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Predicting older adults' maintenance in exercise participation using an integrated social psychological model

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Abstract

Little is known about the predictors of maintenance in organized exercise programmes. The aim of this study was to investigate the behavioral predictors of maintenance of exercise participation in older adults, using an integrated social psychological model. To this end, we carried out a prospective cohort study (n = 1725; age 50 years or older) involving 10 different types of exercise programmes, with measurements at baseline and after 6 months. Predictors of intention to continue participating and the actual maintenance of exercise participation in the exercise programme were assessed using a stepwise logistic regression model. Significant odds ratios (ORs) predicting the intention to continue with the exercise programme were found for female sex, younger age, being married, being a non-smoker, being in paid employment, having a positive attitude towards exercise and having a high self-efficacy at baseline. Significant ORs predicting actual maintenance of exercise participation were short lapses, absence of lapses, high intention at baseline, high perceived quality of the programme, positive attitude at baseline and few risk situations at baseline. In order to promote maintenance of exercise participation for older adults, effort should be taken to prevent lapses, to help people cope with risk situations for lapses, to improve the attitude towards exercise participation and to improve the quality of the programme.

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Introduction

Regular participation in exercise confers a variety of health benefits on older adults, such as improved cardiovascular, respiratory and muscular function, and a diminished risk of disease states (US Department of Health and Human Services, 1996; American College of Sports Medicine, 1998). However, despite the potential benefits of exercise, many people are still physically inactive. Although considerable effort has been put into promoting exercise programmes to increase levels of physical activity, less attention has been paid to ensuring that people continue to participate in these programmes. In the exercise promotion literature 6 months is often accepted as the time-frame for behavior change to become imbedded (Prochaska and DiClementi, 1983) and so we accept this time-frame as relevant to maintenance of exercise participation. Research shows that about 50% of the participants of exercise programmes drop out during the first 6 months (Carmody *et al.*, 1980; Dishman, 1982; Oldridge *et al.*, 1988; Dishman and Sallis, 1994). Very few theoretically driven studies have investigated predictors of maintenance

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of exercise participation among older adults (Rhodes *et al.*, 1999), yet an understanding of these determinants is important because a physically active lifestyle can alter the course of frequently occurring chronic diseases. The aim of this study is to identify determinants of exercise maintenance in organized exercise programmes for seniors (i.e. people over 50 years of age).

Theoretical model for prediction of maintenance of exercise participation

Several theoretical health behavior models have been developed to predict actual exercise participation, but few are available to predict maintenance of exercise participation. In this study, Bandura's Social Learning Theory (Bandura, 1986) has been used related to attitude and social influence, the Theory of Planned Behavior (Ajzen, 1991; Ajzen and Driver, 1992) was used related to self-efficacy, the Triandis model of past behavior (Triandis, 1977, 1979) was integrated related to past behavior, and the Relapse Prevention model (Marlatt and Gordon, 1985) was used related to (re)lapses, coping behavior and (perceived) risk situations. All these separate models were integrated to elaborate factors constituting an integrated social psychological model of exercise maintenance (Figure 1).

A central aspect of the Theory of Planned Behavior (Ajzen, 1991) is the individual's intention to perform a given behavior. Intentions are assumed to capture the motivational factors that influence behavior—they are indications of how hard people are willing to try, or how much effort they are planning to exert, in order to perform a behavior. The theory postulates three conceptually independent determinants of intention, i.e. attitude, social

Fig. 1. The adapted planned behavior model used in this study based on (1) Social Learning Theory (Bandura, 1986), (2) the Theory of Planned Behavior (Ajzen, 1991; Ajzen and Driver, 1992), (3) the model of past behavior (Triandis, 1977, 1979) and (4) the Relapse Prevention model (Marlatt and Gordon, 1980, 1985).

influences and self-efficacy. Attitude consists of the advantages and disadvantages of a particular behavior [referred to as outcome expectations in the Social Learning Theory of Bandura (Bandura, 1986)]. Social influences include subjective norms (beliefs of important referent people), perceived social support (support from others for a certain behavior) and modeling (perceived behavior of relevant others) (Ajzen and Fishbein, 1980; Bandura, 1986). Self-efficacy is the perceived ease or difficulty of performing a behavior (Bandura, 1986). It is assumed to reflect past experience as well as anticipated impediments and obstacles.

In the Theory of Planned Behavior, Ajzen (Ajzen, 1991) argues that the perceived behavioral control (PBC) and self-efficacy constructs are interchangeable. However, self-efficacy is more clearly defined and operationalized than is PBC. Moreover, while self-efficacy and PBC account for equivalent proportions of variance in behavior, self-efficacy explains somewhat more of the variance in intention than does PBC. Therefore, we have decided to include self-efficacy instead of PBC.

We also included past behavior (habits) in our model. A person's habits regarding a certain behavior are very important (Triandis, 1977, 1979), and several studies have shown that the inclusion of past behavior can improve the prediction of intention and/or behavior (Lechner and De Vries, 1995a,b). In turn, intention is considered an immediate antecedent of actual behavior—the stronger a person's intention to engage in a behavior or to achieve his or her behavioral goals, the more successful he or she will be. However, barriers such as lack of time or ill health may influence a person's intention to continue exercising such that he or she ultimately stops exercising (Ajzen and Fishbein, 1980). The ability to cope with situations in which reversion to an old behavior is likely may be an important predictor of maintenance of exercise participation. In Relapse Prevention theory, Marlatt and Gordon distinguish between a 'lapse' and a 'relapse'—a lapse refers to a 'slight error or slip' (Marlatt and Gordon, 1985), whereas a relapse implies a breakdown in the person's efforts to control a particular problem (here, continuing exercise participation). Relapse is the act or instance of backsliding to the undesired behavior (Marlatt and Gordon, 1985). A lapse does not mean that an individual has totally relapsed into the old behavior. He or she may be able to cope with the reason for the lapse and to continue with the new behavior again. Lastly, we added two specific factors that may be important to the maintenance of exercise participation: type of exercise and perceived quality of the programme. The perceived quality was divided into three components: (1) quality of the instructor, (2) quality of the programme content and (3) quality of the programme conditions (price, distance to the accommodation, the accommodation itself, the time of day the programme is held, etc.).

Methods

Design

A prospective cohort study with baseline (before the start of the exercise programme) and follow-up measurements (6 months after the start) was performed to identify the predictors of maintenance of exercise participation in organized exercise programmes for older individuals (50-plus) living in the community.

Recruitment procedure and study population

In collaboration with four representatives of two important national organizations in the field of sports and physical activity in The Netherlands, i.e. Netherlands Institute of Sports and Physical Activity and Netherlands Olympic Committee/ Netherlands Sports Confederation, 10 different types of exercise programmes in The Netherlands were identified which may be seen as representative for the organized exercise programmes for older adults in The Netherlands. Criteria for selection were based on (1) specific policy on exercise for older adults and (2) popularity among older adults. These exercise programmes include More Exercise for Seniors Gymnastics (being a low-to-moderate community-based group-wise exercise programme attracting mainly older women (65-plus), organized

sports in sports clubs (specifically athletics, badminton, cycling, gymnastics, speed skating and table tennis), FysioSport (i.e. a fitness programme delivered by physical therapists/sports physical therapists), Exercise for Heart Patients and Walking for Sports (a group-wise walking programme).

The national organizations running these exercise programmes participated in the study, which facilitated data collection.

A network was set up for each exercise programme to recruit participants for the prospective study. Local organizations, clubs or groups were approached through the national organizations. Over a period of 15 months, all new members of the clubs or groups were asked to participate in the study. Participation is defined as 'regularly taking part in an exercise programme'. Inclusion criteria were (1) 'being older than 50' and (2) 'not being a member of an organized sports organization when joining the study'. The participants were asked for written informed consent before joining the study. To prevent bias among the participants, they were not told that the study investigated programme drop-out, but instead were told that the aim of the study was to increase the quality of the exercise programmes. They completed a baseline questionnaire (administered by post) before they started an exercise programme. Non-responders received a reminder after 3 weeks. After 6 months, all the participants who had returned the first questionnaire received a second postal questionnaire. Non-responders to the second questionnaire received a reminder after 3 weeks. Non-response research (conducted by computer-assisted telephone interviews among a random sample of 50 non-responders to both questionnaires) was carried out to check whether there were significant differences between responders and non-responders, and whether non-responders may have biased the final results (see Figure 2). The Medical Ethics Testing Committee of The Netherlands Organization for Applied Scientific Research (TNO) approved the study protocol.

Measurements

Because this was one of the first studies to specifically investigate factors governing maintenance of exercise participation in an organized programme, existing measures were not appropriate so we had to develop some new ones. We performed a literature search and then held two focus-group interviews with people who had dropped out of earlier programmes, people who had continued to participate in exercise programmes and instructors of exercise programmes, to gather information about self-efficacy, risk situations, barriers and the quality aspects of an exercise programme (Stiggelbout and Hopman-Rock, 2002).

At baseline, information was collected on background variables: age (in years), sex (female/male), marital status (married living together, married living alone, unmarried living alone, never lived together and widowed), educational attainment [education was recoded in three categories: 1 = primary education, 2 = secondary education and 3 = higher education (college/university)], housing (living in a house, apartment building, service flat and elderly people's home) and source of income (paid employment versus other sources of income).

Physical activity was evaluated using questions derived from the Dutch Monitor on Physical Activity and Health (Ooijendijk *et al.*, 2002), which covers compliance with Dutch public health guidelines (Kemper *et al.*, 2000). These guidelines, which are based on international guidelines, recommend that all adults perform 30 min or more of moderate-intensity physical activity (such as brisk walking) on most, and preferably all, days—either in a single session or 'accumulated' in multiple bouts, each lasting at least 8–10 min (Pate *et al.*, 1995; American College of Sports Medicine, 1998). This level of physical activity was considered to be the norm. Other lifestyle behaviors assessed were smoking (non-smokers, former smokers and smokers) and alcohol consumption (yes/no and how many glasses of alcohol a week). The participants were asked their weight and height, from which we calculated the body mass index (BMI; kg/m^2).

Health status was measured using RAND-36, a multidimensional health questionnaire (Ware and Sherbourne, 1992), translated into Dutch (Zee van der and Sanderman, 1993). In this study, five of

Fig. 2. Flow chart of the study. The information on non-response was based on a non-response examination of a random selection of 50 non-responders.

the nine subscales were used: vitality (reliability: Cronbach's α 0.82), pain (Cronbach's α 0.88), mental health (Cronbach's α 0.85), general feeling of health (Cronbach's α 0.81) and change in health status (a one-item subscale: no α available). Each subscale was scored 0–100, 100 being the best score. We chose these five subscales because earlier exercise studies showed the five subscales to be associated with exercise participation, and they were relatively easy to assess.

Determinants of physical activity/exercise behavior

To evaluate attitude, (perceived) social influence and self-efficacy, we developed questions related to physical activity/exercise behavior, based on Lechner and De Vries (Lechner and De Vries, 1995a,b). Scales derived from these questions were checked by four-point factor analysis and the consistency was computed. All questions were rated using a Likert-type scale.

Attitude was assessed by means of 10 questions on beliefs, such as 'I think that participating in the exercise programme is...'. Answers on a four-point scale ranged from 'very bad for health' to 'very healthy', scored from 1 (very bad for health) to 4 (very healthy). Attitudes were found to be highly correlated and were treated as one scale (Cronbach's α 0.84).

Social influence was assessed with nine questions on the influence on exercise participation of the partner (three questions), friends (three questions) and relatives (three questions). These questions were related to (1) social norms: 'What do

they think about your taking part in an exercise programme' ['What is their opinion about your exercise participation?']; five-point scale ranging from 'very negative' to 'very positive', scored from −2 to +2; (2) social support: 'How much do they support your participation in the exercise programme?'; three-point scale ranging from 'very little support' to 'a lot of support', scored from −1 to +1; (3) modeling: 'Do they exercise or take part in an exercise programme?'; four-point scale ranging from 'no, never' to 'yes, always', scored from +1 to +4. Because the partner's, relatives' and friends' influences were poorly correlated, all social influence items (social norms, support and modeling) were analyzed separately.

Self-efficacy was evaluated with 14 questions: 'Imagine you have missed one or more exercise sessions, would you feel able to participate again?'. Answer categories were on a five-point Likert type scale, ranging from 'certainly not' to 'certainly yes'. All these variables were scored from −2 (negative about continuation of exercise participation) to +2 (positive about continuation of exercise participation). The self-efficacy questions were highly correlated and were treated as one scale (Cronbach's α 0.81; the total score of the scale had a range from −28 to +28).

The intention to continue exercise participation was evaluated with the question 'Do you intend to continue participating in the exercise programme in the coming 6 months?'. Because the answers had a skewed distribution, the answer categories were dichotomized: 0 (low intention) and 1 (high intention). In the questionnaire there was also a question about earlier participation in exercise programmes (with answer categories yes/no).

The questionnaire mentioned 19 barriers to maintain active in an exercise programme, such as 'I usually have too little time' and 'I am not used to exertion'. Answers on a four-point scale were ranked from 'not important barrier' to 'very important barrier', scored from 1 (not important barrier) to 4 (very important barrier). The barriers were highly correlated and were treated as one factor (Cronbach's α 0.85; the total score of the factor had a range from 19 to 76).

In the follow-up questionnaire, the participants were asked whether they still took part in their exercise programme (no/yes). We had identified 14 risk situations that could influence maintenance of exercise participation. Participants were asked questions such as 'If the weather was bad, did you continue to take part in the programme?' and 'If you were bored by the programme, did you continue with it?'. The answers on a four-point scale ranged from 'no' to 'yes', scored from 1 (no-risk situation) to 4 (high-risk situation). The risk situations were highly correlated and were treated as one scale (Cronbach's α 0.85; the total score of the scale ranged from 14 to 56). Coping was assessed using an adapted Dutch coping questionnaire containing 17 questions related to how people cope with specific problems (Tak *et al.*, 1999). Questions asked were such as 'Do you ask people for help?', with an answer on a four-point scale, scored 1 (seldom) to 4 (very often). The coping questions were highly correlated and were treated as one factor (Cronbach's α 0.84; the total score of the factor had a range from 17 to 68). Three questions concerned lapses, i.e. the occurrence of lapses (yes/no), the number of lapses (*N*) and the duration of lapses (in weeks).

In general, exercise programme components may be divided into three main quality aspects: conditions of the programme (the accommodation, the price, accompany, etc.), content (type, intensity, duration, frequency) and guidance (trainer). For this reason we have divided the perceived quality into these three main components. The choice of all aspects related to the components was based on literature survey and the focus-group interviews (Stiggelbout and Hopman-Rock, 2002).

Answers were scored on a five-point scale ranging from 'very negative (1)' to 'very good (5)'. The perceived quality variables were found to be highly correlated and were treated as one factor (Cronbach's α 0.92; the total score of the factor had a range from 20 to 100).

Statistical analyses

Only the data from patients who completed both questionnaires were analyzed. Factor analysis and

consistency analysis (Cronbach's α) were used to check whether the scales were adequate to be used in the analysis. Attitude, social influence, self-efficacy, risk situation, coping, barriers and perceived quality of the programme were entered into the analysis as total scores.

The model of exercise maintenance predicted the intention to continue participation and the actual maintenance of exercise participation in the exercise programme. To predict determinants of intention (at a 0.05 level of significance) a step-wise logistic regression was applied with intention to continue participation as dependent variable (no/yes).

Because 'attitude', 'social influence', 'self-efficacy' and 'habits' were theoretically expected to be the most important predictive variables, they were entered first, followed by the background characteristics (age, sex, marital status, level of education, housing situation and work status), lifestyle (physical activity, smoking and alcohol consumption] and health status (BMI and health-related quality of life). Another step-wise logistic regression analysis was carried out to identify which significant determinants were most important in predicting self-reported continued exercise participation (at a 0.05 level of significance). Maintenance of exercise participation (yes/no) was used as dependent variable. It was defined here as 'remaining to take part regularly in an exercise programme'.

'Occurrence and period of lapses', 'perceived quality of the programme', 'risk situation', 'barriers' and 'coping responses' were entered as independent variables in the first block, as they were expected to have the highest predictive value. 'Intention to continue participation' was entered in Block 2, 'attitude', 'social influence', 'self-efficacy' and 'habits' in Block 3, and background variables in Block 4. A difference was considered to be statistically significant when $P < 0.05$. SPSS 11.0 (SPPS, Chicago, IL) was used for analysis.

Results

More than 400 local intermediaries (exercise and sport instructors) agreed to recruit participants for the project. After recruitment, 2350 people gave informed consent and received the baseline questionnaire. Of these, 2020 returned the questionnaire; 1725 participants completed the follow-up questionnaire at 6 months. Only data for the latter participants were analyzed (Figure 2). The total response was 73% (1725 of 2350). The main reason for non-response to the first questionnaire was 'not starting the programme after all' (34%), followed by 'refused to participate in the study' (30%); the main reason for non-response to the second questionnaire was 'lack of time' (22%), followed by 'illness/injury' (20%).

Table I presents the characteristics of the study participants. There were similar numbers of men and women. The mean age was 60 years. Most participants were married, had had a lower to middle education, lived in a multi-storey house and received income from a source other than work. Only 33% of the participants complied with the national physical activity guideline and approximately 13% smoked. Participants scored higher on vitality than drop-outs.

Prediction of intention to continue exercise participation

Multivariate analysis showed female sex [odds ratio (OR) 1.81; 95% confidence interval (CI) 1.04–3.17], younger age (OR 1.07; CI 1.02–1.12), being married (OR 2.91; CI 1.10–7.69), being in paid employment (OR 4.97; CI 2.36–10.46), being a non-smoker (OR 3.23; CI 1.11–9.09), having a positive attitude at baseline (OR 3.30; CI 1.73–6.31) and having a high self-efficacy at baseline (OR 1.73; CI 1.09–2.75) to be significant and independent predictors of the intention to continue participation in the exercise programme (Table II). Paid employment became a more important predictor of intention when it is controlled by age in the model.

