



ORIGINAL ARTICLE

## Intersubjectivity and the meaning of Nordic Walking practice in the view of people with Parkinson's disease: a pilot study

*Intersubjetividade e o significado da prática do Nordic Walking na visão de pessoas com doença de Parkinson: um estudo piloto*

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### Abstract

**Aims:** whilst Nordic Walking (NW) practice is spreading worldwide, few studies have addressed the issue of intersubjectivity and the perception of PD individuals practicing NW and its possible impact on their daily life across different countries and cultures. This pilot study sought to explore the possible relationship between the habit of practicing NW and the perception of functionality and quality of life in the participants' cultural context.

**Methods:** the focus group (FG) technique was used, with 10 individuals participating in a NW program.

**Results:** content analysis revealed five main discourse categories: a) "NW benefits for people with PD"; b) "incorporation of the NW poles in daily life"; c) "Belonging to a NW group as a treatment aid"; d) "how PD people feel about their condition"; and, finally, e) "the present and the future: expectations and issues".

**Conclusion:** in general, NW was found to generate positive content regarding coping with PD, beyond the biomechanical and quantitative functional effects previously studied. We suggest NW might be an important adjuvant resource for improving perceived functionality among people with PD.

**Keywords:** Parkinson's disease, walking, perception, adaptation, psychological.

### Resumo

**Objetivos:** embora a prática de Caminhada Nórdica (CN) esteja se espalhando pelo mundo, poucos estudos abordaram a questão da intersubjetividade e a percepção dos indivíduos com doença de Parkinson que praticam CN e seu possível impacto em sua vida diária em diferentes países e culturas. Este estudo piloto buscou explorar a possível relação entre o hábito de praticar CN e a percepção de funcionalidade e de qualidade de vida no contexto cultural dos participantes.

**Métodos:** foi utilizada a técnica de grupo focal, com 10 indivíduos participantes de um programa de CN.

**Resultados:** a análise de conteúdo revelou cinco categorias discursivas principais: a) "Benefícios da CN para pessoas com doença de Parkinson"; b) "incorporação dos bastões de CN na vida diária"; c) "pertencer a um grupo de CN como recurso auxiliar de tratamento"; d) "como as pessoas com doença de Parkinson se sentem sobre sua condição"; e, por fim, e) "o presente e o futuro: expectativas e questões".

**Conclusão:** de maneira geral, a CN gerou conteúdo positivo sobre o enfrentamento da doença de Parkinson, além dos efeitos biomecânicos e funcionais quantitativos previamente estudados. Sugerimos que a CN possa ser um recurso



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adjuvante importante para melhorar a percepção de funcionalidade em pessoas com doença de Parkinson.

**Palavras-chave:** doença de Parkinson, caminhada, percepção, adaptação psicológica.

## Introduction

Parkinson's disease (PD) is an idiopathic, chronic, and progressive neurodegenerative condition, which typically presents motor and non-motor signs and symptoms. Due to the neurological disorders related to PD, individuals with this condition are advised to participate in physical exercise programs to mitigate sensory-cognitive-motor impairments and thus achieve better levels of functional mobility and quality of life (1-5).

The practice of NW appeared in 1930, in the Nordic countries of Europe (2). One of the great advantages of NW is the modulation of the mechanical work of locomotion and better energy efficiency when walking (3, 4). Once learned, the technique can potentially be incorporated into the daily life of individuals with PD, in order to improve their functional independence and quality of life (1, 4, 5). Thus, NW has been proposed as a form of physical intervention beneficial to the locomotion of several groups of individuals, including those diagnosed with PD.

Whilst NW practice is spreading worldwide,

few studies have addressed the issue of intersubjectivity and the perception of PD individuals practicing NW and its possible impact on their daily life across different countries and cultures. The point is of great importance to understand the transcultural differences to maximize the potential benefits of the technique. This pilot study sought to explore the possible relationship between the habit of practicing NW and the perception of functionality and quality of life in the participants' cultural context. According to our hypothesis, practicing NW can mobilize content beyond the biomechanical effects of the technique on the locomotion/functional mobility of these individuals in their cultural context.

