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Original Research

# A New Version of the Impairment and Functioning Inventory for Patients With Chronic Pain (IFI-R)

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**Abstract**

**Background:** Few instruments are available that have adequate psychometric properties for assessing daily functioning in patients with musculoskeletal pain. In addition, none of these instruments assesses the perceived decrease in levels of daily activities after the onset of pain.
**Objective:** To review the psychometric qualities of the Impairment and Functioning Inventory (IFI) for patients with chronic pain.
**Design:** Cross-sectional study.
**Setting:** Four public primary care centers and a public pain clinic.
**Patients:** A total of 483 patients with back pain who were treated at primary care centers and 137 patients with various pain conditions who were treated at a pain clinic.
**Methods:** To analyze factorial validity, a confirmatory factor analysis was performed via structural equation modeling. To measure internal consistency, Cronbach's $\alpha$ coefficients were calculated. To assess convergent validity, Pearson correlation coefficients were computed between the 2 scales of the IFI and the measures of the Roland Morris Questionnaire. Criterion validity and generalizability were analyzed by regression analysis via structural equation modeling using the LISREL 8.30 software package.
**Main Outcome Measures:** The IFI for patients with chronic pain.
**Results:** A revised version of the IFI (IFI-R) is presented that consists of 30 items with 2 related subscales: Daily Functioning and Impairment (perceived current level of functioning compared with the level of functioning before pain onset). Both subscales were significantly correlated with disability. Depression, pain intensity, and pain anxiety had a negative association with functioning and a positive association with impairment. On the other hand, pain catastrophizing had a negative association with functioning and pain hypervigilance had a positive association with impairment due to pain.
**Conclusions:** The IFI-R appears to be a valid and reliable measurement tool for the assessment of perceived daily functioning and impairment in people with chronic pain.

## Introduction

Most patients with chronic pain experience a significant decrease in their level of daily functioning [1-4]. In fact, daily functioning has been considered an important indicator of the quality of life and well-being of these patients [5,6]. The impact of pain on everyday activity has usually been evaluated as part of the assessment of the impact of pain on patients' lives as a whole [1,4,7-10]. The influence of pain-related fear on impairment has been confirmed in several studies [11-13]. Most empirical research framed within fear-avoidance models suggests that fear of pain is associated with decreased activity [11-16]. The Fear-Avoidance Model [17] and the Fear-Anxiety-Avoidance Model [18] suggest that fear of pain is a risk factor that predicts the level of impairment in patients' lives. Fear-avoidance models suggest that persons who engage in catastrophic thinking become fearful of pain and avoid any movement and activity that may provoke pain, which leads to disengagement from meaningful activities and the development of disability and depression [11,17]. Recent studies have shown that adjustment is not related to pain itself but to the extent to which pain interferes with daily life [7,19]. In this sense, Engel et al [20] have suggested that the decrease in the level of functioning is more important than pain severity in predicting analgesic use and doctor visits.

Despite the relevance of levels of daily functioning in patients with chronic pain, a recent review concluded


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that few instruments have adequate psychometric properties for assessing daily activity in patients with musculoskeletal pain [4]. In addition, none of these instruments compares the perceived current level of activity with the perceived activity level before pain (the level of impairment). Moreover, Verbunt et al [9] suggested that the perceived decrease in activity, rather than current activity, is important in assessing the impact of activity-related changes in patients with chronic pain. Therefore, assessing patients' perception of their current level of functioning without knowledge of their level of activity before the onset of pain could lead to erroneous conclusions regarding the patients' level of impairment.

The aim of the present study was to review the psychometric qualities of the Impairment and Functioning Inventory for patients with chronic pain (IFI) [21,22], which was constructed in 2003. Two studies were conducted. Study 1 analyzed the factorial validity (objective 1), internal consistency (objective 2), convergent validity (objective 3), and criterion validity (objective 4) of the 2 scales of the IFI in a sample of patients with heterogeneous chronic pain who were attending a pain clinic. In study 2, a multi-sample analysis was performed to analyze the generalizability of the IFI.

## Method

### *Participants*

The participants consisted of a consecutive sample of 633 patients with chronic pain who were divided into 2 groups. The recruitment process lasted from October 2009 to October 2011. Individuals were considered eligible for inclusion if, at the time of the study, they were experiencing pain and had been experiencing pain for at least the past 3 months, they were not being treated for a malignancy, terminal illness, or psychiatric disorder, and they were able to understand the Spanish language. The doctors who participated in the study reviewed the patient's clinical history, and if the patient fulfilled the inclusion criteria, his or her participation was requested. No one refused to participate. Thirteen participants provided incomplete data and were excluded from the analyses. Thus, the final sample included 620 participants: 483 patients with back pain who were treated at 4 primary care centers and 137 patients with various pain conditions who were treated at a pain clinic. Characteristics of the participants are provided in Table 1.

This research project was approved by the Carlos Haya Hospital Ethics Committee. To guarantee standardization of the recruitment process, prior to data collection, the researchers held a meeting with the participating doctors in which the eligibility criteria were explained and procedures were decided upon.

**Table 1**
Frequency data for demographic and clinical variables

| Variable | Sample 1 (N = 137) Pain Clinic | Sample 2 (N = 483) Primary Care |
|---|---|---|
| Age, y | | |
| Mean | 53.2 | 46.0 |
| SD | 13.2 | 12.8 |
| Minimum-maximum | 22-86 | 17-79 |
| Time in pain, mo | | |
| Mean | 107.2 | 65.1 |
| SD | 97.3 | 63.4 |
| Minimum-maximum | 10-588 | 15-240 |
| Pain intensity | | |
| Mean | 6.8 | 21.1 |
| SD | 1.9 | 6.6 |
| Minimum-maximum | 0-10 | 2-38 |
| Gender, % | | |
| Male | 43.8 | 42 |
| Female | 56.2 | 58 |
| Marital status, % | | |
| Single | 11.9 | 17.6 |
| Married | 74.8 | 60.2 |
| Unmarried couple | 4.4 | 7.2 |
| Divorced | 3.7 | 7 |
| Separated | 2.2 | 3.5 |
| Widowed | 3.0 | 4.3 |
| Education, % | | |
| Reading and writing | 23.0 | 12.3 |
| Primary school | 38.0 | 34.8 |
| High school | 25.0 | 32.9 |
| University education | 14.0 | 20.0 |
| Work status, % | | |
| Housekeeping | 24.5 | 16.8 |
| Working | 16.8 | 52.2 |
| Studying | 2.2 | 2.3 |
| Unemployed | 4.3 | 13.7 |
| Retired | 52.2 | 15.1 |
| Site of pain, % | | |
| Relatively generalized pain syndromes | 48.2 | — |
| Head and neck | 7.3 | — |
| Lower limbs | 5.1 | — |
| Genitals | 73.0 | — |
| Cervical | 14.6 | 56.5 |
| Thoracic-spinal | 24.1 | 35.0 |
| Lumbar, sacral, and coccygeal | 22.6 | 63.2 |

SD = standard deviation.

