

Physical Activity Counselling by Healthcare Professionals in Nova Scotia:

The Need for a Consistent Message

A Final Report

Laurene Rehman, Ph.D.¹, Angie Thompson, Ph.D.², Phil Campagna, Ph.D.¹, Tanara Pickard¹, Terri-Lyn Bennett¹, and Aldona Perks²

September 2003

The need for this project was identified in the Active Kids Healthy Kids strategy which is coordinated by the Sport and Recreation Division of the Office of Health Promotion. The project, “Physical Activity Counselling by Healthcare Professionals in Nova Scotia”, and preparation of this report were sponsored by the Nova Scotia Alliance for Healthy Eating and Physical Activity and funded by the Heart and Stroke Foundation of Nova Scotia and Cancer Care Nova Scotia.

¹School of Health and Human Performance, Dalhousie University

²Department of Human Kinetics, St. Francis Xavier University

Table of Contents

List of Tables.....	iii
List of Figures	iv
Acknowledgements	v
Executive Summary	vi
Background Literature Review	1
Purpose.....	1
Clinical Considerations: Benefits of Physical Activity.....	1
Counselling Practices of Physicians and Allied Healthcare Professionals.....	2
Reported Barriers to Physical Activity Counselling.....	3
Theories and Models of Behaviour Change.....	3
Interventions for Physicians and Health Care Providers	5
PACE	5
Green Prescription	5
Assess, Advise, Agree, Assist, Arrange (Five As).....	6
Evidence for the Effectiveness of Physical Activity Counselling	6
Physical Activity Recommendations of Professional Associations.....	9
Summary	9
Summary of Key Findings	9
Conclusions.....	10
Methodology	11
Results from Physical Activity Counselling Project.....	12
Demographic Data of Respondents.....	12
Counselling or Advising about Physical Activity for Healthy Individuals	13
Frequency of Physical Activity Counselling	14
Physical Activity Recommendations	14
Opinions Regarding Physical Activity Behaviour.....	19
Resources Related to Physical Activity Counselling.....	21
Barriers to Physical Activity Counselling.....	21
Training Related to Physical Activity Counselling.....	21
Discussion	23
Survey Results	23
Limitations	26
Recommendations for a “Physical Activity Counselling” Tool.....	26
Conclusions/Overall Recommendations	27
References	29
Appendix A. Studies Measuring the Effectiveness of Physical Activity Counselling in Primary Health Care.....	33
Appendix B: PACE II Assessment Tool.....	40
Appendix C: Sample Questionnaire.....	41
Appendix D: Annotated Bibliography.....	50

List of Tables

Table 1: Summary of Key Concepts and Focus of the Most Commonly Cited Behavioural Change Models and Theories in Physical Activity Counselling Research.....	4
Table 2: Number of Surveys Distributed by DHA and Health Profession.....	12
Table 3: Representation from the Nine District Health Authorities.....	12
Table 4: Type of Healthcare Practitioner	13
Table 5: Frequency of Physical Activity Counselling.....	14
Table 6: Physical Activity Recommendation for Adults.....	16
Table 7: Physical Activity Recommendations for Children and Youth.....	17
Table 8: Physical Activity Recommendation for Seniors and Older Adults.....	18
Table 9: Recommendations Regarding Limiting Sedentary Activities.....	19
Table 10: Rating of Importance for Discussing Physical Activity as a Preventive Health Behaviour.....	20

List of Figures

Figure 1: Schematic for Effective Physical Activity Counselling in a Primary Care Setting.....	6
Figure 2: Suggested Features of Effective Physical Activity Counselling Strategies.....	8
Figure 3: Percentage Who Believe in the Effectiveness of Physical Activity Counselling.....	20

Acknowledgements

We acknowledge the support of the Heart and Stroke Foundation of Nova Scotia and Cancer Care Nova Scotia who funded this project. In addition, the Alliance for Healthy Eating and Physical Activity were the organization responsible for the research concept and design. Thank you as well to all of the healthcare professionals who took the time to complete the questionnaires and submit them to us – without your support we would not have such valuable findings to report. The skills of our research assistants (Tanara, Terri-Lyn, and Aldona) should be noted and their dedication to the project. Finally, tremendous thanks go to Nancy Campagna for her skills in data entry.

Executive Summary

Strong support exists for the health benefits of participation in 30 minutes of moderate intensity physical activity on most days of the week. However, research conducted on the effectiveness of physical activity counselling by the primary care sector remains inconclusive. Within the following report, background literature on physical activity counselling is examined with the following questions in mind: Do children and adolescents, adults, and older adults counselled by primary care professionals improve or maintain physical activity behaviour? If so, what types of interventions are most effective? Based on the review, the “Five As” as outlined by the USPSTF (2003) are recommended as a practical tool for effective physical activity counselling. To better understand physical activity counselling within Nova Scotia, a questionnaire was administered to 436 healthcare practitioners working in the province. A total of 136 individuals returned the questionnaire (usually via fax). Questions examined issues related to physical activity counselling for healthy clients (i.e., those not living with a chronic disease) including types of clients regularly counselled (e.g., children, youth, adults, older adults), types of recommendations, opinions regarding benefits of physical activity as prevention, barriers to counselling, and access to training and resources. Results indicated that despite recognition of the importance of physical activity, there was large variability in the consistency with which counselling was provided. Adults and clients perceived to be overweight received the most frequent counselling, while children, adolescents and youth, as well as those classified as underweight received the least. Access to resources and training on physical activity counselling were identified as necessary by healthcare practitioners. Regular dissemination of Canada’s Physical Activity Guides may serve as an important information resource both for practitioners and their clients. These guides may also be useful in conferences and/or workshops devoted to the topic. It is important that the promotional materials adopted or developed to assist healthcare practitioners in their physical activity counselling contain consistent messages since a number of guidelines related to physical activity exist and such inconsistencies has lead to confusion among practitioners and their clientele.

Background Literature Review

Despite sufficient evidence of the relationship between moderate levels of physical activity, and the reduction of chronic disease, most Nova Scotians are inactive. Healthcare providers and their staff play a unique and important role in motivating and assisting patients' healthy behaviour changes, including physical activity promotion (see Appendix D for annotated bibliography). The United States Preventive Services Task Force (USPSTF) details a practical organizational construct (the Five As) to describe intervention research in a clinical setting more consistently and help foster its application. In Canada, the Physician-based Assessment and Counselling for Exercise (PACE) program is advocated to enable physicians to promote physical activity to their patients. However, to date, there is insufficient conclusive evidence to indicate whether physical activity counselling by healthcare professionals has a positive effect on behaviour.

Purpose

Once the importance of behaviour change has been clearly linked to improved health outcomes, the most critical issue for clinicians is determining whether interventions in the clinical setting help patients change their behaviour, and if so, how to deliver them effectively and practically (Whitlock, Orleans, Pender, and Allan, 2002).]Therefore, the purpose of this background literature review was to review the literature on primary care physical activity counselling and the effectiveness of the counselling methods used for increasing individual physical activity levels. The intent of this review was not to examine the effectiveness of physical activity counselling on fitness outcomes or reduced chronic disease mortality or morbidity.

Key questions:

1. What types of physical activity counselling are currently used?
2. Do children and adolescents, adults, and older adults counselled by primary care professionals improve or maintain their physical activity behaviour?
3. What types of physical activity counselling are most effective?

It was hoped that this report would provide evidence-based guidance for the development of resources and training programs for health professionals in Nova Scotia interested in physical activity promotion.

Clinical Considerations: Benefits of Physical Activity

There is evidence that increasing an individual's level of physical activity from sedentary to somewhat active reduces morbidity and mortality for at least the following chronic conditions: chronic heart disease (CHD), hypertension, several types of cancer (i.e., prevention of colon cancer, and potential links to breast and prostate cancer) (Marrett, Theis, Ashbury, 2000), obesity, Type II diabetes, and osteoporosis. Psychological benefits also arise from engaging in physical activity on a regular basis. Benefits of physical activity are seen from modest levels and intensities of physical activity, such as walking or bicycling if accumulated 30 minutes or more on most days of the week. Further benefits have been found with increasing such levels of physical activity.

Physical activity need not be strenuous to achieve health benefits. Sixty minutes of daily light activity or 30 minutes of moderate intensity activity, accumulated over the course of the day is sufficient for most adults to achieve health benefits (Canada's Physical Activity Guide, 1999). A focus on promoting moderate intensity physical activities occurs because these activities have higher compliance rates than vigorous physical activities/exercise, fit better with daily lifestyles, and are well maintained over time. Children and youth generally require more physical activity for optimal growth and development. Helping inactive children get involved in any regular physical activity will benefit their health, development and prospects for being active as adults.

A small increase in physical activity levels throughout the population will have a dramatic effect on the overall health and well-being of Nova Scotians. Furthermore, a reduction in the percentage of the population considered physically inactive would reduce the public health burden that currently exists in Canada. In fact, a 10% reduction in physical inactivity has the potential to reduce direct health care expenditures in Canada by \$150 million per year (Katzmarzyk, Gledhill, and Shephard, 2000). In Nova Scotia, a 10% reduction in the prevalence of physically inactive individuals may result in a \$4.6 million per year savings in hospital, drug and physician costs, and \$7.5 million in total health care spending (Colman and Hayward, 2002).

Counselling Practices of Physicians and Allied Healthcare Professionals

Primary healthcare providers and their staff play a unique and important role in motivating and assisting patients' healthy behaviour changes. Patients report that primary care clinicians are expected sources of preventive health information and recommendations (Kottke, 1997, as cited in Whitlock, 2002). Similarly, healthcare providers report that they accept and value their role in motivating health promotion and disease prevention (Whitlock et al., 2002).

Because interventions that help people change unhealthy behaviours often require repetition for sustained effects over time, the healthcare system is a natural setting for health behaviour counselling (see Appendix A for review of research examining effectiveness of physical activity counselling in primary health care). Most clinicians have multiple opportunities to intervene with patients on matters related to behavioural change. Approximately 75-80% of Canadians visit their family physician over the course of a year (Wilson and Ciliska, 1992). Continuity of care offers opportunities to address the key elements of effective behavioural change interventions, including: sustaining individual motivation, assessing progress, providing feedback, and adjusting behaviour change plans as needed (Whitlock et al., 2002). Team counselling and the interaction of physicians and health professionals in physical activity counselling are suggested to be important elements of success (Long et al., 1996). In other words, it is important for health care practitioners to be working together in promoting physical activity counselling and in giving the same promotional message and behaviour.

Physical activity counselling practices are highly variable in content and frequency (USPSTF, 2003). Physician physical activity counselling ranges from a low of 11.8% to a high of 70%. Despite earlier research suggesting a majority of physicians perceive exercise as very important for the average person, fewer than 50% routinely asked patients about physical activity (Lewis and Lynch, 1993). Another survey of physicians in three Canadian regions found that 70% reported physical activity counselling while Kennedy (1998, as cited by Tobin, 2000) reported a low of 12.1% of physicians providing exercise prescriptions that meet the current physical

activity recommendations, and only 11.8% counselled more than 75% of their patients. An observational study in the U.S. noted a physical activity counselling rate of 22.3% (Podl et al., 1999). In a survey conducted in 1997 using patient recall, 42% of adult respondents reported receiving advice from their primary care providers to increase physical activity levels (Eden et al., 2002).

While patients favour physicians as a source of advice on physical activity, physicians doubted the effectiveness of their counselling and cited lack of patient motivation as problematic (Lewis and Lynch, 1993). Stevenson and McKenzie (1992) also found that although physicians consider physical activity counselling important, only 5.3% believed that they were able to successfully change patients' physical activity behaviours. Using a questionnaire, Kennedy (1998, as cited in Tobin, 2000) examined physician confidence, knowledge, and practice related to the counselling of exercise. This study indicated that while Canadian physicians recognized the importance of physical activity for patients, exercise counselling was routinely conducted by only a very small percentage of physicians.

Physicians trained about physical activity counselling are more likely to counsel their patients. Wilson and Ciliska (1992) investigated the effect of training on physical activity counselling and found that the intervention-trained physicians counselled 35% of patients on physical activity, while the non-trained physicians counselled only 8.6% of their patients. Physicians trained in physical activity counselling techniques report greater confidence to perform counselling and also counsel their patients more frequently (Tobin, 2000).

It should be noted that there is difficulty in reporting the amount and type of physical activity counselling by physicians since the methods of assessment vary including self report, patient, report and observation. Another limitation lies in the varied and unclear definitions of "clinical physical activity counselling".

Reported Barriers to Physical Activity Counselling

Frequently reported counselling barriers that physicians identified to their effective physical activity counselling included a lack of sufficient time, lack of financial incentives or reimbursement, lack of standard protocols, lack of a successful counselling role, and lack of appropriate skills, tools and/or training (Petrella and Wright, 2000; Singer et al., 1991). The reported barrier of lack of standard protocols has been attributed to the different set of physical activity recommendations that exist, and the confusion about the amount and benefits of physical activity in various sub-groups of patients (i.e., children, adults, older adults) (Tobin, 2000). One study found that physicians who reported physical activity counselling, spend an average of two to five minutes per counselling session (Walsh et al., 1999).

Theories and Models of Behaviour Change

Another challenge to physical activity counselling is determining whether clients are ready or interested in making a change in their lifestyles and then influencing positive changes. Literature in the area of theories and models of behaviour change may provide assistance. Behaviour change programs are tailored to an individual's readiness for change, specific interests and preferences. These programs teach participants specific behavioural skills then enable them to

incorporate moderate intensity physical activity into daily routines. The application of relevant theoretical models to behavioural counselling interventions is an important contribution to strengthening health research in this area (Whitlock, 2002). Most physical activity behaviour change programs have used constructs from one or more established health behaviour change models, as outlined in Table 1.

Table 1: Summary of Key Concepts and Focus of the Most Commonly Cited Behavioural Change Models and Theories in Physical Activity Counselling Research (taken in part from Whitlock et al., 2002)

Level addressed	Theory/ model	Focus	Key concepts
Theories that address how individual factors such as knowledge, attitudes, beliefs, prior experience, and personality influence behavioural choices	Health Belief Model	Person's perceptions of the threat of a health problem and appraisal of behaviour recommended to prevent or manage problem	Perceived susceptibility and severity of health risk Perceived benefits and barriers to action Self-efficacy
	Theory of Reasoned Action/ Theory of Planned behaviour	Consider whether person thinks family members and friends endorse behaviour	Behavioural intention Subjective norms Attitudes Perceived behavioural control
	Stages of Change / Transtheoretical Model	Readiness to change varies among individuals and within individuals over time Relapse is common and a normal process of change	Precontemplation Contemplation Preparation Action Maintenance Relapse
	Self-Efficacy Theory	Person's confidence to perform physical activity task is a strong predictor of participation in physical activity.	Promotion of self-efficacy Skill development
	Decisional Balance Theory	Likelihood of change is highly dependent upon perceptions of pros and cons of behaviour	Pros and cons may vary Subjectivity plays a role Pros and cons vary between stages
Theories that address processes between individual and social support systems.	Social Cognitive Theory / Social Learning Theory	Behaviour is explained by dynamic interaction among personal factors, environmental influences and behaviour	Observational learning Outcome expectancy Capacity Self-efficacy Reinforcement

Interventions for Physicians and Health Care Providers

To date, few studies have provided a clear picture of the effectiveness of the specific features involved in physical activity counselling (Eden, 2002). In regards to behaviour change, effective approaches are listed in the textbox on page 5.

PACE

The Physician-Based Assessment and Counselling for Exercise (PACE) promotes the counselling of healthy adults to initiate and maintain moderate intensity exercise. This program has been well-cited and evaluated and is considered an effective intervention method for physicians to offer brief, stage-specific counselling (Calfas et al., 1996). The PACE program places emphasis on the primary care team, especially for professionals in the same office (i.e., physicians, nurses, administrators). Primary care professionals and staff receive training and PACE materials, including a physician's manual, an assessment form with an 11-point assessment of activity level and readiness to change (see Appendix B) and a Physical Activity Readiness Questionnaire (PAR-Q) to evaluate risk for unsupervised activity (Tobin, 2000). The PACE guideline is based on the stages of change from the Transtheoretical Model. The program includes an evaluation component that has received support from 75% of providers in that they would recommend PACE to other primary care providers (Tobin, 2000).

In effective behavioural change approaches, the following elements tend to be present (Khan et al., 2002):

- Goal setting for physical activity and self-monitoring of programs toward goals
- Building social support for new behavioural patterns
- Behavioural reinforcement through self-reward and positive self talk
- Structured problem solving geared towards maintenance of the behaviour change
- Prevention of relapse into sedentary behaviours

The PACE prescription was shown to be effective in significantly increasing self-report and objectively (34 minutes/day) measured physical activity in healthy sedentary adults (Calfas, 1997). However, PACE was not found to be effective in increasing the number of episodes of physical activity per week in other studies of sedentary adults (Norris et al., 1998; Norris et al., 2000).

Green Prescription

The Green Prescription was developed and evaluated in New Zealand and is based on training of physicians to facilitate goal setting with patients, and to offer a written prescription for physical activity. This program is considered a “starter program” and patients are encouraged to add physical activity that will be convenient and of little or no cost into their day. Physicians are trained on physical activity counselling, receive a standardized exercise prescription brochure, and receive posters and other brochures. Key elements of this program include an emphasis on community supports and ensuring that patient readiness for physical activity is matched to appropriate counselling (Tobin, 2000).

