

THE IMPACT OF RECREATIONAL PHYSICAL ACTIVITY ON HEALTH AND WELL-BEING OF OLDER ADULTS

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Abstract: Recent studies showed that recreational physical activity has positive affect on people's health and well-being. This research study aimed to investigate the effect of two different types of recreational physical activity, the Fitness and the Harmonic Gymnastics, on health and well-being of older adults. Thirty-nine healthy adults aged 50 years and older from Tel-Aviv, volunteered to participate in this research program, and were divided into three groups: 7 subjects who did not participate in any physical activity program, 16 subjects in the Fitness and 16 in the Harmonic Gymnastics intervention programs. They filled a consent form and answered the SF-36 questionnaire. The data was analyzed though the SPSS v. 23.0 statistical program. The results showed that the No PA group decreased all health and well-being subscales, except the emotional well-being, which revealed no differences. The two active groups improved several health and well-being subscales and significantly improved the health and well-being composite score ($p = 0.015$, $d = 0.35$ in the Fitness and $p = 0.001$, $d = 0.5$ in the HG). The differences between the groups occurred mainly in the emotional well-being subscales. The Fitness group improved some of the emotional well-being subscales but decreased the social well-being, while the HG group did not reveal significant differences in the emotional or social well-being. This study highlighted the benefits of recreational physical activity on the health and well-being of older adults, and also the negative effects of sedentary behavior. It would be necessary to investigate the two types of recreational physical activity in normal conditions, rather than in Covid-19 period of time.

Key words: Health and Well-Being; Older Adults; Recreational Physical Activity; Hamonic Gymnastics; Fitness

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INTRODUCTION

People seek for different paths to prolong life, and more importantly to improve health, well-being and the quality of life, beyond basic survival needs. In addition to the will of people not to be ill, they wish to enjoy life, feel good, be happy and independent, fulfill themselves, make their mark and be part of the society. Therefore, health and well-being are a multicomponent term, which includes physiological, cognitive, social and mental parameters (Kashdan and Biswas-

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Diener, 2014; Ryan and Deci, 2017). In the face of deficiencies in the physiological, neurological, cognitive and mental systems in old age, health and well-being may decrease with age, and the decrease in health and well-being might adversely affects these systems (Khan, Singer and Vaughan, 2017; Wilson et al., 2013).

Recreational physical activity (RPA) was found to be an important key factor, which can bring about a positive change in this vicious circle. Most importantly, RPA may increase the ability of independent functioning, which was also found to be a key factor in increasing health and well-being, not only in the physical aspects, but also in mental and social aspects (Fielding et al., 2017). Recent studies have shown that aerobic exercise and muscle strengthening contributed to functioning and capability and also to the important physiological body systems, which reduced diseases and enhanced the body health state by regulating the immune system, heart and blood pressure, and by reducing the risk of obesity, diabetes and coronary diseases (Bennie et al., 2018; Park and Kim, 2021). In many ways, the cognitive aspect, was also found to be strongly related to health and well-being levels (Allerhand, Gale and Deary, 2014) and RPA which is related to motor learning and coordination was found to be involved in improving the neural conduction and neural functioning processes, which enhance cognitive skills such as: attention, executive functioning, problem solving, memory, mental and social states (Carmeli, 2017).

Kadariya, Gautam and Aro (2019), specified in their scoping review that the most common PA older adults were involved in was walking, in addition to swimming, dancing, jogging, biking, martial arts, tennis, badminton and golf. They found that these RPA were related to better sleep quality, and had positive effect on mental health of older adults. Kim, Lee, Chun, Han and Heo (2017), also found that PA in leisure time was a significant predictor of better health and well-being and protected from loneliness. Moreover, sedentary time was significantly related to physical capability decreases such as: muscle strength, balance, speed, agility and increased the fear of falling, disabilities, frailty and the risks of all-cause mortality (Rosenberg et al., 2016). These insights were reinforced by the, physiological, neurological, psychological and sociological professionals, which created the Copenhagen consensus paper, and defined the risks and negative impact of the sedentary behavior and the importance of RPA and PA for older adults' health and well-being (Bangsbo, et al., 2019).

