ORIGINAL ARTICLE

# Comparison of Physical Activity Using Questionnaires (Leisure Time Physical Activity Instrument and Physical Activity at Home and Work Instrument) and Accelerometry in Fibromyalgia Patients: The Al-Ándalus Project

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## Abstract

**Objective:** To compare the levels of physical activity (PA) assessed with questionnaires (Leisure Time Physical Activity Instrument [LTPAI], Physical Activity at Home and Work Instrument [PAHWI]) and accelerometry in patients with fibromyalgia; and to analyze the test-retest reliability of these questionnaires.

**Design:** Cross-sectional study.

**Setting:** Local fibromyalgia association.

**Participants:** Participants (N=99; 5 men) with fibromyalgia with a mean age of 50.2±9.5 years.

**Interventions:** Not applicable.

**Main Outcome Measures:** Participants carried an accelerometer for 1 week and completed the LTPAI and PAHWI twice (separated by a 1-wk interval). The LTPAI and PAHWI were summed to obtain overall values of PA.

**Results:** Time spent in total, moderate, and moderate-vigorous PA was higher ($P<.01$) when assessed by the LTPAI and PAHWI compared with accelerometry. The Bland-Altman method showed an absence of agreement between the LTPAI and PAHWI and the accelerometer for moderate, moderate-vigorous, and total PA. The test-retest reliability for the workplace subscale and total score of the PAHWI showed high and moderate intraclass correlation coefficients (ICCs), respectively, but also manifested high SE of measurements (up to 179min/d). The LTPAI showed low to moderate ICCs and high SE of measurements (up to 79min/d). For the LTPAI and PAHWI, the ICCs for total activity across the population were low to moderate, and the Bland-Altman method confirmed this lack of agreement.

**Conclusions:** The LTPAI and PAHWI and the accelerometer differ greatly when assessing PA. Furthermore, the LTPAI and PAHWI did not show good levels of test-retest reliability. Therefore, the self-administered LTPAI and PAHWI show questionable usefulness to assess PA in populations with fibromyalgia.

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Fibromyalgia is a systemic chronic musculoskeletal pain disorder characterized by multiple tender points in all body quadrants[1] and widespread pain.[2] Fibromyalgia is also typically accompanied by a wide variety of symptoms (eg, sleep disturbances, reduced physical work capacity, fatigue,[1] stiffness, mood disorders,[3] cognitive disturbances[4]).

Patients with fibromyalgia can benefit from physical activity (PA) to maintain or improve their health.[5] Several studies showed the benefits of PA on pain,[6-10] general symptomatology,[9-11] psychological outcomes,[11] global well-being,[12,13] and physical fitness[6,9,10] in patients with fibromyalgia. Despite the proven benefits of PA on their symptomatology, women with fibromyalgia are usually less physically active than healthy controls.[14]

Self-reported questionnaires are easy and inexpensive to administer, which makes them suitable to assess PA at the population level. However, PA information derived from self-reports is potentially subjected to response bias.[15] In fact, overreporting is common in all populations with the use of PA questionnaires.[15-18] People with fibromyalgia are known to have memory and cognitive difficulties.[19] This fact, together with the wide symptomatology of the condition,[2] makes PA difficult to recall, which may partially explain the limitation of self-report methods, especially in this population.[20]

The Leisure Time Physical Activity Instrument (LTPAI) and Physical Activity at Home and Work Instrument (PAHWI) have been used to estimate PA in people with fibromyalgia.[19,21-23] The LTPAI focuses on leisure activities, whereas the PAHWI focuses on activities at home and in the workplace. When used together (LTPAI and PAHWI), these questionnaires assess the time spent in different intensities and total PA during the week. The LTPAI and PAHWI were originally designed to be used together and validated among women with fibromyalgia in 2005.[21] Both instruments were later transculturally adapted into Spanish in 2011,[19] and their psychometric characteristics were studied.[19] There is a need to examine whether the questionnaires used to assess PA in a population with fibromyalgia are valid and reliable. Studies examining the LTPAI and PAHWI construct validity and test-retest reliability in Spanish populations with fibromyalgia are scarce.[19] Furthermore, there are no studies, to our knowledge, comparing differences between the LTPAI and PAHWI data and an objective measure of PA (eg, accelerometry in women with fibromyalgia). Therefore, we aimed to compare PA estimated by the LTPAI and PAHWI with PA measured by accelerometry in a convenience sample of Spanish patients with fibromyalgia. We also studied the test-retest reliability of the LTPAI and PAHWI.

# Methods

## Participants

We contacted a local association of patients with fibromyalgia from Granada (Southern Spain) to recruit participants, and 116

potential participants responded. One hundred gave their written informed consent after receiving detailed information about the aims and study procedures in an informative session. Participants were excluded from the study if they did not meet the American College of Rheumatology criteria (widespread pain for >3mo and pain with 4kg/cm$^2$ of pressure reported for $\geq$11 of 18 tender points[1]), had acute or terminal illness, or had severe dementia (Mini-Mental State Examination [MMSE] scores <10).[24] One participant had <11 tender points. The final study sample consisted of 94 women and 5 men with fibromyalgia. The study protocol was reviewed and approved by the Ethics Committee of the Hospital Virgen de las Nieves (Granada, Spain).

## Procedures

At the first visit, the tender points count and body mass index (BMI) were estimated. The MMSE, demographic data, and LTPAI and PAHWI were completed in the assessment setting. Participants were asked to wear an accelerometer for 9 consecutive days, starting the same day they received the monitor. They were instructed to wear the accelerometer on their lower back, which was attached by an elastic belt, over the whole day (24h) and were advised to keep on with their normative life. To protect the accelerometers, participants were asked to take them off while bathing. Participants had a second visit to complete the LTPAI and PAHWI questionnaires (retest) and return the accelerometers to the researchers.

## Measures

### Tender points count

We assessed the 18 fibromyalgia-related tender points according to the American College of Rheumatology criteria for classification of fibromyalgia[1] using a standard pressure algometer (FPK 20[a]). The total count of positive tender points was recorded for each participant.

### Body mass index

We measured weight with an 8-polar tactile-electrode impedanciometer (portable InBody R20[b]). Height (cm) was measured using a stadiometer (seca 22[c]). BMI was calculated as weight (kg) divided by height (m) squared.

### Mini-Mental State Examination

The MMSE[24] was used to assess severity of dementia for the exclusion criteria. The MMSE is a brief cognitive screening test, which contains questions that assess 5 areas of cognitive functioning: orientation, immediate memory, attention/concentration, delayed recall, and language.

### Leisure Time Physical Activity Instrument

The LTPAI[19,21] comprises 4 items with 3 activity levels: light, moderate, and vigorous. Participants were asked to recall the average number of hours a week during the previous 4 weeks that they had engaged in a particular type of leisure PA and the activity level. The scale is simplified into the following 3 steps: (1) 0.5 to 1.5 hours a week, (2) 2 to 4 hours a week, and (3) >4 hours a week. When the participant marked step 1 or 2, the mean value of the range was used in the calculation of the total score. When step 3 was marked, participants were asked to provide the answers in hours. When no step was selected, the number of hours for the category was 0. The number of hours indicated by the participants