The relation between risk perceptions and physical activity among older adults: A prospective study

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Past studies have found that risk perceptions of suffering from diseases play an important role in the development of intentions to perform physical activity (PA). According to the behaviour motivation hypothesis, perceived risk could be positively and directly related to PA, but this possibility has been ignored and/or underestimated. Accounting for recent methodological developments on the importance of study design and risk perception assessment, the purpose of the present study was to examine the risk-perceptions–PA relationship among older adults. Participants (\(N=143\)) aged from 61 to 70 years initially underwent measurement of risk perceptions, baseline PA, socio-demographic and health factors. Six months later, they were asked about their PA participation. Multiple regression analyses revealed that perceived risk of suffering from diseases and conditions without regular PA participation was an independent positive predictor of later PA, over and beyond baseline behaviour, socio-demographic and health variables. This study fills a gap in the existing literature on the PAs of older adults and reveals that risk perceptions are directly linked to their participation. In addition, it extends existing knowledge in health psychology on the behaviour motivation hypothesis, and emphasises the necessity of methodological adjustments when assessing the risk-perception–behaviour relationship.

Keywords: risk perceptions; physical activity; older adults

Introduction

Physical activity (PA) promotion among older adults is a major public health concern, given that the prevalence of diseases increases with age, and that the number of people aged 60 years or more will grow worldwide during the next decades (World Health Organization, 2006). It is now well established that regular PA can act as a health protective factor among older adults (Haight, Tager, Sternfeld, Satariano, & Van der Laan, 2005; Lam, Ho, Hedley, Mak, & Leung, 2004; Young & Dinan, 2005). However, activity levels decline with age (Hughes, McDowell, & Brody, 2008), and the number of older adults who take part in structured PA programs is limited
(Centers for Disease Control and Prevention, 2004). Thus, from a public health perspective, understanding the social cognitive determinants of PA among older adults is an important avenue of research, to ultimately frame tailored promotion interventions. Renner, Spivak, Kwon, and Schwarzer (2007) emphasised that PA participation among this age group might be strongly driven by a health preventive goal orientation, aiming at maintaining health and decreasing health risks (Renner et al., 2007). With this in mind, this study focused on the role of health-related cognitions pertaining to health-specific behaviour models for PA participation among older adults, with a special emphasis on the contribution of risk perceptions.

**Risk perceptions and PA among older adults**

The role of risk perceptions – i.e. the individual’s beliefs about the likelihood that a health problem will be experienced – in shaping behaviour represents a fundamental issue in health psychology (Brewer et al., 2007). Most socio-cognitive health behaviour models, including the Health Belief Model (Rosenstock, 1974), the Protection Motivation Theory (Rogers, 1975), and the Extended Parallel Process Model (Witte, 1992) consider risk perceptions as a crucial motivational force for health behaviour adoption. Specifically for PA, research based on the Health Action Process Approach (Schwarzer, 2008) found that risk perception plays an important role for participation among older adults, but not in younger ones (Renner et al., 2007). According to a lifespan perspective, as older adults are more and more confronted with threats to their resources, they are likely to be more and more motivated for health maintenance and loss avoidance (Freund, 2006; Freund & Ebner, 2005; Renner et al., 2007). Thus, older individuals become motivated to engage in PA because they feel susceptible to certain diseases associated with physical inactivity, such as cardiovascular disease, hypertension or hypercholesteremia, and want to protect themselves against future harm (Renner et al., 2007). That is, the more the elderly people feel at risk for certain diseases, the more likely they are willing to engage in PA for preserving health. Conversely, Renner et al. (2007) found that risk perceptions did not predict intention of performing PA among younger adults, and that they are more likely to engage in PA for the benefit of enjoyment (Renner et al., 2007).

