



BENEFITS OF PHYSICAL ACTIVITY FOR ONTARIO

Executive Summary and

Implications for the Development of a Physical Activity Intervention Framework

Prepared for Ministry of Culture, Tourism and Recreation and

Ministry of Health

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The Need to Combat Sedentary Living

- sedentary living is one of four primary risk factors of coronary heart disease, and of these, it is the most prevalent
- inactivity is a modifiable risk factor
- individuals who are sedentary face increased risk of premature death. The relative risk of premature death is 1.51 from inactivity, the same order of magnitude as that from cigarette smoking (1.76) and hypertension (1.73). The relative risk of premature death is twice that high from not being fit (3.4 for males to 4.7 for females)
- 4 out of 10 Ontarians are inactive
- the reduction of risk in Ontario would be greater if the unfit became fit and the inactive became active than if smokers quit smoking or hypertensives became normotensives.
- physical activity intervention strategy is a cost-effective health promotion strategy

- if 1 in 5 of those inactive became active, as much as \$1.1 billion in costs associated with health care, lost revenues, etc. could be avoided. If 1 in 5 cigarette smokers quit smoking, \$0.4 billion in associated costs could be avoided.

The Benefits of Active Living: Reducing the Risks of Sedentary Living

- reduced risks of premature mortality and disease
 - Risk decreases as activity level increases
 - One hour of moderate activity spread over the course of the day adds as much as two years to men's lives
 - Risk of coronary heart disease decreases if physical activity of even a low to moderate level is performed regularly
 - The risk of cardiovascular disease is up to 3 times greater for persons with diabetes. Physical activity helps to reduce this risk.
 - Risk of developing type II diabetes is reduced. Protective benefit is highest for those persons most at risk—those with high body mass index, history of arterial hypertension or a family history of diabetes
 - Reduced risk of colon cancer and possibly the risk of breast cancer and lung cancer
 - Reduced risk of back problems. Back problems are related to sedentary living, infection and rheumatoid disease. Being moderately active at work reduces the risk of lower back problems. The risk is higher among those performing heavy physical work and those.
 - Reduced risk of osteoporosis. Active people have greater bone mass than inactive people. Regular weight bearing or resistive exercise is essential for bone health
 - Reduced risk of obesity, a key risk factor coronary heart disease. Physical activity needs to be a lifelong habit—one of regular, low to moderate intensity activity, with prolonged duration and continued over a period of years.
- Reduced acute health problems
 - Those who are inactive report more reductions in daily activities as a result of acute health problems
 - Those who are inactive in their leisure-time are more likely to report days lost from work
 - Those who have low fitness levels may lose up to 2.5 times as many days off work as their very fit counterparts
 - Trunk flexion and pelvic tilt exercises reduce the recurrence of acute lower back problems.
- Reduced mental health problems
 - Reduced anxiety and stress
 - Reduced depression
 - Increased psychological well-being

- Positive association with a person's satisfaction with their physical shape, appearance and weight. For older adults, regular physical activity including interaction with others is more likely to increase life satisfaction, owing to increased feelings of social integration.

- Increased economic activity

- Reduced absenteeism

- Significant savings. Even slight decreases in days off work attributable to becoming more active can lead to significant savings across the entire workforce

- Increased productivity

- Reduced turnover, hiring and training costs

- Reduction in accidents

- Enhanced human development

- Increased self-esteem. Self-esteem is positively associated with better adjustment, less defensive behaviour, less deviant behaviour and general well-being

- Positively affects self efficacy. Physical activity influences individual's perceptions of their physical capabilities and personal efficacy.

- Moderate to high association between academic performance and motor performance. Physical education is associated with academic performance—students with high grade point averages perform better on selected physical skill tests—and those with daily aerobic programs are associated with higher levels of reading, language and mathematics than those without.

- Positive affect on the cognitive skills of children with learning disabilities.

- Possible improvement in, or maintenance or, cognitive-neuro psychological function in aging.

The Benefits of Active Living: As an Alternative Approach

- Physical activity as an alternative to medical treatment

- May improve glucose tolerance and reduces insulin sensitivity among persons with impaired glucose tolerance or who are in the early stages of type II diabetes

- Treatment for lower back pain which can be as effective as back surgery in cases of acute herniated discs

- Treatment for hypertension, with the results achieved being similar to those from drug therapy. The beneficial effect of exercise training at lower intensities (40-70% estimated VO₂max) is important in hypertensive populations.

