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INACTIVITY BEHAVIOR AND EXERCISE BARRIERS IN PATIENTS WITH BEHÇET DISEASE

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Abstract

Aim: Impaired quality of life, aerobic capacity, respiratory function and life satisfaction, sleep disorders, depression, anxiety, and fatigue are commonly seen in patients with Behçet disease (BD), similar to other rheumatic diseases. Considering that regular physical activity affects the survival of patients and healthy people, it is important to determine the factors affecting physical activity level and exercise barriers. The purpose of this study was to investigate physical activity levels and exercise barriers in patients with BD.

Material and Methods: Fourty five patients were included in the study. Physical activity level, exercise barriers, fatigue, depression, pain, quality of life, and aerobic capacity were evaluated using the International Physical Activity Questionnaire (IPAQ), Exercise Barriers and Benefits scale, Fatigue Severity Scale, Beck Depression inventory, Behçet Disease Quality of Life Questionnaire (BDQoL), visual analog scale, and 6-min walk test, respectively. Spaerman's correlation coefficient was used to investigate the relationships between exercise barriers and other parameters.

Results: Physical activity levels significantly correlated with both exercise benefits (rho =0.320) ($p>0.05$) and exercise barriers (rho =-0.345). BDQoL scores also correlated significantly with exercise barrier scores (rho =0.338) ($p<0.05$). No significant relationships were observed for the other parameters. Additionally, IPAQ demonstrated that 22 (48.8%) patients had low levels of physical activity.

Conclusion: Considering the negative effects of physical inactivity, patients with BD should be encouraged to exercise. In addition, the reasons for physical inactivity should be investigated.

Keywords: Behçet disease, physical activity level, exercise barriers

INTRODUCTION

Behçet disease (BD) is a chronic, inflammatory, rheumatic disease that is characterized by oral aphthous ulcers and major organ involvement, including the ocular, musculoskeletal, gastrointestinal, and central nervous systems. Gender and the type of organ involvement may affect the prognosis of the disease. While papulopustular lesions and ocular and vascular involvement are more common in male patients, genital ulcers and erythema nodosum are more frequent disease

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manifestations in female patients. BD has a more aggressive course in male patients with early onset of the disease (1).

BD has negative effects on the physical and mental health of patients, resulting in impaired quality of life. When compared with the healthy population, it was observed that fatigue, depression, and anxiety were more frequent in BD patients (2,3). Bodur et al. (4) reported that quality of life, life satisfaction, and psychological well-being were impaired in patients with BD.

Physical activity can be described as all body movements that require energy expenditure over basal metabolism and contraction of the skeletal muscle. Promoting physical activity level is one of the major goals in the management of patients with rheumatic diseases because of the negative impact of sedentary lifestyle due to disease (5). Physical inactivity is a general health problem and a risk factor for some diseases such as coronary artery disease, type II diabetes mellitus, hypertension, and obesity (6). A decrease in the physical activity level in patients with rheumatic diseases has been observed in previous studies. Additionally, reasons for physical inactivity were investigated in these studies and some disease-related and general factors were concluded to reduce physical activity (7-9). Clinical symptoms associated with rheumatic diseases, such as periodic pain, chronic fatigue, depression, and decreased aerobic capacity, are reported to be responsible for physical inactivity (10). Non-disease-related symptoms, such as lack of time, motivation, and family responsibilities, are also responsible for physical inactivity and exercise barriers (11). Individuals with several rheumatic diseases such as rheumatoid arthritis (RA), ankylosing spondylitis (AS), and systemic lupus erythematosus (SLE) were found to be physically inactive due to general barriers as well as fatigue, depression, pain, and morning stiffness (7,8,12). However, to the best of the author's knowledge, no study has investigated physical activity levels and exercise barriers in patients with BD.

Impaired quality of life, aerobic capacity, respiratory function, life satisfaction, sleep disorders, depression, anxiety, and fatigue are commonly seen in patients with BD as in other rheumatic diseases (4,13,14). Because of these symptoms, it is possible and expected that patients with BD have low physical activity levels. The World Health Organization declared that physical inactivity is the fourth most common cause of global mortality and is responsible for three million deaths per year. Considering that regular physical activity affects the survival of patients and healthy people, it is important to determine the factors affecting physical activity level and exercise barriers. Therefore, the aim of this study was to investigate the physical activity level and exercise barriers in patients with BD.

MATERIAL AND METHODS

This study was approved by Gazi University Clinical Research Ethics Committee, referenced 25. An informed consent form was completed by the participants.

