

# Advising people to take more exercise is ineffective: a randomized controlled trial of physical activity promotion in primary care

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**Background** Over the last 10 years 'exercise referral schemes' have been popular even though the evidence for effectiveness of any one-to-one intervention in primary care is deficient. We report the results of a primary care based one-to-one intervention that compared the effect of two communication styles with a no-intervention control group on self-reported physical activity at 12 months.

**Methods** In all, 1658 middle-aged men and women were randomly assigned to 30 minutes of brief negotiation or direct advice in primary care or a no-intervention control group. The main outcome was self-reported physical activity at 12 months. Secondary outcome measures included change in blood pressure and body mass index.

**Results** Intention-to-treat analysis revealed no significant differences in physical activity between groups. Brief negotiation group participants who completed the study increased their physical activity significantly more than controls. There was no change in body mass index in any group. The brief negotiation group produced a greater reduction in diastolic blood pressure than direct advice.

**Conclusion** If patients whose health may benefit from increased physical activity seek advice in primary care, 20–30 minutes of brief negotiation to increase physical activity is probably more effective than similar attempts to persuade or coerce. However, blanket physical activity promotion in primary care is not effective. The most effective way of increasing physical activity in primary care has yet to be determined.

**Keywords** Exercise, primary health care, intervention studies, physician-patient relations

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Approximately three-fifths of men and three-quarters of women in England are not active at recommended levels.<sup>1</sup> A sedentary lifestyle is associated with increased risk of coronary heart disease, type II diabetes, hypertension and colon cancer,<sup>2</sup> and the Department of Health recommends 30 minutes of moderate physical activity at least 5 days/week or three 20-minute periods of vigorous activity/week.<sup>3</sup> Most UK-based interventions aimed at increasing individual activity have been based in primary care,<sup>4,5</sup> but there is little evidence that such interventions are effective.<sup>6,7</sup> Despite this, the government continues to promote such initiatives.<sup>8</sup>

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In the UK, many of the programmes designed to increase physical activity require attendance at a facility and participation in structured physical activity.<sup>6,7</sup> Two systematic reviews of physical activity trials have reported that interventions that encourage walking and do not require attendance at an exercise facility are most likely to lead to sustainable changes in physical activity. On-going support increases the chances of people being able to maintain a more active lifestyle.<sup>4,5</sup>

Giving brief advice to achieve behaviour change in primary care settings is common despite concerns about its effectiveness.<sup>9</sup> There have been calls to explore more client centred methods of helping patients with behaviour change and there is some evidence that this can be more effective.<sup>10,11</sup> Patients in primary care have a preference for a patient centred approach to consultations.<sup>12</sup>

We report the results of a randomized controlled trial evaluating the effectiveness of two primary care based, face-to-face, interventions for promoting physical activity.

## Methods

### Participants

Participants were included in the study if they were aged 45–64 years, registered with two medical centres in Wellingborough, did not undertake regular exercise to improve/maintain their health and/or fitness and had done less than four occasions of moderate intensity physical activity in the last 4 weeks. They were excluded from the study if they reported a long-standing illness, disability or infirmity and/or were permanently sick or disabled and not able to work. Orthopaedic and arthritis conditions ( $n = 79$ ) and cardiovascular diseases ( $n = 64$ ) were the commonest reasons for medical exclusions.

### Recruitment

Recruitment took place between February 1996 and May 1997. All 45- to 64-year-old patients ( $n = 5797$ ) were sent a questionnaire including items on drinking, smoking, eating, physical activity and readiness to change (increase) activity, as well as demographic information (a copy can be obtained from the corresponding author). Readiness to change was assessed using nine questions, developed for this study, with answers on a 5-point Likert scale. The nine items combined to form a measure of readiness to change physical activity ranging from 0 to 36 (0 = least ready). Participants were classified as 'Active' or 'Insufficiently Active' on their responses to two questions in the baseline questionnaire (referred to above). Non-responders (after two mailings), and those classified as 'Active' were not contacted further.

