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Satisfaction with the intervention for promotion of daily mobility with regard to the direction of change in the follow-up activity level: the Fit-Old project results

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Abstract

This study explored the differences in the self-reported satisfaction with a six-month intervention for promotion of daily mobility implemented in community-dwelling elderly persons of five European countries, between the groups of participants (N=90, age 60-92 years, 68.9% women) classified according to the direction of pre-post intervention change in objectively-measured physical- and sedentary activity. The differences were found only for the perceived impact of the intervention on the decrease in use of motorized transportation (between the groups differing in vigorous- and sedentary activity). The intervention did not result in increased physical activity, yet around three-fourths of the participants considered it important and worth implementing to a wider community. Around two-thirds considered it fun, enjoyable and helpful. This positive reception is encouraging for future studies which should account for the possible negative effect of seasonality, and consider tailored, combined interventions of longer duration and higher intensity.

Key words: evaluation of intervention, exercise, behavior change, daily transport, older age

Introduction

Regular physical activity has long been shown to have many important and diverse health benefits, among which the substantial role in prevention, but also treatment of a number of chronic non-communicable diseases (Warburton & Bredin, 2017). Targeted physical activity and exercise have been proven a valid strategy in prevention and treatment of more than 25 chronic conditions and diseases (Pedersen & Saltin, 2015; Warburton & Bredin, 2017).

Despite these well-known facts and the efforts of public health authorities to convey the message of importance of choosing an active lifestyle, 27.5 % of adults globally do not meet the recommended minimum of 150 minutes of moderate-intensity aerobic activity per week (Bull, et al., 2020; WHO, 2020). Constant efforts are therefore warranted to promote the habit of regular physical activity.

In that context, a population of special interest are the elderly people. On the one hand, this part of the population is burdened by a high prevalence of chronic non-communicable diseases requiring long-term treatment, usually accompanied by significant personal and healthcare costs, and often resulting in considerable physical limitations, loss of independence in daily activities and low quality of life (Maresova, et al., 2019). On the other hand, this population is especially at risk of insufficient physical activity, as the epidemiological studies repeatedly describe an age-related decline in activity (European Commission, 2022).

Numerous interventions for promotion of physical activity in the elderly have so far been implemented, employing different designs and techniques, modes and settings of delivery and with different results, with positive ones usually reported in up to 12-month periods (Stevens, et al., 2014; Yerrakalva, Yerrakalva, Hajna, & Griffin, 2019; Zubala, et al., 2017). Post-implementation evaluation of different aspects of interventions should be a standard practice, to identify their strengths and weaknesses and help improve future efforts by discovering the factors contributing to either their success or failure (De Santis, et al., 2022).

This study was performed within the Erasmus+ Sport co-funded project "Interventions in the Elderly's Mobility Modes for Promotion of their Physical Activity and Fitness" (Fit-Old), in which a six-month text message-based intervention for physical activity promotion, focused on the daily

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transport domain, was performed in a sample of persons aged 60+ years living in urban areas of five European countries. To better understand the outcome of the intervention, the aim of this study was to explore the differences in the level of satisfaction with the intervention, provided in a post-intervention questionnaire, between the participants grouped according to the direction of pre-post intervention change (positive change/no change/negative change) in their objectively-measured time spent in light-, moderate-, and vigorous physical activity, and sedentary activity.

Methods

Participants and study design

This study is part of the Erasmus+ project "Interventions in the Elderly's Mobility Modes for Promotion of their Physical Activity and Fitness" (Fit-Old), funded by the European Union [Grant Agreement No 622623-EPP-1-2020-1-DESPO- SCP] in the period 2021-2023. Partner consortium included academic institutions and non-governmental organizations from seven countries: Germany (coordinator), Croatia, Greece, Italy, Poland, Portugal, and Turkey.

Data collection and physical activity promotion intervention were performed in six of the partner countries (coordinating partner from Germany did not collect data nor implement intervention). Due to the issues of accelerometry data validity, in this study cumulative data from only five countries are presented (Croatia, Greece, Italy, Poland, and Portugal).

