, Bath Ankylosing Spondylitis Functional Index (higher score indicates a higher degree of functional limitations); MET, metabolic equivalent of task; FACIT-F, Functional Assessment of Chronic Illness Therapy (score lower than 30 indicates serious fatigue); Tampa, Tampa scale of kinesiophobia (score higher than 37 predicts kinesiophobia); SARC-F (Strength, Assistance in walking, Rise from a chair; score higher than 4 is risk for having sarcopenia); PHQ9, Patient Health Questionnaire for depression (score 0-4 none or minimal, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-25 severe depression). Continuous variables are presented as mean ± standard deviation or median (interquartile range), as appropriate. Categorical variables are presented as n (%). Group comparisons were performed using t-test or Mann-Whitney U test and Fisher's exact test, as appropriate.

Table 2. Comparison of clinical and patient-reported characteristics between concordant and discordant physical activity patterns among patients reporting moderate-to-high physical activity on the International Physical Activity Questionnaire.

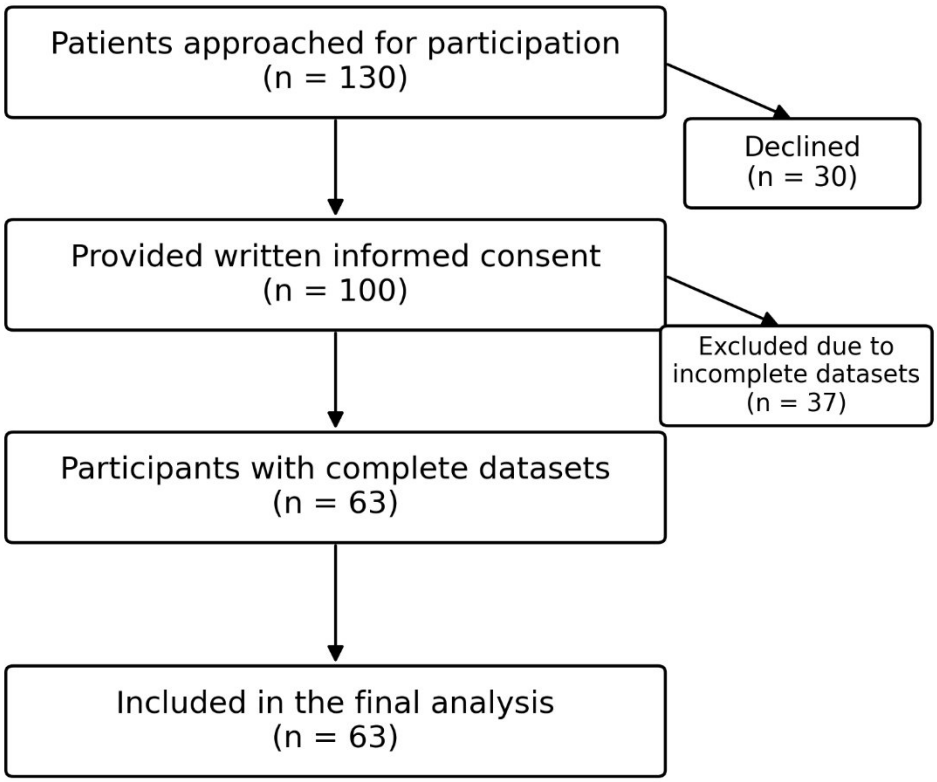
	Discordant (n=35)	Concordant (n=21)	p-value
Age, years	48 (18)	39 (13.5)	0.035
BMI, kg/m²	27.0 (5.6)	26.7 (6.9)	0.793
Disease duration, years	13 (15)	5 (13)	0.010
Male sex, n (%)	22 (62.9)	14 (66.7)	1.000
Married, n (%)	23 (65.7)	11 (52.4)	0.401
Children, n (%)	24 (68.6)	9 (42.9)	0.092
Retired, n (%)	5 (14.3)	1 (4.8)	0.393
Smoking, n (%)	10 (28.6)	4 (19.0)	0.532
Disability, n (%)	7 (20.0)	3 (14.3)	0.727
Higher education, n (%)	22 (62.9)	11 (52.4)	0.561
History of peripheral arthritis, n (%)	21 (60.0)	3 (14.3)	0.001
Enthesitis, n (%)	3 (8.6)	5 (23.8)	0.136
Psoriasis, n (%)	3 (8.6)	0 (0)	0.284
Inflammatory bowel disease, n (%)	3 (8.6)	1 (4.8)	1.000
Anterior uveitis, n (%)	7 (20.0)	5 (23.8)	0.748
Hypertension, n (%)	6 (17.1)	2 (9.5)	0.696
Osteoporosis, n (%)	4 (11.4)	0 (0)	0.286
No comorbidities, n (%)	19 (54.3)	14 (66.7)	0.412

PA, physical activity; BMI, body mass index. Group comparisons were performed using t-test or Mann-Whitney U test and Fisher's exact test, as appropriate. Continuous variables are presented as mean ± standard deviation or median (interquartile range), as appropriate. Categorical variables are presented as n (%). Group comparisons were performed using t-test or Mann–Whitney U test and Fisher's exact test, as appropriate.