At the end of their visit to their doctor, each patient who fulfilled the eligibility criteria was informed of the study aims and their participation was requested. Informed consent was obtained prior to data collection. The participants were aware that the information collected was confidential and that this information would be linked to a number alone and not to their name. Each participant had a semi-structured interview with a psychologist to obtain demographic, social, or medical history data. A battery of questionnaires was also completed by each participant. Patients with back pain (sample 2) were interviewed in their usual primary care center, and patients with heterogeneous pain conditions (sample 1) were interviewed in a pain clinic.

### Instruments

#### IFI

The original IFI was developed in 2003 [22] with a sample of 135 patients with heterogeneous chronic pain who were recruited from the pain clinic and rheumatology service of Carlos Haya Regional Hospital in Málaga, Spain. One year later, the instrument was validated with a sample of 252 patients with heterogeneous chronic pain who were recruited from the pain clinic [21]. As a result of the validation procedure, the IFI now consists of 30 items that refer to an activity associated with one of the following areas: household, autonomous behavior, leisure, and social relationships. First, patients are asked if they performed an activity during the previous week (or during the previous month for certain activities). If they performed the activity, they are asked how often they performed it. If they did not perform the activity, they are asked if they practiced this activity before the onset of their chronic pain. This approach differentiates between present functioning and impairment and is useful in assessing patients with a long history of pain, for whom the degree of deterioration is at least as informative as the current level of functioning.

The IFI has been specifically developed for patients with various pain conditions who are being treated at a pain clinic. The instrument provides 2 indexes (Daily Functioning, $\alpha = 0.84$, and Impairment, $\alpha = 0.85$) with 4 factors in each index: household (11 items, $\alpha = 0.93$); autonomous behavior (7 items, $\alpha = 0.65$); leisure (6 items, $\alpha = 0.54$); and social relationships (6 items, $\alpha = 0.58$). Since the time of its development, the IFI has been included in several studies in which the 2 global indexes of functioning and impairment were used as indicators of the patients' adjustment [23-30].

#### Pain Catastrophizing Scale

The Pain Catastrophizing Scale (PCS) is a 13-item measure with a 5-point scale that respondents use to indicate the degree to which they experience various thoughts and feelings while they are in pain [31]. The PCS consists of 3 subscales assessing rumination, magnification, and helplessness and also provides a total score for catastrophizing. The total score alone was used in this study. The Spanish version of the scale shows good reliability and validity and has high internal consistency [32].

#### Pain Anxiety Symptoms Scale

The Pain Anxiety Symptoms Scale (PASS) is a 40-item measure of anxiety and fear responses associated with chronic pain [33]. It consists of 4 subscales that measure (1) cognitive anxiety responses, (2) escape and avoidance, (3) fearful thinking, and (4) physiological anxiety responses. The psychometric properties of the PASS subscales and total score are highly reliable [34]. The total score alone was used in this study. The Spanish version of the questionnaire [35] shows high internal consistency.

#### Pain Vigilance and Awareness Questionnaire

The Pain Vigilance and Awareness Questionnaire (PVAQ) assesses awareness, vigilance, preoccupation, and observation of pain [36]. The original PVAQ consists of 16 items and has been validated for use in chronic pain samples and nonclinical samples. The Spanish version [37] consists of 2 related subscales corresponding to 2 factors: Active Vigilance and Passive Awareness. The total scale and the subscales show good internal consistency. Both subscales and the total score are positively and significantly correlated with other fear-related constructs: fear avoidance beliefs, pain anxiety, and pain catastrophizing [35].

#### Pain Intensity Index

The Pain Intensity Index asks patients to rate their mildest, average, and worst pain during the past 2 weeks and their current pain on a scale ranging from 0 to 10, with "0" indicating "no pain" and "10" indicating pain "as intense as you could imagine." A composite pain intensity score was calculated for each subject by calculating the average of the mildest, average, worst, and current pain. Composites of the 0-10 ratings are very reliable measures of pain intensity in patients with chronic pain [38].

#### Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression Scale (HADS) is a self-reporting measure that contains two 7-item scales, one for anxiety and one for depression [39]. The depression scale was used in this study. The Spanish version of the scale shows appropriate reliability and validity. The internal consistency of both scales is high [40].

#### Roland-Morris Questionnaire

The Roland-Morris Questionnaire (RMQ) [41] consists of 24 items that refer to limitations in different daily activities attributed by the patient to low back pain. The patient must mark each item that applies to his or her current status. The Spanish version [42] has adequate internal consistency and the ability to predict self-reported pain intensity and quality of life.

### Analyses

#### Study 1

To analyze the factorial validity of the IFI (objective 1), a confirmatory factor analysis was performed via structural equation modeling using the LISREL 8.30 software package [43]. The validity of the 4-factor structure previously obtained [21,22] was examined in the 2 subscales. For purposes of comparison, a one-factor model was also estimated in which all the items were specified to a single factor. Analyses were performed on the polychoric correlation matrix of the IFI items using the Maximum Likelihood Robust estimation method. Several goodness-of-fit indexes for the 2 alternative models were considered. The Satorra-Bentler $\chi^2$ is a $\chi^2$ fit index that corrects the statistic under distributional violations [44]. To reduce the sensitivity of $\chi^2$ to sample size, the index is divided by the degrees of freedom. Ratios of 3 or smaller are indicative of an acceptable fit of the model [14]. The Comparative Fit Index [45] and the Non-Normed Fit Index [46] measure the proportional improvement in fit by comparing a hypothesized model with a more restricted baseline model (a null model is the most commonly used baseline model). The Comparative Fit Index and Non-Normed Fit Index range from 0 (absolute lack of fit) to 1 (perfect fit); when the values are more than 0.90, the fit is considered to be good [47]. The root mean square error of approximation is an absolute misfit index; the closer to zero, the better the fit. Values less than 0.08 indicate an adequate fit, and values less than 0.06 indicate a good fit [47,48]. To measure the internal consistency of the IFI (objective 2), Cronbach's $\alpha$ coefficients were calculated for the subscales.

