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ORIGINAL RESEARCH

Nutritional and physical exercise programs for older people: program format preferences and (dis)incentives to participate

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Purpose: A growing number of studies in older people have been examining the beneficial effects of non-pharmacological interventions, such as physical exercise (PE) and nutritional supplementation, to target age-related syndromes such as sarcopenia and frailty. This study evaluated interpersonal, intrapersonal, and community (dis)incentives, concepts of motivation, and preferred program formats toward a PE or nutritional program in older people, with or without frailty or risk of sarcopenia.

Methods: A questionnaire was developed and filled in by 115 community-dwelling older adults (≥65 years of age) after content (n=7 experts) and face validation (n=8 older adults). We assessed 1) the agreement with a statement (a statement with which ≥70% of the participants agree or strongly agree is considered as a common statement), 2) concepts of motivation by an exploratory factor analysis, and 3) program preferences by nonparametric Wilcoxon or Friedman's analysis of variance and post hoc Wilcoxon signed-rank tests.

Results: Intrapersonal motivators (eg, health benefits) were the most common motivators to participate in a PE or nutritional program. Identified concepts to participate in a PE intervention were intrinsic health beliefs, fear of falling or injuries, influence of significant others and environment, and (para)medical encouragement (Cronbach's alpha: 0.75; 72% variance explained). Intrinsic health beliefs, influence of significant others and (para)medical encouragement were identified as concepts that motivate older people to participate in a nutritional intervention (Cronbach's alpha: 0.77; 78% variance explained). No favorability of exercise location was identified; however, older people preferred protein supplement intake in a tablet form compared to liquid or powder form and in a pulsed timing compared with a spread intake.

Conclusion: Program preferences of older people toward nutritional interventions need to be taken into account in future clinical trials and implementation programs, to increase recruitment and adherence to interventions.

Keywords: physical activity, nutrition, incentives, sarcopenia, frailty, old

Introduction

Recently, there has been a growing scientific interest in the beneficial effects of non-pharmacological interventions in older people to target age-related syndromes such as sarcopenia and frailty and their consequences. Several randomized controlled trials (RCTs) have shown beneficial effects of physical exercises (PE) and/or nutritional interventions, such as improved physical functioning and muscle strength.[1–3]

However, a limitation of these RCTs is that the adherence of older participants to the interventions was rather low,[4] which may influence the effect of the intervention. Adherence to an intervention can be influenced by the characteristics of the

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intervention and by the personal (dis)incentives of the participants. Although considerable research has been done on assessing (dis)incentives of older people to participate in PE programs[5–7] and to a lesser extent on the preferred program formats,[8,9] less attention has been paid to (dis)incentives to participate in nutritional programs or the preferred formats of a nutritional intervention.[10,11]

For this reason, we aimed to investigate the preferred location of a PE intervention and the preferred timing and intake form of a nutritional intervention in older people. Moreover, we aimed to assess the interpersonal, intrapersonal, and community-based (dis)incentives of older people to participate in non-pharmacological interventions such as a nutritional and/or a PE intervention. Furthermore, to our knowledge, this was the first study to investigate the agreement with statements and preferred program preferences in subgroups of older people with or without risk of sarcopenia and with or without frailty.

Methods

Development of the questionnaire

The development of the questionnaire, based on the existing literature and on the Social Ecological Model for health promotion of McLeroy et al,[12] the content and face validity methodology, and the results are extensively described in the Supplementary materials.

Description of the questionnaire

The draft questionnaire was adapted according to its content and face validity, before distribution to the participants. The adapted questionnaire (Supplementary materials) consists of three parts. The first part assesses the participant's frailty status (Tilburg Frailty Indicator, TFI),[13] risk of sarcopenia (SARC-F),[14] nutritional status (Mini Nutritional Assessment Short-Form, MNA-SF),[15] and the level of physical activity (PA) (Rapid Questionnaire for Physical Activity, RAPA).[16] The TFI consists of 15 questions rated with 0 or 1 points. Participants with a score ≥5/15 are indicated as being frail.[13] The SARC-F questionnaire consists of five questions that are rated with 0–2 points. A score ≥4 indicates being at risk of sarcopenia.[14] The MNA-SF consists of five questions and takes the body mass index (BMI) into account. A total score <8 indicates malnutrition, 8–12 indicates a risk of malnutrition, and a score of 12–14 indicates normal nutritional status.[15] The RAPA assesses the aerobic activities by seven statements, whereby participants with a result of ≥6/7 are categorized as sufficiently active, and also strength and flexibility activities by two statements (1–2 score).[16] The second and third part of the questionnaire consist of statements and open questions assessing (dis)incentives toward participating in a hypothetical PE and nutritional program and the preferred intervention format (Table 1).

