WHO INFORMATION SERIES ON SCHOOL HEALTH

DOCUMENT TWELVE

Promoting Physical Activity in Schools:

An Important Element of a Health-Promoting School

World Health Organization

This document is part of the **WHO Information Series on School Health.** Each document in this series provides arguments that can be used to gain support for addressing important health issues in schools. The documents illustrate how selected health issues can serve as entry points in planning, implementing, and evaluating health interventions as part of the development of a Health-Promoting School.

Other documents in this series include:

Local Action: Creating Health-Promoting Schools (WHO/NMH/HPS/00.4)

Strengthening Interventions to Reduce Helminth Infections: An Entry Point for the Development of Health-Promoting Schools (WHO/HPR/HEP/96.10)

Violence Prevention: An Important Element of a Health-Promoting School (WHO/HPR/HEP/98.2)

Healthy Nutrition: An Essential Element of a Health-Promoting School (WHO/HPR/HEP/98.3)

Tobacco Use Prevention: An Important Entry Point for the Development of a Health-Promoting School (WHO/HPR/HEP/98.5)

Preventing HIV/AIDS/STI and Related Discrimination: An Important Responsibility of Health-Promoting Schools (WHO/HPR/HEP/98.6)

Sun Protection: An Important Element of a Health-Promoting School (WHO/FHE and WHO/NPH, 2002)

Creating an Environment for Emotional and Social Well-Being: An Important Responsibility for a Health-Promoting and Child-Friendly School (WHO/MNH and WHO/NPH, 2003)

Skills for Health: Skills-Based Health Education Including Life Skills (WHO and UNICEF, 2003)

Family Life, Reproductive Health and Population Education: Key Elements of a Health-Promoting School (WHO/NPH, 2003)

The Physical Environment: An Important Component of a Health-Promoting School: (WHO/PHE and WHO/NPH, 2003)

Oral Health: An Essential Element of a Health-Promoting School (WHO, UNESCO, EDC, 2003)

Teachers' Exercise Book for HIV Prevention (EI, WHO, EDC, 2004)

Malaria Prevention and Control: An Important Responsibility of a Health-Promoting School

Documents can be downloaded from the Internet site of the WHO Global School Health Initiative (www.who.int/school_youth_health) or requested in print by contacting the School Health/Youth Health Promotion Unit, Department Chronic Diseases and Health Promotion, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland, Fax: (+41 22) 791-4186.

In an effort to provide you with the most useful and user-friendly material, we would appreciate your comments:

- **From where did you receive this document, and how did you hear about it?**
- **Did you find this document useful for your work? Why or why not?**
- **What do you like about this document? What would you change?**
- **Do you have other comments on any aspect of this document, for example, its content, design, or user-friendliness?**

Please send your feedback to the above address. We look forward to hearing from you.

WHO INFORMATION SERIES ON SCHOOL HEALTH

DOCUMENT TWELVE

Promoting Physical Activity in Schools:

An Important Element of a Health-Promoting School

World Health Organization

WHO Library Cataloguing-in-Publication Data :

Promoting physical activity in schools: an important element of a health-promoting school.

(WHO information series on school health ; document 12)

1 Physical fitness. 2.Exercise. 3.Motor activity. 4.Health education - methods. 5.Health promotion - methods.6.Schools. 7.Teaching materials. 8.Adolescent. 9.Child. I.World Health Organization. II.Series.

ISBN 978 92 4 159599 5 (NLM classification: QT 255)
ISSN 1727-2335

Printed in France.

ACKNOWLEDGEMENTS

Material herein was originally drafted by Ilkka Vouri of the UKK Institute for Health Promotion Research and Sanjeeb Sapkota of the Centers for Disease Control and Prevention (USA).

Cornelia Guell prepared this document by updating, revising and adding a substantial amount of content to supplement the original drafts. The document was a joint effort of the Health Promotion Unit and the Primary Prevention of Chronic Diseases Unit. Jack T. Jones, WHO/HQ: NMH/CHP/HPR, and Timothy P. Armstrong, WHO/HQ: NMH/CHP/SPP, provided considerable guidance and expertise to the preparation of this document.

WHO would like to thank the following individuals who provided comments and suggestions on this document:

Hamadi Benaziza (WHO/HQ: NMH/CHP/HPR)

Noriko Saito (WHO/HQ: NMH/VIP/DAR)

Boosaba Sanguanprasit (Mahidol University, Thailand)

Ingrid Keller (WHO/HQ: NMH/CHP/SPP)

Charlene Burgeson (National Association for Sports and Physical Education, USA)

Jacqueline Eppings (CDC)

CONTENTS

FOREWORD

This document is part of the WHO Information Series on School Health prepared for WHO's Global School Health Initiative and the Global Strategy on Diet, Physical Activity and Health. Its purpose is to strengthen efforts to educate young people about the benefits of physical activity and to help schools provide opportunities for students and school personnel to be physically active. It is published in support of an international partnership that is Focusing Resources on Effective School Health.

WHO's Global School Health Initiative is a concerted effort by international organisations to help schools improve the health of students, staff, parents, and community members. Education and health agencies are encouraged to use this document to take important steps that can help their schools become "Health-Promoting Schools." Although definitions will vary, depending on need and circumstance, a Health-Promoting School can be characterised as a school constantly strengthening its capacity as a healthy setting for living, learning and working (see the Health-Promoting School box on the following page).

The WHO Global Strategy on Diet, Physical Activity and Health is an effort to address the increasing global burden of chronic diseases, including coronary heart disease, stroke, diabetes, and some cancers. WHO Member States have endorsed the principle that, in order to address the challenges of chronic diseases, cross-sectoral policies that promote physical activity, generate sustainable access to healthy diets and promote healthy choices must be developed and implemented. At the World Health Assembly (WHA) in 2002 Resolution WHA55.23 requested the Director-General to adopt a Global Strategy on Diet, Physical Activity and Health. WHO Member States and other stakeholders developed the Global Strategy on Diet, Physical Activity and Health (DPAS) over a two-year consultative process. The DPAS was approved by the World Health Assembly in May 2004. Implementation is occurring in all Regions with WHO, Governments, the private sector, and NGOs all playing an important role. The DPAS highlights that, for physical activity promotion, multisectoral approaches are required. As part of a holistic, multisectoral approach, the document recognises that schools are an important setting for promotion of physical activity for young people, their families, and the broader community.

Focusing Resources on Effective School Health (FRESH) is an international effort launched by WHO, UNICEF, UNESCO, and the World Bank to encourage education and health agencies to work together to strengthen school health programmes to improve both health and education. Education and health agencies are encouraged to use this document to foster the implementation of school health programmes that help to prevent, control and reduce factors that contribute to death, disease and disability, and that also undermine learning, schooling and the goals of education.

The extent to which each nation's schools become Health-Promoting Schools will play a significant role in determining whether the next generation is educated and healthy. Education and health support and enhance each other. Neither is possible alone.

A Health-Promoting School

A Health-Promoting School, a concept promoted by the World Health Organization, is characterized as a school which is constantly strengthening its capacity to become a healthy setting for living, learning and working.

A Health-Promoting School:

- Fosters health and learning with all the measures at its disposal.
- Engages health and education officials, teachers, students, parents and community leaders in efforts to promote health.
- Strives to provide a healthy environment, school health education and school health services along with school/community projects and outreach, health promotion programmes for staff, nutrition and food safety programmes, opportunities for physical education and recreation, and programmes for counselling, social support and mental health promotion.
- Implements policies, practices and other measures that respect an individual's well-being and dignity, provides multiple opportunities for success, and acknowledges good efforts and intentions as well as personal achievements.
- Strives to improve the health of students, school personnel, families and community members.