To assess the convergent validity of the IFI (objective 3), Pearson correlation coefficients were computed between the 2 scales of the IFI and the measures of the RMQ.

In addition, the criterion validity of the 2 scales of the IFI was analyzed (objective 4) by regression analysis of the (exogenous) determinant variables (PASS, PCS, PVAQ, pain intensity, and depression) and of the (endogenous) criterion variables (the IFI subscales). This analysis was performed via structural equation modeling using the LISREL 8.30 software package [43]. According to the Kolmogorov-Smirnov test, the variables fulfilled the assumption of multivariate normality, and we therefore used maximum likelihood estimation on a covariance matrix of the observable variables. In the regression analyses via structural equation modeling, the $\gamma$ parameters represent the directional effects of the exogenous variables on the endogenous variable (equivalent to $\beta$ in traditional regression) and the *t* values indicate whether the $\gamma$ parameters are significant. All the determinant variables (exogenous) are entered into the model. In addition, the determination coefficients indicate the proportion of variability in the criteria variables (endogenous) that is accounted for by the exogenous variables.

*Study 2*

Multi-sample analyses were performed to test the statistical significance of the parameter differences between the 2 samples by structural equation modeling using LISREL 8.30 software [43]. The data were checked prior to the analyses, and we found that some variables were not normally distributed. Thus, the estimation method used was maximum likelihood because this method is effective for any distribution of the data if the analyses are performed on covariance matrices and the matrix of fourth-order moments is provided [49]. In a multi-sample analysis, $\chi^2$ is a measure of overall fit of all models in all groups and cannot be decomposed into a $\chi^2$ for each group separately [43]. In this analysis, it is first assumed that all the parameters are the same in all groups, which forms the baseline model. Next, successive models are estimated in which each parameter, one by one, is allowed to vary for each group. The relative fit across the groups is compared in relation to the changes in $\chi^2$. If the change in $\chi^2$ is significant compared with the baseline model—that is, the model shows a better fit—it can be concluded that the parameters are significantly different across the groups.

## Results

### *Study 1: Factor Analyses, Reliability, and Validity*

*Confirmatory Factor Analysis and Reliability*

Table 2 shows all the goodness-of-fit indexes of the tested models. As shown, differences existed between the 2 subscales: The 4-factor model had the best fit and was the most parsimonious regarding the Daily Functioning subscale, but the one-factor model had a better fit regarding the Impairment subscale.

In summary, the IFI-R consists of 30 items with 2 related subscales ($r = -0.66$): Daily Functioning and Impairment. Each subscale presents a different factor structure; that is, the Daily Functioning subscale has a 4-factor structure, and the Impairment subscale has a one-factor structure. The subscales showed good internal consistency (Daily Functioning, Cronbach's $\alpha =$ 0.93; Impairment, $\alpha = 0.98$), and the 4 functioning factors had acceptable reliability (Household Activity, $\alpha = 0.95$; Independent Functioning, $\alpha = 0.81$; Social Activities, $\alpha = 0.60$; Leisure Activities, $\alpha = 0.64$). However, no correlations were found between 2 items in the Daily Functioning subscale (Social Activities item 22: *Have you been to any meetings during the last month, eg, with neighbors?*, $r = 0.06$; and Leisure Activities

**Table 2**
Confirmatory factor analysis of the Impairment and Functioning Inventory in sample 1; goodness-of-fit indexes

| | $\chi^2;/df$* | NNFI | CFI | RMSEA |
|---|---|---|---|---|
| Daily functioning | | | | |
| One factor | 3.49 | 0.87 | 0.88 | 0.14 |
| Four-factor final model | 1.82 | 0.96 | 0.96 | 0.07 |
| Impairment | | | | |
| One factor | 1.62 | 0.97 | 0.97 | 0.06 |
| Four-factor final model | 5.38 | 0.95 | 0.95 | 0.09 |

NNFI = Non-Normed Fit Index; CFI = Comparative Fit Index; RMSEA = root mean square error of approximation.
* $\chi^2;/df$: Satorra-Bentler $\chi^2$; divided by degrees of freedom.

item 26: *Have you carried out any leisure activity outside the home during the last week?*, $r = 0.03$). To improve reliability, both items were deleted from this subscale. The Daily Functioning subscale contains 28 items and the Impairment subscale contains 30 items. Table 3 shows that all the corrected item-factor correlations were positive and appropriate. In addition, there was an improvement in the internal consistency of the factors Social and Leisure Activities (Social Activities, $\alpha = 0.65$; Leisure Activities, $\alpha = 0.71$).

*Convergent Validity*

Validity analyses were performed using the total scores of the 2 subscales of the IFI-Revised (IFI-R: Daily Functioning, 28 items; Impairment, 30 items). Convergent validity was assessed by computing Pearson correlations of the 2 IFI-R subscales with another measure of pain limitations during different daily activities: the RMQ, M = 13.87, standard deviation (SD) = 6.50. Both subscales showed a high significant correlation [50] with disability (RMQ). There was a negative association with the Daily Functioning subscale ($r = -0.54$, $P \leq .001$) and a positive correlation with the Impairment subscale ($r = 0.54$, $P \leq .001$).

*Criterion Validity*

Criterion validity was examined by regression analysis via structural equation modeling of the (endogenous) criterion variables (2 subscales of the IFI-R) and of the (exogenous) determinant variables, including the PCS (M = 32.70, SD = 11.56), the PVAQ (M = 29.33, SD = 8.81), the PASS (M = 94.00, SD = 35.02), the HADS depression subscale (HADS-D, M = 18.77, SD = 4.28), and the Pain Intensity Index (M = 6.75, SD = 1.87).

Figure 1 shows the $\beta$ parameters representing the directional effects of the exogenous variables on the endogenous variables. To obtain a parsimonious model of the relationship between the variables, we examined the path coefficients and deleted all paths from the model that were not statistically significant. Thus, the paths from catastrophizing to impairment and from hypervigilance to daily functioning were not statistically significant and were deleted. The results show that depression, pain intensity, and pain anxiety were significantly associated with lower daily functioning and higher impairment. On the other hand, catastrophizing was only associated with lower levels of daily functioning, whereas hypervigilance was significantly associated with higher impairment.