Prediction of maintenance of exercise participation

Absence of lapses (OR 6.6; CI 2.1–20.8), short duration of lapses (OR 9.0; CI 4.7–17.2), high

Table I. *Characteristics of subjects at baseline*

Background variables	Adherers (n = 1475)		Drop-outs (n = 250)		Total (n = 1725)	
	Mean	SD	Mean	SD	Mean	SD
Age (years)	61.1	8.1	60.5	8.4	60.9	8.2
	%	*N*	%	*N*	%	*N*
Sex						
male	49	723	45	113	48	836
female	51	752	55	137	52	889
Marital status						
married (living together)	78	1151	78	195	78	1346
divorced	5	74	7	18	5	92
widowed	14	206	9	22	13	228
never lived together	3	44	6	15	3	59
Level of education						
higher education	18	265	24	60	19	325
secondary education	41	605	49	123	42	728
primary education	41	605	27	67	39	672
Housing situation						
multi-storey house	70	1032	73	183	70	1215
house/apartment	26	384	26	65	26	449
service flat	3	44	0.5	1	3	45
living in elderly home	1	15	0.5	1	1	16
Working status						
income from work	38	538	41	100	38	638
income from other source	62	892	59	144	62	1036
Life style factors						
physical activity (% norm active)[a]	33	487	30	75	33	562
smoking	12	177	16	40	13	217
alcohol (glasses/week)						
0	27	398	27	67	27	465
1–5	39	575	38	95	39	670
6–10	22	325	20	50	22	375
11–21	10	147	12	30	10	177
>21	2	30	3	8	2	38
BMI						
<20	3	44	6	15	3	59
20–25	43	634	36	90	42	724
25–30	43	634	48	120	44	754
>30	11	162	10	25	11	187
	Mean	SD	Mean	SD	Mean	SD
health status						
pain	67.5	16.5	64.3	17.7	67.0	16.7
vitality	83.2	19.8	77.9	20.1	82.4	19.9
mental health	75.6	15.2	73.6	15.8	75.3	15.3
general feeling of health	68.2	17.2	65.2	18.2	67.8	17.4
change in health status	55.4	20.2	53.4	21.2	55.1	20.4

χ^2-test, [a]$P < 0.01$
[a]Moderate activity for a minimum of 30 min at least 5 days a week (according to the guidelines).

Table II. *Estimate parameters [OR (CI)] of the step-wise logistic regression model of the intention (low/high) to maintain participating in the exercise programmes* (n = *1358*[a])

	Block 1			Block 2					
	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
Attitudes	3.42	2.91	2.29	3.45	3.40	3.45	3.56	3.77	3.30
	(1.88–6.22)	(1.58–5.36)	(1.31–4.01)	(1.84–6.46)	(1.80–6.41)	(1.82–6.56)	(1.87–6.75)	(1.98–7.18)	(1.73–6.31)
Self-efficacy		1.95	2.29	2.05	1.92	1.82	1.74	1.66	1.73
		(1.26–3.03)	(1.55–3.40)	(1.32–3.19)	(1.23–3.00)	(1.17–2.85)	(1.12–2.72)	(1.05–2.61)	(1.09–2.75)
Income from									
no job				1	1	1	1	1	1
job				2.76	2.63	4.47	4.68	4.72	4.97
				(1.53–4.97)	(1.44–4.82)	(2.17–9.18)	(2.26–9.69)	(2.27–9.84)	(2.36–10.46)
Marital status									
unmarried					1	1	1	1	1
married					2.98	3.5	3.82	3.16	2.91
					(1.20–7.42)	(1.39–8.83)	(1.50–9.74)	(1.22–8.22)	(1.10–7.69)
widowed					NS	NS	NS	NS	NS
Age						1.06	1.07	1.07	1.07
						(1.01–1.10)	(1.02–1.11)	(1.02–1.12)	(1.02–1.12)
Smoking									
yes							1	1	1
no							3.13	3.13	3.23
							(1.10–9.09)	(1.09–9.09)	(1.11–9.09)
Sex									
male								1	1
female								1.77	1.81
								(1.02–3.09)	(1.04–3.17)

Only the significant determinants are reported in the table.
[a]Total does not add up to 1725, due to missing values

intention at baseline (OR 3.9; CI 2.0–7.6), high perceived quality of programme (OR 2.7; CI 2.0–3.8), positive attitude at baseline (OR 1.9; CI 1.2–3.0) and few risk situations at baseline (OR 1.1; CI 1.01–1.14) were significant independent predictors of maintenance of exercise participation (Table III).

The occurrence and the number of lapses were important predictors of maintenance. Therefore we did additional step-wise logistic regression analyses for predictors of lapses. We found that there was a higher chance of lapses when there were more risk situations (OR 0.92; CI 0.89–0.95) and when participants had a lower self-efficacy (OR 1.45; CI 1.12–1.86). The chance of lapses was lower when the level of education was higher (OR 2.57; CI 1.80–3.64), when the vitality score was higher (OR 1.01; CI 1.01–1.02) and when there was less reported pain (OR 1.1; CI 1.01–1.02).

Discussion

We examined the predictors of the intention to continue participation in exercise programmes and the actual maintenance of exercise participation in organized exercise programmes for older adults (50-plus) at 6 months using an integrated social psychological model. We found that 85% of our study participants were still taking part in the exercise programme 6 months after they started. In the general population, about 50% of people who exercise are still exercising 6 months later (Carmody *et al.*, 1980; Dishman, 1982; Dishman

Table III. *Estimate parameters [OR (CI)] of the step-wise logistic regression model of the maintenance of exercise participation in the exercise programmes* (n = *1270*[a])

	Block 1				Block 2	Block 3	Block 4
	Step 1	Step 2	Step 3	Step 4	Step 1	Step 1	Step 1
Period of lapse							
1 week	8.7	8.5	8.5	8.2	8.3	9.0	9.0
	(4.7–16.1)	(4.5–15.9)	(4.5–15.9)	(4.4–15.5)	(4.4–15.9)	(4.7–17.2)	(4.7–17.2)
2–3 weeks	8.5	8.1	8.1	8.1	8.2	8.3	8.3
	(4.8–15.2)	(4.5–14.6)	(4.5–14.7)	(4.5–14.6)	(4.5–14.9)	(4.5–15.3)	(4.5–15.3)
4–6 weeks	5.3	5.6	5.6	5.3	5.2	5.1	5.1
	(2.7–10.4)	(2.8–11.2)	(2.8–11.2)	(2.6–10.5)	(2.6–10.5)	(2.5–10.3)	(2.5–10.3)
6 weeks or more	1	1	1	1	1	1	1
Perceived quality of the programme		2.6	2.6	2.6	2.7	2.5	2.7
		(1.9–3.5)	(1.9–3.5)	(1.9–3.5)	(1.9–3.6)	(1.8–3.5)	(2.0–3.8)
Lapse							
yes			1	1	1	1	1
no			6.4	7.0	7.2	7.2	6.6
			(2.2–18.7)	(2.4–20.5)	(2.4–21.1)	(2.4–21.5)	(2.1–20.8)
Risk situation				1.1	1.1	1.1	1.1
				(1.02–1.14)	(1.03–1.14)	(1.01–1.13)	(1.01–1.14)
Intention to continue							
low					1	1	1
high					4.7	4.3	3.9
					(2.5–9.1)	(2.3–8.3)	(2.0–7.6)
Attitude						2.5	1.9
						(1.5–3.7)	(1.2–3.0)

Only the significant determinants are reported in the table.
[a]Total does not add up to 1725, due to missing values

and Sallis, 1994). This difference in maintenance of exercise participation may partly be because we focused on organized exercise programmes. Older people often adhere better to a specific type of exercise, whereas younger people tend to change more often. Older people may have a stronger sense of responsibility, especially when social interaction is involved, such as in a group-based exercise programme. Moreover, they may also have more time than younger people to participate in such exercise programmes.

Predictors of the intention to continue participation were age, sex, marital status, smoking, work status, attitude and self-efficacy, and those of actual maintenance of exercise participation were the occurrence and duration of lapses, intention to continue participation in the programme, perceived quality of the exercise programme, number of risk situations, and attitude.

Intention to continue participation in the programme

According to McAuley and Courneya (McAuley and Courneya, 1993), key variables of exercise participation, derived from the Theory of Reasoned Action and Theory of Planned Behavior in the physical activity domain, are attitude, self-efficacy and intention. Attitude and self-efficacy are considered to be prime targets for intervention, because they affect an individual's intention to be physically active and ultimately his or her physical activity patterns. Consistent with this, we found that both attitude and self-efficacy were independent predictors of the intention to continue participation, which

in turn was a predictor of actual maintenance of exercise participation. Some background variables (being married, in paid employment and female sex) were also significant independent predictors of the intention to continue participation in the exercise programme. Although the Theory of Planned Behavior states that social influence may be a predictor of intention, and therefore a predictor of maintenance (Oka *et al.*, 1995), we found that social influence was not a predictor of either intended or actual maintenance of exercise participation. The inclusion of the measure of past behavior has been shown to account for an important role in physical activity intention and behavior, and may be seen as an important predictor (Hagger *et al.*, 2002; Jackson *et al.*, 2003). In our study, however, past behavior predicted neither the intention nor the maintenance of physical activity. The discrepancy may be due to the fact that most studies relate to exercise participation, whereas our study relates mainly to maintenance of exercise participation.

Maintenance of exercise participation

In the theoretical model, maintenance of exercise participation is predominantly determined by intention. Although this was partly the case, we found several factors to influence maintenance. For example, the perceived quality of the exercise programme was a predictor of maintenance of exercise participation. For this reason, an instrument should be developed to monitor the quality of exercise programmes, with a view to preventing people from dropping out because of 'poor' programmes. Because a positive attitude towards exercise participation at baseline was a predictor of maintenance of exercise participation, it may be worthwhile to highlight the positive effects of exercise participation to potential and new participants, in order to improve their attitude and indirectly decrease drop-out.

Both the occurrence and duration of lapses were predictors of maintenance of exercise participation. Analysis of the variables that predicted the occurrence of lapses revealed there to be a higher chance of lapses when there were more risk situations and when participants had a lower self-efficacy. There was a lower chance of lapses occurring when the level of education was higher, when the vitality score was higher and when there was less reported pain. Thus, although one might expect health to predict maintenance of exercise participation, we found that it had an indirect influence, by affecting the likelihood of lapses. Not only did more risk situations predict the occurrence of lapses, but a smaller number of risk situations was also an independent predictor of maintenance of exercise participation.

The Relapse Prevention theory of Marlatt and Gordon (Marlatt and Gordon, 1985) includes the identification of situations that are high-risk situations for lapses and training in problem solving to deal with risk situations. In a study of the effectiveness of relapse prevention training on maintenance of exercise participation, Marcus and Stanton (Marcus and Stanton, 1993) found that while their programme did not appear to promote continued participation, it decreased the number of lapses. Belisle *et al.* (Belisle *et al.*, 1987) reported a small, but consistent, effect of the relapse training programme on maintenance of exercise participation. Thus, relapse prevention training appears to be a cost-effective means to increase maintenance of exercise participation. However, Belisle *et al.* studied younger adults and it would be necessary to carry out a similar study with older adults. Such a programme may be beneficial for older individuals because we found that lapses and a lower number of risk situations were important predictors of continued participation.

Self-efficacy is reported to be an independent predictor of maintenance of exercise participation (McAuley and Courneya, 1993; Oman and King, 1998; McAuley *et al.*, 2003). However, we found it to be a predictor of the intention to continue participation and it was overruled in the final continued participation model (probably because intention was a predictor). Self-efficacy is a predictor of lapses, which in turn predict continued participation.

For the sake of this study we integrated a social psychological model. Our results show that the model offers sufficient relevant predictors for

explaining exercise maintenance. However, there are some questionable factors.

Coping was no predictor of maintenance of exercise participation. In this case we took coping behavior in general into the questionnaire. It may be more relevant to take coping with risk situations into account. As this is more relevant as both risk situations as the occurrence of lapses are predictors of maintenance of exercise participation.

In the case of barriers to exercise it seems that there may be some overlap between the scales so that the influence of barriers is overshadowed by risk situations.

In this study the Theory of Planned Behavior and the Social Cognitive Theory grounded the development of the integrated model that we applied for explaining exercise maintenance. By doing so, our first interest was to uncover leads for improving exercise maintenance rather than to improve theory. Nevertheless, the results of the regressions analyses indicated a fairly good fit of the integrated model. A strength of the model is the inclusion of risk situations from the Relapse Prevention model which seem to have an important effect on maintenance together with lapses. In the Relapse Prevention model lapses and risk perceptions and situations are also important components. A limitation is the lack of influence of social influence; however, other studies have often found no effect of social influence.

Strength and limitations of the study

The paper has a number of strengths: it is prospective in nature, has a large sample size, relies on a representative population of older participants, considers a range of determinants that have been identified as important with respect to exercise behaviors and considers a range of types of organized programmes.

However, it also has some limitations, such a bias due to non-response (Figure 2), which means that the actual maintenance of exercise participation may have been higher than was suggested in our study. Although we included 10 different exercise programmes in the study, we did not include all exercise programmes for older adults in our study. Thus, the results of this study cannot be generalized to all exercise programmes for seniors. We assessed maintenance over 6 months, a time period generally accepted to reflect the time it takes exercise behavior to be imbedded (Prochaska and DiClementi, 1983). A longer follow-up period may have led to a higher drop-out rate. Moreover, a longer study would have been more expensive and it would have been more difficult to recruit organizations to participate.

Conclusions and recommendations

This study is one of the first to systematically investigate the predictors of the intention to continue participation in exercise programmes and the actual maintenance of exercise participation in organized exercise programmes for older adults (50-plus) using an integrated social psychological model. We found sex, age, marital status, smoking, working status, attitude and self-efficacy to be significant predictors of intention to continue participation at baseline. The occurrence and duration of lapses, the intention to continue participation, the perceived quality of the exercise programme, and baseline attitude were significant predictors of maintenance of exercise participation.

Thus, in order to promote the actual maintenance of exercise participation in organized exercise programmes for older adults, it is important to increase the intention of participants to continue participation, possibly by changing their attitude at baseline, and to see how participants cope with potential risk situations with a view to decreasing lapses. The perceived quality of the programme could be evaluated by means of a satisfaction questionnaire, because people are more inclined to drop out of a programme they consider to be of poor quality. Relapse prevention training may help to increase maintenance in exercise programmes for older people.

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DROP-OUT FROM EXERCISE PROGRAMS FOR SENIORS: A PROSPECTIVE COHORT STUDY

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running head: Drop-out from exercise programs for 50-plus

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Abstract

This study examines drop-out incidence, moment of drop-out, and switching behavior in organized exercise programs for seniors in the Netherlands, as determined in a prospective cohort study (with baseline measurements at the start of the exercise program and follow-up after six months; n=1725, response rate 73%) Subjects were 50+ community-living individuals who participated in different forms of organized exercise programs. The average drop-out incidence was 0.15 per six months, which is lower than that for the general population. The drop-out incidence and the timing of drop-out differed substantially between the exercise programs. In total 31% of people who dropped out of one type of exercise program switched to another type of exercise. The type of program and exercise had a strong effect on differences in this switching behavior. It is recommended that switching behavior be monitored in future studies.

Key words: exercise, physical activity, health behavior, health promotion, aged, cohort studies

There is clear evidence of the benefits of exercise programs for older people (American College of Sports Medicine, 1998). Regular physical activity has been associated with a variety of health benefits, such as improved cardiovascular, respiratory, and muscular function, and reduction of risk factors associated with chronic disease states. Exercise also plays an important role in enhancing the quality of life of the older adult, by improving physiological and psychological function, which helps to maintain personal independence and reduces the demand for acute and chronic care services (Pate, Pratt, Blair, et al., 1995; US Department of Health and Human Services, 1996). It is therefore important to promote exercise participation among older individuals.

Drop-out from exercise programs is a problem (Carmody, Senner, Malinow, & Matarazzo, 1980; Dishman, 1982; Oldridge, 1988; Dishman & Sallis, 1994), and drop-out rates in adults of approximately 50% in the first six months, mostly in the first 12 weeks, have been reported (Dishman, 1982; Dishman & Sallis., 1994). Unfortunately, it is difficult to compare data because many researchers have neither explicitly defined drop-out nor monitored participants over an extended period (Oldridge, 1982; Ecclestone, Myers, & Paterson, 1998). The available studies generally looked at drop-out data for younger adults (i.e., <50 years old), and this may not be representative for older populations (King, Blair, Bild, & Dishman, 1992). Some researchers have suggested that older adults may exercise more consistently because they are more concerned about their health and have more time to exercise than younger adults (Oldridge, 1988; Lee, Jensen, Oberman, et al., 1996). By contrast, other researchers have shown that, in community exercise programs, older people are no more compliant than younger people (Ecclestone et al., 1998). Older people may also be more likely to interrupt their exercise programs because the incidence of chronic diseases increases with advancing age.

Obstacles to habitual exercise may lead to extended lapses, defined as 'a slight period of non-participation in the exercise program' (Sforzo, McManis, Black, Luniewski, & Scriber, 1995), and ultimately to drop-out. In our study, we have defined drop-out in terms of stopping with a specific exercise program, rather than a cessation of all physical activity. To date, only one study (Ecclestone et al., 1998) investigated the behavior of participants in switching from one exercise program to another. These authors found that 21% of the participants switched to another program during the 3-year study and concluded that older adults join, leave, rejoin, and switch as their commitments and interests change.

The aim of this study was to determine the drop-out incidence, moment of drop out in different types of program, and exercise program switching behavior of older adults in the Netherlands.

Population and methods

This was a prospective cohort study with baseline (at the individual start of the exercise program) and follow-up measurements (six months after the start).

Recruitment procedure and study population

In collaboration with several experts in the field, ten different forms of exercise programs were identified as being representative of the exercise programs available to older individuals in the Netherlands, namely, More Exercise for Seniors Gymnastics (MBvO in Dutch), organized sports in sports clubs (specifically, athletics, badminton, cycling, gymnastics, skating, and table tennis), FysioSport (i.e. a fitness program delivered by physical therapists/sports physical therapists), Exercise for Heart Patients (HIB in Dutch), and Walking for sports (referred to as Walking in this paper). These exercise programs are supported by national organizations, which facilitated data collection and participant recruitment. Local

organizations were approached through the national organizations and recruited clubs or groups which were known to encourage participation by older adults.

Over a period of 15 months, all new members of these clubs or groups were asked to participate in the study. Inclusion criteria were (1) age older than 50 years and (2) not being a member of an organized sports organization directly prior to the study. The participants gave their written informed consent before joining the study. They completed a baseline questionnaire when they started the exercise program. Non-responders received a reminder after three weeks. After six months, all participants who had finally returned the first questionnaire received a second questionnaire. Non-responders to the second questionnaire received a reminder after three weeks. The Medical Ethics Testing Committee of TNO approved the study protocol.

Drop-out in this study was defined as 'no longer participating in the specific organized exercise program', according to the opinion of the respondent. Drop-out should be distinguished to lapsing. Lapses were defined as 'a slight period of non-participation in the exercise program' (Sforzo et al., 1995), whereas in the case of drop-out the cessation is definite. It was elaborated that one may merely speak of drop-out whenever one has terminated ones membership of an organization. So, in the case of a seasonal sport as speed-skating one does not speak of drop-out when there is a seasonal lapse; speed-skaters only drop-out if they had terminated their membership of the sports club (which was asked for in the questionnaire), which in most cases was not the case.