The Green Prescription has shown that 70% of patients increased their activity over a 6-week study period. After 11 months, 47% of patients had maintained or increased their activity level. Walking was the most popular activity prescribed (Pfeiffer et al., 2001).

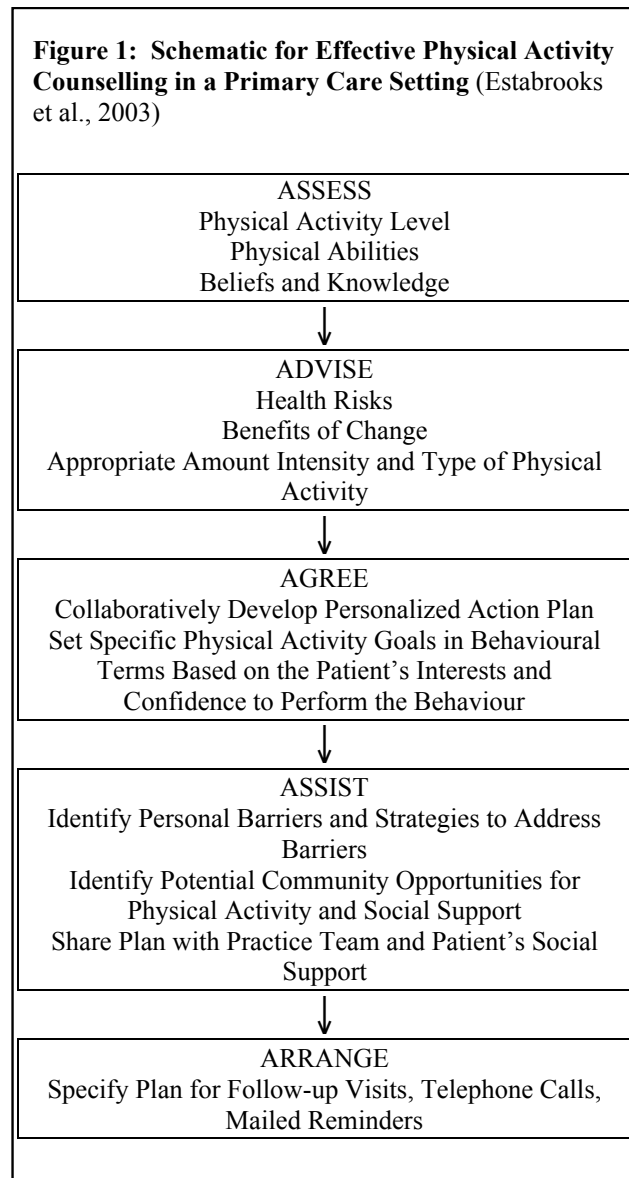
Assess, Advise, Agree, Assist, Arrange (Five As)

The Five As (assess, advise, agree, assist, arrange) describe an effective physical activity promotion strategy that can be used in the primary care setting (See Figure 1) (Estabrooks, Glasgow, and Dziewaltowski, 2003). The first stage consists of assessing the current level of physical activity and function, such as through a brief questionnaire which could be administered in a waiting room. Next, the client is advised through a process of relating symptoms to physical inactivity and potential benefits for engaging in activity. Third, the practitioner should agree with the client if s/he is planning to set a physical activity goal and discuss potential barriers. Then move on to assisting the patient in developing strategies and techniques to negotiate potential barriers and develop a “graduated action plan”. Finally, a follow-up assessment is arranged to examine potential emerging problems and solutions. This prescription has been practically designed and follows a systematic approach to physical activity counselling. Support for the effectiveness and ease of use for this framework has been noted (Whitlock et al., 2002). One of the main benefits of this strategy is that aspects of it can be implemented by a variety of healthcare staff (e.g., nurses, health educators, dieticians), rather than relying solely on a physician.

Evidence for the Effectiveness of Physical Activity Counselling

Great variability has been found when evaluating the effectiveness of physical activity counselling in primary healthcare. Some reasons offered for these inconclusive findings include: (USPSTF, 2002; Eden, 2002):

- The health professional must have assessed whether a patient was sedentary. Variability in the rigor with which interventions were delivered or actively evaluated;



- The clinician used critical components of counselling that must be replicable. Failure to distinguish patients; who were ready to begin an exercise program from those who were not;
- Counselling must increase and maintain physical activity levels among sedentary patients;
- The benefits of this increase were uncertain or there was low provider adherence;
- Inadequate power due to low participant numbers or high baseline physical activity must be greater than the adverse effects of assessment,;
- Inclusion of counselling advice in usual care control groups.
- Whether routine counselling and follow-up by primary care professionals actually results in increased physical activity among their adult patients is unclear (USPSTF, 1996). The Canadian Task Force on Preventive Health Care concluded that the evidence for or against a recommendation to include physical activity counselling in the periodic health examination was lacking (Beaulieu, 1994).

Given the inconsistencies in terms and intervention descriptions in the current literature, the USPSTF have endorsed using a construct to describe these interventions more consistently across a range of approaches (see Figure 1, page 6). The Five As has been judged to have the highest empirical support for each of its elements (Whitlock et al., 2002) and has been used in other health behaviour intervention programs, such as tobacco cessation.

Three recent systematic reviews obtained different conclusions about the efficacy of physical activity counselling. Eaton (1998) focused on eight studies published between 1988 and 1998 in which primary care clinicians directly advised patients to increase their physical activity. Only four studies reported small, short-term increases in self-reported physical activity levels. The second review consisted of 15 studies published between 1979 and 1999 by the U.S. Preventive Services Task Force and identified interventions initiated or constructed in the primary care setting, regardless of whether the primary care physician played a role (Eakin, 2000). This review concluded that physical activity counselling was "moderately effective". It should be noted that even a "modest" impact on increasing physical activity translated to significant benefits to the health of the population when systematically applied (Glasgow, et al., 1999). The third review was conducted by the U.S. Preventive Services Task Force (USPSTF, 2003). In this review it was noted that the majority of studies of the effectiveness of physical activity counselling have been conducted outside the primary care setting and strong support was identified for the importance of a written prescription rather than simply providing oral advice. It was also noted in this third review that women may need more intensive counselling interventions than men to increase physical activity in the long term.

As noted previously, tremendous variability has been found when evaluating the effectiveness of physical activity counselling. Part of the variability that has been observed may be because of the methods used to evaluate the effectiveness of physical activity counselling. In this regards, some reasons offered for the inconsistencies in results include (USPSTF, 2002; Eden, 2002):

- Variability in the rigor with which interventions were delivered or evaluated;
- Failure to distinguish patients who were ready to begin an exercise program from those who were not;
- Uncertain or low provider adherence;

- Inadequate statistical power due to low participant numbers or high baseline physical activity;
- Inclusion of counselling advice in usual care control groups.

Given the limitations noted for evaluating the effectiveness of whether routine physical activity counselling and follow-up by primary care professionals actually results in increased physical activity among their adult patients, the results are somewhat unclear. In fact, The Canadian Task Force on Preventive Health Care concluded that the evidence for or against a recommendation to include physical activity counselling in the periodic health examination was lacking (Beaulieu, 1994).

The ideal evidence in support of physical activity counselling in primary health care would directly link counselling to increased levels of physical activity and improved health indicators in a controlled trial. To date, such conclusive evidence is lacking. It is difficult for a number of reasons, including study design, to make the link between physical activity counselling and improved health outcomes. What is clear, however, is that a moderate level and intensity of physical activity is related to health. As such, it can be assumed that an intervention that improves individual physical activity levels may likely lead to various health benefits. In this regard, it is prudent to advocate physical activity counselling by healthcare professionals. This conclusion is similar to what other professional associations recommend.

Existing studies do not provide a clear picture of the specific features of counselling which signify its effectiveness or ineffectiveness (Eden, 2000), although some suggestions have been offered by recent reviews. Multi-component interventions combining provider advice with behavioural interventions to facilitate and reinforce healthy levels of physical activity appear to be the most promising technique. Such interventions often include patient goal setting, written exercise prescriptions, individually tailored physical activity regimens, and mailed or telephone follow-up assistance provided by specially trained staff. Linking primary care patients to community-based physical activity programs may enhance the effectiveness of primary care clinician counselling (USPSTF, 2003). Of the physical activity counselling methods described in this review (PACE, the Green Prescription, the Five As), the Five As is considered to be the most effective at increasing individual levels of physical activity. In fact, the Five As is judged to have the highest empirical support for each of its elements (Whitlock et al., 2002) and is

Figure 2: Suggested Features of Effective Physical Activity Counselling Strategies

Assessment Strategies

- Assessment of current behaviour in order to distinguish between active and sedentary (Eden, 2002)
- Assessment of motivation and self-efficacy for physical activity behaviour
- Assessment of individuals who are ready to begin behaviour change, with those who are not (Stage of change)

Advice

- Written prescription more effective than advice alone (Swinburn et al., 1998)
- Reduce confusion between different physical activity recommendations and protocols (Tobin, 2000)

Agreement Strategies

- Multiple treatment or agreement options, based on patient
- Use goal setting

Assistance

- Offer direct support from healthcare provider
- Offer guidance in obtaining social support from family and friends
- Telephone counselling; intervention activities spread across clinical staff (or through continuum of care)
- For women, more intense guidance from healthcare provider better than brief advice (The Writing Group for the Activity Counselling Trial Research Group, 2001)

Arrange

- Long-term follow-up essential to sustainability of behaviour (Eden, 2002)

currently used in other health behaviour intervention programs, such as tobacco cessation. The Five As are outlined in Figure 2. Each of these components should be considered when designing effective physical activity counselling strategies.

Physical Activity Recommendations of Professional Associations

Many organizations and federal agencies recommend that healthcare providers counsel individuals about physical activity. Due to the lack of scientific evidence, these recommendations are based on the health benefits of physical activity rather than on the effectiveness of counselling by health care providers to promote changes in physical activity. The US Preventive Services Task Force recommends individually adapted health behavioural programs integrated with other community-based interventions (USPSTF, 2003).

Some organizations offering recommendations for physical activity counselling by healthcare providers include:

- Department of Health and Human Services
- Centers for Disease Control and Prevention
- Canadian College of Family Physicians
- Canadian Medical Association

Summary

There is conclusive evidence that participation in 30 minutes of moderate intensity physical activity for most days of the week will lead to health benefits. However, the evidence is inconsistent about the effectiveness of physical activity counselling in the primary care setting. Although some intervention trials suggest that primary care counselling can promote increases in physical activity, the sum of studies conducted and reported to date are inadequate to determine the overall efficacy, effectiveness, and feasibility of physical activity counselling by professionals in primary care settings.

Although current research on the effectiveness of physical activity promotion in the primary healthcare setting has been judged insufficient to support a claim of efficacy or inefficacy, it is important to note that such actions have not been found ineffective, only that more research is needed (Estabrooks et al., 2003).

Summary of Key Findings (Tobin, 2000)

- Regular physical activity counselling is conducted by a minority of family physicians in Canada (range 12 – 70%)
- Physicians who participated in training for physical activity counselling intervention reported increased confidence in their counselling skills
- Physicians who participated in training for physical activity counselling intervention increased the frequency of their patient counselling
- Physician counselling can change patient behaviour in the short term

- The most frequently reported barriers were
 - Time constraints
 - Lack of financial incentives
 - Lack of standard protocols
 - Lack of success in the counselling role
 - Lack of appropriate training
- Trained nurse practitioners have conducted effective health promotion teaching, including physical activity counselling

Conclusions

“The balance of the benefits and harms, as well as approaches to preventing adverse effects, especially among older adults are suggested important for future research endeavours” (USPSTF, 2003). The roles of allied health care professionals and staff in the clinical setting in regard to physical activity counselling have not been adequately studied and warrant future consideration (Tobin, 2000). Further studies are needed to evaluate the effectiveness of healthcare provider physical activity counselling in all populations. There is a notable lack of literature in the area of physical activity counselling in the healthcare setting with children and adolescents.

Methodology

To examine the physical activity counselling strategies used by healthcare professionals working in Nova Scotia, the following study was conducted. Questionnaires were administered to people working in the healthcare field who had responsibility for providing physical activity counselling. Efforts were made to ensure diversity of profession as well as geographic location. Data collection took place during the months of May, June, and July 2003.

To ensure appropriate geographical coverage of the province, it was broken down into the nine district health authority regions (DHAs). The initial method used to contact healthcare practitioners within the nine regions was through a search engine found on the “Yellow Pages” website. Key words such as physicians, massage therapists, physiotherapists, dieticians, etc. were used in combination with a Nova Scotia map, listing cities and towns to locate healthcare professionals working in each of these regions. This primary list was used to contact individuals by phone, explaining the purpose of the study and to obtain permission to send a questionnaire via fax. For those who consented, questionnaires were returned to the researchers via fax to ensure a quick turnaround due to the time constraints of the study. Those healthcare practitioners located within close proximity to Dalhousie University and St. Francis Xavier University (where the research assistants were located) received hand-delivered questionnaires. Within DHA six, seven, and eight the local public health offices were contacted and a list of physicians in these areas was obtained.

To increase the questionnaire return rate and to access regions where the response rate was low, the three research assistants personally visited each of the DHAs at least once. During these visits, the regional phone books, and tourism offices were initially consulted to inquire about healthcare practitioners within the regions. The research assistants hand delivered questionnaires to as many healthcare practitioners as possible, spending just under a day in each region. For those healthcare practitioners interested in completing questionnaires, an option to either immediately complete or to later return via fax was provided.

After these visits, follow-up telephone calls were made particularly where adequate representation of professions had not been obtained. E-mail addresses were also obtained from chiropractors within the province with the assistance of the Council of the Nova Scotia College of Chiropractors. These final methods resulted in a good representation obtained from all the DHAs and healthcare practitioners.

The statements included on the questionnaire examined a number of issues related to physical activity counselling, including demographic information, target population with whom they work, frequency with which physical activity is discussed, typical physical activity recommendations, opinions regarding importance of physical activity as a preventive behaviour, access to resources and training, and barriers to physical activity counselling (see Appendix C for sample questionnaire).

Results from Physical Activity Counselling Project

Demographic Data of Respondents

Surveys were administered to 436 healthcare practitioners within the province of Nova Scotia (see Table 2). A total response of 136 was obtained which equates to a response rate of 31.2%. Representation from each of the nine District Health Authorities was attained as indicated in Table 3. Of the total sample, the percentage in each region ranged from 6 to 19%.

Table 2: Number of Surveys Distributed by DHA and Health Profession

Type of Health Professional	Dietician	Nutrition Consultant	Occupational Therapist	Physiotherapist	Physician	Nurse	Respiratory therapist	Kinesiologist	Fitness professionals	Pharmacists	Chiropractors	Massage therapist	Total
District Health Authority													
South Shore (1)				2	10	2				2	5		21
South West(2)	1			1	3	1				2	5		13
Annapolis Valley(3)	1		2	2	13	1		2	1	3	5	1	31
Colchester East (4)	2		1	7	17	1		1		2	5	2	38
Cumberland (5)	1		1	4	18	4		1	1	6	5	2	37
Pictou County(6)	8			7	33	6	1			6	6		67
Guysborough-Antigonish (7)	6		1	4	32	6		2		14	3	1	69
Cape Breton(8)	4			1	48	10					5		68
Capital District (9)	10	6	1	5	44	4		2		3	10	1	86
Total	33	6	6	33	218	35	1	8	2	38	49	7	436

Table 3: Representation from the Nine District Health Authorities

	Frequency ¹	Percent ²
South Shore DHA	14	10.3
South West DHA	15*	11.0
Annapolis Valley DHA	20	14.7
Colchester East DHA	10	7.4
Cumberland DHA	9	6.6
Pictou County DHA	8	5.9
Guysborough-Antigonish DHA	25	18.4
Cape Breton DHA	9	6.6
Capital District DHA	26	19.1
Total	136	100.0

¹Frequency = the number of questionnaires returned

²Percent = percent of the total sample of returned questionnaires

*Health Care professionals in this district copied and distributed the questionnaire to others working in the region. The types of health care practitioners initially included physicians, dietitians, nutrition consultants, occupational therapists, physiotherapists, and nurses. During data collection, the

definition of healthcare practitioner was re-evaluated and the following professions added: kinesiologists, fitness professionals, pharmacists, chiropractors, massage therapists, and respiratory therapists. For a breakdown of the number of participants from each of these categories, see Table 4. The greatest number of respondents were physicians, accounting for 37.5% (n=51) of the entire sample.

There were more female (n=87; 64%) than male participants (n=49; 36%). This finding is consistent with a higher percentage of women working in the caring professions (Perry, 2003). The majority of healthcare professionals were working at a primary healthcare facility (36.8%) with other large percentages working at either a medical clinic (23.5%) or private clinic (22.8%). Other locales included pharmacies, public health offices, fitness facilities, and teaching units.

Table 4: Type of Healthcare Practitioner

	Frequency¹	Percent²
physician	51	37.5
occupational therapist	1	0.7
respiratory therapist	1	0.7
nutrition consultant	4	2.9
physiotherapist	14	10.3
dietician	13	9.6
nurse	18	13.2
massage therapist	1	0.7
pharmacist	13	9.6
kinesiologist	5	3.7
chiropractor	13	9.6
fitness professional	2	1.5
Total	136	100.0

¹Frequency = the number of questionnaires returned

²Percent = percent of the total sample of returned questionnaires

The length of time participants had been working as a healthcare professional varied from 0.04 to 37 years, with a mean of 12.6 ±10.3 years.

