Effect of intervention by physical activity on referral (FaR®), motivational interview, and aerobic capacity test on physical activity level in primary care.

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Citation

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Abstract

Background: Physical activity on referral (FaR®) has become a well-known concept in Sweden that was implemented to increase physical activity level in sedentary people. Materials and Methods: In the present study primary health care patients with lifestyle related diseases such as diabetes mellitus type 2, hypertension, lipid disturbance, overweight/obesity, mental ill-health were invited to a Lifestyle Reception to participate in an intervention study of FaR®. They were offered motivational interview, aerobic capacity test, and were provided with a written FaR® and also followed-up after 3-4 months. Results: There were 134 persons who participated at base-line. Walk was the most frequently prescribed activity. Eighty women and 40 men (mean age 55 years) participated at the follow-up. Compliance was good and 89 of the followed-up persons (74%) reported that they performed their prescribed physical activity. The number of days that the participants were physically active a normal week increased from 2.6 days/week at base-line to 4.5 days/week at the follow-up (p<.001). Mean heart rate decreased from 121 to 112 (p<.001) and mean subjective efforts estimated by Borg's RPE-scale® decreased from 13.4 to 11.4 (p<.001) at the aerobic follow-up test. There was also a mean body weight decrease from 92.4 kg to 90.8 kg (p<.001). Conclusion: The study shows that physically inactive persons may increase their physical activity level by FaR®, adequate support, and follow-up.

BACKGROUND

An unhealthy lifestyle means increased risk for illness and disease, and also increased medical costs. The beneficial effect of physical activity on several chronic diseases such as diabetes mellitus type II, high blood pressure and musculoskeletal disorders is obvious (1). Physical activity on referral (FaR®) is a well-known concept in Östergötland County Council, Sweden for increasing physical activity level in sedentary patients (2). The FaR® model was introduced in 2001 by the Swedish National Institute of Public Health (3). The referred patients may suffer from several diseases such as diabetes mellitus type 2, hypertension, lipid disturbance, overweight/obesity, mental ill-health, and they are often physically inactive. A Lifestyle Reception was established at Vadstena Primary Health Care Centre (PHCC) at the beginning of the 21st century to which patients are referred by registered health care professionals employed at the PHCC. Such high risk patients are offered motivational interviews (MI), where the advantages/disadvantages of maintaining/changing life-style habits are thoroughly discussed, to motivate the patient to make his/her own choice for eventual behavioural change (4). Health profile assessment includes on the one hand a questionnaire concerning questions about different activities performed in leisure-time; frequency of physical activity; eating, smoking and drinking habits; medication; physical symptoms; perceived mental stress; perceived loneliness; perceived health, and on the other aerobic capacity test. In addition body weight and height are measured and self-estimated health is stated by the Euro-Qol visual analogue scale (www.euroqol.org). The patients are welcome to different group activities at the PHCC for instance Risk factor group for patients with overweight, high blood pressure and/or diabetes type II; Rehabilitation group for people on the sick list; "Feel-good" group for improved muscle strength and balance performance tailored in particular for the elderly; and also Qi-Gong group for relaxation, improved coordination and balance performance. Since the year 2007 Vadstena PHCC has the aim to prescribe at least 50 FaR® each year.

The Swedish public health recommendation of at least 30 min physical activity on a moderate intensity level, for

instance brisk walks every day, is based on international recommendations (5, 6). The Swedish Council on Technology Assessment in Health Care emphasised that there is lack of knowledge concerning long-term effects of different measurements for the promotion of physical activity. More studies on physical activity promotion in primary care have been demanded (7, 8). Some recent studies investigated if the prescription of FaR® may result in changed self-reported physical activity levels by follow-up interview or self-administered questionnaire after 3, 6 and/or 12 months (3, 9). Low compliance is a common problem amongst patients who are prescribed physical activity. Behavioural change extends over a long-term period and motivation to lifestyle change could be enhanced by MI and adequate feedback, when meeting patients in the clinic (4). In the present study of FaR® there was an appointment with a nurse at the Life-style Reception and different follow-up measures.

Aim/objectives: Do sedentary primary health care patients increase their physical activity level after prescribed physical activity on referral (FaR®), motivational interview, and follow-up?

