DEVELOPMENT AND USE OF THE

STANDARD AND MODIFIED

FUNCTION AND PAIN INVENTORY (FAPI)

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The Functional Assessment and Pain Inventory

Introduction

Functional outcomes are progressively important in today's physical therapy environment as the physical therapist assumes more control over access and responsibility for the overall management of dysfunction. Referring physicians, payors, employers and especially patients and treating physical therapists benefit from timely applications of rehabilitative services that progress the patient to agreed functional and pain reduction goals. It is important to have a reproducible and accurate functional disability measurement device that can augment documentation as well as provide the patient with a relatively objective means of communicating the current status of their own specific functional losses to the health care team.

In addition to functional loss, physical therapists must address the issue of pain, with the goal of compiling a subjective report of pain by patients into an objective measure clinicians are able to see and compare with previous reports.

The physical therapist (PT) may use information gained from the initial application of such a device (typically at initial evaluation) to develop the treatment plan. The physical therapist typically reapplies the device at 30 day increments, or other progress note times, and may use information gained to either affirm that the goals of the rehabilitation process are being met, or if they are not being met, to evaluate strategy/plan/tactics of the rehabilitation process in terms of appropriateness and correctness of application.

This data will demonstrate progression of the patient in the areas of pain reduction and functional loss improvement that has successfully influenced physicians and payors to support the rehabilitation process. Conversely, in those rare cases that are not meeting the expectations of progress, the device will demonstrate and objectify this non-progression of function, allowing the patient and the PT to focus on the next plan (returning the patient to the referral) versus being mired in incriminations and recriminations. In this case the data is used to help make the decision to discharge a patient from an ineffectual rehabilitation process. The data provides the therapist with enough data that would protect them from inappropriate re-referral to their facility by the physician. The data shows the payor that functional gain is the prime motivator behind the rehabilitation process, and that the health care dollars are being managed responsibly.

Therefore, the therapists has a quick reference to monitor the patient's pain and level of disability with patient specific activities, as well as being a good indicator if current treatments

are beneficial. The FAPI may also be important in identifying those patients who may be symptom exaggerators or those patients that are fraudulently marking pain. The importance of the FAPI is to allow therapists to be able to base decisions on objective data. The data may be collected and analyzed on a company-wide basis, or analyzed by PT to assist in their review process.

The Functional Assessment and Pain Inventory (FAPI) as developed by Ando & Aston Physical Therapy has proved to be a valuable clinical assessment tool. It has been in constant use, on all patients since inception in 1994. It is patient specific by functional loss and pain by area. It utilizes components from different pain and functional scales and informs the therapist of which functional activities cause patients the most disability. The FAPI is not restricted to assessing function or pain in one region or patient type, but may be used anywhere on the body with several different functional activities in orthopedic, neurologic and medical patient populations.

Standard FAPI

At initial evaluation all patients, regardless of diagnosis are asked to rate his/her pain by location and functional disabilities that are specific to the patient on a VAS-based FAPI worksheet. The markings on the VAS are measured with a ruler and recorded in a FAPI table in the initial evaluation document.

At each progress note, or other predetermined reassessment time the patient is asked to re-rate on his/her pain and functional disability on the same FAPI worksheet that was used at the initial evaluation, however they are directed to use a different colored pen to allow separate measurement of the new, re-rated VAS markings. The data is recorded in a revised FAPI table, adjacent to the initial evaluation FAPI ratings, in the progress note document.

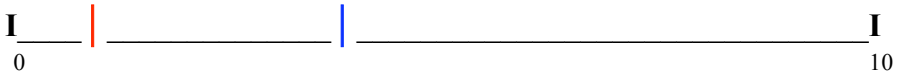
As part of his standard initial evaluation 1/10/02, the patient was interviewed in order to identify the specific functional activities that are limited at the time of the evaluation and in identifying the specific location(s) of pain. These items were written on the FAPI form by the therapist and the patient was then instructed to mark the line scale **(blue ink)** to indicate the severity of the pain/functional limitation. This data was placed in table form and reported as part of the standard initial evaluation sent to the referring physician. Upon reevaluation 1/24/02 the patient was instructed to again mark the line scale with a different color pen **(red ink)** to indicate the

current severity of the pain/functional limitation. This new data was included as part of the standard progress report sent to the referring physician. Percentage change from the last visit, and also percentage change from the initial evaluation may be computed and reported as well.