### Randomization

Subjects were randomized by IW to one of three arms: (1) Direct Advice, (2) Brief Negotiation or (3) Control by household with each monthly batch forming a single permuted block. Participants in the direct advice (DA) or brief negotiation (BN) arms were invited, by post, to a health check with a health promotion specialist (CF). Control subjects were invited to the same health check 11 months later, when intervention participants were invited for a follow-up health check. Randomization of intervention arms were sent to CF in sealed opaque envelopes. At the health check participants were asked to consent to a randomized trial of the effect of health professionals' communication style on patient's health behaviour, namely physical activity. If consent was given, the envelope was opened and the appropriate intervention carried out. Those people who did not consent received a health check without activity advice, and no further contact was made.

### Interventions

Interventions lasted 30 minutes, including measurement of blood pressure and weight, and were carried out by CF. All intervention subjects were telephoned at set intervals following the health check (2, 6, 10, 18, 26 and 34 weeks). The DA participants received more advice about the importance of a physically active lifestyle while BN participants were asked to report on the positive and negative outcomes of attempts to become more active. Each call was intended to last no more than 3 minutes. All face-to-face interventions were audiotaped to assess adherence to the study protocol.

#### *Brief negotiation*

Brief negotiation was based on Motivational Interviewing,<sup>13</sup> a client-centred approach to negotiating behaviour change. Its

central purpose is the examination and resolution of ambivalence, which it sees as a key obstacle to change. A brief version of motivational interviewing was adapted for use in this trial based on a method designed for time limited consultations in medical settings.<sup>14</sup> A menu of six strategies was developed for the 30-minute consultation. Each strategy is suitable for a different level of motivation or readiness. They are:

- 1 Feedback about current physical activity versus recommendations.
- 2 Assessment of motivation and confidence for increasing physical activity.
- 3 Weighing up the pros and cons of increased physical activity.
- 4 Information exchange.
- 5 Exploring concerns about taking up regular physical activity.
- 6 Helping with decision making.

Consultations worked through the strategies at a pace dictated by the subject. It was not the aim of every consultation to take clients from strategy 1 through to 6. Less motivated participants might not progress beyond strategy 3 but would spend more time on it. More detailed descriptions of the strategies can be found elsewhere.<sup>14</sup> The method is characterized by absence of advice about the need to increase activity.

#### *Direct advice giving*

Giving advice could be regarded as 'usual care' in primary care. The content was based on the Health Belief Model.<sup>15</sup> Participants were told about the benefits of activity and the risks associated with low activity. They were advised to work towards 30 minutes of brisk walking on at least 5 days per week, or encouraged to other similar activity if preferred.

The audiotapes used for quality control were made specifically for the study and lasted exactly 30 minutes. This ensured that all participants, irrespective of randomized group, received face-to-face interventions that were very similar in duration. A random selection of tapes were listened to ensure that the last part of the tape contained dialogue indicating the end of the consultation.

### Follow-up

Intervention groups were invited for a follow-up health check after 11 months, when control participants were offered a first health check. Blood pressure and bodyweight measures were collected for control participants and repeated for intervention groups. Following the check, participants were given a 28-day physical activity logbook, which they were asked to complete and return.

### Outcome measures

Self-reported physical activity was assessed from the logbook and was calculated as kilocalories per kilogram bodyweight per week (kcal/kg/week). The logbook contained 36 activities including gardening, housework, DIY, walking, cycling and various sports. It was based on a modified version of the Minnesota Leisure Time Activity Questionnaire.<sup>16</sup> An energy cost was assigned to each activity using published tables,<sup>17</sup> and was multiplied by the duration and divided by 4 to compute kcal/kg/week. A subset of 40 subjects were asked to wear Tri-Trac motion sensors<sup>18</sup> to validate self-reported activity. Weight was measured using a doctor's scale with subjects wearing indoor clothing

and no shoes. The average of two blood pressures taken with a Hawksley random zero mercury sphygmomanometer after 5 minutes sitting was recorded.