## Methods

This study was approved by the local Research Ethics Committee and all participants signed the Informed Consent Form (ICF). All individuals with PD participating in the NW group organized by a university in southern Brazil were invited to take part. After signing the informed consent, a time was scheduled with the participants to attend the focus group (FG) (6-10). Ten participants who expressed interest to participate in the activity were included. The characterization of the participants is presented in **Table 1**.

**TABLE 1** – Characteristics of the studied participants.

Participants	Age (years)	Gender	Duration of Disease (years)	Hoehn & Yahr Stage	UPDRS III Score	Levodopa (years of use)	NW (years of practice)	Other physical activities	NW sessions a week / duration	Physiotherapy / sessions a week
Iris	54	Female	18	3	14	NS	4	Weight training	3 / 60 min. 1 / 90 min.	No
Tulip	60	Female	2	1	7	4	3	Weight training	3 / 90 min.	No
Cyclamen	77	Female	4	1.5	16	NS	3	Balance training, Pilates and Speech Therapy	4 / 60 min.	Yes / 1
Poppy	67	Male	4	1	12	4	4	Pilates	2 / 60 min.	Yes / 1
Pansy	80	Male	6	3	17	5	6	No	Variable	No
Violet	63	Male	10	1.5	15	NS	3	No	Variable	Yes / 1
Mimosa	68	Male	18	1	10	NS	3	Pilates	2 / 50 min.	No
Lily	50	Male	3	1	6	3	4	No	Variable	No
Bluebell	60	Male	4	1	5	5	4	No	Variable	No
Buttercup	61	Male	5	1	16	7	6	No	1 / 60 min.	No

UPDRS-III: Unified Parkinson's Disease Rating Scale); NW, Nordic walking, NS, Not sure, min, minutes.

A single FG session lasted 90 minutes and was conducted in March 2019 by the first author of this study (Casarotto, VJC). Qualitative research investigates specific and detailed questions, concerned with a level of reality that cannot be measured by quantitative methods. Thus, meanings, motives, aspirations, beliefs, values and attitudes are studied, among other subjective characteristics specific to social behavior that correspond to relationships, processes, or phenomena that cannot be reduced to numerical variables. The aim of the FG was to facilitate communication and interaction among

the participants and thus involve the entire group in gathering information on specific topics (6 - 10).

The FG session was held in a classroom and the participants sat in a circle. During the activity, water, coffee, and snacks were available. The author who conducted the activity received the participants and promoted a pleasant and informal atmosphere in the group. Before starting the FG, she reinforced the research goals for all the participants and explained that different questions regarding NW practicing, PD, their quality of life

and general health would be asked. She also explained the participants should feel completely free and comfortable to share their opinions, impressions, and meanings about the asked questions - all their points would be respected and valued. Because the studied participants typically practice NW in group, we decided *a priori* the NW-related discussions and reflections may be more fruitful and natural to the participants using the FG technique.

Two recorders were used to register the comments during the FG. We used flower names to mention the participants and maintain confidentiality. The following questions were used in the FG: 1) *Did the Nordic walking help improve your daily activities?* 2) *In functional terms, how was your life before you joined the NW group?* 3) *For those who have poles at home, do you include NW in your activities outside the regular training sessions?* 4) *Did being a member of the NW group contribute to your social life?* 5) *Do you feel unable to do/participate in any functional activity due to PD (daily tasks, such as housework; shopping; leisure/entertainment and related activities)?*

This study also aimed to identify the perception, feelings, attitudes, and general opinions of the participants regarding living with PD. The inclusion criteria have received a diagnosis of PD; have participated actively in the NW group in the previous two months or more; have attended the regular visits with the clinical neurologist and have used the eventually prescribed medicines. The exclusion criteria were to show significant PD-unrelated musculoskeletal disease or trauma; severe cardiovascular, respiratory, endocrine or other diseases that interfere with the NW practicing.