Patients: This study included 45 patients who were being followed up at Gazi University Faculty of Medicine, Department of Rheumatology with BD who met the diagnostic criteria proposed by the International Study Group of BD. All patients were in the age of 18-65 years. Patients who were illiterate, pregnant, diagnosed with malignancy, accompanied by any other rheumatic diseases except for fibromyalgia, had changed medical treatment in the last 3 months, and had dysfunction that limited physical activity such as severe neurological impairment, immobility, or cooperation deficits were excluded from the study.

Outcomes: Age, body mass index, vocation, smoking/alcohol habits, drug use, duration of the disease, personal background, and family histories were recorded. Whether patients had an exercise habit or not was also recorded. Physical activity level, exercise barriers, fatigue, depression, disease activity, pain, quality of life, sleep disorders, and aerobic capacity were evaluated in this study.

Physical Activity Level: Physical activity level was assessed using the Turkish version of the International Physical Activity Questionnaire (IPAQ)-Short Form. This questionnaire obtains information about how much time is spent while walking and in moderate and vigorous activities in the last 7 days. There is also a separate section on sitting duration (15).

Exercise Barriers: Exercise barriers were evaluated using the Turkish version of the Exercise Benefits/Barriers Scale (EBBS). It consists of 43 items including benefits of exercise (e.g., I enjoy exercise) and barriers (e.g., Exercising takes too much of my time). Benefits subscale scores range between 29 and 116, whereas barriers subscale scores range between 14 and 56 (16).

To examine the exercise barriers in more detail, the questions in the exercise barriers section of EBBS were divided into five sub-parameters: EBBS Lack of Time, EBBS Fatigue, EBBS Emotional Factors, and EBBS Lack of Support. Results of 4^{th},14^{th},24^{th} and 37^{th} questions were summed and divided to four to calculate EBBS Lack of Time, 6^{th},$19^{th,}$ and 40^{th} questions were summed and divided to three to calculate EBBS Fatigue, 9^{th},$16^{th,}$ and 42^{th} questions were summed and divided to three to calculate EBBS Lack of Facilities, 12^{th} and 28^{th} questions were summed and divided to two to calculate EBBS Emotional Factors, 21^{th} and 33^{th} questions were summed and divided to two to calculate EBBS Lack of Support. The minimum and maximum scores ranged

between 1 and 4 for EBBS Lack of Time, EBBS Fatigue, EBBS Emotional Factors, and EBBS Lack of Support. Higher scores indicate greater perception of barriers to exercise.

Fatigue: The Turkish version of the Fatigue Severity scale (FSS) was used to evaluate fatigue in patients. This scale consists of nine questions; each question is scored from 1 to 7, in which a high FSS score indicates severe fatigue (17).

Depression: Depression was assessed using the Turkish version of the Beck Depression inventory (BDI), which consists of 21 items related to depressive symptoms, such as pessimism, sense of failure, guilt, dissatisfaction, sleep, appetite, and fatigue. Each item is scored between 0 and 3. Higher scores indicate increased severity of depression. According to this scale, 1-10 points are defined as normal, scores between 11 and 16 indicate mild mental distress, 17-20 indicate the patient is at the border points for clinical depression, 21-30 indicate moderate depression, and severe depression scores between 31-40 and 40 points above are interpreted as very serious depression (18).

Pain: The Turkish version of the Short Form McGill Pain Questionnaire was used to evaluate the type and severity of pain. This questionnaire consists of 11 sensory and 4 affective descriptive words. These 15 words are scored between 0 and 4. Therefore, three types of pain scores (sensory, affective, total = sensory + affective) are obtained. In the McGill Pain Questionnaire, the current level of pain is measured by Visual Analog Scale (VAS) and Likert scale consisting of 6 points (0= no pain, 1= mild, 2= irritating, 3= bothersome, 4= terrible, 5= unbearable) (19).

Quality of life: Quality of life was assessed using the Behçet Disease Quality of Life Questionnaire. It consists of 15 items about difficulties in social, psychological, and daily living effects for patients with BD. A higher score indicated a high quality of life level (4).

Sleep disorders: Sleep disorders were evaluated using the Turkish version of the Pittsburgh Sleep Quality Index. It is a self-assessment questionnaire that evaluates sleep quality and disturbances over a 1-month time interval. It consists of 19 self-rated items and five questions rated by bedpartner or roommate, which is not included in the total score. A higher score indicates worse sleep quality (20).