In the five countries, elderly aged 60+ were invited to take part in the study through networks of the partner institutions (community services for elderly, recreation and fitness clubs, senior academic institutions, etc.). Potential participants had to meet the following criteria: a) being healthy or in a heath situation which is effectively controlled; b) being able to engage in conversation; c) being able to walk without using an aid. Exclusion criteria were: a) unstable health condition; b) decreased physical or mental abilities that would limit the participation; c) visual or auditive impairments; d) history of falls within the previous year; e) living in senior homes or similar settings; f) refusal to participate. After the study protocol was approved by the ethics committees of respective partner institutions, potential participants were approached. Study protocol, benefits and risks were explained. A written information was also given to the participants. Participants provided their written informed consent, and a brief pre-participation health risk screening was performed. Participants filled-out a general questionnaire on sociodemographic data, physical activity level, opinions on their respective neighborhoods and preferred mode of daily transport.

A sub-sample of participants, who reported not being active in daily transport, and who owned mobile phones and confirmed they were able to read text messages, agreed to participate in the intervention study. This study included a 7-day measurement of physical activity by accelerometers and assessment of aerobic fitness (2-min step test) at two time-points (initial and post-intervention measurement) and a 6-month SMS-based intervention for physical activity promotion, emphasizing walking in daily mobility. Initial measurements were performed during spring, while post-intervention measurements were performed during autumn/winter in 2022.

The final sample of participants in the intervention study included 172 community-dwelling elderly persons (68% women, 60-92 years) living in five urban areas in Croatia, Greece, Italy, Portugal, and Poland. Participants were randomly allocated to either the intervention group (N=90, 62 females) or control group (N=82, 55 females). After the intervention, the experimental group filled-out a questionnaire on their satisfaction with the intervention program. This paper presents only the data obtained from the intervention group (N=90). Characteristics of the participants from the intervention group are presented in Table 1.

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Insert Table 1 here

Assessment of physical activity and sedentary time by accelerometry

Time spent in activities of different intensity (light-, moderate-, and vigorous) and sitting time was measured by the ActiGraph wGT3X-BT triaxial accelerometer (ActiGraph, GT3X model, Fort Walton Beach, FL). Participants wore the device at the waist, attached to an elastic belt, at the right iliac crest level, and were instructed to wear it for seven consecutive days, weekend days comprised. They were advised to wear the accelerometer under the clothes, during all waking hours, except when bathing and engaging in other water activities. The participants were given a registration form with the instruction to record time and reason for any device removal during waking hours. The research group agreed on a protocol for personal delivery of the accelerometers, which was followed in all countries. Before the actual data collection, training and pilot measurements with accelerometers were performed under the supervision and support of the researchers from University of Lisbon. During the data download, the epochs were set to 15 seconds, and the biometric data was recorded. Both .agd and .gt3x files were stored, named after the participants' codes.

In data processing, periods of at least 90 consecutive 0 counts were defined as non-wear time. A day with > 10 hours of wear time was considered as valid (Troiano, et al., 2008). To be considered for further analysis, a participant had to have at least three valid days (within which at least one weekend day). In the quality control and harmonization, a preliminary data validation analysis, as described above, was performed by partners in each country on their respective data. Thereafter, a centralized reprocessing was performed by the partner team from the University of Lisbon, using the Actilife software, with the highest data resolution, following standardized procedures. The cutoff values defining physical activity intensity and enabling quantification of the mean time spent sitting or at light-, moderate- or vigorous intensity activity were the following: sedentary: < 100 counts·min- 1; light: 100-2019 counts·min-1; moderate: 2020-5998 counts·min-1 (corresponding to 3-5.9 METs); vigorous: ≥ 5999 counts·min-1 (corresponding to ≥ 6 METs) (Troiano et al., 2008).

Intervention for physical activity promotion

A six-month text message-based intervention for physical activity promotion, focused on the daily mobility domain, was implemented. During these 24 weeks participants received a total of 42 short text messages on their mobile phones. Two messages were sent each week, one on Monday and the other on Thursday. Messages were delivered at the time of day when participants were most receptive (around 11am or noon).

Strategy for message design included: a positive and encouraging tone; concise, direct, and simple language; one idea per message; putting emphasis on the benefits of action (positive framing) over the consequences of inaction (negative framing). The messages were designed to offer direct, practical and relevant advice, in simple, understandable language. To avoid participant boredom each message was unique. Messages were first composed in English, and afterwards they were translated and culturally adapted into languages of partner countries.

