The effect of cardiac rehabilitation on quality of life, anxiety and depression in patients with congestive heart failure; a randomized controlled trial, short-term results

Europa Medicophysica Best MFPRM Paper Award Winner

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Aim. One of the major treatment goals in congestive heart failure (CHF) is to preserve the functional level of the patient and to improve psychosocial factors. For these purposes, exercise training is recommended for the management of CHF. With this background, the aim of this study is to investigate the effects of aerobic exercise on quality of life, depression and anxiety levels in a Turkish patient population with CHF.

Methods. Sixty patients with CHF in stage II-III according to NYHA were included. Patients were randomly assigned either to a cardiac rehabilitation group or to a control group. Twenty-seven patients were allocated to a weekly aerobic walking program on treadmill, thrice a week for 8 weeks, and 26 patients did not receive any exercise training. Both groups were assessed by an ergospirometric exercise test, Hacettepe Quality of Life Questionnaire (HQoL), Beck Depression Inventory (BDI), Spielberger Trait Anxiety Inventory (STAI) at baseline and at the end.

Results. Forty-four patients (treatment group: 23) completed the study. In the treatment group, significant increases in peak oxygen consumption, exercise time and metabolic equivalents (MET) levels were attained (P=0.001, P=0.001, P=0.003, respectively). Significant decreases in BDI (P=0.004) and STAI subgroups (P=0.049, P=0.023, respectively) were observed, whereas there was no change in HQoL scores. In the control group, there was no difference between baseline and 8th week evaluation in all parameters.

Conclusion. Patients with CHF tolerated aerobic exercise programs well. This resulted with improvement in both physical and psychologic wellbeing, but not in quality of life in the short term.

Key words: Heart failure, congestive - Tests, treadmill - Depression - Anxiety - Rehabilitation - Quality of life.

Congestive heart failure (CHF) is described as an imbalance in pumping function in which the heart fails to maintain adequate circulation of blood due to many cardiac diseases or disorders that cause either systolic or diastolic dysfunction with reduced ventricular filling and reduced myocardial contractility. This condition is associated with high morbidity and mortality rates. In Turkey, the incidence of CHF is not known exactly, but it is thought that it is increasing over time due to the increasing number of patients with coronary artery disease in the population.

Recent studies reported increased levels of depression and anxiety and a decrease in quality of life (QoL) in patients with heart failure. High mortality and morbidity rates and inactivity due to low functional capacity associated with CHF is not astonishing since patients typically report psychological distress, reduced social functioning, and diminished QoL. Impaired QoL, depression and anxiety have negative
impacts not only on daily social, domestic, work and leisure activities, but also on rehospitalization and death rates. Anxiety may negatively affect the cardiac output of patients with CHF by increasing heart rate, which has a negative effect on coronary artery perfusion through shorter diastole, thus affecting clinical status as well.

One basic aim of the treatment strategies in CHF should be to preserve the functional levels of patients in order to achieve return to work, independence in daily living activities and improved psychosocial factors. To attain these purposes, nonpharmacological treatment strategies, such as exercise training, are also recommended for the management of CHF.

Until the last decade, patients with CHF had been avoided doing exercise for the fear of decompensation. Recently, with better understanding of the pathophysiology of CHF and benefits of exercise, cardiac rehabilitation programs developed for patients with myocardial infarction (MI) have been improved and adjusted to patients with CHF.

This approach was supported by many studies which showed the utility of exercise interventions in CHF since exercise improved maximal exercise capacity and exercise hemodynamics, QoL and psychological status, decreased symptoms and hospital admissions. Patients with moderate to severe heart failure in whom exercise intolerance interferes with daily life would benefit most from increased fitness. However, these patients are frequently excluded from exercise programs although satisfactory recommendations for exercise testing and guidelines for cardiac rehabilitation in CHF exist.