In addition, sociodemographic and clinical data were collected to characterize the sample (e.g., age; marital status; educational level; occupation; associated illnesses; time since PD diagnosis; use of medications; length of time practicing NW). This information was collected individually on a different occasion, according to the availability of each participant. Because this is a pilot study, a sample size calculation was not performed.

Nonetheless, all individuals participating in the NW group were invited to take part - the current sample size represents the totality of the individuals of this group who agreed to participate in the study.

The information recorded during the FG session was transcribed by a second researcher (AIF), who did not attend the session and never met the participants. Any doubts were resolved with the first author, who led the FG session. The discursive textual analysis was performed by a third independent researcher (MNB), trained in psychology and with experience in content analysis. Again, this researcher did not know the participants or the NW technique at the time of the analyzes.

In the first stage of the analysis, the full transcript was edited and the responses to the prompts were grouped according to each participant. After, they were pulverized and deconstructed based on the interpretive abilities of the researcher who performed the analysis. The second stage involved categorizing the main discourse domains. In the third stage, the metatexts were collapsed into the proposed discourse domains. In the fourth stage, the metatexts were subjected to critical-reflexive analysis (7-10). Finally, the reported metatexts were transculturally adapted from Brazilian Portuguese to standard English by two independent experts who were not involved in this research: a) a Brazilian native speaker with experience in Portuguese-English translations and b) an English native speaker with experience in English-Portuguese translations). Then, a final/consensual version of the metatexts was used to report our findings.

## Results

The content analysis identified the intersubjectivity and perception of individuals with PD who practice NW and its possible impact on daily life. No losses or participant withdrawal occurred in this study. The data analysis revealed the emergence of five main discourse domains, namely: a) *The benefits of NW for people with PD*; b) *Incorporating NW in daily life*; c) *The*

therapeutic benefits of belonging to a NW group; d) "How people with PD feel about their condition"; and, finally, e) "The present and the future: expectations and issues".

#### **a) The benefits of NW for people with PD**

The participants mentioned several benefits of NW, as illustrated by the following statements: "It's been a year since I started NW. For example, before starting NW I used to feel my legs were "wobbly". I recovered my speed again. I always very fast (before PD)..." (Tulip); "The moment I started to move, to walk, I became more agile, I am faster, I tremble less.." (Iris). "I improved a lot after I started doing the Nordic walking" (Cyclamen).

The participants also highlighted the importance of continuously practicing NW: "I think the activity (NW) is as, or more, important than medication (...) I'm one thing when I'm practicing Nordic walking and another thing when I'm not. I suggest to my colleagues that during vacation we keep practicing to avoid what happened in my last summer vacation, I lost muscle and physical conditioning. I took a vacation, but you shouldn't take vacation from Nordic walking" (Buttercup). Another participant corroborates the statement "I didn't practice (as much) this semester (...) I feel like it is worsening, the stiffness when turning around, in the spine and in the difficulty in walking" (Tulip).

Concerning improved posture and balance, IH comments: "... (Nordic) walking makes everything easier, I no longer walk with my arms glued to my body and I had difficulty walking, I walked slower, so I improved a lot (after NW). NW improved my walking and now moving my arms improves my body balance. This is in addition to everything (the benefits) my colleagues mentioned".

IG says the poles help keep the body in an upright posture, promoting better arm movements and safety when walking: "I notice the difference in my posture. We tend to walk with our bodies all wrong, and with poles we must walk like that, you know (upright posture). And in the movement of the arm too (...). After a month's vacation, I realize that I am walking without moving my arms. Using

the poles, you must keep upright. So, I think that we will have to walk more often with the poles to cause this movement, because we tend to keep the arms glued to the body. I think it's very good, very valuable to use the poles. It's safer". "I also see improvements in impulse (walking propulsion), it helps to go further" (Iris).