The baseline questionnaire covered a number of areas. Demographic data were collected concerning age, sex, marital status, level of education, housing situation, and work status. Physical activity was evaluated using questions derived from the Dutch Monitor on Physical Activity and Health (Ooijendijk, Hildebrandt, & Stiggelbout, 2002), which covers compliance with Dutch public-health guidelines

during an average week in the summer and winter (Kemper, Ooijendijk, & Stiggelbout, 2000). These guidelines are based on international guidelines (Pate et al., 1995; US Department of Health and Human Services, 1996; American College of Sports Medicine, 1998). All participants complied with these guidelines and met norms for physical activity. Other lifestyle components, such as alcohol consumption (yes/no, and how many glasses of alcohol per week) and smoking (non-smokers, former smokers, and smokers), were also evaluated. Weight and height were recorded and used to calculate the body mass index (BMI; kg/m^2).

Health status was measured with the RAND-36, a multidimensional health questionnaire (Ware & Sherbourne, 1992), which has been translated into Dutch (Van der Zee & Sanderman, 1993). In this study, five of the nine subscales were used: vitality (reliability: Cronbach's alpha 0.82), pain (Cronbach's alpha 0.88), mental health (Cronbach's alpha 0.85), general feeling of health (Cronbach's alpha 0.81), and change in health status (a one-item subscale: no alpha available). Each subscale was scored 0-100, with 100 being the best score.

In the follow-up questionnaire particular attention was paid to continued participation and drop-out, the occurrence of lapses, the frequency of lapses, the duration of lapses (i.e. how long the individual lapses lasted, devided in: 1 week, 2-3 weeks, 4-6 weeks, and >6 weeks), and the moment of drop-out (measured in weeks after the start of the program). To distinguish between lapses and drop-out, the participants were asked to fill in questions containing both definitions in the second questionnaire, before putting forward the questions related to drop-out and lapsing behavior. In our study we have collected the time point of drop-out, but not the time point of lapses. The reason for not taking the time point of lapses was that the occurrence of lapses was predicted as being quite frequent, and we only had two measurements per individual; this would certainly lead to a (too) high amount of memory bias.

Participants who dropped out were asked whether they had taken up another form of exercise, and if so, which. This was an open answer question. The answers were then categorized into 17 forms of exercise.

Statistical analyses were carried out on the data of the participants who completed both questionnaires. Means and standard deviations of the general characteristics were calculated. The adherers and drop-outs were compared in univariate analysis for nominal variables using a $\chi 2$-test, and for numerical variables with a t-test. The drop-out incidence is defined as the number of cases (i.e. people dropping-out) in 6 months (available per program), per 100 enrolled participants. The software used was SPSS 11.0 (SPPS Inc., 2003).

Results

More than 400 local intermediaries (exercise and sport instructors) agreed to recruit participants for the project. After recruitment and giving their informed consent, 2350 people received the baseline questionnaire and 2020 completed and returned it. Of these 2020 participants, 1725 also returned the follow-up questionnaire at six months. The data for these 1725 subjects were analyzed (see Figure 1). The total response was 73%.

The mean drop-out incidence for all programs was 0.15 per 6 months (see Figure 2). The highest drop-out incidence was for FysioSport (0.37), followed by badminton (0.25) and skating (0.22). The lowest drop-out incidence was for cycling (0.05).

Insert figure 2 about here

Background characteristics

Table 1 presents the background characteristics of the drop-outs (N=250) and the adherers (i.e. the non-drop-outs; N=1475). There were no differences between the drop-outs and the adherers in age, sex, housing situation, working status, and lifestyle factors (physical activity, smoking, and alcohol consumption). There were, however, significant differences in marital status, level of education, and BMI. More people who had always been single and fewer widowed people reported dropping out. Fewer people with a low level of education dropped out compared with people with a higher level of education. More people with underweight (BMI<20) and overweight (BMI>25) dropped out compared with people with a normal weight (BMI 20-25). There were also significant differences between the drop-outs and the adherers in health status: drop-outs reported lower scores on vitality and general feeling of health, and they reported lower pain scores (i.e. they experienced more pain).

Insert table 1 about here

Differences between drop-outs and adherers in terms of lapses

Seventy-six percent of the drop-outs reported lapses during the study period, compared with 58% of the adherers ($\chi 2$ =53, df=1, $p<0.01$). The drop-outs also had significantly more and longer lapses than did the adherers (Table 2).

Insert table 2 about here

Moment of drop-out

There were large exercise program-specific differences in the moment that participants dropped out. People who participated in athletics or cycled dropped out relatively soon (mainly within 8 weeks) after the start of the program, whereas people who skated, played table tennis, or walked mainly dropped out later (weeks 17 through 26; Figure 3).

Insert figure 3 about here

Switching to another form of exercise program

Thirty-one percent of the people who dropped out switched to another form of exercise. There were large differences between the exercise programs in switching behavior. For example, many people who dropped out of skating switched to another form of exercise, whereas few people who dropped out of cycling switched to another type of exercise (Figure 4). Many of the people who dropped out switched to fitness, swimming, tennis, and walking.

Insert figure 4 about here

Insert table 3 about here

Discussion

This study investigated the drop-out incidence and timing of drop-out among seniors taking part in organized exercise programs in the Netherlands. The average drop-out incidence was 0.15 per six months.

In the general population, the average drop-out incidence in exercise programs is about 0.50 during the first six months (Carmody et al., 1980; Dishman, 1982; Oldridge, 1988; Dishman & Sallis, 1994). This difference in drop-out incidence may partly be because we focused on organized exercise programs. Older adults often adhere better to a specific kind of exercise behavior, whereas younger people tend to change more often. This may be due to a stronger sense of responsibility, especially when social interaction is involved, such as in a group-based exercise program. Older people may also have more time for exercise programs than younger people.

The overall drop-out incidence among seniors attending organized exercise programs in the Netherlands was lower than that reported in US and Canadian studies. Ecclestone et al. (1998) found that, in organized exercise programs for seniors in Canada, the drop-out incidence was 0.41 during the first six months. In that study the exercise programs consisted mainly of aerobics and fitness classes, whereas we compared ten different types of exercise programs. It should be noted that we observed considerable variations in the drop-out incidence for the different programs, with FysioSport having the highest drop-out. FysioSport is an aerobics and fitness class and therefore the form of exercise most similar to the exercise programs of Ecclestone et al. (1998). The drop-out incidence for FysioSport was comparable to that reported by Ecclestone et al. (1998) (0.37 and 0.41, respectively). People who dropped out were asked whether they did so because of the intensity of the program. This reason was, however, not mentioned in

FysioSports. This high drop-out incidence may in part be due to the cost, because FysioSport is a relatively expensive exercise program.

The drop-out incidence appeared to vary according to marital status and level of education, housing situation, and BMI. Among those who dropped out, there were significantly fewer people with a lower level of education. These results are in accordance with the results of King, Kiernan, Oman, Kraemer, Hull, & Ahn (1997), but on the whole there is little information in the literature about the association between level of education and drop-out. Among the drop-outs there were significantly more people who had always been single and significantly less widowed people. This may be because organized exercise programs are an important aspect of the social life of people who have lost their partner since it offers the chance to make new social contacts. Among the drop-outs were significantly more people with overweight and underweight. In the focus group interviews TNO held with seniors (50-plus) before the study, overweight was mentioned as an important determinant of drop-out, although there is little scientific evidence to support this. The results indicate that this aspect warrants further investigation, especially because exercise is often recommended to people with overweight. The higher drop-out incidence among people with a BMI under 20 was unexpected and difficult to explain. Underweight may be associated with underlying illnesses or frailty, but because of the relative low number of subjects in this subgroup this hypothesis cannot be proven. There were significant differences in vitality, pain score, and general feeling of health between the drop-outs and the adherers. People with a lower perceived health status tended to drop-out more often than those with a higher perceived health status. Other investigators have reported poor health to be a determinant of drop-out (Dishman & Sallis, 1994, Ecclestone et al., 1998; Rhodes, Martin, & Taunton, 1999; Martin & Sinden, 2001). This is in accordance with the results of the current study.

The literature suggests that drop-out mainly occurs during the first three months of a program (Carmody et al., 1980; Dishman, 1982; Dishman & Sallis, 1994; Oldridge, 1988). We found that the type of exercise program influenced the moment that people dropped out. In several programs (i.e. skating, table tennis, and walking) participants tended to drop out after four months, whereas in other programs (i.e. cycling and athletics) people mainly dropped out in the first eight weeks. It seems that certain exercise programs are more prone to early drop-out than other programs.

This study is one of the first to investigate whether seniors who drop out of an exercise program actually switch to another form of exercise. Thirty-one percent of the people who dropped out subsequently took up another form of exercise. There were large differences in such switching behavior between the ten exercise programs. For example, many people who dropped out from skating took up another form of exercise. This may be influenced by the seasonal aspects of the sport, as people can only skate in the winter and thus tend to take up another sport in the summer. Three of the five skaters who took up another form of exercise took up cycling. Few of the people who dropped out of cycling took up another type of exercise. Ecclestone et al. (1998) found that in a period of three years 21% of the participants switched to another exercise program in their center. However, they did not take into account the participants who quit an exercise program and switched to another form of exercise outside of their initial centre. We took other forms of exercise into account, which may explain the differences in results (21% in Ecclestone et al. in three years versus 31% in this study in six months). It was found that people who switched from one program to another often switched to fitness, swimming, tennis, and walking, exercises which appear to be popular among seniors (Ooijendijk et al., 2001). However, it was not reported that people switched

to another sport because they preferred it or thought it to be more beneficial to their health.

This study had a number of limitations. The number of drop-outs may have been biased by non-response (Figure 1). A random non-response analysis revealed that participants had not responded because they were ill or injured (20%), had moved to another city (12%), or had died (4%). Based on these responses one may certainly expect these people to have dropped out of the exercise programs. The drop-out incidence would then be about 0.20. While different types of exercise were included, it was not possible to ensure that the same number of participants followed each type of exercise program, which may have biased the results. In this study the occurrence of lapses, the amount of lapses and the duration of lapses were taken into consideration. An aspect which could have offered additional information was the time-point of the lapse(s). However, this information was not recorded. In future studies it could be added, if the risk of memory bias is low.

In conclusion, the results suggest that the drop-out incidence for organized exercise programs for seniors (0.15) is lower than that for such programs for the general population. There are substantial program-specific differences in when older people drop out, but 31% of people who dropped out of one exercise program took up another form of exercise. Future studies should take switching behavior into account when dealing with drop-out from exercise programs.

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Figure 1. Flow chart for the study. The information on non-response was based on data for a random selection of 50 non-responders.

Figure 2. Six-month drop-out incidence for different exercise programs (number between 0-1).

Figure 3 - Moment of drop-out (comparison months 0-8 weeks versus 9-16 weeks and 17-26 weeks; in percentage 0-100).

Figure 4. The percentage of people who dropped out (n = 250) who switched to another form of exercise. Total drop-out: 250.

Table 1. Background characteristics of subjects at baseline.

Background variables	Adherers (N=1475)		Drop-outs (N=250)		Total (N=1725)		Test-statistic	
	M	Sd	M	Sd	M	Sd		
Age in years	61.1	8.1	60.5	8.4	60.9	8.2	NS	
	%	N	%	N	%	N	X2	df
Sex								
-male	49	723	45	113	48	836	NS	
-female	51	752	55	137	52	889		
Marital status								
-married (living together)	78	1151	78	195	78	1346	13.1*	3
-divorced	5	74	7	18	5	92		
-widowed	14	206	9	22	13	228		
-never lived together	3	44	6	15	3	59		
Level of education								
-High	18	265	24	60	19	325	10.8*	2
-Middle	41	605	49	123	42	728		
-Low	41	605	27	67	39	672		
Housing situation								
-house/flat with stores	70	1032	73	183	70	1215	NS	
-house/apartment	26	384	26	65	26	449		
-service flat	3	44	0.5	1	3	45		
-living in elderly home	1	15	0.5	1	1	16		
Working status								
Income from work	38	538	41	100	38	638	NS	
Income from other sources	62	892	59	144	62	1036		
Life style factors								
-Physical Activity:								
% norm active[1]	33	487	30	75	33	562	NS	
-Smoking	12	177	16	40	13	217	NS	
-Alcohol								
no alcohol	27	398	27	67	27	465	NS	
1-5 glasses/week	39	575	38	95	39	670		
6-10 glasses/week	22	325	20	50	22	375		
11-21 glasses/week	10	147	12	30	10	177		
>21 glasses/week	2	30	3	8	2	38		
Body Mass Index							12.9*	3
<20	3	44	6	15	3	59		
20-25	43	634	36	90	42	724		
25-30	43	634	48	120	44	754		
>30	11	162	10	25	11	187		
Health status:	M	Sd	M	Sd	M	Sd		
Vitality	67.5	16.5	64.3	17.7	67.0	16.7	F=7.0**	
Pain	83.2	19.8	77.9	20.1	82.4	19.9	F=14.8**	
Mental health	75.6	15.2	73.6	15.8	75.3	15.3	NS	
General feeling of health	68.2	17.2	65.2	18.2	67.8	17.4	F=5.9**	
Change in health status	55.4	20.2	53.4	21.2	55.1	20.4	NS	

$\chi 2$ test, * $p<0.01$; T-test, ** $p<0.01$

[1] Moderate activity for minimally 30 minutes during at least 5 days a week

Table 2. The percentage of adherers and drop-outs who lapsed in program participation in the last six months, lapse frequency, and length of lapses (in percentages and absolute numbers).

Variables	Adherers % (n)	Drop-outs % (n)	χ2 (df)
Occurrence of lapses during past 6 months			28.6 (1) *
Yes	58 (856)	76 (190)	
No	42 (619)	24 (60)	
Frequency of lapses			63.6 (4) *
>1x per month	28 (240)	58 (110)	
1x per month	20 (171)	11 (21)	
1x per 2 months	18 (154)	9 (17)	
1x per 3 months	15 (128)	9 (17)	
<1x per 3 months	19 (163)	13 (25)	
Length of lapses			145.3 (3) *
1 week	33 (283)	18 (34)	
2-3 weeks	40 (342)	19 (36)	
4-6 weeks	16 (137)	16 (31)	
>6 weeks	11 (94)	47 (89)	

* $p<0.01$

Table 3. The number of people who dropped out of a specific exercise program (horizontal) who switched to another form of exercise (in absolute numbers (n))

Exercise/ switched to exercise form (n)	Athl	Badm	Cycl	Gymn	Skat	TaTe	Fysio	HIB	MBvO	Walk
Cycling (n=9)	1	2			3	2			1	
Dancing (n=1)									1	
Fitness (n =17)	2	2		2	1	1	3	4		2
Gardening (n =3)							2			1
Golf (n =2)							2			
Home exercise (n=5)				2			2	1		
MBvO (n =2)		1						1		
Rowing (n =1)	1									
Skating (n =1)				1						
Skeelering (n =1)					1					
Slender you (n =1)		1								
Swimming (n =17)		1	1				5	6	3	1
Table tennis (n =1)									1	
Tennis (n =12)		1		1			3	3	2	2
Volleybal (n =1)								1		
Walking (n =14)				1		1	5	3	4	
Tv-exercise (n =3)						1			2	
Total (n =91)	4	8	1	7	5	5	22	19	14	6

Athl=Athletics, Badm=Badminton, Cycl=Cycling, Gymn=Gymnastics, Skat=Skating, TaTe=Table tennis, Fysio=FysioSport, HIB=clubs for (ex) heart patients, MBvO=More Exercise for Seniors, Walk=Walking for sports

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DETERMINANTS OF MAINTENANCE OF EXERCISE PARTICIPATION IN EXERCISE PROGRAMS FOR SENIORS IN THE NETHERLANDS

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Introduction

Exercise is important for older people. It improves physical fitness and health. It can reduce the natural decline of various bodily functions that accompanies aging. Exercise can also prevent various chronic disorders, such as diabetes mellitus type 2, cardiovascular disease, osteoporosis, and overweight (1-4). This means that exercise is an important form of prevention.

Regular exercise is needed to achieve health benefits. The minimum amount of exercise required to achieve health benefits is 30 minutes of moderately intensive physical activity a day at least five days a week (1-4).

Health benefits are only maintained when people continue to exercise. Exercise therefore needs to become a habit. This has proved to be the difficulty. Prevalence figures suggest that 50% of exercise participants drop-out after six months (5;6). There is still a lack of specific data relating to drop-out and maintenance of exercise participation in older participants.

TNO Prevention and Health therefore carried out a study on drop-out and maintenance of exercise participation in older adults. Establishing prevalence figures of drop-out determinants makes it possible to take specific action to improve maintenance.

Methods

A prospective cohort study was carried out with baseline measurements and follow-up. Ten different types of organised exercise programs were integrated in the project: More Exercise for Seniors – gymnastics (MBvO-gym in Dutch), Sports clubs for patients with coronary heart diseases (HIB in Dutch), FysioSports (fitness guided by specialised sports physiotherapists), Walking for sports, and organised sports in a club (athletics, badminton, tour cycling, gymnastics, speed skating, table tennis).

During the course of the study, new participants in the exercise programmes were approached over a period of 15 months when they enrolled for the program in question.

Participants completed questionnaires after they started the program and after six months. Determinants of maintenance (background variables, attitude, social influence, self-efficacy, behavioural intention, number and duration of lapses, risk situations, coping response and the perceived quality of the contents of the program) were evaluated using logistic regression. Drop-out rates were measured for a total of 1725 people aged 50 and older completed both questionnaires.

Results and discussion

The drop-out rate was 14.5% (varying from 37% - 5% per program). There were considerable variations between the various types of exercise. The maintenance for FysioSport was 37%, as compared to 5% for the tour cyclists. MBvO participants reported a maintenance rate of 10% (see figure 1).

Figure 1: Drop-out rates (as percentages (%) of the total number of participants in the programme).

In addition to variations in drop-out rates, there are also considerable variations in terms of when people drop out from the various activities. In the case of speed skating and walking for sport, drop-out mainly occurs after 16 weeks; in the case of cycling and athletics, the majority drop out in the first eight weeks.

Figure 2: Timing of drop-out for the various types of exercise in weeks (as percentages (%) of all drop-outs for the particular type of exercise)

Predictors of maintenance

Significant odds ratios predicting the intention to remain in the exercise programme were found for: female sex (OR 1.81), younger age (OR 1.07), being married (OR 2.91), being a non-smoker (OR 3.23), receiving income from work

(OR 4.97), having a positive attitude towards exercise (OR 3.30), and having a high self-efficacy at baseline (OR 1.73). Significant odds ratios predicting actual exercise maintenance were short lapses (OR 9.0), absence of lapses (OR 6.6), high intention at baseline (OR 3.9), high perceived quality of the programme (OR 2.7), positive attitude at baseline (OR 1.9), and few risk situations at baseline (OR 1.1).