The following message structure was applied: Week 1 – introduction, followed by 11 cycles of two weeks, each cycle composed of: 1 information/motivation message, 1 challenge message, 1 self-monitoring message, 1 - feedback message; Week 24 – conclusion.

The theoretical background used for the message design was the Capability, Opportunity, and Motivation Behavior (COM-B) model (Michie, van Stralen, & West, 2011). Behavior Change Techniques used to address capability, opportunity and motivation were: verbal persuasion, information about health consequences, prompt cues, instruction on how to perform a behavior,

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goal setting (behavior and outcome – advice on setting SMART goals), action planning, graded tasks (advice about the gradual increase in physical activity), problem-solving (identifying motivators and barriers to physical activity, advice on action planning), self-monitoring behavior, feedback on behavior, social comparison, social support (Michie, et al., 2013).

Satisfaction with the intervention questionnaire

The questionnaire consisted of 17 items formulated as statements to which participants provided their answer on a 5-point Likert-type scale ranging from 1 (totally disagree) to 5 (totally agree). The participants rated their level of agreement with the following statements: "The Fit-Old program…: 1) is important for my health; 2) is enjoyable; 3) is fun; 4) is important for my life; 5) helped me to be more active; 6) helped me to learn more strategies to be active; 7) is so good that it should be implemented with other older people; 8) should be reformulated; 9) sent important SMS messages that motivated me to be more active; 10) helped me to reduce the use of motorized transportation in my daily routines; 11) made me know new friends; 12) made me know new routes in my neighborhood; 13) improved my physical fitness (ability to do daily physical activities); 14) made my well-being better; 15) made me walk more in my daily life; 16) helped me to increase my active transportation; and 17) made me spend less time in sitting behavior. The participants gave their answer to the additional two questions: What obstacles did you find when you started increasing your daily activity? What obstacles did you find when you started changing the mode of transportation during taking part in Fit-Old project? Participants were instructed to choose one (dominant) answer among: a) none; b) deterioration of health (frequent illnesses, injury, depression, etc.); c) weather condition (frost, heat, strong wind, frequent rain, storm, etc.); d) family situation (taking care of family member, moving into new place, loss of close person, etc.); e) other.

Data analysis

All continuous data are presented as mean ± SD, range. Categorical data are presented as frequencies. The normality of distribution of continuous data was tested by Kolmogorov-Smirnov test. To compare the level of satisfaction with the intervention between the participants grouped according to the direction of change of their pre-post intervention physical and sedentary activity, the variables for difference between post and pre values for light-, moderate-, and vigorous physical activity, and sedentary time, were first calculated. Then, these four continuous variables were recoded into categorical variables. A two-category variable (positive change/negative change) was created for light activity, moderate activity and sedentary time, while a three-category variable (positive change/no change/negative change) was created for vigorous activity, since 17 participants (18.9%) did not show any change in the pre- and post-intervention vigorous activity, while for the other three variables the calculated changes were either positive (increase in activity) or negative (decrease in activity). The variables of difference in activity were considered as trend and were further analyzed regardless of the statistical significance of the change in the activity.

The Kruskal-Wallis H test was used to test whether satisfaction with intervention, expressed as attitudes on a 5-point Likert-type scale, differed based on whether participants had positive, negative or no change in vigorous physical activity level (the only activity level for which participants were grouped in three groups according to the observed direction of activity change).

For other three activity categories (light-, moderate-, and sedentary activity), the Mann-Whitney U test was used to compare differences between the positive- and the negative-change group (separately for each activity category) in attitudes toward the implemented intervention for promotion of physical activity. All analyses were performed using IBM SPSS Statistics ver. 29.0.1.0(171). Statistical significance was set at $p<0.05$.

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Results

The distribution of participants according to the direction of change in either light-, moderate-, vigorous- or sedentary activity is presented in Table 2.

Insert Table 2 here

The highest proportion of participants with a positive change between post- and pre-intervention activity was observed for the sedentary time (75.6% increased their sedentary activity). Also, there was a trend in increase of light activity (positive change in 56.7% of participants), and a trend of decrease in moderate-intensity activity (58.9% of participants).