MATERIALS AND METHODS

An intervention study of FaR® was performed at the Lifestyle Reception at Vadstena PHCC in 2007 (Vadstena population of approximately 7 500). A specific FaR® form, developed by the Östergötland County Council, was used for the prescription of physical activity. The FaR® scheme is a single-paged prescription form, which includes patient characteristics such as gender, age, perceived health, frequency of performed physical activity level for at least 30 minutes on a moderate intensity for a normal week and also for the last week, reasons for the prescription (nine different alternatives are possible), preferred selected physical activity and also duration, frequency and intensity of planned performed activity (3, 10). Those patients who had a diagnosis associated to insufficient physical activity were referred to the Lifestyle Reception at Vadstena PHCC and were contacted by telephone according to ordinary routine and had an appointment reserved with the nurse at the Reception. The preliminary participants were introduced to the follow-up study and were informed that the data should be confidentially handled. Those interested in participating gave verbal informed consent to the study. MI (10, 11) was conducted by the nurse and the FaR® form was completed. Aerobic capacity was tested at base-line and at the 3-4 month follow-up by a computerized exercise bicycle or by a modified six-minute walk test (12). The walk test was chosen for those who were taking drugs, which might influence heart rate and blood pressure, and for those who were not able to pedal the bicycle due to joint disorders. Heart rate was followed and documented each minute of the aerobic test. Subjective effort was estimated according to Borg's RPE-scale®, which is a valid method to assess perceived exertion based on a numeric scale with the ratings between 6 and 20 (13). The participants recorded their physical activity in a diary from the start of the project to the follow-up visit after 3-4 months. Load, speed and inclination were constant for each participant at the follow-up visit. Body weight (kg) was measured on a digital balance scale and height (cm) with a calibrated stadiometer, with the subjects in light indoor clothes and without shoes. BMI was calculated as weight/height squared (kg/m^2).

STATISTICAL ANALYSIS

The Student's t-test was used to analyze data. Group results were reported as mean (M), standard deviation (SD) and range. A p-value <0.05 was considered significant. The statistical analyses were performed using the SPSS statistical software (release 17.0).

RESULTS

PARTICIPANTS

There were 134 persons (91 women and 43 men) who participated at base-line. At the follow-up 120 persons (80 women i.e. 67% and 40 men i.e. 33%) participated. The participants were born between 1926 and 1992. Mean age was 55 years (range 15-81 years). Eleven women and 3 men dropped-out at the follow-up.

A number of reasons/diagnoses were cited for the patient referral. The following reasons were most frequently cited; overweight that is BMI>25 (n=95), musculoskeletal disorders (n=67), hypertension (n=54), hyperlipidemia (n=32), mental ill-health (n=25), diabetes mellitus type 2 (n=18), sedentary (n=18), other reasons (n=15), and pulmonary disease (n=1).

At base-line the participants' reasons for wanting to increase their physical activity levels were body weight reduction 59.7% (n=80), improved physical fitness 12.7% (n=17), and also improved general health and muscular strength 27.6% (n=37).

PHYSICAL ACTIVITY

Physicians 41.8% (n=56) and physiotherapists 35.1% (n=47) were professionals that most often referred patients to the nurse at the Lifestyle Reception. Other categories were nurses 18% (n=24) and psychosocial team members 5.2% (n=7).

Increased strength and aerobic capacity (n=38) were the most common aims of the prescribed physical activity on the FaR®. Other aims were improved flexibility and balance performance.

Several physical activities were suggested to increase the physical activity level. Walking (n=112 i.e. 83.6%), cycling (n=7), swimming (n=6), and Nordic walking (walking with poles) (n=5) were the most frequently prescribed activities.

DURATION

The duration of the prescribed physical activity was on average 35.7 min/day (range 20-60) (SD=9.1) for 4.6 days/week (range 1-7) (SD=1.7).

COMPLIANCE

Self-reported compliance concerning prescribed physical activity was good at the follow-up. Eight-nine persons (74%) reported that they followed the specific prescription, 7 persons (6%) were physically active in another activity than the prescribed, while 24 persons (20%) did not follow the prescription.