Nevertheless, in older adults' population it is very important to adjust the type and intensity of the PA and be accurate in the way the activity is accessed, mainly in the face of the age-related declines and the sensitivity to the body homeostasis in this stage of life (Brown, 2011). Although most recommendations are associated with moderate to vigorous intensity of PA, studies which focused on older adults, revealed great results in the light to moderate intensity, which was found to be highly beneficial in old age, and was found to be more tailored for them than vigorous intensity (Amagasa et al., 2018).

The aim of this research study was focused on the impact of RPA on health and well-being of older adults: the Fitness moderate RPA program and the Harmonic Gymnastics (HG), a somatic type of PA, in low intensity. In this study we started from the presumption that RPA has a positive influence on health and well-being of older people, and that health and well-being of older adults may be influenced by the type of the physical activity.

MATERIALS AND METHODS

The research samples

A total of 58 healthy people, aged 50 and over, from central cities in Israel (Tel-Aviv and Raanana), gave their written consent form of voluntary participation in this research program. They were divided into three groups: 22 subjects participated in the Fitness RPA group, 25 subjects in the Harmonic Gymnastics (HG) RPA group and 11 subjects who did not participate in any PA. The study was approved by the Ethics Commission of Babeş-Bolyai University of Cluj-

Napoca, Romania, and was conducted for 3 months: from March to June 2020. Three weeks after the beginning of the program, 19 subjects dropped from the program, since Covid-19 restrictions prevented them from participating in the original program plan. They did not adjust the alternative way of practicing and stopped taking part of the study. Finally, the sample which managed to participate in the program, in Covid-19 conditions, included 39 subjects, 16 in each active group (Fitness and HG) and 7 subjects, who did not participate in any PA and were part of the No PA group.

Intervention programs

The Fitness physical activity program

At the beginning, the Fitness PA group practiced with a skilled fitness trainer, muscles' strengthening and endurance by the weight lifting gym machineries, cycling ergometer and treadmill running machine, in addition to some flexibility and balance exercises at the gym club. After three weeks, gym clubs had to be closed and gatherings were not allowed following Covid-19 restrictions. The subjects of the Fitness group practiced outdoor by themselves. Some of them practiced walking, running, biking in addition to using the outdoor fitness facilities in the neighborhood. Some of them exercised through some fitness practice applications. All subjects of the Fitness group practiced three months, two times a week, while each practice lasted about 50 minutes.

The Harmonic Gymnastics program

The Harmonic Gymnastics is a RPA which focuses on practicing coordination, vestibular and proprioceptive abilities, attention and body awareness, in addition to muscle strengthening and flexibility with body weight (Eddy, 2016; Mullan, 2019; Stebbins, 1892). In the first three weeks, before the Covid-19 restrictions, the HG group practiced two times a week for 50 minutes in each practice in a studio. The exercises were mostly on the matt on the studio's floor and also in various sitting and standing positions. The HG program is based on the 'Healthy RPA' which was delivered in the Physical Activity and Movement Faculty of the Kibbutzim College of Education, taught by Dr. Efrat Heiman, in Tel Aviv Israel, following the HG approach brought by Judith Binnetter and Lotte Kristeller, in 1944' (Eddy, 2016; Mullan, 2016). In this somatic RPA, the trainees exercised mainly flexibility and strengthening exercises of the joints and the body muscles, with attention and body awareness to the quality of the movements and the breathing. The HG practice contains variety of exercises, which usually do not repeat, that way the trainees exercise also memory, coordination and motor learning. Additionally, in HG, they practice proprioceptive ability since the trainer explains the exercises in words, rather than physically showing them, and the trainees have to perform the movements following the verbal descriptions. Vestibular ability is also practiced in these sessions, since many exercises include rolling from one side to another, from lying on the back to lying on the stomach and from lying to sitting and standing up (In Covid-19 conditions the HG group continued practicing together from their homes, by a digital application (Zoom), following the HG trainer's instructions through the mobile phone, laptop or computer.

