Evaluation of Clinical Methods for Rating Dyspnea*

Donald A. Mahler, M.D. F.C.C.P.; † and Carolyn K. Wells, M.P.H.‡

To evaluate available clinical methods (self ratings and questionnaire) for rating dyspnea, we (1) compared scores from the recently developed baseline dyspnea index (BDI) with the Medical Research Council (MRC) scale and the oxygen-cost diagram (OCD) in 153 patients with various respiratory diseases who sought medical care for shortness of breath; and (2) evaluated the relationships between dyspnea scores and standard measures of physiologic lung function in the same patients. The dyspnea scores were all significantly correlated \( r = 0.48 \) to 0.70; \( p < 0.001 \). Agreement between two observers or with repeated use was satisfactory with all three clinical rating methods. The BDI showed the highest correlations with physiologic measurements. Dyspnea scores were most highly related to spirometric values \( r = 0.78; \ p < 0.001 \) for patients with asthma, maximal respiratory pressures \( r = 0.34 \) and 0.35; \( p < 0.001 \) for patients with chronic obstructive pulmonary disease, and \( P_{\text{max}} \) \( r = 0.51; \ p = 0.01 \) and \( F_{\text{VC}} \ \ r = 0.44; \ p = 0.03 \) for those with interstitial lung disease. These results show that: (1) the BDI, MRC scale, and OCD provide significantly related measures of dyspnea; (2) the clinical ratings of dyspnea correlate significantly with physiologic parameters of lung function; and (3) breathlessness may be related to the pathophysiology of the specific respiratory disease. The clinical rating of dyspnea may provide quantitative information complementary to measurements of lung function.

Dyspnea, especially on physical exertion, is a predominant complaint of patients with respiratory disease, and is often the reason that a person seeks medical attention. The experience of difficult or uncomfortable breathing is probably the single most important factor that limits that person's ability to function on a day-to-day basis. Despite the frequency of dyspnea, the mechanisms contributing to the sensation of breathlessness are poorly understood. Although the perception of dyspnea can be evaluated in the laboratory using psychophysical techniques, we believe that the symptom of breathlessness, defined as "difficult or labored breathing," should be considered as the sum of physiologic and psychologic factors that affect a patient's functional health status. Therefore, it is useful to measure or quantify this symptom so that its severity can be assessed and response to specific therapy can be determined.

The purpose of this study was twofold: (1) to compare the existing clinical techniques for grading dyspnea; and (2) to correlate these instruments with standard physiologic measurements in a large group of symptomatic patients. We were especially interested to evaluate the recently developed baseline dyspnea index, which provides a multidimensional rating of breathlessness, with previously described approaches for quantifying breathlessness in patients with a wide spectrum of disease severity. Patients with diverse cardiopulmonary conditions were studied including chronic obstructive pulmonary disease (COPD), interstitial lung disease (ILD), asthma, heart disease, and obesity. This information has potential application in the care of patients who experience breathlessness, because this symptom can greatly influence an individual's overall health status.

**MATERIAL AND METHODS**

**Patient Population**

One hundred sixty-one patients, all of whom had the chief complaint of breathlessness, were evaluated. Subjects were referred to the pulmonary function laboratory of the Dartmouth-Hitchcock Medical Center for investigation of dyspnea by their physicians. To avoid the potential influence of medications on the ratings of dyspnea, only patients who were not taking any cardiopulmonary drugs for at least 48 hours were included. Appropriate subjects were studied in consecutive order between May 1983 and August 1985. The study was approved by the Institutional Review Board, and informed consent was obtained.

In 153 patients, a specific disease was established as the primary cause of dyspnea. This information was obtained by reviewing the patient's medical record after appropriate tests had been completed. These 153 subjects are the focus of this investigation. In eight patients, the reason for shortness of breath was not established, and they were excluded.

**Rating of Dyspnea**

Three different clinical methods were used for rating dyspnea at a single point in time: a modification of the scale devised by the Medical Research Council of Great Britain\(^*\) (Appendix A); the oxygen-cost diagram\(^*\) (Appendix B); and the baseline dyspnea index\(^*\) (Appendix C).