**The behaviour motivation hypothesis**

However, existing studies consider that risk perceptions play a role only for intention formation without extending beyond (Renner et al., 2007; Schwarzer, 2008). As a result, they have used intentions to participate in PA as the outcome variable, but not yet behaviour per se. In contrast, the behaviour motivation hypothesis postulates the existence of a positive and direct relation between high perceived risk of disease, hazard or health problems, and subsequent health preventive actions (Brewer et al., 2007; Brewer, Weinstein, Cuite, & Herrington, 2004). Although it has been verified by several studies interested in different behaviours (vaccination, Brewer et al., 2004, 2007; Weinstein et al., 2007; cancer screening, McCaul, Branstetter, Glasgow, & Schroeder, 1996), no research has yet tested this hypothesis regarding PA behaviour. In addition, most of the research based on the behaviour motivation hypothesis focused on the relation between risk perceptions and discrete behaviours intended
to reduce a specific health threat, such as vaccination (Brewer et al., 2004; Weinstein et al., 2007), and less is known about behaviours that may have a wide range of health consequences, such as PA. Given that older adults are strongly driven by a health preventive goal orientation and that PA is explicitly considered as a health behaviour designed to reduce health risk (Renner et al., 2007), it is likely that the behaviour motivation hypothesis could be verified among this particular age group and for this behaviour. However, the likelihood of a contribution of risk perceptions to the prediction of PA participation has been underestimated in research specific to the prediction of PA among older adults and ignored in health psychology.

Methodological issues
As Brewer et al. (2004, 2007) emphasised, although fundamental, the relation between risk perceptions and health behaviour remains an undecided issue, partly because of methodological shortcomings (Brewer et al., 2004, 2007; Van der Pligt, 1996). According to Brewer et al. (2004, 2007), the test of the behaviour motivation hypothesis requires a prospective design measuring risk perception at one time and subsequent behaviour at a later time, and the use of an appropriate conditional risk assessment (Brewer et al., 2004; Van der Pligt, 1996). Taking into account these methodological issues, Brewer et al. (2004, 2007) have found a consistent and strong relationship between hazard-specific risk perceptions and preventive action, illustrated by vaccination behaviour. In addition, although previous research found that social cognitive constructs predict PA independently from the strong contribution of past PA (McAuley et al., 2007), most studies in health psychology dealing with the relation between perceived risk and behaviour did not control for previous behaviour (Van der Pligt, 1996). As a result, it is not clear that the behaviour motivation hypothesis is verified even when past behaviours are considered.

The present research
The purpose of this study was to provide an examination of the relation between risk perceptions and PA participation among older adults. In line with the behaviour motivation hypothesis (Brewer et al., 2004), and accounting for the methodological precautions advocated by Brewer et al. (2004, 2007), we hypothesised in a prospective study that older adults’ perceived risk of suffering from certain diseases in the future without the participation in regular PA would be positively related to their subsequent involvement in PA, controlling for baseline PA.

Method
Participants and procedure
A random sample of members of the French Federation of Sport Retirement (FFSR) aged 60 or older was constituted for the purpose of the study. The FFRS is specifically addressed to retired individuals, and organises different sport and physical activities, such as endurance activities, cycling, walking, hiking, strength training, gymnastics, dancing, tennis, games sport and martial arts, throughout the
Being affiliated to the Federation did not necessarily mean that they were involved in the PA proposed. In other words, given that the FFRS is not an intervention program, affiliated individuals are free to participate or not in the activities proposed. A 6-month prospective design was employed with two waves of data collection by regular mail. Participants’ addresses were obtained from the record of the directory of the FFRS. At the beginning of the regular season (Time 1), a questionnaire was mailed to 1500 individuals with a stamped return envelope. An accompanying letter explained the purpose of the study, and it was clearly stated to participants that anonymity and confidentiality of their answers would be preserved at all times. The questionnaire included questions about risk perceptions, current level of PA, health and socio-demographic variables. Four hundred and eighty questionnaires were returned (27% response rate). Six months later (Time 2) a second questionnaire with a return stamped envelope was sent to the same individuals to obtain information on PA participation. Two hundred and seventy questionnaires were returned (18% response rate). Among these participants, 146 completed both Time 1 and Time 2. Three participants were identified as multiple outliers and were removed from the analyses. The final sample consisted of 143 participants, 105 women and 38 men (a proportion similar to the one observed for the whole population of the Federation). Their age ranged from 61 to 70 years (Mean age = 64.5 years, SD = 1.56). Eighty-four per cent (composed of 72% of women and 28% of men) of the participants had a partner (i.e. were married, lived as wife or husband, or were in a contract for people in a long-term relationship), and 61% were living in an urban area (69% of women and 31% of men). They were fully retired for an average of 7 years (SD = 3.33).