Counselling or Advising about Physical Activity for Healthy Individuals

The majority of participants were providing information on physical activity to their healthy clients. When asked if they “*counsel or advise healthy individuals about physical activity*”, a resounding 87.4% (n=118) of respondents reported “yes”. Only one participant did not respond to this question. Furthermore, 28.1% (n=9) of 32 respondents had another person within their office provide information on physical activity. For those who reported the type of healthcare professional counselling about physical activity, nurses, physiotherapists, physicians, and pharmacists were listed.

To obtain an idea of who was targeted for physical activity counselling, healthcare professionals were asked to identify the percentage of total physical activity counselling time devoted to “a

healthy population” and *“patients with a chronic disease”*. Most of the time reported was spent on treatment or patients with a chronic disease. Specifically, $65.4 \pm 24.1\%$ of physical activity counselling time was relegated to treatment with $38.4 \pm 27.2\%$ to prevention or healthy patients.

Next, Analyses of Variance (ANOVA) were used to examine differences in time spent with each population for each type of health professional. There were significant differences for healthy (H) and chronic disease (CD) populations (H: $p=0.000$; CD: $p=0.001$). For the healthy population, the largest percentage of time was spent by respiratory therapists, nutrition consultants, occupational therapists, and fitness professionals (in descending order). The largest percentage of time counselling about physical activity for individuals living with a chronic disease counselling about physical activity was spent by nurses, dieticians, kinesiologists, and physiotherapists (again in descending order). There was no statistical difference in the amount of time physicians spent counselling health or chronically ill patients. It is important to keep in mind, however, when translating this data that some health professionals were only represented by one participant (e.g., occupational therapists and respiratory therapists) which may skew the results.

For the remainder of the questionnaire, healthcare professionals were asked to only consider the physical activity counselling they did for the healthy population.

Frequency of Physical Activity Counselling

Participants were asked to use a 4 point Likert-type scale to indicate the frequency of their physical activity counselling to children, youth and adolescents, adults, and the elderly. On this scale 1 = “always”, 1 = “most times”, 3 = “some times” and 4 = “never”. As such, the smaller the average, the less the participant reported physical activity counselling. In a similar way, the participants were asked the frequency of their counselling based upon their perception of clients’ weight. Adults and people considered overweight received the largest amount of physical activity counselling (see Table 5). Children and adolescents and youth as well as those considered underweight received the least amount of physical activity counselling.

Table 5: Frequency of Physical Activity Counselling

	N	Average	SD¹
<i>Question B2</i>			
PA counsel children	109	2.62	0.86
PA counsel adolescents and youth	113	2.42	0.86
PA counsel adults	117	1.81	0.72
PA counsel older adults	115	2.03	0.78
<i>Question B3</i>			
PA counsel overweight	121	1.56	.74
PA counsel normal weight	121	2.08	0.79
PA counsel underweight	119	2.36	0.89

¹ SD = Standard deviation

Physical Activity Recommendations

In section C of the questionnaire, healthcare practitioners identified their approach to assessing physical activity levels, their physical activity recommendations, and the frequency and recommendations for sedentary activities. First, participants were asked to describe, “*your approach to assessing your clients’ physical activity levels*” and to select only one of the options listed. Of the 121 respondents, 54.5% (n=66) “*routinely question all my clients regarding their physical activity practices*”, 29.8% (n=36) “*routinely question my clients who exhibit other risk factors for chronic disease (i.e., overweight, high blood pressure, high cholesterol levels) regarding their physical activity practices*”, 10.7% (n=13) “*occasionally question my clients regarding their physical activity practices*”, 1.7% (n=2) “*do not question my clients regarding their physical activity practices*”, and 3.3% (n=4) selected “*other*”. Three separate questions (C2, 3, and 4) examined physical activity recommendations for adults, children and youth, and seniors and older adults. A total of 120 responded to these questions. For their adult clientele, most recommended increasing to 30 minutes of moderate physical activity at least five days of the week either continuously (20%, n=24) or intermittently (25%, n=30) (see Table 6). The next most frequent responses were for increasing to 20 minutes of continuous vigorous physical activity at least three days per week and to “*be active but do not give specific guidelines*”.

With regards to their physical activity recommendation to children and youth, 43.3% (n=52) indicated, “*I recommend they be active but do not give specific guidelines*” (see Table 7). In addition, 11.7% (n=14) and 13.3% (n=16) advocate increasing to 30 minutes of continuous or intermittent moderate physical activity at least five days of the week, respectively, while 11.7% (n=14) recommend, “*they increase to 60 minutes of moderate physical activity on most (at least 5) days of the week*”.

With regard to seniors and older adults, the top three responses were “*increase to 30 minutes of intermittent moderate physical activity on most (at least 5) days of each week*” (31.7%, n=38), “*be active with no specific guidelines*” (21.7%, n=26), and “*increase to 20 minutes of continuous vigorous physical activity at least three days of each week*” (15.8%, n=19) (see Table 8).

Participants were asked in two separate questions (C5 and 6) whether they assessed or recommended limiting sedentary activities. Of the 124 respondents, 46.0% (n=57) “*sometimes*”, 30.6% (n=38) “*most times*”, 14.5% (n=18) “*never*” and 8.9% (n=11) “*always*” assessed their “*clients participation in sedentary activities such as watching television or working on the computer*”. It should be noted that 50% (n=24) of the 48 physicians who responded indicated they “*sometimes*” assessed sedentary activities of their clients. Furthermore, 18.8% (n=9) reported “*never*” and 21.7% (n=13) cited “*most times*” addressing this issue. In addition, 55.6% (n=10) of the 18 nurses who responded indicated “*sometimes*” or “*never*” assessing their clients sedentary activity. Only two nurses and two physicians “*always*” assessed the sedentary activity of their clients.

Table 6: Physical Activity Recommendation for Adults

		20 min cont ¹	30 min cont ²	30 min int ³	60 min ⁴	be active ⁵	none ⁶	other
chiropractor	N	7	2	1		1		2
	%	5.8%	1.7%	0.8%		0.8%		1.7%
dietician	N	2	3	6		1		1
	%	1.7%	2.5%	5.0%		0.8%		0.8%
fitness professional	N	1						1
	%	0.8%						0.8%
kinesiologist	N	1	1					2
	%	0.8%	0.8%					1.7%
massage therapist	N							1
	%							0.8%
nutrition consultant	N				1	2		1
	%				0.8%	1.7%		0.8%
occupational therapist	N			1				
	%			0.8%				
pharmacist	N	2	1			4		2
	%	1.7%	0.8%			3.3%		1.7%
physiotherapist	N	3	4	2		1		
	%	2.5%	3.3%	1.7%		0.8%		
physician	N	8	11	14	3	6		4
	%	6.7%	9.2%	11.7%	2.5%	5.0%		3.3%
nurse	N		2	6	1	5	1	1
	%		1.7%	5.0%	0.8%	4.2%	0.8%	0.8%
respiratory therapist	N	1						
	%	0.8%						
Total	N	25	24	30	5	20	1	15
	%	20.8%	20.0%	25.0%	4.2%	16.7%	0.8%	12.5%

¹ = I recommend they increase to 20 minutes of continuous vigorous activity at least 3 days each week.

² = I recommend they increase to 30 minutes of continuous moderate activity on most days (at least 5) each week.

³ = I recommend they increase to 30 minutes of moderate activity on most days (at least 5) each week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day.

⁴ = I recommend they increase to 60 minutes of moderate physical activity on most days (at least 5) each week.

⁵ = I recommend they be active, but do not give specific guidelines.

⁶ = I do not give physical activity recommendations.

Table 7: Physical Activity Recommendations for Children and Youth

		20 min cont ¹	30 min cont ²	30 min int ³	60 min ⁴	be active ⁵	none ⁶	other
chiropractor	N	1	2	1	1	6		2
	%	0.8%	1.7%	0.8%	0.8%	5.0%		1.7%
dietician	N		2	1	5	3	1	1
	%		1.7%	0.8%	4.2%	2.5%	0.8%	0.8%
fitness professional	N	1						1
	%	0.8%						0.8%
kinesiologist	N		1			1		2
	%		0.8%			0.8%		1.7%
massage therapist	N					1		
	%					0.8%		
nutrition consultant	N			1		2		1
	%			0.8%		1.7%		0.8%
pharmacist	N					6	1	2
	%					5.0%	0.8%	1.7%
physiotherapist	N		3	3		4		
	%		2.5%	2.5%		3.3%		
physician	N	1	6	8	5	21	3	3
	%	.8%	5.0%	6.7%	4.2%	17.5%	2.5%	2.5%
nurse	N			2	3	8	2	1
	%			1.7%	2.5%	6.7%	1.7%	0.8%
respiratory therapist	N						1	
	%						0.8%	
Total	N	3	14	16	14	52	8	13
	%	2.5%	11.7%	13.3%	11.7%	43.3%	6.7%	10.8%

¹ = I recommend they increase to 20 minutes of continuous vigorous activity at least 3 days each week.

² = I recommend they increase to 30 minutes of continuous moderate activity on most days (at least 5) each week.

³ = I recommend they increase to 30 minutes of moderate activity on most days (at least 5) each week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day.

⁴ = I recommend they increase to 60 minutes of moderate physical activity on most days (at least 5) each week.

⁵ = I recommend they be active, but do not give specific guidelines.

⁶ = I do not give physical activity recommendations.

Table 8: Physical Activity Recommendation for Seniors and Older Adults

		20 min cont ¹	30 min cont ²	30 min int ³	60 min ⁴	be active ⁵	none ⁶	other
chiropractor	N	6		4				3
	%	5.0%		3.3%				2.5%
dietician	N	2		8		1	1	1
	%	1.7%		6.7%		0.8%	0.8%	0.8%
fitness professional	N							2
	%							1.7%
kinesiologist	N		1			1		2
	%		0.8%			0.8%		1.7%
massage therapist	N							1
	%							.8%
nutrition consultant	N			1			1	2
	%			0.8%			0.8%	1.7%
pharmacist	N	1	1	1		3		3
	%	0.8%	0.8%	0.8%		2.5%		2.5%
physiotherapist	N		1	4		5		
	%		0.8%	3.3%		4.2%		
physician	N	10	6	11	4	10		5
	%	8.3%	5.0%	9.2%	3.3%	8.3%		4.2%
nurse	N			9	1	6		1
	%			7.5%	0.8%	5.0%		0.8%
respiratory therapist	N							1
	%							0.8%
Total	N	19	9	38	5	26	2	21
	%	15.8%	7.5%	31.7%	4.2%	21.7%	1.7%	17.5%

¹ = I recommend they increase to 20 minutes of continuous vigorous activity at least 3 days each week.

² = I recommend they increase to 30 minutes of continuous moderate activity on most days (at least 5) each week.

³ = I recommend they increase to 30 minutes of moderate activity on most days (at least 5) each week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day.

⁴ = I recommend they increase to 60 minutes of moderate physical activity on most days (at least 5) each week.

⁵ = I recommend they be active, but do not give specific guidelines.

⁶ = I do not give physical activity recommendations.

Of the 124 respondents to the second question regarding recommendations for limiting participation in sedentary activities, 46.8% (n=58) indicated they “*sometimes*” make this recommendation (see Table 9). Once again the physicians and nurses were not frequently making recommendations to limit watching television or working on the computer. Specifically, 58.3% (n=28) and 66.7% (n=12) of the physicians and nurses, respectively, “*sometimes*” or “*never*” recommended limiting participation in sedentary activities.

Table 9: Recommendations Regarding Limiting Sedentary Activities

		always	most times	sometimes	never	Total
chiropractor	N	3	3	7		13
	%	2.4%	2.4%	5.6%		10.5%
dietician	N	3	5	5		13
	%	2.4%	4.0%	4.0%		10.5%
fitness professional	N				2	2
	%				1.6%	1.6%
kinesiologist	N			3	1	4
	%			2.4%	0.8%	3.2%
massage therapist	N	1				1
	%	0.8%				0.8%
nutrition consultant	N	3		1		4
	%	2.4%		0.8%		3.2%
occupational therapist	N			1		1
	%			0.8%		0.8%
pharmacist	N	1	1	6	1	9
	%	0.8%	0.8%	4.8%	0.8%	7.3%
physiotherapist	N	1	3	6		10
	%	0.8%	2.4%	4.8%		8.1%
physician	N	5	15	21	7	48
	%	4.0%	12.1%	16.9%	5.6%	38.7%
nurse	N	2	4	7	5	18
	%	1.6%	3.2%	5.6%	4.0%	14.5%
respiratory therapist	N			1		1
	%			0.8%		0.8%
Total	N	19	31	58	16	124
	%	15.3%	25.0%	46.8%	12.9%	100.0%

Opinions Regarding Physical Activity Behaviour

The next section of the questionnaire (D) examined participants' opinions about physical activity. Overall, health professionals thought it was important to discuss physical activity as a preventive health behaviour to their various client groups (e.g., children, adolescents, adults, older adults, overweight, normal weight, and underweight) (see Table 10). It was considered most important "to talk about physical activity as a preventative health behaviour" for the clients perceived as overweight.

Question D2 asked participants to "agree", "disagree", or "somewhat agree" with various statements related to intensity and duration of physical activity and health benefits. The majority of the respondents supported moderate physical activity in intermittent bouts on a daily (at least five days a week) basis. In support of this finding, it was noted that the respondents disagreed with statements suggesting that physical activity should be vigorous and continuous to provide health benefits.

Beliefs in the effectiveness of their physical activity counselling were assessed in Question D3. A total of 69.1% (n=85) of the 123 respondents believed their physical activity counselling was “*sometimes*” effective (see Figure 3). A further 26% (n=32) felt their counselling “*most times*” was effective. It is interesting to note that this question elicited unsolicited feedback from several of the survey respondents. In fact, one respondent clearly felt jaded by including “**Who knows? Who cares?**” as a written comment.

Table 10: Rating of Importance for Discussing Physical Activity as a Preventive Health Behaviour

	N	Minimum	Maximum	Mean	SD
<i>How important do you think it is to discuss physical activity with...</i>					
children and their caregivers	123	1.00	4.00	3.49	0.77
adolescents or their caregivers	124	2.00	4.00	3.53	0.64
adults	124	2.00	4.00	3.69	0.51
older adults	123	2.00	4.00	3.62	0.53
overweight clients	125	2.00	4.00	3.92	0.30
normal weight clients	124	1.00	4.00	3.40	0.70
under weight clients	122	1.00	4.00	3.30	0.78

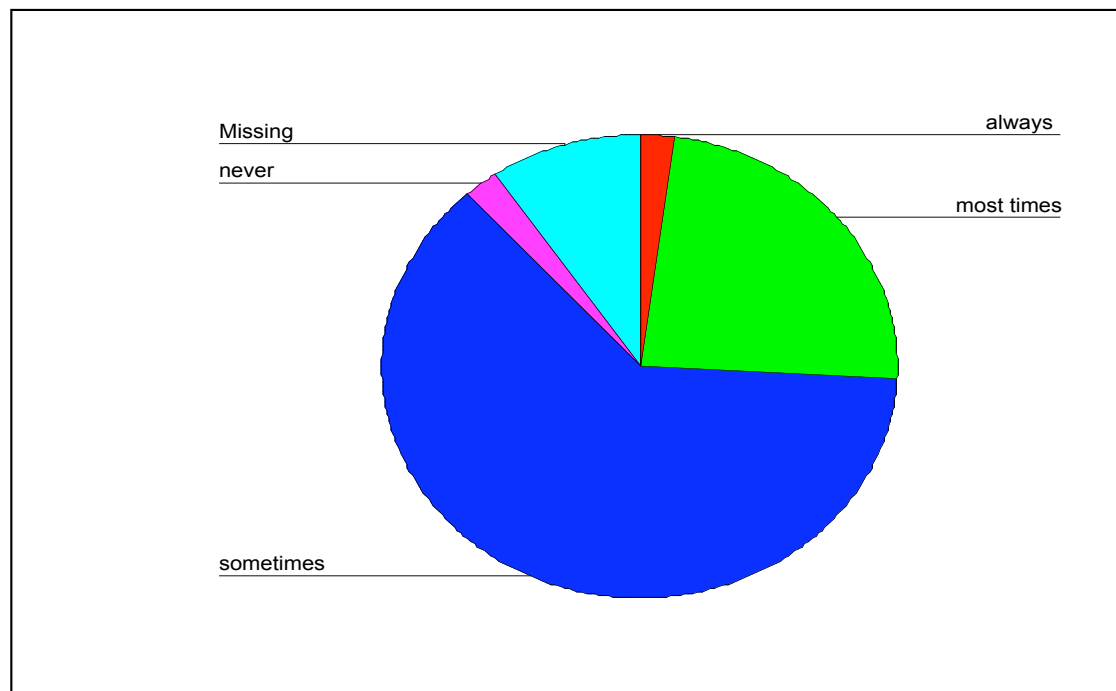


Figure 3: Percentage Who Believe in the Effectiveness of Physical Activity Counselling

Resources Related to Physical Activity Counselling

Questions were asked in relation to written materials, internet sites, and use and utility of Canada's Physical Activity Guides in section E of the questionnaire. For questions E1 and 2, 125 participants provided responses and 124 responses were given for E3. Written materials or brochures about physical activity are "*sometimes*" or "*never*" provided by 76.8% (n=96) of the healthcare practitioners. Use of internet sites as a source of physical activity information was not popular as 70.4% (n=88) indicated they did not use them. Canada's Physical Activity Guides were familiar to 54.8% (n=68) of the respondents. However, the use and distribution of the guides was infrequent. The majority of responses for E4 and 5 indicated that the adult and older adult guides were the most commonly used. The children and adolescent guides were never or only sometimes used. It should be noted that despite 64% (of the 75 respondents) indicating the physical activity guides were useful, they were not regularly disseminating any of the guides as a resource for their clients.