Especially older adults are not accustomed to doing regular exercise. In addition to that, for many years patients with CHF were prevented from doing physical activity and exercises. With this background, the aim of this study is to investigate the effects of aerobic exercise on QoL, depression and anxiety levels in a Turkish patient population with CHF.

Materials and methods

Patients

Sixty ambulatory patients with CHF diagnosed and followed by the Cardiology Department of Ankara University Medical School were recruited to the study. Inclusion criteria were to have a stable heart failure for at least 3 months (primarily systolic dysfunction), to be in functional class II/III according to the New York Heart Association (NYHA) classification, and to sign written informed consent. Exclusion criteria were the presence of obstructive cardiomyopathy, exercise-induced ischemia or arrhythmias, uncontrolled arrhythmias or hypertension, resting blood pressure more than 200/120 mmHg, aortic stenosis, recent MI or a history of surgery within the previous 4 months, and symptomatic angina, peripheral artery disease, active infection, exercise limitation due to neuromuscular and/or musculoskeletal diseases, uncontrolled systemic diseases such as diabetes mellitus, thyrotoxicosis, and major psychiatric disease. Patients who were illiterate or unable to answer the questions of health-related QoL, depression, and anxiety questionnaires were also excluded.

After enrollment, patients were randomized by using the sequence of random numbers either to an 8 weeks supervised aerobic exercise training group or to a control group. All patients continued their recommended medication and diet during the study. They were all on diuretics, angiotensin converting enzyme inhibitor (ACEI) drugs and some of them on digoxin and β-blockers. None of the patients was taking antidepressant drugs.

Study design

In this randomized controlled trial, cardiopulmonary fitness level, QoL, depression and anxiety levels of all patients were assessed at the beginning and at the end of the study (8 weeks later) after randomization. The control group continued their medication and were encouraged to perform their routine daily activities, whereas the exercise group participated in an 8 week supervised aerobic exercise training program at the Cardiopulmonary Rehabilitation Unit of Physical Medicine and Rehabilitation Department in addition to their usual medication.

Cardiopulmonary exercise test

Cardiopulmonary fitness levels of patients were assessed by an ergospirometric exercise test performed on a treadmill using a graded exercise test protocol (modified Bruce protocol) (Marquett Advanced Exercise System, MAX I, and Vmax 29, Sensormedics, Yorba Linda, CA). Prior to exercise testing, dynamic lung function tests were performed. During exercise
testing, maximal heart rate (MHR), systolic and diastolic blood pressure (sBP and dBP), total exercise time and metabolic equivalents (METs) were recorded and 12 lead ECG was monitored. Brachial blood pressure at heart level was measured at 3-min intervals with a manual cuff manometer. Measurements at peak exercise and at anaerobic threshold included pulmonary ventilation (VE\textsubscript{AT} and VE\textsubscript{peak} -L/min), oxygen consumption (VO\textsubscript{2AT} and VO\textsubscript{peak} -mL/kg/min), carbon-dioxide production (VCO\textsubscript{2AT} and VCO\textsubscript{peak} -L/min). The measurements during the cardiopulmonary exercise test were evaluated as secondary outcome measures since improvement in fitness parameters is a goal in order to obtain benefits within the scope of this study. The exercise test was symptom-limited and terminated when patients felt physically exhausted, developed dyspnea, fatigue or in any case of inconvenience. In addition, premature ending criteria for exercise tests were adhered, too.\textsuperscript{19} A pulse oximeter with a finger probe was used to monitor oxygen saturation before, during and after the exercise testing.

Aerobic exercise training

An individualized aerobic training program in order to increase patients' functional capacity was based on progressive walking on treadmill 3 times a week during 8 weeks. Each session lasted approximately 1 h and was performed under the supervision of a physiotherapist experienced in the field. Patients walked on a treadmill with an adjusted speed and inclination to attain recommended target heart rate. Target heart rate was calculated individually as 60-70\% of the patient's MHR. Initial training heart rate was determined according to a baseline maximal exercise test and further gradually modified according to the patients' adaptation to the training program. Every training session began with 5 min warm-up and ended with 5 min cool-down periods.

