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ΜΟΡΙΑΚΗ ΚΑΙ ΕΦΑΡΜΟΣΜΕΝΗ ΦΥΣΙΟΛΟΓΙΑ

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Physical activity in Greek patients with Primary Sjogren's Syndrome

ΕΛΕΝΗ ΤΣΟΛΑΚΚΗ

Επιβλέπουσα: Αναπλ. Καθηγήτρια: Κλειώ Μαυραγάνη

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DECLARATIONS

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ABSTRACT

This study aims to evaluate the benefits provided by physical activity being performed by patients that have been diagnosed with primary Sjogren's syndrome. Through this random controlled trial, in which 70 PSS patients took part, we aimed to compare the physical exercise ratio of the subject group with healthy population that matched age and sex. Moreover, trying to assess the value and the influence that inflammatory markers (IL-1 and IL-18) and fatigue have to patients that have been diagnosed with PSS. The medium used for the comparison described above was the Recent Physical Activity Questionnaire (RPAQ).

Keywords: Primary Sjogren's Syndrome, Physical activity, Fatigue, Inflammatory markers

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1.0 Introduction

Primary Sjogren's syndrome is an autoimmune rheumatic disease, affecting 0.09%-0.23% of the Greek population, with the symptom of chronic fatigue being predominant (Patel & Shahane, 2014; Gabriel & Michaud, 2009). An international research has shown that one out of two rheumatic patients suffers from fatigue (Overman, Kool, Da Silva & Geenen, 2016). Most recent inquire about, showed that fatigue- a major burden for patients with Sjogren's syndrome- can be reduced when physical activity is implemented (Wouters et al., 2012). Additionally, previous evidence suggests that the symptom of depression that have been linked with those people is largely present due to low levels of physical activity (Ng et al, 2017). However, there is no sufficient information concerning physical activity levels in people with primary Sjogren's syndrome in Greek population.

Previous studies (Perandini et al., 2012; Petersen & Pedersen, 2005), showed the benefits of physical exercise to inflammation and how chronic systemic diseases can be prevented by regular exercise. Another study showed important changes in aerobic capacity and depression levels in people with primary Sjogren's syndrome after a 12-week exercise intervention (Strombeck, Theander & Jacobsson, 2007). Moreover, a study suggested that people with PSS have shown decreased ability to do an extensive variety of regular exercises in comparison with healthy controls. As a result, decreased physical exercise can be related with many of the clinical highlights of the syndrome and decrease the condition and wellbeing of the patients (Strombeck et al., 2000).

Up until now there has not been a formal study regarding the benefits of physical exercise in patients with that has been diagnosed with PSS within Greek population and the effect on the inflammatory markers and fatigue.

The questionnaire RPAQ (Recent Physical Activity Questionnaire), is a validated questionnaire used in Greek population and it assess physical activity during the last month of the subjects' lifetimes. The results are going to be compared with healthy control groups. This questionnaire is separated into three parts: A) physical activities

performed at home, B) physical activities performed at work, C) physical activities performed during free time (MRC Epidemiology Unit, University of Cambridge,2018). The purpose of this study is to provide an outline concerning if in fact, Greek population with PSS spends time on different types of exercise and the influence of the exercise training on the inflammatory markers and fatigue (Golubic et al., 2014).

2.0 Patient and methods

PSS patients were selected from the rheumatology department of the General Hospital of Athens (LAIKO) from February 2018 to June 2018. Moreover, blood samples of the patients with PSS who completed the questionnaire were used to find the amount of IL-1 and IL-18. Questionnaires from patients with PSS were compared to healthy population.

2.1 Subject groups

The available Data was collected from a sample of seventy participants with primary Sjogren's syndrome in Greek population through a distribution of questionnaires in physical copies and via telephone calls. Those seventy patients were asked to fill in the questionnaire about their physical activity during the last four weeks. The age group that is included in the study is patients from 21 years until 83 years old. People with secondary Sjogren's syndrome were excluded from the study (according to the classification criteria of American College of Rheumatology 2016).

2.2 Data Collection Tools

The primary data was collected through the use of the RPA Questionnaire. The Questionnaire is divided into three parts: A) physical activities performed at home, B) physical activities performed at work, C) physical activities performed during free time. The RPAQ assessed physical activity of patients during the last four weeks. The Fatigue scale (FACIT) was used in order to determine fatigued or non-fatigued PSS patients (Webster, Cella, & Yost,2003).

2.3 Statistical Analysis

The data analysis was done using the IBM SPSS software 25.0 using different comparisons. In the first part, we compared people with primary Sjogren's syndrome and healthy controls in order to find which group of people are exercising more. Moreover, we analyzed fatigue and exercise in people with Primary Sjogren's syndrome in order to see if people who exercise show signs of fatigue. Additionally, we searched for a correlation of the inflammatory markers (IL-1 and IL-18) and exercise through the help of the questionnaire. The significance level was set at $P < 0.05$.

2.4 Measures

The laboratory findings that were included in this study were acquired from the General Hospital of Athens (LAIKO) in July 2018. The main results that were included in this paper were IL-1 and IL-18, Fatigue scale (FACIT). To evaluate the activity ratio of the subjects group and moreover compare it with the healthy population group the RPA questionnaire was used.

2.5 Ethical Considerations

Patients were informed before completing the RPAQ that their answers and their personal information will remain anonymous and would only be used for the aims of the research.

3.0 Results

Table 1. Demographics of patients with PSS and HC

Patient Characteristics	PSS	HC	p-value
Female sex (%)	94.2 (66/70)	92.9 (65/70)	1.00
Age (years, mean±SD)	61.5 ±12.3	61.4 ±9.15	0.499

Table 2. Prevalence of patients with PSS and HC in physical activities performed at home

PSS vs HC exercise	PSS (n=70)	HC (n=70)	p-value
Transportation (%)			
Car	42.9 (30/70)	62.9 (44/70)	**0.027**
Walking	27.1 (19/70)	24.3 (17/70)	0.847
Public Transport	30 (21/70)	11.4 (8/70)	0.011
Cycling	1.4 (1/70)	1.4 (1/70)	1.00
TV, DVD or Video (%)			
Week			
Never	10 (7/70)	10 (7/70)	1.00
0-1 hours	8.6 (6/70)	8.6 (6/70)	1.00
1-2 hours	34.3 (24/70)	31.4 (22/70)	0.857
2-3 hours	24.3 (17/70)	25.7 (18/70)	1.00
3-4 hours	8.6 (6/70)	12.9 (9/70)	0.586
4+ hours	12.9 (9/70)	10 (7/70)	0.533
Weekend			
Never	11.4 (8/70)	12.9 (9/70)	1.00
0-1 hours	7.1 (5/70)	4.3 (3/70)	0.718
1-2 hours	32.9 (23/70)	10 (7/70)	0.125
2-3 hours	27.1 (19/70)	20 (14/70)	0.426
3-4 hours	7.1 (5/70)	14.3 (10/70)	0.274
4+ hours	14.3 (10/70)	28.6 (20/70)	0.063
Computer use (%)			
Week			
Never	61.4 (43/70)	45.7 (32/70)	0.090
0-1 hours	7.1 (5/70)	18.6 (13/70)	0.075