### Ethics

Kettering Ethical/Research Committee approved the study in January 1996.

### Sample size

A sample size of approximately 260 per intervention group (allowing for a 10% loss to follow-up) was needed for 76% power to detect a difference of 5 kcal/kg/week between the two intervention groups, and 87% power to detect a difference of 5 kcal/kg/week between the combined intervention groups (BN + DA) and the control group.

### Statistical methods

The distribution of energy expenditure was skewed, and was transformed by adding one kcal/kg/week and taking the logarithm. Adding one was necessary because some subjects reported zero baseline energy expenditure.

Comparisons of intervention versus control were based on all randomized subjects (target population 1). Comparisons of BN versus DA were based on all subjects who consented at the first health check (target population 2), since allocation was concealed until then. Analyses were by intention-to-treat in these populations, except where otherwise stated. Allowing for dependence between participants in the same household had little effect on standard errors and was ignored.

Energy expenditure at follow-up was missing in 68% of intervention subjects and 43% of controls. All groups showed a large increase in energy expenditure between baseline and follow-up so it was inappropriate to carry baseline observations forward when data were missing. Instead we imputed follow-up energy expenditure using a regression model constructed by a stepwise procedure. The model was fitted using control subjects only but was used for imputing all groups. Imputing predicted values in this way underestimates their variance, so we corrected regression standard errors by an extension of Little and Rubin.<sup>19</sup> Missing blood pressure and/or weight and height measures at follow up were assigned the baseline value. These outcomes were not analysed for Intervention versus Control because they were not collected in the control group.

Regression models for each outcome were constructed by a stepwise procedure using subjects in all three arms and the baseline variables listed in Table 1. Treatment effects were estimated by entering randomised allocation in the selected model.

All analyses were carried out using STATA 5.<sup>20</sup>

## Results

### Recruitment

All 1658 eligible participants were randomized. The progress of subjects through the study is shown in Figure 1. There were no major differences between groups in selected baseline characteristics (Table 1).

In all, 354 (64%) of BN participants and 343 (63%) of DA participants attended for health check 1. A total of 112 intervention subjects did not consent, so 585 participants received an intervention (302 BN, 283 DA). In logistic regression analysis

**Table 1** Selected baseline characteristics by randomised group<sup>a</sup>

Characteristic	Brief negotiation N	Direct advice N	Control N
	551	544	563
Age (years)	54.6 (5.5)	55.0 (5.9)	55.0 (5.7)
Men %	46.8	49.8	50.3
Married/living as married %	81.1	76.8	78.3
<b>Ethnicity</b>			
Non-white %	8.3	10.8	9.1
<b>Education %</b>			
Higher qualification	11.8	10.1	9.1
A level or equivalent	4.4	3.9	5.9
O level or equivalent	13.8	10.8	14.2
Other	20.0	23.2	22.2
None	44.3	46.3	43.9
<b>Employment status %</b>			
Full/part time	74.2	73.2	73.0
Retired	9.3	11.6	10.8
Unemployed	3.1	2.2	2.7
Others	13.4	13.1	13.3
<b>Car ownership %</b>	87.8	85.3	84.5
<b>Home ownership %</b>			
Owned/mortgaged	80.2	78.5	81.2
<b>Smokers %</b>	22.3	26.3	27.9
<b>Energy expenditure<sup>b</sup> (kcal/kg/week)</b>	8.7 (12.2)	9.2 (12.5)	9.1 (11.9)
<b>Alcohol (units per week)</b>	5.9 (10.0)	7.9 (12.5)	7.1 (13.5)
<b>Physical health %</b>			
Permanently sick/disabled	6.2	4.8	4.4
Long standing illness	33.4	33.6	34.5
No physical limitations	59.7	60.8	60.2
<b>General health %</b>			
Good	69.7	72.1	72.1
Fair	26.0	24.6	24.9
Bad	2.9	2.6	2.4
<b>Readiness to change</b>	20.0 (6.9)	19.6 (6.8)	19.8 (6.7)

<sup>a</sup> Values are means (Standard Deviation) unless stated otherwise.