Participants who were lost to follow-up were compared with those who were retained on all baseline variables, including risk perception, demographic characteristics and baseline PA. No significant differences were found between the longitudinal and the drop-out sample with regard to risk perception, health conditions, PA level, age, education level, time since retirement, marital status, and zone of residence, $\chi^2(1, N = 479) = 1.19, p = 0.27$, and $\chi^2(1, N = 479) = 0.00, p = 0.98$. However, the analysis revealed that there was a greater proportion of women (105 women and 38 men) in the longitudinal sample compared to the drop-out sample (199 women and 137 men), $\chi^2(1, N = 479) = 9.00, p < 0.01$.

Measures

Demographic and health-related factors

At Time 1, the first part of the questionnaire distributed to participants provided demographic information about age, gender, zone of residence (urban vs. rural), and marital status, namely ‘living with a partner’ (married, living as husband and wife or in a contract for people in long-term relationship) or ‘living alone’ (single, divorced or widowed). Education was rated on a scale from 1 (‘did not finish school’) to 5 (‘graduated from university’). Individuals were also asked to report if they had specific diseases using the 26-item checklist of diseases and health problems of the Older Americans Resources and Services Questionnaire (OARS; Fillenbaum, 1988). It includes 26 diseases commonly found among older individuals (e.g. heart problems,
high blood pressure, diabetes, cancer, stroke and arthritis). Participants were asked to report whether they currently suffered from a particular disease of conditions specified in the list and diagnosed by a doctor. They were also asked about any other disease not included in the list. The total number was computed, with higher scores indicating more health conditions.

**Risk perceptions**

Risk perceptions were assessed at Time 1. In line with Renner et al. (2007), three questions related to perceived personal risk of suffering from disease and health problems relevant to the ageing process were assessed, namely hypertension, hypercholesteremia and cardiovascular diseases. Given that loss of autonomy is also a major consequence of ageing, a fourth question was developed specifically for the present study. Following the recommendations of Brewer et al. (2004, 2007), the risk questions were conditioned on not practicing PA. They were labelled as: ‘For you, without the participation in regular PA, what is the likelihood that you will suffer from [hypertension/hypercholesteremia/cardiovascular disease/autonomy loss] in the next years?’ Responses were made on 7-point Likert scales ranging from 1 (‘very unlikely’) to 7 (‘very likely’). A principal component analysis revealed that the four items loaded on a single factor. The solution explained 70% of the variance, with an eigenvalue of 2.82. Item scores were averaged, giving an overall perceived risk mean ($\alpha = .86$). Higher scores indicated a higher perceived likelihood of suffering from diseases and health problems without the participation in regular PA.

**Physical activity**

In line with existing self-reported PA measures (e.g. Godin & Shephard, 1985; Vuillemin et al., 2000), at both Time 1 and Time 2, an open-ended question was used to capture the frequency of participation during a week in different types of physical activities proposed by the Federation. Reports of participation in activities organised by the Federation were considered, namely aerobic activities (cycling, running, swimming, rowing, walking and hiking), calisthenics (gymnastics, aerobic and dancing), strength training, games, and martial arts. At Time 1, baseline PA was assessed by asking participants to report, on average, in which PA from the above-mentioned list they were usually engaging, and how often they usually participated in each PA during a regular week, i.e. their usual frequency of participation per week. Responses were summed to obtain a baseline total number of PA sessions per week. At Time 2, the same procedure was used to assess participants’ PA session attendance. Participants were asked to report about which PA from the list they engaged and their frequency of participation per week during the past 6 months. Responses were summed to obtain a total number of PA sessions per week during the past 6 months.