1-2 hours	15.7 (11/70)	18.6 (13/70)	0.823
2-3 hours	1.4 (1/70)	5.7 (4/70)	0.366
3-4 hours	5.7 (4/70)	7.1 (5/70)	1.00
4+ hours	8.6 (6/70)	4.3 (3/70)	0.493
Weekend			
Never	61.4 (43/70)	40 (28/70)	**0.018**
0-1 hours	7.1 (5/70)	8.6 (6/70)	1.00
1-2 hours	15.7 (11/70)	25.7 (18/70)	0.210
2-3 hours	1.4 (1/70)	7.1 (5/70)	0.209
3-4 hours	7.1 (5/70)	7.1 (5/70)	1.00
4+ hours	8.6 (6/70)	11.4 (8/70)	0.779
Stairs (%)			
None	45.7 (32/70)	22.9 (16/70)	**0.007**
1-5 times a day	42.9 (30/70)	37.1 (26/70)	0.605
6-10 times a day	11.4 (8/70)	21.4 (15/70)	0.170
11-15 times a day	0 (0/70)	11.4 (8/70)	**0.006**
16-20 times a day	0 (0/70)	8.6 (6/70)	**0.028**
20+ times a day	0 (0/70)	0 (0/70)	1.00

Table 3. Prevalence of patients with PSS and HC in physical activities performed at work

PSS vs HC exercise	PSS (n=70)	HC (n=70)	p-value
Employment during the last four weeks (%)	22.9 (16/70)	62.9 (44/70)	0.00
Hours per week (mean±SD)	23.9 ±21.6	8.71 ±16.5	0.00
Type of work (%)			
Sedentary occupation	14.3 (10/70)	45.7 (32/70)	0.00
Standing occupation	5.7 (4/70)	12.9 (9/70)	0.243
Manual work	2.9 (2/70)	4.3 (3/70)	1.00
Heavy Manual work	0 (0/70)	0 (0/70)	1.00
Distance from home to work (km, mean±SD)	2.43 ±6.083	7.36 ±11.9	0.00
Times per week travelling to work	1.16 ±2.91	3.16 ±2.483	0.00
Travel to work (%)			
By car	10 (7/70)	58.6 (41/70)	0.00

Public Transport	7.1 (5/70)	1.4 (1/70)	0.209
Bicycle	2.9 (2/70)	0 (0/70)	0.496
Walking	7.1 (5/70)	4.3 (3/70)	0.718

Table 4. Prevalence of patients with PSS and HC performing aerobic exercise

PSS vs HC exercise	PSS (n=70)	HC (n=70)	p-value
Recreation (minutes, mean ±SD)			
Aerobic exercise			
Swimming leisurely	65.7 ±214	34 ±90.4	0.925
Swimming competitive	0	0	1.00
Sports on the beach	0	0	1.00
Walking for pleasure	474.2 ±771	468.9 ±674	0.802
Backpacking or mountain climbing	7.71 ±45.6	4.29 ±35.9	0.567
Cycling	0	25.9 ±135	0.13
Rough cycling	0	19.29 ±102	0.081
High impact aerobics	2.50 ±13.5	4.29 ±35.9	0.323
Other types of aerobics	13.4 ±77.6	4.29 ±35.9	0.316
Bicycle treadmill	0.57 ±4.78	37.3 ±102	**0.002**
Dancing	40.3 ±216	22.9 ±134	0.732
Competitive Running	0	0	1.00
Running on a Treadmill	0	19.2 ±80	**0.007**
Jogging	0	3.43 ±28.7	0.317

Table 5. Prevalence of patients with PSS and HC performing strengthening exercises

PSS vs HC exercise	PSS (n=70)	HC (n=70)	p-value
Recreation (minutes, mean ±SD)			
Strengthening exercises			
Exercise with weights	56.6 ±182	182 ±65.9	0.248
Conditioning exercises	199 ±363	114 ±317	0.499
Floor exercises	101 ±186	46.1 ±114	0.105

Table 6. Prevalence of patients with PSS and HC performing hobbies

PSS vs HC exercise	PSS (n=70)	HC (n=70)	p-value
Recreation (minutes, mean±SD)			
Hobbies			
Bowling	0	0	1.00
Ping pong	0	0	1.00
Tennis or Badminton	0	0	1.00
Squash	0	0	1.00
Golf	0	0	1.00
Football, rugby or hockey	0	0	1.00
Rowing	0	0	1.00
Fishing	0	6.86 ±57.4	0.317
Horse-riding	0	0	1.00
Musical-instrument playing or singing	0	12.43 ±100	0.156
Sailing-wind surfing	0	0	1.00
Martial arts	0	0	1.00

Table 7. Prevalence of patients with PSS and HC performing activities at home

PSS vs HC exercise	PSS (n=70)	HC (n=70)	p-value
Recreation (minutes, mean±SD)			
Activities at home			
Heavy gardening work	0	6 ±37	0.81
Light gardening work	70.4 ±199	199 ±450	**0.007**
DIY	78.4 ±603	194 ±528	**0.00**

Table 8. Demographics and clinical characteristics of patients with PSS

Patient Characteristics	Fatigued (n=32)	Non-Fatigued (n=74)	p-value
Female sex (%)	96 (24/25)	93.2 (42/45)	1.00
Age (years, mean±SD)	60.2 ±13.4	63.8 ±9.68	0.35
Age at PSS diagnosis (years, mean±SD)	48.8 ±11.6	50.2 ±17.4	0.83
Disease Duration (years, mean±SD)	14 ±8.09	15 ±10.1	0.45
Clinical characteristics			
Ocular dryness (%)	91.7 (22/24)	94.9 (37/39)	1.00
Oral dryness (%)	100 (24/24)	92.3 (36/39)	0.86
SGE (%)	33.3 (8/24)	30 (12/40)	1.00
Abnormal Schirmer's test (%)	85.7 (18/21)	75.8 (25/33)	0.84
MSG Biopsy focus score (mean±SD)	3.38 (±2.34)	2.09 (±1.87)	**0.037**
Arthralgias/ Myalgias (%)	68 (17/25)	61.4 (27/44)	0.84
Arthritis (%)	28 (7/25)	11.1 (5/45)	0.20
Raynaud's (%)	32 (8/25)	20 (9/45)	0.41
Purpura (%)	36 (9/25)	17.8 (8/45)	0.27
Interstitial nephritis (%)	4 (1/25)	0 (0/45)	0.37
Liver involvement (%)	8 (2/25)	0 (0/45)	0.14
Lung involvement (%)	24 (6/25)	6.67 (3/45)	0.14
Peripheral neuropathy (%)	32 (8/25)	15.6 (7/45)	0.25
Lymphoma (%)	45.8 (11/24)	20.9 (9/43)	0.19
IL-1 (mean±SD)	1.27 ±0.96	2.48 ±2.27	0.19
IL-18 (mean±SD)	0.69 ±0.34	1.02 ±0.61	0.16
Medications			
Hydroxychloroquine (%)	0 (0/25)	8.89 (4/45)	0.29
Rituximab (%)	4 (1/25)	4.44 (2/45)	1.00
Steroid use (%)	16 (4/25)	20 (9/45)	1.00

Table 9. Prevalence of patients with PSS in physical activities performed at home

PSS-Fatigue	Fatigued (n=25)	Non-Fatigued (n=45)	p-value
Transportation (%)			
Car	52 (13/25)	37.8 (17/45)	0.316
Walking	24 (6/25)	28.9 (13/45)	0.782