<sup>b</sup> Geometric mean (Standard Deviation) on the untransformed scale.

only two variables were significant independent predictors of attendance at health check 1: readiness to change and alcohol intake. Participants in the top quintile were 1.74 (95% CI: 1.13, 2.69) times more likely to attend than those in the lowest quintile of readiness to change. Each unit of alcohol consumed per week reduced the likelihood of attending by 2% (OR = 0.98, 95% CI: 0.97, 1.00).

Overall, 202 BN and 209 DA participants attended the follow-up health check along with 400 control subjects. The final logbook was completed by 177, 178 and 319 participants, respectively. Those who were permanently sick or disabled were less likely to complete the final logbook than those who were not (adjusted OR = 0.40, 95% CI: 0.18, 0.89), and those who undertook less than one 30-minute occasion of physical activity per week at baseline were less likely to complete the final logbook compared to those doing at least that amount (OR = 0.29, 95% CI: 0.16, 0.53).

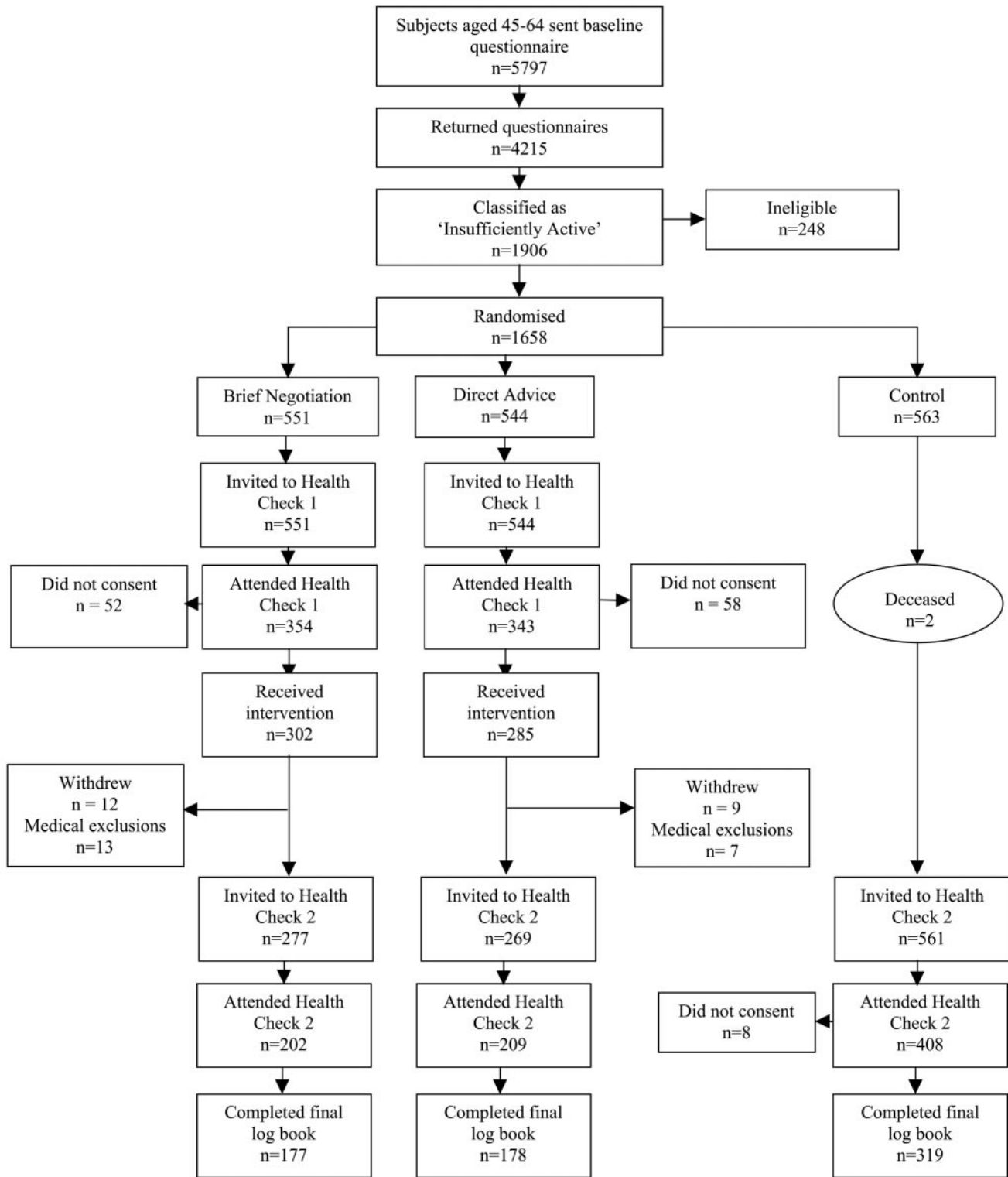
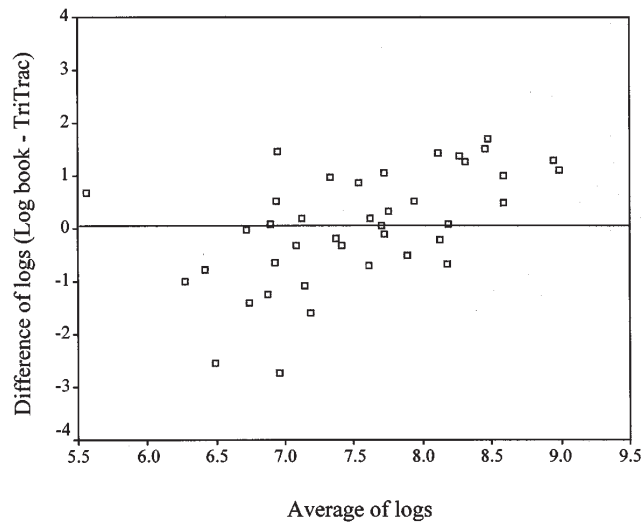