***Study 2: Multi-sample Analysis***

*Baseline Model*

Structural equation modeling was performed under the specification that all structural path coefficients were equal between the 2 samples. Regarding the Impairment subscale, the value of $\chi^2$ (not statistically significant) indicated that this model had a good fit between the 2 samples ($\chi^2_{(863)} = 0.00$, $P = .90$). Therefore, there were no differences in factor loadings between the 2 samples.

On the other hand, regarding the Daily Functioning subscale, the value of $\chi^2$ (statistically significant) indicated that this model had a bad fit between the 2 samples ($\chi^2_{(864)} = 3224.12$, $P \leq .001$). Based on these results, linear differences between samples were analyzed in relation to the Daily Functioning subscale.

*Linear Differences Between Samples in Daily Functioning*

The next step in the analysis was to remove the constraint that the path coefficients between the latent variables were equal between the groups, taking into account one path at a time. Compared with the baseline model in which all the paths in the 2 groups are constrained to be equal, this analysis (similar to analysis of variance) tests whether there is a difference between groups for a particular path coefficient. Table 4 shows the path coefficients between the latent variables between the groups that were successively estimated; the differences in the $\chi^2$ values compared with the baseline model and the significance of these differences are also displayed. A significant difference in $\chi^2$ values would represent a significant improvement in model fit, indicating that there is a difference between these path coefficients.

As shown, the differences between $\chi^2$ values were significant only in one case. That is, the association between the factor Social Activities and item 28 (*Did you go to church last week*?) was significant in the sample of patients from the pain clinic but was not significant in the sample of patients from Primary Attention centers. To improve the generalizability of the IFI to a different sample, item 28 should not be included in the Daily Functioning total score or in the Social Activity dimension of the Daily Functioning subscale.

*Final Instrument*

These analyses led to modifications in the IFI-R (see Appendix 1).

Confirmatory factor analysis showed that the one-factor model is better than the 4-factor model regarding the Impairment subscale. This subscale maintained the 30 original items.

The Functioning subscale maintained the 4-factor structure. However, to improve internal consistency, 2 items should not be included in the Daily Functioning total score (items 22 and 26). In addition, items 22 and 26 should not be included in the Social Activity dimension and the Leisure Activity dimension, respectively.

Multi-sample analysis showed that item 28 was not associated with the factor Social Activities in the

**Table 3**
Means, standard deviations, and corrected item-factor correlations of the items of IFI-R in sample 1; internal consistency and factor loadings

| Item | Daily Functioning (28 Items) $\alpha = 0.93$ | | | | Impairment (30 Items) $\alpha = 0.98$ | | | | |
|---|---|---|---|---|---|---|---|---|---|
| During the past week, did you.... | M | SD | Corrected Item-Factor Correlations | Factor Loadings | Item | M | SD | Corrected Item-Factor Correlations | Factor Loadings |
| Household activity, $\alpha = 0.95$ | | | | | | | | | |
| | | | | | 1 | 0.53 | 0.70 | 0.87 | 0.66 |
| 1.Sweep your house? | 0.89 | 1.01 | 0.83 | 0.86 | 2 | 0.43 | 0.63 | 0.81 | 0.64 |
| 3. Wash the dishes? | 1.25 | 1.22 | 0.77 | 0.82 | 3 | 0.51 | 0.70 | 0.86 | 0.66 |
| 5. Mop the floors? | 0.75 | 1.02 | 0.84 | 0.87 | 4 | 0.53 | 0.67 | 0.78 | 0.62 |
| 7. Do the dusting? | 0.82 | 0.98 | 0.78 | 0.83 | 5 | 0.62 | 0.73 | 0.87 | 0.67 |
| 9. Do the laundry? | 0.96 | 1.07 | 0.75 | 0.80 | 6 | 0.52 | 0.62 | 0.76 | 0.62 |
| 11. Make the beds? | 1.25 | 1.32 | 0.75 | 0.79 | 7 | 0.52 | 0.74 | 0.88 | 0.68 |
| 13. Clean the bathroom? | 0.74 | 0.98 | 0.85 | 0.88 | 8 | 0.40 | 0.59 | 0.84 | 0.66 |
| 14. Iron the clothes? | 0.49 | 0.82 | 0.76 | 0.85 | 9 | 0.47 | 0.72 | 0.90 | 0.69 |
| 15. Hang the clothes out? | 0.61 | 0.91 | 0.83 | 0.88 | 10 | 0.37 | 0.62 | 0.85 | 0.67 |
| 18. Cook a meal? | 1.37 | 1.30 | 0.76 | 0.79 | 11 | 0.54 | 0.69 | 0.83 | 0.65 |
| 20. Go shopping? | 1.31 | 1.15 | 0.56 | 0.62 | 12 | 0.45 | 0.52 | 0.70 | 0.60 |
| | | | | | 13 | 0.58 | 0.76 | 0.87 | 0.66 |
| Independent functioning, $\alpha = 0.81$ | | | | | | | | | |
| | | | | | 14 | 0.70 | 0.79 | 0.88 | 0.67 |
| | | | | | 15 | 0.64 | 0.74 | 0.88 | 0.67 |
| 2. Climb the stairs? | 1.05 | 1.28 | 0.50 | 0.59 | 16 | 0.58 | 0.67 | 0.79 | 0.62 |
| 8. Drive your car? | 0.87 | 1.26 | 0.39 | 0.40 | 17 | 0.52 | 0.62 | 0.78 | 0.63 |
| 19. Dress by yourself? | 2.62 | 1.28 | 0.66 | 0.86 | 18 | 0.47 | 0.73 | 0.92 | 0.69 |
| 21. Get in and out of bed without help? | 2.65 | 1.28 | 0.68 | 0.83 | 19 | 0.30 | 0.50 | 0.86 | 0.68 |
| | | | | | 20 | 0.40 | 0.56 | 0.85 | 0.67 |
| 24. Shave (him) or put on makeup (her) without help? | 1.79 | 1.21 | 0.51 | 0.56 | 21 | 0.29 | 0.48 | 0.83 | 0.66 |
| | | | | | 22 | 0.55 | 0.78 | 0.86 | 0.66 |
| 27. Eat without help? | 3.04 | 1.11 | 0.61 | 0.73 | 23 | 0.61 | 0.62 | 0.74 | 0.61 |
| 29. Pick up heavy objects? | 0.56 | 0.95 | 0.45 | 0.53 | 24 | 0.35 | 0.52 | 0.78 | 0.64 |
| | | | | | 25 | 0.34 | 0.53 | 0.84 | 0.67 |
| Social activities, $\alpha = 0.65$ | | | | | 26 | 0.55 | 0.80 | 0.87 | 0.67 |
| | | | | | 27 | 0.26 | 0.45 | 0.84 | 0.68 |
| 4. Visit any relatives? (in the past month) | 0.92 | 0.98 | 0.47 | 0.71 | 28 | 0.61 | 0.80 | 0.86 | 0.67 |
| 10. Phone any relatives or friends? | 1.62 | 1.16 | 0.44 | 0.61 | 29 | 0.73 | 0.49 | 0.52 | 0.56 |
| | | | | | 30 | 0.62 | 0.69 | 0.78 | 0.62 |
| 16. Visit friends? | 0.59 | 0.97 | 0.47 | 0.70 | | | | | |
| 22. Go to any meetings, eg, with neighbors? (in the past month) | — | — | — | — | | | | | |
| 25. Talk to a neighbor? | 1.47 | 1.24 | 0.40 | 0.47 | | | | | |
| 28. Go to church? | 0.23 | 0.50 | 0.26 | 0.33 | | | | | |
| Leisure activities, $\alpha = .71$ | | | | | | | | | |
| 6. Eat outside your home? (in the past month) | 0.65 | 0.87 | 0.48 | 0.70 | | | | | |
| 12. Go for a walk? | 1.23 | 1.19 | 0.59 | 0.74 | | | | | |
| 17. Go to a bar or café? | 0.78 | 0.89 | 0.54 | 0.71 | | | | | |
| 23. Go swimming? | 0.53 | 0.83 | 0.42 | 0.60 | | | | | |
| 26. Carry out some leisure activity outside the home? (eg, go to a gym, go to painting classes, or play cards; please indicate which one) | — | — | — | — | | | | | |
| 30. Go to the cinema or theater? (in the past month) | 0.17 | 0.46 | 0.39 | 0.53 | | | | | |

