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Walking Capacity in Children With Ataxia Telangiectasia From the Global Ataxia Telangiectasia Family Data Platform

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ABSTRACT

Objective: Walking capacity declines prematurely in individuals with ataxia telangiectasia. However, granular data on walking capacity loss in ataxia telangiectasia are scarce. In this large cross-sectional cohort, we describe age-related walking capacity loss reported by participants and compare categories of a subjective walking capacity scale with the International Cooperative Ataxia Rating Scale (ICARS) walking categories.

Methods: Children with ataxia telangiectasia who presented with neurological symptoms at 5 years of age or younger and were 18 years of age or younger at the time of walking capacity reporting were included. Descriptive statistics, Spearman's rank correlations, and simple linear regression of score versus age were used to analyze the data.

Results: Mean walking capacity scores from 372 participants remained stable until age 5, followed by progressive worsening between ages 5 and 14, with persistently high scores thereafter. Categories from the subjective walking capacity scale were mapped to ICARS and its abbreviated, more functional version, Rescored modified ICARS (RmICARS) walking categories. Correlation with age was similar across all three scales (Spearman's rho: 0.711, 0.713, and 0.714). Linear regression in participants aged 5–14 years ($N = 220$) showed consistent R^2 values (~0.45) across all scales and confirmed a statistically significant relationship between age and diminished walking capacity ($p < 0.001$).

Conclusions: Although age-related loss of ambulation was statistically significant, it accounted for just under half of the variability in walking capacity progression. Controlling for disease severity, i.e., classical or the mild variant of ataxia telangiectasia, and capturing more granular data on walking with assistance may improve the prediction of age-associated walking capacity loss.

1 | Introduction

Ataxia telangiectasia is a rare autosomal recessive inherited disorder that arises from pathogenic variants in both copies of the *ATM* (ataxia-telangiectasia mutated) gene, which is located on chromosome 11q22.3 [1]. The *ATM* gene encodes a kinase protein that regulates cellular stress responses by phosphorylating numerous downstream targets. These targets are involved in DNA damage recognition and repair, regulation of RNA splicing, mitochondrial and metabolic signaling, maintenance

of redox balance, and defense against oxidative stress, among other essential pathways [2].

When *ATM* activity is absent or severely impaired, a wide spectrum of clinical features emerges. The neurological manifestations include progressive cerebellar ataxia, impaired eye movements (oculomotor apraxia), slurred speech (dysarthria), and involuntary movements. Characteristic vascular changes appear in the eyes and skin as telangiectasias. Affected individuals frequently have T- and B-cell immune dysfunction leading to recurrent infections and chronic respiratory disease. Additional features include growth faltering, delayed sexual maturation, marked sensitivity to ionizing radiation, and an increased risk of malignancy due to underlying genomic instability [3–5].

Walking ability, which is crucial for mobility, well-being, and quality of life for children and adults, declines prematurely in people with ataxia telangiectasia [3–5]. Ambulation allows for independence in exploring the environment, which is important for the cognitive, emotional, and social development of a child [6, 7]. Loss of the ability to walk is relatively easy to measure and represents a meaningful clinical and research endpoint. However, in ataxia telangiectasia, data on walking capacity loss are scarce. Symptoms of the disease have historically been described and measured using comprehensive ataxia scales, in which walking capacity represents only one component of the overall score.

Categories and scores of walking capacity, as defined in scales commonly used in children with ataxia telangiectasia, are summarized in Table 1. Walking capacity scores in the four described scales are based on the International Cooperative Ataxia Rating Scale (ICARS), which was developed as a scale for comprehensive assessment of cerebellar symptoms. It includes four domains: posture and gait (34 points), kinetic/limb movement disturbance (52 points), speech (8 points), and oculomotor function (6 points). Walking capacity is represented by 8/100 points of the total score, with gait speed contributing an additional 4 points [8]. However, the posture and gait items in ICARS are overlapping and interdependent, leading to four factors determining 70% of the variance of the scale [9]. To reduce redundancies encountered in ICARS and to make the scale easier to administer, shorter ataxia scales were developed—such as the Scale for the Assessment and Rating of Ataxia (SARA), introduced in 2006, and the Brief Ataxia Rating Scale (BARS), introduced in 2007 [10, 11]. Walking capacity

TABLE 1 | Scoring of walking capacity in different ataxia scales.