Public Transport	24 (6/25)	33.3 (15/45)	0.587
Cycling	0 (0/25)	2.2 (1/45)	1.00
TV, DVD or Video (%)			
Week			
Never	8 (2/25)	11.1 (5/45)	1.00
0-1 hours	16 (4/25)	4.4 (2/45)	0.177
1-2 hours	36 (9/25)	33.3 (15/45)	1.00
2-3 hours	24 (6/25)	24.4 (11/45)	1.00
3-4 hours	4 (1/25)	11.1 (5/45)	0.410
4 + hours	12 (3/25)	13.3 (6/45)	1.00
Weekend			
Never	8 (2/25)	13.3 (6/45)	0.702
0-1 hours	12 (3/25)	4.4 (2/45)	0.341
1-2 hours	40 (10/25)	28.9 (13/45)	0.428
2-3 hours	24 (6/25)	28.9 (13/45)	0.782
3-4 hours	4 (1/25)	8.9 (4/45)	0.648
4 + hours	12 (3/25)	15.6 (7/45)	1.00
Computer use (%)			
Week			
Never	68 (17/25)	57.8 (26/45)	0.451
0-1 hours	4 (1/25)	8.9 (4/45)	0.648
1-2 hours	4 (1/25)	22.2 (4/45)	0.083
2-3 hours	4 (1/25)	0 (0/45)	0.357
3-4 hours	4 (1/25)	6.7 (3/45)	1.00
4+ hours	16 (4/25)	4.4 (2/45)	0.177
Weekend			
Never	68 (17/25)	57.8 (26/45)	0.451
0-1 hours	4 (1/25)	8.9 (4/45)	0.648
1-2 hours	8 (2/25)	20 (9/45)	0.306
2-3 hours	4 (1/25)	0 (0/45)	0.357
3-4 hours	4 (1/25)	8.9 (4/45)	0.648
4+ hours	16 (4/25)	4.4 (2/45)	0.177
Stairs (%)			
None	60 (15/25)	37.8 (17/45)	0.086
1-5 times a day	36 (9/25)	46.7 (21/45)	0.455
6-10 times a day	4 (1/25)	15.6 (7/45)	0.244

16-20 times a day	0 (0/25)	0 (0/25)	1.00
20 + times a day	0 (0/25)	0 (0/25)	1.00

Table 10. Prevalence of patients with PSS in physical activities performed at work

PSS-Fatigue	Fatigued (n=25)	Non-Fatigued (n=45)	p-value
Employment during the last four weeks (%)	20 (5/25)	24.4 (11/45)	0.772
Hours per week (mean±SD)	7.8 ±15.9	9.22 ±16.9	0.701
Type of work (%)			
Sedentary occupation	16 (4/25)	13.3 (6/45)	0.737
Standing occupation	0 (0/25)	8.9 (4/45)	0.289
Manual work	4 (1/25)	2.2 (1/45)	1.00
Heavy Manual work	0 (0/25)	0 (0/25)	1.00
Distance from home to work (km, mean±SD)	7.8 ±6.83	11.9 ±9.57	0.594
Times per week travelling	5 ±0	5.09 ±1.22	0.615
Travel to work (%)			
By car	8 (2/25)	11.1 (5/45)	1.00
Public Transport	8 (2/25)	6.7 (3/45)	1.00
Bicycle	0 (0/25)	4.4 (2/45)	0.534
Walking	8 (2/25)	6.7 (3/45)	1.00

Table 11. Prevalence of patients with PSS performing aerobic exercise

PSS-Fatigue	Fatigued (n=25)	Non-Fatigued (n=45)	p-value
Recreation (minutes, mean ±SD)			
Aerobic exercise			
Swimming leisurely	38.4 ±128	80.9 ±250	0.650
Swimming competitive	0	0	1.00
Sports on the beach	0	0	1.00
Walking for pleasure	380.2 ±491	526.4 ±891	0.464
Backpacking or mountain climbing	9.6 ±48	6.67 ±44.7	0.687

Cycling	0	0	1.00
Racing or rough cycling	0	0	1.00
High impact aerobics	0	3.89 ±16.7	0.190
Other types of aerobics	4 ±20	18.7 ±95.6	0.903
Bicycle treadmill	0	0.89 ±5.96	0.456
Dancing	0	62.7 ±268	0.190
Competitive Running	0	0	1.00
Running on a Treadmill	0	0	1.00
Jogging	0	0	1.00

Table 12. Prevalence of patients with PSS performing strengthening exercises

PSS-Fatigue	**Fatigued (n=25)**	**Non-Fatigued (n=45)**	**p-value**
Recreation (minutes, mean±SD)			
Strengthening exercises			
Exercise with weights	48 ±240	61.3 ±143	0.085
Conditioning exercises	100 ±332	254 ±371	**0.04**
Floor exercises	24 ±120	143 ±204	**0.002**

Table 13. Prevalence of patients with PSS performing hobbies

PSS-Fatigue	**Fatigued (n=25)**	**Non-Fatigued (n=45)**	**p-value**
Recreation (minutes, mean±SD)			
Hobbies			
Bowling	0	0	1.00
Ping pong	0	0	1.00
Tennis or Badminton	0	0	1.00
Squash	0	0	1.00
Golf	0	0	1.00
Football, rugby or hockey	0	0	1.00
Fishing	0	0	1.00
Musical instrument playing or singing	0	0	1.00
Sailing-wind surfing	0	0	1.00
Martial arts	0	0	1.00

Table 14. Prevalence of patients with PSS performing activities at home

PSS-Fatigue	Fatigued (n=25)	Non-Fatigued (n=45)	p-value
Recreation (minutes, mean±SD)			
Activities at home			
Heavy gardening work	0 ±0	0 ±0	1.00
Light gardening work	91.2 ±231	58.9 ±182	0.877
DIY	12 ±60	115 ±751	0.930

The Results of the questionnaire are described extensively in the tables above. Depending on the activity there was a spectrum of differences between the PSS and HC group. Based on table 1, the people who participated were mostly women with an average age of 61 years old in both groups. Regarding the question about transportation, the biggest difference between the two groups was found to be associated with car and public transportation use with p-values 0.027 and 0.011 respectively. Considering the healthy population group, people are mostly using their cars with the percentage of 62.9 % (20% more than people with PSS). Patients with PSS most often use public transportation to move around while in contrast only a quite small percentage of healthy people use this form of transport (11.4 %). Contrary to the findings above, the difference concerning walking and cycling appeared to be much more settle with p-values 0.847 and 1.00 respectively. According to the results, neither group seemed to use walking as their primary way of transportation although the PSS appeared to walk slightly more. Cycling appeared to have no difference in percentage between the two groups.

Moreover, people were asked about some activities that take place at home like TV, DVD or Video viewing and computer use at home and not during working hours. The results appeared to be similar in the category of TV, DVD or Video Viewing. The only significant difference appeared to be during weekends in 4+ hours with percentage of 14.3 in people with PSS and 28.6 in healthy group (p-value was 0.063). In addition, the most notable finding associated with the computer use at home was during the weekends concerning those who never use it with a p-value 0.018. PSS patients seem to that they do

not prefer to use the computer at home (with a percentage of 61,4 %) on both weeks and weekends compared with the healthy control group. Furthermore, people were asked about the number of stairs climbing each day at their home. A high percentage of 45.7 % that corresponds to people with PSS seem to totally avoid climbing stairs with a 22.8 % difference with healthy people (p-value was calculated to be 0.007). P-value of 0.006 and 0.028 showed another two major differences in this section between the two groups. People with PSS seem to climb stairs less than 11-15 times and 16-20 times a day at home while the healthy control group had 11.4 % and 8.6 % more respectively.