A Kruskal-Wallis H test was used to determine if there were differences in satisfaction with the intervention of physical activity promotion among the three groups of participants with different direction of pre-post change in time spent in vigorous activity. The analysis was performed for each of the 17 Likert-type items. The results of the test are presented in Table 3.

Insert Table 3 here

The median answer scores were statistically significantly different between groups only for the item 10)"The Fit-Old Program helped me to reduce the use of motorized transportation in my daily routines", $H(2) = 6.095$, $p = .047$. Pairwise post hoc comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. A statistically significant difference in the median score on this questionnaire item was found between the no-change and negative-change group, with the negative-change group scoring higher than the no-change group (adjusted $p = .043$).
Mann-Whitney U test was used to explore differences in the satisfaction with the intervention between the positive-change and negative-change groups for each of the remaining categories of activities (light-, moderate- and sedentary activity) (Table 4).

Insert Table 4 here

There were no significant differences between the groups categorized according to the direction of changes in the light- and moderate activity. However, the two groups categorized according to the direction of change in the sedentary activity significantly differed in the median values again for the item 10) "The Fit-Old program helped me to reduce the use of motorized transportation in my daily routines. Namely, the group that reduced their time spent in sedentary activities scored significantly higher compared to the group that increased their sedentary activity (mean ranks 57.34 vs 40.95, $U = 1009$, $z = 2.817$, $p = .005$).

The distribution of answers to all questions for the whole sample is presented in Table 5.

Insert Table 5 here

The statement with which the largest proportion of participants (43.3%) expressed their highest level of agreement was "The Fit-Old program is so good that it should be implemented with other older people". None of the participants totally disagreed with the statement "The Fit-Old program helped me to learn more strategies to be active". However, the highest overall proportion of the same level of agreement to a single statement was observed for the item 10)

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"The Fit-Old program helped me to reduce the use of motorized transportation in my daily routines" with which 52.8% of participants neither disagreed nor agreed.

Discussion

The study aimed to explore the differences in the level of satisfaction with the text messaging-intervention for promotion of daily mobility, implemented in a sample of community-dwelling persons aged 60+ living in urban areas of five European countries, between the groups of participants classified according to the direction of their pre-post intervention change (positive change/no change/negative change) in objectively-measured time spent in light-, moderate-, and vigorous physical activity, and sedentary activity.

The category in which the highest proportion of participants increased their time between pre- and post-intervention measurement was sedentary activity (75.6% increased their sitting time). A trend of increase in light activity (positive change in 56.7% of participants), and of decrease in moderate-intensity activity (58.9% of participants) were also observed.

The increase in the sitting time was the only statistically significant pre-post intervention change recorded in the intervention group (without significant difference between the intervention and control group in the post-intervention results, as shown by the results of the analysis of covariance ($F(1, 169) = 1.60$, $p = .207$, partial eta squared = .01), controlling for their pre-intervention sitting time). This result can be potentially and partially attributed to the effect of seasonality, since the first measurement was performed in spring and the second in the autumn/winter months of 2022. The influence of colder seasons of the year on the increase in sedentary behavior has previously been documented in large samples of middle-aged and elderly people (Diaz, et al., 2016; Tucker & Gilliland, 2007). However, in their subjective rating, only a small proportion (up to 10.0 %) of our participants reported worsening of weather conditions as obstacles to increasing their activity (Table 5). Thus, the six-month mobile phone-based intervention did not yield the expected result of a significant increase in physical activity and further analysis is limited to exploring satisfaction of participants only with regard to the trends in direction of their activity change.

Participants showed either an increase (positive change) or decrease (negative change) in the variables of light activity, moderate activity and sedentary time. Only for vigorous activity 17 participants (18.9%) showed no change in the pre- and post-intervention result, although the overall mean time spent engaging in higher-intensity activities was very low (less than a minute per day).

Interestingly, a significant difference in the level of agreement between groups of different direction of activity change was found only for one questionnaire item, the same in two activity categories: 10) "The Fit-Old Program helped me to reduce the use of motorized transportation in my daily routines". With regard to the change in vigorous activity, the participants who decreased their activity in this category agreed with the above statement to a higher extent than the participants who showed no change in vigorous activity (adjusted $p = .043$).