The modified MRC method is a five-point scale based on degrees

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Clinical Methods for Rating Dyspnea (Mahler; Wells)
of various physical activities that precipitate breathlessness.\textsuperscript{4} In our study, each patient was instructed to read the descriptive statements and then select the number which best fitted his shortness of breath. The MRC scale was completed within 30 seconds.

The oxygen-cost diagram is a visual analogue scale consisting of a line 100 mm long with descriptive phrases at various points along the line which correspond to oxygen requirements of different activities.\textsuperscript{9} The top of the vertical line represents "no breathlessness," while the bottom of the line reflects "the greatest breathlessness." The patient was instructed to "mark the line at a point above which you would become breathless." Usually, further explanation was necessary for the patient to understand the relationship between the vertical line and the listed activities. The distance from the bottom of the scale to the patient's mark was measured in millimeters and provided a quantification of the subject's dyspnea. It took one to two minutes for the patient to complete the OCD.

The baseline dyspnea index consists of five specific grades for each of three categories: functional impairment, magnitude of effort, and magnitude of effort.\textsuperscript{7} To grade dyspnea with the BDI, an observer interviewed the patient and asked open-ended questions concerning the patient's symptoms. The observer then focused on specific criteria for the severity of breathlessness in each category as outlined in the BDI. Based on the patient's responses, the observer was able to grade the degree of impairment (range, 0 to 4) related to dyspnea for all three components. A baseline focal score was obtained by adding the three ratings for functional impairment, magnitude of effort, and magnitude of effort. The range for the focal score was 0 to 12. The interviewing process took two to three minutes.

The MRC, OCD, and BDI methods were administered in random order to all patients by one of two pulmonary technicians prior to any pulmonary function testing. In addition, one of the authors (D.A.M.), a pulmonary physician, performed similar ratings using the MRC scale in 25 patients and the OCD and BDI in 57 of the 153 patients. This was done either before or after the evaluation by the technician.

**Physiologic Measurements**

Physiologic testing was completed on the same day as dyspnea was graded. Forced vital capacity (FVC) and forced expiratory volume in one second (FEV\textsubscript{1}) were measured in the seated position using the Gould M100B testing system. Values were selected from the best of three efforts having the greatest sum of FVC and FEV\textsubscript{1}.\textsuperscript{26} Predicted normal values were taken from Morris et al.\textsuperscript{27}

Maximal inspiratory (Pimax) and expiratory (PEmax) mouth pressure were measured using the system described by Black and Hyatt.\textsuperscript{28} Pimax was determined at residual volume, while PEmax was obtained at total lung capacity. The highest of three efforts was selected for Pimax and PEmax, and predicted normal values were taken from Black and Hyatt.\textsuperscript{29}

**Statistical Analysis**

Correlations between dimensional variables were evaluated using Pearson's correlation coefficient (r). Additional correlations were performed between ordinal variables using Kendall's tau and between ordinal and dimensional variables using Jaspert's multiserial correlation coefficient. Although these additional statistical methods are considered more appropriate for analysis of relationships involving ranked data,\textsuperscript{30} the values for these correlations are comparable to Pearson's correlation coefficients. For example, the association between FEV\textsubscript{1} and the MRC ratings was \( r = 0.46 \) for Jaspert's \( r \) (\( p < 0.0001 \)) compared to \( -0.41 \) for Pearson's \( r \) (\( p < 0.0001 \)). Therefore, we have chosen to present all results as Pearson's correlation coefficient for ease in comprehension and comparison across relationships. The ratings obtained by the pulmonary technicians were used for all calculations.