The participants perceive NW as being different from walking in general, requiring technique and guidance: "It is one thing to walk socially, another thing is walking with technique (NW)" (Cyclamen). "This guided physical activity is fundamental for us. In fact, in my last appointment with the neurologist, the doctor recommended guided activity (...) five times a week, with moderate to high intensity, we must make more effort... And then even more" (Violet).

#### **b) "Incorporating NW in daily life"**

Some of the participants mentioned that incorporating NW poles improved their daily activities: "Now, with my poles, I walk in the street normally" (Cyclamen). "I got two broomsticks at home. At the time, my grandson lived with me, and we both did the exercises. I didn't use to exercise, I always liked to walk, but not exercising. But then, I started doing the exercises that I learned here too" (Mimosa).

Participants state they routinely use NW poles, but sometimes feel it is not appropriate in public places. However, the participants notice the difference when they do not use the NW poles: "... For example, I use the poles when I go the barber. If I'm going to Pilates, I'll use my poles. (...) I just don't go to places like the mall and hospital, for example, because it doesn't seem appropriate. I don't use them, but I miss them. Here on the street, I usually use them a lot. I miss them when I don't" (Cyclamen). "Sometimes I use them at home, in the yard. And I took them to the beach once, and used them, in a square" (Mimosa).

Sometimes, participants mentioned feeling embarrassed or even inadequate when using the NW poles in public. One of the participants suggested this may be a culture-related issue. "It's strange, you know... Imagine on a beach, it's

strange for us, it's strange. But, last year, when I went to Rio with my daughter, I saw several tourists using poles, mainly Scandinavians, all using them. There at Pão de Açúcar, on the beach, everywhere. It is normal in Europe to use these poles" (Mimosa).

One of the participants did not incorporate the use of NW poles in their routine but feels a difference when not using the poles: "I have (the NW poles), but I've only used them a couple of times. Because of laziness or even a habit issue, something like that. You must get used to doing it... I'm wrong. I bought them; I spent the money... I should use them, right? I go for a walk and I don't even remember... When I get a backache, then I remember... I feel it because of the posture" (Lily).

Another participant who did not use the NW poles in their daily routine stated despite having the poles, they only used them in class because the activity was physically demanding: "I've already said Nordic walking moves 90% of the body's muscles, you know. Then I get home and (realize) the physical activity (NW) is more intense than a regular walk, without the poles. It seems that we work hard on the triceps, the arm, right. This effort on the triceps is harder (using NW). When we walk without a pole you notice the arms go further back. I understood. So, I think it (NW) is more demanding, physically. It's a more complete (exercise)" (Bluebell).

### **c) "The therapeutic benefits of belonging to a NW group"**

The comments from the focus group participants suggest there is bonding with the group teachers and other members of the NW group, which contributes to treatment adherence, improved performance in walking and overcoming emotional problems, such as depression. Three participants mentioned this aspect: "I think the big difference I noticed from the moment I started Nordic walking is belonging to a group, I think this is fantastic (...) this contact with much younger colleagues and especially with you, the teachers, the people that help here, this always makes a change, how many have already changed, and each teacher seems to be better than the last, so

I am very happy (...) communication with a group of people makes a huge difference (...) one of the things that excited me about the Nordic walking (group) is the human contact (...) here it is very good because it is like a breath of fresh air, of other ways of thinking. Anyway, all I can do is recognize the importance that I see in the Nordic walking, both in the practical part, in the exercises, and in socialization. Highly positive".

In the statements it is possible to observe how much the participants value the walking group as a motivating living space, where they can meet people who are experiencing the same situation and learn: "... I met several colleagues, it was wonderful, now it is even more wonderful, every time a new colleague enters, it is a joy for us, you are adorable, you dedicate yourself to the maximum. Right from the beginning, I felt the difference. I used to walk (before the PD). Then, my legs didn't want to walk. But with the poles, I was able to walk more (again), I got faster, I walked a lot, it changed my life..." (Mimosa). "... the most important thing is your dedication, of everyone. Each one who enters (the group) is more lovely than the other. We miss those who have already left (teachers) and the colleagues, it is a wonderful experience. We get depressed when we are alone, and during the two-month vacation, we got depressed, not just because of the disease" (Mimosa).