ICARS	BARS	SARA	RmICARS
Normal (score 0)	Normal (score 0)	Normal (score 0)	Normal (score 0)
Unable to walk with feet in tandem position (score 1)	Unable to walk with feet in tandem position (score 1)	Slight difficulties visible only when walking in tandem 10 consecutive steps (score 1)	Unable to walk with feet in tandem position (score 0)
Clearly abnormal and irregular (score 2)	Clearly abnormal and irregular (score 2)	Clearly abnormal, tandem walking > 10 steps not possible (score 2)	Clearly abnormal and irregular (score 1)
Considerable staggering difficulties in half turn (score 3)	Considerable staggering difficulties in half turn (score 3)	Considerable staggering difficulties in half turn, but without support (score 3)	Considerable staggering difficulties in half turn (score 2)
Episodic support of the wall for a 10-meter walk test (score 4)	Uses support of the wall for 10-meter test (score 4)	Marked staggering, intermittent support of the wall required (score 4)	Episodic support of the wall for a 10-meter walk test (score 3)
Walking only possible with one stick (score 5)	Walking only possible with one cane (score 5)	Severe staggering, permanent support of one stick or light support by one arm required (score 5)	Walking only possible with one stick (score 3)
Walking only possible with two special sticks or a stroller (score 6)	Walking possible with two canes or with a stroller (score 6)	Walking > 10 m only with strong support (two special sticks or stroller or accompanying person) (score 6)	Walking only possible with two special sticks or a stroller (score 3)
Walking only possible with accompanying person (score 7)	Walking only possible with accompanying person (score 7)	Walking less than 10 feet only with strong support (two special sticks or stroller or accompanying person (score 7)	Walking only possible with accompanying person (score 3)
Unable to walk even with accompanying person; needs wheelchair (score 8)	Walking impossible with one accompanying person, needs 2-person assist or a wheelchair (score 8)	Unable to walk, even supported (score 8)	Unable to walk even with accompanying person; needs wheelchair (score 4)

Abbreviations: BARS, Brief Ataxia Rating Scale; ICARS, International Cooperative Ataxia Rating Scale; RmICARS, Rescored modified International Cooperative Ataxia Rating Scale; SARA, Scale for the Assessment and Rating of Ataxia.

categories in these two scales are almost identical to ICARS. Because other domains are reduced in these scales, walking capacity accounts for 20% of the total score in SARA and 24% in BARS. A rescored version of the ICARS (Rescored modified ICARS [RmICARS]) was introduced into clinical trials in 2023 as a functionally more relevant score [12]. In this version, walking capacity scoring was reduced from 0–8 to 0–4 points, representing 14% of the total score. The reduction was achieved primarily by grouping all categories of walking with support into a single score, which made this scale useful in younger patients, before they needed assistance in walking.

The Ataxia-Telangiectasia Neurological Examination Scale Toolkit (A-T NEST) is the most comprehensive assessment tool for ataxia telangiectasia, evaluating 53 items across six core neurological domains and including 11 additional items related to growth, nutrition, cognition, and mental state. Walking capacity represents 6/171 points (3.5%) of the total score [13, 14]. Walking capacity in A-T NEST is described on a 7-point scale, where a score of 0 represents the need for vertical support and a score of 6 represents normal gait. A-T NEST is strongly correlated with the SARA score in adult patients with ataxia telangiectasia [14]; however, its length and complexity represent an obstacle for use in clinical trials, although it was designed with the intention that subscales, e.g., "gross motor," which includes walking capacity, could be used in isolation.

The Ataxia Telangiectasia Functional Scale (ATFS), described by Shenhod and colleagues in a 2019 pilot study, aimed to overcome the limitations of ICARS in measuring functional mobility. The study included 27 participants and demonstrated that the scale effectively mirrored disease progression in ataxia telangiectasia, delineating three distinct stages of functional decline. However, the scale was described as exploratory, and no subsequent validation has been published [15].

The ability to walk depends on the ability to stand and maintain posture, and it is a key determinant of quality of life. Improved understanding of the stages and timing of walking loss, and the use of a scale that describes this function in real-life situations, could provide critical information for anticipatory guidance and serve as a reference for evaluating long-term treatment effect, especially in trials without control groups.

Since 2016, the Global A-T (Ataxia Telangiectasia) Family Data Platform has been gathering information on walking capacity and other health data from a large international cohort of participants with ataxia telangiectasia. Walking capacity is subjectively captured from either the patient or the caregiver using a scale adapted from clinical practice (referred to as the subjective walking capacity scale). This large, cross-sectional cohort of children has provided an opportunity to assess the subjective walking capacity scale and map its categories to those used in the ICARS and RmICARS applied in large prospective interventional trials.

