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Physical Activity through the Lifespan

Physical Activity for Mothers and Babies... It's Not Just Physical!

Dot Laing, MA, Program Coordinator, Kinsmen and Commonwealth Sports & Fitness Facilities, Edmonton, AB.

Health-Related Quality of Life (HRQL) and Physical Activity

Research supports the connection between health-related quality of life (HRQL) and physical activity. HRQL is the sense of well-being that includes physical, intellectual, and emotional capacity (Kaplan & Bush, 1982). Thus, physical activity improves more than physical function, such as increased muscular strength and cardiac output. Greater physical ability also allows people to be active with family and friends (e.g., by giving them more energy for daily living) and enhances positive self-perception.

The Effect of Motherhood

Several factors can account for physical inactivity. For example, people may lack time, not know how to start a program, or not enjoy exercise. Evidence also suggests that a lifestyle transition (e.g. starting a new career or relocating) can be a barrier to beginning and/or maintaining a physical activity regime.

"This shift away from the mother to her baby after giving birth can sometimes lead to feelings of loneliness, isolation, lack of support, and depression—all of which can affect the mother's HRQL" —Dot Laing.

Motherhood is a significant lifestyle change that can be a barrier to physical activity for women (Verhoef & Love, 1994). This transition is linked to particular physical and psychological changes. Physical changes include weight gain, incontinence, and fatigue, while psychological factors may include post-partum depression, diminished self-image, and anxiety (Sampselle, Seng, Yeo, Killion, Oakley, 1999; Walker and

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Wilging, 2000). These physical changes and psychological factors can in turn affect mothers' HRQL.

Many of the post-partum psychological factors stem from the nine months of carrying the baby. Alison Irwin (mother and yoga instructor) explains, "For nine months you are really focused on your core because that's where the baby is. The baby is an extension of you." After delivery, the changes (e.g., separation from the baby, physical body changes) can be overwhelming. Alison goes on to say, "After the baby is born, the focus shifts away from yourself [the mother] to outside of yourself." This shift away from the mother to her baby after giving birth can sometimes lead to feelings of loneliness, isolation, lack of support, and depression—all of which can affect the mother's HRQL.

All of these physical and psychological factors, coupled with the lifestyle changes demanded by a baby's needs, can discourage mothers (especially new mothers) from participating in physical activity (Verhoef & Love, 1994).

Physical Activity Programs for Mothers

The Kinsmen Sports Centre in Edmonton, Alberta, offers two programs, Strollercise and Post-Natal Yoga for Mothers and Infants (PONYOMI), that address some of these physical, psychological, and lifestyle changes.

The Strollercise program combines cardiovascular/aerobic exercise (e.g., women walk and/or run laps around an indoor track with their babies in strollers) and strength and endurance work (e.g., mothers safely use their babies as added resistance for strength and endurance training). Both components focus on the training needs of the mother.

PONYOMI uses yoga techniques to teach women how to find a calm place in the middle of the hectic life of motherhood. This program includes babies by teaching mothers soothing baby massage and stretches. In addition, babies lie beside their mothers as the women do yoga. Mothers are able to develop a heightened mind/body awareness and flexibility as they perform the yoga poses. At the same time, they learn how to focus on themselves and their babies in spite of distractions (e.g., other babies fussing). During this process, Alison Irwin explains, "women can learn how to better cope with the events outside the class." This ability can also positively affect the mothers' HRQL.

Why Do These Programs Work?

The success of these two programs comes from three ingredients.

- The programs remove child-care challenges, because babies are part of the class.
- A safe and positive environment makes it acceptable for mothers to stop and tend to their babies' needs (e.g., breast feeding, crying). The environment accepts babies who may be crying and/or fussing without making mothers feel intimidated, embarrassed, or uncomfortable.
- Mothers can connect with other mothers who share similar circumstances. In this way, the women themselves create a powerful social support network.

Strollercise and PONYOMI certainly address physical changes, such as weight gain and lack of energy. However, the sum of the psychological, emotional, and social benefits derived from the programs far exceeds the programs' physical benefits. Mothers have an outlet for being physically active with their babies, and at the same time create ways to receive and provide social support.