Primary outcome measures

1) Beck's Depression Inventory (BDI): BDI \textsuperscript{20} was used to assess depression. It is a structured self report 21-item scale used to assess depressive symptomatology such as the severity of affective, cognitive, behavioral, and physiological symptoms of depression. Each item consists of 4 self evaluative statements of increasing severity. The total score of BDI can range from zero, suggesting no depression, to a maximum score of 63, indicating a severe state of clinical depression. The following classification, suggested by Beck, is used to guide decision making in clinical and research settings; 0-9 absence of or minimal depression; 10-18 mild to moderate depression; 19-29 moderate to severe depression; 30-63 severe depression.\textsuperscript{21} Validation, responsibility and reliability study of BDI for the Turkish population was done by Hisli \textit{et al.}\textsuperscript{22}

2) State (STAI) and the Trait Anxiety (TRAI) Inventories: anxiety was assessed by the State (STAI) and the Trait Anxiety (TRAI) Inventories,\textsuperscript{23} both are 20-item self-administered scales. The STAI assesses momentary emotional state characterized by strain, concern, nervousness, inner disquiet, and fear of future occurrence. The TRAI assesses proneness to develop a state of anxiety as an element of personality. The STAI state scale is scored on 4 levels of anxiety intensity from 1 "not at all" to 4 "very much" and with a total score between 20 and 80. A validation and reliability study of STAI for the Turkish population was also done.\textsuperscript{24}

3) Hacettepe Quality of Life Questionnaire (HQoL): disease specific QoL is assessed by the HQoL (Appendix). This questionnaire was developed by Hacettepe University, School of Medicine for the Turkish population and its reliability, responsibility and validity was proved.\textsuperscript{25} It is also translated into English and the validity and reliability study was done in USA.\textsuperscript{26} The HQoL is a 46-item self-report scale with each item rated on a 5 point scale. Positive questions are scored from 5 to 1 and negative questions are scored in reverse order. It is designed to provide daily assessments along several of the following domains of QoL; general wellbeing, physical activity and symptoms, sleep dysfunction, sexual function, cognitive function and social participation and appetite.

Statistical analysis

The data were evaluated by using the statistical package SPSS 11.0 for Windows. All data were expressed as mean values and standard deviations. Fischer's exact test and Student's t-test were used to analyse and compare the clinical and demographic properties of the groups. Wilcoxon signed-rank test was used to compare the data which did not have a normal distribution (HQoL, STAI and VO\textsubscript{peak} -mL/kg/min). Repeated measures of ANOVA were used to compare the data which have a normal distribution. The level of significance was determined to be 0.05.
Results

Subjects

After enrollment, 7 patients out of 60 were found to be ineligible. Yet, 27 patients were randomized to the exercise group and 26 to the control group. Two patients from the exercise group and 1 patient from the control group were dropped due to ECG criteria observed during exercise testing. In the control group, cardiac decompensation and uncontrolled ventricular arrhythmia occurred in 2 patients, 1 patient died due to sudden cardiac arrest, and 1 patient dropped out voluntarily, so 4 patients dropped out from the control group. In the exercise group, 1 patient dropped out because of pneumonia and 1 patient dropped out voluntarily because of incompliance to exercise. So, 23 patients in the exercise group (6 females, 17 males) and 21 patients in the control group (6 females, 15 males) completed the study (Figure 1). The mean age of the patients was 58.3±10.5 years in the control group and 60.4±11.0 years in the exercise group. There were no statistical differences in clinical and demographic characteristics regarding age, gender, work status, education and cardiac status according to NYHA classification between the groups (Table I). Baseline maximal exercise testing was ended because of muscular fatigue in 42 patients, anginal pain in 1, and frequent ventricular premature complexes in the remaining one. None of the patients had any immediate adverse events during the training program and no severe long-term adverse events occurred, either. All the remaining patients in the exercise group complied to the training program well.