The ability of the patient to select the same integer, 0 to 4, on two applications of the MRC scale and agreement between one of the pulmonary technicians and the physician for the BDI, 0 to 12, were determined using both weighted percentage agreement and weighted kappa (\( \kappa _w \)).\textsuperscript{14,15} Since the dyspnea scores are ranked as integers, the percentage of agreement was calculated after weights were assigned to disparities among categories; values for percentage agreement can range from 0 to 100 percent.\textsuperscript{16} The \( \kappa _w \) statistic provides for disparities in ranks and also adjusts for the amount of agreement that might occur by chance.\textsuperscript{17} Values for \( \kappa _w \) can range from -1 (total disagreement) to +1 (perfect agreement); a value of 0 represents agreement expected by chance.

Since the OCD is a dimensional ranking system, the intraclass correlation coefficient was calculated to assess agreement between two repeated efforts by the patient using the OCD.\textsuperscript{18}

Differences in correlations between ratings of dyspnea (modified MRC, OCD, and BDI) and measures of lung function for the different diseases (COPD, ILD, and asthma) were assessed using a standard statistical test.\textsuperscript{19}

Values are reported as mean \( \pm \) SD.

**Results**

The patients consisted of 97 men and 56 women. Age was 57 \( \pm \) 15 years. Specific conditions and number of subjects for each subgroup include: COPD, 91; ILD, 23; asthma, 17; heart disease, 9; obesity, 6; and miscellaneous, 7 (cystic fibrosis, chest wall abnormalities, and respiratory muscle weakness). Physiologic function and dyspnea ratings for the groups of subjects are shown in Table 1. The range of scores for the dyspnea ratings indicates the wide spectrum of severity in this patient group, from no detectable impairment (OCD, 100 mm, 2 patients; MRC, grade 0, 18 patients; BDI, grade 12, 4 patients) to severe impairment (OCD, 1 mm, 1 patient; MRC, grade 4, 5 patients; BDI, grade 0, 3 patients).

Scores for the specific components of the BDI are shown in Table 2. Although the largest number of patients had only slight impairment, grade 3, for the functional component, a majority showed moderate impairment, grade 2, for magnitude of task, and ranged from light to major impairment for effort.

Observer agreement between the pulmonary technician and the pulmonary physician for the MRC scale and BDI are described in Table 3. Agreement was extremely high for the MRC scale, since the patient selected one of five possible categories as requested by two different interviewers. Weighted percentage agreement for the BDI exceeded 90 percent for the three components as well as the focal score, while values for \( \kappa _w \) ranged from 0.66 (magnitude of effort) to 0.73 (functional impairment), representing substantial agreement between the two observers using the BDI.\textsuperscript{15} The intraclass correlation coefficient for the OCD was 0.68; a value of 0.70 is considered to reflect good agreement.\textsuperscript{15}

Relationships among the three clinical methods for rating dyspnea are depicted in Table 4. The modified MRC scale, OCD, and BDI were all significantly interrelated. The magnitude of task component for the BDI showed slightly greater correlation with the MRC.
scale, whereas all three components of the BDI had similar correlations with the OCD. However, the focal dyspnea score provided greater correlations with the two other methods of grading dyspnea than any of the three single components of the BDI.

Correlations among dyspnea scores and measures of respiratory function are shown in Table 5. Ratings from the BDI and the MRC scale showed comparable associations with FVC and FEV₁, which were higher and more significant than those observed with the OCD. However, the BDI demonstrated slightly higher correlations with Plmax and PEmax than either the MRC scale or the OCD.

The relationships among respiratory function and the BDI for three major disease categories are presented in Figure 1. In COPD, the PEmax (r = 0.35; p < 0.001) and Plmax (r = 0.34; p < 0.001) showed the greatest correlations with the clinical rating for dyspnea. In patients with asthma, FVC (r = 0.78; p < 0.001) and FEV₁ (r = 0.77; p < 0.001) were highly related to the BDI. For interstitial lung disease, only Plmax (r = 0.51; p = 0.01) and FVC (r = 0.44; p = 0.03) showed significant correlations with breathlessness.