The next part of the RPA Questionnaire was asking about activity at work. People were asked if they were employed the last four weeks (before the questioning process took part). There seems to be a quite noticeable difference as far as the rate of employment goes between the two groups. More specifically, the healthy population group proved to have a higher employment rate (40 %) while the first group of patients with PSS showed a significant less amount of employment (22.9 %) even though the latter group appeared to work longer hours than the former when employed. Additionally, the next question was about the type of work that people were performing in order to gain the knowledge about the physical activity involved during work time. In both groups, the higher percentage appeared in people who spend most of their time sitting during work with healthy population having a significant larger percentage of people doing a sedentary occupation (p-value: 0.000). Percentage in people who had a standing occupation, or a manual work had no significant difference between PSS and matched group. In general, in both groups no people that apply vigorous physical activity during work time where spotted. Moreover, people with PSS seem to have a job in a close distance from their home. In addition, they attend work fewer times per week than the healthy population. Most of the people in both groups travel with car to go to work. However, there is a huge difference between PSS patients and HC (p-value: 0.00). Public transport and walking are used as alternative ways of transportations to work. Bicycle use was only used by the PSS group with a percentage of 2.9 %.

Last but not least, people were asked about the recreations that they may have performed the last four weeks and the number of times and the average time spend on each physical activity. Physical activities were separated into different categories as aerobic exercise,

hobbies and activities at home. The main physical activity in the category of aerobic exercise that seemed to be performed by both groups is walking for pleasure with 474.2 hours and 468.9 during the last four weeks in PSS and HC respectively. Healthy group engage in physical activities like bicycle treadmill and running on a treadmill in contrast with the PSS group (p-value: 0.002 and 0.007 correspondingly). In the category of other types of exercise, people with PSS seem to perform conditioning exercises mostly (199 hours/4xweeks). Furthermore, PSS patients give the impression to like more floor exercises than exercises with weights. The main difference between the two groups derives through the amounts of time spend in exercise with weights and floor exercises. HC group spend more time exercising using weight lifting than PSS group (p-value: 0.248). However, PSS group appears to prefer the floor exercises more than the HC group. Moreover, regarding the category of hobbies it looks like PSS group doesn't perform any hobbies during their free time in comparison with HC group who seem to play musical instruments or go for fishing few hours during the last four weeks. Lastly, patients were asked about the physical activities carry out at their home. P values of 0.007 and 0.00 showed that HC population spend on average more time in Light gardening and DIY activities at home than patients with PSS who mentioned that they get easily tired when performing these kinds of activities. In addition, people with PSS don't spend any time in heavy gardening work while HC people spend some hours per month.

PSS patients were separated in two groups: fatigued (n=25) and non-fatigued (n=45). By observing the results that are associated with the PSS patients we came to the conclusion that physical activity did not influence the following clinical characteristics: Ocular dryness, Oral dryness, SGE, Arthralgias/Myalgias, Purpura, Insterstitial Nephritis, Liver involvement, Peripheral neuropathy, Lymphoma. In contrast with the above findings we concluded that physical exercise was in fact associated with Arthritis, more specifically we did observe that PSS patients who performed more Bicycle Treadmill, the following parenthesis features minutes [3,3 (± 11,6) vs 0] with p value = 0,03 and dancing [183 (± 9,83) vs 10,3 (± 7,07)] with p value = 0,02. Additionally, PSS patients with Raynaud's syndrome appeared to perform more in the other types of aerobics category [55,3 (± 153,2) vs 0] with p value = 0,002. Lastly the findings also showed that PSS patients with

Lung involvement seemed to perform fewer conditioning exercises [0 vs 228,5 (± 300,1)] with p value= 0,02. Furthermore, an interesting fact should be distinguished, the PSS patients that were swimming more appeared to have increased IL-1 levels (p-value: 0.047, r –value: 0.334).

The comparison of the clinical characteristics and the RPA Questionnaire was made between the two sub-groups. First of all, both groups were asked about their physical activities executed at home. Patients with fatigue tend to predominantly use their car for transportation than non-fatigued patients (p-value:0.316). Around 24% of the Fatigued patients use walking as their main form of transportation, while non-fatigued patients walk a bit more with a percentage of 28.9 %. Only one patient in the non-fatigued group answered that used cycling in order to transport. PSS patients were asked about the time they spend watching TV, DVD or Video during the days of the week and the weekend. No major differences were spotted between the two sub-groups with the he most significant difference appearing during the week and weekend in 0-1 hours with fatigued patients occupying percentages around 12-16 %, while a percentage of 4 - 4.4 % of non-fatigued patients watch TV, DVD, or Video. Another difference that needs to be highlighted appeared during the week in 3-4 hours with p-value of 0.410 and with non-fatigued group having a 7.1 % higher than fatigue group. Besides the use of TV, DVD, or Video, PSS were asked about the use of computer at home. The most noticeable result came into sight during week at 1-2 hours with p-value 0.083 and non-fatigued group have 18.2 % higher than the fatigue group. Additionally, during week and weekends at 4+ hours, patients with fatigue seem to have a higher distinction with percentage of 11.6 % showing that non-fatigued patients may have a more active lifestyle. Furthermore, PSS patients were asked about walking in stairs at home. Non-fatigued patients seem to climb stairs more than patients with fatigue.60% of Patients with fatigue didn’t seem to climb stairs at all in contrast with non-fatigue patients that had an 22.2 % lower in the climbing stairs question.

The next questions that were completed by PSS patients were about physical activities at work (Table 4). There is no considerable difference on the percentage of people that were employed during the last month. Non-fatigued PSS patients tend to spend more time on

work on an average than fatigue PSS patients. In both sub-groups, PSS patients tend to spend most of the time at work sitting in an office. While some of the non-fatigued patients have a job that requires them to be in standing position or even walking, there isn't any fatigued patient who is employed in a non-sitting occupation. Moreover, there is only one patient in each sub-group that his work involves some light physical effort. There is also no difference in the section of heavy manual work since no PSS patient from either group seem to be occupied by a job that requires vigorous physical activity. While the mean amount of times that both fatigue and non-fatigued patients went to work is the same, fatigue patients' home to work distance in km seems to be longer on an average than non-fatigue patients. Both Fatigue and non –fatigue patients seemed to equally use their cars, public transport and walking in order to head from home to work and vise-versa. The only difference can be seen on patients who travel with bicycle since fatigue patients don't travel at all with this form of transport while a small percentage of people with no fatigue choose the bike as their main (p-value: 0.534).

In table 5-8, we can see the prevalence of patients doing several physical activities separated into different kinds of exercise. In table 5, we can observe that in most cases of aerobic exercise, non-fatigue PSS patients spend more time exercising in comparison with fatigue patients. More specifically, physical activities like high impact aerobics and dancing have a p-value of 0.190 and we can notice that there are major differences in the total time that the subjects spend during the last month. In table 6, we can notice the hours spend in other kind of exercises such as exercises with weights, conditioning and floor exercises. Non-fatigued PSS patients spend a lot more hours during the last four weeks doing these 3 kinds of exercises in contrast with fatigue patients. Although, the most significant p-values are found in the categories of conditioning exercises and floor exercises with 0.04 and 0.002 respectively. Patients with PSS don't seem to perform any hobbies during their free time. Lastly, we can see that patients with fatigue spend more time on light gardening work, while non-fatigue patients spend more time in DIY work.

4.0 Discussion

In general, physical activity seemed to be reduced in PSS patients in comparison with matched HC group. However, PSS group stays active and in some forms of exercises it even spends more hours in average than HC group. Some of these exercises are swimming leisurely, walking for pleasure, backpacking, other types of aerobics, dancing, conditioning exercises and floor exercises. Interestingly, it is noteworthy that there is difference in hours performing bicycle treadmill and running on treadmill between two groups showing that patients with PSS don't like these kinds of exercises, which are more intense. Moreover, intense physical activities at home like light gardening work and DIY were executed by patients with PSS but in a significantly smaller amount of time in average during the last month compared with the HC.