Statements in the second and third parts were categorized into intrapersonal, interpersonal, and community items according to the Social Ecological Model for health promotion.[12] Intrapersonal items question the individuals' knowledge, attitude, skills, or self-efficacy. Interpersonal items include social networks and support from family, friends, and peers. Community items question the institution (such as the presence of a sport institution) and the community (such as access).[6,12] Agreement with each statement was indicated on a Likert scale (strongly disagree – disagree – neutral – agree – strongly agree).

Study sample and design

Dutch-speaking older people were asked to complete the adapted questionnaire according to the face and content validity after giving written informed consent. Inclusion criteria to participate in the study were 1) aged ≥65 years; 2) being able to understand, read, and write Dutch; and 3) living at home or in a service residence. Participants were recruited 1) at the day clinic of the Geriatric Department of Leuven University Hospitals; 2) at seven service residences or day care services in Flanders, Belgium; 3) at four activities of organizations for seniors; and 4) by personal contacts of the researchers. A total of 240 questionnaires were distributed. The study received approval of the Medical Ethics Committee of the Leuven University Hospitals (S59660).

Data analysis

The demographic variables are described as mean ± standard deviation (SD), median with interquartile range (IQR), or

Table 1 Hypothetical interventions proposed in the questionnaire

Intervention type	Content of hypothetical intervention
Physical exercise intervention	The physical exercise intervention consists of three exercise sessions (30 minutes) per week. The participants perform exercises to strengthen the muscles, improve their balance, and increase their flexibility. In addition, participants will walk twice a week for 30 minutes. These exercises are personalized to the individual ability of the participants
Nutritional intervention	In the nutritional intervention, participants take protein supplements three times a day (breakfast, lunch, and before bedtime). In addition, a vitamin D and calcium supplement will be taken once daily

frequencies and percentages. Ordinal, nominal, and binary variables are reported as frequencies or numbers (n) and percentages. Unpaired *t*-tests, Wilcoxon signed-rank tests, Fisher's exact tests, and chi-square tests are used to describe group differences between participants with or without the risk of sarcopenia and with or without frailty. Statements concerning intrapersonal, interpersonal, and community perceptions are described by the common agreement of the participants. Common agreement of a statement is a statement with which >70% of the participants agree or strongly agree. Preferred program formats were described by frequencies and percentages and were analyzed with nonparametric Wilcoxon or Friedman's analysis of variance and post hoc Wilcoxon signed-rank test.

To identify the common concepts to interpret the (dis) incentives of the participants to participate in a PE or nutritional intervention, factor analysis was performed. Prior to the factor analysis, 20 complete data sets were created by multiple imputation based on the multivariate normal distribution of all potential items and continuous demographic variables (age and BMI). Factor analysis with principal component extraction was performed on each of the data sets based on the polychoric correlation matrix of the items. Oblimin rotation was used to achieve a simple factor structure since some of the factors are highly correlated. The 20 analyses had different factor orders because the factors are ordered based on the explained variance of the factor from high to low, and this changed over the analyses. Therefore, averaging the results would have ended with mismatching factors and low factor loadings. The matching factors were found based on factor similarity by using factor congruence coefficients. Cronbach's alpha, the measure of reliability which determines whether the items measure the same concept, factor loadings, and explained variance are reported. Complete details of the factor analysis are found in Supplementary materials.

Statistical analysis was performed with SPSS (version 20; IBM Corporation, Armonk, NY, USA), SAS software (version 9.4; SAS Institute Inc., Cary, NC, USA), and R (version 3.4.0; http://www.R-project.org).