The specific aims of this study were to

1. describe the pattern of age-related walking capacity loss using a subjective walking capacity scale in a large cross-sectional cohort of children with ataxia telangiectasia;
2. compare the walking capacity categories of this subjective scale with those used in the ICARS/RmICARS, and assess whether they adequately describe progressive loss of walking capacity; and
3. attempt to quantify the annual loss of function as estimated by the scales.

2 | Methods

Data for this study were obtained from the Global A-T (Ataxia Telangiectasia) Family Data Platform, which is maintained by the nonprofit organization the A-T Children's Project, dedicated to accelerating research and developing treatments for this rare disorder. The Global A-T Family Data Platform collects clinical information, biological samples, and genetic data to aid in biomarker discovery and therapeutic development.

Patient-reported clinical information includes the time of onset of typical ataxia telangiectasia symptoms; participant's age at the time of clinical and genetic diagnosis; walking capacity; detailed symptomatology; history of malignancy, infections, and other complications; treatments (including medications and supplements); and family history. Survival status and, for deceased patients, date and cause of death is entered by the study staff. The questionnaire was initiated in 2016 and has been translated into multiple languages. Participants complete the entire questionnaire at least once, and they have the opportunity to provide subsequent updates. Newly diagnosed families are encouraged to enroll. All participants signed an institutional review board–approved informed consent form for participation in data collection and sharing. A data access committee evaluates research requests before sharing data sets with researchers.

Between 2016 and 2024, 624 participants with ataxia telangiectasia completed the questionnaire. Walking capacity data provided in the 2024 data set were used for this analysis. Participant ages ranged from 0 to 64 years. To capture pediatric participants likely to have the classic form of ataxia telangiectasia, the following inclusion criteria were used for this analysis: clinical diagnosis of ataxia telangiectasia, presence of first neurological symptom at 5 years of age or younger, and age 18 years or younger at the time of providing walking capacity information. These criteria identified 372 participants for inclusion in this study. The study was cross-sectional; each participant contributed only one time point set of data.

The subjective walking capacity scale used by the Global A-T Family Data Platform was adapted from a scale used in clinical practice and comprised the following categories: walks independently; walks independently most of the time; needs assistance for long trips (may use wheelchair or stroller when fatigued or on extended trips); uses bilateral support (walker) most of the time; uses wheelchair without assistance; and uses wheelchair with assistance. These categories were designed to describe progressive loss of walking capacity.

Six categories were mapped to nine ICARS categories (score 0–8) and five RmICARS categories (score 0–4), as depicted in

TABLE 2 | Mapping of subjective walking capacity scale to ICARS and RmICARS categories.

Subjective walking capacity scale	ICARS Original scores and a mapped score	RmICARS Original scores and a mapped score
Walks independently Score 1	Walks without support 0 = normal 1 = almost normal naturally, but unable to walk with feet in tandem position 2 = walking without support, but clearly abnormal and irregular Mapped score 1.5*	Walks without support 0 = walking normal but unable to walk with feet in tandem position 1 = walking without support, but clearly abnormal and irregular Mapped score 0.5*
Walks independently most of the time Score 2	Walks without support but with difficulties 3 = walking without support but with considerable staggering; difficulties in half turn Mapped score 3	Walks without support but with difficulties 2 = walking without support but with considerable staggering; difficulty with half turn Mapped score 2
Needs assistance for long trips (may use wheelchair or stroller when fatigued or on extended trips) Score 3	Walks with support 4 = walking with autonomous support no longer possible; the patient uses episodic support of a wall for a 10-meter test 5 = walking only possible with one stick Mapped score 4.5	Walks with support 3 = walking with autonomous support no longer possible; the patient uses episodic support 3 = walking only possible with one stick
Uses bilateral support (walker) most of the time Score 4	Walks with bilateral support 6 = walking only possible with two special sticks or a stroller 7 = walking only with accompanying person Mapped score 6.5	3 = walking only possible with two special sticks or a stroller or accompanying person Mapped score 3
Uses wheelchair without assistance Score 5 Uses wheelchair with assistance Score 6	Uses wheelchair 8 = walking impossible even with accompanying person (wheelchair) Mapped score 8	Uses wheelchair 4 = walking impossible even with accompanying person (wheelchair) Mapped score 4

Abbreviations: ICARS, International Cooperative Ataxia Rating Scale; RmICARS, Rescored modified International Cooperative Ataxia Rating Scale.
*When a single category from the subjective walking capacity scale was mapped to more than one ICARS or RmICARS score, the mapped score was calculated by averaging included scores (e.g., ICARS score 1 and 2 are mapped as 1.5; RmICARS score 0 and 1 are mapped as 0.5).