In the other two groups for which the level of agreement on the mentioned item significantly differed, the opposite direction of change was measured for sedentary behavior. The group that showed a decrease in sedentary time agreed to a higher extent than the group who increased this activity with the statement that the Fit-Old intervention program helped them to reduce the use of motorized transportation in their daily routines ($U = 1009$, $z = 2.817$, $p = .005$).

There were no other significant differences in the level of satisfaction with the intervention program between any of the groups.

When looking at the overall distribution of the answers for the total sample (N=90), 76.7% of respondents agreed or totally agreed that the intervention was important for their health, 73%

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agreed or totally agreed that the program was important for their life, while 74.4% of participants agreed that the intervention was "so good that it should be implemented with other older people", with this being the statement with the highest single proportion of participants (43.3%) expressing their total agreement. The participants also tended to agree/totally agree to a similar extent that the intervention was enjoyable (65.5%), fun (63.4%), that it helped them to be more active (62.2%) and improved their physical fitness (61.1%). Furthermore, more than half of participants agreed or totally agreed that the intervention helped them to learn more strategies to be active (57.8%, with this being the statement with which no participant totally disagreed), improved their well-being (56.7%) or made them spend less time in sedentary behavior (54.4%). However, as already mentioned, statement under the item No10 was the one to which the highest overall proportion of participants expressed the same level of agreement – 52.8% of them neither disagreed nor agreed that the implemented program helped them to reduce the use of motorized transportation in their daily routines. The majority of participants did not report any suggested obstacles that would have prevented them from increasing physical activity.

Thus, around three-fourths of the participants considered the content of the intervention important for their health and life and that it should be implemented in a wider community of elderly people, while around two-thirds considered it as enjoyable and fun and that it helped them to be more active and fit. Finally, more than half of participants considered they learned new strategies to be active and that their well-being improved. Consequently, the content of the intervention can be considered well-received and the reasons for the lack of positive results should be sought elsewhere. One to consider is the already mentioned effect of seasonality, which is related to the duration of the intervention – since the measurements were performed just before and immediately after the intervention, a period of six months included transition from spring months, more convenient for physical activities, to autumn/winter months, less suitable for activities, which could have influenced the results (Garriga, et al., 2021; Tucker & Gilliland, 2007). In fact, previous interventions for promotion of physical activity in the elderly that resulted in increased activity usually showed that result within a 12-month period (Zubala, et al., 2017). Future interventions may benefit from designs of longer duration and measurement of physical activity preformed in several yearly seasons, to enable stronger conclusions on the effect of seasonality.

A large proportion of our participants (almost 53%) reported they neither disagreed nor agreed that the intervention helped them to reduce the use of motorized transportation in their daily routines. The intervention included a combination of messages aimed at promoting overall physical activity, but also messages aimed strictly at promoting walking instead of using other means of transport in daily commuting (e.g., cars or public transport). An adaptation of this content should be considered – e.g., tailored messages, prompting participants to explore neighborhood paths or other local opportunities for activity and interventions using combined strategies, such as booklets, use of technology, additional telephone calls, lectures or joint activities should be considered (Hall, Cole-Lewis, & Bernhardt, 2015). Tailored intervention including information on local or neighborhood opportunities to be active was not considered in this study, since the sample included participants from several countries. Cultural differences and a relatively small sample of participants per country could also have influenced the results.

The messages were designed to be concise, clear, and adapted for the elderly and these efforts were reflected in the positive feedback of around two-thirds of participants who considered them enjoyable, fun and helpful. Segar et al. (2020) have already emphasized the importance of frames and messages used to convey the information on physical activity in determining whether they will be perceived as feasible and relevant or not. The importance of perceived effectiveness and likeability of messages was further explored in a study by Jongenelis, Jackson, Newton, &

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Pettigrew (2022) who, in addition to the informative part, considered even the possible influence of phonological characteristics of rhyming or alliteration used in the messages on their positive reception by older participants. Recent findings suggest future texting-based interventions could benefit from a more integrative message-design process, including content pretesting and end-user feedback (Pathak, et al., 2021).

Although the participants mainly reported the intervention content was important, enjoyable and fun, the frequency of messages was rather low (two per week). Previous findings indicate intensity of intervention as an important determinant of its successfulness (e.g., a high proportion of interventions that included sending at least one SMS daily resulted in increased physical activity (Hall, Cole-Lewis, & Bernhardt, 2015).