Disease activity: Behçet Disease Current Activity Form (BDCAF) was used to evaluate disease activity (21). BDCAF scores clinical features of patients in the last 4 weeks. It has 12 components: headache, oral ulcer, genital ulcer, arthralgia, erythema, skin pustule, arthritis, nausea/vomiting/abdominal pain, diarrhea or frank blood per rectum, eye symptoms, and nervous and vascular system symptoms. Each component is scored as absent (0 point) or present (1 point), and the final BDCAF score is the sum of all components with a maximum of 12. A Turkish version of BDCAF has been validated (22).

Aerobic capacity: Aerobic capacity was assessed with a 6-min walk test (6 MWT). 6 MWT is the distance required to a fast-paced walk on a flat floor of length 30 m. The aim of the 6 MWT is to walk for as long as the patient can walk in 6 min. Dyspnoea and fatigue levels are recorded at the end of the test (23).

Statistical Analysis

Data analyses were performed using IBM® SPSS® Statistics software (Version 25.0. Armonk, NY: IBM Corp.). The normal distribution of the data was investigated using the Shapiro-Wilk test and histograms. Non-parametric analyses were used for further analyses because the data showed a nonnormal distribution. Continuous variables obtained in the study were expressed as median and Interquartile Range IQR. Categorical variables are summarized as numbers and percentages. Spearman correlation coefficients between subjects' EBBS sub-scores and IPAQ, FSS, BDI, VAS, BDQoL, 6 MWT, BDCAF, and PSQI results. Correlation coefficients were interpreted as excellent (rho> 0.90), good (0.90> rho> 0.71), moderate (0.70> rho> 0.51), fair (0.50> rho> 0.31), and poor (rho≤ 0.30) (24). A p-value of <0.05 was assumed to indicate a statistically significant correlation.

RESULTS

The study was completed with forty-five (18 females, 27 males) participants with a median age of 34.0 (IQR P25/P75: 24.0/44.5). Descriptive analysis showed that 9 of 45 patients had a habit of exercising regularly. Furthermore, three of the forty-five participants' levels of physical activity were high, 20 of the participants had moderate levels of physical activity, and 22 had low levels of physical activity. Details of the descriptive and clinical characteristics of the participants are presented in Table 1.

Correlations between EBBS scores and IPAQ, FSS, BDI, VAS, BDQoL, 6 MWT, BDCAF, and PSQI were analyzed to determine the factors associated with exercise barriers. The results of all correlation analyses are presented in Table 2. There was a significant negative fair correlation between IPAQ and EBBS General Barriers (rho: -0.345, $p<0.05$) and EBBS Lack of Facilities (rho: -0.317, $p<0.05$) scores. IPAQ also positively correlated with EBBS General Benefits score at a fair level (rho: 0.320, $p<0.05$). Significant fair correlations were observed between BDQoL and EBBS General Barriers scores (rho: 0.338, $p<0.05$), BDQoL and EBBS Lack of Time scores (rho: 0.341, $p<0.05$), BDQoL and EBBS

Table 1. Demographics and clinical characteristics of the participants

	Median (IQR P25/P75) or number (%)
Age (years)	34.0 (24.0/44.5)
Height (cm)	170.0 (162.5/178.5)
Weight (kg)	75.0 (68.8/86.8)
BMI (kg/m²)	25.1 (21.5/29.7)
Gender (female/male)	(18/27)
Disease duration (years)	7.0 (4.0/11.7)
Regular exercise (yes/no)	9/36
Pain (VAS)	0 (0/4.0)
EBBS general benefits (sum score) **EBBS general barriers (sum score)** EBBS fatigue EBBS lack of time EBBS lack of support EBBS lack of facilities EBBS emotional factors	99.0 (86.8/1098) 32.0 (23.0/41.0) 3.0 (2.0/5.5) 1.75 (1.0/10.0) 2.5 (1.0/4.0) 3.0 (1.0/4.0) 1.0 (1.0-7.3)
IPAQ (MET-min/week)	495.0 (181.5/1388.0)
IPAQ Level Low (IPAQ score <600) Moderate (600< IPAQ score <3.000) High (3.000< IPAQ score)	 22 (48.8%) 20 (44.4%) 3 (6.7%)
FSS (score)	2.7 (1.9/4.7)
6 MWT (meters)	595.5 (514.5/675.3)
BDI (score)	2.0 (7.0/12.5)
BDQoL (score)	16.0 (10.0/22.5)
BDCAF (score)	2.0 (2.0/3.0)
PSQI (score)	5.0 (3.25/7.0)