**Data analysis**

Multiple regression analyses were performed to test the hypothesis of a direct contribution of risk perceptions assessed at Time 1 on the frequency of PA assessed at Time 2. PA participation at Time 2 was the criterion variable. In line with previous research revealing their contribution to PA (King et al., 2000), participants’ gender
(coded 1 for men and −1 for women), marital status (coded as 1 for living alone and −1 for living with a partner), zone of residence (coded as 1 for rural and −1 for urban), education and chronic health conditions were entered first to control for their potential effect. Given that baseline PA is a strong predictor of later PA (McAuley et al., 2007), PA participation at Time 1 was entered on Step 2. Mean risk perception was entered on the third and last step.1

Results
The means, standard deviations and correlations between the variables of the study are presented in Table 1. Descriptive statistics revealed that individuals in this sample participated in PA session on an average between two and three times per week at both Time 1 (M = 2.62, SD = 1.50) and Time 2 (M = 2.54, SD = 1.57; see Table 1).2 On an average, participants practiced between 1 and 2, different activities during a week (M = 1.64, SD = 0.92), ranging from no activity to four different types of activities. Walking and/or hiking (60% of the participants), gymnastics (40%), aquagym (24%), cycling (15%), dancing (15%), were the most frequently performed activities, whereas the participants engage to a lesser extent in tennis, swimming, strength training, sport games and martial arts. For the following analyses, the total number of PA sessions per week was used, independently of the type of activity.

Regression analysis of PA level on risk perceptions
Regression analyses were conducted to identify the independent contribution of socio-demographic, health-related factors, baseline PA level and risk perceptions assessed at Time 1 on PA participation re-assessed 6 months later, at Time 2. These analyses further aimed to verify if the observed correlation between risk perceptions and Time 2 PA persisted, while controlling recognised predictors of PA. In the first step, only gender was significantly related to Time 2 PA (β = −0.27, p < 0.01), and the equation was significant, F(5, 137) = 3.61, p < 0.01, R² = 0.11. Thus, older women were likely to participate more frequently in PA than men. The second step revealed that Time 1 PA accounted for a significant portion of Time 2 PA (β = 0.47, p < 0.001, ΔR² = 0.21), while controlling for the significant contribution of gender (β = −0.24, p < 0.001). Thus, the more the individuals participated frequently in PA at baseline, the more likely they were to participate frequently during the next 6

Table 1. Means, standard deviations and correlations matrix (N = 143).

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>64.53</td>
<td>1.56</td>
<td>0.02</td>
<td>0.17*</td>
<td>−0.03</td>
<td>0.20**</td>
<td>0.03</td>
</tr>
<tr>
<td>2. Education</td>
<td>3.47</td>
<td>1.06</td>
<td>−0.03</td>
<td>0.03</td>
<td>−0.10</td>
<td>−0.00</td>
<td>−0.13</td>
</tr>
<tr>
<td>3. Number of chronic diseases</td>
<td>1.17</td>
<td>1.38</td>
<td>−0.26**</td>
<td>0.01</td>
<td>−0.16*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Time 1 PA</td>
<td>2.62</td>
<td>1.50</td>
<td>−</td>
<td>0.13</td>
<td>0.51***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Risk perception</td>
<td>4.48</td>
<td>1.56</td>
<td>−</td>
<td></td>
<td>0.20**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Time 2 PA</td>
<td>2.54</td>
<td>1.57</td>
<td>−</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: PA, physical activity. *p < 0.05, **p < 0.01 and ***p < 0.001.
months. The equation was also significant, $F(6, 136) = 10.77, p < 0.001, R^2 = 0.32$. The third and final step of the analysis revealed that risk perceptions significantly accounted for Time 2 PA ($\beta = 0.19, p < 0.01, \Delta R^2 = 0.03$), while controlling for gender ($\beta = -0.24, p < 0.001$) and Time 1 PA ($\beta = 0.44, p < 0.0001$). High perceived personal risk of disease and health problems without the practice of regular PA independently leads to more frequent PA participation, beyond initial level of involvement and gender. The final equation was significant, $F(7, 135) = 10.69, p < 0.0001, R^2 = 0.35$ (Table 2).³

### Discussion

This study was designed to provide an examination of the relation between risk perceptions and PA participation among older adults. Existing research has only considered the role of risk perceptions in motivating for PA participation and has underestimated the behaviour motivation hypothesis endorsed by most health behaviour models (Brewer et al., 2004), which postulates a positive association between perceived risk of diseases or health problems and preventive health behaviours.

Using a prospective design, this research fills a gap in the existing literature on the social cognitive determinants of PA among older adults. It reveals that perceived risk of diseases and health problems directly motivates PA participation, defined as the frequency of PA session attendance at organised classes, which is in line with our

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### Table 2. Summary of regression analysis of Time 2 PA on Time 1 perceived risk ($N = 143$).