Figure 1 Flow of subjects through study

A limits of agreement analysis between the logged values of self-reported and TriTrac measures of energy expenditure was carried out. The mean difference was 0.05 on the log scale (95% CI : -0.29, 0.39). The differences were correlated with

the average of the two measures ( $r = 0.54, P < 0.001$ ) suggesting systematic bias. The mean energy expenditure assessed by the logbook had greater variability than TriTrac (Logbook SD 1.2; TriTrac SD 0.7 on the log scale). The mean differences



**Figure 2** Comparison of the average and differences in energy expenditure between self report and TriTrac ( $n = 40$ )

were not significantly different between randomized groups ( $P = 0.6$ ).

### Telephone follow-up

The mean number of successful calls was 3 for each group and the mean total duration of all 6 attempted calls was 7.6 minutes in the brief negotiation group and 7.0 minutes in the direct advice group.

### Main outcomes

#### Intervention versus control

Both groups significantly increased physical activity with no significant differences between groups (Table 2). The intervention

group showed a 4% (95% CI: -5%, 13%) greater increase in energy expenditure than the control group (adjusting for baseline values), equivalent to approximately 6 minutes of brisk walking per week for a 70-kg person.

#### Brief negotiation versus direct advice

Energy expenditure increased in both the intervention groups (target population 2), and increased more (but not significantly so) in the BN group (Table 3). The net increase in the BN group of 10% (95% CI: -4%, 26%, adjusting for baseline values) is equivalent to approximately 14 minutes of brisk walking per week for a 70-kg person.

Systolic blood pressure reduced in both groups with no significant difference between groups. Diastolic blood pressure reduced significantly more in the BN group than the DA group (Table 3).

When the analysis is confined to participants who completed the final logbook, the BN group increased activity significantly more than the control group whereas the DA group did not. The net difference between control and BN is equivalent to approximately 37 minutes of brisk walking for a 70-kg person (Table 4). However, this analysis is potentially biased because it excludes non-completers.