Table 2. When a single category from the subjective walking capacity scale was mapped to more than one ICARS or RmICARS score, the mapped score was calculated by averaging included scores (e.g., ICARS score 1 and 2 are mapped as 1.5; RmICARS score 0 and 1 are mapped as 0.5).

Statistical methods included descriptive statistics and Spearman's rank correlation to assess whether walking capacity scores correlated with age. Linear regression was used to estimate the annual loss of function as measured by each of the scale scores. We present measures of central tendency, the results of Spearman's rho correlation coefficient, and the results of linear regression, including R^2 to describe the proportion of variability, slope estimates, *t*-statistics, and *p*-values. Linear regression lines were used to present estimated disease progression between ages 5 and 14.

3 | Results

Characteristics of the 372 participants meeting the inclusion criteria are presented in Table 3. The mean age at which the first neurological symptom was noted was 1.8 ± 1.0 years. The mean age at diagnosis of ataxia telangiectasia was 3.95 ± 2.56 years, and the mean age at the time of walking capacity reporting was 7.97 ± 4.60 years.

As presented in Table 3, the majority of patients reported walking independently all or most of the time (225/372, 60.5%); 72/372 (19.3%) reported needing assistance for walking, while 75/372 (20.2%) used a wheelchair. Fewer patients (< 3% per category) selected the categories "uses walker most of the time" and "uses wheelchair without assistance" compared with the other four categories.

Figure 1 depicts mean walking scores and 95% confidence intervals (95% CI) by each year of age (2–18 years) for the subjective walking capacity scale (Figure 1A), and for walking capacity mapped to ICARS (Figure 1B) and RmICARS (Figure 1C). Ages 0 and 1 ($N = 3$) were excluded from the figures due to the small number of patients. Age categories with fewer than 10 patients per year included age 0 (first year of life, $N = 2$), age 1 ($N = 1$), and age 15 ($N = 7$). Ages 2–8, 10, 11, and 13 had ≥ 20 and

TABLE 3 | Characteristics of 372 included patients.

	N	%
Female	174	46.8%
Male	198	53.2%
Walking capacity		
Walks independently (without support)	170	45.7%
Walks without support most of the time	55	14.8%
Needs assistance for long trips	62	16.7%
Uses walker most of the time	10	2.7%
Uses wheelchair without assistance	9	2.4%
Uses wheelchair with assistance	66	17.7%
Age when first neurological symptom noted		
Mean ± SD (years)	1.80 ± 0.98	
Median (Q1;Q3)	2 (1;2)	
Age at diagnosis		
Mean ± SD (years)	3.95 ± 2.56	
Median (Q1;Q3)	3 (2;5)	
Age at reporting of walking capacity		
Mean ± SD (years)	7.97 ± 4.60	
Median (Q1;Q3)	7 (4;11)	

< 40 participants per year of age. Ages 9, 12, 14, 16, 17, and 18 had 10–19 participants per year.

As depicted in Figure 1A–C, mean walking capacity scores were stable until 5 years of age. From 5 to 14 years of age, scores increased, with the exception of ages 9 and 12. After age 14, the scores remained high.

Figure 2A–C depicts the mean age (years ± SD) at which the walking capacity scores were reported for the three scales. The mean age (years ± SD) by subjective walking capacity scale categories were (1) walks independently 5.0 ± 2.7 years ($N = 170$); (2) walks independently most of the time 6.6 ± 3.5 years ($N = 55$); (3) needs assistance for long trips 10.3 ± 3.7 years ($N = 62$); (4) walks with bilateral support 10.1 ± 2.7 years ($N = 10$); (5) uses wheelchair without assistance 14.2 ± 2.5 ($N = 9$); and (6) uses wheelchair with assistance 13.4 ± 3.2 ($N = 66$). The two least frequently chosen categories, "uses walker" and "uses wheelchair without assistance," did not reflect a clear pattern of age-related progression. Children in the "uses walker most of the time" category were slightly younger than those in the "needs assistance for long trips" category. Conversely, patients in the "uses wheelchair without assistance" category were older than those who reported "using wheelchair with assistance."

Spearman's rho correlation coefficients with age were 0.711 for the subjective walking capacity scale, 0.713 for ICARS, and 0.714 for RmICARS, showing consistently strong association with age across the three scores.