We will now offer several measures to improve maintenance. People are often unable to participate in exercise activities for a certain length of time (called lapses): this may last for one week or several weeks due to, for example, injury, illness or holidays. The study has shown that preventing such lapses or decreasing their duration may improve maintenance.

Measures to reduce lapses are therefore important. One possibility could be the introduction of a "*buddy system*" in which a "buddy" (in other words, an experienced participant) is assigned to a new participant to encourage them to attend. Another might be a telephone system in which participants keep in touch with each other and support each other.
Relapse Prevention training can also be useful. In America and Canada, training of this kind has proved beneficial. Relapse Prevention training teaches participants to deal with disappointments that may lead to them giving up. Having few risk situations – and knowing how to deal with them – is a predictor of maintenance. Participants must be aware that a lapse – if it does not last too long – is not a problem and that the health benefits of exercise need not suffer from a short time off. The main thing is that missing exercise sessions (i.e. lapsing) should not become a habit.
The perceived quality of the programme is also an important determinant of maintenance. Therefore conducting periodical *surveys of satisfaction* levels may be beneficial. Depending upon the results of the surveys, the activity or the circumstances can be adapted accordingly.

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Er is bij de begeleiders van sport- en bewegingsactiviteiten en bij beleidsmakers behoefte aan meer informatie over het voorkomen van uitval bij bewegingsactiviteiten voor ouderen (50-plus) in Nederland. TNO heeft - met financiële steun van ZonMw - en met ondersteuning van een groot aantal organisaties, een prospectief onderzoek gedaan naar de mate van uitval bij bewegingsactiviteiten voor ouderen, de reden waarom ouderen afhaken bij bewegingsactiviteiten en maatregelen om uitval te verminderen.

Uitval bij bewegingsactiviteiten voor 50-plussers

Wie, waarom, wanneer?

MAARTEN STIGGELBOUT[1], MARIJKE HOPMAN-ROCK[1 2] EN TINUS JONGERT[1]

Inleiding

Bewegen is belangrijk voor ouderen. Het bevordert het lichamelijke prestatievermogen en de gezondheid. Het kan de natuurlijke achteruitgang van diverse lichaamsfuncties, die bij het verouderen optreedt, verminderen. Tevens kan bewegen ook het ontstaan van diverse chronische aandoeningen, zoals diabetes mellitus type 2, hart- en vaatziekten, osteoporose en overgewicht tegengaan. Daarmee is bewegen een belangrijk preventiemiddel.

Om gezondheidswinst te bereiken moet men regelmatig bewegen. De minimale hoeveelheid beweging die nodig is om de gezondheid te bevorderen bedraagt 30 minuten matig intensieve lichamelijke activiteit per dag op tenminste 5 dagen van de week.

Effecten op de gezondheid blijven uitsluitend gehandhaafd wanneer men blijft bewegen. Het bewegen moet daarom een vaste gewoonte worden. Dat laatste blijkt lastig te zijn.

Bij het ouder worden neemt de mate van lichamelijke activiteit dikwijls af. Bij mensen die aan bewegingsactiviteiten meedoen is de uitval vaak groot; men haakt af. Deze informatie is afkomstig

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uit onderzoek in de algemene bevolking, en met name de Verenigde Staten en Canada. Specifieke gegevens over de uitval van oudere deelnemers aan bewegingsactiviteiten in Nederland ontbreken nog.

Daarom heeft TNO samen met tal van sportorganisaties onderzoek uitgevoerd naar de uitval bij dergelijke bewegingsactiviteiten. Inzicht in de mate van uitval en kennis van de determinanten van uitval vormen de basis op grond waarvan men kan komen tot gerichte maatregelen om uitval te verminderen of zelfs te voorkomen.

Het onderzoek van TNO naar uitval bij bewegingsprogramma's

Bij het onderzoek zijn 10 verschillende soorten bewegingsactiviteiten betrokken: Meer Bewegen voor Ouderen (MBvO), Hart in Beweging, Sportief wandelen, FysioSport en zes vormen van georganiseerde sport (atletiek, badminton, toerfietsen, gymnastiek, schaatsen en tafeltennis). Op deze wijze is een representatief deel van het bewegen voor ouderen in Nederland betrokken in het onderzoek. Binnen het onderzoek zijn gedurende een periode van 15 maanden de nieuwe deelnemers van de genoemde bewegingsactiviteiten benaderd. Dit vond plaats bij aanmelding. Voordat ze begonnen aan de bewegingsactiviteit vulden ze een vragenlijst in. Na zes maanden vulden ze een tweede vragenlijst in. In totaal hebben 1725 personen van 50 jaar en ouder beide vragenlijsten ingevuld.

Uitkomsten en discussie

In totaal hebben 1725 personen de beide vragenlijsten ingevuld.
In figuur 1 is de geslachtsverhouding weergegeven van de deelnemers binnen het onderzoek.

Er is sprake van specifieke mannensporten, zoals fietsen, tafeltennis en Hart in Beweging. Daarnaast zijn er ook specifieke beweegvormen voor vrouwen zoals wandelen, MBvO, gymnastiek en in mindere mate FysioSport. Deze verhoudingen lijken de daadwerkelijke verhouding van de deelnemers aan deze sport- en beweegactiviteiten redelijk goed weer te geven.

In figuur 2 wordt de gemiddelde leeftijd weergegeven van de deelnemers aan het onderzoek van TNO.

Er blijken aanzienlijke verschillen te zijn in de gemiddelde leeftijd van de deelnemers in het onderzoek. Vooral bij georganiseerd sport (zoals atletiek, schaatsen, badminton en fietsen) ligt de gemiddelde leeftijd relatief laag, terwijl bij MBvO - en in iets mindere mate gymnastiek - de leeftijd wat hoger ligt. Dit lijkt overeen te komen met wat in het algemeen bekend is over bewegingsdeelname van senioren. Met toenemende leeftijd neemt de sportdeelname dikwijls af, en gaan mensen andersoortige beweegvormen uitvoeren. Van MBvO is bekend dat het met name oudere senioren aanspreekt.

Mate van uitval bij de bewegingsprogramma's

De gemiddelde uitval binnen de bewegingsprogramma's bedroeg 14.5%. Er waren grote verschillen in uitval tussen de verschillende beweegprogramma's. Deelnemers aan FysioSport rapporteerden een uitval van 37% tegenover 5% bij toerfietsers (figuur 3).
De relatieve hoge uitval bij FysioSport is wellicht te verklaren doordat FysioSport enerzijds als abonnement wordt aangeboden en anderzijds als cursus met een van te voren bepaalde duur volgend op bijvoorbeeld een fysiotherapeutisch behandeltraject.

Naast verschillen in de mate van uitval, zijn er ook aanzienlijke verschillen tussen de momenten waarop men uitvalt bij de diverse bewegingsprogramma's. Bij schaatsen, tafeltennis en sportief wandelen komt uitval vooral na 16 weken voor, terwijl bij fietsen en atletiek de meerderheid van de deelnemers vooral in de eerste acht weken van deelname uitvalt.

Redenen van uitval

Om uitval te kunnen voorkomen is inzicht in de redenen van uitval noodzakelijk. De hoogte van de eigen bijdrage van deelnemers blijkt een belangrijke reden te zijn voor uitval. Mensen die een eigen bijdrage moeten betalen van 9-18 euro per maand hebben een twee keer zo grote kans om

Figuur 1 *- Verhouding mannen en vrouwen van de deelnemers aan het onderzoek per sport/beweegvorm (in percentage).*

Figuur 2 *- Gemiddelde leeftijd deelnemers per sport/beweegprogramma (in jaar).*

Figuur 3 *- Mate van uitval bij bewegingsprogramma's (in percentage (%) van het totaal aantal deelnemers van het betreffende bewegingsprogramma).*

Figuur 4 *- Het moment van uitval bij de verschillende bewegingsprogramma's in weken (in percentage (%) van alle uitvallers binnen betreffend bewegingsprogramma).*

Figuur 5 *- Het percentage uitvallers dat is overgestapt naar een ander beweegvorm/programma.*

Uitval bij bewegingsactiviteiten voor ouderen (50-plus)

Er is bij de begeleiders van sport- en bewegingsactiviteiten en bij beleidsmakers behoefte aan meer informatie over het voorkomen van uitval bij bewegingsactiviteiten voor ouderen (50-plus) in Nederland. TNO Preventie en Gezondheid heeft – met financiële steun van ZonMw – en met ondersteuning van een groot aantal organisaties, een prospectief onderzoek gedaan naar de mate van uitval bij bewegingsactiviteiten van ouderen, de reden waarom ouderen afhaken bij bewegingsactiviteiten en maatregelen om uitval te verminderen.

Bewegen is een belangrijk preventie middel

Bewegen is belangrijk voor ouderen. Het bevordert het lichamelijke prestatievermogen en de gezondheid. Het kan de natuurlijke achteruitgang van diverse lichaamsfuncties, die bij het verouderen optreedt, verminderen. Tevens kan bewegen ook het ontstaan van diverse chronische aandoeningen, zoals diabetes mellitus type 2, hart- en vaatziekten, osteoporose en overgewicht tegengaan. Daarmee is bewegen een belangrijk preventiemiddel.
Om gezondheidswinst te bereiken moet men regelmatig bewegen. De minimale hoeveelheid beweging die nodig is om de gezondheid te bevorderen bedraagt 30 minuten matig intensieve lichamelijke activiteit per dag op tenminste 5 dagen van de week.
Effecten op de gezondheid blijven uitsluitend gehandhaafd wanneer men blijft bewegen. Het bewegen moet daarom een vaste gewoonte worden. Dat laatste blijkt lastig te zijn.
Bij het ouder worden neemt de mate van lichamelijke activiteit dikwijls af. Bij mensen die aan bewegingsactiviteiten mee doen is de uitval vaak groot, men haakt af. Specifieke gegevens over de uitval van oudere deelnemers aan bewegingsactiviteiten ontbreken nog.
Daarom heeft TNO Preventie en Gezondheid onderzoek uitgevoerd naar de uitval bij dergelijke bewegingsactiviteiten. Inzicht in de mate van uitval en kennis van de determinanten van uitval vormen de basis op grond waarvan men kan komen tot gerichte maatregelen om uitval te verminderen of zelfs te voorkomen.

Het onderzoek van TNO-PG

Bij het onderzoek zijn 10 verschillende soorten bewegingsactiviteiten betrokken: Meer Bewegen voor Ouderen (MBvO), Hart in Beweging, Sportief wandelen, FysioSport en zes vormen van georganiseerde sport (atletiek, badminton, toerfietsen, gymnastiek, schaatsen en tafeltennis). Op deze wijze is een representatief deel van het bewegen voor ouderen in Nederland betrokken in het onderzoek.
Binnen het onderzoek zijn gedurende een periode van 15 maanden de nieuwe deelnemers van de genoemde bewegingsactiviteiten benaderd. Dit vond plaats bij aanmelding. Voordat ze begonnen aan de bewegingsactiviteit vulden ze een vragenlijst in. Na zes maanden vulden ze een tweede vragenlijst in. In totaal hebben 1725 personen van 50 jaar en ouder beide vragenlijsten ingevuld.

Uitkomsten en discussie

Mate van uitval bij de bewegingsprogramma's
De gemiddelde uitval binnen de bewegingsprogramma's bedroeg 14.5%. Er waren grote verschillen in uitval tussen de verschillende beweegprogramma's. Deelnemers aan FysioSport rapporteerden een uitval van 37% tegenover 5% bij toerfietsers. MBvO deelnemers rapporteerden een uitval van 10%.

Naast verschillen in de mate van uitval, zijn er ook aanzienlijke verschillen tussen de momenten waarop de uitval optreedt bij de diverse bewegingsprogramma's. Bij schaatsen en sportief wandelen komt uitval vooral na 16 weken voor, terwijl bij fietsen en atletiek de meerderheid van de deelnemers vooral in de eerste acht weken van deelname uitvallen.

Redenen van uitval

Om uitval te kunnen voorkomen is inzicht in de redenen van uitval noodzakelijk. De hoogte van de eigen bijdrage van deelnemers blijkt een belangrijke reden te zijn voor uitval. Mensen die een eigen bijdrage moeten betalen van 9-18 euro per maand hebben een twee keer zo grote kans om uit te vallen als degenen die minder dan 9 euro bijdragen. Degenen die meer dan 18 euro per maand bijdragen, hebben zelfs een zes maal grotere kans op uitval dan degenen die minder dan 9 euro betalen. Om uitval tegen te gaan is het daarom van belang om de eigen bijdrage van

Het is van belang maatregelen in te voeren die tijdelijke uitval verminderen

deelnemers - indien mogelijk - te beperken. Zoek eventueel aanvullende sponsors en subsidie verstrekkers om activiteiten financieel te ondersteunen.
Het komt regelmatig voor dat mensen gedurende een bepaalde periode tijdelijk niet mee kunnen doen aan bewegingsactiviteiten. Dat kan gedurende een week zijn, maar het kan ook meerdere weken duren. De redenen van dergelijke tijdelijke uitval kunnen uiteenlopend zijn, bijvoorbeeld door een blessure, ziekte of vakantie. Uit het onderzoek blijkt dat deze tijdelijke uitval vaak leidt tot definitieve uitval. Het optreden van tijdelijke uitval, het aantal keren dat men niet kan deelnemen en de duur van de tijdelijke uitval zijn belangrijke oorzaken van definitieve uitval.
Het is van belang maatregelen in te voeren die tijdelijke uitval verminderen. Daarbij kan worden gedacht aan het invoeren van een 'Buddy systeem' waarbij een 'buddy' (=ervaren deelnemer als maatje) wordt gekoppeld aan een nieuw lid om deze te motiveren om te komen. Ook kan men denken aan een belsysteem waarbij de deelnemers onderling contact houden en elkaar ondersteunen.
Een Relapse Preventie training kan ook zinvol zijn. In Amerika zijn positieve ervaringen opgedaan met het geven van dergelijke trainingen. Binnen Relapse Preventie training leren deelnemers om te gaan met tegenslagen, die wellicht kunnen leiden tot afhaken. Deelnemers moeten zich ervan bewust worden dat tijdelijke uitval – mits niet te langdurig – geen probleem vormt, dat de gezondheidseffecten van bewegen niet nadelig beïnvloed hoeven te worden door een korte onderbreking. Maak vooral geen gewoonte van tijdelijke uitval!
De tevredenheid van deelnemers is uiteraard een heel belangrijke reden voor uitval. Het is een van de belangrijkste reden voor deelnemers om af te haken. Het is daarom goed om periodiek de tevredenheid van de deelnemers te peilen. Naar aanleiding van de uitkomst van een dergelijke tevredenheidspeiling kan men gepaste maatregelen nemen om de activiteit, of de randvoorwaarden, bij te stellen.

Acties voor de toekomst

In de komende jaren zullen verschillende vervolgacties worden ondernomen om de genoemde maatregelen verder uit te werken. Er zullen protocollen worden ontwikkeld voor een Buddy systeem, er zal een Relapse Preventie training worden voorbereid. Er zal ook een Tevredenheidsmonitor worden ontwikkeld om de mate van (on)tevredenheid te kunnen volgen en – indien gewenst – hier op in te kunnen spelen. •

Maarten Stiggelbout[1],
Marijke Hopman-Rock[1 2],
Tinus Jongert[1]

1. TNO Preventie en Gezondheid
2. Body@Work Onderzoekscentrum Bewegen, Arbeid en Gezondheid TNO-VUmc

U ZOEKT...
BETAALBARE MATERIALEN VOOR MBvO-LESSEN?

- Play and Beachbal
- Overball (zacht materiaal)
- Knotsen/stokken
- Pittenzakjes
- Dobbelsteen
- Fitband (aangepaste sterkte)
- Pilonen
- Hoepels
- Werpringen
- Toverkoord

Meer weten?
Bel voor onze prijslijst

ELECTRO MEDICO NEDERLAND

Pr. Marijkestraat 4-8, 2404 BC Alphen a/d Rijn
Telefoon 0172 - 47 50 41, Telefax 0172 - 49 17 28

Bijeenkomst in Catharina Ziekenhuis te Eindhoven

Hartfalen: veel aandacht voor bewegen

Op 15 maart 2005 was er een bijeenkomst over hartfalen in het Catharina Ziekenhuis te Eindhoven. Tijdens deze bijeenkomst gaven vijf sprekers uitleg en hun visie over hartfalen in het kader van de oprichting van de hartfalenpoli. Zowel de cardioloog, als de huisarts, de nurse practitioner en de fysiotherapeut gaven het belang van bewegen aan. Bewegen als onderdeel van leefstijladviezen; bewegen als behandeling om verbetering in de NYHA klasse te bewerkstelligen.

Wat gebeurt er op de hartfalen poli? Een multidisciplinair team staat voor de patiënten klaar om informatie te geven, lichamelijk onderzoek te doen,aandacht te besteden aan het psychosociale en de mantelzorg, op indicatie fysiotherapie of andere disciplines aan te vragen en het patiënten dagboek bij te houden in zoverre het de afspraken betreft. Met andere woorden om zorg op maat te leveren. Doel hiervan is het voorkomen/verkorten van de ziekenhuisopname, kwaliteit van de zorg verbeteren en het zelfzorgmanagement bevorderen. Zelfzorgmanagement vraagt om kennis en inzicht in het eigen ziektebeeld en het eigen functioneren. Fysiotherapeut P. den Backer gaf aan dat veel patiënten door bewegingsangst minder presteren dan ze zouden moeten kunnen. Eén van de doelen van de oefengroep is dan ook het overwinnen van de bewegingsangst, het plezier krijgen in bewegen en het opbouwen van een reële conditie. Ook is het leren inschatten van een inspanning van belang om een goede planning van de dagelijks activiteiten te kunnen maken. Jammer dat tijdens de oefengroepen zo eenzijdig bewogen wordt. De activiteiten bestaan alleen uit fietsen op de fietsergometer. Natuurlijk is dat goed meet- en controleerbaar, maar in hoeverre leert men daarmee lichamelijke activiteiten in het dagelijks leven in te schatten. Dan praten we toch over een veelzijdigheid aan bewegingsactiviteiten. Ook is het aantal deelnemers en de duur van de oefenperiode gelimiteerd, aangezien de ziektenkostenverzekeraars maar een beperkt aantal trainingen vergoeden.