Results

Sample characteristics

The overall response rate was 47.9% (n=115/240). Two questionnaires were excluded from the analyses due to missing data (>18% of data were not available). Table 2 shows the baseline characteristics of all the participants and of the subgroups ([not] at risk of sarcopenia and [not] frail). The median age of the participants was 77.50 (IQR=12) years, 57% were women, the mean BMI was 25 kg/m^2, and 73% lived at home. Fifteen percent of the participants were considered at risk of sarcopenia, and 34.5% were frail; 84% of the participants had a normal nutritional status, 45% had an active lifestyle, and 12% performed both

Table 2 Characteristics of study participants

Variable	Total sample (n=113)	At risk of sarcopenia (n=17)	Not at risk of sarcopenia (n=96)	*p*-value	Frail (n=39)	Not frail (n=74)	*p*-value
Age (years)[a]	77.50 (12)	87 (7)	75 (11)	<0.001[d]	79 (27)	76 (14)	0.078[d]
Gender (% women)	64/112 (57.14)	14/17 (82.4)	50/95 (52.6)	0.032[c]	25/39 (64.1)	39/73 (53.4)	0.320[c]
BMI (kg/m^2)[b]	25.26±3.45	27.37±3.60	24.90±3.31	0.008[e]	25.88±4.12	24.93±3.02	0.175[e]
Living at home	77/105 (73.3)	5/15 (33.3)	72/90 (80)	0.001[c]	22/36 (61.1)	55/69 (79.7)	0.062[c]
At risk of sarcopenia	15/113 (15)	–	–	–	11/39 (28.1)	6/74 (8.1)	0.011[c]
Frailty	39/113 (34.5)	11/17 (64.7)	28/96 (29.2)	0.011[c]	–		–
Malnourished	2/90 (2.2)	0/9 (0)	2/81 (2.5)	0.166[f]	0/29 (0)	2/61 (3.3)	0.244[f]
At risk for malnutrition	12/90 (13.3)	3/9 (33.3)	9/81 (11.1)		6/29 (20.7)	6/61 (9.8)	
Normal nutritional status	76/90 (84.4)	6/9 (66.6)	70/81 (86.4)		23/29 (79.3)	53/61 (86.9)	
Sedentary	5/105 (4.8)	1/16 (6.25)	4/89 (4.5)	0.247[f]	1/35 (2.85)	4/70 (5.7)	0.356[f]
Underactive	53/105 (50.5)	5/16 (31.25)	48/89 (53.9)		15/35 (42.85)	38/70 (54.3)	
Active	47/105 (44.8)	10/16 (62.5)	37/89 (41.6)		19/35 (54.3)	28/70 (40)	
Subject exercises strength and flexibility	13/105 (12.4)	2/15 (13.3)	11/90 (12.2)	1.000[c]	4/38 (10.5)	9/67 (13.4)	0.766[c]
Interested in PE + Nu intervention	37/110 (33.6)	5/16 (31.3)	32/94 (34.0)	1.000[c]	14/38 (36.8)	23/72 (31.9)	0.673[c]

Notes: Data expressed as frequencies (percentages), median and interquartile range,[a] or mean (± SD)[b]. [c]Fisher's exact tests; [d]Wilcoxon signed-rank test; [e]Unpaired *t*-test; [f]chi-square tests.

Abbreviations: BMI, body mass index; PE, physical exercise; Nu, nutritional; SD, standard deviation.

strength and flexibility exercises. Participants at risk of sarcopenia were older (86 vs 75 years), more often female (82% vs 53%), had a higher BMI (27 vs 25 kg/m^2), lived less often at home (33% vs 80%), and were more often frail (65% vs 29%) compared to participants not at risk of sarcopenia. Frail older people were at higher risk of sarcopenia compared to non-frail older people (28% vs 8%). No significant differences were found between the different subgroups in nutritional status or level of PA. In general, 34% of the participants indicated to be interested to participate in a combined PE and nutritional intervention.

(Dis)incentives toward PE and nutritional supplementation

Seventy percent or more of those surveyed (strongly) agreed with five statements, defined as common motivators. Participants most strongly agreed with intrapersonal statements (3/5) (Table 3): 1) "PE can help me to perform activities of daily living as long as possible" (92%); 2) "PE contributes to healthy aging" (91%); and 3) "PE can help me to increase my lifespan" (81%). Two interpersonal statements were identified as common motivators: 1) the recommendation of a doctor can encourage me to take nutritional supplements/eat healthy (76.1%); 2) the follow-up by a doctor can encourage me to take nutritional supplements/eat healthy (70.8%). No community statements were identified as common motivators.