<table>
<thead>
<tr>
<th>Steps</th>
<th>Variables</th>
<th>$\beta$</th>
<th>$B$</th>
<th>SEB</th>
<th>$R^2$</th>
</tr>
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<tr>
<td>1</td>
<td>Gender</td>
<td>-0.27*</td>
<td>-0.47</td>
<td>0.14</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>Education</td>
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<td>-0.18</td>
<td>0.12</td>
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<tr>
<td></td>
<td>Zone</td>
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<td>-0.06</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marital status</td>
<td>0.02</td>
<td>0.06</td>
<td>0.17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of chronic diseases</td>
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<td>-0.17</td>
<td>0.09</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Gender</td>
<td>-0.24**</td>
<td>-0.43</td>
<td>0.12</td>
<td>0.32a</td>
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<td>Education</td>
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<td>-0.10</td>
<td>0.10</td>
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<tr>
<td></td>
<td>Zone</td>
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<td>-0.03</td>
<td>0.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marital status</td>
<td>-0.03</td>
<td>-0.08</td>
<td>0.15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Number of chronic diseases</td>
<td>-0.03</td>
<td>-0.03</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time 1 PA</td>
<td>0.47***</td>
<td>0.50</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Gender</td>
<td>-0.24**</td>
<td>-0.43</td>
<td>0.12</td>
<td>0.35b</td>
</tr>
<tr>
<td></td>
<td>Education</td>
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<td>-0.10</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zone</td>
<td>-0.04</td>
<td>-0.07</td>
<td>0.11</td>
<td></td>
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<tr>
<td></td>
<td>Marital status</td>
<td>-0.03</td>
<td>-0.08</td>
<td>0.15</td>
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<tr>
<td></td>
<td>Number of chronic diseases</td>
<td>-0.03</td>
<td>-0.04</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time 1 PA</td>
<td>0.44***</td>
<td>0.47</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Risk perception</td>
<td>0.19*</td>
<td>0.20</td>
<td>0.07</td>
<td></td>
</tr>
</tbody>
</table>

Notes: PA, physical activity.
* $p < 0.01$, ** $p < 0.001$ and *** $p < 0.0001$.
* $\Delta R^2 = 0.20, p < 0.0001$.
* $\Delta R^2 = 0.03, p < 0.01$. 
main hypothesis and provides support for the behaviour motivation hypothesis. This result suggests that perceiving that one is likely to suffer from diseases or health problems in the future, if one does not engage in regular PA, leads to more frequent PA participation in organised classes to reduce these risks. As such, it is a further confirmation that PA is considered as a health behaviour by older adults, and that their participation is driven by a health-preventive goal orientation, aiming at maintaining health and decreasing health risks (Renner et al., 2007). However, although based on self-reported PA in a specific organised context, the original contribution of our study is to reveal that the motivational properties of risk perceptions among older adults are sufficiently important to directly predict behaviour adoption.

In addition, the relation between risk perception and PA session attendance is independent from the main contribution of baseline behaviour. This result confirms that socio-cognitive variables, and more particularly health-related cognitions, account for older adults’ PA participation, independently from their habitual behaviour (McAuley et al., 2007; Renner et al., 2007). Furthermore, the demonstration of a relation between risk perceptions and future behaviour, while controlling for past behaviour, adds to existing research in health psychology as a whole. Most studies dealing with the relation between perceived risk and behaviour did not control for previous behaviour (Van der Pligt, 1996). McAuley et al. (2007) emphasised that certain theoretical models are applied to behaviour prediction, without including past behaviour as covariates, which does not allow determining the contribution of theoretical constructs independently from habitual behaviour. Thus, in this study, the behaviour motivation hypothesis is further supported given that risk perceptions are independent predictors of future PA session attendance, while controlling for the major contribution of baseline PA session attendance.