The participants value the teaching team's interaction in the NW group, and they miss them when there are vacation and breaks: "Living with the group has been important. The affection of the teaching team as well. I miss it when they go on vacation... I don't have this relationship (outside) that we have here" (Cyclamen). "So, for me, you shouldn't go on vacation. Continue, take turns. Leave one or two without a vacation for us to continue with us (...). May the Nordic walking group continue for many years to help a lot of people. But seriously: don't take vacations" (Lily).

Another aspect highlighted by the group is the importance of exchanging experiences among the group members, sharing their difficulties, discoveries and learning experiences: "Another thing that I think is important is the exchange of

experiences" (Cyclamen).

One of the participants lives in a city 60 kilometers from Porto Alegre, so it takes more than an hour to get to NW group sessions: *"Exactly because of the (human) contact, the best thing is to get here and find people who have the same problem as me. I can see the experiences of each one, people who are more advanced (in PD), others not so much, but for longer than me. I've had this disease for 3 years and this (NW group) was very good for my mind and body too. I used to do anything (before PD). (Now), I feel the difference during the vacations, a difference in walking (performance) (...) I feel a difference when I do not do (Nordic) walking. I miss being with people, talking, because I don't work anymore. I don't have any activity. I watch movies, clean the house with my partner, but... I miss it (NW)" (Lily).*

#### **d) "How people with PD feel about their condition"**

According to the participants, the diagnosis produced feelings such as shock, fear, shame, embarrassment, and indifference. However, over time, the participants accepted their new condition and looked for ways to deal with the limitations and difficulties arising from the neurodegenerative process.

The participants attempted to overcome their difficulties and face the disease after the "initial shock" of the diagnosis: *"... it is a very big struggle between the person and the disease, but I'm still going, let's see..." (Cyclamen); "... And I feel good this way, I don't have any major constraints, I can travel, I can decide for myself, I can do everything I need, so it's not a very bad thing for me" (Mimosa).*

Despite IG's positive view, almost all the participants reported feelings of shame and embarrassment, especially regarding tremors, and not being able to move around without the symptoms of the disease being noticed, as reported (Buttercup): *"... I shook, I carried a leather briefcase with a lot of court documents, I had lots of work. I was very strong. When I dropped a folder, my hand shook (...) Until one day, I was delivering a summons to a drug addict, who said: 'Wait a*

*minute... One sick person summoning another... What about that?' 'What do you mean, a sick person delivering a summons?'; 'Uh, you. You have Parkinson's, don't you?'"*

For one of the participants, being diagnosed with PD at 57 years old sounded like a life sentence, as PD is typically associated with old age and being dependent. Nevertheless, in contrast to other participants who had greater difficulty accepting the diagnosis, the participant mentions the importance of reacting to the limitations imposed by the disease and not resigning to the pain and difficulties: *"So one thing that we have to put in our mind is: do not stop. And I think that 'stopping' will accelerate our disease" (Tulip).* This participant said the more difficulty he/she had walking, the more he/she tries to practice walking, reducing the time taken to follow a certain path, thus showing the increase in walking speed. *"... we have to do what is difficult. Because not doing it makes it worse, I think. If walking is difficult? Then, walk. Is sitting down becoming hard to do? So, sit down. I think that's it, you have to fight a little bit every day. And you can't give up... Otherwise, it will consume us" (Tulip).*

The participants perceived optimism as a positive characteristic in their treatment, as stated (Buttercup): *"I think that being optimistic is also helpful" (Buttercup).* At the same time, feelings of discouragement and the effort needed to face the disease were identified: *"... I think that the greatest challenge I feel is to remain enthusiastic in facing it (PD) because when there are those peaks due to medication or something, the difficult part comes from the whirlwind of thoughts and we have to fight the disease, change the environment, do something because if we give up, depression comes" (Violet).*

The feeling of discouragement was also associated with shame and low self-esteem: *"When I went to public offices, some girls looked at me. I thought, 'Is it because of my good looks?' And then when I noticed, one of them said: 'Do you want a place to sit, do you want me to help you?' That was very embarrassing because I was thinking I was able to hide (the disease)" (Buttercup).*

On the other hand, NW helped increase the

self-esteem of one participant: *"One thing the NW brought me, I think, was confidence. You know [...] - I was a little afraid to face it... I think my self-esteem improved a lot. I feel more ready, alive"* (Al).