IFI-R = Impairment and Functioning Inventory-Revised; SD = standard deviation.

sample of patients attending primary care centers. Therefore, to improve the generalizability of the IFI, item 28 should not be included in the Daily Functioning total score or in the Social Activity dimension of this subscale.

## Discussion

The aim of this study was to examine the factor structure of the IFI and present some empirical evidence regarding its psychometric qualities.

Confirmatory factor analysis of the IFI-R supported the validity of the 4-factor model regarding the Daily Functioning subscale. However, the one-factor model is better regarding the Impairment subscale. In fact, several studies have clearly shown the utility of the global scores of functioning and impairment [23-30,51].

With regard to convergent validity, the IFI-R subscale total scores were significantly associated with disability as measured using the RMQ [42]. As Lin et al [2] suggested, although the concepts of *disability* and *physical activity* reflect the impact of pain on daily functioning, they are not identical. Disability has been used as a term to cover broad aspects of health: impairments in body functions and structures, activity limitations, and participation restrictions [52]. Thus, there are several differences between the RMQ and the IFI-R: the IFI-R provides information on perceived levels of daily functioning (in 4 areas) and impairment due to chronic pain, whereas the RMQ measures disability in patients with back pain. In this case, disability is understood as limitations in activities involving autonomous functioning. In any case, as expected, there was a significant association between the IFI-R total scores and disability (RMQ).

Regression analyses showed that pain anxiety, depression, and pain intensity were significantly associated with daily functioning and impairment. Regarding pain anxiety, this result is in line with fear-avoidance models. Reductions in pain-related anxiety may predict improvements in functioning and reduced interference with daily activity [7]. On the other hand, there is a growing consensus that depression also plays an important role in chronic pain. Pincus et al [53,54] suggested that clinical depression is often associated with social withdrawal and increased passivity, leads toward functional disability, and sometimes interacts with fear-avoidance variables. Previous studies have found that depression and pain intensity are negatively associated with a patient's self-reported activity level [55]. However, studies using objective measures of daily life activities have not found significant associations between these 2 variables [56]. Huijnen et al [56] found that depression was significantly associated with the discrepancy between self-reported and objectively assessed activities in daily life. However, a perceived decrease in the level of activity, rather than in current daily functioning, seemed to be more disabling [9]. Bousema et al [1] suggested that the patients' level of impairment was not related to daily functioning but to the perceived decrease in activity after pain onset. As Verbunt et al [9] pointed out, if patients report impairment, it is unlikely that they compare their actual level of activity to other people's levels of activity. It seems more likely that their evaluation is based on comparing their perceived actual daily functioning with their perceived habitual functioning before pain onset, which would imply that a decrease in perceived activity

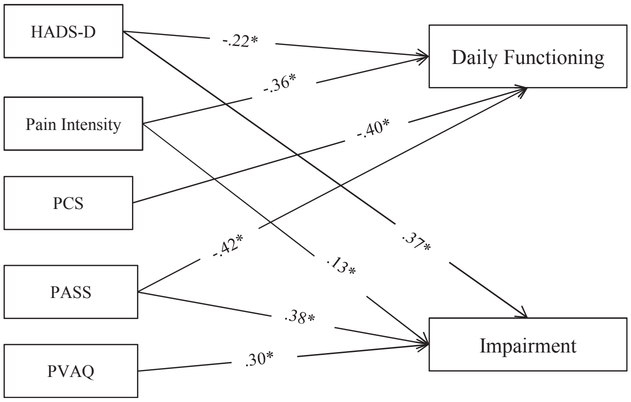


**Figure 1.** Criterion validity in sample 1. Regression analyses. Standardized β coefficients. HADS-D = Hospital Anxiety and Depression Scale (depression subscale); PCS = Pain Catastrophizing Scale; PASS = Pain Anxiety Symptoms Scale; PVAQ = Pain Vigilance and Awareness Questionnaire. $^*P \leq .05$.

would be more strongly associated with self-reported impairment than their actual level of activity. Therefore, instead of focusing on actual levels of activity, future research on the role of daily activity and impairment due to pain could focus on the perceived decrease in the level of activities over time as a reaction to pain. Thus, a decrease in activity appeared to play a mediating role in the association between fear of movement/(re)injury and impairment.

Catastrophizing was only associated with lower levels of daily functioning, whereas hypervigilance was significantly associated with higher impairment. It has been consistently demonstrated that catastrophizing is strongly associated with adjustment to pain [57,58]. Based on the fear-avoidance models [17,18], hypervigilance and catastrophizing predict the level of disuse as a result of avoidance of activities [1,7]. Although not explicitly stated in the original model, the automatic selection of pain or pain-related information at the expense of other information in the environment was introduced in the model as "hypervigilance" [7]. Persistent hypervigilance is dysfunctional and leads to more disability and suffering in the long term.