Moreover, by eliminating many of the barriers to activity, these programs may also provide the impetus for mothers to begin activity or continue being physically active. Ultimately, physical activity programs that integrate both mother and baby can enhance the HRQL, not just for the mother, but for the whole family.

References available on request or from the Alberta Centre for Active Living web site at www.centre4activeliving.ca.

Other Resources

- **Mothers in Motion is a web site for new mothers. For more information, visit www.caaws.ca/mothersinmotion/e/index.htm.**

- **High Five has produced a new resource designed to help parents improve the quality of their children's recreation and sports programs. For more information, visit www.highfive.org/pdfs/ReviewProgBroch.pdf.**

Risk Factors for Cardiovascular Disease and Type 2 Diabetes in Obese Youth: Does a Healthy Lifestyle Offer Protection?

Geoff D. C. Ball, PhD, RD, Research Associate, Institute for Prevention Research, Keck School of Medicine, University of Southern California, Los Angeles, CA.

Defining "Overweight" and "Obesity"

The fact that obesity in Canadian children and adolescents has increased dramatically over the last two decades may not be news to those of you who have visited your local shopping mall or school playground. However, scientific research also supports your observations. In Canada, the prevalence of *overweight* in boys and girls doubled between 1981 and 1996 (Tremblay and Willms, 2000). In addition, the prevalence of *obesity* also tripled over that period, from 5% to 16.6% in boys and from 5% to 14.6% in girls (Tremblay and Willms, 2000).

Definitions of overweight and obesity in youth depend on several factors, including the cut-off points used to define the overweight/obese categories, the indicator (e.g., body mass index, skin-fold thicknesses, or body weight) used to assess weight status, and the reference population used for comparison purposes. Still, the upward trend among Canadian boys and girls is consistent across a number of studies (Ball and McCargar, in press).

Risk Factors

Historically, a high degree of body fat in boys and girls has been a concern from a cosmetic point of view. However, we now recognize that several risk factors, including abnormal glucose tolerance, hyperinsulinemia (i.e., higher levels of insulin), and lipid profile abnormalities (e.g., increased triglyceride and decreased HDL-cholesterol) can accompany a high level of body fat, even in pre-pubertal children.

In response to these findings, our society has tried to prevent obesity in youth through initiatives that both directly and indirectly influence dietary and physical activity behaviours. While this is a laudable goal, a growing number of boys and girls are already obese. To help these children, we need a more detailed understanding of the health risks of a high level of body fat.

Can Children Be "Fat and Fit"?

Our research group at the University of Alberta began an observational study (funded by the MSI Foundation of Edmonton) in the fall of 2000 to uncover why some obese children are at risk for cardiovascular disease and type 2 diabetes, while others are not (and, in fact, appear otherwise healthy).

"...our findings emphasize the complexity of the inter-relationships between the hereditary and environmental factors that influence health risks in obese children"
—Geoff D. C. Ball.

We recruited 83 obese children (48 boys and 35 girls between 6 and 12 years of age) from northern Alberta, and assessed a variety of behavioural and metabolic variables related to chronic disease risk. We categorized children as a *high* or *low* health risk based on whether or not they had elevated levels of blood pressure, insulin, and blood lipids. Children with a greater than 1 risk factor (e.g., high blood pressure, high cholesterol, or high insulin levels) were placed in the high health risk group (n = 53). Children with no risk factors were assigned to the low health risk group (n = 30). We compared both groups according to body composition, body fat distribution, physical activity and inactivity, aerobic fitness, and a number of dietary variables.

After statistically controlling for group differences in sex, physical maturation, ethnicity, socioeconomic status, and family history of disease, we found that abdominal body fat mass was the best way to predict high health risk in our sample of obese boys and girls (McCargar, Ball, & Marshall, 2002). We also evaluated whether lifestyle factors such as physical activity, dietary intake, and aerobic fitness would positively influence health risk. However, we found that these variables did not have as strong an influence on health risks as abdominal body fat.