Maximal exercise testing

Test duration, MET values, resting and maximal heart rates, resting and maximal blood pressures, measurements at peak exercise and at anaerobic threshold including pulmonary ventilation (VE_{AT} and
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$\dot{V}E_{peak}$ (L/min), oxygen consumption ($VO_{2AT}$ and $VO_{2peak}$ (mL/kg/min)), carbon dioxide production ($VCO_{2AT}$ and $VCO_{2peak}$ (L/min)) were evaluated as exercise test parameters. In the exercise training group, significant improvements were observed in peak oxygen consumption, test duration and MET levels ($P=0.001$, $P=0.018$ and $P=0.002$ respectively). In the control group, there were no statistical differences in any of the parameters (Table II).

Psychological evaluation and quality of life

Significant improvement occurred in BDI scores in the exercise training group ($P=0.02$). In the control group, scores were higher at the end of the study when compared to baseline, but they did not reach a significant level. There was a significant difference in BDI scores between groups in favor of the exercise group at the end of the study ($P=0.004$). In the exercise group, there were significant improvements in both STAI and TRAI scores ($P=0.023$ and $P=0.049$), but no difference was detected in the control group. There was a significant difference in TRAI scores between groups at the end of the study ($P=0.034$). There were no statistical differences within and between the groups in HQoL scores (Table III). On the other hand, when subitems of the HQoL related to physical activity were analyzed, there was a significant difference in the

### Table I.—Clinical and demographic characteristics of the groups.

<table>
<thead>
<tr>
<th></th>
<th>Control group (n=21)</th>
<th>Exercise group (n=23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>— Female</td>
<td>6 (28.6%)</td>
<td>6 (26.1%)</td>
</tr>
<tr>
<td>— Male</td>
<td>15 (71.4%)</td>
<td>17 (73.9%)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>60.4±11.0</td>
<td>58.3±10.5</td>
</tr>
</tbody>
</table>

| Education              |                      |                       |
| — None                 | 29.4%                | 17.6%                 |
| — Primary              | 47.1%                | 41.2%                 |
| — Midschool            | 23.5%                | 17.6%                 |
| — Highschool           | 0%                   | 11.8%                 |
| — University           | 0%                   | 11.8%                 |

| Work                   |                      |                       |
| — Unemployed           | 76.5%                | 70.6%                 |
| — Employed             | 23.5%                | 29.4%                 |

| NYHA Classification    |                      |                       |
| — Class 2              | 29.4%                | 5.9%                  |
| — Class 2.5            | 29.4%                | 47.1%                 |
| — Class 3              | 41.2%                | 47.1%                 |

### Table II.—Exercise test parameters of the groups.

<table>
<thead>
<tr>
<th></th>
<th>Control group (n=21)</th>
<th>Exercise group (n=23)</th>
<th>$P^*$</th>
<th>$P^†$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test duration (min)</td>
<td>9.7±1.7</td>
<td>10.7±1.1</td>
<td>0.519</td>
<td>0.042</td>
</tr>
<tr>
<td>MET</td>
<td>6.3±1.6</td>
<td>6.5±1.4</td>
<td>0.152</td>
<td>0.002</td>
</tr>
<tr>
<td>Maximal heart rate (bpm)</td>
<td>140±22.9</td>
<td>141.2±23.6</td>
<td>0.807</td>
<td>0.405</td>
</tr>
<tr>
<td>$VO_{2AT}$ (L/min)</td>
<td>1.0±0.3</td>
<td>1.1±0.4</td>
<td>0.570</td>
<td>0.272</td>
</tr>
<tr>
<td>$VO_{2peak}$ (mL/kg/min)</td>
<td>22.6±6.3</td>
<td>24.6±5.8</td>
<td>0.155</td>
<td>0.312</td>
</tr>
</tbody>
</table>

*Statistically significant. †Difference within groups. ‡Difference between groups at 8-week. $VO_{2AT}$ (L/min): oxygen consumption at anaerobic threshold; $VO_{2peak}$ (mL/kg/min): peak oxygen consumption.