Finally, because the IFI was initially developed for patients with various pain conditions who were treated at a pain clinic, a multi-sample analysis was conducted to compare the stability of the IFI across 2 samples: patients with chronic back pain treated at primary care centers and patients with heterogeneous pain conditions treated at a pain clinic. A recent study [25] found that patients treated at a pain clinic showed worse adjustment to pain than did patients attending primary care units. The results show that the IFI-R could be usefully applied to both samples of patients.

This study has some limitations. Self-reporting was the only method included in the analyses. Because the IFI-R assesses the patient's perception of his or her level

**Table 4**
β Coefficients; path coefficients between variables across samples in the Daily Functioning subscale

| Path Coefficients From Factors to Items | Baseline Model $\chi^2$; (864) = 3224.12 | Pain Unit (N = 137) | Primary Care (N = 483) | $\chi^2$; change/ *P* value* |
|---|---|---|---|---|
| Household | | | | |
| 1 | 0.82 | 0.86 | 0.79 | |
| 3 | 0.79 | 0.82 | 0.78 | |
| 5 | 0.85 | 0.87 | 0.84 | |
| 7 | 0.79 | 0.83 | 0.75 | |
| 9 | 0.82 | 0.80 | 0.85 | |
| 11 | 0.76 | 0.79 | 0.73 | |
| 13 | 0.85 | 0.88 | 0.83 | |
| 14 | 0.86 | 0.85 | 0.86 | |
| 15 | 0.85 | 0.88 | 0.86 | |
| 18 | 0.79 | 0.79 | 0.82 | |
| 20 | 0.51 | 0.62 | 0.41 | |
| Independent | | | | |
| 2 | 0.67 | 0.59 | 0.59 | |
| 8 | 0.46 | 0.40 | 0.49 | |
| 19 | 0.44 | 0.86 | 0.64 | |
| 21 | 0.39 | 0.83 | 0.57 | |
| 24 | 0.51 | 0.56 | 0.36 | |
| 27 | 0.40 | 0.73 | 0.57 | |
| 29 | 0.57 | 0.53 | 0.47 | |
| Social | | | | |
| 4 | 0.64 | 0.71 | 0.54 | |
| 10 | 0.55 | 0.61 | 0.50 | |
| 16 | 0.73 | 0.70 | 0.79 | |
| 22 | 0.28 | 0.24 | 0.31 | |
| 25 | 0.41 | 0.47 | 0.42 | |
| 28 | 0.00† | 0.33 | −0.21† | 23.46/≤.001 |
| Leisure | | | | |
| 6 | 0.73 | 0.70 | 0.73 | |
| 12 | 0.62 | 0.74 | 0.53 | |
| 17 | 0.68 | 0.71 | 0.67 | |
| 23 | 0.57 | 0.60 | 0.55 | |
| 26 | 0.30 | 0.03† | 0.48 | 29.94/≤.001 |
| 30 | 0.62 | 0.53 | 0.71 | |

* When $\chi^2$ changes are not significant, this indicates that there is not a significant improvement in model fit over the baseline model and the path coefficients are not different. Only significant $\chi^2$ changes are shown ($P < .05$ ). All the rest are not significant.
† Nonsignificant results.

of daily functioning and impairment, the validity of the IFI-R could be improved by comparing self-reported information to objectively assessed activities in daily life. In addition, all the findings were based on cross-sectional and correlational data. Significant correlations do not indicate causal effects. Future longitudinal research could investigate the role of functioning and impairment at different stages during the development of chronic pain conditions. The responsiveness of the IFI-R and its subscales to treatment interventions should be the subject of future studies.

This study has several clinical implications. First, the 4 functioning factors included in the IFI-R could have descriptive value in a clinical context. Clinicians could obtain more information on which areas of activity would increase the patients' level of functioning or even on those areas in which they show a good level of activity. Second, the IFI-R can be used to assess a perceived decrease in levels of activity (impairment). As several researchers have suggested [1,6], impairment could be a better indicator of adjustment than daily functioning. On the other hand, a recent study [19] found that high levels of impairment were associated with high levels of fear and avoidance. It may be the case that when pain makes it difficult to engage in everyday activities and follow useful goals, there is an increase in fear beliefs about pain. Thus, recommended treatments for chronic pain typically promote increased daily activity to aid recovery and reduce impairment. Furthermore, McCracken, Evon, and Karapas [8] suggested that a strong predictor of treatment satisfaction was the patient's perception that his or her ability to perform daily activity had improved.

In summary, a revised version of the IFI-R has been presented. The IFI-R appears to be a valid and reliable measurement tool for the assessment of daily functioning and impairment in people with chronic pain.

## References


1. Bousema EJ, Verbunt JA, Seelen HAM, Vlayen JWS, Knottnerus JA. Disuse and physical deconditioning in the first year after the onset of back pain. Pain 2007;130:279-286.
2. Lin CC, McAuley JH, Macedo L, Barnett DC, Smeets RJ, Verbunt JA. Relationship between physical activity and disability in low back pain: A systematic review and meta-analysis. Pain 2011;152:607-613.
3. Smeets RJ, Vlaeyen JW, Kester AD, Knottnerus JA. Reduction of pain catastrophizing mediates the outcome of both physical and cognitive-behavioral treatment in chronic low back pain. J Pain 2006;7:261-271.
4. Verbunt JA, Huijnen IPJ, Köke A. Assessment of physical activity in daily life in patients with musculoskeletal pain. Eur J Pain 2009; 13:231-242.
5. Brenes GA, Rapp SR, Rejeski WJ, Miller ME. Do optimism and pessimism predict physical functioning? J Behav Med 2002;25: 219-231.
6. Verbunt JA, Smeets RJ, Wittink HM. Cause of effect? Deconditioning and chronic low back pain. Pain 2010;149:428-430.
7. Crombez G, Eccleston C, Van Damme E, Vlaeyen JWS, Karoly P. Fear-avoidance model of chronic pain. The next generation. Clin J Pain 2012;28:475-483.
8. McCracken LM, Evon D, Karapas ET. Satisfaction with treatment for chronic pain in a specialty service: Preliminary prospective results. Eur J Pain 2002;6:387-393.
9. Verbunt JA, Sieben JM, Seelen HAM, et al. Decline in physical activity, disability and pain-related fear in sub-acute low back pain. Eur J Pain 2005;9:417-425.
10. van den Berg-Emons RJ, Schasfoort FC, de Vos LA, Bussmann JB, Stam HJ. Impact of chronic pain on everyday physical activity. Eur J Pain 2007;11:587-593.
11. Asmundson GJG, Norton PJ, Norton GR. Beyond pain: The role of fear and avoidance in chronicity. Clin Psychol Rev 1999;19:97-119.
12. Crombez G, Vervaet L, Lysens R, Baeyens F, Eelen P. Avoidance and confrontation of painful, back-straining movements in chronic back pain patients. Behav Modif 1998;22:62-77.
13. Crombez G, Vlaeyen JWS, Heuts PHGT, Lysens R. Pain-related fear is more disabling than pain itself: Evidence on the role of pain-related fear in chronic back pain disability. Pain 1999;80:329-339.