In addition, the clinical characteristics that seemed to be mostly influenced by physical activity were arthritis, Raynaud's syndrome and lung involvement. Another fact that came up after analyzing the results was that PSS patients who did spend more time swimming seemed to have elevated IL-1 levels.

In this research, we tried to observe, compare and analyze the occurrence, types and frequency of the physical activity between PSS patients separated into two groups: fatigued and non-fatigued group.

Numerous patients with PSS (about 70%) appear to have fatigue as a symptom. Most of the patients mention that it is the most crippling manifestation of the syndrome (Newton et al., 2012). A previous study showed that people with PSS have decreased ability to do an extensive variety of regular exercises in comparison with HC. As a result, decreased physical exercise levels are related with many of the clinical highlights of the syndrome and in addition lessened wellbeing personal satisfaction. (Strombeck et al., 2000). We managed to prove that exercise indeed reduces the fatigue levels in PSS patients. The most significant and chief finding was that PSS patients who exercise and more specifically perform conditioning exercises and floor exercises don't experience the feeling of fatigue.

Exercise has a great significance in keeping up great wellbeing. Sedentary lifestyle is a hazard factor for chronic diseases like PSS and the benefits of a daily physical activity are many (Musumeci, 2015). A lifestyle without physical activity has major risks like developing cardiovascular diseases. In another study performed to 273 individuals with Primary Sjogren's Syndrome, physical activity was assessed using the validated International Activity Questionnaire- short form and compared with a healthy group. The results showed that physical activity is decreased in patients with Primary Sjogren's Syndrome and it primary connected with the feeling of depression and the need of extra sleep during the day. However, sitting time had not any outstanding difference between the PSS patients and the control group (Ng et al., 2017). Although in this study that used the RPA Questionnaire helped us to observe that sitting time of PSS patients is almost at the same levels of HC and apparently HC are more in sitting position than PSS. The main difference is seen in computer use during weekends where a large number of patients with PSS didn't use computer at home at all in comparison with HC.

In conclusion, PSS patients must exercise as much as possible in order for them to feel less fatigued and also to decrease the possibilities of developing secondary chronic diseases like cardiovascular diseases (Klavestrand & Vingard, 2009).

5.0 Limitations

We came across different limitations during the completion of this master thesis. First of all, while there are a lot of advantages using a questionnaire for a research, there is a limitation on the point that respondents may not give conscious answers and give answers that may affect the validity of the questionnaires. In an attempt of patients to protect their personal information, they will not be one hundred percent honest with their answers. Furthermore, some of the questionnaires were taken by telephone calls. The limitation to this is that while not talking with the patient face to face they may have a different perception of the questions and don't take the appropriate attention to answer through a telephone call.

Additionally, due to time restrictions, only 70 questionnaires of people with Primary Sjogren syndrome were completed. However, if we had more time and thus more questionnaires would be answered, results would be more reliable.

6.0 Future work

Primary Sjogren syndrome is a rheumatic disease that affects significant amount of people and there is a wide spectrum of possibilities regarding future work that can be done in order to gain knowledge and experience that could result in the improvement of the patient's quality of life.

Similar studies with additional human resources could take place in order to broaden the amount of available data concerning this topic. Moreover, studies in the form of Systematic Reviews could collect the available data from various studies like this one and present a much broader and collective source of evidence regarding this specific topic. Last but not least controlled and randomized trials involving specific exercise intervention programs for patients with Primary Sjogren syndrome (given by doctors or physiotherapists) can bring to the surface more information regarding the effects of fatigue and inflammatory markers. This may be time consuming but through specific instructions by specialists, it may have a positive outcome for researchers, Medical specialists and the patients.

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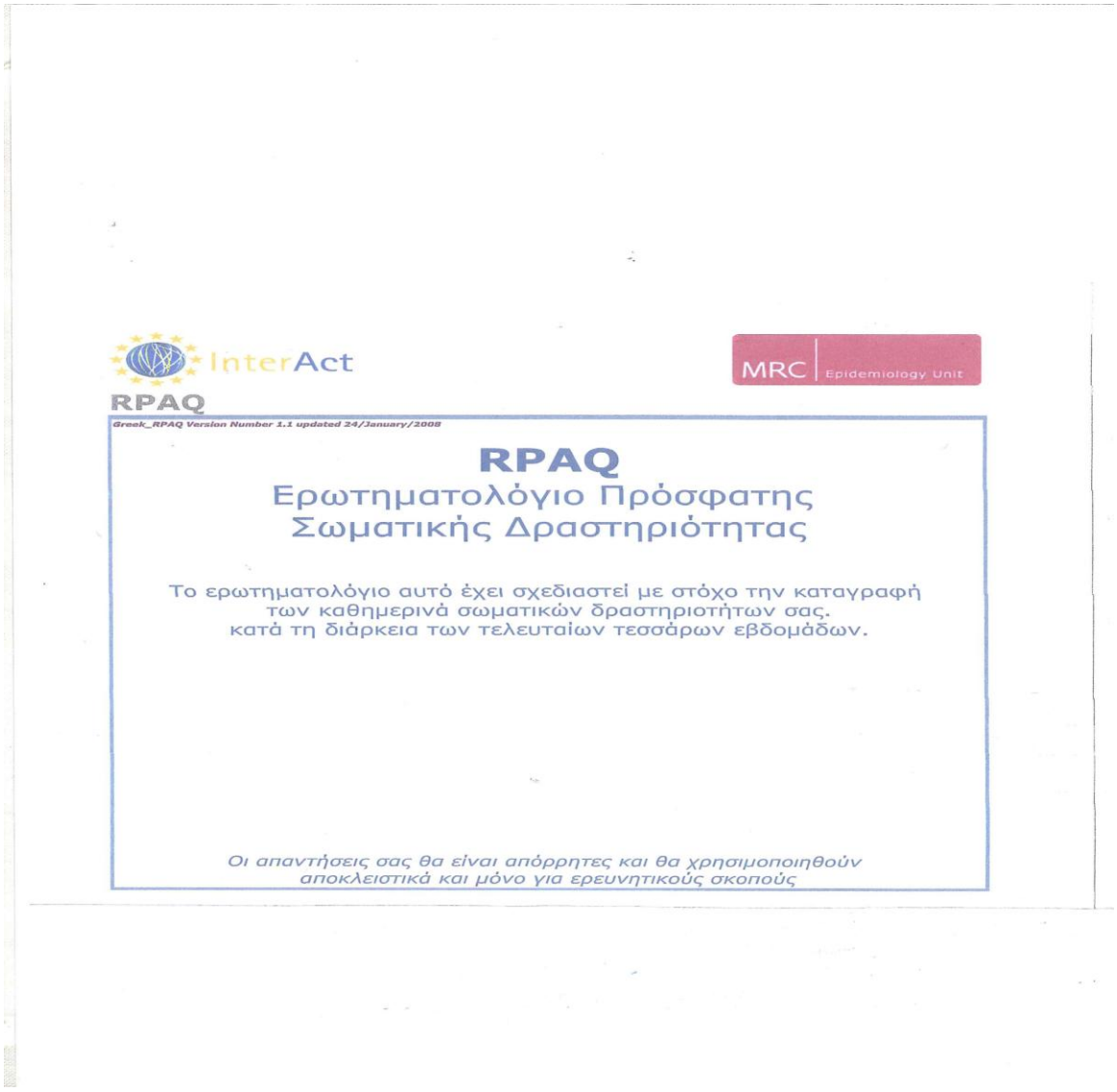
The citation of the references in the bibliography is according to APA citation norm.