The number of days for a normal week that the participants (n=84) reported physical activity increased from 2.6 days/week (SD=2.6) at base-line to 4.5 days/week (SD=1.9) at the follow-up ($p<0.001$). The participants also reported frequency of physical activity level for the last week, which increased from 2.4 days/week (SD=2.7) at base-line to 4.1 days/week (SD=2.1) at the follow-up ($p<0.001$).

PERCEIVED HEALTH

Self-reported perceived health improved amongst the participants (n=103) (Table I).

Figure 1

Table I. Proportions of participants (n=103) reporting perceived health.

	Excellent	Very good	Good	Rather good	Bad
Baseline	3%	16%	40%	31%	10%
Follow-up	5%	28%	49%	17%	1%

AEROBIC CAPACITY TESTS AND BODY WEIGHT

At base-line 86 persons participated in the six-minute walk test and 25 persons in the bicycle test. The mean speed on the walk test was 4.1 km/h (range 0.8-7.1) and the mean angle of inclination of the running band was 2.25 (range 0-6). The mean load on the exercise bicycle corresponded to 84.1 watt (range 50-100). At the follow-up 63 participants were in the walk test and 16 in the bicycle test. Mean heart rate decreased from 121 (SD=18) to 112 (SD=16) ($p<0.001$). Mean subjective efforts estimated by Borg's RPE-scale® decreased from 13.4 (SD=1.6) to 11.4 (SD=2.1) ($p<0.001$).

Mean body weight (n=85) decreased from 92.4 kg (SD=20.0) at base-line to 90.8 kg (SD=18.5) at the follow-up ($p<0.001$).

DISCUSSION

The importance of performing physical activity for maintaining health is no longer disputed. Sedentary patients with musculoskeletal diagnosis and/or metabolic disorders are important groups for the primary health care to focus on (1, 9, 10). The present intervention study indicated that self-reported physical activity increased in sedentary persons by means of FaR® prescription, MI, diary, and follow-up by aerobic capacity test. This is in agreement with other studies, which showed that physical activity level can be enhanced in primary health care patients by prescription of FaR® (3, 9, 14). Besides the increased physical activity, aerobic capacity and perceived health were improved at the 3-4 month follow-up. Walk and cycle tests may be used on the one hand to get an idea of the patient's aerobic capacity and on the other to control the training intensity and to enhance the motivation at follow-ups, and thus support the effect of training (10, 12). The participation rate was good in the study and only 10.5% dropped-out at the follow-up. MI is an important method to achieve behavioural change. A key concept in the MI is the reduction of ambivalence that is associated to change, to encourage patients to choose a healthier life-style (4, 10, 11). A number of patients do not manage to exercise on their own, while other patients are well-motivated and take responsibility for their own health. Some sedentary patients may need more instructions and follow-ups for increasing and maintaining physical activity levels than others. Thus, it is important to offer support and advice, so that they will become compliant to the prescribed physical activity. In addition to conversation about physical activity habits it is important to include eating habits, as an

insufficient diet deteriorates the effect of physical activity (10).

Physical activity may be assessed by the use of a questionnaire and also by using special equipment such as pedometer (15). Valid measurements that may reflect a real change in physical activity level are lacking. There are also insufficient long-term follow-ups concerning the effect of training on health on the long view (7). A physical activity referral may not be sufficient to achieve a long-term change of physical activity habits (14). In the large study of FaR® in routine primary health care patients by Leijon et al. nearly one-third (29%) of the followed-up patients (n=5 243) reported that they were still physically inactive at the 3-month follow-up by telephone interview, postal questionnaire or interview at the PHCC (9). Though, our study was smaller the self-reported compliance was good amongst the participants and only 20% reported that they were not compliant at all to the FaR®. Improved aerobic capacity and decreased subjective efforts confirmed the reported compliance in the present study. Thus, it seems that a relatively good compliance may be attained in patients, if both a FaR® prescription, MI, and follow-up measurements such as the use of a diary and aerobic capacity are included.

The number of elderly persons is rapidly increasing in modern society and the elderly often need supervision for adequate physical activity. Professionally balance training, back exercise training, strength training, and walks can improve balance performance, bone health, and also health-related quality of life in the elderly (16-21). The development of osteoporosis and fractures in the population may be slowed down by increased physical activity (22, 23).

Physical activity on referral is one of several methods for promoting physical activity in the population and together with other community-based interventions the effect will probably be enhanced (24).

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