14. McCracken LM, Samuel VM. The role of avoidance, pacing, and other activity patterns in chronic pain. Pain 2007;130:119-125.
15. Vangronsveld KL, Peters M, Vlaeyen JWS. The influence of fear of movement and pain catastrophizing on daily pain and disability in individuals with acute whiplash injury: A daily diary study. Pain 2008;139:449-457.
16. Vangronsveld KL, Peters M, Goossens M, Linton S, Vlaeyen JWS. Applying the fear-avoidance model to the chronic whiplash syndrome. Pain 2007;131:258-261.
17. Vlaeyen JW, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: A state of the art. Pain 2000;85:317-332.
18. Asmundson GJG, Norton PJ, Vlaeyen JWS. Fear-avoidance models of chronic pain: An overview. In: Asmundson GJG, Vlaeyen JWS, Crombez G, eds. Understanding and Treating Fear of Pain. Oxford, UK: Oxford University Press; 2004; 3-24.
19. Ramírez-Maestre C, Esteve R, López AE. Fear-avoidance, pain acceptance and adjustment to chronic pain: A cross-sectional study on a sample of 686 patients with chronic spinal pain. Ann Behav Med 2014;48:402-410.
20. Engel CC, Von Korff M, Katon WJ. Back pain in primary care: Predictors of high health-care costs. Pain 1996;65:197-204.
21. Ramírez-Maestre C, Esteve R, López AE. Revisión del Inventario de Deterioro y Funcionamiento para pacientes con dolor crónico. Presented at the 7th European Conference on Psychological Assessment, Málaga, Spain, April 1-4, 2004.
22. Ramírez-Maestre C, Valdivia Y. Evaluación del funcionamiento diario en pacientes con dolor crónico. Psicología Conductual 2003;11:283-291.
23. Bendayan R, Esteve R, Blanca MJ. Empirical evidence of the validity of the Spanish version of the chronic pain acceptance questionnaire: The differential influence of activity engagement and pain willingness on adjustment to chronic pain. Br J Health Psychol 2012;17:314-326.
24. Esteve MR, Ramírez-Maestre C, López AE. Adjustment to chronic pain: The role of pain acceptance, coping strategies and pain-related cognitions. Ann Behav Med 2007;33:179-188.
25. Esteve MR, Ramírez-Maestre C. Pain fear-avoidance and pain-acceptance: A cross-sectional study comparing their influence on adjustment to chronic pain across three samples of patients. Ann Behav Med 2013;46:169-180.
26. Esteve R, Ramírez-Maestre C, López-Martínez AE. Experiential avoidance and anxiety sensitivity as dispositional variables and their relationship to the adjustment to chronic pain. Eur J Pain 2012;16:718-726.
27. Gómez-Pérez L, López-Martínez AE, Ruiz-Párraga GT. Psychometric properties of the Spanish version of the Tampa Scale for Kinesiophobia (TSK). J Pain 2011;12:425-435.
28. López-Martínez AE, Esteve-Zarazaga R, Ramírez-Maestre C. Perceived social support and coping responses are independent variables explaining pain adjustment among chronic pain patients. J Pain 2008;9:373-379.
29. Ramírez-Maestre C, Esteve R, López AE. Cognitive appraisal and coping in chronic pain patients. Eur J Pain 2008;12:749-756.
30. Ramírez-Maestre C, Esteve R, López AE. The path to capacity: Resilience and spinal chronic pain. Spine 2012;4:1-8.
31. Sullivan MJL, Bishop SC, Pivik J. The Pain Catastrophizing Scale: Development and validation. Psychol Assess 1995;7:524-532.
32. Muñoz M, Esteve R. Reports of memory functioning by chronic pain patients. Clin J Pain 2005;21:287-291.
33. McCracken LM, Zayfert C, Gross RT. The pain anxiety symptoms scale: Development and validation of a scale to measure fear of pain. Pain 1992;50:67-73.
34. Roelofs J, McCracken L, Peters ML, Crombez G, van Breukelen G, Vlaeyen JWS. Psychometric evaluation of the Pain Anxiety Symptoms Scale (PASS) in chronic pain patients. J Behav Med 2004;27:167-183.
35. Esteve R, Muñoz M. Fear of pain and anxiety sensitivity: Related or redundant constructs? In: Columbus P, ed. Fear of Pain. New York, NY: Nova Publishers; 2010; 25-42.
36. McCracken LM. Attention to pain in persons with chronic pain: A behavioral approach. Behav Ther 1997;28:271-284.
37. Esteve R, Ramírez-Maestre C, López-Martínez AE. Empirical evidence of the validity of the Spanish version of the Pain Vigilance Awareness Questionnaire. Int J Behav Med 2013;20:59-68.
38. Jensen MP, Turner P, Romano JM, Fisher LD. Comparative reliability and validity of chronic pain intensity measures. Pain 1999;83:157-162.
39. Zigmong AS, Snaith RP. The Hospital Anxiety and Depression Scale. Acta Psychiatr Scan 1983;67:361-370.
40. Tejero A, Guimerá EM, Farré JM. Uso clínico del HAD en población psiquiátrica: Un estudio de su sensibilidad, fiabilidad y validez. Rev Esp Dep Psiquiatr Univ Bar 1985;13:233-238.
41. Roland M, Morris R. A study of the natural history of pain. Part I. Development of a reliable and sensitive measure of disability in low-back pain. Spine 1983;8:141-144.
42. Kovacs FM, Llobera J, Gil del Real MT, Abraira V, Gestoso M, Fernández G, Grupo Kovacs de Atención Primaria. Validation of the Spanish version of the Roland Morris Questionnaire. Spine 2002;27:538-542.
43. Jöreskog KG, Sörbom D. Lisrel 8: Structural Equation Modeling With the SIMPLIS Command Language. Hillsdale, NJ: Scientific Software International; 1993.
44. Bentler PM. EQS 6 Structural Equations Program Manual. Encino, CA: Multivariate Software, Inc; 2006.
45. Bentler PM. Comparative fit indexes in structural models. Psychol Bull 1990;107:238-246.
46. Bentler PM, Bonnet DG. Significance tests and goodness of fit in the analysis of covariance structures. Psychol Bull 1980;88:588-606.
47. Hu L, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Struct Equation Model 1999;6:1-55.
48. Hu L, Bentler PM. Fit indices in covariance structure modelling: Sensitivity to underparameterized model misspecification. Psychol Meth 1998;3:424-453.
49. Batista JM, Coenders G. Modelos de Ecuaciones Estructurales. Madrid, Spain: La Murralla; 2000.
50. Cohen JW. Statistical Power Analysis for the Behavioral Sciences. 2nd ed. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.
51. Ruiz-Párraga GT, López-Martínez AE, Gómez-Pérez L. Factor structure and psychometric properties of the Resilience Scale in a Spanish chronic musculoskeletal pain sample. J Pain 2012;13:1090-1098.
52. World Health Organization. Steps to health. A European framework to promote physical activity for health. Copenhagen, Denmark: WHO Regional Office for Europe; 2007.
53. Pincus T, Smeets RJEM, Simmonds MJ, Sullivan MJL. The fear avoidance model disentangled: Improving the clinical utility of the fear avoidance model. Clin J Pain 2010;26:739-746.
54. Pincus T, Vogel S, Burton AK, Santos R, Field AP. Fear avoidance and prognosis in back Pain. Arthritis Rheum 2006;54:3999-4010.
55. Hasenbring MI, Plaas H, Fischbein B, Willburger R. The relationship between activity and pain in patients 6 months after lumbar disc surgery: Do pain related coping modes act as moderator variables? Eur J Pain 2006;10:701-709.
56. Huijnen IPJ, Verbunt JA, Peters ML, et al. Do depression and pain intensity interfere with physical activity in daily life in patients with chronic low back pain? Pain 2010;150:161-166.
57. Sullivan MJL, Thorn B, Haythornthwaite JA, et al. Theoretical perspectives on the relation between catastrophizing and pain. Clin J Pain 2001;17:52-64.
58. Linton SJ, Nicholas M, MacDonald S, et al. The role of depression and catastrophizing in musculoskeletal pain. Eur J Pain 2010;15:416-422.