The measurement tools

Health and well-being were measured by the Hebrew version of the SF-36 - I questionnaire, before and after three months program. The SF-36 is the short form (SF) of Medical Outcome Study (MOS) questionnaire, which consists of 36-items related to the subject's physical functioning abilities and limitations, general health, bodily pain, social well-being, mental health and mental limitations, energy-fatigue and one question about health and well-being in the present time compared to last year. In addition to the separated subscales, the general score (composite score), which represents the percentage achieved by each subject from the maximum score (3600 p), is also recorded. This questionnaire was formed by the Rand Corporation of Santa Monica and

was found to be highly valid and reliable. It is widely used for health status and quality of life measurements of adults and older adults, in many countries all over the world in healthy and ill populations (Rand health program, 1992; Gandek, et al., 1998).

The statistical analysis was designed by the SPSS software version 23.0. The comparisons between the groups, before and after the program, were based on Shapiro-Wilk tests of normality.

RESULTS

The socio-demographic data of this research study sample showed that in the Fitness group the mean age was 63.44 (8.25), while in the HG group it was 59.37 (10.71) and 64,14 (14,15) in the No PA group. Most of the sample subjects were married (61.54%) highly educated (71.84% of the total sample had academic education and only 2.56% did not finish high school). In the Fitness and HG there were 9 women and 7 men while in the No PA group there were 7 women.

The results of the comparisons of the mean composite score of the SF-36 questionnaire of each group, between before (T1) and after (T2) the participation in the intervention programs, were as follows: The No PA group T1 = 72,501, T2 = 56,384; Fitness group T1 = 78,842, T2 = 83,559; HG group T1 = 74,714, T2 = 81,615 (Figure 1).

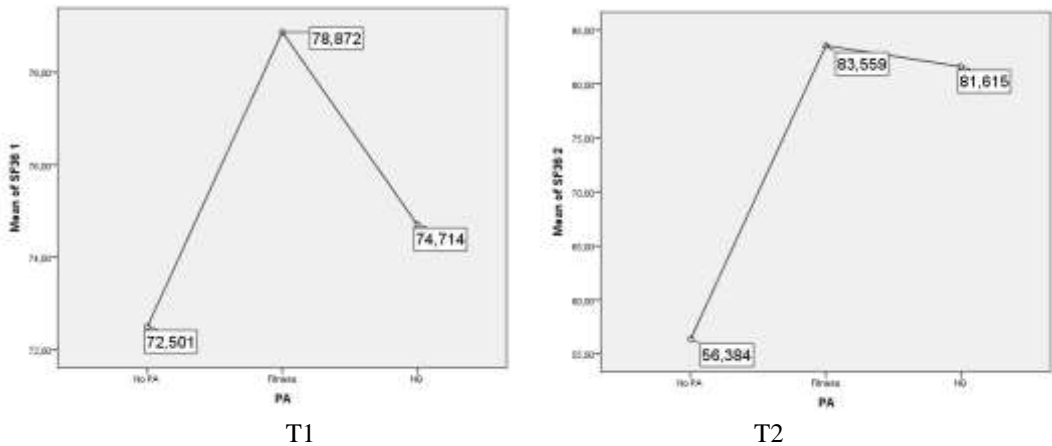


Figure 1. The composite score means of the SF 36 questionnaire by group and recording time

The analysis of the means of the composite scores of the SF36 questionnaire registered for the three groups shows the following: before the intervention program the data were normally distributed ($p = 0.258$), and the ANOVA test indicates that there were no differences between the three groups ($F = 1.433$, $p = 0.252$); after the application of the intervention program the data were not normally distributed ($p = 0.001$), and the Kruskal Wallis test shows that the difference between the means recorded by the three groups was significant ($\chi^2 = 14.510$, $p = 0.001$).