Comparisons of the correlations for lung function and dyspnea ratings among the three diseases revealed that r values were significantly higher for FVC (test statistic = −2.66; p < 0.01) and FEV₁ (test statistic = −2.44; p < 0.05) between COPD and asthma with the BDI. Similar analyses for the MRC scale and OCD showed no significant differences for correlation coefficients across diseases.

**DISCUSSION**

We believe that the clinical measurement of dyspnea is important for several reasons. First, breathlessness is frequently the patient's major complaint. Second, as a symptom, breathlessness represents the summation of pathophysiologic and psychologic factors which collectively provide a distressing signal to the patient. By quantifying dyspnea, the physician can assess its severity and its impact on a person's functional health status. Third, and probably most important, grading dyspnea is an important consideration for establishing

<table>
<thead>
<tr>
<th>Measurement</th>
<th>COPD (n = 91)</th>
<th>ILD (n = 23)</th>
<th>Asthma (n = 17)</th>
<th>Heart Disease (n = 9)</th>
<th>Obesity (n = 6)</th>
<th>Miscellaneous (n = 7)</th>
<th>Total (n = 153)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FVC, L</td>
<td>3.19 ± 1.10</td>
<td>2.68 ± 0.90</td>
<td>3.74 ± 1.58</td>
<td>3.50 ± 0.80</td>
<td>3.06 ± 1.07</td>
<td>2.49 ± 0.66</td>
<td>3.15 ± 1.13</td>
</tr>
<tr>
<td>FEV₁, L</td>
<td>1.64 ± 0.73</td>
<td>2.02 ± 0.73</td>
<td>2.70 ± 1.26</td>
<td>2.60 ± 0.60</td>
<td>2.34 ± 1.05</td>
<td>1.80 ± 0.61</td>
<td>1.91 ± 0.88</td>
</tr>
<tr>
<td>Plmax, cm H₂O</td>
<td>93 ± 31</td>
<td>99 ± 37</td>
<td>106 ± 34</td>
<td>99 ± 34</td>
<td>88 ± 34</td>
<td>87 ± 36</td>
<td>96 ± 32</td>
</tr>
<tr>
<td>PEmax, cm H₂O</td>
<td>143 ± 49</td>
<td>127 ± 44</td>
<td>151 ± 53</td>
<td>141 ± 51</td>
<td>132 ± 46</td>
<td>140 ± 58</td>
<td>141 ± 49</td>
</tr>
</tbody>
</table>

Dyspnea ratings† (median, range)

<table>
<thead>
<tr>
<th>Component</th>
<th>MRC</th>
<th>OCD</th>
<th>BDI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Functional impairment</td>
<td>18</td>
<td>17</td>
<td>40</td>
</tr>
<tr>
<td>Magnitude of task</td>
<td>3</td>
<td>29</td>
<td>87</td>
</tr>
<tr>
<td>Magnitude of effort</td>
<td>3</td>
<td>49</td>
<td>62</td>
</tr>
</tbody>
</table>

*Numbers refer to number of patients who had the corresponding score for the specific components of the baseline dyspnea index.

**Table 3—Interobserver Agreement in Ratings of Dyspnea**

| Component          | No. of Ratings | Weighted Percentage Agreement | K  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MRC</td>
<td>25</td>
<td>98</td>
<td>0.92</td>
</tr>
<tr>
<td>BDI</td>
<td>56†</td>
<td>91</td>
<td>0.73</td>
</tr>
<tr>
<td>Functional impairment</td>
<td>56†</td>
<td>91</td>
<td>0.73</td>
</tr>
<tr>
<td>Magnitude of task</td>
<td>57</td>
<td>93</td>
<td>0.68</td>
</tr>
<tr>
<td>Magnitude of effort</td>
<td>57</td>
<td>91</td>
<td>0.66</td>
</tr>
<tr>
<td>Baseline score</td>
<td>56†</td>
<td>99</td>
<td>0.72</td>
</tr>
</tbody>
</table>

*MODIFIED MEDICAL RESEARCH COUNCIL SCALE; †BASELINE DYSPNEA INDEX.
efficacy of treatment. At present, there is no objective
evidence that any pharmacologic therapy, except ox-
gen, prolongs survival or alters the decline in lung function in chronic respiratory disorders. Therefore,
treatment should be directed toward improving
symptoms such as dyspnea.