Barriers to Physical Activity Counselling

In section F of the questionnaire, the participants were asked to consider various factors that may be perceived as barriers to their physical activity counselling. Question F1 assessed three factors (i.e., lack of reimbursement, lack of adequate training, and time constraints) that may make physical activity counselling difficult for healthcare practitioners. Of the three constraints, time was the most significant barrier, with 69.8% (n=90) of the 129 healthcare practitioners citing this concern. Lack of reimbursement and lack of adequate training were indicated as constraints by 10.9% (n=14) and 35.7% (n=46) of the participants, respectively.

Although the majority did not think lack of reimbursement was a constraint to their physical activity counselling, 49.6% (n=60) of the 121 healthcare practitioners who responded to question F4 did not think they were adequately reimbursed. A further 22.3% (n=27) indicated being "*unsure*" of adequate reimbursement.

Adequate training and preparation for physical activity counselling was indicated as "*most times*" and "*always*" by 49.6% (n=65) of the respondents. In other words, 50.4% of the healthcare practitioners only "*sometimes*" or "*never*" feel adequately trained or prepared to provide physical activity counselling.

The average amount of time spent with clients during a routine medical check-up was 25.66 ± 27.47 minutes, with a range of 3 to 240 minutes recorded. A total of 42.5% (n=54) of the 127 respondents felt they had adequate time during a routine appointment "*most times*" or "*always*" to counsel about physical activity. Only 4.7% (n=6) participants felt they "*never*" had adequate time.

Training Related to Physical Activity Counselling

To examine the level of training and training needs of healthcare practitioners related to physical activity counselling, a variety of questions in section G were asked to ascertain types, utility, and support for training.

A total of 122 people responded to the question (G1) on the types of formal and informal training they had for advising about physical activity. The most popular type of training was “*scientific reading or journals*”, cited by 66.4% (n=81) of the respondents. Formal training in the form of workshops/seminars or courses was only used by approximately one-third of the respondents each (i.e., 27.0% or n=33 and 30.3% or n=37). The media was rarely used with only 16.4% (n=20) noting this as a source of information. Other training sources identified included specific courses or training (e.g., CFC, PFLC, YMCA fitness trainer), university education, personal knowledge/experience (e.g., “**My own experience through having been physically active all my life**”, “**taking part in fitness activities myself**”), organizations which promote physical activity (e.g., Dieticians of Canada, Sports Nutrition Network), and seminars/conferences.

Next, the utility of additional training and educational materials was explored (G2). Respondents were asked to indicate information sources which would be useful to them when counselling their clients about physical activity. A total of 132 healthcare practitioners completed this question. Resounding support was indicated for more training and additional educational materials for dissemination to clients. A few physicians indicated using the “Healthy Heart Kit” from Health Canada. There were 61.4% (n=81) and 77.3% (n=102) supporting a demand for these respective educational sources. When asked if a “*proven behaviour change program for clients*” would be useful, healthcare practitioners were almost evenly divided. Specifically, 46.2% (n=61) said “yes” they would like information on such programs. Only three respondents did not feel they required any information as they had adequate training in physical activity promotion and sufficient resources available.

To examine the healthcare practitioners’ desire and support for training, they were asked about willingness to travel (within the province) to attend a conference or workshop on physical activity counselling (G3). A solid 80.8% (n=105) of 130 respondents expressed a willingness to engage in such travel.

However, participants were divided about the support they would receive from their facility or organization in order to attend such training sessions. Just over half (51.3% of 119, n=61) reported having financial support for training.

The final question (G5) related to support for training and information examined participants’ willingness to be included in a directory of health professionals seeking additional information and resources on physical activity counselling. For this question, 129 people responded with 85.3% (n=110) indicating they would like to be included in the directory.

Discussion

A physically active lifestyle is regarded as essential for optimal mental and physical health. Furthermore, engaging in regular moderate intensity physical activities throughout the week are considered part of the lifestyle required for the primary prevention of chronic disease. Despite the known benefits of a physically active lifestyle, the majority of the Canadian population are not physically active enough to attain these health benefits. In fact, the most recent Physical Activity Monitor (2001) reported that nearly two-thirds of Canadians (ages 18 – 64 years) were not active enough to achieve any really health benefits from their physical activity (Cameron et al., 2002). Among older adults (≥ 65 years), 67% of men and 55% of men are considered inactive (Cameron et al.). Furthermore, many Canadian children and youth (60% of 5 – 17 years) were reported as insufficiently physically active for optimal growth and development (Cameron et al.).

Given the low level of physical activity in Canadians, a variety of efforts, individual and community-based, have been made to encourage various population groups to become more physically active. The results of these initiatives have led researchers to suggest that for behaviour change in regards to physical activity (i.e., to increase physical activity levels) to be successful, the message must come from the various significant influences upon an individual's life. Thus, similar to the “stop smoking” programs, the message to increase physical activity should come from healthcare practitioners, educators, parents, community organizations, and the various government operated departments of Health and Education. Further, the “message” promoted should be clear, concise, and consistent among the various promoters. Little is known about the physical activity counselling of healthcare practitioners. Thus, the purpose of this project was to examine the current practices of physical activity promotion, including the education, training, and needs, currently used by healthcare practitioners in Nova Scotia. Further, the purpose of this project was to review the literature on the current practices and evidence regarding physical activity promotion and recommend the “best” message and how to most effectively deliver this message for healthcare practitioners in Nova Scotia.

Survey Results

Overall, the healthcare practitioners indicated that discussing “*physical activity as a preventative health behaviour*” was very important for the various healthy populations with which they worked. Despite this belief, only 38.4% of their total physical activity counselling time was given to healthy individuals. This finding is much lower than the 70% of physicians who reported exercise counselling in primary care practice settings in three Canadian regions (Petrella and Wright, 2000) and somewhat higher than a U.S. study in which physical activity counselling was observed in 22.3% of patient visits (Podl et al., 1999). The frequency of the healthcare practitioners' physical activity counselling in the current study varied with adults and overweight individuals receiving counselling most often. Children and youth, in particular, received the least amount of physical activity counselling. These contradictions in findings support a gap in the application of knowledge (regarding the importance of a physically active lifestyle for everyone) to behaviours (assessing and recommending a physically active lifestyle).

It is also interesting to note that when asked about the frequency and importance of physical activity counselling according to the weight status of their clients, that the healthcare professionals indicated a much greater frequency and importance for their overweight clients. This raises a few questions. First, how does a healthcare practitioner determine the weight status (over, normal, under) of their clients? Second, why is physical activity considered more important (and thus counselled about more frequently) for overweight individuals, given that the health benefits of a physically active lifestyle occur regardless of weight status. There were also some interesting, unsolicited comments written on the questionnaires in regards to weight classifications: **“I don’t see underweight clients, they don’t exist”**. These comments are recognized and supported by the most recent reports on the overweight and obesity status of individuals living in Nova Scotia. A conservative estimate of obesity (Body Mass Index [BMI] ≥ 30 kg/m²) for Canadian adults (≥ 20 years) in 1998 obtained from the Population Health Survey was 14.8% (Katzmarzyk et al., 2000). In a random survey of grade 3, 7, and 11 children living in Nova Scotia (Campagna et al., 2002), 36% of the boys and 44.6% of the girls in Grade 3 had a BMI greater than the 85th percentile (age and gender matched). In grade 7, 36.8% and 39.9% of the boys and girls respectively had a BMI calculated greater than the 85th percentile. The percentage exceeding the 85th percentile in grade 11 were 32.9% of the boys and 25.0% of the girls. Thus, overweight and obesity is not limited to adults.

There were differences noted in the physical activity recommendations for the clients assessed (adults, children and youth, older adults and seniors). The most frequent (range 20.0 – 25.0% of respondents) recommendations (in descending order) for physical activity for adults were:

- (1) *“increase to 30 minutes of moderate physical activity on most (at least 5) days of the week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day”*,
- (2) *“increase to 20 minutes of continuous vigorous activity at least 3 days each week”*, and
- (3) *“increase to 30 minutes of continuous moderate activity on most (at least 5) days of the week”*.

For children and youth, the most common response (43.3%) was simply to *“be active with no specific guidelines”*. For seniors and older adults, the most frequent (31.7%) response was *“increase to 30 minutes of moderate physical activity on most (at least 5 days of the week), but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day”*. Perhaps these differences were noted because the healthcare practitioners recognize the typical lifestyle of adults, children and youth, and older adults. Most adults and older adults are limited in their available time for physical activity, thus a recommendation that highlights the possibility of 10-minute intervals may suit this lifestyle more effectively. Further, in regards to older adults, 10-minutes of moderate intensity physical activity may be perceived as attainable, whereas 30 minutes, at one time, may seem overwhelming. The recommendation of *“be active”* to children and youth may also reflect their typical lifestyle, or at least the typical lifestyle that existed prior to the emergence and abundance of technological forms of entertainment. These different recommendations for physical activity for the different age groups of clients may be because of the variety of physical activity recommendations that have been publicized and promoted throughout the years; healthcare practitioners may be confused as to what is the best recommendation. Further, it should be recognized that many healthcare professions make recommendations based upon personal experience as noted in the section on training and

informational sources. Two participants commented about the use of personal fitness/physical activity experience as a source of information for their physical activity counselling of clients.

Given the level of technological advancement involved in many occupations and as a part of entertainment, it is somewhat surprising to note the results from the questions on assessing and recommending limiting sedentary activities, particularly from physicians and nurses. Assessment of time spent in sedentary activities does not appear to have the same importance as physical activity assessment. Yet, it is well-documented that a sedentary lifestyle is a risk factor for chronic disease (Berlin and Colditz, 1990). Further, it has been noted that the determinants of a sedentary lifestyle differ from the determinants of a physically active lifestyle (Gordon-Larsen, McMurray, and Popkin, 2000), thus both are worthy of assessment. More than half of the respondents only “*sometimes*” or “*never*” assessed their clients’ sedentary activities. Furthermore, almost 60% of the respondents did not make or “*sometimes*” made a recommendation for limiting time watching TV and/or computer time for their clients. This is an issue that should be addressed in workshops and/or training sessions for healthcare practitioners. Clearly, a reduction in sedentary activities will lead to an increase in physical activity.

Physical activity resources are seldom provided by the healthcare professionals in Nova Scotia to their clients. Only 23.2% of the participants indicated that they “*most times*” or “*always*” provided physical activity resources. Of particular interest in this project, in regards to resources available and used by healthcare practitioners in Nova Scotia, were Canada’s Physical Activity Guides (adults, children, youth, and older adult). The guides were familiar to slightly more than half (54.8%) of the respondents. These respondents found the guides useful, but did not actively disseminate them to their clients. Further in the questionnaire, the majority of respondents indicated a demand for educational resources to provide to their clients. An issue with Canada’s Physical Activity Guides may be that the healthcare professionals must order them. If the guides were provided on a regular basis, perhaps dissemination would increase.

A demand was also noted for additional training for physical activity counselling, with the majority of the respondents indicating this need. This need was also noted in another Canadian study of family physicians (Petrella and Wright, 2000). Further, the respondents in the current study indicated they were willing to travel to attend conferences and workshops with slightly more than half noting their expenses could be covered by their workplace. Thus, the healthcare practitioners are receptive to advancing their training on physical activity counselling. The next step then is to develop or adopt the most appropriate training program for healthcare professionals in Nova Scotia and make it available to practitioners across the province. There was also interest noted in becoming part of a directory of individuals interested in obtaining more information about physical activity counselling. A directory such as this could be used to disseminate written materials in regards to physical activity counselling and to inform healthcare practitioners of upcoming training sessions and/or workshops. If this directory was created on-line, it likely would not be difficult to maintain, and on-line resources could very easily be made available to the practitioners. However the access to on-line resources for physical activity counselling need to be directly made available to healthcare practitioners (i.e., synopsis sent as part of an email and/or newsletter with web address/link provided for more complete details) since it was noted that the internet was not a frequent source of information.

Limitations

A significant challenge of the current research project was to obtain representative responses from various healthcare professionals across the province of Nova Scotia. Initially, a telephone survey was proposed. However, access to healthcare practitioners via this route was almost non-existent. Thus, alternatives were quickly developed. Face-to-face introduction of the project was determined the most effective method of obtaining responses. Most responses were then obtained via faxed questionnaires.

A second limitation may be the lack of representativeness in some of the healthcare groups assessed (i.e., occupational therapist, respiratory therapist, massage therapist, fitness professional). There may also be a bias towards the over-sampled physician group. Furthermore, these uneven group sizes may have affected the statistical calculations.

It should also be noted that similar to other self-report studies that rely on questionnaires, the sample that provided responses may be biased and providing positive responses for the importance of and their participation in physical activity counselling. If the sample is biased in this way, it may be even more urgent to move forward with adopting a physical activity counselling tool and developing various methods to advocate it.

Since Canada's Physical Activity Guides for children and youth are relatively new, it may be that their awareness and use have been affected as a result.

Recommendations for a “Physical Activity Counselling” Tool

Based upon the literature review and the survey results; it is recommended that the Five As (i.e., assessment strategies, advise, agreement strategies, assistance, and arrange) be adopted to consistently and effectively promote physical activity in Nova Scotia by healthcare practitioners. Although various tools have been developed and with various levels of efficacy, it was considered important that one tool be advocated such that one message could be consistently delivered to the population of Nova Scotia. It is possible, that similar to the smoking cessation programs, frequent, consistent, messages that advocate a physically active lifestyle may result in increasing the level of physical activity in children, youth, adults, and older adults. Confusion has existed in the past as to what people should do and how much to achieve health benefits. Alleviating this confusion may also assist people in selecting a more active lifestyle.

It is further recommended that the Five As be revised such that their presentation and implementation is congruent with the three As (ask advise, assist) currently used in the smoking cessation programs. Two separate but similar counselling tools may confuse not only the healthcare practitioners providing the counselling but also the recipient of the message. The last three As of the Five As are agreement strategies, assistance and arrange. These three As can easily be considered steps included within assistance. The healthcare practitioners should work to develop agreement strategies with their clients for increasing physical activity and to find methods of providing more direct support including assistance in obtaining social support, telephone counselling, etc.. Finally, healthcare practitioners should arrange for a follow up visit as a component of their assistance.

Another recommendation in regards to the Five As is to create a one page outline of the revised 3As for practical use by healthcare providers. Use and distribution of Canada's Physical Activity guides could be advocated on this page as well.

It is also recommended that workshops are developed to train healthcare practitioners in Nova Scotia to deliver the same physical activity message and promotional materials. Attention should be given to the preferred learning methods previously identified in the Physicians/Nurses/Pharmacists Needs Assessments for Furthering Cancer Education in Nova Scotia. Specifically, physicians noted a need for informal and formal methods, incorporating training into existing CME programs and offering CME interventions locally as much as possible. Nurses preferred in person methods of education delivered close to their employment and the pharmacists most highly rated contact lists of health professionals and agencies, checklists for instructions, and education sessions.

It is further recommended that these workshops can be implemented in various locales across the province since the healthcare practitioners in this review indicated a willingness to travel. Financial support to attend these workshops should be provided to those who would not receive assistance from their workplace. Efforts should also be made to obtain accreditation for the workshop so that the healthcare professionals can include this as part of their professional development credits since this was noted to increase and facilitate physician attendance in PACE programs by Long et al. (1996).

Another recommendation is to make available or distribute physical activity promotional materials that healthcare practitioners could then disseminate to their clientele. Although the surveyed professionals were aware of Canada's Physical Activity Guides and considered them useful, they were not regularly disseminated. The various guides (children, youth, adult, older adult) may be more regularly disseminated if they were delivered directly to healthcare professionals.

Furthermore, it is recommended that action be taken immediately such that healthcare practitioners do not become apathetic to this situation as noted recently by Lovett (2003). Such apathy appears to already be affecting some of the healthcare practitioners as seen by the comments of "*who knows? who cares?*".

Conclusions/Overall Recommendations

The high levels of inactivity among Nova Scotians highlight the need to increase physical activity and reduce sedentary activities. Healthcare practitioners play a potentially important role in this process as facilitators and motivators. As clients turn to healthcare professionals for guidance and health advice, there is a "golden opportunity" present to provide information on physical activity and healthy lifestyles. The healthcare providers in this study indicated support for physical activity counselling of their clients, however, a number of challenges were identified such as a personal lack of information about physical activity and training, a lack of access to resources (e.g., brochures, posters), and a lack of understanding about the role that decreasing sedentary activities can play. Support is, therefore, needed from those currently working in the

physical activity, sport, recreation, and leisure industries to assist in career development and training of healthcare professionals to bridge the gap in current knowledge and understanding. The importance of providing consistent messages and recommendations regarding physical activity was also highlighted within this report to ensure misunderstanding and confusion is avoided.

References

Beaulieu, M.D. (1994). Physical activity counselling. *Canadian task force on the periodic health examination: Canadian guide to clinical preventive health care*. Ottawa: Health Canada 1994: 560-569). Available at http://www.ctfpchc.org/Full_Text/Ch47full.htm, June 10, 2003).