Frail subjects and subjects at risk of sarcopenia showed the same common statements. In addition, the statements "I consider myself physically able to participate in a PE program" (76.5%) and "Healthy eating/nutritional supplementation contributes to healthy aging" (76.9%) were identified as common motivators in older people at risk of sarcopenia and in frail older people, respectively.

Factor analysis of (dis)incentives to participate in an intervention

Descriptive statistics after multiple imputation summarizes the items of the scale assessing the participants' motivation toward a PE or nutritional intervention (Supplementary materials). The kurtosis and skewness values demonstrate the non-normal data distribution, substantiating the use of polychoric correlations.

Factor analysis of the PE intervention scale identified four factors with very high primary loadings and low cross-loadings, explaining about 72% of the variance (Cronbach's alpha: 0.75; Supplementary materials). Cronbach's alpha is a measure of reliability which determines whether the items measure the same concept. The four identified factors were labeled by the researchers as intrinsic health belief, fear of falling or injuries, influence of significant others and environment (such as the company of friends or a sidewalk near the home), and (para) medical encouragement. Only one item ("I can be motivated to do physical activities by my social environment [partner/family/friends]") of the 14 items had a cross-loading above 0.3; however, this item had a primary loading of 0.69 indicating that this item had high enough loading on the primary factor. Based on this population sample, intrinsic health beliefs of the participants explained a higher percentage of the variance, followed by (para)medical encouragement, influence of significant others and environment, and fear of falling or injuries.

Factor analysis of the nutritional intervention scale identified three factors with very high primary loadings and low cross-loadings, explaining about 78% of variance (Cronbach's alpha:

Table 3 Most common (dis)incentives of the study participants (≥70% of subjects that [strongly] agree)

Statement	Type of item	% subjects (n=133)	% subjects at risk of sarcopenia (n=17)	% subjects not at risk of sarcopenia (n=96)	% frail subjects (n=39)	% not frail subjects (n=74)
Physical exercise can help me to perform activities of daily living as long as possible	Intra	**92.0**	**88.2**	**92.7**	**94.9**	**90.5**
Physical exercise contributes to healthy aging	Intra	**91.2**	**94.1**	**90.6**	**89.7**	**91.9**
Physical exercise can help me to increase my lifespan	Intra	**81.4**	**88.2**	**80.2**	**82.1**	**81.1**
The recommendation of a doctor can encourage me to take nutritional supplements/eat healthy	Inter	**76.1**	**70.6**	**77.1**	**84.6**	**71.6**
The follow-up by a doctor can encourage me to take nutritional supplements/eat healthy	Inter	**70.8**	**76.5**	69.8	**94.4**	68.9
I consider myself physically able to participate in a physical exercise program	Intra	58.4	**76.5**	55.2	69.2	52.7
Healthy eating/nutritional supplementation contributes to healthy aging	Intra	61.6	58.8	62.1	**76.9**	53.4
Physical exercise can help me to prevent falls	Intra	69.0	64.7	69.8	61.5	**73.0**

Notes: "% subjects" is the percentage of subjects that agree or strongly agree with the statement; n, number of subjects; bold highlights numbers ≥70%. Intra, intrapersonal statement; Inter, interpersonal statement.

0.77). The proposed factor labels were intrinsic health beliefs, influence of significant others, and (para)medical encouragement (Supplementary materials). This population sample indicated a higher percentage of variance explained by the intrinsic health beliefs of a participant, followed by the (para)medical encouragement and the influence of significant others.

In both the scales, no substantial increases in Cronbach's alpha values for any of the scales could have been achieved by eliminating more items, although reducing the number of items could lead to unreliable factors.

Factor analysis of the complete questionnaire, combining the PE and nutritional intervention scale (24 items), explained 82% of the variance (Cronbach's alpha: 0.82) and identified seven factors. As the PE intervention scale and nutritional intervention scale overlapped in concepts, the factor structure was less clear.

Preferences of older people for exercise or nutritional programs

Preferred exercise location

There was no statistically significant difference in agreement with regard to the preferred exercise program format of all the study participants (p=0.137), the population at risk of sarcopenia (p=0.150), the population not at risk of sarcopenia (p=0.340), in frail older people (p=0.794), or non-frail older people (p=0.226) (Table 4).