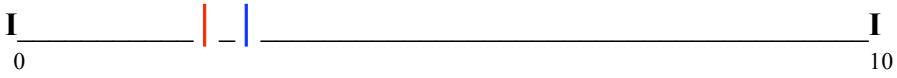
- The FAI will be administered during the initial evaluation, before each progress note, and at the end of the treatment period as part of the discharge summary.
- To properly use the Functional Assessment Inventory (FAI) the patient must first identify where the pain is located.
- The scale that must be marked reads from 0-10, 0= no pain or disability, 10=worst possible pain or disability that would put you in the hospital.
- The patient then marks the amount of pain they are experiencing by placing a vertical mark along the horizontal line.
- The patient must then determine which functional activities are affected. They may choose up to a total of 10 activities. The specific activity should be written down.
- The total line is 10 cm long. The length of the line between 0 and the patient's mark for each of the measured pain areas or disability items is measured with a ruler by the transcriptionist and documented in a table.
- Subsequent re-evaluations are similarly marked by the patient and measured and documented.
- Metrics have included % change overall, % change by category, % change by item.

SAMPLE FAPI DATA SHEET

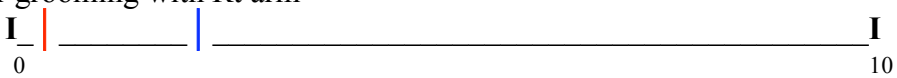
1. Pain in Rt neck



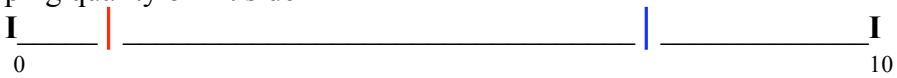
2. Pain in Rt shoulder



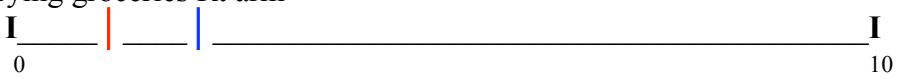
3. Hair grooming with Rt arm



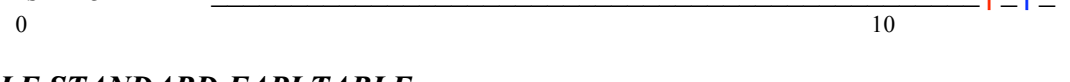
4. Sleeping quality on Rt side



5. Carrying groceries Rt arm



6. Tennis > 45 min



SAMPLE STANDARD FAPI TABLE

Pain & Function Item **Date(s)**	**1/10/02**	**1/24/02**
Pain in neck	**4.2**	**1.0**
Pain in Right shoulder	**3**	**2.5**
Hair grooming	**2.4**	**0.5**
Sleeping quality	**8.3**	**1.3**
Carrying groceries	**2.3**	**1.2**
Tennis > 45 minutes	**9.5**	**9.0**

Modified FAPI.

In November of 2002, a modified version of the FAPI was developed using the Borg 1-10 scale versus VAS data. Half points are allowed. This was done to simplify the gathering of information from patients who had discontinued therapy, and therefore were not able to provide functional loss and pain level information in person in the form of the VAS, but were able to provide verbal responses by telephone, allowing a complete data set for that patient. In addition the Modified FAPI lends itself well to electronic medical record (EMR) format of documentation. Outcome metrics since 2004 are automated in the Medinformatix ™ EMR software, for whom Art Ando acted as the primary physical therapy programming analyst.

SAMPLE MODIFIED FAPI DATA SHEET

INSTRUCTIONS: Therapists will use this form as a tool to record your areas and amounts of functional loss and pain. It will be monitored during the course of your rehabilitation to assess your progress. To ensure accuracy, please be specific when telling your therapist about your problems.
Please refer below for the scoring system.