- Treatment of overweight, obese and severely obese, provided the activity is regular, of appropriate intensity, of prolonged duration and continued over a period of years

- Treatment for anxiety, with results showing that exercise may be more effective than a tranquilizer drug, but it has not been found to be better than traditional psychological interventions.

- Physical activity as a means of addressing community issues
- Appropriately planned physical activity programs may assist in the prevention of crime
- Appropriate physical activity, providing a successful experience and increased sense of competence, improves self-esteem. Self-esteem is an important predictor of substance abuse, so such programs may help to prevent substance abuse.
- Appropriate physical activity programs teach social skill, and self-responsibility

Factors Influencing Participation in Physical Activity

- Individual's motivation and response
 - Attitudes and knowledge
 - Self-efficacy for exercise
 - Intention to exercise
 - Intrinsic motivations
 - Fun and enjoyment
 - Challenge
 - Mastery
 - Personal control
 - Achievement
 - Expectation of strength increase
 - Expectation of improved appearance
 - Weight control
 - Stress reduction
 - Personal fitness
 - Expect health benefits
 - Past activity involvement (adult and childhood)
 - Positive activity experience with pleasant after effects
 - Goal setting and monitoring skills
 - Commitment

- Self-determination
- Diet
- Lack of time (due to family, work or other competing pressures)
- Biological factors
 - Gender
 - Age
 - Higher percent body fat
 - Genetics
 - Race
- Health status and function
 - Disease
 - Disability
 - Mental illness
 - Mood disturbance
 - Injury history
 - Overweight/ obesity
 - Insulin dependent diabetes
- Social environment
 - Flexibility (e.g. timing, location)
 - Convenience
 - Social support (family, friends...)
 - Education
 - Income level
 - Occupation
 - Childless
 - Group cohesion

- Exercise class size
- Social support (instructor)
- Positive, safe environment
- Physical environment
- Transport
- Facilities
- Accessibility
- Proximity
- Pollution
- Safety

The Inactive Population

General Population

- Demographics
 - More likely to be females and older adults
 - Concentrated among lower education and income levels
 - Higher proportion among sales and clerical workforce and among homemakers. Many are also blue collar workers.
 - More likely to live in communities having fewer than 75,000 residents
 - Report similar work related energy expenditures.
- Health status and utilization
 - Twice as likely to feel that they are not in very good health compared to the views of those who are active
 - More likely to report chronic conditions
 - More likely to take days off work or school
 - More likely to visit a physician over twice per year
 - Less likely to have feelings of positive well-being
- Lifestyle behaviours
 - More likely to smoke cigarettes and less likely to have never smoked

- Less likely to adhere to Canada's Food Guide
- Less likely to report limiting fat in their diet
- More likely to be overweight, have excess fat, or a fat distribution pattern that elevates their risk of premature death
- One in six people who are inactive report that they often feel stressed.
- Attitudes and intentions
- Twice as likely to have a negative attitude toward vigorous physical activity
- Regular physical activity rank sixth in importance to well-being, after adequate sleep, a good diet, maintaining proper weight, having a smoke-free environment and controlling stress.
- Individuals who are inactive are half as likely as to intend to be active at least three times a week compared to those who are active
- One third intend to exercise less than once a week.
- Supportive environments
- Less likely to have close friends and family that they can talk to about private matters and call on for help
- Less likely to receive encouragement to participate in activity
- Twice as likely to be discouraged than those active
- Those who are inactive tend to have less active spouses
- Less likely to report having a high degree of control over their choice to be active
- Almost half report that they face time pressures due to family
- More likely to feel that they lack energy and self-discipline, lack of ability and feeling ill at ease than those who are active.

Implications for Developing a Physical Activity Intervention Framework

- Implications to the general population and population segments. The inactive population is heterogeneous and needs to be segmented into more homogeneous subgroups to explore the best interventions and strategies for these groups.
- Demographics are often used to segment the population. This approach is useful in tailoring interventions to be delivered through different systems or settings: for example, reaching children and youth through schools; the majority of the adult population through workplaces; and older adults through existing seniors networks and programs.
- From a marketing perspective, a campaign based on values and aspirations may be more appropriate than a broad based campaign aimed solely at demographic profiles. This approach should be refined as psychographic profiles become available. For example a different approach would be used for reaching

seniors having the "Integrated Achievers" profile than that for the "Contented Cocoonist".