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Although both groups had the same level of total per cent body fat (~40%), the absolute level of fat deposited in the abdomen was substantially different between the groups. Other researchers have made similar observations about the relationship between risk factors for cardiovascular disease and type 2 diabetes and abdominal body fat in obese and non-obese youth (Daniels, Morrison, Sprecher, Khoury, & Kimball, 1999; Morrison, Barton, Biro, Daniels, & Sprecher, 1999). However, our study is unique because we observed that some obese children may not have additional physical health risks. Our study suggested that classifying a child as "obese" may only reveal part of the story—additional information, such as the measure of abdominal fatness, may be necessary to get a more complete picture of health risk.

Studies of adults have shown that overweight and obese people who are physically active (Paffenbarger, Hyde, Wing, & Hsieh, 1986) or who have a high degree of aerobic fitness (Blair et al., 1996) are at a lower health risk than their inactive and unfit overweight and obese peers. These findings imply that a physically active lifestyle benefits individuals regardless of their weight classification. To date, we have not seen similar results in younger populations. Aerobic fitness may not independently influence risk factors other than body fatness in younger boys and girls. This phenomenon may develop only later in life, as physiological, hormonal, and metabolic processes mature.

What Does Our Study Mean?

Our study does not downplay the importance of a healthy lifestyle for both obese and non-obese children. Clearly, several other emotional, psychological, and physical health benefits are derived from a healthy lifestyle—benefits that do not relate to risk factors for cardiovascular disease and type 2 diabetes. However, our findings emphasize the complexity of the inter-relationships between the hereditary and environmental factors that influence health risks in obese children.

References available on request or from the Alberta Centre for Active Living (www.centre4activeliving.ca).

Canada's Physical Activity Guides for Children and Youth

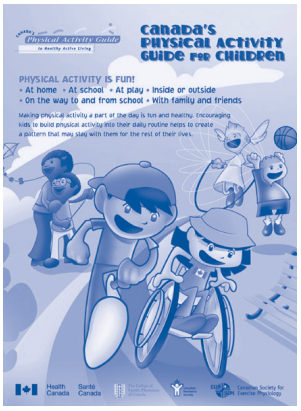
Last April, the Honourable Anne McLellan, federal Minister of Health, launched Canada's Physical Activity Guides for Children and Youth.

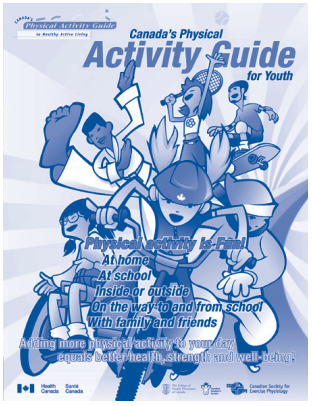
These first-ever national physical activity guidelines for children and youth recommend that sedentary children and youth increase physical activity by 30 to 90 minutes and reduce "non-active" time by 30 to 90 minutes per day. This increase in physical activity should combine moderate activity (e.g., brisk walking, skating, and bike riding) and vigorous activity (e.g., running and playing soccer).

Research has shown that more than half of Canadian children are not active enough for optimal growth and development. From 1981 to 1996, the prevalence of overweight children doubled, and obesity tripled for both boys and girls.

These guidelines were developed in partnership with the Canadian Society for Exercise Physiology (CSEP) and are strongly supported by the Canadian Paediatric Society and the College of Family Physicians of Canada. Additional tools to help parents, teachers, physicians, recreation leaders, and other intermediaries to help children and youth become more physically active will soon be released.

To obtain a copy of the guides, call toll-free 1-888-334-9769 or visit the guide web site at www.hc-sc.gc.ca/hppb/paguide/youth.html.





Use It or Lose It: Boomers Get Active

Joanne Gesell, MA, Education Coordinator,
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The Problem

Despite government and non-government promotion of active lifestyles, most of Alberta's adult population is not physically active enough to gain health benefits (Health Canada, 1999). Fewer occupations now require daily physical activity, and we increasingly rely on motorized transportation and other labour-saving devices. Many of us also find the entertainment of television, videos, and computers relaxing after a hectic day.