1. INTRODUCTION

This document introduces school-based strategies of health promotion to foster physical activity. While the concepts introduced in this document apply to all countries, some of the provided examples and strategies might be more relevant to certain countries than to others. It is also recognised that environmental conditions, such as technical and societal issues in the school, community and family, might not be ideal and affect the extent to which physical activity interventions can be implemented. However, a Health-Promoting School strives to improve those conditions and fosters interventions related to physical activity even in less than ideal situations.

There are numerous physical, psychological and social benefits of physical activity for children. A physically active childhood fosters healthy growth and development (bone health), the maintenance of energy balance (weight control), as well as psychological well-being (self esteem, positive body image) and social interaction *(1)*. Physical inactivity, however, leads to the development of health risk factors. Obesity is perhaps the most visible sign of physical inactivity and results out of an imbalance between energy expenditure and energy intake. It has become an increasingly global problem as people in both developed and developing countries suffer from this new 'epidemic' *(2-6)*. Other risk factors associated with physical inactivity in young people include raised blood pressure, impaired blood chemical profile, and low bone mineral density which can later lead to chronic diseases such as coronary heart diseases, diabetes type II, and osteoporosis (*1)*. Considering these possible consequences, public health officials are becoming increasingly concerned that young people in both developed and developing countries are becoming increasingly inactive *(5)*.

Much of a nation's future depends upon the status of its children. Healthy children are the foundation for a healthy nation. Many leaders around the world — presidents, prime ministers, health ministers — have designated schools as an important setting in which children should develop behaviour and skills for physical, emotional and social well-being. Other than the family, no social institution has greater influence on the lives of children than schools. Every day millions of children and young people around the world go to school and spend a considerable amount of time interacting with their peers, other students and teachers gaining knowledge, building attitudes and skills, and developing behaviours. Many behavioural patterns developed during childhood and adolescence are retained into adulthood *(7)*. Schools, therefore, play a crucial role in building healthier nations around the world.

1.1 Why did WHO prepare this document?

This document addresses the rise of sedentary lifestyles among young people and consequently adverse health outcomes among children around the world. Interventions, in the form of policies and practices to promote physical activity through schools, are suggested.

The World Health Organization has prepared this document to help policy makers, students, school personnel and community members to understand:

- the significance of physical activity among children and adolescents.
- the significance of schools as an indispensable forum to promote physical activity.
- the nature of a Health-Promoting School and how efforts to promote health and physical activity might be planned, implemented and evaluated as a part of the development of a Health-Promoting School.

This document provides schools and communities with guidelines to promote physical activity in and through schools in order to assist young people:

- to take control over and improve their health through physical activity.
- to obtain information that helps them make efforts for lifelong physical activity.

This publication is part of the Information Series on School Health developed by the World Health Organization. Other publications in this series are listed on the inside front cover of this document.

1.2 Who should read this document?

This document is directed to:

a) **School administrators, school staff, parents, community members** who are concerned and committed to fostering an environment conducive to physical activity and active living for children and adolescents.

b) **Policy- and decision-makers, programme planners and coordinators** at local, district (provincial) and national levels who plan and implement physical activity programmes.

c) **Officials in agencies, institutions and organisations** who develop initiatives that promote physical activity among young people.

d) **Programme staff and consultants** of international health, education and development programmes who are interested in promoting health through schools.

e) **Professional practitioners and researchers** who design and deliver physical activity programmes for young people.

f) **Community leaders, health workers, service providers, media representatives and members** of organised groups, e.g. youth sports and public health organisations, interested in improving health, education and well-being in schools and communities.

The concepts and strategies presented in this document apply to all countries, however due to variations in resources and needs, programmes should be tailored according to the circumstances prevailing in each country.

1.3 How should this document be used?

This document provides a variety of ways to promote physical activity among school children and adolescents. Section 1 defines what physical activity is and presents different ways to perform it. The arguments in Section 2 can be used to advocate the importance of physical activity for children and adolescents. Section 3 outlines why it is important for schools to create environments conducive to physical activity. Section 4 presents practical steps to promote physical activity in and through schools. Section 5 explains how physical activity could be integrated into various components of a Health-Promoting School. Finally, Section 6 explains the importance of the evaluation of physical activity programmes and methods to perform an effective evaluation.

1.4 How will this document help people to take control over and to improve health?

This document is designed to help people create an environment which fosters, increases or maintains physical activity through schools. It is based on best research for promotion of physical activity via schools and is consistent with the ideals of the Ottawa Charter of Health Promotion (8), as described below:

a) Create healthy public policy:

Information provided in this document can be used to lobby for policies and regulations for creating an environment that promotes physical activity among young people.

b) Develop supportive environments:

This document describes the environmental changes that are necessary for supporting physical activity in and through schools and how those changes could be achieved in the most cost effective ways.

c) Reorient health services:

This document describes how school health services can help to mobilise new opportunities for physical activity.

d) Develop personal skills:

This document identifies the skills that young people need to adopt to maintain an active life. It also identifies skills needed by others — parents, teachers, and community members — to create conditions conducive for physical activity and health in schools.

e) Mobilise community action:

This document identifies essential actions that should be taken jointly by the school and community to initiate, promote and maintain physical activity among children and adolescents. It demonstrates how community resources can be mobilised to strengthen programmes in schools. It also addresses parents, media and community as partners to advocate policies and resources needed for promoting physical activity.

1.5 What is meant by 'Physical Activity'?

Physical activity is defined as any bodily movement produced by skeletal muscles that causes energy expenditure *(9)*. Thus, physical activity occurs in many different settings. At school, physical activity includes participating in physical education, recreation and dance programmes, school athletics and active play during the recess; walking or cycling to and from school; and extracurricular opportunities that offer physical activities during leisure time.

Physical activity can be performed at various intensities: low, moderate and vigorous. A sedentary lifestyle includes no or little physical activity. Moderate intensity physical activity produces smaller increase in heart rate and breathing rate than vigorous physical activity *(1)*. Typically, brisk walking, dancing and bicycling on level terrain are some ways for young people to be physically active of moderate intensity, whereas jogging, playing football or bicycling uphill are some examples of vigorous activities (also see Annex 1: Physical activity pyramid).

The health effects of physical activity result from a mix of intensity, frequency and duration *(10)*. National guidelines and experts recommend adults to exercise moderate intensity physical activity at least 30 minutes a day, on five or more days a week in order to lead a healthy life and prevent non-communicable diseases *(1;11)*. This amount of activity can be accumulated in bouts of at least 10 minutes. Current physical activity recommendations for children and adolescents include **at least 60 minutes of moderate activity in total each day, with vigorous activity included at least twice a week** in order to build bone density, muscle strength and flexibility *(1;1;11;12)*. Interestingly enough, typical play activities of young children such as skipping, chasing and climbing seem to be optimal high-strain activities for bone health *(13)*.

Participation in physical activity can lead to **physical fitness**. Key components of physical fitness are cardio-respiratory **endurance**, muscular **strength** and endurance, **flexibility**, body composition, and hand-eye and hand-foot **coordination** *(9)*.

In conclusion, young people can be physically active in numerous ways which may vary in duration, frequency and intensity. Walking to and from school, spontaneous play during breaks at school or structured sport during physical education should all be included in efforts to promote physical activity among school children.

2. CONVINCING OTHERS OF THE IMPORTANCE OF PHYSICAL ACTIVITY DURING CHILDHOOD AND ADOLESCENCE

This section provides information which can be used to convince policy- and decision-makers of the importance of physical activity during childhood and adolescence. It also presents arguments why both the community and school should work together to support physical activity.