To evaluate available clinical methods for rating
dyspnea, we compared the BDI, MRC scale, and
OCD in a large number of patients with diverse
cardiorespiratory diseases and a wide spectrum of
physiologic severity. We were especially interested in
comparing the recently devised baseline dyspnea
index, which includes the components of functional
impairment and magnitude of effort affecting
breathlessness along with the magnitude of task, with
previously described methods, such as the MRC scale
and the OCD, which are based exclusively on
performance of physical tasks. This present study expands
our initial experience with the BDI1 to include 153
additional subjects complaining of breathlessness due to
a variety of different causes.

Dyspnea scores from all three methods were
significantly correlated (Table 4). Guyatt et al6 also showed
significant correlation between the BDI and OCD
($r = 0.59; p = 0.001$) in 25 patients with COPD.
However, examination of the specific scores for each of
the three components of the BDI demonstrates consider-
able differences (Table 2). For example, a patient may
require extraordinary effort to accomplish a relatively
easy task, and the corresponding ratings for these
components of the BDI would be distinctly different.
Also, the demands of an individual task may have
totally different consequences depending on a person’s
activities at work and/or home. For these reasons,
measurement of specific components affecting dys-
pnea appears to be important. In further support of this
approach, Stoller et al6 concluded that each of the
components of a modified BDI makes a distinctive
contribution to the measurement of dyspnea. Prospective
application and analysis of the specific components
of the BDI would be useful to further evaluate this
multidimensional clinical tool.

Observer agreement was satisfactory for each of the
three different clinical methods. Agreement for the
MRC scale was nearly perfect, as would be expected
when an individual patient is asked to grade his degree
of breathlessness on two occasions on the same day
using a five-point global scale. Agreement for the
OCD, administered in the same fashion, was accepta-
ble, although some patients had initial difficulty under-
standing how to use this scale. On the other hand, the
BDI was used by two different interviewers to rate
dyspnea according to responses of the patient to
specific questions. Despite this added dimension of
potential variability, both the percentage agreement
and $k$ statistics showed substantial agreement be-
tween observers. These results are comparable to
previous experience with the baseline dyspnea index in
a smaller number of subjects, all of whom had
COPD.7

Dyspnea scores obtained from the MRC scale,
OCD, and BDI correlated significantly with lung
function and respiratory muscle strength (Table 5).
However, the BDI and MRC scale showed substan-
tially higher correlations with spirometric values than
did the OCD, while the BDI had the highest correla-
tions with PImax and PEmax. These relationships
appear to be consistent with our understanding of the
sensation of dyspnea, which is related to inap-
propriateness between lung volume and muscular
output (length and tension) of the respiratory mus-
cles.8,10

The focal dyspnea score from the BDI showed
various correlations with physiologic parameters
depending on the disease category (Fig 1). However,
alyses showed statistical differences for only FVC and
FEV1 between patients with asthma and COPD. In
contrast, there were no significant differences using
the MRC scale or OCD across disease categories. These
data suggest that different pathophysiologic
processes may be important in generating or contrib-
uting to the symptom of dyspnea at least between
asthma and COPD. Additional numbers of patients
might be necessary to demonstrate other differences

Table 4—Correlations Among Three Clinical Methods for
Rating Dyspnea*

<table>
<thead>
<tr>
<th>Method</th>
<th>MRC</th>
<th>OCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRC (n = 153)</td>
<td></td>
<td>-0.53</td>
</tr>
<tr>
<td>OCD (n = 153)</td>
<td>-0.53</td>
<td></td>
</tr>
<tr>
<td>BDI (n = 153)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Functional impairment</td>
<td>-0.61</td>
<td>0.50</td>
</tr>
<tr>
<td>Magnitude of task</td>
<td>-0.67</td>
<td>0.50</td>
</tr>
<tr>
<td>Magnitude of effort</td>
<td>-0.64</td>
<td>0.48</td>
</tr>
<tr>
<td>Focal score</td>
<td>-0.70</td>
<td>0.54</td>
</tr>
</tbody>
</table>

*Correlations are statistically significant with $p < 0.001$.