Sedentary behaviour is linked to a substantial number of deaths from coronary heart disease (Blair et al., 1989), type 2 diabetes (Helmrich, Raglund, Leung, & Paffenbarger, 1991), and colon cancer (Lee, 1994). Research suggests that regular physical activity can protect against all-cause mortality in all age groups studied and can lead to an increased life expectancy (Pate et al., 1995). However, in order to protect against chronic diseases, people must be regularly physically active over the long-term (Hillsdon, 1998).

Our Ageing Population

By the second decade of the 21st century, more of our population will be seniors. The elderly present a number of challenges to the health-care system: many of these challenges relate to declining physical functioning (Barry & Eathorne, 1994). The loss of capacity in the neurological, musculoskeletal, and energy metabolism systems accelerates through disuse (Buchner & Wagner, 1992). Thus, many changes commonly attributed to ageing are in fact preventable.

Active older adults deteriorate less in strength, bone mass, and cognitive function (Buchner & Wagner, 1992). Adopting an active lifestyle can also help maintain mobility and physical independence (O'Brien Cousins & Vertinsky, 1991). People who maintain or enhance their strength and flexibility may be less likely to develop back pain. They are also better able to carry out daily activities and avoid disability, particularly as they advance into older age (Pate et al., 1995).

"...many changes commonly attributed to ageing are in fact preventable"
—Joanne Gesell.

The psychological benefits attributed to physical activity include enhanced mental performance, improved self-image, increased confidence, greater sleep quality, and a reduction in perceived feelings of anger, time urgency, and pressure (DiLorenzo et al., 1999).

There is also evidence that physical activity can positively influence different dimensions of the health-related quality of life (HRQL) in older adults (Rejeski, Brawley, & Schumaker, 1996). HRQL usually refers to the ability to perform significant activities and function well in daily living (Grimby, 1995). HRQL also involves measures of functional (physical, mental, and social) and physiological status, perceptions of well-being, and general life satisfaction (MacKeigan & Pathak, 1992).

Active Boomers

For several reasons, physical activity interventions that target middle-aged adults are a significant investment for the future.

People in their forties may already be experiencing some loss in physical functioning (Huang et al., 1998), a fact that argues for more preventive approaches before people need therapeutic treatment (Bull & Jamrozik, 1998).

More major chronic diseases appear during middle age. If we increase our physical activity level during middle age, we are more likely to live longer. By increasing physical activity, we decrease the number of risk factors that may contribute to our death (Pate et al., 1995).

By taking preventive action now, we could reduce the number of seniors requiring extensive medical care in the future. These seniors could also enjoy the benefits of a physically active lifestyle for a longer time (Calfas, Sallis, Oldenburg, & Ffrench, 1997).

Interventions could tremendously improve both the public's health and individual quality of life (Goldstein et al., 1999).

As activity patterns in elderly people depend on previous activity levels (particularly activity levels during middle age—see Frandin, Mellstrom, Sundh, & Grimby, 1995), we should target middle-aged adults to ensure an active and independent elderly population in the future (Grimby, 1995).

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Health Canada recommends between 30 and 60 minutes of activity every day (Health Canada & CSEP, 1998). People should choose from each of the three activity groups—endurance, flexibility, and strength. (These activities can be accumulated in periods of at least 10 minutes each.) What's more, sedentary people benefit the most from this additional physical activity (Pate et al., 1995). Even small changes in daily activity enable people to reduce their risk of chronic disease.

Summing Up

Previous research shows that physically fit people live two to three years longer than sedentary people (Butler, Davis, Lewis, Nelson, & Strauss, 1998). Therefore, initiating and maintaining long-term light to moderate intensity physical activity programs for middle-aged adults may reduce the rate of age-associated deterioration, which, in the long-term, should increase both the quantity and quality of life (Mazzeo et al., 1998).

References available on request or from the Alberta Centre for Active Living web site at www.centre4activeliving.ca.

The U of Agers exercise group dances at the University of Alberta.

Balance Your Life! The Metaphors of Falling

Sandy O'Brien Cousins, EdD, Faculty of Physical Education and Recreation, University of Alberta, and Donna Goodwin, PhD, College of Kinesiology, University of Saskatchewan.