## Disclosure

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## Appendix 1. Impairment and Functioning Inventory—Revised (IFI-R) for patients with chronic pain

Instructions:

Here are some questions about everyday activities that people do. Answer yes or no depending on what you normally do. There are no right or wrong answers. The questions are designed to find out about the things you normally do and how often. Think about the previous week and tell me what you have done and how often.

| During the past week, how many times did you…. | Functioning<br>0 = Never<br>1 = Between 1 and 2 times<br>2 = Between 3 and 6 times<br>3 = Between 6 and 9 times<br>4 = 10 or more times | Impairment<br>If your answer is 0 (Never):<br>Did you used to do this before the pain began?<br>1 = Yes<br>0 = No |
|---|---|---|
| 1. Sweep your house? | 0 1 2 3 4 | 1 0 |
| 2. Climb the stairs? | 0 1 2 3 4 | 1 0 |
| 3. Wash the dishes? | 0 1 2 3 4 | 1 0 |
| 4. Visit any relatives? (in the past month) | 0 1 2 3 4 | 1 0 |
| 5. Mop the floors? | 0 1 2 3 4 | 1 0 |
| 6. Eat outside your home? (in the past month) | 0 1 2 3 4 | 1 0 |
| 7. Do the dusting? | 0 1 2 3 4 | 1 0 |
| 8. Drive your car? | 0 1 2 3 4 | 1 0 |
| 9. Do the laundry? | 0 1 2 3 4 | 1 0 |
| 10. Phone any relatives or any friends? | 0 1 2 3 4 | 1 0 |
| 11. Make the beds? | 0 1 2 3 4 | 1 0 |
| 12. Go for a walk? | 0 1 2 3 4 | 1 0 |
| 13. Clean the bathroom? | 0 1 2 3 4 | 1 0 |
| 14. Iron the clothes? | 0 1 2 3 4 | 1 0 |
| 15. Hang the clothes out? | 0 1 2 3 4 | 1 0 |
| 16. Visit friends? | 0 1 2 3 4 | 1 0 |
| 17 Go to a bar or café? | 0 1 2 3 4 | 1 0 |
| 18. Cook a meal? | 0 1 2 3 4 | 1 0 |
| 19. Dress by yourself? | 0 1 2 3 4 | 1 0 |
| 20. Go shopping? | 0 1 2 3 4 | 1 0 |
| 21. Get in and out of bed without help? | 0 1 2 3 4 | 1 0 |
| 22. Go to any meetings, eg, with neighbors? (in the past month) | 0 1 2 3 4 | 1 0 |
| 23. Go swimming? | 0 1 2 3 4 | 1 0 |
| 24. Shave (him) or put on makeup (her) without help? | 0 1 2 3 4 | 1 0 |
| 25. Talk to a neighbor? | 0 1 2 3 4 | 1 0 |
| 26. Carry out some leisure activity outside the home? (eg, go to a gym, go to painting classes, or play cards; please indicate which one) | 0 1 2 3 4 | 1 0 |
| 27. Eat without help? | 0 1 2 3 4 | 1 0 |
| 28. Go to church? | 0 1 2 3 4 | 1 0 |
| 29. Pick up heavy objects? | 0 1 2 3 4 | 1 0 |
| 30. Go to the cinema or theater? (in the past month) | 0 1 2 3 4 | 1 0 |

### *Correction*

Level of Daily Functioning: Add the number of times they do things (first column). Omit items 22, 26, and 28.
Level of Impairment: Add the number of "yes" replies in the second column.

### *Dimensions of Daily Functioning*

Household activity (11 items): 1, 3, 5, 7, 9, 11, 13, 14, 15, 18, and 20.
Independent functioning (7 items): 2, 8, 19, 21, 24, 27, and 29.
Social activities (4 items): 4, 10, 16, and 25.
Leisure activities (5 items): 6, 12, 17, 23, and 30.