Berlin, J.A., and Colditz, G.A. (1990). A meta-analysis of physical activity in the prevention of coronary heart disease. *American Journal of Epidemiology*, 132:612-628.

Calfas, K. Sallis, J.F., Zabinski, M.F., Wilfley, D.E., Rupp, J., Prochaska, J.J., et al. (2002). Preliminary evaluation of a multicomponent program for nutrition and physical activity change in primary care: PACE+ for adults. *Preventive Medicine*, 34, 153-61.

Cameron, C., Craig, C.A., Stephens, T., and Ready, T.A.. (2001/2002). *Increasing physical activity: Supporting an active workforce*. Canadian Fitness and Lifestyle Research Institute.

Campagna, P., Ness, G., Murphy, R., Rasmussen, R., Thompson, A., Porter, J., Rehman, L. (2002). *Physical activity levels in children and youth in the Province of Nova Scotia*. Sport and Recreation Commission, Government of Nova Scotia. Accessed online <http://www.gov.ns.ca/src/activekidshealthykids/research.htm>

Colman, R. and K Hayward. The cost of physical inactivity in Nova Scotia. *GPI Atlantic*, Accessed online http://gpiatlantic.org/ab_inactivity.shtml on August 22, 2002.

Eakin, E., Glasgow, R., and Riley, K. (2000). Review of primary care based physical activity intervention studies: effectiveness and implications for practice and future research. *Journal of Family Practitioners*, 49, 158-68.

Eden, K, Orleans, T., Mulrow, C., Pender, N.J., and Teutsch, S.M. (2002). Does counselling by clinicians improve physical activity? A summary of evidence for the US Preventive Services Task Force. *Annals of Internal Medicine*, 137, 208-15. Accessed online <http://www.ahcpr.gov/clinic/3rduspstf/physactivity/physsum.htm> on June 17, 2003.

Estabrooks, P, Glasgow, R.E., and Dzewaltowski, D.A.. (2003) Physical activity counselling through primary health care. *Journal of the American Medical Association*, 289, 2913-2916.

Fielding, J.E., Mullen, P.D., Brownson, R.C., Fullilove, M.T., Guerra, F.A., Hinman, A.R., et al. (2002). Recommendations to increase physical activity in communities. *American Journal of Preventive Medicine*, 22(4S): 67-72.

Fletcher, G. (1997). How to implement physical activity in primary and secondary prevention: A statement for healthcare professionals from the task force on risk reduction. American Heart Association. *Circulation*, 9, 355-357.

Francis, K. (1999). Status of the Year 2000 health goals for physical activity and fitness. *Physical Therapist*, 79(4), 405-414.

Glasgow, R., Vogt, T., and Boles, S. (1999). Evaluating the public health impact of health promotion interventions. *American Journal of Public Health*, 89, 1322-1327.

Gordon-Larsen, P., McMurray, R.G., Popkin, B.M. (2000). Determinants of adolescent physical activity and inactivity patterns. *Pediatrics*, 105(6), 1322.

Goldstein, M., Pinto, B., Marcus, B, Lynn, H., Jette, A, Rakowski, W. et al. (1999). Physician based physical activity counselling for middle aged and older adults: A randomized trial. *Annals of Behavioural Medicine*, 21, 40-47.

Harland, J., White, M. Drinkwater, C., Chinn, D., Farr, L., and Howel, D. (1999). The Newcastle exercise project: A randomized controlled trial of methods to promote physical activity in primary care. *British Medical Journal*, 319, 828-32.

Jones, L., Muir, J., Mant, D., Yudkin, P. (1994). Effectiveness of health checks conducted by nurses in primary care: Results of the Oxcheck study after one year. *British Medical Journal*, 308, 308-312.

Katzmarzyk, P.T., Gledhill, N., and Shephard, R.J. (2000). The economic burden of physical inactivity in Canada. *Canadian Medical Association Journal*, 163, 1435-1440.

Kennedy, M. (1998). *Exercise counselling by family physicians in Canada*. Master of Science Thesis. University of Calgary.

Khan, E., Ramsey, L.T., Brownson, R.C., Heath, G.W., Howze, E.H., Powell, K.E., et al. (2002). The effectiveness of interventions to increase physical activity: A systematic review. *American Journal of Preventive Medicine*, 22(4): 73-108.

Lewis, B. and Lynch, W. (1993). The effect of physician advice on exercise behaviour. *Preventive Medicine*, 2, 110-121.

Long, B., Calfas, K., Wooten, W., Sallis J.F., Patrick, K., Goldstein, M., et al. (1996). Multisite field test of the acceptability of physical activity counselling in primary care: Project PACE. *American Journal of Preventive Medicine*, 12(2), 73-81.

Lovett, R. (2003). Refusing to budge: American unmoved by doctors' exhortations to exercise. *Psychology Today*, 36(2), 30.

Marrett, L.D., Theis, B., Ashbury, F.D. (2000). Workshop report: Physical activity and cancer prevention. *Chronic Diseases in Canada*, 21(4), 143-149.

Norris, S., Grothaus, M., Buchner, D., and Pratt, M. (2000). Effectiveness of physician based assessment and counselling for exercise in a staff model HMO. *Preventive Medicine, 30*, 513-23.

Nova Scotia Department of Health. (1994). Leading the way: Nova Scotia task force on primary health care (Final Report). Accessed online at: <http://www.doh.ns.ca/>, July 20, 2003.

Perry, A. (2003). Care is no longer charity. *Toronto Star*. Accessed online at <http://www.thestar.com>., August 12, 2003.

Petrella, R.J., and Wright, C. (2000). An office-based instrument for exercise counselling and prescription in primary care: The Step Test Exercise Prescription (STEP). *Archive of Family Medicine, 9*, 339-344.

Podl, T.R., Goodwin, M.A., Kikano, G.E., and Stange, K.C. (1999). Direct observation of exercise counseling in community family practice. *American Journal of Preventive Medicine, 17*(3), 207-210.

Singer, J., Lindsay, E., and Wilson, D. (1991). Promoting physical activity in primary care: Overcoming the barriers. *Canadian Family Physician, 37*, 2167-2174.

Steptoe, A., Doherty, S., Rink, E., Kerry, S., Kendrick, T., and Hilton, S. (1999). Behavioural counselling in general practice for the promotion of healthy behaviour among adults at increased risk of coronary heart disease: A randomised trial. *British Medical Journal, 319*, 943-947.

Stevens, W., Hillsdon, M., Thorogood, M., and McArdle, D. (1998). Cost-effectiveness of a primary care based physical activity intervention in 45-75 year old men and women: A randomised controlled trial. *British Journal of Sports Medicine, 319*: 828-32.

Stevenson, L., McKenzie, D., and Wilson, D. (1992). Physician's exercise habits. *Canadian Family Physician, 38*, 2015-1018.

Swinburn, B., Walter, L., Arroll, B., Tilyard, M., and Russell, D. (1998). The Green Prescription study: A randomised control trial of written exercise advice provided by general practitioners. *American Journal of Public Health, 88*, 288-91.

Tobin, M. (2000). *Physical activity counselling by health professionals*. Canadian College of Family Physicians of Canada. Accessed online at <http://www.cfpc.ca/English/cfpc/programs/patient%20care/physical%20activity/research/physical%20activity/default.asp?s=1>, July 20th, 2003.

U.S. Preventive Services Task Force. (USPSTF). (2003). Behavioural counselling in primary care to promote physical activity: Recommendation and rationale. *American Journal of Nursing, 103*(4): 101-107.

Walsh, H. (1999). Exercise counselling by primary care physicians in the era of managed care. *American Journal of Preventive Medicine*, 16(4), 312.

Whitlock, E., Orleans, C., Pender, N., and Allan, J. (2002). Evaluating primary care behavioural counselling interventions: An evidence-based approach. *American Journal of Preventive Medicine*, 22(4), 267-284.

Wilson, D. and Ciliska, D. (1992). Family physicians and exercise counselling; Can they be influenced to provide more? *Canadian Family Physician*, 38: 2003.

The Writing Group for the Activity Counselling Trial Research Group. (2001). Effects of physical activity counselling in primary care: The Activity Counselling Trial: A randomized trial. *Journal of the American Medical Association*, 286, 677-687.

Appendix A. Studies Measuring the Effectiveness of Physical Activity Counselling in Primary Health Care

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
<p>- Calfas, 1997 - quasiexperimental design - United States-Elley et al. (2003). - cluster randomized controlled trial - 42 rural and urban general medical practices (n= 117 physicians)</p>	<p>- PACE intervention (3-5 minutes of counselling) - behaviourally based counselling by physicians - oral and written physical activity advice offered by physicians during regular consultations - exercise specialists offered support by telephone follow up 2 weeks later - assessments of PA and mediators collected at baseline and at 4-6 weeks follow up mail - control group received usual care</p>	<p>- healthy, sedentary, adult patients n = 255 - urban physicians (n = 5) - suburban physicians (n =12) - sedentary adults between ages of 40-7 (n=878)</p>	<p>- Walking for exercise increased 100% for post intervention group and 27% for control (+39 min/week vs +10 min/week) - conditions differed on 2 of the 6 mediator variables at baseline. - ANOVAs – intervention group reported more social support (1.9 vs 1.7, F (1,210) = 4.20, P < 0.05) and higher scores on cognitive processes of change (31.3 vs 28.7, F(1,206) = 4.57, P<0.04) Change in physical activity (kcal and minutes/day), quality of life (SF-36), cardiovascular risk and blood pressure</p>	<p>- counselled patients improved significantly more than those in the control group on behavioural and cognitive processes of change - changes in mediators were nonsignificant - Behavioural processes of change and self efficacy made significant contributions to the multiple regression model - intervention subjects significantly increased PA on self report and objective measures compared with controls-minutes of exercise increased by 34 minutes / day in the intervention group (p=0.001) - mean total energy expenditure increased 9.4kcal/kg/week (p=0.001) - proportion of individuals accumulating > 2.5 hours of PA increased by 9.72% (p=0.003)</p>
<p>-Elley et al. (2003).(1998) - cluster randomized controlled trial - 42 rural and urban general medical practices (n= 117 physicians) - New Zealand- Clinical Trial - Multicenter Study - Randomized Controlled Trial</p>	<p>- oral and written physical activity advice offered by physicians during regular consultations - exercise specialists offered support by telephone and mail -control group received usual care - Physically Active for Life (PAL) - Physicians in the intervention group (1-hour training session and received support materials)</p>	<p>- sedentary adults between ages of 40-79 - n=878 - 12 practices randomized to the intervention group - 12 to standard care.</p>	<p>- change in physical activity (kcal and minutes/day), quality of life (SF-36), cardiovascular risk and blood pressure- Pre-assessment and post-assessment of self-reported counselling behaviours - Patient evaluations of the exercise counselling and support materials were also obtained.</p>	<p>-minutes of exercise increased by 34 minutes / day in the intervention group (p=0.001) - mean total energy expenditure increased 9.4kcal/kg/week (p=0.001) - proportion of individuals accumulating > 2.5 hours of PA increased by 9.72% (p=0.003)- physicians favourably endorsed the training and the support materials, and reported adherence to delivery of the intervention protocol - improvements in confidence for intervention-group physicians but no significant changes in physician reports of exercise counselling provided to all patients. Patients reported satisfaction with the exercise counselling and support materials.</p>

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
<ul style="list-style-type: none"> - Goldstein et al. (1999)(2000) - randomized controlled trial - Physically Active for Life (PAL) project - United States 	<ul style="list-style-type: none"> - counselling was based on Transtheoretical Model of Change and social learning theory& Social Cognitive Theory - PASE administered at 6 weeks and 8 months. 	<ul style="list-style-type: none"> - 24 community-based primary care medical practices (12 randomized to- 355 patients - intervention, n = 181 & 12 to the control, n = 174) - mean age= 65.5 	<ul style="list-style-type: none"> - motivational readiness for physical activity (PASE) Motivational readiness for physical activity and related constructs were assessed at baseline, 6 weeks and 8 weeks. 	<ul style="list-style-type: none"> - 6-week follow-up, subjects in the intervention condition were more likely to be in more advanced stages of motivational readiness - 8 month follow-up, the intervention did not produce significant changes in PASE scores- at 6 weeks, interventions positively effected; decisional balance, self-efficacy, behavioural processes - at 8 months effects not maintained - interventions of greater intensity and duration may be needed to sustain change
<ul style="list-style-type: none"> - Kohn et al. (1998)(2003) - 2-yr randomized control trial - United States- 4 large (>5000 active patient files) academic, primary care practices. - 3 urban & 1 rural - each had 4 primary care physicians 	<ul style="list-style-type: none"> - The Lifestyle accounts for an individual's motivational readiness and preferences for integrating physical activity into daily routines. - ACSM - 2 STEP interventions - 2 usual care 	<ul style="list-style-type: none"> - 235 sedentary and healthy adults - n=241 subjects - 131 intervention & 110 control 	<ul style="list-style-type: none"> - energy expenditure in physical activity (estimated by kcal per kilogram of body weight of energy expenditure) - cardio respiratory fitness (measured by maximal oxygen uptake)- change in VO(2max) - change in ESE - change in systolic blood pressure - change in mass index 	<ul style="list-style-type: none"> - no substantive differences were noted between the two treatment groups STEP Intervention -VO(2max) (11%; 21.3 to 24ml/kg/min) over 6 months (p <0.001), 14% (21.3 to 24.9ml/kg/min) 12 months (p <0.001). - increase in ESE (32%; 4.6 vs 6.8) - Systolic blood pressure decreased 7.3% and body mass index decreased 7.4%, Usual Care - VO(2max) (4%; 22 to 23ml/kg/min) over 6 months (p <0.001), 3% (22.1 to 22.8ml/kg/min) 12 months (p <0.001 - ESE (22%; 4.2 vs 5.4) at 12 months (p < 0.001). Exercise counselling time (p <0.02) longer in the STEP (11.7+/-3.0min) - elderly patients improve using a tailored exercise prescription. STEP maintains benefits to 12 months

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
<p>- Marcus et al. (1997) - sequential comparison group design - United States - Primary care practice (3 Canadian Regions) - Clinical Trial - Randomized Controlled Trial</p>	<p>- change in self-reported physical activity between experimental (counselling and self-help materials) and control (usual care) - telephone contact at Phase 1 - 362 completed a 10-minute questionnaire (demographics, preventive practice, and exercise counselling habits) Phase 2 weeks - experimental patients had follow-up appointment with physician after 4 weeks - Counselling using American College of Sports Medicine guidelines (control) - Counselling using guidelines and an office-based step test (Step Test Exercise Prescription [STEP])</p>	<p>- Family physicians n=400 - patients 50 + yrs, active less than 3 /week 20 min each time > 65 - 4 male physicians in 40s (healthy)</p>	<p>- feasibility of counselling - determine fitness level and prescribe an exercise training heart rate. Physicians were asked to deliver their assigned exercise prescription to a convenience sample of the next 10 healthy patients older than 65 years who presented to the office.</p>	<p>- both groups increased their physical activity - physical activity was greater for patients who reported receiving a greater number of counselling messages Phase 1 -90% of physicians practice preventive health counselling & 70% included exercise counselling. - 67.4% felt confident regarding their exercise prescribing - (93.8%) interested in improving their exercise prescribing skills - barriers inadequate time, lack of necessary skills and tools, and lack of reimbursement. Phase 2 STEP was significantly longer (16.4 vs 12.9 min; P = .001) to administer; however, improvement in physician confidence (P = .01) and knowledge (P = .009) were significantly greater compared with controls.</p>

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
<p>- Norris et al. (2000)(1998)</p> <p>- randomized control trail</p> <p>- United States- - Randomized Controlled Trial</p> <p>- West London</p> <p>- assess cost-effectiveness of primary care based intervention</p>	<p>- physicians gave PACE exercise counselling protocols at the index visit</p> <p>- reminder phone call at 1 month</p> <p>- an enhanced intervention group received additional activity reminders- Intervention subjects invited to a consultation with an exercise development officer, and a personalized 10 week program</p> <p>- Control subjects sent information (leisure centers)</p>	<p>- patients aged 30 or older n=812</p> <p>- primary care physician offices n=32</p> <p>- 714 inactive people aged 45-74</p>	<p>- energy expended through- All subjects were followed up at eight months.</p> <p>- Confidence interval</p> <p>- number of episodes of physical activity per week</p> <p>- stages of change score cost</p>	<p>-at 6 month follow up:</p> <p>- control group did not differ significantly from intervention group for energy expended (2,048 kcal/week vs 2,108 kcal/week, P=0.77)</p> <p>- time walking (202 min/week vs 187min/week, P=0.99)</p> <p>- Stages of Change scores:</p> <p>- intervention increased (P=0.03)</p> <p>- Baseline levels of PA counselling high (50%)</p> <p>- Baseline patients levels of PA high (61%)</p> <p>Intervention Group</p> <p>- a net 10.6% (95% confidence interval 4.5 to 16.9%) reduction</p> <p>- increase in the mean number of episodes of physical activity per week (an additional 1.52 episodes (95% confidence interval 1.14 to 1.95)),</p> <p>The cost of moving a person out of the sedentary group was shown to be less than 650 Pounds. The cost of moving someone to the now commonly recommended level was estimated at almost 2500 Pounds.</p>
<p>- Painter et al. (2000) sequential comparison group design</p> <p>- United States</p>	<p>- Intervention patients had individually prescribed exercise for 8 weeks of independent home exercise. Followed by 8 weeks of in center cycling during dialysis</p> <p>- (SF-36) questionnaire assessed self reported health status</p>	<p>- haemodialysis patients n = 286</p>	<p>- gait speed test</p> <p>- sit to stand test</p> <p>- physical scales on SF-36</p>	<p>- Intervention group improved on fast gait speed test, sit to stand test and physical scales on SF-36, including the component scale</p> <p>- nonintervention group either did not change or decline over the duration of study</p> <p>- intervention group showed increased participation in PA</p> <p>- there were significant differences between intervention and non-intervention groups in change over time</p>