## Discussion

In this study we have shown that people advised to increase their physical activity do not do so any more than a no-advice control group. There were some differences between the two methods of advice giving, in that the BN group reported 10% more activity (about 3 kcal/kg/week) than the DA group, but the difference was not significant (95% CI: -4%, 26%). Unfortunately, the power of the study was reduced by the large loss to follow-up. In an analysis limited to participants who completed the study, those in the BN group increased their activity by 24% more than the control group ( $P < 0.01$ ). Such

**Table 2** Mean per cent changes in physical activity at 12-month follow-up in all randomized subjects

Measure	Intervention n = 1095 Mean change % (95% CI)	Control n = 561 Mean change % (95% CI)	Between-group difference % (95% CI) <sup>a</sup>	P-value
Energy expenditure kcal/kg per week	124 (110, 137)	113 (95, 133)	3.7 (-4.7, 12.5)	0.39

<sup>a</sup> Difference in weekly energy expenditure, expressed as a percentage of energy expenditure at 12-month follow-up, and adjusted for baseline energy expenditure, age, gender, health status, employment, education and home ownership.

**Table 3** Mean changes in physical activity, body mass index (BMI) and blood pressure at 12-month follow-up by intervention received

Measure	Brief Negotiation n = 302 Mean change (95% CI)	Direct Advice n = 285 Mean change (95% CI)	Between-group difference (95% CI)	P-value
Energy expenditure kcal/kg per week %	148 (117, 183)	98 (75, 125)	10.2 (-3.9, 26.1) <sup>a</sup>	0.16
BMI	0.0 (-0.2, 0.2)	0.01 (-0.2, 0.2)	-0.03 (-0.36, 0.30) <sup>b</sup>	0.86
Systolic BP, mmHg	-3.2 (-4.6, 1.7)	-2.9 (-4.4, 1.4)	-0.3 (-2.5, 1.9) <sup>c</sup>	0.81
Diastolic BP, mmHg	-2.5 (-3.5, -1.5)	-0.2 (-1.2, 0.7)	-2.3 (-3.8, -0.8) <sup>d</sup>	<0.01

<sup>a</sup> Difference in weekly energy expenditure, expressed as a percentage of energy expenditure at 12-month follow-up, and adjusted for baseline energy expenditure, age, gender, health status, employment, education and home ownership.

<sup>b</sup> Adjusted for baseline BMI (weight [kg]/ht<sup>2</sup> [m]), age and energy expenditure.

<sup>c</sup> Adjusted for baseline weight, blood pressure, smoking, home ownership and age.

<sup>d</sup> Adjusted for baseline blood pressure.

**Table 4** Mean changes in physical activity at 12-month follow-up by randomization in study completers

Measure	Brief Negotiation n = 177	Direct Advice n = 178	Control n = 319
	Mean change % (95% CI)	Mean change % (95% CI)	Mean change % (95% CI)
Energy expenditure kcal/kg per week %	142 (10, 191)	82 (55, 114)	109 (84, 137)
Difference between intervention group and control <sup>a</sup>	24 (7, 44)	4 (-12, 21)	
P-value for difference between intervention group and control	<0.01	0.61	

<sup>a</sup> Change in weekly energy expenditure, expressed as a percentage of energy expenditure at 12-month follow-up, and adjusted for baseline energy expenditure, age, gender, health status, employment, education and home ownership.

analyses are open to bias, in that those who completed the study may have increased their activity more than those who failed to complete the study. However, this comparison is between two groups of participants who completed the study, so the difference is unlikely to be explained by this bias.