Finally, one of the participants expressed gratitude for the NW group: *"...we always find it difficult to do things alone. Always... It takes a lot of willpower, going out alone doing stuff... But with the group (professionals and colleagues), then everyone helps each other and we can do more"* (Violet). This comment indicates the importance of the group support for coping with the disease.

#### **e) "The present and the future: expectations and issues"**

In general, the participants shared their concerns about the course of the disease in the focus group. Some of them expressed pessimism and depressive attitudes regarding the future *"it (the disease) continues to progress, with each passing year. Whoever is at the beginning, don't worry, it will get worse"* (Buttercup). On the other hand, some participants showed motivation and hope despite having the disease for a long time: *"... I've had the disease for 18 years and I am better now than at the beginning, and even the doctor says: 'in all this time of treatment, you should be very bad'. But I don't feel it, I feel very good (...). I don't lose hope"* (Iris).

The participants also discussed the impossibility of controlling all the PD symptoms and disease-related future issues: *"...only God knows what will happen, God help us and help everyone"* (Mimosa); *"as they say 'we don't know what awaits us tomorrow'"* (Lily).

Some participants emphasize the importance of focusing on the present, being more positive about facing PD. They also highlighted the role of the NW group as resource to help overcome adversities: *"I think this way: I have to live a lot in the present, without worrying too much about the future. If we look at everything that Parkinson's may cause, we will die before living. So, I prefer to live in the present (...) if NW helps me to deal with the advance of the disease, I am very happy! It great to know it is helping us in this way"*(Cyclamen); *"...*

*we will not let the sadness of the past or the fear of the future take away the joy of the present, so we have to live in the present"* (Violet).

Focusing on the present is seen as a tool to help individuals plan their lives. In addition, it is clear the participants made their plans based on the present situation and the resources available to them, without establishing long-term goals: *"When I got the diagnosis, I thought (...) my God! I live alone, independently. I will need someone to clean my ass, to shower, for this, for that. So, at first it was horrible, you know, but then I kept thinking (...) who can guarantee I won't die crossing the road (...) then I started to think like that, there is no use suffering for what will happen in five, in six, I don't know how many years. Today I'm fine, let's live one day at a time, right, and if someone has to take care of me (...) I won't think about it now (...) but, when the time comes I will (...) today I'm fine, I can make a plan, a week-long trip. But don't think like this: 'I won't be able to take a shower in the future', it is very painful for us"* (Tulip).

## **Discussion**

This research sought to understand the intersubjectivity and perception of people who practice Nordic walking in terms of functionality and quality of life. The participants reported NW induced several motor gains, such as recovered of agility, improved balance, reduced tremors, and better body posture, in addition to the maintenance of muscles and physical fitness. These perceived effects have been previously reported by quantitative studies (1). For example, the correct use of NW poles contributes towards energy expenditure during locomotion, which may be related to perceived recovered agility or greater functional mobility (11). Reported perceptions are in line with Santis and Kaplan (12), who observed reduction/absence of tremors, postural instability (typical "off phase" effects) in individuals with PD who practice NW.

Physical activity, such as Nordic Walking, can contribute to improve several aspects related to functionality and quality of life (1 - 13). NW seems to provide benefits in both motor and non-



motor symptoms of PD (14). Incorporating regular physical exercise in the routine helps people with PD to cope with the disease by stimulating creative and intersubjective dimensions (15). In addition, performing exercise routinely helps improve the mood and well-being of individuals with PD (16, 17).