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
- Petrella et al. (2001) - randomized control trial - London ON, CA	- participants underwent self paced step testing and maximal exercise treadmill test with VO ₂ max measurements - testing was done in random order (clinic/lab) separated by 2 weeks - tests repeated 52 weeks following exercise program	- random sample healthy older adults (≥ 65 yrs) n=240 - men n=118 - women n=122 - university family medical clinics n=4	- step-pace correlation with VO ₂ max	- normal step-pace correlation with VO ₂ max (ml/kg/min) with no difference (female 0.93: male 0.91) from fast pace (0.95:0.90) between clinic and lab at baseline or 52 weeks - cross-validation showed no significant difference from the main group using the predictive model
- Petrella et al. (2003) - randomized control trial - 4 large (>5000 active patient files) academic, primary care practices.	- 2 STEP interventions - 2 usual care - 3 urban & 1 rural	- 241 subjects - intervention n = 131 - control n = 110 - each had 4 primary care physicians	- change in VO ₂ max - change in ESE - change in systolic blood pressure - change in mass index	STEP Intervention - VO ₂ max (11%; 21.3 to 24ml/kg/min) over 6 months (p <0.001), 14% (21.3 to 24.9ml/kg/min) 12 months (p <0.001). - increase in ESE (32%; 4.6 vs 6.8) - Systolic blood pressure decreased 7.3% and body mass index decreased 7.4% Usual Care - VO(2max) (4%; 22 to 23ml/kg/min) over 6 months (p <0.001), 3% (22.1 to 22.8ml/kg/min) 12 months (p <0.001 - ESE (22%; 4.2 vs 5.4) at 12 months (p < 0.001). Exercise counselling time (p <0.02) longer in the STEP (11.7+/-3.0min)
- Petrella & Wright (2000) - primary care practice (3 Canadian regions) - randomized controlled trial	Phase 1 - 362 completed a 10-minute questionnaire (demographics, preventive practice, and exercise counselling habits) Phase 2 - counselling using American College of Sports Medicine guidelines (control) - counselling using guidelines and an office-based step test (Step Test Exercise Prescription STEP)	- family physicians n=400 - patients > 65 yrs. (healthy)	- determine fitness level and prescribe an exercise training heart rate. Physicians were asked to deliver their assigned exercise prescription to a convenience sample of the next 10 healthy patients older than 65 years who presented to the office.	Phase 1 -90% of physicians practice preventive health counselling & 70% included exercise counselling. - 67.4% felt confident regarding their exercise prescribing - (93.8%) interested in improving their exercise prescribing skills - barriers inadequate time, lack of necessary skills and tools, and lack of reimbursement. Phase 2 STEP was significantly longer (16.4 vs 12.9 min; P = .001) to administer; however, improvement in physician confidence (P = .01) and knowledge (P = .009) were significantly greater compared with controls.

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
<ul style="list-style-type: none"> - Pfeiffer et al. (2001) - randomized controlled trial - United States 	<ul style="list-style-type: none"> - intervention - oral and written advice (green prescription) - control - oral advice 	<ul style="list-style-type: none"> - 49 community dwelling adults (62+ yrs) - 3 geriatricians at an Ohio Medical Clinic 	<ul style="list-style-type: none"> - participation - amount of physical activity - duration of physical activity 	<p>After 6 weeks:</p> <ul style="list-style-type: none"> - # of individuals still participating - average increase in amount of physical activity - average increase in duration of activity - self-reported participation to improve health - retrospective self assessment <p>Green Prescription:</p> <ul style="list-style-type: none"> - increase in amount of physical activity response <p>Intervention and control group:</p> <ul style="list-style-type: none"> - increase in the amount of physical activity pursued for health benefits - 50% in each group increase the amount of physical activity
<ul style="list-style-type: none"> - Pinto et al. (1998) - clinical Trial - multi-center study - Randomized Controlled Trial 	<ul style="list-style-type: none"> - Physically Active for Life (PAL) - physicians in the intervention group (1-hour training session and received support materials) 	<ul style="list-style-type: none"> - 12 practices randomized to the intervention group - 12 to standard care. 	<ul style="list-style-type: none"> - pre-assessment and post-assessment of self-reported counselling behaviours - Patient evaluations of the exercise counselling and support materials were also obtained. 	<ul style="list-style-type: none"> - physicians favourably endorsed the training and the support materials, and reported adherence to delivery of the intervention protocol - improvements in confidence for intervention-group physicians but no significant changes in physician reports of exercise counselling provided to all patients. Patients reported satisfaction with the exercise counselling and support materials.
<ul style="list-style-type: none"> - Pinto et al. (2000) - randomized trial - United States 	<ul style="list-style-type: none"> - Transtheoretical Model & Social Cognitive Theory 	<ul style="list-style-type: none"> - 355 patients - intervention n= 181 - control n= 174 - mean age= 65.5 	<ul style="list-style-type: none"> motivational readiness for physical activity and related constructs were assessed at baseline, 6 weeks and 8 weeks. 	<ul style="list-style-type: none"> - at 6 weeks, interventions positively effected; decisional balance, self-efficacy, behavioural processes - at 8 months effects not maintained - interventions of greater intensity and duration may be needed to sustain change

Author, year Design suitability Evaluation setting	Intervention and comparison elements	Study population & description Sample size	Outcome Measure	Results
<ul style="list-style-type: none"> - Podl et al. (1999) - cross-sectional multi-method study - North East Ohio, USA 	<ul style="list-style-type: none"> - exercise advice was measured by direct observation, and patient report. - medical record review, patient exit questionnaire and billing data, was determined by logistic regression analysis 	<ul style="list-style-type: none"> - family physicians - n = 138 	<ul style="list-style-type: none"> - exercise counselling 	<ul style="list-style-type: none"> - in 4,215 of patients > 2 years of age exercise counselling was observed during 927 visits (22.3%), but reported by only 13% of patients returning questionnaires - mean time spent PA counselling was .78 mins with a range of .33 to 6.00 min (SD= .067) - exercise counselling is relatively common during outpatient visits to family physicians and more commonly given to patients with risk factors. - multiple patient visits over time present opportunities to integrate exercise counselling among the competing demands of primary care practice
<ul style="list-style-type: none"> - Stevens et al. (1998) - - randomized controlled trial - West London - assess cost-effectiveness of primary care based intervention 	<ul style="list-style-type: none"> - intervention subjects invited to a consultation with an exercise development officer, and a personalized 10 week program - control subjects sent information (leisure centers) - all subjects were followed up at eight months. 	<ul style="list-style-type: none"> - 714 inactive people aged 45-74 	<ul style="list-style-type: none"> - number of episodes of physical activity per week - cost 	<p>Intervention Group</p> <ul style="list-style-type: none"> - a net 10.6% (95% confidence interval 4.5 to 16.9%) reduction - increase in the mean number of episodes of physical activity per week (an additional 1.52 episodes [95% confidence interval 1.14 to 1.95]) - cost of moving a person out of the sedentary group was less than 650 Pounds <ul style="list-style-type: none"> - cost of moving someone to the recommended level of physical activity was estimated at 2500 Pounds.
<ul style="list-style-type: none"> - Swinburn, 1998 - randomized control trial - New Zealand 	<ul style="list-style-type: none"> - patients received verbal advice on increasing physical activity and were randomized to an exercise prescription (green prescription) group or a verbal advice group. 	<ul style="list-style-type: none"> - sedentary patients n = 491 - general practitioners n=37 		<ul style="list-style-type: none"> - 54% to 81% of the participants increased their PA - the number of people engaging in any recreational physical activity at 6 weeks increased substantially, but significantly more so in the green prescription group. - more participants in the green prescription group increased their activity over the period.

Appendix B: PACE II Assessment Tool

Please tell me which ONE statement of the statements I will read you best describes your CURRENT level of physical activity or your interest in physical activity.

“Moderate” exercise included brisk walking, dancing, or hard work around the house. Any activity that makes you work as hard as brisk walking and lasts at least 30 minutes should be counted.

“Vigorous” exercise includes jogging, aerobic classes, or any activity that makes you work as hard as jogging and lasts 20 minutes at a time.

Pre-contemplator

1. _____ I do not exercise or walk regularly now, and I do not intend to start in the near future.

Contemplator

2. _____ I do not exercise or walk regularly, but I have been thinking of starting.
3. _____ I am trying to exercise or walk. (or) During the last month I have starting to walk or exercise on occasion (or on weekends only).
4. _____ I have exercised or walked infrequently (or on weekends only) for over 1 month.

Active

5. _____ I am doing moderate or vigorous exercise, less than 3 times per week (or moderate exercise less than 2 hours per week)
6. _____ I have been doing moderate exercise, 3 or more times per week (or more than 2 hours per week) for the last 1 to 6 months.
7. _____ I have been doing moderate exercise, 3 or more times per week (or more than 2 hours per week) for 7 to 12 months.
8. _____ I have been doing vigorous exercise 3 to 5 times per week for 1 to 6 months.
9. _____ I have been doing vigorous exercise 3 to 5 times per week for 7 to 12 months.
10. _____ I have been doing vigorous exercise 3 to 5 times per week for over 12 months.
11. _____ I do vigorous exercise 6 or more times per week.

Appendix C: Sample Questionnaire

Physical Activity Counselling Questionnaire

Please take a few minutes to answer the following questionnaire about physical activity counselling or advising that you give to your patients or clients. All responses will be confidential and used only in aggregate form.

**Please return by fax to Aldona Perks at (902) 867-2455 by Wednesday July 3rd
Thank you so much for your time and consideration.**

Internal Use Only:

Code:

Date:

Category (health professional):

A. Background information:

A1. At what type of facility do you work? _____

A2. What is your role at this facility? _____

A3. How long have you been working in that role? _____ years

A3a. What is your gender? M F

A3b. What District Health Authority (DHA) do you work in? _____

A4. In your current role at this facility, do you counsel or advise **HEALTHY** individuals about physical activity?

1. Yes

2. No

IF YES, proceed to Section B ...

IF NO....

A5. Does someone else in your office talk about physical activity?

1. Yes

2. No

If Yes, who is the person in your office who generally talks to the clients about physical activity?

Contact info: Name: _____ Phone: _____

Skip to Section on Barriers on page 6.

B. Target Population

B1. Of ALL of the Physical Activity counselling that you do, what percentage is:

1. For a healthy population (preventative)? _____ %

2. For patients with a chronic disease (treatment)? _____ %

For the purposes of this survey, we are primarily interested in the Physical Activity counselling you do with **healthy** individuals and populations. This includes the counselling that you offer to clients/ patients in the **PREVENTION** of chronic disease. The remainder of the questions we are asking are specifically for the **HEALTHY** populations that you counsel. (no chronic disease states such as CVD or diabetes)

B2. How frequently do you talk to the following patients/ clients (or their caregivers) about physical activity?

Children	1. Always	2. Most times	3. Sometimes	4. Never
Youth and Adolescents	1. Always	2. Most times	3. Sometimes	4. Never
Adults	1. Always	2. Most times	3. Sometimes	4. Never
Elderly	1. Always	2. Most times	3. Sometimes	4. Never

B3. How frequently do you talk to the following patients or their caregivers about physical activity?

A) Overweight clients	1. Always	2. Most Times	3. Sometimes	4. Never
B) Normal Weight Clients	1. Always	2. Most Times	3. Sometimes	4. Never
C) Underweight Clients	1. Always	2. Most Times	3. Sometimes	4. Never

C. Physical Activity Recommendations

C1. Which of the following statements best describes your approach to assessing your clients' physical activity levels? (Choose only one)

- 1. I routinely question all my clients regarding their physical activity practices.
- 2. I routinely question my clients who exhibit other risk factors for chronic disease, (i.e., overweight, high blood pressure, high cholesterol levels) regarding their physical activity practices.
- 3. I occasionally question my clients regarding their physical activity practices.
- 4. I do not routinely question my clients regarding their physical activity practices.
- 5. Other: (specify): _____

C2. What is your physical activity recommendation to your adult patients/clients?

- 1. I recommend they increase to 20 minutes of continuous vigorous activity at least 3 days each week.
- 2. I recommend they increase to 30 minutes of continuous moderate activity on most (at least 5) days of the week.
- 3. I recommend that they increase to 30 minutes of moderate physical activity on most (at least 5) days of the week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day.
- 4. I recommend that they increase to 60 minutes of moderate physical activity on most (at least 5) days of the week.
- 5. I recommend they be active, but do not give specific guidelines
- 6. I do not give physical activity recommendations.
- 7. Other: (please specify)

C3. What is your physical activity recommendation to children and youth?

- 1. I recommend they increase to 20 minutes of continuous vigorous activity at least 3 days each week.
- 2. I recommend they increase to 30 minutes of continuous moderate activity on most (at least 5) days of the week.
- 3. I recommend that they increase to 30 minutes of moderate physical activity on most (at least 5) days of the week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day.
- 4. I recommend that they increase to 60 minutes of moderate physical activity on most (at least 5) days of the week.
- 5. I recommend they be active, but do not give specific guidelines
- 6. I do not give physical activity recommendations.
- 7. Other: (please specify)

C4. What is your physical activity recommendation to seniors and older adults?

- 1. I recommend they increase to 20 minutes of continuous vigorous activity at least 3 days each week.
- 2. I recommend they increase to 30 minutes of continuous moderate activity on most (at least 5) days of the week.
- 3. I recommend that they increase to 30 minutes of moderate physical activity on most (at least 5) days of the week, but this can be accumulated in shorter time intervals (such as 10 minute intervals) throughout the day.
- 4. I recommend that they increase to 60 minutes of moderate physical activity on most (at least 5) days of the week.
- 5. I recommend they be active, but do not give specific guidelines
- 6. I do not give physical activity recommendations.
- 7. Other: (please specify)

C5. Do you assess your client’s participation in sedentary activities such as watching television or working on the computer?

- 1. Always
- 2. Most times
- 3. Sometimes
- 4. Never

C6. Do you recommend that your clients limit participation in sedentary activities such as watching television or working on the computer?

- 1. Always
- 2. Most times
- 3. Sometimes
- 4. Never

D. Opinions regarding Physical Activity Behaviour

D1. On a scale of 1-4, with 1 being not very important and 4 being very important, how important do you believe it is for you, as a health professional to talk about physical activity as a preventative health behaviour to the following populations

	Not Very			Very Important
1. Children and their caregivers	1	2	3	4
2. Adolescents, or their caregivers	1	2	3	4
3. Adults	1	2	3	4
4. Older adults and seniors	1	2	3	4
5. Overweight patients	1	2	3	4
6. Normal weight patients	1	2	3	4
7. Under weight patients	1	2	3	4
8. Other: _____	1	2	3	4

D2. With which of the following statements do you agree/ disagree or somewhat agree?

	Agree	Somewhat agree	Disagree
1. In order for physical activity to be beneficial, it must be vigorous			
2. Unless there is a physical limitation, everyone should engage in some form of physical activity on a daily (at least 5 days/week) basis.			
3. Moderate physical activity can provide health benefits.			
4. Physical activity accumulated in 10 minute intervals throughout the day is beneficial to overall health.			
5. In order for physical activity to be beneficial, one's heart rate must be at least 65-75% of their maximum heart rate.			
6. In order for physical activity to be beneficial, the activity must be continuous for at least 20 minutes.			

D3. Do you believe that your counselling improves your clients' physical activity levels?

- 1. Always
- 2. Most times
- 3. Sometimes
- 4. Never

Comments: _____

E. Resources

E1. Do you provide written materials or brochures about physical activity to you clients?

- 1. Always
- 2. Most times
- 3. Sometimes
- 4. Never

E2. Do you use Internet Sites as resources?

- 1. Yes
- 2. No

If YES, what are the top sites that you use?

E3. Are you familiar with Canada's Physical Activity Guides?

- 1. Yes
- 2. No, skip to question E7

E4. Of the 4 different versions of Canada's physical activity guides, which do you use as a source of information and how often?

Regular (adult)	1.Always	2. Most Times	3. Sometimes	4. Never
Children's	1.Always	2. Most Times	3. Sometimes	4. Never
Youth	1.Always	2. Most Times	3. Sometimes	4. Never
Older adult	1.Always	2. Most Times	3. Sometimes	4. Never

E5. Of the 4 different versions of Canada's Physical Activity guide, which do you use as a resource to pass onto those you counsel or advise and how often?

Regular (adult)	1.Always	2. Most Times	3. Sometimes	4. Never
Children's	1.Always	2. Most Times	3. Sometimes	4. Never
Youth	1.Always	2. Most Times	3. Sometimes	4. Never
Older adult	1.Always	2. Most Times	3. Sometimes	4. Never

E6. In general, do you find Canada's Physical Activity guide a useful tool in your practice?

- 1. Yes
- 2. No

Why or why not? Do you have any suggestions for ways of improving Canada's Physical Activity Guide?