Falling, typically, has a negative connotation in our society. We fall from grace, fall behind, fall short, fall apart, and fall out of step. Some of us also dread falling revenues, falling attendance, taking a fall, falling leaves, and hair that is falling out. However, we relish falling in love and strive to have things fall into place. Some among us even seek out the exhilaration of falling when skydiving, parachuting, bungee jumping, parasailing, ski jumping, and cliff diving. Still others spend many years developing the landing skills for controlled falls, e.g., gymnasts, wrestlers, skaters, and judo enthusiasts (Fitzgerald, 2001; Heid, 1999).

The Fear of Falling

Falls are a serious business for Canadian seniors—in 1997, falls accounted for 62% of all injuries to Canadian seniors, with nearly half of all falls occurring at home (Health Canada, 2001). All falls are significant, but a "bad fall" in an elderly person can be fatal (Rose, 2002). For example, half of all women over 80 who fracture a hip in a fall will die within the first year. In fact, a recent study found that older people are more afraid of falling than of being robbed (Yardley & Smith, 2002).

Fears about falling are real, and these fears may be a warning that the person's state of health and fitness needs improvement. Unfortunately, instead of improving their strength and flexibility, people tend to reduce their physical activity even more, allowing their fear of falling to undermine their ability to recover if they lose their balance. Thus, fear itself leads to sedentary living (Okada, Hirakawa, Takada, & Kinoshita, 2001).

However, evidence suggests that physically active people are less afraid of falling (McAuley, Mihalko, & Rosengren, 1997). Older people who increase their physical activity also improve their

- balance (Worm et al., 2001);
- muscle strength and reaction time (Hunter, Thompson, & Adams, 2001); and
- mobility (Holland, Tanaka, Shigematsu, & Nakagaichi, 2002).

All these improvements also protect seniors from falls and fall injuries. Many studies show that physical activity improves balance and reduces falls (Khan et al., 2001a; Perrin, Gauchard, Perrot, & Jeandel, 1999).

Learning to Fall

Can older people learn to fall without injury? Learning to fall is all about fitness and mechanics and "going with the flow." People can learn that being stronger and more flexible helps their bodies resist the force of falling over time and distance.

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Experts in falling try not to wince, shrink, and stiffen when falling—instead, they will puff up like a bubble to expand, lengthen, widen, and round all their body parts. Their strategy is to be elastic and attempt to roll or slide (i.e., going with the flow). If their joints are already flexed on contact, they can't absorb the fall at all (splat!). It takes practice to land in different positions, but people can learn most moves at any age.

Why Fitness?

People who have stronger and more agile bodies (with good reaction times) rarely experience out-of-control falls. When these people do fall, they have a better chance of reducing the force of impact. In addition, strong muscles are attached to stronger bones that can better withstand the force of falling. Older adults benefit significantly from fall prevention intervention programs such as Steady As You Go (Robson, n.d.) in terms of the

- number of falls experienced;
- amount of bed rest required; and
- number of days of restricted activity (Khan, Liu-Ambrose, Donaldson, & McKay, 2001b; Puisieux et al., 2001; Wagner et al., 1994).

The accumulated scientific literature emphasizes that what we don't use, we lose (O'Brien Cousins, 1999). This means that older people should be able to improve balance, prevent falls, and even fall "better." For example, people who have precarious balance tend to fall more frequently because of muscular weaknesses resulting from injuries, disability, or a lack of fitness. Yet, a study on balance training among older women showed that they could significantly improve their balance in only nine weeks (Kronhed, Moller, Olsson, & Moller, 2001).

The Art of Falling

The art of falling depends on the circumstances and the individual's fitness and skills. The "best" situation for balance recovery is when there is time to act and when the fall is forward. The worst falls can be the ones that "just happen," and that happen fast (especially backward falls). At least in the "slower" falls older adults can protect themselves by learning and practising safe ways to fall. People can also develop balance abilities (and legitimate confidence) with dancing activities, toe balances, or t'ai chi (Kutner, Barnhart, Wolf, McNeely, & Xu, 1997; Li, McAuley, Harmer, Duncan & Chaumeton, 2001). Older adults will experience the exhilaration

The U of Agers group practises falling.

that can come from an expert fall. People who "fall down fit" improve their prospects for a better landing! Other suggestions for preventing falls include the following.