Functional Loss

Score	Current Status
0	No Loss
1, 2, 3	Mild Loss
4, 5, 6	Moderate Loss
6, 7, 8	Severe Loss
10	Catastrophic Loss (Unable)

		Date ___ Score	Date ___ Score	Date ___ Score	Date ___ Score
Transfers (e.g. sit to stand)	_____	___	___	___	___
Standing (e.g. cooking)	_____	___	___	___	___
Sitting/Driving (e.g. >45 min)	_____	___	___	___	___
Sleeping (e.g. position, quality)	_____	___	___	___	___
Bending (e.g. knee, neck forward)	_____	___	___	___	___
Dressing/Grooming (e.g. socks)	_____	___	___	___	___
Lifting/Carrying (e.g. groceries)	_____	___	___	___	___
Pushing/Pulling (e.g. vacuuming)	_____	___	___	___	___
Walking (e.g. community, hills)	_____	___	___	___	___
Stairs (e.g. reciprocal)	_____	___	___	___	___

Squatting (e.g. deep)	_____	___	___	___	___
Run/Jump/Cut	_____	___	___	___	___
Recreational (e.g. gardening)	_____	___	___	___	___
Other (specify)	_____	___	___	___	___

Pain/Headache or Sensory Change

Score	Current Status
0	No pain or sensory change
1, 2, 3	Mild pain or sensory change
4, 5, 6	Moderate pain or sensory change
6, 7, 8	Severe pain or sensory change
10	Catastrophic pain or sensory change (emergency room)

		Date	Date	Date	Date
		___	___	___	___
		Score	Score	Score	Score
Body Area #1 (e.g. top of right arm)	_____	___	___	___	___
Body Area #2	_____	___	___	___	___
Body Area #3	_____	___	___	___	___
Body Area #4	_____	___	___	___	___
Body Area #5	_____	___	___	___	___
Body Area #6	_____	___	___	___	___
Headache	_____	___	___	___	___

The Functional Assessment and Pain Inventory - Development

The clinic of Ando and Aston Physical Therapy is credited with the development of the Functional Assessment and Pain Inventory **(**FAPI) in October of 1994, and subsequent modification in 2002, and implementation into a electronic medical records program in 2004. The FAPI is developed from six separate pain scales; the Visual Analogue Scale, Borg Scale, the Oswestry, the Cincinnati Rating System, the Million Visual Analogue Scale, and the Dallas Pain Questionnaire. The FAPI utilizes a few variations from each of the six scales. Each scale is summarized below.

Visual Analogue Scale. The purpose of the visual analogue scale (VAS) is to gain a quantitative measure of pain, which is sensitive to small changes in pain intensity (1-4). The VAS is a line, the length of which is taken represents the continuum of some experiences like pain (2,4). It is a simple, sensitive, and reproducible instrument that enables a patient to express the severity of his/her pain in such a way that it can be given a numerical value (2,4). The VAS can be used to compare pain severity in the same patient at different times. Problems with the VAS include failure to understand the concept and possible variations in reproducibility along the length of the line (1). The line is represented by no pain on one end to severe pain on the other end. The line is 10 cm long. The distance of the mark from the end of the scale is then taken to represent severity of pain (1,2,4). It is difficult to measure the sensitivity of pain measurements especially since there is no absolute standard (2,4). The VAS has a greater capacity to change in response to a stimulus, such as a treatment, than the simple verbal descriptions that can be placed in order of severity for pain (3). There is a high correlation between successive measurements of pain severity on a VAS, confirming the reproducibility of the method (1,4,5). An advantage of the VAS is its universality (3,4). The VAS may be used with any assortment of injuries, ranging from low back pain to knee pain.

Borg Scale. A slight variation of the Borg scale is used on the FAPI. Only the 0 and 10 numbers are used to describe each end of the scale. The traditional Borg scale is a subjective, self-report, and gives pain a quantitative rating (1,6). The Borg scale may help patients feel comfortable rating pain with a number and it allows the patient to report subjective changes in pain in a brief period of time on a scale that communicates fairly objectively (1,6). It is not as

valid as the VAS (1,3,6). Each number on the Borg scale communicates what it should mean; 3= moderate pain, 7= very strong pain and must see a doctor, 10= very, very strong pain and should be in the hospital. The examples of these phrases are a more objective determination of the patient's pain than vague phrases like, "It's a little bit better" (1). The actual rating of pain on the FAPI is 0 which means no pain and 10 which means very, very strong pain (6). The actual rating of pain on the FAPI is combining the VAS and the Borg and marking down the level of pain or disability.