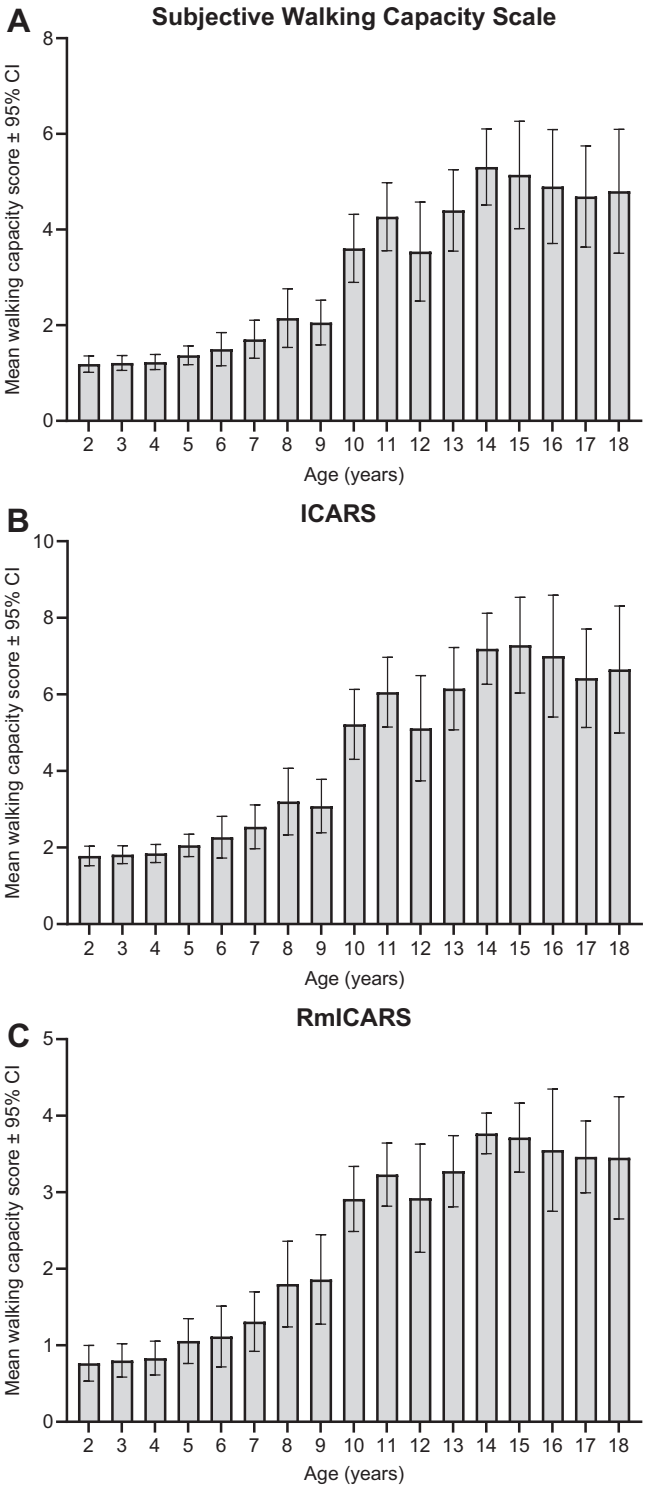

FIGURE 1 | Walking capacity by age. (A) Subjective walking capacity scale, (B) International Cooperative Ataxia Rating Scale (ICARS), (C) Re-scored modified International Cooperative Ataxia Rating Scale (RmICARS). Data are mean ± 95% confidence interval.

Annual loss of walking capacity was assessed for participants between the ages of 5 and 14 years ($N = 220$), as this age group showed the most rapid decline. Figure 3 depicts regression lines comparing the three scales for the age group with rapid walking capacity decline. Residual plots from each linear fit were examined for confirmation of normality and homoscedasticity and indicated that the assumption of a linear relationship of each