Direct advice is likely to be viewed as less 'client centred' than negotiation, and client-centred consultations are preferred by primary care patients and are associated with better health outcomes.<sup>12,21</sup> In the brief negotiation group, participants were asked to think out loud about the perceived personal benefits and costs of increased physical activity and were encouraged to think through the importance of physical activity in their lives. Obstacles to change were acknowledged by the practitioner and any solutions to overcoming them generated by the participant. In this approach the participant expends most of their energy considering the prospect of being more active while those being advised to change exert considerable effort in generating reasons why they either cannot or do not need to be more active. The limited intervention received may have been insufficient in an environment that is hostile to becoming physically active. Our results encourage further exploration of whether more sessions of brief negotiation, which encourage problem solving in a client-centred way, might assist people to adopt a more physically active lifestyle. A recent study which included two follow-up sessions with an exercise specialist reported significantly greater changes in physical activity in intervention participants compared to controls at one year.<sup>22</sup> The best method for providing this follow-up is unclear. Our experience was that the telephone resulted in little additional contact, despite the time and place of the telephone calls being negotiated with each individual. In the US, telephone follow-up is popular and has been shown to be effective in achieving longer term exercise adherence.<sup>23,24</sup>

The increase in energy expenditure in control participants was greater than anticipated, especially when population trends show an increase in people who are insufficiently active.<sup>1</sup> There are several possible explanations for this increased activity. Baseline measures were obtained by recall of activity whereas follow-up measures were obtained from completion of a 28-day prospective logbook, which may have either encouraged physical activity, or led to more activity being reported. However, three recent studies have reported similar observations. In a study in Newcastle,<sup>25</sup> 23% of control participants increased their physical activity after one year, while in a trial in London<sup>26</sup> 13% of the control group increased their exercise. In an Australian study 31% of non-active control participants were classified as 'now active' at one-year follow-up.<sup>27</sup> Increased physical activity in no-intervention controls may demonstrate regression to the

mean. Participants were selected on the basis of low reported activity over the last 4 weeks. A prospective study of 3451 adults found that 38% of sedentary men and 44% of sedentary women increased their activity over a 12-month period.<sup>28</sup> One key physical activity promotion trial did not include a no-intervention control group but reported successful interventions.<sup>29</sup> Such apparent successes may simply reflect normal individual variation in activity. In using a no-intervention control group, this trial may be providing a more accurate estimate of the effectiveness of one-to-one physical activity interventions.

In this trial participants were randomized at the point of invitation rather than after a fitness test and consent. Randomizing participants after stringent inclusion criteria, and after they have attended for screening, can result in recruiting a selected group of motivated participants, which can lead to exaggerated results.<sup>30</sup> We effectively used a Zelen<sup>31</sup> recruitment design to improve external validity by evaluating the interventions with participants who were not specially selected to be motivated. The trial achieved a relatively high recruitment rate compared to other primary care physical activity interventions in England, but the main limitation is the large loss to follow-up, which is often a disadvantage of the Zelen design.<sup>31</sup> Our main analyses were by 'intention to treat', and this may also explain in part why our findings are less encouraging than that found in another trial of physical activity promotion.<sup>32</sup>

The relatively negative findings of this trial are consistent with other primary care based, primary prevention, physical activity trials.<sup>25,27,33</sup> Only two primary care based physical activity interventions have reported significant changes in activity for a follow-up period greater than 6 months.<sup>22,26</sup> Adopting a physically active lifestyle is a difficult and complex challenge for people, especially when they are confronted with an increasingly automated environment. Simply advising them to become more active assumes that their lack of physical activity results from inadequate knowledge. It fails to acknowledge the competing priorities in people's lives and the many perceived and actual obstacles to change. It is no real surprise then that simple advice to become more active is not effective.

While it is acknowledged that environmental factors are likely to be important determinants of people's activity levels, there is very little research evidence to guide future interventions.<sup>34</sup> Ecological models have been described to help the development of future research.<sup>34</sup>

## Conclusion

Despite government endorsement of the primary care based exercise referral model<sup>8</sup> there is no evidence of effectiveness.<sup>7</sup>

Our findings suggest that if patients whose health may benefit from increased physical activity seek advice in primary care, 20–30 minutes of brief negotiation to increase physical activity is probably more effective than similar attempts to persuade or coerce. However, blanket physical activity promotion in primary care is not effective. The most effective way of increasing physical activity in primary care has yet to be determined.