Table 3. Spearman correlation matrix between daily step count and psychometric variables.

Variable	Steps	FACIT-F	SARC-F	PHQ-9	Tampa
Steps	—	0.366**	−0.273*	−0.206	−0.142
FACIT-F	0.366**	—	−0.455**	−0.706**	−0.429**
SARC-F	−0.273*	−0.455**	—	0.316*	0.355**
PHQ-9	−0.206	−0.706**	0.316*	—	0.387**
Tampa	−0.142	−0.429**	0.355**	0.387**	—

FACIT-F, Functional Assessment of Chronic Illness Therapy (score lower than 30 indicates serious fatigue); SARC-F, Strength, Assistance in walking, Rise from a chair (score higher than 4 is risk for having sarcopenia); PHQ9, Patient Health Questionnaire for depression (score 0-4 none or minimal, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-25 severe depression); Tampa, Tampa scale of kinesiophobia (score higher than 37 predicts kinesiophobia). Data are presented as Spearman's rho (r). *p<0.05, **p<0.01.



Flow diagram of participant recruitment and inclusion in the final analysis.

Figure 1. Study flow diagram.

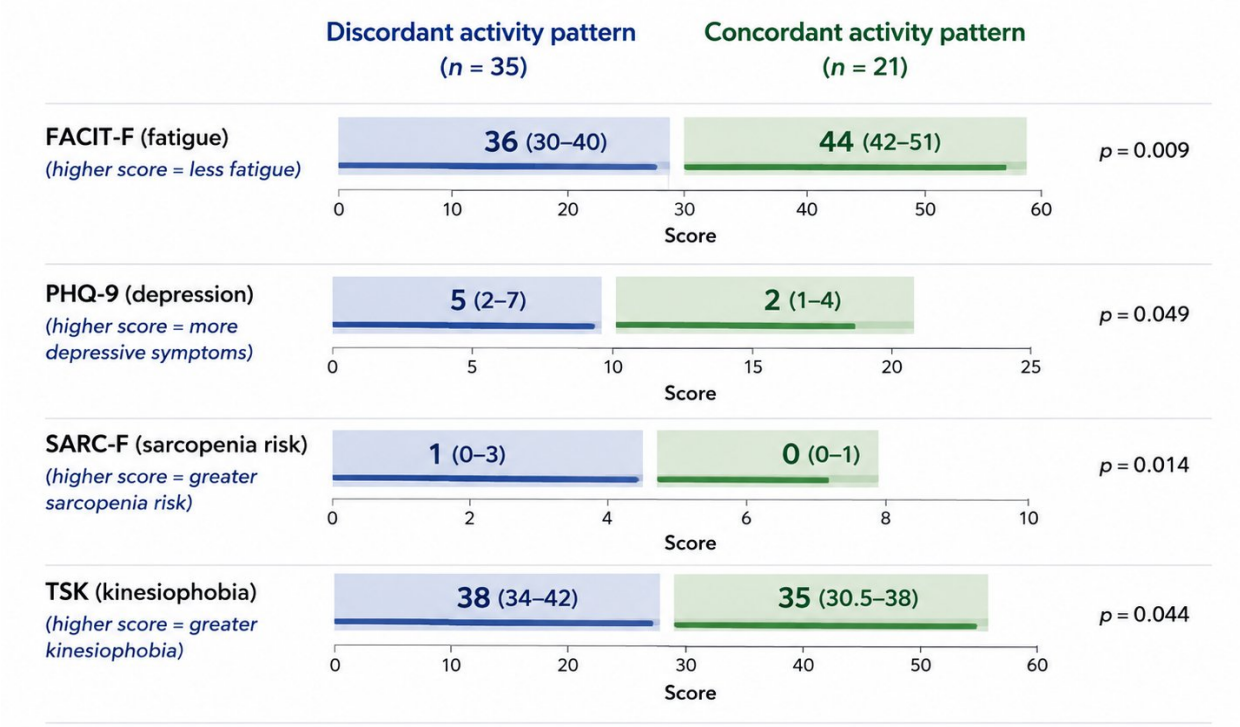


Figure 2. Score comparison between discordant and concordant patterns. FACIT-F, Functional Assessment of Chronic Illness Therapy (score lower than 30 indicates serious fatigue); SARC-F (Strength, Assistance in walking, Rise from a chair; score higher than 4 is risk for having sarcopenia); PHQ9, Patient Health Questionnaire for depression (score 0-4 none or minimal, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-25 severe depression); Tampa, Tampa scale of kinesiophobia (score higher than 37 predicts kinesiophobia).