2.1 Argument: Physical activity improves health and fitness among young people.

Regular physical activity is critically important for the health and well-being of young people *(1;11;13;14)*. It improves young people's physical fitness, i.e. fosters muscle and bone strength which is a vital basis for healthy growth and development and the reduction of injuries, and enhances heart and lung function and cardio-respiratory endurance *(15-18)*.

An important issue concerning childhood health is weight control. Regular physical activity can help prevent and reduce obesity or to maintain a healthy weight *(19)*. Obesity, which is caused by an imbalance of energy intake and expenditure, is becoming increasingly prevalent among young people, and consequently are diseases for which obesity is a risk factor. *(18;20-22)*. Recent studies on diabetes show that the adult onset of diabetes (type 2 diabetes) is in fact no longer limited to adults (*23-25)*. Research suggests that sedentary behaviour among children contributes to their obesity and obesity hinders young people from being more physically active *(22)*.

2.2 Argument: Physical activity enhances cognitive performance.

There is some evidence that physical activity helps children stay alert in class which improves their academic achievements *(26;27)*. Physical activity also helps to relieve tension, restlessness and lack of concentration from continuous sitting *(28)*. Physically active students are thus more likely to have good conduct and high academic achievement *(26;28;29)*. Moreover, a physically active school creates an environment in which children can interact and communicate with their peers, boosting their self-esteem and self-perception *(1;27)*. Research also suggests that increasing the time devoted to physical activity in school has no significant negative effects on students' academic achievement *(30).*

2.3 Argument: Physical activity has a positive influence on children's psychological and social well-being and can counteract risk behaviour.

Research suggests that physical activity can contribute to children's psychological and social well-being *(30;31)*. Physical activity is one of the best ways to create opportunities for social and functional contacts between people and to enhance communication. Physical activity builds self-esteem, positive self-perceptions of competence and body-image *(32-34)* as well as vital social skills and values such as teamwork, fair play and tolerance (35). Physical activity can make an important contribution to the psychological school atmosphere by creating experiences of togetherness, acceptance and success *(36;37).* Research also suggests that students participating in school sports are less likely to adopt unhealthy behaviours such as smoking or drug use *(29;38).*

2.4 Argument: Physical activity decreases risk factors for future chronic illness.

Physical activity in childhood and adolescence may lay the foundation for better future health. There are a myriad of diseases and adverse health conditions associated with remaining inactive for many years. Heart disease, ischaemic stroke, type 2 diabetes, colon cancer, breast cancer and obesity are all associated with sedentary behaviour in adults *(1;39)*. There is insufficient evidence that a physically inactive child or adolescent is likely to be a physically inactive adult or that a physically active childhood can prevent adult ill-health *(1;14)*, as many chronic diseases such as cardiovascular diseases are not childhood diseases but develop at a much later age. Nevertheless, risk factors associated with the development of chronic diseases can be avoided at an early age and studies suggest an indirect link between activity patterns during childhood and future health *(40;41)*. Bone density, for example, should be established at an early age which is vital to prevent osteoporosis in adult life *(1;39)*. Another reason for this lack of evidence is due to methodological and measurement difficulties. Surveys of physical activity levels are methodologically difficult and longitudinal studies still rare.

3. CONVINCING OTHERS THAT SCHOOLS SHOULD FOSTER PHYSICAL ACTIVITY

Information in this section can be used to convince others of the importance of promoting physical activity through schools and assist policy- and decision-makers to justify their decisions to develop programmes to promote and provide for physical activity in schools.

3.1 Argument: Schools are an effective setting for increasing physical activity among children.

It is a myth that young people automatically develop skills, attitudes and behaviours that lead to regular participation in physical activity *(42).* Although evidence is methodologically difficult to establish, health scientists fear that activity levels and patterns of children around the world are becoming increasingly under threat *(43).* Schools provide an excellent opportunity to enable students to acquire knowledge and skills and increase activity levels among young people as children and adolescents ideally spend a significant time of their young lives there and educational efforts can be put into action on a regular and continuous basis *(44).* Although many children in this world are still fighting for the opportunity to attend school, schools nonetheless reach over 1 billion children worldwide *(44).*

There is considerable evidence to support the effectiveness of well-conducted school-based health promotion intervention to enhance physical activity among students *(45-49).* School environments have a significant impact on sustainable healthy behaviour, a key success factor of Health-Promoting Schools *(46-48).* Timperio et al.'s review on studies evaluating physical activity intervention programmes summarizes that those employing a multidimensional model of school health intervention prove to be most effective *(46;47;50).* Multidimensional approaches not only focus on curriculum-based interventions but also include policy-based strategies, environmental changes, community and parental participation, additional school-food programmes etc. in order to provide opportunities to increase physical activity in structured and unstructured ways. They can change students' sedentary lifestyles conveying knowledge and skills, and influencing values and attitudes.

The 'Active Programme Promoting Lifestyle Education in School' (APPLES) targets childhood obesity in middle schools in the **United Kingdom** (51). Its successful high-intensity approach engages the whole school community, i.e. students, parents, teachers, catering staff, and conveys a consistent set of health messages. Nutrition education and the 'fit is fun' programme for physical education are combined with creating a health supportive environment such as healthy school meals and playground activities.

The **Greek** 'health, nutrition and physical exercise education programme' was launched in 1992 in Crete by the Department of Social Medicine of the University of Crete *(52).* The evaluation six years after introducing the programme found a significant change in children's behaviour in relation to health issues, ascribing the positive results to the high degree of parental participation, teachers' compliance and the emphasis on pleasant, non-competitive forms of exercise.

3.2 Argument: Schools have the mandate and responsibility for enhancing all aspects of development of children.

Although schools traditionally focus on the intellectual development of children and adolescents, emotional, physical and social growth are equally important for the development of a child. In fact, emotionally stable and physically balanced and fit schoolchildren show better academic performance, as mentioned in the previous chapter.

Most schools have a mandate and thus responsibility to offer developmentally appropriate, adequate, motivating, sufficiently supervised and safe physical activity programmes. These programmes should allow participation of all students and work to enhance their physical, social and psychosocial well-being.

3.3 Argument: Schools should provide access to physical activity to all children.

School is also a unique setting where a large proportion of every successive age group can be familiarised with different aspects of physical activity under qualified guidance *(30).* Although a small minority of young people in a few countries are perhaps involved in expensive health clubs and fitness centres, a large proportion of children do not have access to such facilities and may be inactive and possibly remain so into their adulthood. It is thus the duty of schools to offer physical activity to every student.

This is particularly vital in regards to groups of students who do not seem to access standard opportunities of physical education, such as disabled or overweight students or adolescent girls *(53-56).* Physical activity among adolescent girls, for example, might not seem to be cultural appropriate in all societies, ethnic or religious groups. Having said this, schools should be aware of their responsibility to all their students and should take their stance on promoting physical activity to girls *(57).* Culturally sensitive solutions could entail single-sex swimming or gym lessons.

3.4 Argument: Physical activity fosters collaboration between schools and other partners.

Organising physical activity events offers schools opportunities to collaborate with parents, representatives of sport and other volunteer organisations, community officials, health care providers and the private sector. Physical activity programmes provide schools an opportunity to enhance their integration in community life gaining not only social but also financial benefits *(58).* Good collaboration helps raising funds and other community resources to promote physical activity. Collaboration is a way for schools to increase the availability and variety of physical activities for young people and maintain their accessibility and educational qualities on a high level.

4. PLANNING EFFORTS TO FOSTER PHYSICAL ACTIVITY

The previous sections provided strong arguments about why physical activity is important and why schools should foster physical activity. This section describes steps to facilitate, organize and implement programmes to increase physical activity by creating a school health team, performing a situation analysis, shaping policies and developing goals and objectives for physical activity among students and staff – if time and resources allow.