E7. Do you refer HEALTHY clients/ patients to someone else outside of your office for physical activity counselling?

- 1. Yes
- 2. No

If YES, who is (are) the person(s) outside of your office that you most often refer your clients / patients to?

Who? (occupation)	Where? (facility)

E8. Do you know of any others who counsel or advise about physical activity? Promote physical activity in the work they do?

Who? (occupation)	Where? (facility)

F. Barriers to Physical Activity Counselling

F1. What inhibits your physical activity counselling/advising/ makes physical activity counselling difficult?

- 1. Lack of reimbursement
- 2. Lack of adequate training
- 3. Time constraints
- 4. Other: _____

F2. What is the average amount of time you spend with clients during routine medical checkups? _____ minutes

F3. Do you usually have adequate time during a routine appointment, check-up, or consultation to counsel your clients about physical activity?

- 1. Always
- 2. Most times
- 3. Sometimes
- 4. Never

F4. Are you adequately reimbursed if you counsel or advise about physical activity?

- 1. Yes
- 2. No
- 3. Unsure

F5. Do you feel that you are adequately prepared / trained for the physical activity counselling that you do?

- 1. Always
- 2. Most times
- 3. Sometimes
- 4. Never

Comments: _____

G. Training

G1. What formal and informal training have you had to counsel or advise individuals about physical activity?

- 1. Workshop or seminar (specify: _____)
- 2. Courses: (specify: _____)
- 3. Scientific reading or journals
- 4. Media
- 5. Other: _____

G2. Which of the following would be most useful to you in promoting physical activity with your patients/ clients? (Check all that apply.)

- 1. Additional training in physical activity and client's behaviour (i.e. workshops)
- 2. Educational materials (i.e. brochures) to provide to clients
- 3. A proven behaviour change program for clients
- 4. Nothing - I feel adequately trained in physical activity promotion and have adequate resources available to me.

G3. Would you be willing to travel (in province) to a conference or workshop regarding physical activity counselling?

- 1. Yes
- 2. No

G4. Do you feel that your organization or facility would support you (financially or otherwise) to attend such a conference or workshop?

- 1. Yes
- 2. No

G5. We are compiling a directory of health professionals that would like more information and resources on physical activity counselling - would you like to be added to such a list?

- 1. Yes
- 2. No

IF YES, please fill out the contact information sheet below.

Thank you for your interest - If you have any further questions about this project, please feel free to contact one of the project leaders below.

If NO, thank you again for your time. If any further questions about this project were to arise, please feel free to contact us.

Project leaders:

Phil Campagna Ph.D.
School of Health and Human Performance
Dalhousie University
6230 South Street
Halifax, NS B3H 3J5
Phone: (902) 494-1145
Email: campagna@dal.ca

Laurene Rehman Ph.D.
School of Health and Human Performance
Dalhousie University
6230 South Street
Halifax, NS B3H 3J5
Phone: (902) 494-6389
Email: lrehman@dal.ca

Angie Thompson Ph.D.
Department of Human Kinetics
St. Francis Xavier University
PO Box 5000
Antigonish NS, B2G 2W4
Phone: (902) 867-4000 ext. 3540
Email: amthomps@stfx.ca

If you would like further information or resources, please leave your contact information.

Name: _____

Address: _____

Phone: _____ Fax: _____

Email: _____

For confidentiality purposes, this page will be detached if contact information is given.

Appendix D

Abramson, S., Stein, J., Schaufele, M., Frates, E., & Rogan, S. (2000). Personal exercise habits and counseling practices of primary care physicians: a national survey. *Clin.J.Sport Med.*, 10, 40-48.

Abstract: OBJECTIVE: Regular physical activity can reduce the incidence and prevalence of many chronic diseases. A vast majority of Americans cite their physician as their primary source of information regarding healthy lifestyle decisions. This study was designed to obtain information about the personal exercise behavior and counseling practices of primary care physicians, to evaluate the relationship between their personal and professional exercise practices, and to determine whether physician specialty is associated with these practices. CONCLUSION: Physicians who exercise are more likely to counsel their patients to exercise. Inadequate time and knowledge/experience regarding exercise are the most common barriers to counseling identified. These findings suggest strategies that might increase physician exercise counseling behavior

Beaulieu, M. (1994). *Physical Activity Counseling* Ottawa: Health Canada.

Abstract: There is fair evidence to support the effectiveness of regular physical activity for the primary prevention of cardiovascular heart disease and hypertension. Physical activity can also contribute to the prevention of obesity, non-insulin dependent diabetes and osteoporosis. There is insufficient direct evidence to indicate whether physician counselling of patients to incorporate regular physical activity into their daily routines will have a positive effect on their behavior. However, qualifying considerations suggest that such counselling may be clinically prudent, especially for patients who are sedentary

Buckworth, J. (2000). Exercise determinants and interventions. *International Journal of Sport Psychology*, 31, 305-320.

Abstract: Significant improvements in public health could be achieved if more people adopted and maintained physically active lifestyles. Considerable effort has been expended over the past 20 years to establish determinants of exercise and to develop interventions to foster exercise behavior change. Understanding factors that are associated with level of physical activity has helped identify segments of the population at greater risk of sustaining a sedentary lifestyle and those who would be more or less responsive to behavior change interventions. Research on determinants of physical activity has also supported the design and implementation of interventions to affect level of physical activity by determining modifiable variables associated with exercise behavior. In considering the connection between exercise determinants and interventions, this article reviews personal, environmental and behavioral determinants that have remained fairly consistent over the years and describes strategies that have been applied to increase exercise adoption and adherence

Calfas, K. & et. al. (1996). A Controlled Trial of Physician Counseling to Promote the Adoption of Physical Activity. *Preventive Medicine*, 25, 225-233.

Castro, C. M. & King, A. C. (2002). Telephone-assisted counseling for physical activity. *Exerc.Sport Sci.Rev.*, 30, 64-68.

Abstract: Different methods of intervention have been tested to promote physical activity at the individual level. The telephone is an excellent form of media for delivering exercise counseling and advice. This review highlights important clinical trials that have documented the success of telephone-assisted exercise counseling for promoting physical activity in a variety of populations

ChodzkoZajko, W. J. (1997). The World health Organization issues guidelines for promoting physical activity among older persons. *Journal of Aging and Physical Activity*, 5, 1-8.

Abstract: Significant improvements in public health could be achieved if more people adopted and maintained physically active lifestyles. Considerable effort has been expended over the past 20 years to establish determinants of exercise and to develop interventions to foster exercise behavior change. Understanding factors that are associated with level of physical activity has helped identify segments of the population at greater risk of sustaining a sedentary lifestyle and those who would be more or less responsive to behavior change interventions.

Conn, V. S. (1998). Older adults and exercise - Path analysis of self-efficacy related constructs. *Nursing Research, 47*, 180-189.

Abstract: Background: Despite the potential benefits of exercise, rates of exercise among older adults remain low. Self-efficacy expectation is the strongest correlate of exercise behavior or exercise behavior change. Objectives: To develop and test the predictive ability of a model of exercise among older adults. Conclusions: Lifelong leisure exercise exerts its influence on exercise through self-efficacy beliefs, further emphasizing the importance of efficacy. Also important are perceived barriers to exercise. Further research should examine self-efficacy expectations, perceived barriers, and age as predictors of exercise among older adults at different stages of health behavior change

Eden, K. & et. al. (2002). Does Counseling by Clinicians Improve Physical Activity? *Annals of Internal Medicine, 137*, 208-215.

Elley, C. R., Kerse, N., Arroll, B., & Robinson, E. (2003). Effectiveness of counselling patients on physical activity in general practice: cluster randomised controlled trial. *British Medical Journal, 326*, 793-796.

Abstract: Objective To assess the long term effectiveness of the "green prescription" programme, a clinician based initiative in general practice, that provides counselling on physical activity Design Cluster randomised controlled trial. Practices were randomised before systematic screening and recruitment of patients. Conclusion Counselling patients in general practice on exercise is effective in increasing physical activity and improving quality of life Over 12 months

Estabrooks, P. (2003). Physical Activity Counseling Through Primary Health Care. *Journal of the American Medical Association, 289*, 2913-2916.

Fiscella, K., Goodwin, M. A., & Stange, K. C. (2002). Does patient educational level affect office visits to family physicians? *J.Natl.Med.Assoc., 94*, 157-165.

Abstract: Significant disparities in health care based on patient socioeconomic status have been documented. The extent to which physician behavior accounts for these differences is not known. We examined the impact of patient socioeconomic status, measured by years of education, on physician behavior assessed by direct observation of office visits, chart audits, and patient reports among 138 family physicians in 84 practices. Less educated patients had similar overall visit satisfaction, but were slightly less likely to have their expectations met. These show that patients' education has relatively small, but potentially important, effects on the outpatient delivery of primary care

Fletcher, G. (1997). How to implement physical activity in primary and secondary prevention: a statement for healthcare professionals from the task force on risk reduction. *Circulation, 96*, 355-357.

Goldstein, M. G., Pinto, B. M., Marcus, B. H., Lynn, H., Jette, A. M., Rakowski, W. et al. (1999). Physician-based physical activity counseling for middle-aged and older adults: A randomized trial. *Annals of Behavioral Medicine, 21*, 40-47.

Abstract: Sedentary behavior among older adults increases risk for chronic diseases. Physicians in a primary care setting can play an important role in promoting physical activity adoption among their older patients. The Physically Active for Life (PAL) project was a randomized, controlled trial comparing the efficacy of brief physician-delivered physical activity counseling to usual care on self-reported physical activity levels. The physical activity counseling was based on the Transtheoretical Model of Change and social learning theory. Results showed that at the 6-week follow-up, subjects in the intervention condition were more likely to be in more advanced stages of motivational readiness for physical activity than subjects in the Control condition. This effect was not maintained at the 8 month follow-up and the intervention did not produce significant changes in PASE scores. Results suggest that more intensive, sustained interventions may be necessary to promote the adoption of physical activity among sedentary, middle-aged, and older adults in primary care medical practices

Green, B., McAfee, T., Hindmarsh, M., Madsen, L., Caplow, M., & Buist, D. (2002). Effectiveness of Telephone Support in Increasing Physical Activity Levels in Primary Care Patients. *American Journal of Preventive Medicine*, 22, 177-183.

Harsha, D. M., Saywell, R. M., Jr., Thygerson, S., & Panozzo, J. (1996). Physician factors affecting patient willingness to comply with exercise recommendations. *Clin.J.Sport Med.*, 6, 112-118.

Abstract: OBJECTIVE. To evaluate how physician factors such as weight, exercise habits, and humanistic traits could influence patient willingness to comply with exercise recommendations. CONCLUSIONS. Physicians may have a positive impact on patient willingness to comply by prescribing exercise and providing education and detailed guidance for all candidates. The study also showed that physicians' negotiating exercise programs and being good "exercise" role models is very important

Houde, S. C. & Melillo, K. D. (2000). Physical activity and exercise counseling in primary care. *Nurse Pract.*, 25, 8, 11-8, 18.

Abstract: Despite the known health benefits of regular physical activity and exercise, physical inactivity is prevalent among American adults. The primary care provider is in an optimal position to provide physical activity and exercise counseling. The Physician-based Assessment and Counseling for Exercise (PACE) program, which utilizes the stages of change theory, provides a valuable framework for exercise counseling. This article discusses exercise counseling theories and research and provides an overview of the PACE program, including the PACE protocols and the model's utility in primary care

Jones, T. F. & Eaton, C. B. (1995). Exercise prescription. *Am.Fam.Physician*, 52, 543-545.

Abstract: Exercise can increase longevity and improve overall health and quality of life. Since a large proportion of Americans have a sedentary lifestyle, exercise counseling should be a part of routine health maintenance. Physicians need to provide patients with information about the specific benefits of exercise and motivate them to increase their physical activity. Physicians should encourage all adults, including those who elect not to participate in a formal exercise program, to accumulate 30 minutes or more of moderate-intensity physical activity on most days of the week.

Kahn, E. & et al. (2002). The Effectiveness of Interventions to Increase Physical Activity: A Systematic Review. *American Journal of Preventative Medicine* 4S, 73-107.

Ref Type: Journal (Full)

Kenny, T. (2001). Get moving! Exercise counseling for sedentary patients. *Adv.Nurse Pract.*, 9, 95-98.

King, A. C. (2000). Exercise counseling in health promotion. *West J.Med.*, 173, 5-6.

King, A. C. (2001). Interventions to promote physical activity by older adults. *Journals of Gerontology Series A-Biological Sciences and Medical Sciences*, 56, 36-46.

Abstract: Physical inactivity has been established to be an independent risk factor for a range of chronic diseases and conditions that threaten the health of the nation. However, only a minority of the population is currently meeting the recommended levels of regular physical activity, which have been linked with important health and quality-of-life benefits. Older adults are at particular risk for leading sedentary lifestyles. This article provides an overview of factors associated with physical activity for older adults and also describes potentially promising interventions for promoting regular physical activity in this growing population segment.

King, A. C., Rejeski, W. J., & Buchner, D. M. (1998). Physical activity interventions targeting older adults - A critical review and recommendations. *American Journal of Preventive Medicine*, 15, 316-333.

Abstract: Background: Although many of the chronic conditions plaguing older populations are preventable through appropriate lifestyle interventions such as regular physical activity, persons in this age group represent the most sedentary segment of the adult population. The purpose of the current paper was to provide a critical selected review of the scientific literature focusing on interventions to promote physical activity among older adults. Conclusions: Recommendations for future scientific endeavors targeting older adults are discussed

Kohl, H. W., Dunn, A. L., Marcus, B. H., & Blair, S. N. (1998). A randomized trial of physical activity interventions: design and baseline data from Project Active. *Medicine and Science in Sports and Exercise*, 30, 275-283.

Abstract: We report here the design and baseline data from Project Active, a 2-yr randomized trial designed to compare the effectiveness of a Lifestyle physical activity intervention with the traditional Structured exercise prescription approach. Primary outcome measures are energy expenditure in physical activity (estimated by kcal per kilogram of body weight of energy expenditure) and cardiorespiratory fitness (measured by maximal oxygen uptake). The secondary hypothesis is that both groups will make significant improvements from baseline in physical activity and cardiorespiratory fitness at the end of 6 months. Six months of active intervention are followed by 18 months of a tapered follow-up maintenance intervention in both groups. Primary outcome measures are measured after 6 and 24 months

Laitakari, J., Miilunpalo, S., & Vuori, I. (1997). The process and methods of health counseling by primary health care personnel in Finland: a national survey. *Patient Educ. Couns.*, 30, 61-70.

Abstract: A stratified random sample of 53 Finnish health centers was selected, and representative samples of their physicians, nurses and physiotherapists were surveyed by questionnaire on the frequency of their use of health education methods in health counseling and their perception of the ease vs. difficulty of implementing the stages of the process of lifestyle counseling. Overall, the assessment of the enabling and reinforcing factors in client health behavior (social relationships and physical environment), the translation of these factors into a behavior change program and the evaluation of such programs were seen as difficult by all three categories of health care professionals.

Marcus, B. H., Goldstein, M. G., Jette, A., SimkinSilverman, L., Pinto, B. M., Milan, F. et al. (1997). Training physicians to conduct physical activity counseling. *Preventive Medicine*, 26, 382-388.

Abstract: Background. In accordance with the U.S. Preventive Services Task Force recommendations, the current pilot study tests the feasibility and efficacy of a physician-delivered physical activity counseling intervention. Results. Counseling was feasible for physicians to do and produced short-term increases in physical activity levels. Both groups increased their physical activity, but the increase in physical activity was greater for patients who reported receiving a greater number of counseling messages. Conclusions. Physician-delivered physical activity interventions may be an effective way to achieve widespread improvements in the physical activity of middle-aged and older adults. (C) 1997 Academic Press

Marcus, B. H., King, T. K., Clark, M. M., Pinto, B. M., & Bock, B. C. (1996). Theories and techniques for promoting physical activity behaviours. *Sports Medicine*, 22, 321-331.

Abstract: The primary goal of this article is to review theoretical models utilised in designing physical activity interventions for healthy adults. Physical activity offers numerous benefits for improved physical and psychological health. However, the majority of the population is sedentary and therefore at increased risk for morbidity and mortality. Many techniques have been developed for intervening with physical activity behaviours, some of which are based on theoretical models. While some of these models show more promise than others, no model is sufficient to thoroughly explain exercise behaviours or how to best intervene. In the final section, recommendations for future research are presented, and promising areas of development in physical activity interventions are discussed. This is not an exhaustive review of theoretical models but rather focuses on models most commonly applied to physical activity

Melillo, K. D., Houde, S. C., Williamson, E., & Futrell, M. (2000). Perceptions of nurse practitioners regarding their role in physical activity and exercise prescription for older adults. *Clin.Excell.Nurse Pract.*, 4, 108-116.

Abstract: Health promotion related to physical activity and exercise is an integral part of the nurse practitioner (NP) role. Yet, studies suggest that only 30% of primary care clinicians provide counseling to their sedentary patients (Clinician's Handbook of Preventive Services, 1994). This percentage may be even less with clients who represent the oldest old or a minority population. Information about the extent to which NPs counsel patients about physical activity and exercise prescription has not been well documented. The purpose of this research study was to identify the NPs role in providing individualized exercise prescription and to determine what strategies NPs use in assisting older adults to initiate and maintain an exercise program. The study utilized a focus group design comprising two focus groups, ranging in size from 6 to 7. Purposive sampling was used to enlist NP focus group participants. It is imperative that policymakers include physical activity and exercise counseling as a condition for reimbursement in primary care visits

Miilunpalo, S. (1993). Measurement of problem-oriented need for the primary health care services: need for exercise counseling as an example. *Scand.J.Soc.Med.*, 21, 107-115.