Table 1. Comparisons between the groups before the program in the normal distributed data (N=39)

Multiple Comparisons

Bonferroni

Dependent Variable	(I) PA	(J) PA	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Bp 1	No PA	Fitness	-13.348	17.068	1.000	-56.21	29.51
		HG	9.152	17.068	1.000	-33.71	52.01

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	Fitness	HG	22.500	13.316	0.299	-10.94	55.94
Gh 1	No PA	Fitness	-2.232	33.575	1.000	-86.54	82.07
		No PA	2.232	33.575	1.000	-82.07	86.54
	Fitness	HG	40.625	26.194	0.389	-25.15	106.40
EWB 1	No PA	Fitness	-45.000	29.366	0.403	-118.74	28.74
		HG	-41.250	29.366	0.506	-114.99	32.49
	Fitness	HG	3.750	22.911	1.000	-53.78	61.28
E/F 1	No PA	Fitness	0.179	21.659	1.000	-54.21	54.56
		HG	0.179	21.659	1.000	-54.21	54.56
	Fitness	HG	0.000	16.898	1.000	-42.43	42.43
SF36c 1	No PA	Fitness	-6.37010	4.18179	0.409	-16.8707	4.1305
		HG	-2.21211	4.18179	1.000	-12.7127	8.2885
	Fitness	HG	4.15799	3.26259	0.632	-4.0345	12.3505

The comparisons between the three groups analyzed by the Bonferroni multiple comparisons tests for the normal distributed data, presented in Table 1, show there were no differences between the groups before the program in the Bodily pain (Bp 1), General health (Gh 1), Emotional Well-Being (EWB 1), Energy-Fatigue (E/F 1) and in the SF-36 composite score (SF-36c 1).

Table 2. Comparison of means according to the SF-36 subscales before the intervention program for the non-normal distributed data (N = 39)

<i>Test Statistics^{a,b}</i>						
	Pf 1	RP 1	RE 1	SWB 1	q-2-1	
Chi-Square	3.009	0.902	1.393	0.727	1.275	
df	2	2	2	2	2	
Asymp. Sig.	0.222	0.637	0.498	0.695	0.529	

a. Kruskal Wallis Test

b. Grouping Variable: PA

Analysis of the significance of the differences between the means scores, presented in Table 2, also show there were no differences between the groups before the intervention program in any of the subscales which were analyzed by the Kruskal Wallis test: the Pf-1 ($p = 0.222$), RP-1 ($p = 0.637$), RE-1 ($p = 0.498$), SWB-1 ($p = 0.695$) and in q-2-1 ($p = 0.529$) subscales.

The comparisons between the groups after the intervention program for the normal distributed data, which were analyzed by the ANOVA showed there were significant differences in the Gh 2 ($F = 8.904$, $df = 36$, $p = 0.001$) and no differences in the EWB - 2 subscale ($F = 0.993$, $df = 36$, $p = 0.380$). In the subscales which the data was not normally distributed after the program, the Kruskal Wallis test showed there were significant differences in the Pf-2 ($p = 0.006$), RP-2 ($p = 0.000$), Bp-2 ($p = 0.002$), RE-2 ($p = 0.000$), SWB-2 ($p = 0.022$), q-2-2 ($p = 0.009$) subscales and the SF-36c-2 ($p = 0.001$).

The comparisons of the means recorded before and after the intervention program were performed by the paired t-test for the normal distributed data and by the Wilcoxon test for the non-normal distributed data. Table 3 shows that the No PA group decreased the means values in all SF-36 subscales, and the decrease was significant in the Pf (0.009 , $d = 0.4$), Bp ($p = 0.013$, $d = 0.25$), Gh ($p = 0.001$, $d = 0.98$), RE ($p = 0.02$, $d = 0.3$), SWB ($p = 0.02$, $d = 0.3$), E/F ($p = 0.036$, $d = 0.3$) and the SF-36c ($p = 0.015$, $d = 0.4$). In addition, there was borderline significance in the RPf subscale ($p = 0.057$, $d = 0.2$).