IQR: Interquartile range, BMI: Body mass index, VAS: Visual analog scale, IPAQ: International physical activity questionnaire, MET: Metabolic energy equivalent, FSS: Fatigue severity scale, 6 MWT: Six-minute walk test, BDI: Beck depression inventory, BDQoL: Behçet Disease Quality of Life Questionnaire, BDCAF: Behçet Disease Current Activity Form 2006, EBBS: Exercise barriers and benefits scale, P25: percentile 25, P75: percentile 75, PSQI: Pittsburgh sleep quality index, cm: centimeters, kg: kilograms, m: meters

Emotional Factors scores (rho: 0.344, $p<0.05$), and a moderate correlation was observed between BDQoL and EBBS Fatigue scores (rho: 0.535, $p<0.01$). No other significant relationships were determined between EBBS scores and other outcome measurements ($p>0.05$), (Table 2).

DISCUSSION

48.8% of BD patients who participated in our study had low levels of physical activity. In addition, self-reported exercise barriers and benefits were correlated with physical activity level. While no statistically significant correlation was found between EBBS and fatigue, exercise capacity, quality of life, disease activity, and pain, a significant correlation was found between depression and some EBBS subscales (lack of time, fatigue, emotional status, and general barriers). Reasons for willingness to exercise can be psychological status rather than other disease-related barriers in BD patients, according to the present study. Also, beliefs in the benefits of exercise can increase the physical activity level in these patients.

Almost half of the participants were found to have low levels of physical activity in our study, which was not surprising as BD is a rheumatic disease with symptoms affecting daily living. Physical inactivity is a general health problem and is commonly observed in rheumatic diseases. To the best of our knowledge, no study has investigated physical activity levels in patients with BD. Similar to our study, physical activity level was found to be lower in RA, AS, and SLE patients. Some barriers were stated as a reason for physical inactivity in these patients (7,8,12).

Researchers stated that there are many disease-related factors preventing physical activity, such as fatigue, pain, morning stiffness, psychological factors, and general barriers that can be observed in patients or healthy populations, such as demographic features, mentality, environmental factors, and socio-cultural factors (7,8,12). We used EBBS to evaluate the general benefits and barriers of exercise. General exercise barriers were found to be negatively correlated and exercise benefits were positively correlated with physical activity level. In other words, patients who believed in the benefits of exercise were found to be more active and imported less general barriers such as age, socioeconomic status, lack of motivation, and time. This is in accordance with the study of Henchoz et al. (25), where perceived physical and psychological benefits were significantly different between physically active and inactive RA patients. In addition, arthritis-specific situational barriers were found to be higher than the general situational barriers in this study (25). Wilcox et al. (26) investigated perceived exercise barriers, enablers, and benefits among exercising and non-exercising adults with arthritis and determined many benefits and barriers associated with both general and arthritis-specific symptoms. The authors included 68 participants (n=36 for exercisers, n=32 for non-exercisers) and stated physical barriers (pain, fatigue, mobility, and comorbid conditions), psychological barriers (lack of time, motivation, fear, and perceived negative outcomes), social barriers (lack of support, no one to exercise with and competing role responsibilities) and environmental barriers (environmental conditions, cost, and transportation). They also stated some benefits, including physical benefits (symptom

Table 2. Correlation analysis

	EBBS general barrier	EBBS lack of time	EBBS fatigue	EBBS lack of facilities	EBBS emotional factors	EBBS lack of support	EBBS general benefit
Pain (VAS)	.193	.095	.207	.208	.106	.226	-.063
IPAQ	**-.345***	-.214	-.193	**-.317***	-.050	-.089	**.320***
FSS	.253	.128	.227	.154	.106	.222	-.215
6 MWT	-.074	-.160	-.131	-.191	-.041	-.004	.042
BDI	.081	.146	.147	.052	.030	.139	-.214
BDQoL	**.338***	**.341***	**.535****	.163	**.344***	.279	-.050
BDCAF	.067	-.105	-.003	.000	-.035	.179	-.019
PSQI	.097	.107	.128	.033	.146	.106	.022

Spearman's Correlation Coefficient (rho), *p <0.05, **p <0.01, EBBS: Exercise barriers and benefits scale, VAS: Visual analog scale, IPAQ: International physical activity questionnaire, FSS: Fatigue severity scale, BDI: Beck depression inventory, BDQoL: Behçet Disease Quality of Life Questionnaire, BDCAF: Behçet Disease Current Activity Form 2006, PSQI: Pittsburgh sleep quality index

management, mobility, function, strength, flexibility, and weight loss), psychological benefits (independence, emotional beliefs, and enjoyment), and social benefits (26).