Conclusion

The differences in the level of participants' satisfaction with the SMS-based intervention for promotion of daily mobility were found only for the perceived impact of the intervention on the decrease in their use of motorized transportation, and only between the groups of participants that differed in the direction of change in vigorous- and sedentary activity. However, in the overall sample as many as 52.8% of participants neither agreed nor disagreed with this statement. Although the intervention did not result in an increase of physical activity, around three-fourths of the participants considered its content important for their health and life and worth implementing in a wider community of elderly people, while around two-thirds considered it enjoyable, fun and helpful in becoming more active and fit. This positive reception is encouraging for future study designs which should account for the possible negative influence of seasonality, and consider combined interventions of longer duration and higher intensity.

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Tables

Table 1. Characteristics of participants in the intervention group (mean ± SD, range)

	N (%)	Age (years)	Body weight (kg)	Body height (cm)
Males	28 (31.1)	70.4±6.0 (60-85)	78.0±8.4 (63.0-91.0)	170.9±8.6 (153.0-187.0)
Females	62 (68.9)	71.3±6.1 (63-92)	69.7±10.3 (47.0-95.0)	161.5±9.7 (144.0-186.0)
Total	90 (100.0)	71.0±6.1 (60-92)	72.3±10.4 (47.0-95.0)	164.4±10.3 (144.0-187.0)

Table 2. Frequency of the participants and the direction of their activity change in all categories of physical activity and sedentary time

Activity	Positive change (N (%))	Negative change (N (%))	No change (N (%))
Light activity	51 (56.7)	39 (43.3)	-
Moderate activity	37 (41.1)	53 (58.9)	-
Vigorous activity	40 (44.4)	33 (36.7)	17 (18.9)
Sedentary activity	68 (75.6)	22 (24.4)	-

Table 3. Independent-Samples Kruskal-Wallis Test Summary (N=90 for all items) for differences in the satisfaction with the intervention among the three groups of participants grouped according to the direction of change in their pre-post vigorous physical activity

Item: The Fit-Old program…:	H	Df	p
1) is important for my health	.487	2	.784
2) is enjoyable	.109	2	.947
3) is fun	2.067	2	.356
4) is important for my life	1.573	2	.456
5) helped me to be more active	.296	2	.863
6) helped me to learn more strategies to be active	2.252	2	.324
7) is so good that it should be implemented with other older people	.809	2	.667
8) should be reformulated	3.354	2	.187
9) sent important SMS messages that motivated me to be more active	.630	2	.730
10) helped me to reduce the use of motorized transportation in my daily routines	6.095	2	.047
11) made me know new friends	1.721	2	.423

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12) made me know new routes in my neighborhood	2.654	2	.265
13) improved my physical fitness (ability to do daily physical activities)	.434	2	.805
14) made my well-being better	.222	2	.895
15) made me walk more in my daily life	.181	2	.913
16) helped me to increase my active transportation	1.689	2	.430
17) made me spend less time in sitting behavior	.394	2	.821

H = Kruskal-Wallis H value, Df = degree of freedom, p = p-value

Table 4. Differences in the attitudes toward the Fit-Old intervention between the positive-change and the negative-change groups for light-, moderate-, and sedentary activity (Mann-Whitney U test)

	Change in light activity					Change in moderate activity					Change in sedentary time				
	Mean rank					Mean rank					Mean rank				
The Fit-gram…	Positive change group (N=51)	Negative change group (N=39)	Mann-Whitney U	z-score	p	Positive change group (N=37)	Negative change group (N=53)	Mann-Whitney U	z-score	p	Positive change group (N=68)	Negative change group (N=22)	Mann-Whitney U	z-score	p
1) is important for my health	46.97	43.58	920	-.651	.515	45.08	45.79	996	.135	.892	44.15	49.68	840	.920	.357
2) is enjoyable	44.88	46.31	1026	.269	.788	40.42	49.05	1169	1.618	.106	46.92	41.11	652	-.951	.342
3) is fun	44.07	47.37	1068	.625	.532	43.91	46.61	1040	.509	.611	44.78	47.73	797	.484	.628
4) is important for my life	45.21	44.73	965	-.092	.927	43.35	46.12	1014	.527	.598	45.22	44.32	722	-.151	.880
5) helped me to be	44.49	46.82	1046	.441	.659	42.32	47.72	1098	1.014	.311	45.07	46.82	777	.287	.774