8.0 Appendices

8.1 Appendix 1: Questionnaire



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Greek_RPAQ Version Number 1.1 updated 24/January/2008

RPAQ

Ερωτηματολόγιο Πρόσφατης Σωματικής Δραστηριότητας

Το ερωτηματολόγιο αυτό έχει σχεδιαστεί με στόχο την καταγραφή των καθημερινά σωματικών δραστηριοτήτων σας. κατά τη διάρκεια των τελευταίων τεσσάρων εβδομάδων.

Οι απαντήσεις σας θα είναι απόρρητες και θα χρησιμοποιηθούν αποκλειστικά και μόνο για ερευνητικούς σκοπούς

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Κωδικός Εθελοντή :

Το ερωτηματολόγιο αυτό χωρίζεται σε τρία μέρη Παρακαλώ απαντήσετε σε κάθε ερώτηση

- **Μέρος Α**: Αφορά τις σωματικές δραστηριότητές σας μέσα και κοντά στο το σπίτι σας.
- **Μέρος Β**: Αφορά τον τρόπο μετάβασής στην εργασία σας και το πόσο σωματικά δραστήριοι είστε στο πλαίσιο αυτής.
- **Μέρος Γ**: Αφορά τις ψυχαγωγικές δραστηριότητες στις οποίες συμμετείχατε τις τελευταίες τέσσερις εβδομάδες.

Παρακαλώ απαντήστε στις παρακάτω γενικές ερωτήσεις, πριν συμπληρώσετε το Μέρος Α

Q1. Ποια είναι η ημερομηνία γέννησής σας?
Η ημερομηνία μπορεί να επιλεγεί από το παρακάτω λευκό τετράγωνο στα δεξιά.
Παράδειγμα: 31/12/1950

Q2. Ποια είναι η σημερινή ημερομηνία?
Η ημερομηνία μπορεί να επιλεγεί από το παρακάτω λευκό τετράγωνο στα δεξιά.
Παράδειγμα: 12/12/2007

Q3. Ποιο είναι το φύλο σας?
Παρακαλώ επιλέξτε μία απάντηση από τον παρακάτω πίνακα.

Άρρεν	*Θήλυ*
○	○

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Μέρος Α: Δραστηριότητες στο σπίτι

Α1. Για τη μετακίνηση σας

Q1. Ποια μέσα μεταφοράς χρησιμοποιήσατε πιο συχνά τις τελευταίες τέσσερις εβδομάδες, αν εξαιρέσετε τη μεταφορά προς και από την εργασία σας?

Παρακαλώ επιλέξτε μία απάντηση από τον ακόλουθο πίνακα.

Αυτοκίνητο / μηχανή	Περπάτημα	Μέσα μαζικής μεταφοράς	Ποδήλατο
○	○	○	○

Α2. Τηλεόραση, DVD ή βίντεο

Q1. Παρακαλώ αναφέρετε τις ώρες που παρακολουθείτε τηλεόραση, βίντεο ή DVD ανά ημέρα?

Παρακαλώ επιλέξτε μία απάντηση για κάθε σειρά του πίνακα που ακολουθεί.

Ώρες παρακολούθησης Τηλεόρασης, DVD ή βίντεο ανά ημέρα	Μέσος όρος κατά τη διάρκεια των τελευταίων τεσσάρων εβδομάδων					
	Καθόλου	Λιγότερο από 1 ώρα την ημέρα	1 έως 2 ώρες την ημέρα	2 έως 3 ώρες την ημέρα	3 έως 4 ώρες την ημέρα	Περισσότερο από 4 ώρες την ημέρα
Καθημερινές πριν τις 6 μμ	○	○	○	○	○	○
Καθημερινές μετά τις 6 μμ	○	○	○	○	○	○
Σαββατοκύριακα πριν τις 6 μμ	○	○	○	○	○	○
Σαββατοκύριακα μετά τις 6 μμ	○	○	○	○	○	○

Α3. Χρήση ηλεκτρονικού υπολογιστή στο σπίτι αλλά όχι στην εργασία σας
[π.χ. διαδίκτυο, ηλεκτρονικό ταχυδρομείο (e-mail), ηλεκτρονικά ψυχαγωγικά παιχνίδια (playstation, xbox, gameboy κ.λπ)]

Q1. Παρακαλώ αναφέρετε τις ώρες που χρησιμοποιείτε τον ηλεκτρονικό υπολογιστή ανά ημέρα?

Παρακαλώ επιλέξτε μία απάντηση για κάθε σειρά του πίνακα που ακολουθεί.

Ώρες χρήσης του ηλεκτρονικού υπολογιστή στο σπίτι ανά ημέρα	Μέσος όρος κατά τη διάρκεια των τελευταίων τεσσάρων εβδομάδων					
	Καθόλου	Λιγότερο από 1 ώρα την ημέρα	1 έως 2 ώρες την ημέρα	2 έως 3 ώρες την ημέρα	3 έως 4 ώρες την ημέρα	Περισσότερο από 4 ώρες την ημέρα
Καθημερινές πριν τις 6 μμ	○	○	○	○	○	○
Καθημερινές μετά τις 6 μμ	○	○	○	○	○	○
Σαββατοκύριακα πριν τις 6 μμ	○	○	○	○	○	○
Σαββατοκύριακα μετά τις 6 μμ	○	○	○	○	○	○

A4. Χρήση σκαλοπατιών/σκάλας στο σπίτι

Q1. Παρακαλώ αναφέρετε πόσες φορές την ημέρα ανεβαίνετε έναν όροφο (περίπου 10 σκαλοπάτια) στο σπίτι σας?

Παρακαλώ επιλέξτε μία απάντηση για κάθε σειρά του πίνακα που ακολουθεί.

Φορές που ανεβαίνετε έναν όροφο (περίπου 10 σκαλοπάτια) κάθε ημέρα στο σπίτι σας	*Μέσος όρος κατά τη διάρκεια των τελευταίων τεσσάρων εβδομάδων*					
	Καθόλου	*1 έως 5 φορές την ημέρα*	*6 έως 10 φορές την ημέρα*	*11 έως 15 φορές την ημέρα*	*16 έως 20 φορές την ημέρα*	*Περισσότερο από 20 φορές την ημέρα*
Καθημερινές	○	○	○	○	○	○
Σαββατοκύριακο	○	○	○	○	○	○

A5. Μέρος Α: Σχόλια

Μόνο στην περίπτωση που το επιθυμείτε, *παρακαλώ σημειώστε εδώ οποιοδήποτε σχόλιο έχετε, σημειώνοντας την υποενότητα και την ερώτηση στην οποία αναφέρεται.*

Παρακαλώ σημειώστε εδώ σχόλια για οποιαδήποτε πτυχή του Μέρους Α:	

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Μέρος Β: Σωματική δραστηριότητα στο πλαίσιο της εργασίας

B1. Αμειβόμενη εργασία τις τελευταίες 4 εβδομάδες

Q1. Τις τελευταίες τέσσερις εβδομάδες απασχοληθήκατε σε αμειβόμενη εργασία ή σε κάποια οργανωμένη εθελοντική εργασία?

Παρακαλώ επιλέξτε ΝΑΙ αν εργαζόσασταν ή ΟΧΙ αν δεν εργαζόσασταν.