### Table III.—Psychological and quality of life assessments of the groups.

<table>
<thead>
<tr>
<th></th>
<th>Control group (n=21)</th>
<th>Exercise group (n=23)</th>
<th>$P^*$</th>
<th>$P^†$</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>20.2±12.5</td>
<td>22.5±11.8</td>
<td>0.245</td>
<td>0.004</td>
</tr>
<tr>
<td>STAI</td>
<td>45.8±16.5</td>
<td>44.6±14.4</td>
<td>1.000</td>
<td>0.057</td>
</tr>
<tr>
<td>TRAI</td>
<td>61.8±11.5</td>
<td>62.8±8.0</td>
<td>0.776</td>
<td>0.025</td>
</tr>
<tr>
<td>HQoL</td>
<td>129.3±10.3</td>
<td>125.3±17.6</td>
<td>0.526</td>
<td>0.786</td>
</tr>
</tbody>
</table>

*Statistically significant. †Difference within groups. ‡Difference between groups at 8-week. BDI: Beck Depression Inventory; STAI: Spielberger State Anxiety Inventory; TRAI: Spielberger Trait Anxiety Inventory; HQoL: Hacettepe Quality of Life Questionnaire.
exercise training group but not in the control group (P=0.003, P=0.157 respectively).

**Discussion**

Results of the present study showed that an 8-week aerobic exercise program improved the anxiety and depression levels of the patients with CHF. It was proved that exercise training leads to central (cardiac) and principally peripheral (skeletal muscle) beneficial adaptations and these give rise to significant improvements in exercise tolerance and symptoms in cardiac patients.27-30

Several reports previously showed that exercise training is safe and beneficial in compensated CHF.26, 31-34 Similar to these results, 8 week exercise training led to a significant increase in patients’ aerobic and functional capacity, resulting in a 15% increase in VO2peak, 20% in MET, and 17% in exercise test duration in this study.

The primary aim of the study was to explore the impact of improved exercise capacity on QoL, depression and anxiety levels of the patients with CHF and an improvement was observed in the depression and anxiety levels of the exercise group.

Several studies demonstrated that patients with CHF suffer from depression and anxiety 4, 6, 10, 35-37 that cause significant functional limitation.36 The limitations associated with depression may be additional to the limitations associated with existing medical illness. Physical performance is closely related to psychological disturbances, such as anxiety and depression.3, 38, 39 Therefore, cardiac rehabilitation programs attempt to restore and maintain the optimal functioning level of patients with CHF, regarding physical, psychological, social and vocational aspects by means of exercise training and education.17, 40

Although the patients in the exercise group said that they felt better with exercising, the QoL levels were found to be unchanged, similar to the results of van den Berg et al.32 Most of the studies showed improvements in QoL with rehabilitation.27, 31-34, 41-47 The absence of change in the QoL questionnaire scores is somewhat surprising. It was suggested in Kavanagh et al.’s 34 study that initial improvements in aerobic capacity and symptoms occur at 4 weeks and the maximum time required to attain peak responses in physical and cardiopulmonary variables was 16 and 26 weeks, respectively, before reaching a plateau. Expected changes in QoL may also occur in the long term. Sometimes, no strong correlation exists between measures of health-related QoL and either central haemodynamic abnormalities or exercise intolerance.48 Furthermore, the results of a review suggest that treatment-related improvement in exercise capacity in patients with CHF was not consistently associated with improvement in all domains of health-related QoL.43 The primary health-related QoL domain affected by treatment appears to be the performance of daily activities, which may or may not be accompanied by enhanced well-being. Yet, an improvement was observed in physical activity items of the QoL scale in the exercise group in this study, but this improvement did not result in a difference in statistical analysis of the overall QoL scores. So, maybe exercise training mostly affects items related to physical activities.