Preferred nutritional intake form

There was a statistically significant difference in agreement of the participants regarding the preferred nutritional intake form ($p<0.001$) (Table 4). Post hoc Wilcoxon signed-rank tests with Bonferroni corrections ($p<0.005$) showed the preference of older people for tablet intake compared to all other possibilities ($p<0.001$) and in favor of 125 mL liquid intake compared to 30 mL liquid intake ($p<0.001$). No differences were found between 250 and 125 mL liquid intake, powder and 250 mL liquid intake, powder and 125 mL liquid intake, and between 250 and 30 mL liquid intake.

In the population at risk of sarcopenia, no statistically significant differences in agreement were found (p=0.372). In contrast, the participants not at risk of sarcopenia showed preference for tablet intake compared to all other intake possibilities ($p<0.001$), and for powder (p=0.003) or for 125 mL liquid ($p<0.001$) intake compared to 30 mL concentrated liquid.

Frail older people showed statistically significant differences in agreement ($p<0.001$). Post hoc tests showed that frail older people prefer intake of a tablet compared to 30 mL concentrated liquid ($p<0.001$). Similar to the population not at risk of sarcopenia, participants who are not frail prefer tablet intake compared to all other intake possibilities ($p<0.003$). Also, compared to a 30 mL concentrated liquid, non-frail older people prefer intake of a powder (p=0.002) or 125 mL liquid (p=0.001).

Preferred nutritional timing

There was a statistically significant difference in agreement with regard to the preferred nutritional timing ($p<0.001$). In general, older people preferred a pulsed compared to a spread intake. Participants at risk of sarcopenia showed no statistically significant preference for nutritional timing (p=0.110). In contrast,

Table 4 Preferred exercise location, nutritional format, and nutritional timing

Program format	Total sample	At risk of sarcopenia	Not at risk of sarcopenia	Frail	Not frail
Preferred exercise program					
In group	2.19±1.23	2.20±0.94	2.19±1.28	2.21±1.28	2.19±1.22
Independently at home	2.15±1.14	2.33±1.23	2.12±1.13	2.36±1.06	2.03±1.18
Combination of group and at home	2.06±1.19	1.33±1.13	2.17±1.18	2.00±1.21	2.09±1.20
p-value	0.137	0.150	0.340	0.794	0.226
Preferred nutritional format					
Powder	1.85±1.25	1.59±1.13	1.89±1.26	1.64±1.06	1.96±1.34
Liquid 250 mL	1.81±1.13	1.82±1.24	1.80±1.12	1.72±1.05	1.86±1.18
Liquid 125 mL	1.90±1.17	1.82±1.24	1.91±1.16	1.87±1.06	1.92±1.23
Liquid 30 mL concentrated	1.45±1.08	1.47±0.94	1.45±1.11	1.54±1.05	1.41±1.10
Tablet	2.52±1.26	1.94±1.25	2.62±1.24	2.46±1.27	2.55±1.26
p-value	<0.001	0.372	<0.001	<0.001	<0.001
Preferred nutritional timing					
Spread over the meals	1.63±1.10	1.47±1.13	1.66±1.10	1.67±1.16	1.61±1.08
Pulsed	2.63±1.25	2.18±1.33	2.71±1.22	2.82±1.14	2.52±1.29
p-value	<0.001	0.110	<0.001	0.001	<0.001

Notes: Values are mean ± SD. Comparison differences between preferred exercise program formats within one group were made by using Friedman's ANOVA and Wilcoxon signed-rank test.
Abbreviations: ANOVA, analysis of variance; SD, standard deviation.

the participants who are not at risk of sarcopenia ($p<0.001$), frail ($p=0.001$), and non-frail ($p<0.001$) showed preference to a pulsed intake compared to a spread intake (Table 4).

Discussion

This study showed that intrapersonal motivators, such as the statement that PE can help to perform activities of daily living as long as possible, are important motivators for older people and older people with frailty or risk of sarcopenia. Identified concepts of motivation of older people to participate in a PE or nutritional intervention in this study encompassed intrinsic health beliefs, influence of significant others (and environment), and (para)medical encouragement. Also fear of injuries or falls was a specific factor of motivation toward the PE intervention. Respondents reported no favorability of exercise location. To our knowledge, this is the first study assessing preferences of nutritional supplementation. Older people preferred the intake of a tablet over other intake forms and preferred this intake in a pulsed way instead of a spread timing schedule. Also frail elderly preferred a pulsed intake compared to a spread intake and the intake of a tablet compared to a 30 mL concentrated liquid.