Εργαζόσασταν κατά την διάρκεια των τελευταίων τεσσάρων εβδομάδων?	
Ναι ○	Όχι ○

Οι ερωτήσεις αυτές εμφανίζονται αν επιλέξατε "Απασχολήθηκα σε αμειβόμενη εργασία τις 4 τελευταίες εβδομάδες" στο Μέρος Β1 ερώτηση 1

Ποια η διάρκεια, το είδος και το μέγεθος της σωματικής σας δραστηριότητας στην εργασία σας

B2. Ώρες στη δουλειά

Q1. Παρακαλώ αναφέρετε το σύνολο των ωρών και λεπτών που εργαστήκατε ανά εβδομάδα, σε κάθε μία από τις τελευταίες 4 εβδομάδες (χωρίς να περιλαμβάνετε ο χρόνος μετακίνησης)

Παρακαλώ σημειώστε το συνολικό χρόνο εργασίας σας κάθε εβδομάδα σε ώρες και λεπτά.

Ώρες εργασίας (μη συμπεριλαμβανομένης της μεταφοράς)	*Ώρες*	*Λεπτά*
4 εβδομάδες πριν	*0*	*0*
3 εβδομάδες πριν	*0*	*0*
2 εβδομάδες πριν	*0*	*0*
1 εβδομάδα πριν	*0*	*0*

B3. Είδος εργασίας

Q1. Παρακαλώ επιλέξτε το είδος της εργασίας που αντιπροσωπεύει καλύτερα την απασχόλησή σας τις τελευταίες 4 εβδομάδες, από τις 4 επιλογές που ακολουθούν

Καθιστική απασχόληση *Περνάτε τον περισσότερο χρόνο σας καθισμένοι (π.χ. δουλειά γραφείου)*	○
Όρθια απασχόληση *Περνάτε τον περισσότερο χρόνο σας όρθιοι ή περπατώντας, αλλά η δουλειά σας δεν απαιτεί έντονη σωματική προσπάθεια (π.χ., βοηθός μαγαζιού, κομμωτής, φύλακας κ.λπ.)*	○
Χειρωνακτική εργασία *Η εργασία αυτή απαιτεί μέτρια σωματική προσπάθεια και χρήση βαριών αντικειμένων και εργαλείων (π.χ., υδραυλικός, ηλεκτρολόγος, μαραγκός κ.λπ.)*	○
Βαριά χειρωνακτική εργασία *Η εργασία αυτή απαιτεί πολύ έντονη σωματική προσπάθεια και χρήση πολύ βαριών αντικειμένων (π.χ. ανθρακωρύχος, φορτοεκφορτωτής, κτίστης, οικοδόμος κ.λπ.)*	○

B4. Μεταφορά προς και από την εργασία σας τις τελευταίες τέσσερις εβδομάδες

Q1. Παρακαλώ σημειώστε την απόσταση από το σπίτι σας ως την κύρια εργασία σας?

Παρακαλώ σημειώστε την απόσταση σε χιλιόμετρα.

	Απόσταση *π.χ. 7.5 km*
χιλιόμετρα	0.0

Q2. Πόσες φορές την εβδομάδα μεταβαίνατε από το σπίτι σας στην κύρια εργασία σας?

Παρακαλώ σημειώστε των αριθμό των διαδρομών ΠΡΟΣ την εργασία σας (Υπολογίστε μόνο τη μεταφορά προς την εργασία σας και όχι το ταξίδι της επιστροφής).

Αριθμός ταξιδιών π.χ. 5
0

Q3. Παρακαλώ αναφέρετε τον τρόπο μετακίνησής σας προς την κύρια εργασία σας?

Παρακαλώ επιλέξτε μία απάντηση για κάθε σειρά του πίνακα που ακολουθεί.

Με τι μέσο μεταφοράς ταξιδεύετε συνήθως για τη δουλειά σας?	*Πάντα*	*Συνήθως*	*Περιστασιακά*	*Ποτέ ή Σπάνια*
Αυτοκίνητο / μηχανή	○	○	○	○
Με μεταφορικό μέσο της δουλειάς μου ή με μέσο μαζικής μεταφοράς	○	○	○	○
Ποδήλατο	○	○	○	○
Βάδισμα	○	○	○	○

Q4. Ποιος είναι ο ταχυδρομικός κώδικας της κύριας εργασίας σας τις τελευταίες 4 εβδομάδες?

Παρακαλώ σημειώστε τον ταχυδρομικό κώδικα της κύριας εργασίας σας.

ΤΚ *π.χ. 115 27*

Q5. Αν δε γνωρίζετε τον ταχυδρομικό κώδικα της κύριας εργασίας σας, παρακαλώ σημειώστε εδώ τη διεύθυνση της κύριας εργασίας σας?

Παρακαλώ σημειώστε τη διεύθυνση της κύριας εργασίας σας.

Αφορά τη γραμμή 1:	
τη γραμμή 2:	
τη γραμμή 3:	
τη γραμμή 4:	

Q6. Ποιος είναι ο ταχυδρομικός κώδικας της διεύθυνσης του σπιτιού σας?

Παρακαλώ σημειώστε τον ταχυδρομικό κώδικα του σπιτιού σας.

ΤΚ *π.χ. 115 27*

Q7. Αν δε γνωρίζετε τον ταχυδρομικό κώδικα του σπιτιού σας, παρακαλώ σημειώστε εδώ τη διεύθυνση του σπιτιού σας?

Παρακαλώ σημειώστε τη διεύθυνση του σπιτιού σας.

Αφορά τη γραμμή 1:	
τη γραμμή 2:	
τη γραμμή 3:	
τη γραμμή 4:	

B5. Μέρος Β: Σχόλια

Μόνο στην περίπτωση που το επιθυμείτε, *παρακαλώ σημειώστε εδώ οποιοδήποτε σχόλιο έχετε, σημειώνοντας την υποενότητα και την ερώτηση στην οποία αναφέρεται.*

Παρακαλώ σημειώστε εδώ σχόλια για οποιαδήποτε πτυχή του Μέρους Β:	

InterAct

MRC Epidemiology Unit

RPAQ

Μέρος Γ: Ψυχαγωγικές Σωματικές Δραστηριότητες

Στη συνέχεια θα ερωτηθείτε σχετικά με τις δραστηριότητες σας κατά την διάρκεια του ελεύθερου χρόνου σας.

Παρακαλώ αναφέρετε πόσο συχνά ασχοληθήκατε με την εκάστοτε δραστηριότητα κατά τις τελευταίες τέσσερις εβδομάδες.

Παρακαλώ αναφέρετε το χρόνο που κατά μέσο όρο αφιερώσατε στην εκάστοτε δραστηριότητα.

Παράδειγμα

Περπάτημα για ψυχαγωγία περίπου 40 λεπτά μία φορά την εβδομάδα. Κλάδεμα ή ξερίζωμα αγριόχορτων στον κήπο κάθε δεκαπενθήμερο (διάρκειας περίπου 1 ώρας και 10 λεπτών). Αν ίσχυαν τα παραπάνω θα συμπληρώνατε τον πίνακα ως εξής:

	Φορές ενασχόλησης με τις παρακάτω δραστηριότητες τις τελευταίες 4 εβδομάδες							**Μέσος όρος χρόνου ενασχόλησης ανά φορά**	
	Καθόλου	Μια φορά τις τελευταίες 4 εβδομάδες	2 ως 3 φορές τις τελευταίες 4 εβδομάδες	Μία φορά την εβδομάδα	2 ως 3 φορές την εβδομάδα	4 ως 5 φορές την εβδομάδα	Κάθε μέρα	Ώρες	Λεπτά
Κλάδεμα και ξερίζωμα αγριόχορτων			●					*1*	*10*
Περπάτημα για ψυχαγωγία				●					*40*

Παρακαλώ απαντήστε ΠΟΣΕΣ ΦΟΡΕΣ ασχοληθήκατε με τις παρακάτω δραστηριότητες τις προηγούμενες τέσσερις εβδομάδες καθώς και το χρόνο που κατά ΜΕΣΟ ΟΡΟ αφιερώσατε στην κάθε δραστηριότητα.