It is very important to choose the most relevant questionnaire especially when it is one of the primary outcome measures. The questionnaire which fits the patient population best should be chosen. For example, in most QoL questionnaires “return to work” is an important item. For some people being together with their family is sufficient for happiness, while for others working and having an active role in social life is unavoidable. Therefore, recognizing the reason of sedentary life in patient population is vital. It is important to discriminate whether it is due to the patient’s choice to prevent physical activities with the fear of deterioration or they are anyhow sedentary people in their usual life. Because of this situation the results of the questionnaire may be sometimes misleading.

In our study, we used the HqoL questionnaire. It consists of items related to sexual life, work status and social life. This questionnaire was chosen since it is the only heart disease specific questionnaire which was shown to be valid, reliable and responsive in the Turkish population. The patient population participated to our study were mostly old, retired or housewives so they had an inactive life style. Considering these patients’ characteristics and the study results, may be HqoL questionnaire was not the appropriate tool to evaluate our patient population. In addition to that, the HqoL questionnaire may not be sufficient to show the differences in short-term or there may be no difference in patients’ QoL in the short term by means of exercise training at all.
Conclusions

In conclusion, exercise training is thought to be effective on decreasing depression and anxiety levels of patients. Encouraging the selected stable patients with CHF to do aerobic exercises under the supervision of a trained team, preferably a rehabilitation team, must be part of a routine treatment protocol in CHF.

References


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THE EFFECT OF CARDIAC REHABILITATION ON QUALITY OF LIFE, ANXIETY AND DEPRESSION IN PATIENTS


APPENDIX
Hacettepe Quality of Life Questionnaire

Below, you are given a collection of statements that people use to describe their status. After reading each statement carefully, please indicate how much each statement applies to your own status by marking the appropriate box.

<table>
<thead>
<tr>
<th>Very good</th>
<th>Good</th>
<th>Neither good nor bad</th>
<th>Not good</th>
<th>Very bad</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>E</td>
</tr>
</tbody>
</table>

Please answer the following questions considering your recent status.

1) I feel healthy
2) I have frequent palpitations
3) I try to rest on every occasion
4) I have no difficulty performing tasks that require physical strength
5) I can take care of myself on my own
6) I try to put off my chores as much as possible
7) I have frequent headaches
8) I do not have any sleeping problems I sleep comfortably
9) I have regular meals
10) I like to walk whenever it is possible
11) I find it hard to start something
12) I don’t like to be inside crowded places like the cinema, theatre etc
13) I feel calm and serene
14) I just want to slumber at home
15) I am a lone, and can not concentrate
16) I do not have any problem in my sexual life
17) I often wake up at night and have trouble sleeping afterwards
18) My job efficiency has diminished, I have begun to make many mistakes
19) My family life is peaceful
20) I have a comfortable work environment

Continued
<table>
<thead>
<tr>
<th></th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>21) I cannot enjoy sexual intercourse</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>22) I am pleased with myself</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>23) I have difficulty climbing stairs and walking uphill</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>24) I can walk as long as I want on level ground</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>25) My sexual desire has diminished</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>26) I find doing even simple chores difficult</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>27) I have no pain at all</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>28) I can not fall asleep easily</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>29) I engage in leisure time activities that I enjoy</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>30) I have a poor appetite and have to force myself to eat</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>31) I am enthusiastic about my work</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>32) I have no financial problems</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>33) I feel tense, I easily get upset even about simple things</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>34) My poor health prevents me from enjoying sex</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>35) I feel energetic when I wake up in the morning</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>36) I do not feel like spending time with friends</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>37) I am forgetful, and have difficulty remembering names</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>38) I follow the news I am interested in world events</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>39) I have become slower in doing things</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>40) Everything seems meaningless to me, I feel unhappy</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>41) I enjoy being with my family</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>42) I do not feel sick</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>43) My weight is stable</td>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>