Although the positive effects of exercise are known, patients with rheumatic diseases were found to be willing to exercise because of disease-related symptoms. Fatigue (2), sleep disturbance (13), decreased aerobic capacity and pulmonary functions (14), impaired quality of life (4), and depression (27) are commonly seen in patients with BD and are found to be poorer than the healthy population. We investigated and concluded no relationship between EBBS and fatigue, aerobic capacity, sleep quality, pain, disease activity, or quality of life. In addition, some subscales of EBBS (general barriers, lack of time, emotional status and fatigue) were found to be correlated with depression. This result suggests that the reason for willingness to exercise may be psychological status rather than other disease-related symptoms in BD patients. Patients with high levels of depression were found to be more reluctant to exercise. This is an expected result that depression is defined as a mental problem causing energy, concentration, self-reliance, and satisfaction loss. To our knowledge, there is no study in the literature investigating physical activity level and exercise barriers in BD; therefore, we could not compare our results with the literature. However, fatigue, depression, and pain were found to be the reasons for physical inactivity in AS patients (28). Rupp et al. (29) concluded a negative correlation between physical activity level and depression (29), whereas Munsterman et al. (30), found no relationship between these parameters in patients with RA (30). It was stated in a recent study that fatigue may be an exercise barrier in RA patients; however, being physically active , even if feeling tired, can decrease the negative effects of fatigue (10).

The strengths of our study include being the first study investigating physical activity level and exercise barriers in patients with BD using quantitative assessments. In addition, we used IPAQ to evaluate physical activity levels, which allows us to classify patients. However, it can be a limitation not to evaluate other rheumatic diseases such as AS, RA, or SLE as a control group. Further studies may include comparison of physical activity levels between patients with BD and other rheumatic diseases.

In conclusion, 48.8% of BD patients who participated in this study had low levels of physical activity. General exercise barriers and benefits were found to be the reason for physical inactivity. Because physical inactivity is a health problem with many negative effects on health, clinicians should be aware of it. Also, they should investigate and treat the factors preventing physical activity in patients with BD. Patients with BD should be encouraged to exercise. Further studies may investigate the effects of exercise in BD patients.

Ethics

Ethics Committee Approval:

Informed Consent: An informed consent form was completed by the participants.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: N.A., M.A.Ö., Concept: S.B.Y., Design: S.B.Y., D.O., Data Collection or Processing: S.B.Y., D.C.S., F.S., G.T., Analysis or Interpretation: S.B.Y., D.C.S, Writing: S.B.Y.

Conflict of Interest: The authors have no conflicts of interest to declare.