The content analysis showed those who incorporated the regular use of poles in their routines had an improved perception of functionality. In addition, the "non-use" of poles was listed by the participants as a trigger for backache. Pellegrini et al. (18) suggest people with backache could benefit from using poles while walking on sloping ground. Foissac and Millet (19) point out the use of poles promotes redistribution of muscular forces due to the increased activation of the muscles involved in propulsion during the extension of the shoulder and elbow. Together, we suggest the participants in this study have experienced these NW effects which may have helped them cope with musculoskeletal pain.

The interaction and exchange of experiences with other people with PD received great attention in the focus group. This observation reinforces the group's importance in producing health content and well-being. Groups usually play an important role in the lives of their participants, and all human beings need to belong to social groups to some extent (20-22). A group cannot be defined only by the sum of its members, but as a set of interdependent people, who constitute a type of organism (23). That is, as the group interacts, it activates the focus on interpersonal relationships and work in favor of common goals (24). The interpersonal relationships established in the studied group seem to have contributed to adherence to NW, facilitating motor benefits, and helping to overcome emotional problems. In addition, the group is seen as a place of belonging, a facilitator of the expression and communication of feelings, which fosters the formation of a group identity (21, 22). The feelings of gratitude and belonging may well have facilitated adherence in the NW group.

Embarrassment was often expressed by the

participants comments, mainly with respect to motor symptoms, such as tremor and mobility difficulties (25). This finding corroborates the study by Valcarengi et al. (26), that highlights the feeling of embarrassment of people living with PD due to motor changes. According to the participants, tremor encourages the concealment of the hands to hide the disease. The literature emphasizes the difficulties involved in coping with the disease, which generate negative feelings such as sadness, anguish, non-acceptance of the disease, disappointment, and fear of dependence (27).

In the focus group, most participants expressed their concerns about the long-term course of the disease. Some comments exhibit a pessimistic and even depressive attitude. Depression is present in about 40% of patients with Parkinson's disease (28) and contributes significantly to the worsening of quality of life and the increased mortality in PD (29). Conversely, participation in a NW group seems to increase the feeling of self-esteem and optimism. These findings agree with previous studies that recommend people with PD practice NW to alleviate depressive feelings (30). The comments from the participants clearly show the need to face PD positively, perceiving the benefits of this activity provides motivation and hope, thus contributing to a improve the mental health.

The participants presented reactions and expectations regarding the diagnosis and prognosis of PD. Awareness of having a life-long disease means the participants' comments focus on control of the disease and its symptoms rather than on the expectation of a cure (27). However, it is clear participating in the NW group helps raise hopes and increase the pleasure of living, probably by promoting physical and social benefits.

This study has some limitations. The external validity/generalization of the study is limited due to the pilot design. While we did not use qualitative data analysis software, the information recorded during the FG was analyzed by an experienced independent researcher, which may alleviate

some common bias in qualitative research.

In summary, the present study suggests taking part in a NW group helps PD people cope with the disease and improves self-perceived functionality and quality of life. This effect may represent an important addition to the known biomechanical advantages generated by this walking technique. This study encourages the adoption of NW groups as a complementary resource to cope with the disease in southern Brazil.

### Notes

This study is part of a doctoral thesis (in development) related to the Graduate Program of Biomedical Gerontology from the Pontifical Catholic University of Rio Grande do Sul (PUCRS), by one of the authors (VJC), entitled "Nordic walking in Parkinson's Disease: participant perceptions and kinetic-functional aspects"

The English version has been made by Timothy Donovan.

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### Conflicts of interest disclosure

The authors declare no competing interests relevant to the content of this study.

### Authors' contributions

All the authors declare to have made substantial contributions to the conception, or design, or acquisition, or analysis, or interpretation of data; and drafting the work or revising it critically for important intellectual content; and to approve the version to be published.

### Availability of data and responsibility for the results

All the authors declare to have had full access to the available data and they assume

full responsibility for the integrity of these results.

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