Aanbieder

Voor ons als aanbieder van bewegingsactiviteiten voor hartpatiënten kan zo'n hartfalenpoli dienen als intermediair. Zij zien de patiënten, afhankelijk van de stabiliteit van het hartfalen, 1 x per week of 1 x per 2 of 6 weken en kunnen de patiënten dan informeren en stimuleren om (meer) te gaan bewegen. Als aanbieders moeten we zorgen dat zij dan ook over die informatie beschikken. In Zuid-Oost Brabant hebben we de 'Beweegwegwijzer' uitgebracht. Een boekje met een groot scala aan beweegactiviteiten voor ex-hartpatiënten. Een stap om vraag en aanbod dichter bij elkaar te brengen. De grote vraag blijft nog steeds: 'Hoe krijgen we de mensen over de drempel naar de beweeggroepen toe?' Potentieel is er genoeg. In Nederland zo'n 200.000 mensen en per jaar komen er 50.000 bij. Hoewel de prognose voor hartfalenpatiënten niet erg gunstig is zijn ze wel gebaat bij bewegen en vooral bij bewegen onder deskundige begeleiding. Wie gaat de uitdaging aan?

IRA COENEN,
ADVISEUR BRABANTS ONDERSTEUNINGSINSTITUUT ZORG TILBURG,
HIB SPORTLEIDER.

Samenvatting TNO Onderzoek:

Uitval bij bewegingsactiviteiten voor ouderen (50-plus): wie - waarom - wanneer?

TNO, Kwaliteit van Leven voorheen Preventie en Gezondheid, deed de afgelopen jaren onderzoek naar de deelname aan en uitval bij bewegingactiviteiten door 50-plussers. Verschillende activiteiten, sportbonden, FysioSport en ook de HIB activiteiten werden met elkaar vergeleken. HIB scoort in vergelijking met andere organisaties redelijk tot goed: dwz HIB deelnemers toonden gemiddeld minder uitval dan de deelnemers bij overige activiteiten!

DOOR DRS. M. STIGGELBOUT
(TNO KWALITEIT VAN LEVEN)

Belangrijkste resultaten

Bewegen is belangrijk voor ouderen. Het bevordert het lichamelijke prestatievermogen en de gezondheid. Het kan de natuurlijke achteruitgang van diverse lichaamsfuncties, die bij het verouderen optreedt, verminderen. Tevens kan bewegen ook het ontstaan van diverse chronische aandoeningen,

Vervolg op pagina 32

Vervolg van pagina 31

zoals diabetes mellitus type 2, hart- en vaatziekten, osteoporose en overgewicht tegengaan. Daarmee is bewegen een belangrijk preventiemiddel. Om gezondheidswinst te bereiken moet men regelmatig bewegen. De minimale hoeveelheid beweging die nodig is om de gezondheid te bevorderen bedraagt 30 minuten matig intensieve lichamelijke activiteit per dag op tenminste 5 dagen van de week.
Effecten op de gezondheid blijven uitsluitend gehandhaafd wanneer men blijft bewegen. Het bewegen moet daarom een vaste gewoonte worden. Dat laatste blijkt lastig te zijn. Met toenemende leeftijd neemt de mate van lichamelijke activiteit dikwijls af. Bij mensen die aan bewegingsactiviteiten meedoen is de uitval vaak groot, men haakt af. Deze informatie is afkomstig uit onderzoek in de algemene bevolking, en vooral de Verenigde Staten en Canada. Specifieke gegevens over de uitval van oudere deelnemers aan bewegingsactiviteiten in Nederland ontbreken nog.
Daarom heeft TNO Preventie en Gezondheid onderzoek uitgevoerd naar de uitval bij dergelijke bewegingsactiviteiten. Inzicht in de mate van uitval en kennis van de determinanten van uitval vormen de basis op grond waarvan men kan komen tot gerichte maatregelen om uitval te verminderen of zelfs te voorkomen. Bij het onderzoek zijn 10 verschillende soorten bewegingsactiviteiten betrokken, waaronder ook Hart in Beweging. In totaal hebben 1725 personen van 50 jaar en ouder een vragenlijst ingevuld op het moment dat ze zich aanmelden als nieuw lid van de vereniging en een tweede vragenlijst na zes maanden. In het onderzoek deden ruim 300 (ex-)hartpatiënten mee die deelnamen aan de sportactiviteiten van ruim 80 HIB verenigingen.

Resultaten onderzoek

De gemiddelde uitval binnen de bewegingsprogramma's bedroeg 14.5%. Er waren grote verschillen in uitval tussen de verschillende beweegprogramma's. Deelnemers aan FysioSport rapporteerden een uitval van 37% tegenover 5% bij toerfietsers. HIB deelnemers rapporteerden een uitval van 13% (zie figuur).

Redenen van uitval en het voorkomen ervan

Om uitval te kunnen voorkomen is inzicht in de redenen van uitval noodzakelijk. De hoogte van de eigen bijdrage van deelnemers blijkt een belangrijke reden te zijn voor uitval. Mensen die een eigen bijdrage moeten betalen van 9-18 euro per maand hebben een twee keer zo grote kans om uit te vallen als degenen die minder dan 9 euro bijdragen. Degenen die meer dan 18 euro per maand bijdragen, hebben zelfs een zes maal grotere kans op uitval dan degenen die minder dan 9 euro betalen. Om uitval tegen te gaan is het daarom van belang om de eigen bijdrage van deelnemers – indien mogelijk - te beperken. Zoek eventueel aanvullende sponsors en subsidie verstrekkers om activiteiten financieel te ondersteunen.

Het komt regelmatig voor dat mensen gedurende een bepaalde periode tijdelijk niet mee kunnen doen aan bewegingsactiviteiten (=relapse). Dat kan gedurende een week zijn, maar het kan ook meerdere weken duren. De redenen van dergelijke tijdelijke uitval kunnen uiteenlopend zijn, bijvoorbeeld door een blessure, ziekte of vakantie. Uit het onderzoek blijkt dat deze tijdelijke uitval vaak leidt tot definitieve uitval. Het optreden van tijdelijke uitval, het aantal keren dat men niet kan deelnemen en de duur van de tijdelijke uitval zijn belangrijke oorzaken van definitieve uitval.
Het is van belang maatregelen in te voeren die tijdelijke uitval verminderen. Daarbij kan worden gedacht aan het invoeren van een 'Buddy systeem' waarbij een 'buddy' (=iemand die al langere tijd deelneemt als maatje) wordt gekoppeld aan een nieuw lid om deze te motiveren om te (blijven) komen. Ook kan men denken aan een belsysteem waarbij de deelnemers onderling contact houden en elkaar ondersteunen.
Een Relapse Preventie training kan ook zinvol zijn. In Amerika zijn positieve ervaringen opgedaan met het geven van dergelijke trainingen. Binnen deze training leren deelnemers om te gaan met tegenslagen, die wellicht kunnen leiden tot afhaken. Deelnemers moeten zich ervan bewust worden dat tijdelijke uitval - mits niet te langdurig - geen probleem vormt, dat de gezondheidseffecten van bewegen niet nadelig beïnvloed hoeven te worden door een korte onderbreking. Maak vooral geen gewoonte van tijdelijke uitval!

Ontevredenheid met de sportactiviteit is één van de belangrijkste redenen voor deelnemers om af te haken. Het is daarom goed om periodiek de tevredenheid van de deelnemers te peilen. Naar aanleiding van de uitkomst van een dergelijke tevredenheidspeiling kan men gepaste maatregelen nemen om de activiteit, of de randvoorwaarden, bij te stellen.

Voor meer informatie/volledig artikel incl. aanbevelingen: www.hartinbeweging.nl

Mate van uitval bij bewegingsprogramma's (in percentage)

even toertochten

mmissie Tochten & Kwaliteit zal ook dit jaar de kwaliteit van :hten waarborgen. De commissie doet een oproep aan alle etsverenigingen en stichtingen om zich te houden aan de num inschrijfgelden. Deze tarieven moeten dan ook pas n vanaf 1 maart 2005. Als iedereen zich goed houdt aan deze num inschrijfgelden is dit in het voordeel van alle toerfiet- Alvast bedankt voor uw medewerking!

:hrijfgelden

aximale inschrijfgelden voor ToerFietsKaart-houders bij NTFU :fietsevenementen zijn vanaf 1 maart 2005 als volgt:

and		1 ster	2 sterren
100 km	1,65	2,53	3,32
– 200 km	2,21	3,09	3,97
– 300 km	3,32	4,19	5,07
– 400 km	6,63	7,50	8,41
– 600 km	9,93		
– 1000 km	13,79		
af 1000 km	41,37		
rit	1,10		
ltoertocht	3,06	4,08	5,11

or een avondmeerdaagse geldt het betreffende bedrag per stand vermenigvuldigd met het aantal dagen dat de meer- agse duurt

j deelname van volwassenen met kinderen aan fietsevenemen- n tot en met 40 km geldt voor kinderen tot en met 12 jaar een schrijfgeld van € 0,55 per kind

· niet ToerFietsKaart-houders zijn bovenstaande inschrijfgelden imaal € 1,00 hoger.

eestelijke opening

ls bekend is het Uniebureau verhuisd naar Landjuweel 5. Om :reen de mogelijkheid te bieden om het nieuwe kantoor te ıen bekijken, zal op vrijdag 18 februari 2005 een feestelijke ope- g plaatsvinden. Voor deze opening zijn verenigingen, bestuurs- :commissieleden en externe relaties uitgenodigd.

;ezocht: Voorzitter Districtsbestuur

ndat Lida Tol zitting heeft genomen in het Hoofdbestuur is de functie n voorzitter van het district Noord-Holland vacant. De NTFU zoekt ıarom een nieuwe voorzitter voor het district Noord-Holland. Heeft u teresse maar wilt u meer informatie? Neem contact op met Lida Tol, :0-6379535 of mail info@toerclubdts.nl

Uitval bij bewegingsactiviteiten voor 50-plussers

Over het hoe en waarom van uitval bij bewegingsactiviteiten was in Nederland niet veel bekend en daarom heeft TNO Preventie en Gezondheid een onderzoek uitgevoerd. Hierbij is gekeken naar de reden waarom ouderen afhaken bij bewegingsactiviteiten en naar maatregelen om uitval te verminderen.

Bewegen is belangrijk

Bewegen is belangrijk voor ouderen. Het bevordert het lichamelijke prestatievermogen en de gezondheid en kan het ontstaan van chronische aandoeningen tegengaan. Het kan de natuurlijke achteruitgang van lichaamsfuncties verminderen. De minimale hoeveelheid beweging die nodig is om de gezondheid te bevorderen bedraagt 30 minuten matig intensieve lichaamsbeweging per dag gedurende 5 dagen van de week. Het bewegen moet een vaste gewoonte worden. Dat laatste blijkt lastig te zijn en dat maakt dat men afhaakt en dat de uitval vaak groot is. Bij het onderzoek zijn betrokken: Meer Bewegen voor Ouderen (MBvO), Hart in Beweging, Sportief wandelen, FysioSport en zes vormen van georganiseerde sport, waaronder toerfietsen. Op deze manier is een representatief deel van bewegen voor ouderen betrokken in het onderzoek.

Uitkomsten

Uit het onderzoek kwam naar voren dat er sprake is van specifieke mannensporten, zoals toerfietsen, tafeltennis en 'Hart in Beweging' en van specifieke vrouwensporten zoals wandelen, gymnastiek en MbvO.

Uitval

Naast verschillen in de mate van uitval, zijn er ook aanzienlijke verschillen tussen de momenten waarop men uitvalt bij de diverse bewegingsprogramma's. Bij schaatsen, tafeltennis en sportief wandelen komt uitval vooral na 16 weken voor, terwijl bij toerfietsen en atletiek de meerderheid van de deelnemers vooral in de eerste acht weken van deelname uitvallen. De hoogte van de eigen bijdrage van deelnemers blijkt een belangrijke reden te zijn voor uitval. Hoe hoger het bedrag dat men moet betalen, hoe hoger de uitval.

Tijdelijke uitval komt ook regelmatig voor. De redenen daarvoor zijn uiteenlopend, bijvoorbeeld door een blessure, ziekte of vakantie. Deze tijdelijke uitval blijkt vaak tot definitieve uitval te leiden.

Maatregelen om tijdelijke uitval te verminderen kunnen zijn: Een 'Buddy systeem' waarbij een 'buddy' (=ervaren deelnemer als maatje) wordt gekoppeld aan een nieuw lid om deze te motiveren om te komen. Een belsysteem waarbij de deelnemers onderling contact houden. Een Relapse Preventie training; het leren om te gaan met tegenslagen, die wellicht kunnen leiden tot afhaken. Periodiek peilen van de tevredenheid van de deelnemers en op basis daarvan nemen van gepaste maatregelen.

Conclusie

Bij de uitvallers is 31% een andere bewegingsactiviteit gaan uitoefenen. Vooral bij schaatsen en tafeltennis gebeurde dit veelvuldig. Schaatsers gingen dikwijls toerfietsen. Schaatsen is een seizoensgebonden sport en wellicht dat men de zomerstop heeft aangewend als periode om een andere sport te kiezen. Fietsers die afhaakten pakten verhoudingsgewijs minder vaak een andere activiteit op. De uitvallers binnen het onderzoek stapten vooral over naar bewegingsactiviteiten voor senioren, zoals zwemmen, tennis en wandelen. Voor meer informatie neem contact op met Ben de Weerd, 0318-581305 of mail bdeweerd@ntfu.nl

Ecotaks teruggave
In Badminton Bulletin 2 van dit jaar had de NBB een oproep aan haar verenigingen geplaatst om via de bond teruggave van ecotaks 2003 bij het Ministerie van Volksgezondheid, Welzijn en Sport (VWS) in te dienen. Deze teruggave van de ecotaks was mogelijk voor verenigingen die een sporthal (deels) beheren en daarvoor een op haar naam gestelde eindafrekening van een energiebedrijf ontvangen. Uiteindelijk hebben drie verenigingen een goedgekeurde aanvraag tot teruggave ingediend. Het ministerie is voor groot deel tegemoet gekomen een deze aanvraag. Het Ministerie van VWS zal in mei 2005 weer vragen om de aanvragen tot teruggave van de ecotaks 2004 in te dienen. De verenigingen van de NBB worden dan wederom via het Badminton Bulletin en de website op de hoogte gehouden van deze mogelijkheid.

Onderzoek naar uitval bij ouderen
Naar aanleiding van de vraag naar informatie over het voorkomen van uitval bij (sport)activiteiten voor ouderen (50-plus) heeft TNO Preventie en Gezondheid met ondersteuning van een aantal (sport)organisaties onderzoek verricht. De mate van uitval bij de activiteiten is onderzocht, evenals de reden waarom ouderen afhaken en de te nemen maatregelen om uitval te verminderen. De NBB heeft TNO in het onderzoek ondersteund op het gebied van badminton. 25% van badmintonnende deelnemers van het onderzoek vielen uit. Dat is een groot deel in vergelijking met deelnemers van anders activiteiten en sporten. De redenen van uitval waren verschillend; deze varieerden van de hoge eigen bijdrage voor de deelnemers tot blessures, ziekte en vakantie. Een uitgebreid verslag van het onderzoek kunt u vinden op www.badminton.nl. Tevens wordt op dit moment naar aanleiding van het onderzoek een brochure ontwikkeld over de uitval bij bewegingsprogramma's voor ouderen en mogelijke maatregelen om deze te voorkomen.

Ridder Ridder in de orde van Oranje Nassau
Rob Ridder – al 25 jaar lang bestuurslid bij Duinwijck – is op 13 november tot Ridder in de Orde van Oranje Nassau benoemd. Dit gebeurde – tot zijn eigen verrassing – in de Duinwijckhal voorafgaand aan de competitiewedstrijd Duinwijck – Velo. Burgemeester Pop van Haarlem overhandigde het kleinood. Namens de NBB uiteraard van harte gefeliciteerd.

Spreekbeurtpakket voor de jeugd
Het spreekbeurtpakket is vernieuwd! In een mooie omslag in kleur zitten de volgende materialen om een flitsende spreekbeurt in de klas te geven: geschiedenis badminton, informatie over de competitie, 25 folders, 25x stickers, badmintonkalender, kleurplaat, diverse illustraties, badminton, kruiswoordpuzzel en een NBB-pen.
De verkoop loopt via de badmintonshop, www.badmintonshop.nl. De prijs voor een spreekbeurtpakket is voor NBB-leden € 5,00 per stuk of € 25,00 voor 6 pakketten (exclusief administratie- en verzendkosten)

Jeugdgroepen Europees Jeugdkampioenschap
In de Maasport te Den Bosch wordt van 18-26 maart 2005 het Europese Jeugd Kampioenschap georganiseerd. Een mooie gelegenheid om met uw jeugd te komen kijken en aan een jeugdclinic mee te doen. De clinics worden gratis georganiseerd op de doordeweekse dagen en voor € 50,00 op zaterdag 26 maart, per opgaaf van voorkeursdag en tijd via info@badminton.nl., met eventuele vragen kunt u hier ook terecht.

Rob Ridder ontvangt uit handen van burgemeester Pop van Haarlem het speldje.

Nieuwe badmintonshop
De webshop www.badmintonshop.nl is vernieuwd. Kijk op de site voor de badmintonartikelen en deeldiploma's en geniet van korting als NBB-lid. Nieuwe artikelen zijn:
- Praktijkbrochure jeugdtraining: planning en lesvoorbeelden;
- Flexibel pen;
- Bidon; tevens te verkrijgen in een set van 5 stuks voor uw team!

Als u inlogt onder uw bondsnummer kunt u gebruik maken van de ledenprijs op de artikelen.

Deeldiploma's
De deeldiploma's zijn een serie diploma's voor de badmintonjeugd. In 6 verschillende delen kunnen vele vaardigheden in een examen afgenomen worden. Ruim 1200 kinderen hebben het afgelopen jaar deelgenomen aan deze deeldiploma-examens. Een goede stimulans om de jeugd binnen uw vereniging enthousiast te houden! Voor degenen die voor een examen slagen, is een prachtig T-shirt met certificaat.
De deeldiploma materialen zijn te bestellen via www.badminton.nl. en vervolgens de button Badmintonshop NBB-leden krijgen korting.

BLRTT
Op zaterdag 12 maart 2005 wordt voor de 13e keer het Belgro Landelijk Recreanten Team Toernooi georganiseerd. Voor informatie en inschrijving: de heer Paul Kemink, tel. 070-3938194 of 06-51840541 (na 18.00 uur).

Wereldranglijsten
Mia Audina heeft als eerste Nederlandse ooit de nummer één positie op de wereldranglijst gehaald. In oktober stond ze fier aan kop in het vrouwenenkelspel. Intussen is ze wel iets gezakt, maar dat heeft te maken met het feit, dat ze geen internationale wedstrijden meer heeft gespeeld.
Dicky Palyama schreef ook historie. Op 18 november stond hij op de 7e plaats op de wereldranglijst van het mannenenkelspel. Ook dat was nog nooit eerder voorgekomen dat een Nederlandse man zo hoog op de lijst stond. Gefeliciteerd!

Dicky Palyama bereikte de 7e plaats op de wereldranglijst in het mannen enkelspel

Trainersopleidingen
De Nederlandse Badminton Bond (NBB) organiseert verspreid over Nederland verschillende trainersopleidingen. Dit zijn de opleidingen tot Badminton Trainer 1 en de opleidingen tot Trainer Coach 1.