- Equity considerations that negatively influence participation are another way to segment the population: for example, women; different cultural groups; persons with disabilities; etc.
- Readiness for change based on theoretical models, for example, precontemplative—may be aware of the need for changing behaviour, but not yet motivated to make a change
- Risk reduction and maximizing the benefits of physical activity is another approach that could be adopted to create more homogenous population segments.

demographic segmentation of inactives

- Women
- Older adults
- lower education and income levels
- sales, clerical and blue collar workers
- smaller communities

Psychographic segmentation of the population

- Segments such as "Contented Cocoonists", "Risk Takers" etc.
- Attitudes to physical activity and health
- Goals for leisure time
- Perceived abilities
- Personal control

Equity segmentation

- Person's with disabilities
- Women
- Aboriginals and other cultural groups
- Low income groups

Readiness for change based on theoretical models

- Precontemplative, may be aware of the need for changing behaviour, but not yet motivated to make a change
- Contemplative, motivated to change

- Preparation, skill development
- Action, initial adoption
- Relapse
- Maintenance of the acquired behaviour

Reducing health risks and maximizing benefits of physical activity as a segmentation strategy

- Children and youth, for optimal growth and maturation
- Pre-retirement and retirement years, for maintaining health and functional capacity
- Girls and women, for reducing the risk of osteoporosis
- Lower income levels, as income is a key determinant of health status

Person's with type II diabetes and at risk to developing type II diabetes, i.e. those with high body mass, history of hypertension, family history of diabetes

- Those with low back problems and those at risk due to sedentary living, and those with high work-related physical demands
- Middle-aged men, those who are overweight, smoke, have high cholesterol and generally face increased risk of coronary heart disease
- Borderline hypertensives, hypertensives, and those with a family history of hypertension
- Those who are overweight, obese, or severely obese
- Individuals who are moderately depressed
- General population, for enhanced self-esteem, self-efficacy, positive psychological well-being
- Youth at risk, those with low self-esteem, "bored" youth
- Employees, for reduced absenteeism, increased productivity, lower turnover and training costs, and reduction in accidents
- Youth, for higher levels of reading language and mathematics among those with daily aerobic physical education

- Implications for systems and settings

Educational/schools

- Quality daily physical education with an aerobic component
- Successful experiences and building of increased competence
- Appropriate programs emphasizing goal setting, delay in gratification and self discipline

- Teaching of life skills using appropriate role models and culturally sensitive approaches

- Appropriate activity to increase social skill and social responsibility

Employment/workplaces

- Regular physical activity programs. Worksite programs with aerobic component, and in some situations even low intensity activities like exercise breaks reduced absenteeism.

- Initiatives supporting the individuals own choice to be active such as posting activity information, bicycle racks or showers. Proximity to opportunities, flexibility in timing and positive social environment are factors influencing an individual's participation.

Recreational

- Programs and facilities which address factors that maximize participation: individual responses; biological factors; health status and function; social environment; and physical environment

Public health/health care

- Use of physical activity as an alternative to medical treatment

- For persons with impaired glucose tolerance or who are in the early stages of type II diabetes

- For individuals having lower back pain due to acute herniated discs

- For borderline hypertensives and hypertensives

- For normalizing weight

- For help in reducing anxiety

Community

- Building supportive environments, making physical activity a norm

- Providing a safe environment, like adequate street lighting

- Providing opportunities to be active such as parks, bicycles and walking paths

- Controlling pollution in the community

Family/homes

- Public education of parents about the risks to their children's future health of inactivity and about the benefits of being active

- Interventions aimed at entire families. Family support can encourage or hinder an individual's choice to be active.

- Implications for the type of physical activity program

- No consensus on one dose of exercise, as an exercise prescription for prevention
- Most researchers recommend that individuals incorporate at least some form of moderate-level physical activity into their lifestyle, preferably on a daily basis
- The optimal program for an individual depends on the goal of the program and a range of factors influencing the individual's choice to participate in the program (factors categorized by individual response, biological, health status and function, social environment and physical environment).



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