4.1 A School Health Team

A School Health Team is a group of persons within the school working together to maintain and promote the health of all persons who are working and learning at the school. If such a team does not exist, the introduction of physical activity interventions can be the opportunity of forming one. Depending upon the resources and staff available in each school, a school health team could be comprised of a physical education teacher, other interested teachers, head master, management staff, school nurse and representatives of parents, community members, children and adolescents. Ideally, the team co-ordinates and monitors health promotion policies and activities, such as preventing tobacco, alcohol and drug use, promoting of physical activity, healthy nutrition, sun protection, etc. The team itself or a sub-committee could help plan steps for the promotion of physical activity in schools.

4.2 Situation analysis

A situation analysis is helpful in planning any health promotion programme. It assists to understand the school's and community's strengths, challenges, perceptions and needs which are relevant to planning effective physical activity programmes. This process also can help build support at the local level.

A situation analysis usually includes three mutually benefiting components as follows:

i) Needs and resource assessment

ii) Data collection, if necessary, and

iii) Political commitment and support

The kind of information that may be useful when undertaking a situation analysis is described in the box below.

The situation analysis should take account of **factors influencing physical activity among young people:** The participation of young people in physical activity is determined by demographic, individual, interpersonal and environmental factors *(1)*. Demographic factors include gender, age and race and ethnicity. Research suggests that older children and adolescents are less active than younger children; girls are often less active than boys *(53;54).*

Individual factors include personal interests, abilities and skills. Participation in physical activity increases, for example, according to the confidence in one's ability to engage in physical activity and positive attitudes towards physical education. Perceiving **benefits of physical activity** is positively associated with students' participation in physical activity. Such perceived benefits include: having fun, learning and improving skills, staying in shape, improving appearance, and increasing strength, endurance and flexibility *(59).* **Barriers to physical activity, i.e.** individual factors which discourage participation in physical activity, are: lack of time, difficulty in performing and believing that it takes too much time *(60;61).*

Interpersonal and environmental factors positively associated with students' participation in physical activity include: participation of peers and siblings, the physical activity level of parents and their support for such activity. Furthermore, having access to convenient play spaces, sports equipment, and easy transportation to sports or fitness programmes fosters physical activity in youth *(60;61).*

To obtain the information identified in the box above, relevant data can be collected through surveys, interviews or focus group discussions among students, teachers and staff, parents, local government officials as well as community members like local leaders, faith healers etc. Reviewing records in the schools, community and local government offices — such as education, sports and health — may provide valuable information. It is important to know if any baseline survey has been conducted earlier, which may serve the purpose of the situation analysis.

4.3 Political commitment to support physical activity in school

In developed countries time and resources allocated for and participation in physical education are decreasing. Many developing countries have yet to secure the necessary commitment and resources for physical activity in schools. Therefore, effective advocacy is needed to gain support for physical education both in developing and developed countries.

On national and international level, the public should be sensitised to the importance of physical activity, and policies must be established to increase the significance of physical education and physical activity in school curricula. Policies at local and national levels are fundamental to promoting and sustaining physical activity programmes at schools *(62).* Policies in favour of physical activity include allocating adequate time, resources and space for physical activity.

Examples of political commitment to support physical activity in schools include:

- Acknowledgement at the highest governmental level of the value of, and need for regular physical activity throughout childhood and adolescence.
- Allocation of an adequate amount of time (a) for unstructured physical activities and leisure activities, (b) for physical education in the school curriculum and school sport.
- Legislation and other statutory measures which acknowledge an official status and secure the provision of basic resources for physical education in schools.
- Designation of an official with responsibility and authority to supervise the planning and implementation of physical education programmes in schools.
- A system for training competent physical education teachers.
- Sustained and coordinated involvement of key sectors such as health, sport, education, culture, transport and environment, along with other relevant public and private sector partners.

European Year of Education through Sport 2004

EYES 2004, European Year of Education through Sport 2004, was established by the Council of the European Union and the European Parliament. Projects, which aim at incorporating sport closer into the educational sector, in all 28 participating countries on local, community-wide, regional, national and transnational level were selected and co-financed.

The objectives of EYES 2004 were:

- Raise the awareness of educational and sports organisations of the need for cooperation to develop education through sport and its European dimension, bearing in mind the great interest shown by young people in all types of sports;
- Take advantage of the values conveyed by sport to increase knowledge and skills, enabling young people to develop their physical capabilities and inclination to personal effort, as well as social capabilities such as teamwork, solidarity, tolerance and fair play in a multicultural context;
- Raise awareness of the positive contribution made by voluntary work to informal education, particularly for young people;
- Promote the educational value of mobility and pupil exchanges, particularly in a multicultural environment, through the organization of sports and cultural meetings as part of school activities;
- Encourage the exchange of good practice concerning the potential role of sport in education systems in order to promote the social inclusion of disadvantaged groups;
- Establish a better balance between intellectual and physical activities during school life by encouraging sport in school activities;
- Examine the problems linked to the education of young sportsmen and women engaged in competitive sport.

Source: http://www.eyes-2004.info

International Year of Sport and Physical Education

2005 was proclaimed as the International Year of Sport and Physical Education at the United Nations General Assembly in 2003.

UN urges Member States to consider the vital role sport and physical education play at all levels of society. For the individual, sport enhances one's personal abilities, general health and self-knowledge. On the national level, sport and physical education contribute to economic and social growth, improve public health, and bring different communities together. On the global level, if used consistently, sport and physical education can have a long-lasting positive impact on development, public health, peace and the environment.

The objectives of the IYSPE 2005 were:

- Encourage governments to promote the role of sport and physical education for all when furthering their development programmes and policies, to advance health awareness, the spirit of achievement and cultural bridging to entrench collective values;
- Ensure that sport and physical education is included as a tool to contribute towards achieving the internationally agreed development goals, including the Millennium Development Goals and the broader aims of development and peace;
- Promote collective work promoting sport and physical education-based opportunities for solidarity and cooperation in order to promote a culture of peace and social and gender equality and to advocate dialogue and harmony;
- Promote the recognition of the contribution of sport and physical education towards economic and social development and encourage the building and restoration of sports infrastructures;
- Further promote sport and physical education, on the basis of locally assessed needs, as a means for health, education, social and cultural development;
- Strengthen cooperation and partnership between all actors, including family, school, clubs/leagues, local communities, youth sports associations and decision-makers as well as the public and private sectors, in order to ensure complementarities and to make sport and physical education available to everyone.

Source: http://www.un.org/sport2005

4.4 Goals and objectives for fostering physical activity

Once one gains relevant information on the status of physical activity in schools and support for actions needed to improve it, the next step is to set goals and objectives.

Goals can be defined as general, broad statements which describe the overall improvement related to physical activity one hopes to achieve in a target population. Some examples of goals are:

- Lay the foundations for lifelong physical activity.
- Help students maintain or improve their physical fitness.
- Help all the girls in school adopt a physically active life.
- Help physically and mentally impaired students maintain or improve their physical activity.

Objectives are achievements that will lead towards the achievement of the programme's goals. Objectives need to be Specific, Measurable, Achievable, Rational, and Time Limited *(63).*

Objectives can be divided into two broad subheadings — process objectives and outcome objectives *(for more information see Chapter 6).*

Following are some examples of objectives:

i. By 15 November 2XXX, at least 30 percent of girls in classes 6, 7 and 8 of the school will be participating in physical activity at least three times a week.

ii. Beginning in April 2XXX, the children in classes 1, 2 and 3 of the school will go to the playground at least once a day and be involved in some game that will make them sweat.

iii. By the end of the year, at least 70 percent of parents of girls of the middle school will be given information on the benefits of involving their daughters in physical activity.