- *Listen to your body*. Stay home if you are feeling weak, tired, dizzy, or just "off-balance," but do *something active* to balance your life! Instead of going out to walk, do some stretching and strengthening exercises (preferably, sitting on the floor).
- *Dress for the conditions*. On a winter day, be equipped with proper gear. Walking across an icy parking lot on smooth-soled shoes or boots with heels is a bad idea! Instead, get out two ski poles and rubber slip-on nail treads for your shoes. If you are going to walk on a glacier (your street), get the gear, so that you can do it safely.
- *Balance your life*! Build balance activities into daily living. For example, toe-walk along a line on your kitchen floor. In another exercise, you can lift one foot a little off the ground and try to hold your balance on one leg for 30 seconds. Then lift the other foot. Roll up on to the balls of both feet, hold, and come down. Repeat several times. Then put one heel out and actively flex up the ankle by holding it for several seconds with your toes to the sky (this is an anti-tripping exercise).
- *Dance!* Take part in at least one dance-like activity each week (e.g., ballet, t'ai chi, step aerobics, or line, tap, square, folk, or ballroom dancing) or simply pull the drapes and dance to the oldies in your living room!

References available on request or from the Alberta Centre for Active Living web site at www.centre4activeliving.ca.

Mission statement of the Alberta Centre for Active Living

Supporting practitioners and organizations to improve the health and quality of life of Albertans through physical activity.

If you have suggestions or questions, we'd like to hear from you.
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News from the Alberta Centre for Active Living

Survey Time!

- Did you know that you can let us know what you think about WellSpring? Fill out a quick survey by visiting the WellSpring page on our web site at www.centre4activeliving.ca/Publications/EdPublicationsIndex.html.
- We would also like to hear what you think of our web site. Visit any main page on our site to fill in the survey (just click on "Web site survey" at the top right part of each page).

Coming Soon to the Canadian Health Network Homepage

Feature interview: Achieving a goal weight through healthy eating and active living. Visit www.canadian-health-network.ca/customtools/homee.html this November for more information.

Perspectives in Exercise Testing and Prescription Conference

CSEP and FACA are hosting a conference this November 1 and 2, 2002, in Kananaskis, Alberta.

- New to this year's conference is "The Power of Authentic Leadership: From Rhetoric to Realness" Leadership Institute. This one-day session with David Irvine is designed to create renewed and life-giving leadership.
- Other conference events will appeal to health-promotion practitioners, exercise professionals, facility administrators, and those interested in the fitness industry. Conference activities include educational sessions, a Friday night banquet and keynote address, and a Saturday breakfast and lunch. For more information or to register, visit www.provincialfitnessunit.ualberta.ca.

Ministers Support Health-Promotion Initiatives

Canada's Federal, Provincial, and Territorial Ministers of Health recently agreed that one key to effective, affordable, and responsive health care is for governments, the health care community, and individual Canadians to concentrate on preventing illness and promoting good health. Ministers will work together on Canadian healthy living strategies that emphasize nutrition, physical activity, and healthy weight. The aim is to promote good health and reduce the risk factors associated with diabetes, cancer, and cardiovascular and respiratory diseases. For more information about the Ministers' recent conference, visit http://www.scics.gc.ca/cinfo02/830756004_e.html.

The Coalition for Active Living

The Coalition is made up of many groups, organizations, and individuals committed to making sure that the environments where we live, learn, work, and play support regular physical activity. The Coalition is working to achieve this goal by advocating for public policies that support physical activity. Members, partners, and supporters represent many sectors, working at the local, provincial, territorial, and national levels to advance physical activity in Canada. For more information about the Coalition, visit www.activeliving.ca/coalition.htm.

Correction

The WellSpring co-editors would like to correct an error in the Spring 2002 issue of WellSpring. Although Mary Wilson has spent much of her professional life working with Aboriginal people, she is not herself Aboriginal. We apologize for this error.