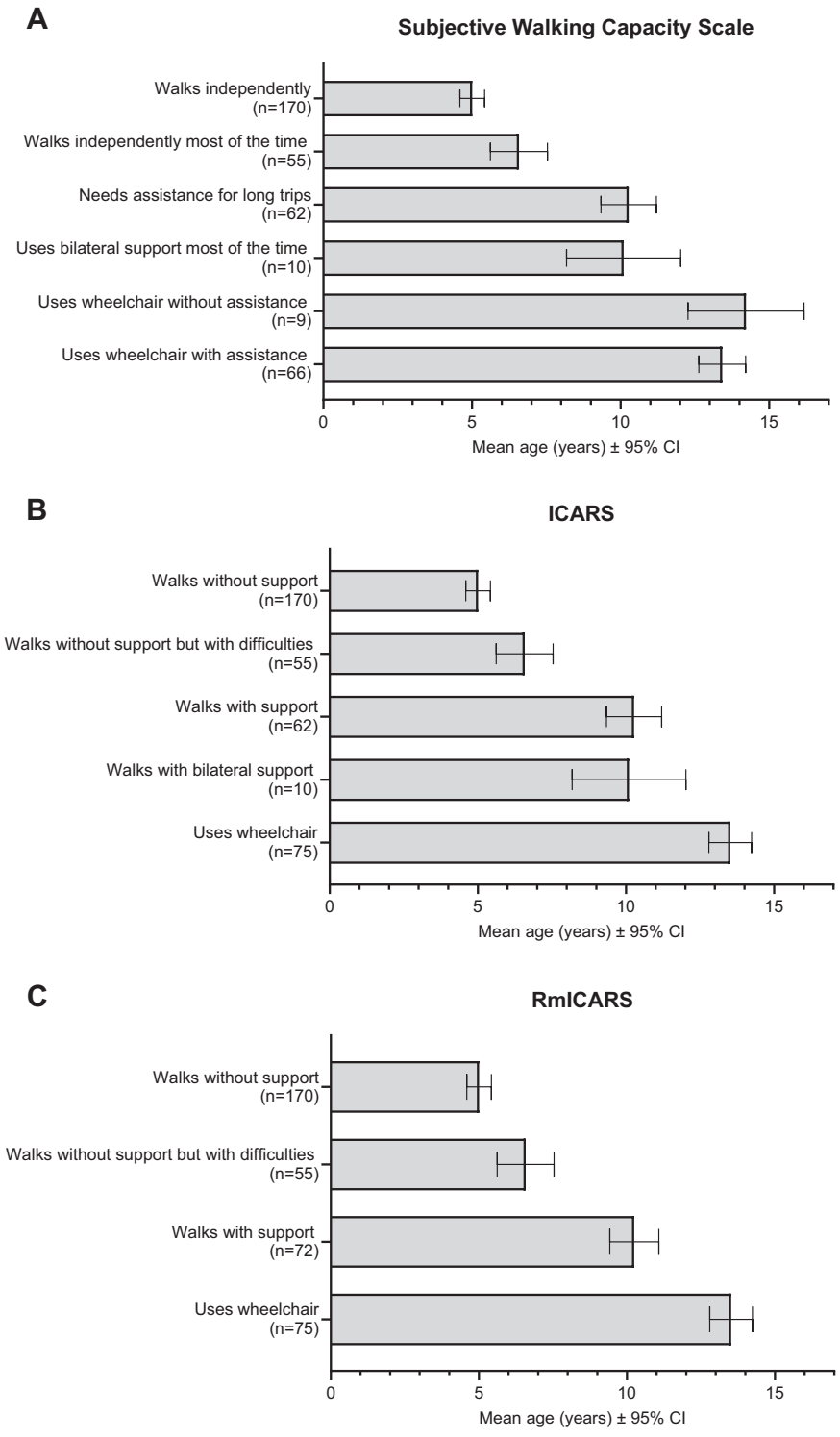

FIGURE 2 | Mean age at which different walking capacity scores were reported. (A) Subjective walking capacity scale, (B) International Cooperative Ataxia Rating Scale (ICARS), (C) Rescored modified International Cooperative Ataxia Rating Scale (RmICARS). Data are mean ± 95% confidence interval.

walking capacity score was reasonable. Table 4 describes R^2 values (quantifying the proportion of variability explained by the regression line), slope estimates, and *t*-statistics. While statistically significant, the similar R^2 values across all three scales (approximately 0.45) indicated that age accounted for just under half of the total variability in walking capacity progression in this population.

Assuming simple linear progression between ages 5 and 14, the estimated time for a one-point change in each scale category was 2.3 years for the subjective walking capacity scale, 1.7 years for the ICARS scale, and 3.0 years for the RmICARS scale. This difference is related to the different number of categories/points, thus the scale with the fewest categories (RmICARS) had the longest time to a one-point change.