5. INTEGRATING EFFORTS TO PROMOTE PHYSICAL ACTIVITY INTO VARIOUS COMPONENTS OF A HEALTH-PROMOTING SCHOOL

Health related habits such as physical activity, healthy nutrition and refraining from tobacco could be influenced through inter-related components of a Health-Promoting School. A framework of these components is illustrated in Figure 1:

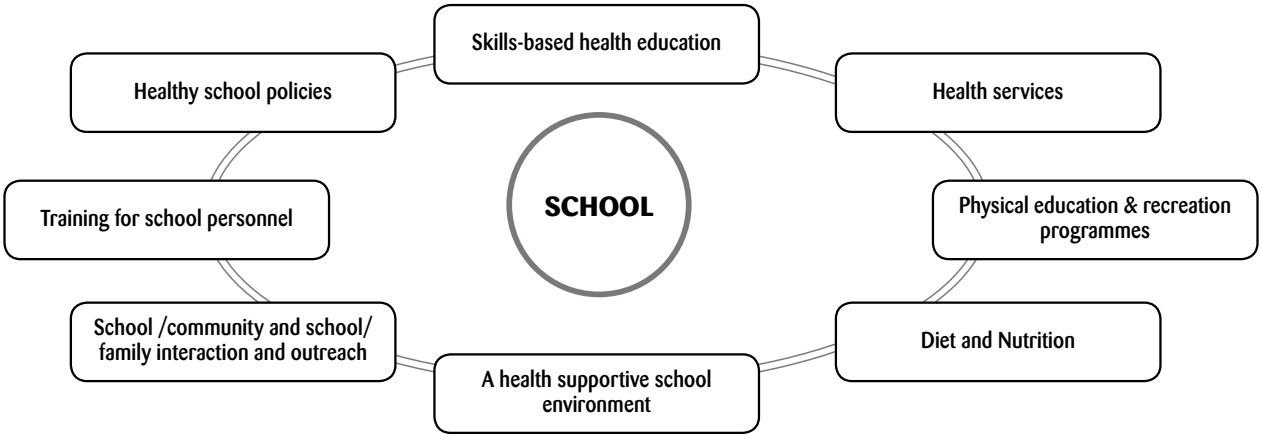


Figure 1. Various Components of a Health-Promoting School

The successful promotion of physical activity in school largely depends on how effectively the above components are mobilised to support the adoption and maintenance of physical activity. This multi-component approach is widely recommended *(47)* and has proven most effective in practice *(46).* The following sections take a closer look how each component can be used to promote physical activity.

Summary: How to promote physical activity in schools:

Supportive school policy:

- Raise the quantity and quality of physical education at schools.
- Integrate the benefits of physical activity in school curricula.
- Support teachers, parents and students who plan, develop and review physical activity programmes

Physical education:

- Develop and practise physical fitness such as endurance, flexibility, strength and coordination, including basic motor skills.
- Provide physical activity to specific needs and to all children (recognizing age, disability and gender).
- Provide recreation and relaxation. Make physical activity fun.
- Provide an increased variety of physical activity such as sports, non-competitive recreation facilities and active play through extra-curricular activities.

A health supportive school environment:

- Ensure safe walking and cycling on the way to school.
- Provide bike storage facilities.
- Provide facilities and equipment for physical activity.
- Ensure safety for active transport to and from school.
- Ensure adequate safety precautions to prevent physical activity injuries and illness.

Skills-based health education:

- Provide knowledge on the physical, psychological and social health benefits of physical activity.
- Help students develop positive attitudes about physical activity by emphasising the enjoyment rather than competitiveness of physical activity.
- Encourage students to develop physical fitness, i.e. high levels of flexibility, strength, endurance and coordination, including motor skills.
- Provide road- and other types of safety training.

Diet and nutrition:

- Encourage students to consume and provide them with healthy, nutritious foods.
- Allow adequate time for eating as well as for recess.
- Discourage students from eating junk foods.

Health services:

- Monitor and assess physical activity levels and fitness.
- Collect medical information from students and parents that is relevant to participation in physical activity.
- Make recommendations on physical activity for students with disorders or disabilities.

Health promotion for school staff:

- Promote health benefits of physical activity to school staff.
- Provide school staff with opportunities to be physically active with colleagues.

Training teachers and other school personnel:

- Provide teachers with adequate, regular and appropriate training to ensure safety and quality of physical activity programmes.

Involving the community and families:

- Ensure that family and relevant community members can take part in planning and decision making.
- Provide opportunities for family and community members to advocate for and participate in activities and services offered through schools.
- Seek support and resources from family and relevant community members.

5.1 Supportive school policies

School health policies are brief documents that set out a clear set of school standards for practices and conditions in the school building, surroundings and events. They are an essential component of a Health-Promoting School. Once developed, they should be communicated to those who are expected to follow the policy; training should be provided, if necessary, to ensure that persons who are expected to follow the policy are capable of doing so; and they should be enforced. Policies also should take into account local factors and recourses, and importantly, should be developed with input from those people who will be affected by the policy.

The following list is a range of actions or qualities that might be supported through policy to improve physical activity in the school.

- The school follows a specifically defined set of standards or protocols to ensure that physical activity is safe, convenient and appropriate for different ages, gender and abilities.
- Quality and quantity of physical education is increased, monitored and receives equal attention as other subjects.
- Planned and sequential physical education curricula enable students to acquire knowledge about the health benefits of physical activity, and develop and practise motor skills as well as strength, flexibility, endurance and coordination.
- Teachers, parents, students and all other relevant school personnel are involved in the planning, development and review of physical activity policies and programmes.
- The school health team meets periodically to review, develop and coordinate related to physical activity promotion efforts between the school and community.
- Teachers and other school personnel receive systematic and ongoing training in the benefits of physical activity.
- Physical education, recess, extracurricular activity and community sports and recreation programmes are made accessible to all students irrespective of their sex, age, ethnicity, health status, or physical or cognitive ability or disability, and meet their special needs and interests.
- The school's actions to provide opportunities for physical activity recognise that enjoyment is one of the most important factors for a child to participate in physical activity.
- The school's actions to promote physical activity recognise that many children require motivation to increase their level of physical activity.
- Individual school policies on physical activity are consistent with the national or other professional standards for physical education *(12).*
- Minimising physical activity-related injuries and illnesses among young people is recognised as a joint responsibility of teachers, school administrators, community members and parents.
- In collaboration with communities, the school personnel makes school space and facilities available for physical activity before and after school hours.

- The school ensures that physical activity is not used as punishment and avoids actions that can create an adverse association with physical activity in the minds of young people.
- The school, in collaboration with many partners such as community and traffic planners, and local government officials, plays a key role in advocating and supporting active forms of transportation to and from school such as walking and bicycling.
- The school develops a school health programme which addresses factors that have comprehensive and holistic impact on health, such as nutrition, tobacco, alcohol and substance use, and violence prevention and helps students understand the value of physical activity and its relationship to the other important health related behaviours.

5.2 Physical education

Physical education involves much more than blowing the whistle and getting the children to work up a sweat. A physically educated person participates regularly in physical activity, is physically fit, has learnt the skills to perform a variety of physical activities and knows the benefits and implications of being physically active. In recent years, more and more schools recognise the need to raise the quality of physical education. Physical education lessons should be available from preschool until secondary, aim to address a variety of physical activities and encourage those who are less inclined to take up structured, competitive sports. This requires abandoning traditional methods of physical education instruction and focussing more on the individual's needs and abilities and - perhaps most important - the enjoyment of physical activity. As time for physical education is usually limited within the school time schedule and curricula, its content must be effective and efficient *(47).*

A good physical education curriculum involves:

- Development of physical abilities & physical conditioning
- Providing physical activity for specific needs and to all children
- Encouraging continued sports and physical activity into later life
- Providing recreation and relaxation

Development of physical abilities & physical conditioning:

Physical education should foremost teach children to develop and practise **physical fitness** including **basic motor skills** and acquire the competency to perform various physical activities and exercises.