Abstract: Based on several previous approaches, a new model for the measurement of needs for primary health care services is constructed and demonstrated. This fourfold model includes the concepts of diagnostic need, perceived need, client dependent demand and provider dependent demand. The empirical results concerning the need for exercise counseling in the primary health care indicated that the present approach is feasible and comprehensive enough to obtain valuable information about the health needs and how they are supplied. The model makes it possible to identify discrepancies, for example, between the experts' and clients' priority ratings and between the criterion-based prevalence of a problem and the practice of the care providers. It may also reveal barriers and inequalities in the use of services. For health administrators and decisionmakers the present problem-oriented model provides a systematic approach to assess needs for health care services and to develop the services provided

Milan, F., Marcus, B., Goldstein, M., & Taylor, E. (1994). Training in exercise counseling. *Acad.Med.*, 69, 822-823.

Norris, S., Grothaus, L., Buchner, D., & Pratt, M. (2000). Effectiveness of Physician-Based Assessment and Counseling for Exercise in a Staff Model HMO. *Preventive Medicine*, 30, 513-523.

Painter, P., Carlson, L., Carey, S., Paul, S. M., & Myll, J. (2000). Physical functioning and health-related quality-of-life changes with exercise training in hemodialysis patients. *Am.J.Kidney Dis.*, 35, 482-492.

Abstract: The Renal Exercise Demonstration Project was designed to test the effects of two different approaches to exercise programming on the levels of physical activity, physical functioning, and self-reported health status in hemodialysis patients. The intervention group showed increased participation in physical activity. There were significant differences between the intervention and nonintervention groups in change over time in normal and fast gait speed, sit-to-stand test scores, and the physical scales on the SF-36, including the physical component scale. The intervention group improved in these test results, whereas the nonintervention group either did not change or declined over the duration of the study. It is clear that improvements in physical functioning result from exercise counseling and encouragement in hemodialysis patients. Because self-reported physical functioning is highly predictive of outcomes in hemodialysis patients, more attention to patients' levels of physical activity is warranted

Petrella, R. J., Koval, J. J., Cunningham, D. A., & Paterson, D. H. (2003). Can primary care doctors prescribe exercise to improve fitness?. The step test exercise prescription (STEP) project. *Am.J.Prev.Med.*, 24, 316-322.

Abstract: Sedentary lifestyle is associated with adverse health outcomes. Available evidence suggests that, despite positive attitudes toward regular exercise in promoting a healthy lifestyle, few physicians actually prescribe exercise for their patients. Barriers include lack of skills and standard office instruments. Because primary care physicians have regular contact with a large proportion of the population, the impact of preventive health interventions may be great. To determine the effect of an exercise prescription instrument (i.e., Step Test Exercise Prescription [STEP]), compared to usual-care exercise counseling delivered by primary care doctors on fitness and exercise self-efficacy among elderly community-dwelling patients.

Petrella, R. J. & Lattanzio, C. N. (2002). Does counseling help patients get active? Systematic review of the literature. *Canadian Family Physician*, 48, 72-80.

Abstract: OBJECTIVE To determine the effect of counseling patients to become more physically active. CONCLUSION Interventions that included written materials for patients, considered behaviour change strategies, and provided training and materials for physicians were effective at increasing levels of physical activity. New strategies that involve measuring and prescribing specific amounts of exercise might also improve fitness levels and hence improve outcomes of chronic disease. Shortcomings of these studies include lack of long-term data, lack of sustaining activities for family physicians, and scant cost-efficacy analysis

Pinto, B. M., Goldstein, M. G., Depue, J. D., & Milan, F. B. (1998). Acceptability and feasibility of physician-based activity counseling. The PAL project. *Am.J.Prev.Med.*, 15, 95-102.

Abstract: BACKGROUND: The continued prevalence of sedentary behavior in older adults underscores the need for physical activity promotion. Physician-delivered activity counseling may be an important avenue of promoting physical activity for these individuals. The Physically Active for Life (PAL) project was a randomized study of the effects of brief physician counseling plus follow-up on physical activity behaviors in older adults. RESULTS: Results showed that physicians favorably endorsed the training and the support materials, and reported adherence to delivery of the intervention protocol. Comparisons between the two groups showed significant improvements in confidence for intervention-group physicians, but no significant changes in physician reports of exercise counseling provided to all patients. Patients reported satisfaction with the exercise counseling and support materials.

Pinto, B. M., Goldstein, M. G., & Marcus, B. H. (1998). Activity counseling by primary care physicians. *Prev.Med.*, 27, 506-513.

Abstract: Modifying patients' sedentary lifestyle, a risk factor for many chronic diseases, is a challenge to health professionals. Although physicians can play a vital role in promoting physical activity among sedentary patients, the prevalence of physician-based exercise counseling is low. This paper presents a review of studies that have targeted physicians as agents of behavior change. Changing sedentary behavior is more likely to be effective when the intervention is grounded in theory. This paper outlines an integration of two theoretical models that have potential for enhancing behavior change, and it describes specific techniques for physicians interested in promoting a more active lifestyle among their patients

Pinto, B. M., Lynn, H., Marcus, B. H., DePue, J., & Goldstein, M. G. (2001). Physician-based activity counseling: intervention effects on mediators of motivational readiness for physical activity. *Ann.Behav.Med.*, 23, 2-10.

Abstract: In theory-based interventions for behavior change, there is a need to examine the effects of interventions on the underlying theoretical constructs and the mediating role of such constructs. These two questions are addressed in the Physically Active for Life study, a randomized trial of physician-based exercise counseling for older adults. Three hundred fifty-five patients participated (intervention n = 181, control n = 174; mean age = 65.6 years). The underlying theories used were the Transtheoretical Model, Social Cognitive Theory and the constructs of decisional balance (benefits and barriers), self-efficacy, and behavioral and cognitive processes of change. Motivational readiness for physical activity and related constructs were assessed at baseline, 6 weeks, and 8 months. Results suggest that interventions of greater intensity and duration may be needed for sustained changes in mediators and motivational readiness for physical activity among older adults

Podl, T. R., Goodwin, M. A., Kikano, G. E., & Stange, K. C. (1999). Direct observation of exercise counseling in community family practice. *Am.J.Prev.Med.*, 17, 207-210.

Abstract: BACKGROUND: Although physical activity is important for the prevention and management of a variety of common chronic diseases, the prevalence and patient and visit characteristics associated with provision of physical activity advice by community family physicians is not well understood. CONCLUSIONS: Exercise counseling is relatively common during outpatient visits to family physicians, and is more commonly given to patients with risk factors. Multiple patient visits over time present opportunities to integrate exercise counseling among the competing demands of primary care practice

Ritchie, C. S., Stetson, B. A., Bass, P. F., III, & Adams, K. J. (2002). Talking to patients about aerobic exercise for disease prevention: an educational exercise for medical students. *Nutr.Clin.Care*, 5, 103-114.

Abstract: Numerous data demonstrate the importance of physical activity in reducing obesity and cardiovascular mortality and morbidity. Research demonstrates the beneficial impact of physician counseling on health promoting behaviors. Unfortunately, few physicians or medical students receive formal training in exercise counseling. We describe an educational activity used to provide medical students with the tools needed to begin to engage patients in activity counseling

Rogers, L. Q., Bailey, J. E., Gutin, B., Johnson, K. C., Levine, M. A., Milan, F. et al. (2002). Teaching resident physicians to provide exercise counseling: a needs assessment. *Acad.Med.*, 77, 841-844.

Abstract: PURPOSE: To determine the behaviors, knowledge, and attitudes of resident physicians regarding exercise counseling. METHOD: In 1997, a self-administered questionnaire was sent to 313 internal medicine resident physicians at six U.S. training programs. Pearson correlation coefficients examined associations between the resident physicians' practices, attitudes, and personal habits. Stepwise multiple linear regression identified predictors of exercise counseling by the resident physicians. CONCLUSIONS: Resident physicians' perceptions of exercise counseling as a priority, confidence in counseling skills, and postgraduate year of training are important predictors of their providing exercise counseling. These factors should be addressed in future educational programs

Sherman, S. E. & Hershman, W. Y. (1993). Exercise counseling: how do general internists do? *J.Gen.Intern.Med.*, 8, 243-248.

Abstract: OBJECTIVE: To assess how often physicians counsel patients about exercise and to identify which primary care internists infrequently counsel about it. DESIGN: Cross-sectional survey of a random sample of primary care internists in Massachusetts. Questions covered physicians' attitudes, beliefs, and practices with respect to counseling about exercise; physicians' perceived barriers to counseling about exercise; physicians' personal exercise frequency; and physician demographics. CONCLUSIONS: Several factors were found to be independently associated with the likelihood of a physician's counseling about exercise. These included physician perceived success at counseling, physician belief that exercise is important, physician age, and physician resting heart rate. These results suggest possible strategies to improve physician's counseling efforts

Simons, M. D., Calfas, K., Oldenburg, B., & Burton, N. (1998). Effects of Interventions in Health Care Settings on Physical Activity or Cardiorespiratory Fitness. *American Journal of Preventive Medicine*, 15, 413-430.

Singer, J. (1991). Promoting Physical Activity in Primary Care: Overcoming the barriers. *Canadian Family Physician*, 37, 2167-2174.

Spence, J. (2001). *Compilation of Evidence of Effective Active Living Interventions: A Case Study Approach* (Rep. No. 001). Alberta Centre for Active Living.

Abstract: The objectives of this report were to discuss the cost-effectiveness and cost-benefits of physical activity interventions and to comment on the worthiness of an outcomes model for assessing the evidence.

Stevens, W., Hillsdon, M., Thorogood, M., & McArdle, D. (1998). Cost-effectiveness of a primary care based physical activity intervention in 45-74 year old men and women: a randomised controlled trial. *British Journal of Sports Medicine*, 32, 236-241.

Abstract: Objective-To assess the cost-effectiveness of a primary care based intervention aimed at increasing levels of physical activity in inactive people aged 45-74. Methods-A total of 714 inactive people aged 45-74, taken from two west London general practices, were randomised into two groups. Intervention subjects were invited to a consultation with an exercise development officer, and offered a personalised 10 week programme to increase their level of regular physical activity, combining leisure centre and home based activities. Control subjects were sent information on local leisure centres. All subjects were followed up at eight months. Conclusions-Moderate physical activity can be successfully encouraged in previously sedentary men and women aged 45-74 through a primary care based intervention. The process of recruitment was the most important variable cost. A high uptake rate would maximise cost-effectiveness, and sensitivity analysis suggests that unit costs could be halved with a more effective recruitment strategy

Tobin, M. (2000). *Physical Activity Counselling by Health Professionals for: The CFPC Physical Activity and Health Strategy and Committee.*

van der Bij, A. K., Laurant, M. G. H., & Wensing, M. (2002). Effectiveness of physical activity interventions for older adults - A review. *American Journal of Preventive Medicine*, 22, 120-133.

Abstract: Objective: This review evaluates the effectiveness of physical activity interventions among older adults. Conclusions: Home-based, group-based, and educational physical activity interventions can result in increased physical activity, but changes are small and short-lived. Participation rates of home-based and group-based interventions were comparable, and both seemed to be unrelated to type or frequency of physical activity. The beneficial effect of behavioral reinforcement strategies was not evident. Comparative Studies evaluating the effectiveness of diverse interventions are needed to identify the interventions most likely to succeed in the initiation and maintenance of physical activity

Walsh, J. M., Swangard, D. M., Davis, T., & McPhee, S. J. (1999). Exercise counseling by primary care physicians in the era of managed care. *Am.J.Prev.Med.*, 16, 307-313.

Abstract: BACKGROUND: Recommendations from the Centers for Disease Control and Prevention (CDC) and the American College of Sports Medicine (ACSM) advise all adults to accumulate at least 30 minutes of moderate intensity physical activity on most, if not all, days of the week, but many U.S. adults engage in no leisure-time physical activity. Since primary care providers can play an important role in exercise counseling and prescription, we wanted to assess the proportion of primary care physicians from four hospitals who asked about exercise habits, counseled about exercise, and prescribed exercise; and the factors that were associated with their counseling and prescription habits. CONCLUSION: Many primary care physicians are not asking about, counseling about, or prescribing exercise for their patients. Since primary care physicians are in the best position to provide individualized exercise prescriptions for their patients, future research should focus on training physicians in effective counseling techniques that can be done as brief interventions

Wee, C. C., McCarthy, E. P., Davis, R. B., & Phillips, R. S. (1999). Physician counseling about exercise. *JAMA*, 282, 1583-1588.

Abstract: CONTEXT: The increase in sedentary lifestyle may contribute to the rise in obesity nationally. Although guidelines suggest that physicians counsel all patients about exercise, physicians counsel only a minority of their patients. Whether patient factors influence physician counseling is not well established. OBJECTIVES: To examine and to identify factors associated with exercise counseling by US physicians. CONCLUSION: The rate of physician counseling about exercise is low nationally. Physicians appear to counsel as secondary prevention and are less likely to counsel patients at risk for obesity. The failure to counsel younger, disease-free adults and those from lower socioeconomic groups may represent important missed opportunities for primary prevention

Weingarten, S. R., Stone, E., Green, A., Pelter, M., Nessim, S., Huang, H. et al. (1995). A study of patient satisfaction and adherence to preventive care practice guidelines. *Am.J.Med.*, 99, 590-596.

Abstract: PURPOSE: Patient satisfaction ratings are being used to judge physicians' quality of care and to determine physician reimbursement. We therefore studied the association between patient satisfaction and the quality of medical care received by patients in physicians' offices. RESULTS: Patients were generally satisfied with their physicians' care (median satisfaction score 4.2; scale 1 to 5, 5 being most satisfied). Patients who received or were offered mammography, clinical breast examination, influenza vaccine, pneumococcal vaccine, tetanus vaccine, exercise counseling, and smoking cessation counseling were more satisfied with their medical care than those patients who did not ($P < 0.001$ for all tests). After controlling for the physician who was providing the medical care, there was still a statistically significant relationship between these factors and patient satisfaction.

Wen, L. M., Thomas, M., Jones, H., Orr, N., Moreton, R., King, L. et al. (2002). Promoting physical activity in women: evaluation of a 2-year community-based intervention in Sydney, Australia. *Health Promotion International*, 17, 127-137.

Abstract: Women are less likely than men to reach recommended levels of physical activity and have unequal access to active leisure time. Studies in Australia have consistently found that women are only half as likely as men to be adequately active. A community-based multi-strategic health promotion intervention, 'Concord, A Great Place to be Active', was implemented from 1997 to 1999. It aimed to increase the physical activity levels of women aged 20-50 years living in the Concord Local Government Area (LGA), an inner-western region of Sydney, Australia. A key feature of this intervention was a partnership between Concord Council (the local government) and the Central Sydney Health Promotion Unit (CSHPU). The project was evaluated using qualitative and quantitative methods. In considering the connection between exercise determinants and interventions, this article reviews personal, environmental and behavioral determinants that have remained fairly consistent over the years and describes strategies that have been applied to increase exercise adoption and adherence

Whitlock, E., Orleans, C., Pender, N., & Allan, J. (2002). Evaluating primary care behavioral counseling interventions: An evidence-based approach. *American Journal of Preventive Medicine*, 22, 267-284.

Will, P. M., Demko, T. M., & George, D. L. (1996). Prescribing exercise for health: a simple framework for primary care. *Am.Fam.Physician*, 53, 579-585.

Abstract: Physicians need to become committed to promoting the preventive benefits of regular physical activity. Practical strategies can help physicians efficiently and effectively incorporate exercise counseling into their practices. These strategies include regularly asking about leisure activity and linking the agenda of an office visit to the benefits of exercise. The physician and the patient should work together to formulate a mutually acceptable plan for the patient to adopt and maintain a healthful exercise lifestyle. In the same way that prescriptions are written for medications, a prescription can be given for an exercise plan suited to the individual patient

Wilson, D. & Ciliska, D. (2002). Family Physicians and Exercise Counselling: Can they be influenced to provide more? *Canadian Family Physician*, 38, 2003.

Woods, C., Mutrie, N., & Scott, M. (2002). Physical activity intervention: a Transtheoretical Model-based intervention designed to help sedentary young adults become active. *Health Education Research*, 17, 451-460.

Abstract: Physical activity levels in young adults are low. Research supports the use of the Transtheoretical Model of behaviour change (TM) in designing physical activity interventions. This study used a pre-post randomized control design to investigate the effectiveness of a self-instructional intervention for helping sedentary young adults to initiate physical activity. Post-intervention, significantly more of the experimental group (80%), in comparison to the control group (68%), improved their exercise stage of change (SOC) from baseline ($P < 0.05$). Discriminate analyses revealed that discrimination between stage improvement/non-improvement was possible using the processes of change data. Stage improvers scored significantly higher on all of the behavioral and four out of five of the cognitive processes of change. For stage improvers, the processes of self-re-evaluation and self-liberation were most frequently used, whilst social liberation was used significantly more by the experimental than the control group. This inexpensive, self-instructional intervention, based on the TM and the 'active living message', is an effective method of assisting sedentary young adults to progress through the exercise SOC