BT1-opleiding Noord geannuleerd
De Nederlandse Badminton Bond heeft besloten de trainersopleiding Noord, die gepland was in Beilen en Drachten, te annuleren. Vanwege een tekort aan aanmeldingen was de NBB genoodzaakt tot deze keuze te komen. Er worden nieuwe initiatieven genomen om toch tot opleiding van trainers te komen.

Lopende trainersopleidingen
Er lopen reeds meerdere opleidingen, te weten in Hoorn, Almere, Pij-

http://www.badminton.nl/onderzoek

Uitval bij bewegingsactiviteiten voor ouderen (50-plus): wie – waarom – wanneer?

Maarten Stiggelbout[1], Bart de Wolf[2], Marijke Hopman-Rock[1 3], Tinus Jongert[1]

1. TNO Preventie en Gezondheid
2. Nederlandse Badminton Bond
3. Body@Work Onderzoekscentrum Bewegen, Arbeid en Gezondheid TNO-VUmc

Er is bij de begeleiders van sport- en bewegingsactiviteiten en bij beleidsmakers behoefte aan meer informatie over het voorkomen van uitval bij bewegingsactiviteiten voor ouderen (50-plus) in Nederland. TNO Preventie en Gezondheid heeft – met financiële steun van ZonMw – en met ondersteuning van een groot aantal organisaties, een prospectief onderzoek gedaan naar de mate van uitval bij bewegingsactiviteiten van ouderen, de reden waarom ouderen afhaken bij bewegingsactiviteiten en maatregelen om uitval te verminderen.

Inleiding

Bewegen is belangrijk voor ouderen. Het bevordert het lichamelijke prestatievermogen en de gezondheid. Het kan de natuurlijke achteruitgang van diverse lichaamsfuncties, die bij het verouderen optreedt, verminderen. Tevens kan bewegen ook het ontstaan van diverse chronische aandoeningen, zoals diabetes mellitus type 2, hart- en vaatziekten, osteoporose en overgewicht tegengaan. Daarmee is bewegen een belangrijk preventiemiddel.

Om gezondheidswinst te bereiken moet men regelmatig bewegen. De minimale hoeveelheid beweging die nodig is om de gezondheid te bevorderen bedraagt 30 minuten matig intensieve lichamelijke activiteit per dag op tenminste 5 dagen van de week.

Effecten op de gezondheid blijven uitsluitend gehandhaafd wanneer men blijft bewegen. Het bewegen moet daarom een vaste gewoonte worden. Dat laatste blijkt lastig te zijn.

Bij het ouder worden neemt de mate van lichamelijke activiteit dikwijls af. Bij mensen die aan bewegingsactiviteiten mee doen is de uitval vaak groot, men haakt af. Deze informatie is afkomstig uit onderzoek in de algemene bevolking, en met name de Verenigde Staten en Canada. Specifieke gegevens over de uitval van oudere deelnemers aan bewegingsactiviteiten in Nederland ontbreken nog. Daarom heeft TNO Preventie en Gezondheid – samen met tal van sportorganisaties - onderzoek uitgevoerd naar de uitval bij dergelijke bewegingsactiviteiten. Inzicht in de mate van uitval en kennis van de determinanten van uitval vormen de basis op grond waarvan men kan komen tot gerichte maatregelen om uitval te verminderen of zelfs te voorkomen.

Het onderzoek van TNO-PG naar uitval bij bewegingsprogramma's

Bij het onderzoek zijn 10 verschillende soorten bewegingsactiviteiten betrokken: Meer Bewegen voor Ouderen (MBvO), Hart in Beweging, Sportief wandelen, FysioSport en zes vormen van georganiseerde sport (atletiek, badminton, toerfietsen, gymnastiek, schaatsen en tafeltennis). Op deze wijze is een representatief deel van het bewegen voor ouderen in Nederland betrokken in het onderzoek. Binnen het onderzoek zijn gedurende een periode van 15 maanden de nieuwe deelnemers van de genoemde bewegingsactiviteiten benaderd. Dit vond plaats bij aanmelding. Voordat ze begonnen aan de bewegingsactiviteit vulden ze een vragenlijst in. Na zes maanden vulden ze een tweede vragenlijst in. In totaal hebben 1725 personen van 50 jaar en ouder beide vragenlijsten ingevuld.

Uitkomsten en discussie

Deelnemers aan onderzoek

In totaal hebben 1725 personen de beide vragenlijsten ingevuld.

In figuur 1 is de geslachtsverhouding weergegeven van de deelnemers binnen het onderzoek. (Resultaten weergeven van alle sport/beweegvormen of alleen die van HIB, etc?)

Figuur 1: Verhouding mannen en vrouwen van de deelnemers an het onderzoek per sport/beweegvorm (in percentage).

Er is sprake van specifieke mannen sporten, zoals fietsen, tafeltennis en Hart in Beweging. Daarnaast zijn er ook specifieke vrouwen beweegvormen zoals wandelen, MBvO, gymnastiek en in mindere mate FysioSport. Deze verhoudingen lijken de daadwerkelijke verhouding van de deelnemers aan deze sport- en beweegactiviteiten redelijk goed weer te geven.

In Figuur 2 wordt de gemiddelde leeftijd weergegeven van de deelnemers aan het onderzoek van TNO.

Figuur 2: Gemiddelde leeftijd deelnemers per sport/beweegprogramma (in jaar)

Er blijken aanzienlijke verschillen te zijn in de gemiddelde leeftijd van de deelnemers in het onderzoek. Vooral bij georganiseerd sport (zoals atletiek, schaatsen, badminton en fietsen) ligt de gemiddelde leeftijd relatief laag, terwijl bij MBvO - en in iets mindere mate gymnastiek - de leeftijd wat hoger ligt. Dit lijkt overeen te komen met wat in het algemeen bekend is over bewegingsdeelname van senioren. Met toenemende leeftijd neemt de sportdeelname dikwijls af, en gaan mensen andersoortige beweegvormen uitvoeren. Van MBvO is bekend dat het met name oudere senioren aanspreekt.

Mate van uitval bij de bewegingsprogramma's

De gemiddelde uitval binnen de bewegingsprogramma's bedroeg 14.5%. Er waren grote verschillen in uitval tussen de verschillende beweegprogramma's. Deelnemers aan FysioSport rapporteerden een uitval van 37% tegenover 5% bij toerfietsers (figuur 3).

Figuur 3: Mate van uitval bij bewegingsprogramma's (in percentage (%) van het totaal aantal deelnemers van het betreffende bewegingsprogramma).

Naast verschillen in de mate van uitval, zijn er ook aanzienlijke verschillen tussen de momenten waarop men uitvalt bij de diverse bewegingsprogramma's. Bij schaatsen, tafeltennis en sportief wandelen komt uitval vooral na 16 weken voor, terwijl bij fietsen en atletiek de meerderheid van de deelnemers vooral in de eerste acht weken van deelname uitvallen.

Figuur 4: Het moment van uitval bij de verschillende bewegingsprogramma's in weken (in percentage (%) van alle uitvallers binnen betreffend bewegingsprogramma

Redenen van uitval

Om uitval te kunnen voorkomen is inzicht in de redenen van uitval noodzakelijk. De hoogte van de eigen bijdrage van deelnemers blijkt een belangrijke reden te zijn voor uitval. Mensen die een eigen bijdrage moeten betalen van 9-18 euro per maand hebben een twee keer zo grote kans om uit te vallen als degenen die minder dan 9 euro bijdragen. Degenen die meer dan 18 euro per maand bijdragen, hebben zelfs een zes maal grotere kans op uitval dan degenen die minder dan 9 euro betalen. Om uitval tegen te gaan is het daarom van belang om de eigen bijdrage van deelnemers – indien mogelijk - te beperken. Zoek eventueel aanvullende sponsors en subsidie verstrekkers om activiteiten financieel te ondersteunen.

Het komt regelmatig voor dat mensen gedurende een bepaalde periode tijdelijk niet mee kunnen doen aan bewegingsactiviteiten. Dat kan gedurende een week zijn, maar het kan ook meerdere weken duren. De redenen van dergelijke tijdelijke uitval kunnen uiteenlopend zijn, bijvoorbeeld door een blessure, ziekte of vakantie. Uit het onderzoek blijkt dat deze tijdelijke uitval vaak leidt tot definitieve uitval. Het optreden van tijdelijke uitval, het aantal keren dat men niet kan deelnemen en de duur van de tijdelijke uitval zijn belangrijke oorzaken van definitieve uitval.

Het is van belang maatregelen in te voeren die tijdelijke uitval verminderen. Daarbij kan worden gedacht aan het invoeren van een 'Buddy systeem' waarbij een 'buddy' (=ervaren deelnemer als maatje) wordt gekoppeld aan een nieuw lid om deze te motiveren om te komen. Ook kan men denken aan een belsysteem waarbij de deelnemers onderling contact houden en elkaar ondersteunen.

Een Relapse Preventie training kan ook zinvol zijn. In Amerika zijn positieve ervaringen opgedaan met het geven van dergelijke trainingen. Binnen Relapse Preventie training leren deelnemers om te gaan met tegenslagen, die wellicht kunnen leiden tot afhaken. Deelnemers moeten zich ervan bewust worden dat tijdelijke uitval – mits niet te langdurig – geen probleem vormt, dat de gezondheidseffecten van bewegen niet nadelig beïnvloed hoeven te worden door een korte onderbreking. Maak vooral geen gewoonte van tijdelijke uitval!

De tevredenheid van deelnemers is uiteraard een heel belangrijke reden voor uitval. Het is een van de belangrijkste reden voor deelnemers om af te haken. Het is daarom goed om periodiek de tevredenheid van de deelnemers te peilen. Naar aanleiding van de uitkomst van een dergelijke tevredenheidspeiling kan men gepaste maatregelen nemen om de activiteit, of de randvoorwaarden, bij te stellen.

In Figuur 5 wordt aangegeven in welke mate uitvallers binnen de verschillende sport- en bewegingsprogramma's zijn overgestapt naar een andere beweegactiviteit. Vervolgens geeft Tabel 1 aan naar welke beweegactiviteit men is overgestapt.

Figuur 5. Het percentage uitvallers dat is overgestapt naar een ander beweegvorm/programma

In totaal is 31% van de uitvallers een andere bewegingsactiviteit gaan uitoefenen. Vooral bij schaatsen en tafeltennis gebeurde dit relatief veelvuldig. Fietsers die afhaakten namen verhoudingsgewijs minder vaak een andere activiteit op. Bij schaatsen is opvallend dat men dikwijls ging fietsen. Dit hangt wellicht samen met het feit dat schaatsen een seizoensgebonden sport is en dat men de zomerstop heeft aangemeld als periode van uitval. Interessant is het gegeven dat uitvallers binnen het onderzoek vooral overstapten naar bewegingsactiviteiten waarvan bekend is dat senioren daar veelal de voorkeur aangeven, zoals zwemmen, tennis en wandelen. Opvallend is echter de hoge mate waarin uitvallers overstapten naar fitness. Deze gegevens bieden wellicht aanknopingspunten voor bewegingsstimulering beleid bij senioren.

Tabel 1. Het aantal uitvallers dat naar specifieke beweegactiviteiten is overgestapt (in absolute aantallen (n))

Originele programma/ nieuwe beweegvorm	Atletiek	Badminton	Fietsen	Gymnastiek	Schaatsen	Tafeltennis	Fysio Sport	HIB	MBvO	Wandelen
Fietsen	1	2			3	2			1	
Dansen									1	
Fitness	2	2		2	1	1	3	4		2
Tuinieren							2			1
Golf							2			
Thuis oefenen				2			2	1		
MBvO		1						1		
Roeien	1									
Schaatsen				1						
Skeeleren										
Slender you		1								
Zwemmen		1	1				5	6	3	1
Tafeltennis									1	
Tennis		1		1			3	3	2	2
Volleybal								1		
Wandelen				1	1	1	5	3	4	
NIB-tv						1			2	
Totaal	4	8	1	7	5	5	22	19	14	6

Productgroep Sportfit 50+

Nieuwsbrief

Sportfit 50+

(Nummer 14, jaargang 2005)

Sportfit 50+ KNGU

In dit nummer o.a. aandacht voor de volgende onderwerpen:

- Landelijke Themadag Nordic Walking, Sportief Wandelen en Boerengolf te Beekbergen
- Dutch Tennis wordt Dynamic Tennis
- TNO onderzoek "uitval bewegingsactiviteiten voor ouderen"
- Cursus Begeleider Sportief Wandelen Oostzaan
- Galm scholing Amersfoort

De volgende nieuwsbrief verschijnt medio zomervakantie 2005!

In deze nieuwsbrief komen de volgende onderwerpen aan bod:

Inhoudsopgave:

Algemeen:

- Inhoudsopgave	Blz. 2
- Inleiding	Blz. 3
- Ledenaantallen KNGU	Blz. 4
- Lidmaatschap KNGU	Blz. 5
- Dutch Tennis wordt Dynamic Tennis	Blz. 7
- Themadag Sportief Wandelen, Nordic Walking en Boerengolf	Blz. 8
- Cursus Begeleider Sportief Wandelen Noord Holland	Blz. 10
- Uitval Bewegingsactiviteiten voor ouderen (50-plus)	Blz. 14
- Juliana Wandeltocht Tsjechie / Polen	Blz. 20
- Persbericht GALM-scholing Amersfoort	Blz. 21
- Bijscholing Ouderensport door Sport Zeeland	Blz. 22
- Oriëntatiemodule MBvO Dans Overijssel	Blz. 26
- Meldingsformulier externe bijscholing	Blz. 29

Heeft u vragen of opmerkingen dan kunt u bellen of mailen met het KNGU Bondsbureau, tel: 055 – 5058742 of E-mail: sportfit55plus@kngu.nl

Veel leesplezier!

Namens de productgroep sportfit 50+, Noël van Tilburg

Uitval bij bewegingsactiviteiten voor ouderen (50-plus): wie – waarom – wanneer?

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3. Body@Work Onderzoekscentrum Bewegen, Arbeid en Gezondheid TNO-VUmc

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Om gezondheidswinst te bereiken moet men regelmatig bewegen. De minimale hoeveelheid beweging die nodig is om de gezondheid te bevorderen bedraagt 30 minuten matig intensieve lichamelijke activiteit per dag op tenminste 5 dagen van de week.

Effecten op de gezondheid blijven uitsluitend gehandhaafd wanneer men blijft bewegen. Het bewegen moet daarom een vaste gewoonte worden. Dat laatste blijkt lastig te zijn.

Bij het ouder worden neemt de mate van lichamelijke activiteit dikwijls af. Bij mensen die aan bewegingsactiviteiten mee doen is de uitval vaak groot, men haakt af. Deze informatie is afkomstig uit onderzoek in de algemene bevolking, en met name de Verenigde Staten en Canada. Specifieke gegevens over de uitval van oudere deelnemers aan bewegingsactiviteiten in Nederland ontbreken nog.

Daarom heeft TNO Preventie en Gezondheid – samen met tal van sportorganisaties - onderzoek uitgevoerd naar de uitval bij dergelijke bewegingsactiviteiten. Inzicht in de mate van uitval en kennis van de determinanten van uitval vormen de basis op grond waarvan men kan komen tot gerichte maatregelen om uitval te verminderen of zelfs te voorkomen.

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Uitkomsten en discussie

Deelnemers aan onderzoek: In totaal hebben 1725 personen de beide vragenlijsten ingevuld.

Figuur 1: Verhouding mannen en vrouwen van de deelnemers aan het onderzoek per sport/beweegvorm (in percentage).

Er is sprake van specifieke mannen sporten, zoals fietsen, tafeltennis en Hart in Beweging. Daarnaast zijn er ook specifieke vrouwen beweegvormen zoals wandelen, MBvO, gymnastiek en in mindere mate FysioSport. Deze verhoudingen lijken de daadwerkelijke verhouding van de deelnemers aan deze sport- en beweegactiviteiten redelijk goed weer te geven.

In Figuur 2 wordt de gemiddelde leeftijd weergegeven van de deelnemers aan het onderzoek van TNO.

Figuur 2: Gemiddelde leeftijd deelnemers per sport/beweegprogramma (in jaar)

Er blijken aanzienlijke verschillen te zijn in de gemiddelde leeftijd van de deelnemers in het onderzoek. Vooral bij georganiseerd sport (zoals atletiek, schaatsen, badminton en fietsen) ligt de gemiddelde leeftijd relatief laag, terwijl bij MBvO - en in iets mindere mate gymnastiek - de leeftijd wat hoger ligt. Dit lijkt overeen te komen met wat in het algemeen bekend is over bewegingsdeelname van senioren. Met het stijgen van de leeftijd, neemt de sportdeelname van senioren dikwijls af en gaat men andersoortige vormen van bewegen uitoefenen. Van deelnemers aan MBvO is bekend dat het vooral oudere senioren aanspreekt.

Mate van uitval bij de bewegingsprogramma's

De gemiddelde uitval binnen de bewegingsprogramma's bedroeg 14.5%. Er waren grote verschillen in uitval tussen de verschillende beweegprogramma's. Deelnemers aan FysioSport rapporteerden een uitval van 37% tegenover 5% bij toerfietsers. 16% van de senioren leden van gymnastiek verenigingen haakte binnen zes maanden af (figuur 3).

Figuur 3: Mate van uitval bij bewegingsprogramma's (in percentage (%) van het totaal aantal deelnemers van het betreffende bewegingsprogramma).

Naast verschillen in de mate van uitval, zijn er ook aanzienlijke verschillen tussen de momenten waarop men uitvalt bij de diverse bewegingsprogramma's. Bij schaatsen, tafeltennis en sportief wandelen komt uitval vooral na 16 weken voor, terwijl bij fietsen en atletiek de meerderheid van de deelnemers vooral in de eerste acht weken van deelname uitvallen.

Figuur 4: Het moment van uitval bij de verschillende bewegingsprogramma's in weken (in percentage (%) van alle uitvallers binnen betreffend bewegingsprogramma

Redenen van uitval

Om uitval te kunnen voorkomen is inzicht in de redenen van uitval noodzakelijk. Het komt regelmatig voor dat mensen gedurende een bepaalde periode tijdelijk niet mee kunnen doen aan bewegingsactiviteiten. Dat kan gedurende een week zijn, maar het kan ook meerdere weken duren. De redenen van dergelijke tijdelijke uitval kunnen uiteenlopend zijn, bijvoorbeeld door een blessure, ziekte of vakantie. Uit het onderzoek blijkt dat deze tijdelijke uitval vaak leidt tot definitieve uitval. Het optreden van tijdelijke uitval, het aantal keren dat men niet kan deelnemen en de duur van de tijdelijke uitval zijn belangrijke oorzaken van definitieve uitval.