Physical fitness:

Key components of fitness are **endurance, flexibility, strength** and **coordination**. Certain physical activities, games or sport can incorporate more than one. A balanced variety of all types of activities facilitates a variety of positive health outcomes and sustains children's enjoyment and interest in physical activity.

Aerobic or Endurance Activities:

E.g. running, jogging, skating, football, basketball, swimming, dancing

- involve continuous movement.
- cause more and rapid breathing and a faster heartbeat, and makes you feel warm.
- benefit the heart, lungs and circulatory system.

Strength Activities:

E.g. lifting weights, carrying groceries, bowling, shovelling snow, raking the leaves

- involve lifting, carrying, pushing and pulling.
- use the muscles against some form of resistance.
- build and strengthen muscles and bones and improve posture.

Flexibility Activities:

E.g. stretching, gymnastics, dancing, swimming, yoga, martial arts

- involve bending, stretching and reaching.
- keep the joints mobile and muscles relaxed; helps with relaxation.

Coordination Activities:

E.g. lifting weights, carrying groceries, bowling, shovelling snow, raking the leaves

- involve throwing, catching, jumping, kicking, hitting an object.
- combining strength, endurance and flexibility to achieve effective, well-directed movements.

Source: Adapted from Public Health Agency of Canada;

http://www.phac-aspc.gc.ca/pau-uap/paguide/child_youth/index.html

Basic motor skills:

To be able to perform most physical exercises and sport, children must have developed basic motor skills. Acquiring these basic motor skills, a physically educated student can perform a variety of physical activities, and is thus prepared to participate regularly in physical activity.

Basic motor skills:

- **Catching:** Catching is receiving and controlling an object by the body or its parts. As children learn to catch, they may first fear the ball and pull away to protect themselves. As they progress they catch a ball with their whole body, then with their arms and hands, and eventually with their hands alone. Some basic activities that involve catching are first catching balloons or bubbles and later basketballs, softballs, and catching activities of cultural games.

- **Running:** Many activities and sports involve running for short or long distances. To run safely, efficiently and without falling children need to learn how to use legs, feet, toes and arms, techniques in running downhill and uphill, wearing appropriate clothes.

- **Throwing:** Throwing skills are required for activities such as throwing snowballs, frisbees, cultural games and for sports such as cricket, basketball, hand ball or volleyball. Children need to be taught the correct way of throwing — the position of objects, the position of hands, watching the target, eye, body and feet coordination, placement of the feet and balancing the body.

- **Jumping and Hopping:** Jumping and hopping activities involve jumping rope, jumping over obstacles, diagonal jump, hopping on one leg etc. Again, eye, body and feet coordination as well as body balance are essential.

- **Kicking :** Kicking activities involve kicking any ball – soft foam ball, rolled up paper wad, many local and cultural games, sports including football, karate and judo.

Providing physical activity for specific needs and to all children:

Age:

Children in middle and secondary schools have different needs and interests than those in primary schools where students should develop basic motor skills that allow participation in a variety of physical activities. Older students should become competent in a select number of physical activities that they enjoy a lifetime and succeed in *(1).*

Disability:

Many children and adolescents in school have physical or cognitive disabilities or chronic health conditions such as asthma, diabetes or heart disease *(55).* Such children have equal need of physical activity as other children. They may be easily discouraged from participating in regular physical activity. Schools and communities should strive to mainstream disabled students into regular physical education by providing modified equipment and facilities as well as teaching assistants for these students. Such programme can help these young people acquire the physical skills and mental benefits of physical activity *(56).* Also see Annex 2 for resources.

Strategies for adapted physical education:

- Adapting the movement form:
  instead of running or walking: rolling across a mat, walking with a partner;
  instead of throwing a ball: rolling or carrying.

- Adapting the environment:
  positioning gym benches for children with difficulties standing for too long; positioning comfortable gym mats; etc.

- Adapting equipment:
  smaller racquet handles are easier to control; sponge balls are easier to catch; etc.

- Adapting rules and instructions:
  pairing students with a partner; accompanying verbal instructions with an demonstration; etc.

Source: http://www.ncpad.org/fun/fact_sheet.php?sheet=285&section=1832;

NCPAD Inclusive Physical Education

Gender:

Girls and boys have different perceptions, interests, opportunities and barriers in regard to physical activity. Studies have shown that girls and boys perceive benefits of physical activity differently. Girls might be more interested in weight management while boys are usually more often interested in competition and strength building. Girls are also more likely to be involved in aerobics, dance or yoga and less likely to participate in team sports *(65;66).* In general, compared with boys, girls are less engaged in physical activity. In ethnically diverse countries, it has also been seen that race and ethnicity determine children's participation in physical activity *(67).* In countries where it is not considered appropriate for women to do sports or girls to play physically active games in public, girls should get the opportunity to be physically active in the privacy of physical education classes. These factors should be considered in efforts to promote increased physical activity.

The national-level NGO Insan Foundation-Pakistan, in collaboration with the international NGO Right to Play, introduced physical activity projects in eight schools in Afghanistan. Close to 100 local coaches were trained to conduct sport and play activities in these schools. A special focus was the inclusion of girls who have been culturally restricted not to participate in sport and play activities. The projects included modification of play sites and the promotion of girls-only events and activities. The projects were well received by both students and teachers and sport and play are now an integral part of school activities of both girls and boys.

Source: Right to Play Annual Report 2003 (68).

http://membership.righttoplay.com/site/PageServer

Culture:

Physical activities and games differ from country to country and culture to culture. Annex 3 provides you with examples of popular games played in different countries.

A school-based, multi-component intervention for reducing obesity among American Indian school children focuses on the change in dietary intake, the increase in physical activity, classroom curricula on healthy eating and lifestyle and family-involvement, and receives strong support from the local tribal community. Physical activity intervention includes three 30-min physical education sessions per week, exercise breaks during classroom time and guided play during recess. *(64).*

Encouraging continued sports and physical activity into later life:

A major goal of physical education curricula should be to help students develop an active lifestyle that will persist into adulthood *(69-71)*. The long-term success of school physical education depends largely on the competence and motivation of teachers *(72).* Research shows that negative attitudes towards physical activity and sports persist into adulthood *(73)* and both positive and negative experience with physical activity is mostly associated with the physical education teacher. Many teachers are specially trained as physical education teachers or instructors. Their training provides them with knowledge and skills that enable them to treat students as individuals with different abilities, interests and motivations in physical activity. Many schools do not have specially trained physical education instructors, however, the ideas of this section can assist teachers who have not been trained as physical educators.

Also, as negative attitudes towards physical activity and sports persist into adulthood *(73),* an emphasis should be made to include non-competitive life-long physical activity. Though competition is a natural and enjoyable part of sports, it may seriously decrease interests of the less competent student not only in sports but also in physical activity in general. After all, it is those less inclined to take up sports who need encouragement.

Examples for individualised, unstructured or non-competitive physical activities (also see Annex 3 for popular local games):

- dancing
- racket sports
- swimming
- ice skating
- weight-training
- martial arts
- yoga
- aerobics
- scavenger hunt

To achieve an active lifestyle, students should also be encouraged during physical education classes to be active before, during, and after the school day. Where available, students might be encouraged to participate in community sports and recreation opportunities. Moreover, physical education teachers should involve parent and family members in physical activity, for example, by giving students physical activity 'homework' which could be performed together with the parents/ family members, such as family walks after supper, or playing in the park.