The Fitness and the HG groups increased all the means values of the SF-36 subscales except the SWB. Table 3 shows that the mean values of the active groups: the Fitness and the HG

were higher after the intervention program than before the program in all SF-36 subscales, except for the SWB. The Fitness group significantly increased the RPF ($p = 0.009$, $d = 0.4$), Bp ($p = 0.004$, $d = 0.4$), RE ($p = 0.05$, $d = 0.3$), E/F ($p = 0.036$, $d = 0.3$) and the SF-36c ($p = 0.015$, $d = 0.35$). In question 2 subscale, the Fitness group increased the mean value with borderline significance ($p = 0.056$, $d = 0.25$) and in the SWB subscale the mean value of the group, significantly decreased ($p = 0.038$, $d = 0.3$). The HG group significantly increased the Pf ($p = 0.002$, $d = 0.5$), RP ($p = 0.004$, $d = 0.4$), Gh ($p = 0.000$, $d = 1.00$), q- 2 ($p = 0.001$, $d = 0.5$) and the SF-36c ($P = 0.001$, $D = 0.5$). There were no differences in the HG group in the Bp ($p = 0.065$, $d = 0.4$), EWB ($p = 0.947$, 0.01), RE ($p = 0.079$, $d = 0.2$), SWB ($p = 0.128$, $d = 0.2$) and E/F ($p = 0.318$, $d = 0.2$).

Table 3. Comparisons of the mean values of the SF-36 subscales of the groups, before and after the program (N=39)

Paired Sample tests						
PA group	Health and Well-being Subscale	Mean 1 (Stdev.)	Mean 2 (Stdev.)	t/Z*	Sig. (1 tail)	Effect size
No PA (N=7)	Physical functioning	835.71 (114.43)	729.86 (149.86)	-2.375*a	0.009	0.4
	Role Physical	271.43 (170.43)	114.29 (121.45)	-1.581*a	0.057	0.2
	Bodily pain	140.71 (27.75)	100.71 (28.49)	-2.226*a	0.013	0.25
	General health	357.14 (27.82)	264.29 (42.96)	6.128	0.001	0.98
	Role Emotional	235.71 (74.80)	157.14 (97.59)	-2.060*a	0.02	0.3
	Emotional WB	280.00 (54.16)	282.86 (68.73)	-0.082	0.938	0.009
	Social WB	171.43 (26.73)	103.57 (68.36)	-2.043*a	0.021	0.3
	Energy/Fatigue	271.43 (32.37)	234.29 (60.79)	-1.784*a	0.037	0.3
	q-2 Health compared to last year	46.43 (26.73)	42.86 (12.20)	-0.378*a	0.353	0.04
	SF36 Composit score	72.5014 (8.34)	56.3843 (7.45)	-2.366*a	0.009	0.4
Fitness (N=16)	Physical functioning	903.13 (88.45)	929.69 (98.83)	-1.399*b	0.081	0.2
	Role Physical	350.00 (103.28)	393.75 (25.00)	-2.121*b	0.017	0.3
	Bodily pain	154.06 (27.09)	179.06 (27.64)	-2.684*b	0.004	0.4
	General health	359.38 (75.21)	373.44 (17.60)	-0.847	0.410	0.14
	Role Emotional	243.75 (81.39)	281.25 (40.31)	-1.613*b	0.054	0.3
	Emotional WB	325.00 (60.44)	330.00 (60.44)	-0.296	0.771	0.05
	Social WB	178.13 (25.62)	162.50 (42.82)	-1.768*a	0.038	0.3
	Energy/Fatigue	271.25 (53.15)	291.25 (48.97)	-1.796*b	0.036	0.3
	q-2 Health compared to last year	54.69 (22.77)	67.19 (15.05)	-1.588*b	0.056	0.25
	SF36 Composit score	78.8715 (7.28)	83.5590 (6.28)	-2.172*b	0.015	0.35
HG (N=16)	Physical functioning	834.38 (124.79)	896.88 (130.98)	-3.002*b	0.002	0.5
	Role Physical	325.00 (123.83)	356.25 (103.08)	-1.518*b	0.065	0.2
	Bodily pain	131.56 (48.60)	160.63 (48.44)	-2.694*b	0.004	0.4
	General health	318.75 (84.90)	392.19 (74.57)	-5.562	0.000	1.00
	Role Emotional	262.50 (71.88)	287.50 (34.16)	-1.414*b	0.079	0.2
	Emotional WB	321.25 (72.47)	322.50 (88.51)	-0.068	0.947	0.01
	Social WB	179.69 (29.18)	175.00 (32.91)	-1.134*a	0.128	0.2
	Energy/Fatigue	271.25 (47.31)	280.00 (53.67)	-.473*b	0.318	0.2
	q-2 Health compared to last year	45.31 (13.60)	67.19 (21.83)	-3.071*b	0.001	0.5
	SF36 Composit score	74.7135 (11.12)	81.6146 (11.07)	-3.351*b	0.001	0.5