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REFERENCES

1. Ruddy S. Kelley's textbook of rheumatology. Rheumatoid Arthritis 2001.
2. Ilhan B, Can M, Alibaz-Oner F, et al. Fatigue in patients with Behçet's syndrome: relationship with quality of life, depression, anxiety, disability and disease activity. Int J Rheum Dis 2018;21:2139-45.
3. Moses Alder N, Fisher M, Yazici Y. Behçet's syndrome patients have high levels of functional disability, fatigue and pain as measured by a Multi-dimensional Health Assessment Questionnaire (MDHAQ). Clin Exp Rheumatol 2008;26(4 Suppl 50):S110-3.
4. Bodur H, Borman P, Ozdemir Y, Atan C, Kural G. Quality of life and life satisfaction in patients with Behçet's disease: relationship with disease activity. Clin Rheumatol 2006;25:329-33.
5. Sharif K, Watad A, Bragazzi NL, Lichtbroun M, Amital H, Shoenfeld Y. Physical activity and autoimmune diseases: Get moving and manage the disease. Autoimmun Rev 2018;17:53-72.
6. Baranowski T, Bouchard C, Bar-Or O, et al. Assessment, prevalence, and cardiovascular benefits of physical activity and fitness in youth. Med Sci Sports Exerc 1992;24(6 Suppl):S237-47.
7. Bağlan Yentür S, Karatay S, Oskay D, Tufan A, Küçük H, Haznedaroğlu Ş. Kinesiophobia and related factors in systemic lupus erythematosus patients. Turk J Med Sci 2019;49:1324-31.
8. van Genderen S, van den Borne C, Geusens P, van der Linden S, Boonen A, Plasqui G. Physical functioning in patients with ankylosing spondylitis: comparing approaches of experienced ability with self-reported and objectively measured physical activity. J Clin Rheumatol 2014;20:133-7.
9. Crilly MA, Wallace A. Physical inactivity and arterial dysfunction in patients with rheumatoid arthritis. Scand J Rheumatol 2013;42:27-33.
10. Hegarty RSM, Conner TS, Stebbings S, Treharne GJ. Feel the Fatigue and Be Active Anyway: Physical Activity on High-Fatigue Days Protects Adults With Arthritis From Decrements in Same-Day Positive Mood. Arthritis Care Res (Hoboken) 2015;67:1230-6.
11. Schutzer KA, Graves BS. Barriers and motivations to exercise in older adults. Prev Med 2004;39:1056-61.
12. Yu CA, Rouse PC, Veldhuijzen Van Zanten JJ, et al. Subjective and objective levels of physical activity and their association with cardiorespiratory fitness in rheumatoid arthritis patients. Arthritis Res Ther 2015;17:59.
13. Lee J, Kim SS, Jeong HJ, et al. Association of sleep quality in Behcet disease with disease activity, depression, and quality of life in Korean population. Korean J Intern Med 2017;32:352-9.
14. Gökoğlu F, Yorgancioğlu ZR, Ustün N, Ardiç FA. Evaluation of pulmonary function and bicycle ergometry tests in patients with Behçet's disease. Clin Rheumatol 2007;26:1421-5.
15. Saglam M, Arikan H, Savci S, et al. International physical activity questionnaire: reliability and validity of the Turkish version. Percept Mot Skills 2010;111:278-84.
16. Ortabag T, Ceylan S, Akyuz A et al. The validity and reliability of the exercise benefits/barriers scale for Turkish military nursing students. South African Journal for Research in Sport, Physical Education and Recreation 2010;32:55-70.
17. Armutlu K, Korkmaz NC, Keser I, et al. The validity and reliability of the Fatigue Severity Scale in Turkish multiple sclerosis patients. Int J Rehabil Res 2007;30:81-5.
18. Hisli N. Beck Depresyon Envanterinin gecerliligi uzerine bit calisma (A study on the validity of Beck Depression Inventory.). Psikoloji Dergisi 1988;6:118-22.
19. Melzack R. The short-form McGill Pain Questionnaire. Pain 1987;30:191-7.
20. Ağargün MY, Kara H, Anlar Ö. The validity and reliability of the Pittsburgh Sleep Quality Index. Turk Psikiyatri Derg 1996;7:107-15.
21. Bhakta BB, Brennan P, James TE, Chamberlain MA, Noble BA, Silman AJ. Behçet's disease: evaluation of a new instrument to measure clinical activity. Rheumatology (Oxford) 1999;38:728-33.
22. Hamuryudan V, Fresko I, Direskeneli H, et al. Evaluation of the Turkish translation of a disease activity form for Behçet's syndrome. Rheumatology (Oxford) 1999;38:734-6.
23. Crapo R, Enright P, Zeballos R. Guidelines for the six-minute walk test. American Journal of Respiratory and Critical Care Medicine Pridobljeno. 2002;14:2007.
24. Unver B, Nalbant A, Karatosun V. Comparison of self-reported and measured range of motion in total knee arthroplasty patients. Ann Transl Med 2015;3:192
25. Henchoz Y, Zufferey P, So A. Stages of change, barriers, benefits, and preferences for exercise in RA patients: a cross-sectional study. Scand J Rheumatol 2013;42:136-45.
26. Wilcox S, Der Ananian C, Abbott J, et al. Perceived exercise barriers, enablers, and benefits among exercising and nonexercising adults with arthritis: results from a qualitative study. Arthritis Rheum 2006;55:616-27.
27. Koca I, Savas E, Ozturk ZA, et al. The relationship between disease activity and depression and sleep quality in Behçet's disease patients. Clin Rheumatol 2015;34:1259-63.
28. Fongen C, Sveaas SH, Dagfinrud H. Barriers and Facilitators for Being Physically Active in Patients with Ankylosing Spondylitis: A Cross-sectional Comparative Study. Musculoskeletal Care 2015;13:76-83.
29. Rupp I, Boshuizen HC, Jacobi CE, Dinant HJ, van den Bos GA. Impact of fatigue on health-related quality of life in rheumatoid arthritis. Arthritis Rheum 2004;51:578-85.
30. Munsterman T, Takken T, Wittink H. Low aerobic capacity and physical activity not associated with fatigue in patients with rheumatoid arthritis: a cross-sectional study. J Rehabil Med 2013;45:164-9.