Oswestry Low Back Pain Disability Questionnaire. The functional activities that the FAPI utilizes was strongly influenced by the Oswestry. The Oswestry is a self-report questionnaire that is a valid measure of a person's perceived disability (1,7). The Oswestry may also be used to assess change as a result of treatment. Traditionally, the Oswestry uses percentages to grade overall disability of patients with back pain. The Oswestry rates 10 functional activities from zero to five and add all ten of the activity scores (7). Next, divide 50 by the total and multiply that number by 100. If the percentage equals 0-20% it is considered minimal disability, 20-40% moderate disability, 40-60% severe disability, 60-80% crippled, 80-100% is bed bound or exaggerated pain (1,7). An advantage of the Oswestry is its ability to assess the effectiveness of the patient's rehabilitation program (1,7). The FAPI does not rate pain or disability with percentages, but utilizes the VAS and a modification of the Borg scale to rate disability or pain with each individual activity.

Cincinnati Knee Rating System. The Cincinnati rating system of pain also offers a few functional activities to the FAPI. The Cincinnati uses its assessment of pain to evaluate the patient's disability in the lower extremity due to knee pain (8). The Cincinnati grades 5 lower extremity functions with a possible score of 50 (8). The FAPI uses some of the functional activities and again scores pain during these activities with the VAS.

Million Visual Analog Scale. The Million Visual Analog Scale is the most similar system to the FAPI. The Million is consistent of 15 questions describing both pain and disability. Responses are expressed on a 10 cm. line and addresses several questions relating to back pain. The score of the 15 questions is derived using a ruler. Add all 15 questions and that is the score of the pain scale. The Million uses the VAS because of the high degree of reproducibility and opportunity for nonverbal expression (1,9). A good correlation is found between the subjective analogue scores and the objective findings of the clinician (1,9). Since

the test focuses primarily on pain and the functional limitations pain imposes, it can be used on multiple occasions to assess the patient's symptomatic improvement (9). This scale may be used to identify symptom exaggerators. The FAPI uses the VAS in a similar manner as the Million does, but different functional questions are asked with the FAPI with each patient. The FAPI uses the same score sheet for each of the testings. The FAPI does not add all the scores from each functional activity as the Million does. The Million scores pain/disability at high for 150-90, 45-89 equivocal, and 0-44 as low (1). The FAPI grades each particular activity separately and graphs each individual activity to monitor changes in pain.

Dallas Pain Questionnaire. The Dallas Pain Questionnaire is a self-report questionnaire to assess the amount of chronic spinal pain that effects four aspects called Factors (1,10). The Factors may be broken into non-psychological factors (daily activities, and work/leisure activities) and psychological factors (anxiety/depression and social interest. There are 16 questions divided between the four Factors (1,10). The section is answered by placing a 'X' an the appropriate division of the VAS between the extremes, the normal state on the left and the worst state on the right (1,10). The VAS is 10 cm. long. The Dallas is scored by counting the divisions on the VAS scale from left to right, always starting with zero with the first division on the left (1,10). Count until the division in which the patient has placed an 'X'. Next, add the total of all the scores for all the sections within each Factor and then multiply that score by the multiplier for each Factor to arrive at the percentile score for each Factor (10). For Factor I the multiplier is 3 and for Factor II-IV the multiplier is 5 (1).

The Dallas Pain Questionnaire is interpreted by the percentage given for each Factor. Three profiles are examined to predict outcomes in terms of treatment appropriate for the patient. Profile one is where medical treatment alone is appropriate and is identified when Factors I and II are greater or equal to 50% and Factors III and IV are less than 50% (1,10). Profile two is where a behavioral approach is the primary intervention and is displayed when Factor III and IV are greater than or equal to 50% and Factor I and II are less than 50% (1,10). Profile three is where combined medical and behavioral intervention are appropriate and is shown when all four Factors are greater than or equal to 50% (1,10). The clinical interpretation may be whenever the Factors are greater than or equal to 50%. The 50% level is a significant enough level of pain/disability expressed by the patient that corresponds to changes in velocity of movement, posturing, body mechanics, facial expressions, verbal expressions, which all should correlate

with the level of impairment evaluated (1). If there is a poor correlation then the patient is classified as a symptom exaggerator (1). The advantages of this questionnaire are that it evaluates the rating of pain, disability, anxiety and depression (1, 10). Its disadvantage is that limited research substantiates it since it is relatively new (1). The FAPI borrows some of the Dallas Pain functional questions that deal with pain and disability, but does not deal with the factors that include anxiety and depression. The FAPI does not utilize the VAS in the same manner as the Dallas, nor does the FAPI score using percentages. The FAPI may be broken down into categories of pain, personal care (ADL pain), positional pain, upper extremity activity that may cause pain, lower extremity activity that may cause pain, and recreational activity that may be painful or cause disability.

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