*based on Wilcoxon Signed Ranks Test

a. Based on positive ranks.

b. Based on negative ranks.

DISCUSSION

The most prominent findings which emerged from the results of this study were related to the differences between the active groups, which increased various aspects of health and well-being, while the No PA group decreased almost all of the SF-36 subscales' scores. These results confirm this research first hypothesis, and are in line with evidence of studies from the last decade, which showed the risks of sedentary behavior in various parameters of health and well-being especially in older adults and the benefits of the PA and RPA for physical and mental functioning, health and well-being (Marquez, et al., 2020; Rosenberg, et al., 2016). Both PA programs were designed for older adults and were performed in the moderate level in the Fitness group and in low level in the HG group. Studies which investigated health and well-being showed that in moderate and low levels of PA, health and well-being were promoted, as was seen in this research study. Moreover, some studies indicated that in older adults' population, it was more suited than the high levels (Amagasa, et al., 2018; Fielding, et al., 2017; Fragala, et al., 2019).

The active groups of this research study, the Fitness and the HG groups, increased mainly the physical aspects of health and well-being in this research study, rather than the social or mental aspects. In the physical domains, the Fitness group significantly increased the RP ($p = 0.017$, $d = 0.3$), Bp ($p = 0.004$, $d = 0.4$), SF-36c ($p = 0.015$, $d = 0.35$) and had bordered significance in q-2 ($p = 0.056$, $d = 0.25$). The same trend occurred in the HG group, which improved the Pf ($p = 0.002$, $d = 0.5$), Bp ($p = 0.004$, $d = 0.4$), Gh ($p = 0.000$, $d = 1.00$) q-2 ($p = 0.001$, $d = 0.5$) and the SF-36c ($p = 0.001$, $d = 0.5$). But in the social and emotional domains, there were specific differences between the groups. The Fitness group increased the RE ($p = 0.05$, $d = 0.3$) and E/F ($p = 0.036$, $d = 0.3$), but decreased the SWB ($p = 0.038$, $d = 0.3$) and the HG group did not reveal any differences in EWB ($p = 0.947$), RE ($p = 0.079$), E/F ($p = 0.318$) and SWB ($p = 0.128$). These results are mixed and in a way are in line with the literature which presents many studies that show significant benefits of PA on mental health and well-being (Delle, et al., 2018; Biddle, Fox, and Boucher, 2000), along with other studies which indicate that the impact of PA on emotional well-being is not entirely clear, especially in the face of the Covid-19 pandemic. Rosenberg, et al. (2016) found significant declines in physical functioning and health following sedentary behavior, but no differences in mental and cognitive aspects. Violant-Holz, et al. (2020) who investigated the impact of PA in Covid-19 pandemic stressed that the restrictions and lockdowns had significant negative impact on older adults' emotional well-being and that the association between PA and emotional well-being revealed contraversial outcomes.

The Fitness group in this research study increased some emotional aspects, but significantly decreased the SWB, while the HG group, although did not reveal significant differences, did not experience this decline. The gap related to the social well-being between the groups, may be related to the fact that the HG subjects practiced as a group. All though practices were not performed face to face in the studio, the group remained together and met regularly two times a week for three months through a digital platform with a skilled trainer. Researchers indicated the importance of being part of a group and practicing with a skilled trainer. Lacroix, Hortobágyi, Beurskens and Granacher (2017) found in their literature review that supervised strength training increased the balance ability of older adults more than unsupervised practice. Komatsu, Yagasaki, Saito and Oguma (2017), found that practicing PA regularly in a group contributed to health and well-being of older adults, and increased the confidence in the community. Studies showed that older adults' motivation and levels of participation in PA were not depending on the PA intensity or type of practice, but rather on practicing at home or in group with a skilled trainer, involving intervention programs (van der Bij, Laurant and Wensing, 2002). Moreover, practicing through digital facilities was found beneficial by studies before the pandemic and during the Covid-19 pandemic (Cotten, Ford, Ford and Hale, 2012; Parker, et al., 2021).