Het is van belang maatregelen in te voeren die tijdelijke uitval verminderen. Daarbij kan worden gedacht aan het invoeren van een 'Buddy systeem' waarbij een 'buddy' (=ervaren deelnemer als maatje) wordt gekoppeld aan een nieuw lid om deze te motiveren om te komen. Ook kan men denken aan een belsysteem waarbij de deelnemers onderling contact houden en elkaar ondersteunen.

Een Relapse Preventie training kan ook zinvol zijn. In Amerika zijn positieve ervaringen opgedaan met het geven van dergelijke trainingen. Binnen Relapse Preventie training leren deelnemers om te gaan met tegenslagen, die wellicht kunnen leiden tot afhaken. Deelnemers moeten zich ervan bewust worden dat tijdelijke uitval – mits niet te langdurig – geen probleem vormt, dat de gezondheidseffecten van bewegen niet nadelig beïnvloed hoeven te worden door een korte onderbreking. Maak vooral geen gewoonte van tijdelijke uitval!

De ontevredenheid van deelnemers is een heel belangrijke reden voor uitval. Het is een van de belangrijkste reden voor deelnemers om af te haken. Het is daarom goed om periodiek de tevredenheid van de deelnemers te peilen. Naar aanleiding van de uitkomst van een dergelijke tevredenheidspeiling kan men gepaste maatregelen nemen om de activiteit, of de randvoorwaarden, bij te stellen.

In Figuur 5 wordt aangegeven in welke mate uitvallers binnen de verschillende sport- en bewegingsprogramma's zijn overgestapt naar een andere beweegactiviteit. Vervolgens geeft Tabel 1 aan naar welke beweegactiviteit men is overgestapt.

Figuur 5. Het percentage uitvallers dat is overgestapt naar een ander beweegvorm/programma

In totaal is 31% van de uitvallers een andere bewegingsactiviteit gaan uitoefenen. Vooral bij schaatsen en tafeltennis gebeurde dit relatief veelvuldig. Fietsers die afhaakten namen verhoudingsgewijs minder vaak een andere activiteit op. Bij schaatsen is opvallend dat men dikwijls ging fietsen.
De uitvallers bij gymnastiek gaven aan dat ze gingen naar fitness overstapten of thuis gingen oefenen (twee maal) en ze gingen tennissen en wandelen (een maal).
Interessant is het gegeven dat uitvallers binnen het onderzoek in totaliteit vooral overstapten naar bewegingsactiviteiten waarvan bekend is dat senioren daar veelal de voorkeur aangeven, zoals zwemmen, tennis en wandelen. Opvallend is echter de hoge mate waarin uitvallers overstapten naar fitness. Deze gegevens bieden wellicht aanknopingspunten voor bewegingsstimulering beleid bij senioren.

Tabel 1. Het aantal uitvallers dat naar specifieke beweegactiviteiten is overgestapt (in absolute aantallen (n))

	Originele programma/ nieuwe beweegvorm	Atletiek	Badmin-ton	Fietsen	Gym-nastiek	Schaat-sen	Tafel-tennis	Fysio Sport	HIB	MBvO	Wan-delen
	Fietsen (9)	1	2			3	2			1	
	Dansen (1)									1	
	Fitness (17)	2	2		2	1	1	3	4		2
	Tuinieren (3)							2			1
	Golf (2)							2			
	Thuis oefenen (5)				2			2	1		
	MBvO (2)		1						1		
	Roeien (1)	1									
	Slender you (1)		1								
	Zwemmen (17)		1	1				5	6	3	1
	Tafeltennis (1)									1	
	Tennis (12)		1		1			3	3	2	2
	Volleybal (1)								1		
	Wandelen (15)				1	1	1	5	3	4	
	NIB-tv (3)						1			2	
	Totaal (90)	4	8	1	6	5	5	22	19	14	6

403 DETERMINANTS OF ADHERENCE IN EXERCISE PROGRAMS FOR SENIORS IN THE NETHERLANDS

M. Stiggelbout1, M. Hopman-Rock1,2 *1 TNO Prevention and Health, 2 Body@Work, Research Centre Physical Activity, Work and Health TNO-VU Medical Centre* (Sponsor: Willem Van Mechelen, FACSM)

Literature states that the drop-out rate of exercise participation is about 50% during the first six months. Little information is available on exercise adherence in organized exercise programs for seniors. PURPOSE: to investigate the determinants of adherence in exercise programs of seniors in the Netherlands. METHODS: A prospective cohort study with baseline measurements and follow-up (n= 1723; age >50 years). Ten different types of organized exercise programs were integrated in the project: More Exercise for Seniors - gymnastics, Sports clubs for patients with coronary heart diseases, PhysioSports (fitness guided by specialized sports physiotherapists), Walking for Health, and Organized sports in a club (athletics, badminton, tour cycling, gymnastics, speed skating, table tennis). Program participants completed questionnaires after they started the program and after six months. Determinants of adherence (background variables, attitude, social influence, self-efficacy, behavioral intention, number and duration of lapses, risk situations, coping response and the satisfaction with the contents of the program) were evaluated using logistic regression. RESULTS: The drop-out rate was 14.5% (varying from 5%-37% per program). Significant odds ratios were found for: marital status widowed (OR 4.4 CI 1.7-11.4), attitude (OR 3.2 CI 2.2-4.8), behavioral intention (OR 3.3 CI 1.8-5.9), short lapses (OR 3.9 CI 2.0-7.6), risk situations (OR 1.1 CI 1.01-1.1) and satisfaction (OR 2.7 CI 1.9-4.0). CONCLUSION: This study identified several determinants of adherence of which some in the future may be affected by the providers of the exercise programs, to increase exercise adherence rates. Supported by a grant of the National Health Research and Development Council (nr 2200.0024)

404 ENVIRONMENTAL RESOURCES FOR PHYSICAL ACTIVITY AMONG PATIENTS WITH CORONARY HEART DISEASE

S. Keup, J. D. Fleury, B. Matteson *Arizona State University, Tempe, AZ and The University of North Carolina, Chapel Hill, NC* (Sponsor: Wayne T. Phillips, FACSM)

Understanding environmental resources for physical activity is essential to develop community-based interventions as well as environmental and policy initiatives. Few studies have explored these resources, particularly from a secondary prevention perspective. PURPOSE: To describe environmental resources for physical activity among patients with diagnosed coronary heart disease (CHD). METHODS: Six months following structured cardiac rehabilitation, 183 participants (139 male; aged 64±10.2; 94.5% Caucasian; 53.6% employed; years of education 15.8±3.3) were asked to report, using a structured, validated questionnaire, neighborhood characteristics and physical and environmental resources available for physical activity. Descriptive statistics were used to characterize resources for physical activity available to participants. Chi square analysis was performed to examine differences in level of resources for age, gender, education, and ethnicity ($p < .05$). RESULTS: Overall, 87% of participants perceived a high level of environmental resources. The majority of participants felt safe participating in physical activity in their neighborhood (86%). Seventy nine percent felt that they had access to necessary resources for activity, while 92% had access to transportation to participate in activity. Eighty two percent reported community norms supporting physical activity, such as people walking in their neighborhood. Sixty five percent had access to trails for walking; 46% to a community recreation center; and 46% to bicycle lanes or trails. Limits to resources included lack of sidewalks for activity (57%), unattended dogs (25%), and lack of adequate street lighting (25%). Chi Square analysis for level of resources showed that those with lower perceived resources differed significantly in perceived safety of neighborhood ($p = .011$). CONCLUSION: It is important to continue to examine the relevance of environmental factors and how the perceived environmental resources may differ among various populations. Supported by NIH/NINR Grant R29 NR04532-05

405 BARRIERS TO PHYSICAL ACTIVITY MAINTENANCE AMONG PATIENTS WITH CORONARY HEART DISEASE

J.D. Fleury, B. Matteson, S. Keup *Arizona State University, Tempe, AZ and The University of North Carolina, Chapel Hill, NC* (Sponsor: Wayne T. Phillips, FACSM)

Little is known about determinants through which physical activity is maintained following cardiac rehabilitation. Few studies have focused on perceptions of intrapersonal, interpersonal, environmental, or organizational factors as barriers to change. PURPOSE: To examine perceived barriers to physical activity maintenance in participants with coronary heart disease (CHD). METHODS: Six months following structured cardiac rehabilitation 160 participants (76% male; age 64± 10.2; 94% Caucasian) were asked to identify, using an open-ended format, those things that made activity difficult. Content analysis of participant responses was conducted. Independent review was used to assess accuracy and reliability of decision rules, categorization of data and coding of data. Coding allowed for Chi square analysis to examine differences in barriers by gender, ethnicity, education and employment. RESULTS: Four categories were identified from coded responses: intrapersonal, interpersonal, environmental, and organizational. Ninety three percent of participants reported intrapersonal barriers to activity maintenance; 39% reported physical condition as most common. Twenty three percent reported interpersonal barriers, with social obligations as most common (16.3%). Eighteen percent reported environmental barriers, with inclement weather as most common (13%). Twenty percent reported organizational barriers, with program scheduling as most common (6.3%). Education level showed significant differences for inactive lifestyle among those less educated ($p = .008$). Employment status showed significant differences for work among those employed full time ($p = .004$). Gender showed significant differences for the interpersonal barriers of family commitments ($p = .015$) and care giving ($p = .011$) among women. CONCLUSION: Results indicate a consistent set of barriers experienced by patients with diagnosed CHD in maintenance of physical activity. Acknowledgement of barriers can be useful in working to overcome these barriers. Supported by NIH/NINR Grant R29 NR04532-05

406 GENDER-ADJUSTED PREDICTION OF LOSS TO FOLLOWUP IN AN EXERCISE REHABILITATION CLINICAL TRIAL FOR COPD PATIENTS

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Comprehensive evaluations of exercise rehabilitation (rehab) in COPD patients (pts) requires assessments of loss to follow-up (LFU). Motivational scores & other baseline (BL) predictors (Ps) of pt returns for follow-up (F1,F2) involving strenuous rehab may exhibit correlations with other Ps. PURPOSE: To examine Ps of the probability of LFU at F1/F2 with emphasis on gender (M,F) interactions. METHODS: Logistic regression was used to predict the probability of LFU in a randomized clinical trial of 2 levels of training intensity (N=126,92M,34F). Potential Ps of LFU@F1 & F2 included demographics & self-reported BL motivational & psychological (psych) scales. Analyses of Ps of LFU@F2, given successful FU@F1, were also conducted. Variables were dichotomized prior to forward stepwise selection. Gender differences in Ps were examined with t-tests/Chi-2 tests ($P<0.05$). RESULTS: At BL, M & F showed no significant t-test differences in age, yrs of education, Modified Dyspnea Index (MDI) scales, depression scales (CESD). There were differences in Pack-Years, FEV1 (L), FEV1/FVC ratio, the Beck Hopelessness Scale (BHS), & on every cognitive/behavioral scale measuring processes of change on the Motivational (MRC) instrument (Marcus, J Sports Med & Phys Fitness, 1993). There were no gender differences on MRC self-efficacy or decision making; more Fs had reached the contemplation stage. After gender adjustments, gender did not enter into the models. Ps of LFU@F1 were over-age-65, MRC stimulus control, & MRC self-reevaluation; Ps of LFU@F2 were: college-educated, >65 yrs, severity of COPD, & a single scale from each of MDI,MRC,BSH,CESD; Ps of LFU@F2, given FU@F1, were college-educated, two MRC subscales, & a CESD subscale. Concordance was 70%-80%. CONCLUSIONS: LFU bias is complex: M&F are motivated differently in LFU in COPD rehab trials; statistical adjustments are needed or separate analyses by gender may be warranted; trials targeting only Fs should be supported. Supported by AHRQ Grant 1RO1-HL64938.

407 A NATIONAL STUDY OF ADULTS WITH PHYSICAL DISABILITIES' PHYSICAL ACTIVITY BEHAVIOR USING TRANSTHEORETICAL MODEL CONSTRUCTS

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A large percentage of adults with physical disabilities are inactive (56%). To improve this situation, more theory-based research is needed. One promising approach is offered by the Transtheoretical Model (TM). PURPOSE: Assess adults with physical disabilities' physical activity behavior using each of the core constructs of TM, along with unique barriers experienced by this population segment, and determine if disability type has a moderating effect. METHODS: This was a cross-sectional study whereby 411 people responded to national advertising, with 322 (78.3%) people meeting the study's eligibility criteria and returning usable surveys. On average participants were 52.5 yr. old, the majority were female (62.1%) and Caucasian (91.9%), and the majority had experienced one or more of the following disability types: post polio, multiple sclerosis, spinal cord injury, amputation, or cerebral palsy. Participants completed a demographic questionnaire and physical activity and disability specific measures of stage of change, processes of change, decisional balance, self-efficacy, and barriers. Data were analyzed using a 5 (stage of change [SOC]) x 6 (disability type) MANOVA. RESULTS: Significant main effects ($p<0.01$) were observed for both SOC and disability type, however the interaction was not significant ($p>0.25$). Participants classified by their SOC differed on each of the TM constructs, as well as physical activity barriers. Intra-ocular observations revealed a gradient pattern of improvement from precontemplation through maintenance for all constructs. Across disability types, the behavioral processes of change, self-efficacy, and decisional balance all showed differential patterns of use. CONCLUSION: These results generally support the utility of TM for understanding and describing adults with physical disabilities' physical activity behavior, though it does appear disability type may have a moderating effect. Funded by the National Institute on Disability and Rehabilitation Research, U.S. Department of Education.

408 INCREASING PHYSICAL ACTIVITY AMONG PATIENTS AT RISK FOR HEART DISEASE: THE ROLE OF PHYSICIAN COUNSELING

J. Norstrom, S.E. Sullivan, W. Conroy, A. Tarnowski, N. Liwienski, A.S. Leon. *Park Nicollet Health Services, Minneapolis, MN*

Patients already at moderate risk for coronary heart disease (CHD) are an important target group that can benefit from regular physical activity (PA). Counseling by physicians and other providers is regarded as a promising strategy to help these patients increase their PA, lower their risk factors, and reduce their overall risk for CHD. PURPOSE: To test the effectiveness of physician counseling (using the Activity Pyramid) as a clinic-based intervention strategy for increasing PA among patients at moderately high risk for developing CHD. METHODS: Six primary care clinics were assigned to either usual care (UC), provider counseling intervention (I1) or provider plus health educator counseling and follow-up interventions (I2). UC providers delivered a brief message about PA without use of Activity Pyramid tools. Both I1 and I2 groups provided brief PA counseling modeled after the Activity Pyramid. In the I2 groups, a trained health educator also provided PA counseling, support, and follow-up services through one-on-one visits and 2 to 4 follow-up counseling sessions. All subjects underwent assessments at baseline and at 6 and 12 months. Assessment included completion of a self-reported PA survey. RESULTS: From baseline to 12 months, I1 and I2 showed statistically significant increases (35.1% and 36.8%, respectively) in indications that they were adding extra steps daily (eg, taking stairs instead of elevator), compared with the UC group, whose responses in this area increased 21%. At 12-month follow-up, 48% and 62% of participants in I1 and I2, respectively, noted that they were interested in increasing their aerobic and recreational activities (eg, tennis, dancing, brisk walking). Only 28% of UC group participants expressed such an interest. CONCLUSIONS: All three groups experienced some improvement in their level of and interest in PA by the 12-month follow-up. Intervention groups showed increases in knowledge of and interest in certain types of PA depicted in the Activity Pyramid. Supported by AHA Grant 9970017N

DETERMINANTS OF ADHERENCE IN EXERCISE PROGRAMS FOR SENIORS IN THE NETHERLANDS

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Supported by a grant of the National Health Research and Development Council (ZonMw, nr 2200.0024)

ZonMw ondersteunt

TNO Prevention and Health

Abstract

Literature states that the drop-out rate of exercise participation is about 50% during the first six months. Little information is available on exercise adherence in organised exercise programs for seniors. PURPOSE: to investigate the determinants of adherence in exercise programs of seniors in the Netherlands. METHODS: A prospective cohort study with baseline measurements and follow-up (n= 1723; age >50 years). Ten different types of organised exercise programs were integrated in the project: More Exercise for Seniors - gymnastics, Sports clubs for patients with coronary heart diseases, FysioSports (fitness guided by specialised sports physiotherapists), Walking for Health, and Organised sports in a club (athletics, badminton, tour cycling, gymnastics, speed skating, table tennis). Program participants completed questionnaires after they started the program and after six months. Determinants of adherence (background variables, attitude, social influence, self-efficacy, behavioral intention, number and duration of lapses, risk situations, coping response and the satisfaction with the contents of the program) were evaluated using logistic regression. RESULTS: The drop-out rate was 14.5% (varying from 5%-37% per program). Significant odds ratios were found for: marital status widowed (OR 4.4 CI 1.7-11.4), attitude (OR 3.2 CI 2.2-4.8), behavioral intention (OR 3.3 CI 1.8-5.9), short lapses (OR 3.9 CI 2.0-7.6), risk situations (OR 1.1 CI 1.01-1.1) and satisfaction (OR 2.7 CI 1.9-4.0). CONCLUSION: This study identified several determinants of adherence of which some in the futute may be affected by the providers of the exercise programs, to increase exercise adherence rates.

Study objective

This study investigated the drop-out incidence and the determinants of exercise adherence in organised exercise programs for older adults (50 years and older) in the Netherlands.

Methods

A prospective cohort study (with baseline measurements and follow-up; n=1723).

As soon as older adults joined an exercise program or sports club, they received the first questionnaire and after six months they received the second questionnaire. Potential determinants of adherence were evaluated using a multivariate logistic regression model.

Ten different types of organised exercise programs were included.

- More Exercise for Seniors - gymnastics
- Sports clubs for patients with coronary heart diseases (HIB)
- PhysioSports
- Walking for Health

Organized sports in a club:

- Athletics
- Badminton
- Tour cycling
- Gymnastics
- Speed skating
- Table tennis

Results

The average drop-out incidence was 14.5%, varying from 5%-37% per program).

Significant odds ratios were found for several determinants of exercise adherence

	OR	Confidence Interval (95%)
Marital status widowed	4.4	1.7 - 11.4
Attitude	3.2	2.2 - 4.8
Behavioral intention	3.3	1.8 - 5.9
Short lapses	3.9	2.0 - 7.6
Risk situations	1.1	1.01 - 1.1
Satisfaction	2.7	1.9 - 4.0

Conclusion

This study identified several determinants of adherence of which some in the future may be affected by the providers of the exercise programs, to increase exercise adherence rates.

movement sequence: attention to the present, diaphragmatic breathing, postural alignment, awareness of movement, slow movement, relaxed movement, and use of the imagination. Adherence to these principles allows the individual to experience relaxation during the movement sequence, reduces the experience of pain during exercise, and reduces the risk of injury during exercise. Research into the benefits of the ROM Dance program has demonstrated both increased participation in and perceived benefit from both rest periods and exercise, but no increase in range of motion, as well as a lower body image among participants (Harlow & Yu, 1984; VanDeusen & Harlow, 1987a, 1987b, 1988; VanDeusen, Harlow, & Baker, 1989). The researchers speculated that the last finding was related to the program's focus on body awareness, which may result in a more accurate, although less positive, perception of one's body (VanDeusen et al., 1989).