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more active															
6) helped me to learn more strategies to be active	44.80	46.41	1030	.305	.761	43.65	46.79	1049	.592	.554	44.32	49.14	828	.792	.429
7) is so good that it should be implemented with other older people	47.71	42.62	882	-.976	.329	44.62	46.11	1013	.284	.777	45.15	46.59	772	.240	.810
8) should be reformulated	44.64	45.49	988	.163	.870	47.54	43.19	868	-.833	.405	45.10	44.68	730	-.071	.944
9) sent important SMS messages that motivated me to be more active	43.99	47.47	1071	.651	.515	43.09	47.18	1070	.758	.448	45.46	45.61	751	.024	.981
10) helped me to reduce the use of motorized transpo	44.29	45.91	1011	.320	.749	47.20	43.43	881	-.740	.459	40.95	57.34	1009	2.817	.005

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rtation in my daily routines															
11) made me know new friends	43.67	47.90	1088	.789	.430	43.20	47.10	1066	.723	.470	44.83	47.57	794	.443	.658
12) made me know new routes in my neighborhood	45.75	45.18	982	-.106	.915	50.36	42.10	801	-1.540	.123	44.40	48.89	823	.730	.465
13) improved my physical fitness (ability to do daily physical activities)	43.35	48.31	1104	.938	.348	42.36	47.69	1097	1.000	.317	44.23	49.43	835	.854	.393
14) made my well-being better	42.98	48.79	1123	1.099	.272	39.93	49.39	1187	1.775	.076	43.77	50.84	866	1.159	.246
15) made me walk more in my daily life	45.98	43.68	919	-.438	.661	40.08	48.50	1144	1.601	.109	44.05	47.89	801	.638	.523

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16) helped me to increase my active transportation	45.25	44.66	956	-.115	.908	43.35	46.17	1023	.543	.587	44.74	45.80	755	.178	.859
17) made me spend less time in sitting behavior	45.02	46.13	1019	.212	.832	42.81	47.38	1080	.869	.385	43.99	50.18	851	1.030	.303

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Table 5. The distribution of answers to all questions (expressed as percentages (%)) for the whole sample

Item	Totally disagree	Disagree	Neither disagree nor agree	Agree	Totally agree
1) is important for my health	3.3	2.2	17.8	36.7	40.0
2) is enjoyable	1.1	5.6	27.8	34.4	31.1
3) is fun	3.3	2.2	31.1	35.6	27.8
4) is important for my life	1.1	3.4	22.5	39.3	33.7
5) helped me to be more active	1.1	3.3	33.3	31.1	31.1
6) helped me to learn more strategies to be active		10.0	32.2	38.9	18.9
7) is so good that it should be implemented with other older people	1.1	5.6	18.9	31.1	43.3
8) should be reformulated	2.2	23.6	44.9	23.6	5.6
9) sent important SMS messages that motivated me to be more active	5.6	13.3	36.7	23.3	21.1
10) helped me to reduce the use of motorized transportation in my daily routines	5.6	15.7	52.8	20.2	5.6

11) made me know new friends	8.9	26.7	33.3	23.3	7.8
12) made me know new routes in my neighborhood	8.9	32.2	34.4	18.9	5.6
13) improved my physical fitness (ability to do daily physical activities)	5.6	10.0	23.3	42.2	18.9
14) made my well-being better	4.4	6.7	32.2	37.8	18.9
15) made me walk more in my daily life	2.2	11.2	32.6	40.4	13.5
16) helped me to increase my active transportation	2.2	9.0	41.6	37.1	10.1
17) made me spend less time in sitting behavior	3.3	7.8	34.4	42.2	12.2

	None	Deterioration of health	Weather condition	Family situation	Other
18) What obstacles did you find when you started increasing your daily activity?	67.8	6.7	10.0	6.7	8.9
19) What obstacles did you find when you started changing the mode of transportation during taking part in Fit-Old project?	75.6	4.4	5.6	4.4	10.0

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