Providing recreation and relaxation:

Within the school curricula, physical education should provide children with balance and variation from long periods of sitting in the classrooms. Children should discover physical activity as a fun type of recreation and as a means of relaxation. Physical education programmes should thus be implemented with an emphasis on enjoyable participation in physical activity *(47)* providing children with an array of ideas for active games and activities and the skills and fitness to play them. It should furthermore teach children how to relax through relaxation and stretching exercises but also through 'letting off steam' being vigorously active. This can also be taken onboard by teachers of other subjects, implementing short relaxation and stretching exercises in their lessons when children get restless and concentration decreases.

5.2.1 Extracurricular programmes

Extracurricula activities are any forms of activity provided by schools other than formal classes *(58).* Examples of such physical education extracurricular activities include interscholastic athletics, intra-school sports and school programmes linked to community recreation facilities. Physical education offered by schools usually only partly meets the recommended levels for physical activity among children and adolescents. Extracurricular activity helps to supplement the amount of physical activity which can be obtained through formal physical education classes, offers an increased variety of opportunities for activity and can serve as an impetus for increased cooperation between schools, parents, communities and voluntary organisations *(74).*

Recess is a particularly good extracurricular opportunity for children to be active and students should be encouraged by providing them with the necessary equipment such as balls and skipping ropes, or playground markings *(75).*

Canada's Guidelines for Increasing Physical Activity in Children

Canada calls to action parents, educators, physicians and community leaders to support and cooperate in helping children benefit from this guideline to increase physical activity among children.

This guide will help children to

- Increase time currently spent on physical activity, starting with 30 minutes **MORE** per day.
- Reduce ´non-active´ time spent on TV, video, computer games and surfing the Internet, starting with 30 minutes **LESS** per day.

Some activities to try with children to achieve the above:

- Take stairs instead of elevators
- Take a walk after supper and make the walk an adventure
- Play ball, hockey, football or go swimming
- Ride a bike or scooter
- Rake the leaves, shovel snow, or carry groceries together
- Go skiing or build a snowman
- Organize neighbourhood games to help kids make active choices
- Dance, dance, dance
- Play sports of any kind
- Bring kids outdoors to play
- Work with the neighbours to create a walking 'school bus'
- Leave the car at home when going on short trips

Source: Health Canada www.hc-sc.gc.ca/hppb/paguide/

5.2.2 Active transport to and from school

Children and adolescents have the daily opportunity to be physically active on their way to school and back home *(78;79).* Choosing an active mode of transportation by walking or cycling increases not only the physical activity level of schoolchildren but also protects the environment. If parents accompany their children on their way to and from school, this also creates a good opportunity for parents to be physically active and for families to communicate. It goes without saying that communities and schools must enable their students to use an active mode of transportation by providing them with a safe environment for walking and cycling (also see 5.8 A health supportive school environment).

5.3 Skill-based health education

Skills-based health education is designed to help students acquire the knowledge, attitudes and skills which are needed to make informed decisions, practice healthy behaviours and create conditions that are conducive to health.

Skill-based health education should:

- Provide **knowledge** about the relationship of physical activity and health, its positive benefits for physical, psychological and social well-being and the long- and short-term consequences of sedentary lifestyles, such as obesity and risk of chronic diseases.
- Help students develop positive **attitudes** about physical activity; that is - personal perceptions, such as feeling responsible for one's own health and viewing physical activity as fun and rewarding in addition to being important for health.
- Reinforce physical education classes by helping students acquire **life skills** that may make it easier for them to adopt and maintain physically active lifestyles.
- Encourage students to develop **motor skills** and **physical fitness**, i.e. high levels of flexibility, strength, coordination and endurance, necessary for active games and sports.

Health education can also complement physical education by enabling students to acquire comprehensive knowledge on healthy living – not only on physical activity but also on issues such as healthy eating, tobacco use, drug use, behaviours that result in injury and other issues that are relevant to the promotion of physical activity. It also presents an opportunity for schools to address theoretical knowledge on physical activity so that the physical education classes can concentrate more on actual activity.

5.4 Nutrition

Adequate nutrition and physical activity are cornerstones of good health and need to be included in comprehensive school health programmes to complement each other *(47).* Nutrition provides fuel for physical activity. The World Health Organization has developed the Global Strategy on Diet, Physical Activity and Health which calls attention to the importance of a balance between nutrition and physical activity.

Nutrition and physical activity are linked in several ways. The prevalence of overweight among children and adolescents has increased dramatically in some developing and most developed countries around the world *(20;21).* The primary cause of overweight and obesity is an imbalance between caloric intake from food and energy expenditure from physical activity *(22).* Thus, physical activity does not in itself guarantee good health. In fostering healthy physical activity, schools should also:

- enable and assist students to choose and consume healthy, nutritious foods *(80)*.
- allow adequate time for eating as well as for recess.
- discourage students from eating junk foods *(52).*
- not use food as a reward or as a punishment.

Global Strategy on Diet, Physical Activity and Health

Poor diet and sedentary behaviours are among the major risk factors of chronic diseases which account for 59% of 56.5 million deaths annually and 46% of the global disease burden.

Recognising this major public health problem, WHO has formulated a Global Strategy on Diet, Physical Activity and Health to mobilise international, national and local action that encourages and helps people maintain a healthy diet and physically active lifestyles.

There is clear and convincing evidence that high consumption of energy – sugar, starch and fat – in relation to physical inactivity is the fundamental determining factor of nutrition-related chronic diseases. Healthy diet and physical activity are key to good nutrition and necessary for a long and healthy life. Eating nutrient dense foods and balancing energy intake with the necessary physical activity to maintain health is essential at all stages of life. Consuming too much food high in energy and low in essential nutrients contributes to energy excess, overweight and obesity.

The simple, but extremely important, recommendations of the global initiative are to eat less high caloric foods; especially foods in high saturated or trans fat and sugar; consume foods with unsaturated fat; use less salt; consume high amounts of fruits, vegetables and legumes; select foods of plant and marine origin; and be physically active for at least 30 minutes a day.

Source: World Health Organization; available at

http://www.who.int/gb/ebwha/pdf_files/WHA57/A57_R17-en.pdf

5.5 Health services

School health services help foster health and well-being as well as prevent, reduce, monitor, treat and refer health problems or conditions. In Health-Promoting Schools, health services provide services, as possible, and make referrals, as needed. Health service providers should be included in the development or review of health-related policy, curricula, and the planning of special events.

School health services should:

- Collaborate with the physical education component of the school to regularly assess physical activity levels and fitness.
- Collect medical information from students and parents that are relevant to participation in physical activity.
- Provide such information (when necessary, and in accordance with parental or guardian permission) to the physical education teachers and other appropriate staff members.
- Identify inactive students and provide them with counselling.
- Encourage active students to maintain their current activities.
- Make recommendations about physical activity for students with disorders and conditions such as anaemia, diabetes, asthma, obesity and heart diseases, and refer them, as necessary, to appropriate health services providers within the community.
- Promote physical activity to students and their families through individual counselling, small group discussions and by distributing educational materials.
- Collaborate with school policy makers, teachers and administrators to develop safety standards and ensure that first aid is available for injuries that might result from physical activity.

Not all schools have health services. Such schools should work with their local health department to assess the importance of such services and make linkages to community based health and social services as needed.

5.6 Health promotion for school staff

A Health-Promoting School aims at promoting healthy lifestyles among all who study, work and use the school. Therefore, a school health programme should not be limited to promoting health among children enrolled in school but be extended to school personnel. Programmes for staff are intended to raise their awareness of health and encourage them to adopt healthy lifestyles. Promotion among staff could also entail printed materials from national or local organisations, or workshops held by the physical education teacher.