On the other hand, it was surprising that the HG group did not reveal significant positive impact in SWB, EWB, RE and E/F. These results are in contrast to studies which showed that PA and RPA improved emotional and social well-being (Kadariya, Gautam and Aro, 2019; Callow, et al., 2020). But these results are in line with studies which indicated that the impact of PA on emotional well-being is not entirely clear. Teychenne, White, Richard and Schuche (2020), emphasized in their review of literature that PA and RPA may improve emotional well-being in some conditions, but it is depending on specific circumstances. Nevertheless, the Covid-19 pandemic may have played an intervening variable in this research study. The research program subjects completed the questionnaires before the program in February 2020, before the outbreak of Covid-19, and again after three months program, which had to be changed facing the restrictions, closures and social distancing of the first three months of the pandemic. Many studies emphasized the great negative impact the pandemic had on older adults' emotional well-being all over the world (Trabelsi, Ammar, Masmoudi et al., 2021). Faulkner, et al. (2021), found significant declines in mental health and well-being in 8,425 subjects following the pandemic, but people who practiced PA, did not reveal this decline. Although Savage, et al. (2020) found weak correlations between PA levels and mental health, Maugeri, et al. (2020) found a strong and significant correlation between them. The Fitness group however increased some of the emotional aspects of health and well-being and this is in line with the study of Lesser and Nienhuis (2020), who found that outdoor RPA, as was performed by the Fitness group of this research study, had significant association with higher emotional well-being.

Nevertheless, although the HG program is in low intensity, the mean scores of social and emotional well-being did not drop despite the Covid-19 pandemic, and health and well-being significantly improved in 4 subscales and in the composite score, with medium (0.4 / 0.5) to large (1.00) size effect. These results in these conditions, emphasize the importance of practicing flexibility, coordination and motor learning, proprioceptive and vestibular ability, attention and body awareness. Many studies showed the importance of practicing these abilities. Van der Maas (2016) found that body awareness practice reduced pain and improved functioning and the quality of life. Roberts, Phillips, Cooper, Gray and Allan (2017), found that lower intensity level of PA, revealed the greatest positive impact on everyday functioning, and the type of PA which was the most effective for older adults in their study was the types which involved memory and attention, coordination, balance and social interaction. Practicing these capabilities in HG program, may have had a positive impact on health and physical functioning, and may have reduced bodily pains, as was seen in other somatic PA programs which involve body-mind workout, and resemble to HG in many ways (Ligibel, Giobbie-Hurder and Dillion 2017; Teixeira-Machado, Araújo, Cunha, Menezes and Melo DeSantana, 2015).

CONCLUSIONS

This research study shows that RPA in low and moderate intensity improves various domains of health and well-being as was measured after three months intervention programs. The people who did not participate in any PA decreased most of health and well-being subscales measured after the program, compared to the measurements before the program. Although, some of the emotional well-being aspects were improved in the Fitness group, the subjects of this group, which practiced separately outdoor, decreased the SWB mean score. In the HG group, significant improvements were obtained in the physical domains and general health, while there were no differences in the social and emotional well-being of this group after the intervention program. Nevertheless, it is necessary to evaluate health and well-being of older adults, following the Fitness and HG programs in normal conditions since the original program had to be changed following the Covid-19 pandemic restrictions.

LIMITATIONS

There were two main limitations in this research study: the first is related to the impact of the Covid-19 pandemic, which imposed social distancing, closures and restrictions and obligated changes from the original plan, and the second limitation is related to the small number of subjects.

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