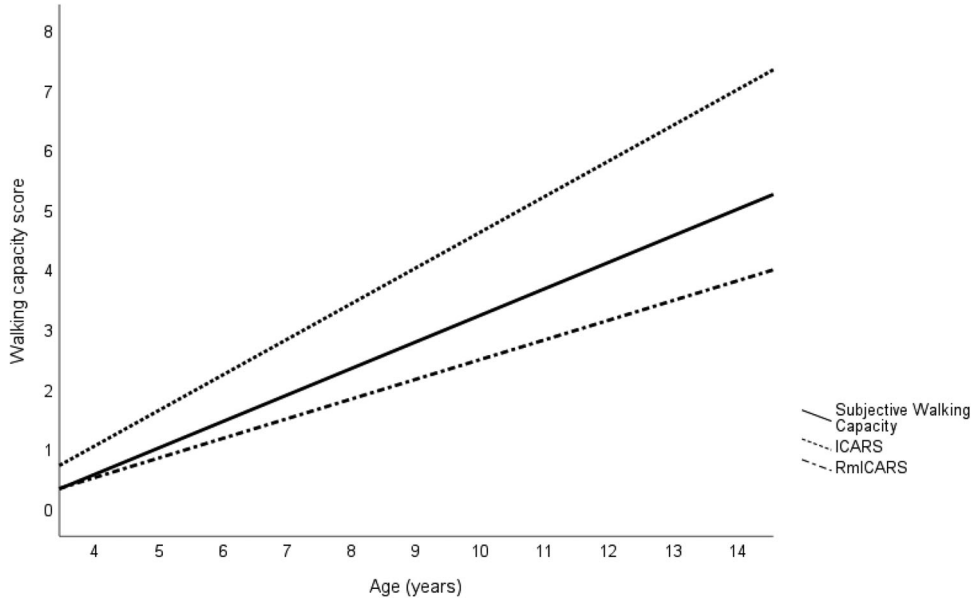

FIGURE 3 | Change in walking capacity with age for 5–14-year-olds. Linear regression lines for International Cooperative Ataxia Rating Scale (ICARS) (top line), subjective walking capacity scale (middle line), and Rescored modified International Cooperative Ataxia Scale (RmICARS) (bottom line).

TABLE 4 | Results of linear model of walking capacity score by age of presentation (ages 5–14 years; $N = 220$).

Score	R^2	Slope est.	Slope SE	*t*-statistic	*p*-value
Subjective walking capacity scale	0.454	0.443	0.33	13.45	< 0.001
ICARS	0.456	0.595	0.044	13.525	< 0.001
RmICARS	0.447	0.329	0.025	13.270	< 0.001

Abbreviations: est, estimate; ICARS, International Cooperative Ataxia Rating Scale; RmICARS, Rescored modified International Cooperative Ataxia Rating Scale; SE, standard error.

4 | Discussion

Walking capacity is an important determinant of quality of life, and it is well known that in ataxia telangiectasia, walking capacity declines with age and is phenotype dependent. However, data on the age at which patients reach different landmarks in the loss of walking capacity, such as starting use of unilateral or bilateral support for walking, are not well defined. While wheelchair use around age 10 is well described in the literature, the literature typically does not distinguish well between wheelchair use and wheelchair dependence [3, 4].

Direct measurement of walking capacity using scales such as ICARS is considered more precise than a subjective report; however, results obtained by measuring the ability to walk 10 meters in a clinic on a level surface do not necessarily reflect a patient's ability to ambulate at home, in school, or outdoors. As Shenhod and colleagues described when discussing the ATFS, walking ability in this population is influenced by surface irregularity, walking distance, setting (e.g., indoors vs. outdoors), and fatigue [15].

The availability of a relatively large data set containing subject-reported data on health and function provided an opportunity to describe age-related walking capacity loss, to evaluate categories of the subjective walking capacity scale in relation to disease progression, and to compare these categories with those used in ICARS and RmICARS.

Similar to what has been described for overall neurological functioning in patients with ataxia telangiectasia [3], our analyses confirmed that there are distinct phases in the deterioration of walking capacity. There was a minimal change in walking capacity scores until age 5, followed by a progressive walking capacity loss between ages 5 and 14 (with minor deviations at ages 9 and 12, likely due to smaller numbers of participants in those age groups), and then a plateau at higher ages. The mean age at which wheelchair dependence developed was 13.5 years.

The three stages of loss of walking capacity were also described by Shenhod and colleagues in their pilot study, which described the development of the ATFS. They provided longitudinal functional data on ambulation and activities of daily living in 27 patients with ataxia telangiectasia. The mobility component of ATFS consisted of a 7-point scale, which assessed mobility in three different environments (home, school, and outdoors). Shenhod's pilot study provided a framework for a functional scale that approximates stages of disease progression (initial slow progression in 2-to-9-year-olds and fast progression in 9-to-14-year-olds, followed by a subsequent slower rate of disease worsening). Our cross-sectional study on a larger number of

patients, and the literature, indicate that fast disease progression starts earlier than 9 years of age [3]. Additional longitudinal data on a larger cohort, required to validate ATFS, have not been published yet [15].