At a broader theoretical level, this study also adds to a fundamental issue in health psychology, related to the role of risk perceptions in shaping health behaviours. This relation is an undecided issue, given that inconsistent results were observed, sometimes leading to the conclusion that perceived risk plays a minor role as a determinant of future behaviour (Brewer et al., 2007; Van der Pligt, 1996). Applying the methodological precautions of Brewer et al. (2007) related to study design and item formulation, this study supports the tenets of most health behaviour models about the inclusion of risk perceptions as a determinant of preventive health behaviours, and confirms recent developments on the necessity of methodological adjustments to fully address the risk perception–behaviour relation (Brewer et al., 2007; Van der Pligt, 1996). In addition, the present study contributes to existing knowledge having considered the behaviour motivation hypothesis for the prediction of discrete behaviour used to decrease the risk of a specific health threat (e.g. vaccination, Brewer et al., 2007; Weinstein et al., 2007), because it analyses a behaviour which had a wide range of health consequences, such as decreasing cardiovascular diseases, hypertension, hypercholesteremia or reducing loss of autonomy.

This study has several limitations that should be considered when interpreting the results, contributions to the literature notwithstanding. First, it relies on a small sample, and needs to be replicated among larger ones. In addition, one may note that women are overrepresented in our study sample, which is a representative of the gender repartition of the PA national organisation in which the study took place. Thus, the specificity of our sample, associated with a low response rate, must be
underlined and raises doubt about the possibility of generalising the results to any older adults’ sample. Future research must be conducted with more heterogeneous samples. This study focused on individuals’ perceived risk for disease or conditions conditioned on not taking preventive action, in our case not taking part in regular PA. Thus, as in Renner et al. (2007) study, we were interested in how risk perceptions lead to frequent PA participation, independently from the type of activity, the duration and intensity of participation, and our measure of PA was matched on the condition of our measure of perceived risk. Future research must establish if risk questions conditioned on different behavioural conditions, such as not engaging in different types of activities, or not achieving certain criteria of duration or intensity of practice, predict different behavioural outcomes, such as involvement in different types of PA, duration or intensity of PA. In addition, in line with Renner et al. (2007), the risk perception measure was composed mostly of cardiovascular-related disorders. Future research may use risk perceptions measures that encompass other health states relevant to the aging process, such as cancer. The present study focused only on the behaviour motivation hypothesis, and did not consider the risk reappraisal hypothesis (Brewer et al., 2004), according to which having engaged in the preventive behaviour, in turn, leads people to lower their personal risk perception. Prospective research is needed with both risk perception and PA assessed at an initial date and then reassessed at a later date, to test these complementary hypotheses.

In addition, this study relies on self-reported measures of PA. Despite the evidence for a rather satisfactory validity of such procedure (Miller, Freedson, & Kline, 1994), particularly among adults compared to younger samples (Slootmaker, Schuit, Chinapaw, Seidell, & Van Mechelen, 2009), such measures could also be exposed to memory bias and to over- or underestimation of the absolute level of PA and/or inactivity (e.g. Slootmaker et al., 2009). A possible way to improve PA measures is to rely on the staff report of individual’s participation or on objective measures, such as accelerometers. This kind of measure may offer more precise estimates of energy expenditure and of time spent on PA at different levels of intensity, and remove many of the issues of recall and response bias of self-reported measures.

Despite these limitations, the present study is a first step toward an in-depth examination of the contribution of health-related cognitions on PA participation among older adults, and it paves the way for future research and development on the motivational properties of risk perceptions among this age group. Taken as a whole, the present study suggests that future research interested in the social cognitive foundations of PA among older adults may reconsider the motivational role of risk perceptions.

Notes
1. Given that all participants were in the same age decade, and as a result the sample was quite homogeneous for age, this variable was not included as a control variable for the prediction of Time 2 PA.
2. Descriptive statistics revealed that the main variables of this study were only moderately skewed (risk perceptions, skew = −0.18; Time 1 PA, skew = 0.73; Time 2 PA, skew = 0.57).
3. Additional analyses revealed that including age as a control variable did not change the overall prediction pattern, and that age did not contribute to Time 2 PA. In addition,
exploratory analyses tested the hypothesis that risk perceptions differentially predict PA according to its level of intensity. Activities were classified according to Godin and Shephard (1985) as strenuous (running, cycling and rowing) or moderate activities (walking, hiking, strength training, games and martial arts). No significant contributions of risk perceptions on either strenuous activities ($\beta = 0.13, p = 0.06$) or moderate activities ($\beta = 0.12, p = 0.08$) were found.

References