Παρακαλώ συμπληρώστε ΚΑΘΕ γραμμή

	Φορές ενασχόλησης με τις παρακάτω δραστηριότητες τις τελευταίες 4 εβδομάδες							Μέσος όρος χρόνου ενασχόλησης ανά φορά	
	Καθόλου	Μια φορά τις τελευταίες 4 εβδομάδες	2 έως 3 φορές τις τελευταίες 4 εβδομάδες	Μία φορά την εβδομάδα	2 έως 3 φορές την εβδομάδα	4 έως 5 φορές την εβδομάδα	Κάθε μέρα	Ώρες	Λεπτά
Κολύμβηση - ψυχαγωγία	○	○	○	○	○	○	○	0	0
Κολύμβηση αγωνιστικός αθλητισμός	○	○	○	○	○	○	○	0	0
Αθλοπαιδιές στην παραλία	○	○	○	○	○	○	○	0	0
Περπάτημα για ψυχαγωγία	○	○	○	○	○	○	○	0	0
Πεζοπορία με σακίδιο ή ορειβασία	○	○	○	○	○	○	○	0	0
Ποδηλασία για ψυχαγωγία	○	○	○	○	○	○	○	0	0
Ποδηλασία πίστας ή ποδηλασία ανώμαλου δρόμου	○	○	○	○	○	○	○	0	0
Βαριές κηπουρικές εργασίες (σκάψιμο, φτυάρισμα, κοπή ξύλων...)	○	○	○	○	○	○	○	0	0
Ελαφριές κηπουρικές εργασίες (κούρεμα γρασιδιού, πότισμα γρασιδιού ή κήπου, ξερίζωμα αγριόχορτων ή κλάδεμα)	○	○	○	○	○	○	○	0	0
Παρακαλώ σημειώστε εδώ οποιοδήποτε σχόλιο για τα παραπάνω:									

Παρακαλώ συμπληρώστε ΚΑΘΕ γραμμή

	Φορές ενασχόλησης με τις παρακάτω δραστηριότητες τις τελευταίες 4 εβδομάδες							Μέσος όρος χρόνου ενασχόλησης ανά φορά	
	Καθόλου	Μια φορά τις τελευταίες 4 εβδομάδες	2 έως 3 φορές τις τελευταίες 4 εβδομάδες	Μία φορά την εβδομάδα	2 έως 3 φορές την εβδομάδα	4 έως 5 φορές την εβδομάδα	Κάθε μέρα	Ώρες	Λεπτά
Μαστορέματα στο σπίτι (ξυλουργικές εργασίες, εργασίες συντήρησης του σπιτιού, συντήρηση οχήματος)	○	○	○	○	○	○	○	0	0
Υψηλής έντασης αερόμπικ (στέπ-αερόμπικ, τραμπολίνο)	○	○	○	○	○	○	○	0	0
Άλλα είδη αερόμπικ	○	○	○	○	○	○	○	0	0
Ασκήσεις με αντιστάσεις (βάρη)	○	○	○	○	○	○	○	0	0
Ασκήσεις για τη βελτίωση της φυσικής κατάστασης	○	○	○	○	○	○	○	0	0
Μηχάνημα ποδηλασίας	○	○	○	○	○	○	○	0	0
Ασκήσεις εδάφους	○	○	○	○	○	○	○	0	0
Χορός	○	○	○	○	○	○	○	0	0
Αγωνιστικό τρέξιμο	○	○	○	○	○	○	○	0	0
Παρακαλώ σημειώστε εδώ οποιοδήποτε σχόλιο για τα παραπάνω:									

Παρακαλώ συμπληρώστε ΚΑΘΕ γραμμή

	Φορές ενασχόλησης με τις παρακάτω δραστηριότητες τις τελευταίες 4 εβδομάδες							Μέσος όρος χρόνου ενασχόλησης ανά φορά	
	Καθόλου	Μια φορά τις τελευταίες 4 εβδομάδες	2 έως 3 φορές τις τελευταίες 4 εβδομάδες	Μία φορά την εβδομάδα	2 έως 3 φορές την εβδομάδα	4 έως 5 φορές την εβδομάδα	Κάθε μέρα	Ώρες	Λεπτά
Τρέξιμο σε κυλιόμενο διάδρομο	○	○	○	○	○	○	○	0	0
Τροχάδην (τρέξιμο για ψυχαγωγία)	○	○	○	○	○	○	○	0	0
Μπόουλινγκ	○	○	○	○	○	○	○	0	0
Επιτραπέζια αντισφαίριση (πινγκ-πονγκ)	○	○	○	○	○	○	○	0	0
Αντισφαίριση (τένις) ή αντιπτέριση (μπάντμιντον)	○	○	○	○	○	○	○	0	0
Σκουός	○	○	○	○	○	○	○	0	0
Γκολφ	○	○	○	○	○	○	○	0	0
Ομαδικά αθλήματα με μπάλα (ποδόσφαιρο, χόκεϋ, πετοσφαίριση (βόλεϊ), καλαθοσφαίριση (μπάσκετ)...)	○	○	○	○	○	○	○	0	0
Παρακαλώ σημειώστε εδώ οποιοδήποτε σχόλιο για τα παραπάνω:									

Παρακαλώ συμπληρώστε ΚΑΘΕ γραμμή

	Φορές ενασχόλησης με τις παρακάτω δραστηριότητες τις τελευταίες 4 εβδομάδες							Μέσος όρος χρόνου ενασχόλησης ανά φορά	
	Καθόλου	Μια φορά τις τελευταίες 4 εβδομάδες	2 έως 3 φορές τις τελευταίες 4 εβδομάδες	Μία φορά την εβδομάδα	2 έως 3 φορές την εβδομάδα	4 έως 5 φορές την εβδομάδα	Κάθε μέρα	Ώρες	Λεπτά
Κωπηλασία	○	○	○	○	○	○	○	0	0
Κυνήγι, σκοποβολή και ψάρεμα	○	○	○	○	○	○	○	0	0
Ιππασία	○	○	○	○	○	○	○	0	0
Παίξιμο μουσικών οργάνων ή τραγούδι	○	○	○	○	○	○	○	0	0
Ιστιοπλοΐα, ιστιοσανίδα, ή λεμβοδρομίες	○	○	○	○	○	○	○	0	0
Αθλήματα μάχης (πολεμικές τέχνες, πυγμαχία, πάλη)	○	○	○	○	○	○	○	0	0
Παρακαλώ σημειώστε εδώ οποιοδήποτε σχόλιο για τα παραπάνω:									

Μέρος Γ: Σχόλια

Μόνο στην περίπτωση που το επιθυμείτε, *παρακαλώ σημειώστε εδώ οποιοδήποτε γενικό σχόλιο για το Μέρος Γ.*

Παρακαλώ σημειώστε εδώ σχόλια για οποιαδήποτε πτυχή του Μέρους Γ:	

Το INTERACT (LSHM - CT - 2006 - 037197)
είναι πρόγραμμα που χρηματοδοτείται από την Ευρωπαϊκή Κοινότητα, υπό την αιγίδα του 6ου Κοινοτικού Πλαισίου Στήριξης.

Σας ευχαριστούμε.

9.0 Supplements

9.1 List of tables

9.2 List of abbreviations

PSS- Primary Sjogren's Syndrome

HC- Healthy Controls

RPAQ- Recent Physical Activity Questionnaire