Analyses of the (dis)incentives to participate in interventions indicate the importance of intrapersonal factors and health beliefs in the motivation of older adults. This finding is consistent with a previous systematic review on motivation and barriers for PE in the oldest old.[6] Although Ferrini et al previously reported that increasing age does not diminish the relationship between health beliefs and health behavior,[17] studies in older people are hampered by difficulties in recruitments[18–20] and high dropout rates.[21–23] Hence, supporting or taking into account intrapersonal factors and health beliefs in the design and execution of a study with older people is one possibility to improve interest, motivation, and adherence of older people in participating in an intervention. For example, according to Ahmad et al, the adherence to exercise of sarcopenic older people is affected by their belief that PE is no longer suitable for them.[24] One can try to anticipate this barrier and change this health belief by clarifying the importance of exercise at old age and its related benefits. At the same time, the influence of significant others and the encouragement of (para)medicals may not be neglected. Tailoring the intervention toward the specific population characteristics can be challenging.

This study addressed program preferences of the older people. We did not find a significant difference in the preference of older people whether to exercise at home, in group or in a combined setting of group-based activities and home-based exercises. Previous studies showed a preference of older people to exercise at home, compared to group exercises[8] or compared to telephone or television or Internet or to combined home and telephone format.[21] In addition, previous studies showed the importance of the accessibility of the exercise facilities[25] or the preference of older people for programs conducted outside of a formal group setting.[26]

For a nutritional intervention, the preference of the participants for a pulsed timing of a supplement intake and the preference of a tablet over other intake forms is of particular interest. In a recent systematic review, Milne et al indicated that the taste of the supplement, the macronutrient composition, and the timing of administration have an effect on the willingness of older people at risk of malnutrition to take a food supplement.[10] However, to our knowledge, this was the first study investigating the participants' preferences among different intake options. Therefore, it is hypothesized that future nutritional interventions, adapted to the program preferences of the study sample, may increase recruitment numbers and adherence to interventions and eventually the implementability.[25]

Strengths of the study

This study discusses the results of a newly developed questionnaire with excellent psychometric properties. The scale content validity index was high (>0.8), indicating an excellent content validity of the overall questionnaire. The face validity of the questionnaire resulted in a questionnaire well-adapted to the targeted population of community-dwelling older people aged ≥ 65 years. A notable result was the very high reliability of both the PE and the nutritional questionnaire. As a result, these short questionnaires can be of general use to examine (dis)incentives of older people to participate in nutritional or PE interventions.

Limitations of the study

In the present study, the overall response rate was 47.9%. Non-responders to this questionnaire may either not be interested in the interventions, which would challenge the strength of the results, or have experienced practical problems (eg, they forgot to fill it in or send it to us). Although no conclusions can be made concerning the motivation of the non-responders or the presence of selection bias, one could argue that a reasonable number of older people filled-in the questionnaire. A recent study reported a response rate of 43.9% in a community-dwelling population aged >65 years.[27] Although the validity of this questionnaire is reported, it could also be valuable to evaluate other psychometric properties of the questionnaire[28] in future studies. The questionnaire was

developed based on the Social Ecological Model for health promotion of McLeroy et al.[12] The Self Determination Theory (SDT) of Ryan and Deci describes competence, autonomy, and relatedness as basic needs to achieve intrinsic motivation.[29] However, as the SDT model includes less environmental factors, the Social Ecological Model is justified for the aim of this study.

Implications

These results provide knowledge about the preferences of older people with or without frailty and/or risk of sarcopenia to participate in nutritional and/or PE interventions. Although, it is important in the development of a future study to combine the knowledge of these preferences with the state-of-the-art literature of a specific topic in older people, for example, the timing of protein intake.

Conclusion

This study provides insights into program preferences and (dis)incentives of older people, for example, the importance of intrapersonal factors. Moreover, to our knowledge, this is the first study to describe preferences of older people to nutritional programs. These preferences can be taken into account in recruitment strategies and interventions for older populations. Finally, a new and short questionnaire with good psychometric properties is proposed that can be of general use to evaluate the (dis)incentives and preferences of older people or specific older people subgroups to participate in PE and nutritional interventions.

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Disclosure

The author reports no conflicts of interest in this work.

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