Table 5—Correlations Among Dyspnea Scores and
Measures of Respiratory Function*

<table>
<thead>
<tr>
<th>Dyspnea Scores</th>
<th>FVC</th>
<th>FEV1</th>
<th>PImax</th>
<th>PEmax</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRC</td>
<td>-0.41</td>
<td>-0.42</td>
<td>-0.38</td>
<td>-0.29</td>
</tr>
<tr>
<td>OCD</td>
<td>0.16</td>
<td>0.16</td>
<td>0.28</td>
<td>0.25</td>
</tr>
<tr>
<td>BDI</td>
<td>0.41</td>
<td>0.43</td>
<td>0.43</td>
<td>0.36</td>
</tr>
</tbody>
</table>

*Values represent Pearson’s correlation coefficients. Corresponding
$p$ values are in parentheses.
for specific diseases.

We believe that the clinical measurement of dyspnea has wide potential application in the practice of medicine. The measurement process is reproducible and can be completed in less than five minutes. The cost is minimal, and a nurse, respiratory therapist, pulmonary technician, or physician can grade the severity of a patient's breathlessness. In fact, ratings of dyspnea by nonphysicians may be more accurate than those by physicians, since the patient may be less likely to be influenced by any expectations that the physician may have or express.

Evaluation of dyspnea is also an important consideration in establishing benefits of therapy. Since no data demonstrate that pharmacologic therapy, except oxygen, reduces mortality or retards the decline in lung function in patients with respiratory disease, the primary goal of treatment should be to alleviate symptoms, such as dyspnea, and to improve functional capacity. Previous studies have demonstrated the application and utility of a visual analog scale and the BDI for rating dyspnea in documenting improvement in breathlessness. Because the MRC scale, which contains five grades, may be too coarse to demonstrate distinct changes, we believe that a visual analog scale, such as the OCD, or the transition dyspnea index, which has been shown to reliably denote changes from the baseline condition, is most appropriate for statistical comparisons of response to therapy.

This study directly compared the BDI, a modified MRC scale, and the OCD for measuring dyspnea in 153 patients with breathlessness due to a spectrum of cardiopulmonary disorders. The three different approaches were all significantly interrelated. Agreement was highly satisfactory for the BDI and MRC and acceptable for the OCD. Ratings from all three methods correlated significantly with measurements of lung function and respiratory muscle strength. However, differences among correlations were observed only for the BDI between asthma and COPD. Our results demonstrate that the clinical rating of dyspnea provides quantitative information which is complementary to physiologic testing. We believe that the measurement of dyspnea can be useful in the evaluation and treatment of affected patients.

ACKNOWLEDGMENT: The authors thank T. Lentine and J. Ward for their technical assistance and for applying the clinical methods to grade dyspnea in this study.

Appendix A—Modified Medical Research Council Dyspnea Scale*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not troubled with breathlessness except with strenuous exercise</td>
</tr>
<tr>
<td>1</td>
<td>Troubled by shortness of breath when hurrying on the level or walking up a slight hill</td>
</tr>
<tr>
<td>2</td>
<td>Walks slower than people of the same age on the level because of breathlessness or has to stop for breath when walking at own pace on the level</td>
</tr>
<tr>
<td>3</td>
<td>Stops for breath after walking about 100 yards or after a few minutes on the level</td>
</tr>
<tr>
<td>4</td>
<td>Too breathless to leave the house or breathless when dressing or undressing</td>
</tr>
</tbody>
</table>

*From ATS News 1982; 8:12-16.