We were interested in understanding whether the categories of this scale are ranked in an order that correlates with age-related loss in walking capacity. The first three categories of the scale, "walks independently," "walks independently most of the time," and "needs assistance for long trips," correlated with age-related disease progression. However, there was a notable difference in age between the categories "walks independently most of the time" (6.6 ± 3.5 years) and "needs assistance for long trips" (10.3 ± 3.7 years), indicating a limitation of the scale in capturing details of the progression between independent walking and walking with assistance. The subsequent category, "uses bilateral support most of the time," was selected by fewer than 3% of participants. These individuals were, on average, slightly younger (10.1 ± 2.7 years) than those in the previous category. Although the small sample size may explain the age difference, this may also suggest that the subjective scale did not distinguish different stages of assisted walking.

Similarly, the categories "uses wheelchair without assistance" and "uses wheelchair with assistance" did not clearly reflect age-related disease progression. Only 9 of 372 patients selected "uses wheelchair without assistance," and these individuals were slightly older than those who reported using a wheelchair with assistance. This may imply that "using wheelchair without assistance" is influenced by different factors, such as the availability of a powered wheelchair, or upper body coordination, rather than representing a stage in loss of walking capacity. Age-related loss of ambulation accounted for just under half of the total variability in walking capacity progression in this population, indicating that there are other factors at play. These other factors likely include disease phenotype and possibly limitations of the subjective scale in capturing different stages of walking with assistance. The consistent proportion of variability in score explained by age, as reflected in the three near-equivalent R^2 values for scores, suggests that no critical information is lost in the 4-point RmICARS scale relative to the 6-point subjective scale or the 9-point ICARS scale for walking capacity. RmICARS retains changes in age-related disease progression, likely due to its granularity in capturing categories of walking without assistance.

Our study has several limitations. We could not control for disease severity, as genetic confirmation and ATM kinase activity data were not available. Our attempt to adjust for severity by using the age at first neurological symptoms may have led to inclusion of participants with milder disease, as suggested by the relatively high mean age at which patients developed wheelchair dependence. Walking capacity was reported by participants and their caregivers worldwide using an online questionnaire, and we did not have access to medical records to verify reported walking capacity.

Despite these limitations, the subjective walking capacity scale may be a useful tool for assessing walking ability, particularly as it enables remote and longitudinal assessments via an online questionnaire, without requiring a clinic visit. The described limitations in capturing stages of walking with assistance can be overcome by minor modifications in subjective walking capacity scale categories, which would allow for more granular data collection and would align this scale better with ICARS walking capacity categories. Having a walking capacity scale with well-defined categories of independent walking and walking with assistance would benefit clinical specialists as well as researchers. Pediatricians and physiotherapists could use a simpler scale to document longitudinal disease progression, and geneticists could use a walking capacity scale to better understand the relationship between disease genotype and phenotype.

5 | Conclusions

In a large cross-sectional cohort of children with ataxia telangiectasia, we used a subjective walking capacity scale to describe three stages in age-related loss of walking capacity. Although the correlation between age and walking capacity loss was statistically significant, age-related loss of ambulation accounted for just under half of the total variability in walking capacity progression in this population. Controlling for disease severity (i.e., whether the person has classical ataxia telangiectasia or the mild variant ataxia telangiectasia) and capturing more granular data on walking with assistance may improve the prediction of age-associated walking capacity loss in this population.

Author Contributions

Biljana Horn: conceptualization, investigation, writing – original draft, writing – review and editing, data curation. **Alex Smith:** conceptualization, investigation, writing – original draft, methodology, software, formal analysis, writing – review and editing, data curation. **Jennifer Thornton:** conceptualization, investigation, writing – original draft, methodology, validation, writing – review and editing, project administration, data curation. **Tara Symonds:** conceptualization, investigation, methodology, writing – review and editing. **Maureen Roden:** conceptualization, methodology, writing – review and editing. **Dirk Thye:** conceptualization, writing – review and editing, validation, methodology. **William P. Whitehouse:** conceptualization, writing – original draft, writing – review and editing, validation.

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Conflicts of Interest

Biljana Horn is a medical director at Quince Therapeutics and receives stock options as a part of compensation. Maureen Roden is the vice president of clinical development at Quince Therapeutics and receives stock options as a part of compensation. Dirk Thye is the chief executive officer and chief medical officer at Quince Therapeutics and receives stock options as a part of compensation. Alex Smith and Tara Symonds receive consulting fees for projects related to ataxia telangiectasia. Jennifer Thornton is the executive director of Ataxia Telangiectasia

Children's Project. William P. Whitehouse is a member of the Scientific Advisory Board for Quince Therapeutics and has received consulting fees from Quince for his work on other ataxia telangiectasia projects.

Data Availability Statement

Requests for sharing of deidentified participant data will be reviewed and granted based on the scientific merit of the proposal upon signing a data use agreement.

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