Friday Morning, Oral Presentations

PSYCHOSOCIAL ASPECTS OF PHYSICAL ACTIVITY

Exercise Participation Motives in Older Asian Indians

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Worldwide, life expectancy has increased dramatically over the past 100 years. However, unless vigorous measures are taken to promote health at older ages, the ageing of the population will place new and increased demands on health care systems across the globe (WHO,2001) For example, in some countries, per capita health expenditure for 60 to 64 year old and 80 to 84 year old people was respectively 2 and 6 times that of their 30 to 34 year old counterparts (Johnston & Teasdale,1999). Therefore, research aimed at ensuring that people maintain the highest possible level of physical, social and mental functioning as they are is of critical importance. High levels of physical functioning are integral to ageing well and participation in physical activity is a strong predictor of successful ageing. The aim of the present study was to investigate the reasons why older Asian Indians participate in exercise activities. Specifically, gender differences and age differences were studied with respect to participation motives. The reasons why older Asian Indians participate in exercise and physical activity were investigated in a sample of 226 adults ranged in age from 55 to 88 years, with an average age of 65.5 years (SD = 6.8). Questionnaire method was used to collect data and the participants were asked to complete the Participation Motivation Questionnaire for Older adults as well as answer questions on demographic information including age, occupation, level of education, and the types of exercise activities they engaged in. The reasons for participation in exercise and physical activity rated as most important for the total sample related to maintaining and improving fitness, releasing tension, being part of a group, and keeping healthy. The motives that were reported as least influential to participating in exercise related to wanting to be noticed and having fun. Males placed significantly greater importance on social recognition reasons for participating in exercise and physical activity than did females. Further, a Kruskal-Wallis test showed that older participants rated being popular more importantly than their younger counterparts. The findings, which are discussed in relation to previous literature and cultural traits of Asian Indians, have potential value in designing strategies to encourage older people to participate in exercise and physical activity.

Determinants of Maintenance of Exercise Participation in Exercise Programs for Seniors in the Netherlands

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Literature states that the drop-out rate of exercise participation is about 50% during the first 6 months. Little information is available on maintenance of exercise participation in

organised exercise programs for seniors. **Objective**: To investigate the determinants of maintenance of participation in exercise programs for seniors in the Netherlands. **Methods**: A prospective cohort study with baseline measurements and follow-up (n = 1,725; age ≥50 years). Ten different types of organised exercise programs were integrated in the project: more exercise for seniors—gymnastics, sports clubs for patients with coronary heart diseases, fysiosports (fitness guided by specialised sports physiotherapists), walking for health, and organised sports in a club (athletics, badminton, tour cycling, gymnastics, speed skating, table tennis). Program participants completed questionnaires after they started the program and after 6 months. Determinants of maintenance (background variables, attitude, social influence, self-efficacy, behavioural intention, number and duration of lapses, risk situations, coping response and the satisfaction with the contents of the program) were evaluated using logistic regression. **Results**: The maintenance rate was 86% (varying from 63% to 95% per program). Significant odds ratios were found for marital status widowed (OR 4.4 CI 1.7-11.4), attitude (OR 3.2 CI 2.2-4.8), behavioural intention (OR 3.3 CI 1.8-5.9), short lapses (OR 3.9 CI 2.0-7.6), risk situations (OR 1.1 CI 1.01-1.1), and satisfaction (OR 2.7 CI 1.9-4.0). **Application:** This study identified several determinants of maintenance of exercise participation of which some in the future may be affected by the providers of the exercise programs, to increase the maintenance of exercise participation. *Note*. Supported by a grant of the National Health Research and Development Council (nr 2200.0024).

Motives for and Obstacles to Exercise Among Older People With Mobility Limitation

Minna Rasinaho[1], Mirja Hirvensalo[2], Raija Leinonen[1], Ritva Sakari-Rantala[1], Taru Lintunen[2], Mauri Kallinen[3], Eino Heikkinen[1], Taina Rantanen[1], [1]The Finnish Centre for Interdisciplinary Gerontology, Department of Health Sciences, University of Jyväskylä, Finland, [2]Department of Physical Education, University of Jyväskylä, Finland, [3] Central Hospital of Central Finland

Purpose: This study examined the self-reported motives for and obstacles to physical exercise participation among older people. **Methods:** This study is part of the baseline of an intervention study called Screening and Counseling for Exercise and Mobility in Older People The participants were 75- to 81-year-old community-living residents in the City of Jyväskylä, central Finland (n = 645) who were able to walk one-half km without assistance and whose physical activity ranged from moderate to sedentary. The participants were given a list with 25 potential motives for and 25 obstacles to exercise, and asked to check those they agreed with. People were divided into 3 groups based on the severity of their mobility limitation. Those who reported difficulty in walking 2 km and climbing 1 flight of stairs were rated as severely limited, those who reported difficulty in walking or climbing were rated as moderately limited while those who reported no difficulty were rated as having no mobility limitation. Differences between genders and mobility groups were examined by means of cross-tabulation and the chi-square test. **Results:** The most often reported motives for and obstacles to physical exercise were in general the same in all mobility groups. Most of the subjects quoted that the most important motives for participation was "exercise helps maintaining health" (70%) and "exercise helps maintaining mental health" (56%), "it is nice to exercise in good weather" (58%) and "the neighborhood is suitable for exercising" (53%). In addition, for men "exercise gives contact to nature" (53%) was often mentioned. However, fewer of those with severely limited mobility named motives to exercise than the other mobility groups ($p < .001$) The most often reported obstacles for exercise were "pain or diseases hinders from exercising" (51%), "bad weather hinders from exercising" (22%), "fear of falling when exercising" (20%) and "feeling insecure when moving outdoors" (10%). These reasons were more often mentioned by those with severely limited mobility than the other mobility groups ($p < .001$). In addition, 74% of all participants (women 81% and men 52%) told they avoid moving outdoors in the evening. Women reported that they

ISAPA conference August 2004

DETERMINANTS OF MAINTENANCE OF PARTICIPATION IN EXERCISE PROGRAMS FOR SENIORS IN THE NETHERLANDS

Dra M. Stiggelbout, Dr M. Hopman-Rock

BODY@WORK

Presentation

- Back ground information
- Method
- Health behaviour model applied
- Results
- Conclusions

Background (1)

Bron: TNO(OBiN 2000)

Background (2)

- Drop-out in exercise programs: important problem
- Little information known related to maintenance of exercise behaviour in older adults
- Hardly any research applied using health behaviour models

Method

- Prospective study in older adults (n=1725) who start an exercise program
- MBvO, PhysioSport, exercise program for (ex-) heart patients, Walking for sport, atletics, badminton, tour cycling, gymnastics, speed skating, tabletennis
- Baseline maesurement and follow-up after 6 months

Health behaviour model

t

Conclusions

Maintenance is predicted by:

- Short duration and the occurrence of lapses
- High intention to remain participating
- High perceived quality of program
- High attitude towards exercise participation
- Less risk situations

For more information:

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the Midwest region of the United States. It is expected that less time will be spent in VPA during the winter months since it is likely less time will be spent outdoors. **METHODS:** Subjects included 28 children (12 males, 16 females) age 3-5 (mean age 3.82 ± .55 years) from six childcare centers in northeast Iowa. The cold months averaged -2 degrees C (*SD* = 5.8) daily high, while the warm months averaged 24 degrees C (*SD* = 4.9). No difference occurred in precipitation between these seasons. The children were objectively assessed for physical activity using Actwatch-16 activity monitors (Sunriver, OR, USA) for three weekdays during each season. VPA was determined by identifying the number of 15s epoch (time intervals) that the child activity counts ≥ 250. From this procedure, the number total minutes were determined for the day. The three days were averaged to determine total minutes per day, and time in VPA at the center and at home. **RESULTS**: The mean (*SD*) minutes spent daily in VPA for the cold and warm months were 67.23 (21.65) and 66.48 (25.29) respectively. A dependent t-test indicated no significant difference in daily VPA between cold and warm months (p=0.865). In addition, dependent t-tests indicated no significant difference between minutes spent in VPA at the center (p=0.258) and the home (p=0.398) when comparing cold versus warm months. There was however a significant (p<0.1) moderate correlation between the locations for the cold (r=0.59) and warm (r=0.54) months. **CONCLUSIONS:** Therefore it is concluded that for the preschool-aged children in this region enrolled in these child-care centers, temperature differences between seasons did not impact the level of VPA

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Baseline Psychosocial Factors Associated with Long-term Physical Activity Adherence in Post-Menopausal Women

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Physical activity adherence has been associated with positive health outcomes, including, maintenance of bone mass in post-menopausal women. However, many do not either begin or fail to maintain the physical activity regimens commonly recommended to post-menopausal women for the prevention of osteoporosis. Underlying psychosocial factors involved in long-term physical activity adoption or rejection are yet to be determined. **PURPOSE**: We examined the psychosocial factors associated with long-term physical activity adherence in post-menopausal women. **METHODS**: 320 post-menopausal, sedentary women were administered a comprehensive psychometric battery before being randomized to control or a strength training program and followed 4 years. The 177 randomized to exercise were divided into two groups, 4-year completers (n=60) and non-completers. These two groups were compared based on responses to the baseline psychometric battery. **RESULTS**: Average age, weight, and body fatness were significantly different between completers and non-completers (56.4 ± 4.1 and 54.1 ± 4.5 years; 65.4 ± 10.0 and 69.8 ± 12.2 kg; 37.0% ± 5.8% and 39.9% ± 6.4% body fat, respectively, p < 0.05). Hormone replacement therapy (HRT) use was equal between groups. Completers scored statistically significantly higher on US SF-36 and WHI psychosocial variables of general health and emotional well being, with fewer physical limitations, than non-completers. Non-completers were more likely to state that they do not work any harder than they have to, on the Dishman Questionnaire. Results of the Martin Questionnaire revealed that non-completers rated highly on not believing that they could change their habits and become more active. These key questions contribute significantly to the logistic regression model, and in addition, when exercise attendance and baseline covariates are added to the model, all questions remain significant. **CONCLUSIONS**: Independent of adherence to exercise, completers of the 4-year exercise intervention appear to have a better overall quality of life score at baseline and are more motivated and willing to work, while non-completers appear to doubt ability to change their lifestyle. Supported by NIH Grant AR39559 and Mission Pharmacal.

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Validation of Online Walking Logs for Middle Aged and Older Adults: A Pilot Study

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Findings from recently published studies support the use of the Internet for delivering physical activity interventions, but to date few studies have published results validating online, self-report physical activity measures. **PURPOSE**: To compare the results of self-report walking logs completed online or on paper with data from corresponding 1-mile walk tests and data collected from accelerometers. **METHODS**: An 8-week randomized controlled trial was conducted with a sample of 94 (n = 21 male, n = 73 female) healthy, low active, computer users (Mean age = 54.4) randomized to either the Internet or the standard care condition. The Internet condition followed a home-based walking program that was delivered online with weekly email reminders and the standard care condition followed the same 8-week home-based walking program delivered via the postal service with weekly telephone reminders. A sub-sample of participants (n = 14) who lived close to the research facility completed both a Rockport 1 mile walk test and wore accelerometers both at the beginning and the end of the study. The main objective of this study was to compare the results of these 2 physical activity measures and the weekly walking logs completed during the intervention. **RESULTS**: A repeated measures multivariate analyses of variance indicated that there were no differences across groups in any of the measures. There was a significant decrease in Rockport times (17.3 versus 16.4 mins, p = .007) and a significant increase in average number of self-reported minutes walked per week (60.8 versus 154.1 mins, p < .001) across groups. Although the increase in the mean accelerometer score was not significant (p > .05), there was a significant correlation between changes in accelerometer scores and changes in self-report minutes spent walking (r = .54, p = .018). **CONCLUSIONS**: These results provide preliminary support validating both online and paper versions of self-report walking logs from a home-based walking program. This study was conducted while Gerald J. Jerome was at the University of Illinois. Supported by American College of Sports Medicine Foundation Research Grant and The Weiss Research Endowment, American College of Sports Medicine.

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Is Low Back Pain A Determinant Of Exercise Maintenance In Older Working Adults (50-plus)?

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Little information is available on maintenance in organized exercise programs for older working adults. Specifically the role of low back pain is unknown, whereas it is an important determinant of work absenteeism, and exercise is beneficial. **PURPOSE**: To investigate determinants of maintenance of exercise behavior in older working adults in the Netherlands, specifically the role of low back pain. **METHODS**: An existing prospective cohort study with baseline measurements and follow-up was used to analyze data in working older adults (n= 560; age ≥50 years). Ten different types of organized exercise programs were taken into account. Participants completed questionnaires after they had started the program and after six months. Determinants of maintenance (background variables, low back pain, attitude, social influence, self-efficacy, behavioral intention, incidence, number and duration of lapses, risk situations, coping response and the satisfaction with the contents of the program) were evaluated using a stepwise logistic regression model. **RESULTS:** After six months 16% of the participants dropped-out. Of the 68 participants with low back pain 10 dropped-out. Univariate analyses showed no significant relationship between low back pain and lapses (χ^2=.18 ; NS), nor drop-out (χ^2=.054, NS). Significant odds ratios for maintenance were found for: short lapses (OR 18.6 CI 5.9-58.3), no lapses (OR 11 CI 1.3-91.8), positive attitude (OR 2.5 CI 1.1-5.6), high satisfaction with the program (OR 5.6 CI 2.9-10.8), and living with a partner (OR 14.3 CI 1.8-112). Low back pain had no significant contribution to the model. **CONCLUSION**: Maintenance of exercise behavior is mainly determined by the incidence and the duration of lapses and the satisfaction with the exercise program. Low back pain is no determinant of maintenance of exercise behavior. Supported by the Netherlands Health Research and Development Foundation grant number 2200.0024.

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Physical Activity and Quality of Life Across a 4-year Period in Older Adults

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With advancing age, there is an increased susceptibility to chronic diseases and functional disability, resulting in compromised well-being and reduced quality of life (QOL). Physical activity (PA) has been effective in attenuating functional decline and enhancing QOL of older adults. Few studies have examined the PA-QOL relationship in older adults using longitudinal data and an established model of QOL. **PURPOSE**: Based on the Stewart and King (1991) model of QOL for PA, the relationships among changes in PA, intermediate QOL outcomes (e.g., social support & well-being), and overall QOL (satisfaction with life; SWL) across a 4-year period in older adults were examined. **METHODS**: Participants (*N* = 174, *M* age = 66.7 yrs) completed a graded exercise test and a battery of psychosocial measures 12 and 60 months after enrolling in a 6-month randomized controlled exercise trial. **RESULTS**: Panel analysis was conducted within a covariance modeling framework for testing a model that included (1) direct effects of PA on social support, esteem, affect, oxygen uptake, and SWL; and (2) direct effects of social support, esteem, affect, and oxygen uptake on SWL across both time points. The fit of the model was excellent, $\chi^2(25)=29.10$, $p=0.26$. With the 12 month assessment, PA had direct effects on affect (ß=0.18) and oxygen uptake (ß=0.27), and esteem (ß=0.18) and affect (ß=0.52) had direct effects on SWL. With the 60 month assessment, change in PA had direct effects on residual changes in social support (ß=0.13), esteem (ß=0.20), and affect (ß=0.19), but only change in affect (ß=0.54) had a direct effect on residual change in SWL. **CONCLUSIONS**: Over time, physical activity effects on QOL in older adults appear to be mediated largely by changes in the affective aspects of well-being, supporting the position that intermediate outcomes associated with PA underlie global QOL. Funded by a grant from the National Institute on Aging (AG12113)

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Effect of an Incentive-Based Motivational Campaign on Weight Loss and Physical Activity in Overweight Women

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Incentive-based campaigns that target eating and exercise behaviors are commonly used within weight control programs (e.g., Diabetes Prevention Program) to encourage adoption and maintenance of these targeted behaviors. However, the effectiveness of

IS LOW BACK PAIN A DETERMINANT OF EXERCISE MAINTENANCE IN OLDER WORKING ADULTS (50-PLUS)?

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Abstract

Little information is available on maintenance in organized exercise programmes for older working adults. Specifically the role of low back pain is unknown, whereas it is an important determinant of work absenteeism, and exercise is beneficial.

PURPOSE: To investigate determinants of maintenance of exercise behaviour in older working adults in the Netherlands, specifically the role of low back pain. METHODS: An existing prospective cohort study with baseline measurements and follow-up was used to analyze data in working older adults (n= 560; age: 50 years). Ten different types of organized exercise programs were taken into account. An extended planned behaviour model was used in this study. Participants completed questionnaires after they had started the program and after six months. Determinants of maintenance (background variables, low back pain, attitude, social influence, self-efficacy, behavioral intention, occurrence, number and duration of lapses, risk situations, coping response and the perceived quality of the contents of the program) were evaluated using a stepwise logistic regression model. RESULTS: After six months 16% of the participants dropped-out. Of the 68 participants with low back pain 10 dropped-out. Univariate analyses showed no significant relationship between low back pain and lapses (p=.18 ; NS), nor drop-out (p=.054, NS). Significant odds ratios for maintenance were found for: short lapses (OR 18.6 CI 5.9-58.3), no lapses (OR 11 CI 1.3-91.8), positive attitude (OR 2.5 CI 1.1-5.6), high perceived quality with the program (OR 5.6 CI 2.9-10.8), and living with a partner (OR 14.3 CI 1.8-112). Low back pain had no significant contribution to the model. CONCLUSION: Maintenance of exercise behavior is mainly determined by the occurrence and the duration of lapses, and the satisfaction with the exercise program. Low back pain is no determinant of maintenance of exercise behaviour.

Figure 1. The extended planned behaviour model of exercise maintenance used in this study was based on (1) the Social Learning Theory (Bandura 1986), (2) The Theory of Planned Behaviour (Ajzen 1991;Ajzen and Driver 1992) the model of past behaviour (Triandis 1977;Triandis 1979) and (4) the Relapse Prevention model (Marlatt and Gordon 1980;Marlatt and Gordon 1985).

Setting

Ten different types of exercise programmes for older working adults (50-plus) were integrated in the project:

- Sports clubs for patients with coronary heart diseases (CHD)
- PhysioSports (fitness guided by a sports physiotherapist)
- Walking for health
- Organized sports in a club:

Athletics	Gymnastics
Badminton	Speed skating
Tour cycling	Table tennis