Appendix B

OXYGEN-COST DIAGRAM

| brisk walking uphill |  |
| medium walking uphill |  |
| slow walking uphill |  |
| bedmaking |  |
| washing yourself sitting |  |
| 0 |  |
| brisk walking on the level |  |
| heavy shopping |  |
| medium walking |  |
| light shopping |  |
| slow walking on the level standing |  |
| sleeping |  |

# APPENDIX C—Baseline Dyspnea Index*

## Functional Impairment

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>No Impairment. Able to carry out usual activities and occupation without shortness of breath.</td>
<td>The patient can do all usual activities without difficulty.</td>
</tr>
<tr>
<td>3</td>
<td>Slight Impairment. Distinct impairment in at least one activity but no activities completely abandoned. Reduction, in activity at work or in usual activities, that seems slight or not clearly caused by shortness of breath.</td>
<td>The patient may need to take occasional pauses while doing usual activities.</td>
</tr>
<tr>
<td>2</td>
<td>Moderate Impairment. Patient has changed jobs and/or has abandoned at least one usual activity due to shortness of breath.</td>
<td>The patient has changed jobs due to shortness of breath.</td>
</tr>
<tr>
<td>1</td>
<td>Severe Impairment. Patient unable to work or has given up most or all usual activities due to shortness of breath.</td>
<td>The patient is unable to work due to shortness of breath.</td>
</tr>
<tr>
<td>0</td>
<td>Very Severe Impairment. Unable to work and has given up most of all usual activities due to shortness of breath.</td>
<td>The patient is unable to work and has given up all usual activities due to shortness of breath.</td>
</tr>
</tbody>
</table>

## Magnitude of Task

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Extraordinary. Becomes short of breath only with extraordinary activity such as carrying very heavy loads on the level, lighter loads uphill, or running. No shortness of breath with ordinary tasks.</td>
<td>During strenuous exercise, the patient becomes short of breath.</td>
</tr>
<tr>
<td>3</td>
<td>Major. Becomes short of breath only with major activities as walking up a steep hill, climbing more than three flights of stairs, or carrying a moderate load on the level.</td>
<td>The patient becomes short of breath while hiking up a steep hill.</td>
</tr>
<tr>
<td>2</td>
<td>Moderate. Becomes short of breath with moderate or average tasks such as walking up a gradual hill, climbing less than three flights of stairs, or carrying a light load on the level.</td>
<td>The patient becomes short of breath while walking up a gradual hill.</td>
</tr>
<tr>
<td>1</td>
<td>Light. Becomes short of breath with light activities such as walking on the level, washing, or standing.</td>
<td>The patient becomes short of breath while walking on the level.</td>
</tr>
<tr>
<td>0</td>
<td>No Task. Becomes short of breath at rest, while sitting, or lying down.</td>
<td>The patient becomes short of breath while sitting.</td>
</tr>
</tbody>
</table>

## Magnitude of Effort

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Extraordinary. Becomes short of breath only with the greatest imaginable effort. No shortness of breath with ordinary effort.</td>
<td>The patient becomes short of breath during the most strenuous activities.</td>
</tr>
<tr>
<td>3</td>
<td>Major. Becomes short of breath with effort distinctly submaximal, but of major proportion. Tasks performed without pause unless the task requires extraordinary effort that may be performed with pauses.</td>
<td>The patient becomes short of breath during tasks that require extraordinary effort.</td>
</tr>
</tbody>
</table>

## References

8. Task group on surveillance for respiratory hazards in the occupational setting, Brooks SM (Chairman). Surveillance for respiratory hazards. ATS News 1982; 8:12-16

*From Chest 1984; 85:751-58.
Continuing Problems in Critical Care

The Johns Hopkins Medical Institutions will present this medical education program May 9-10 at the Sheraton Inner Harbor Hotel, Baltimore. For information, contact Ms. Pamela E. Macedonia, Program Coordinator, Office of Continuing Education, The Johns Hopkins Medical Institutions, Turner 22, 720 Rutland Avenue, Baltimore 21205 (301:955-6085).