#### KEY MESSAGES

- Multiple sessions of activity advice may only lead to resistance and irritation from participants.
- Until supportive evidence is available, there is no rationale to direct resources towards primary care, primary prevention, physical activity interventions.
- Future research should examine effects of more frequent sessions of brief negotiation, with more support.

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## Commentary: Physical activity promotion in primary care

P Puska

A recent World Health Organization (WHO) strategy discusses the global control of the non-communicable disease (NCD) epidemics, which are currently responsible for some 60% of deaths worldwide.<sup>1,2</sup> The paper recognizes the improvements in treatment but puts heavy emphasis on prevention. It points out that there are a few common factors behind several of the major NCDs; these lifestyle-related factors should be the central target for global efforts in NCD prevention. Physical activity is one of the factors, diet and tobacco use being the two others.

Physical activity is important in the prevention of diabetes, cardiovascular diseases, osteoporosis and in control of obesity. At the same time populations not only in Britain and the industrialized countries, but worldwide, have become more and more sedentary due to changes in work, in transportation and in watching TV.

How can we encourage patients, individuals and populations to be more physically active, is a key question in modern public health. Different kinds of studies, like the present one are welcome. This study is concerned with the role and potential of primary health care in physical activity interventions.<sup>3</sup>

The study was a well-planned randomized trial, which is a fashionable way to obtain evidence on intervention effectiveness. The authors should, indeed, be congratulated for good work. However, at the same time the study shows well the limitations of a 'clean single intervention randomized trial' in assessing the potential of lifestyle interventions.

There are two main problems. First, physical activity and other health-related lifestyles are usually deeply enrooted in the community, in its social and even physical environment, and individuals generally tend to continue their established habits. Thus, changing these habits by a restricted individual-centred intervention will even at its best have very limited results. Thus this kind of study shows nothing about the potential of a more

comprehensive public health intervention, in which the health service interventions are combined with possible broad involvement of the community in including some environmental modifications.<sup>4</sup>

Second, the experimental designs put severe limitations on studying the actual potential of physician's advice and brief interventions. In this particular study volunteers were recruited by questionnaire. They were randomized, and the intervention was delivered by health promotion specialists. The baseline questionnaire and the fact that everybody participated in the study might have had an impact (the control group also had an increase greater than expected) over the potential of the comparison. There may also be some spill-over effects in the community. Above all, this set up is far from the situation where a concerned general practitioner—knowing his/her patient—gives carefully individualized advice and intervention to the patient and agrees about follow-up.

Thus, in spite of its obvious merits, the study unfortunately adds rather little to our understanding of the usefulness of risk behaviour counselling in primary health care. We know that the impact of simple counselling even at its best is limited but considering the small costs, it may still be very cost effective. Work in primary health care should be combined with more comprehensive activities in the community—and ultimately with national policies.<sup>5</sup> This does not mean that studies to help develop feasible and useful intervention modalities in primary health care would not be needed. Indeed, a study finding that interactive counselling is more useful than simple giving of information and advice is a useful one.

The study also relates to the broader aspects of evidence in health promotion. It is common place, and rightly so, to say that we need more evidence on the effectiveness of health promotion. But we should critically ask what kind of evidence are we looking for and put the issue in broader public health perspective. Heavy emphasis on the randomized trial leads to overemphasis of simple intervention modalities and undermines the obvious role of broader complex interventions, involving

community-based comprehensive programmes, national policies, etc. This fact, combined with the financial resources of the pharmaceutical industry to pursue randomized clinical trials tends to lead to overemphasis on drug interventions—even if development of effective drugs is most welcome. As some have put it ‘part of the evidence gets over emphasized, while much evidence gets little attention’.

This problem is particularly pertinent to the developing world where a great increase in the chronic disease epidemics is currently taking place.<sup>6</sup> Due to major economic constraints, the public health potential in fighting those epidemics is in primary prevention, and in counteracting the negative trends in especially physical activity, dietary habits and tobacco use. In doing so comprehensive strategies combining public policy with broad health promotion measures involving counselling by primary health care are undoubtedly needed.

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