Physical activity offers several advantages as a health promoting measure for school personnel. Its physical, mental and social benefits are necessary for, and are most likely to be welcomed by the school personnel. Practising physical activity offers enjoyable and inexpensive ways of interacting socially with colleagues and relaxing variation from mentally demanding, sedentary work. Positive personal experiences with physical activity are likely to increase teachers' understanding of its value as an important element in the school day as well as a means to improve their own health and productivity.

5.7 Training teachers and other school personnel

While teachers are crucial to the implementation of physical activity in schools, they do not necessarily possess adequate knowledge and skills to enable them to deliver the programmes effectively.

Adequate, regular and appropriate training should be provided not only to the physical education or activity teachers but also to other staff who may have responsibility for making decisions about physical activity or engaging students in physical activities, such as health service staff, teachers of other subjects, and voluntary coaches. Not all countries have adequate resources for specialised teachers for physical and health education. In such situation providing training to other school personnel and staff is very important to ensure safety and quality of physical activities.

Teachers should be trained to:

- Involve parents and family members to promote physical activity among their children.
- Emphasise activities that can be enjoyed over a lifetime.
- Avoid injury and apply safety precautions during physical activity, e.g. by practising stretching exercises before sports and games and providing students with protective clothing and equipment.
- Encourage girls to participate in physical activity, e.g. by offering activities such as dancing, yoga or aerobic.
- Encourage physically and cognitively impaired children to participate in physical activity, e.g. by asking another student to give extra assistance, adapting rules or equipment (e.g. racquets with shorter handles for better control; sponge balls for better grip).
- Collaborate with the community members to maximise before-and-after-school physical activity.
- Create an environment for physical activity during recess, before and after school.
- Give less emphasis to competitive sports but rather promote non-competitive sports.
- Prepare fact sheets and flyers with information on benefits of physical activity for parents, family and community members.
- Assess reasons for young people not to engage in regular physical activity and try to overcome common barriers to physical activity.
- Recognise the different needs and interests of :
    - Elementary and middle school students
    - Boys and girls
    - Physically/ cognitively impaired students

Trained staff and teachers are likely to appreciate the value and benefits of physical activity for physical, mental and social health as well as for growth and maturation. They are also likely to understand the quality and quantity of physical activity that are necessary for young people to benefit their health, skills and performance. As a result of training, the teachers and staff will be able to provide a variety of developmentally appropriate physical activities for children and adolescents.

Teachers require easy guidelines and practical ideas how to integrate physical activity in their lessons without compromising their own curriculum.

The following suggestions can serve as an initial guideline:

- **Math:** Have students practise their measurement skills by measuring the distance covered when jumping, leaping and hopping.
- **Science/Biology:** Encourage students to write reports on the benefits of physical activity. Ask students to measure their heart rates by taking their pulse after performing different activities and discuss the effects on the body.
- **Literature:** Ask students to write essays on physical activity, e.g. record in their journals the amount of time they spend watching TV and being physically active, what activities they enjoy most and why.

All teachers can incorporate relaxation and stretching exercises in their lessons in order to increase concentration and attention.

Training and learning materials, and many good ideas, may be available through government and non-governmental agencies, international organisations, universities or teachers' unions in most countries. The examples above were partly taken from the (U.S.) National Center for Chronic Disease Prevention and Health Promotion [*(81)*, also: *(82;83)*]. Furthermore, initiatives and foundations sponsored by the private sector provide ideas for classroom based physical activity programmes *(84;85).* For further information see Annex 2.

5.8 A health supportive school environment

The school's environment is a key factor whether physical activity programmes are successful *(78;80;86).*

The psycho-social environment relates to social and emotional conditions which affect education and health. The following aspects should be considered:

- **Support:** The psycho-social environment should support health-conducive perceptions and actions of all who live, work and learn in the school. Friendly and knowledgeable school personnel can help build confidence and self-esteem with regard to taking up physical activity.
- **Teacher role models:** School personnel are important role models and potential advocates for health in both the school and the community at large *(44).* They can be mentors encouraging students by demonstrating a physically active lifestyle.
- **Peer reinforcement:** Another aspect is students' influence on peers. Students can provide positive reinforcement to their peers by motivating each other to participate in games (*87).* This requires that schools provide students with sufficient time to play and socialise.

The physical environment includes the school building, classrooms, recreation and sport facilities and the surroundings in which the school is situated *(45;88).* The following recommendations should assist schools in creating a positive physical environment for physical activity:

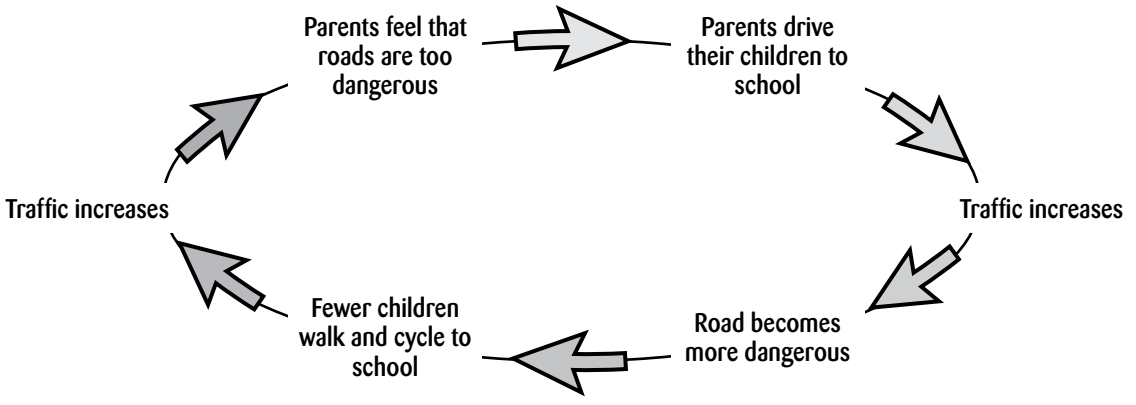
Providing facilities and equipment for physical activity:

The provision of various equipment for play and sports such as skipping ropes and balls can encourage students to spend recess actively *(75).* This is a low-cost intervention with great impact. Another efficient and simple strategy is painting the school playground with colourful markings, e.g. hopscotch or mazes *(89;90).* This requires that appropriate school playgrounds are available. Another quick and easy idea is to make classrooms and recess areas 'activity friendly'. This can be achieved by changing seating arrangements to allow greater movement within the classroom, e.g. for active games during lessons, or allowing more open unfurnished space for active games in indoor and outdoor recess areas. Access to various sport facilities such as gymnasiums, basket ball courts, swimming pools or tennis courts also helps to foster physical activity, but is not essential. Where such facilities are not available in the school, school and community leaders can collaborate to make them available to students within the community.

Recess at school is a perfect opportunity for school children to stretch their bodies after sitting for a long period and to let off steam. Colourful **playground markings** in elementary schools have shown to successfully encourage active play among children *(89-91).* A study on two elementary schools in a deprived area of Northeast Wales, **United Kingdom**, concluded that multicoloured playgrounds are an effective low-cost method to encourage active games among children and increase children's daily physical activity. The markings can be used for traditional games like hopscotch but can also inspire children to create their own games. Other studies report additional positive effects such as decreased playground confrontations or fights, reduction of bullying and decreased levels of classroom disruptions.

Ensuring safety for active transport to and from school:

Walking and bicycling to and from schools could be a great opportunity for children and adolescents to be physically active on a regular basis *(92).* However, the school, families and community members must ensure that active transportation is a safe and enjoyable activity, for example by establishing a traffic free zone outside the school at critical hours *(47).* With unfavourable road conditions and increasing traffic, many parents in urban areas are reluctant to let their child walk or cycle to school *(93;94)*:



The vicious cycle of increasing motorised transport and the school journey

Source: Physical activity through transport as part of daily activities including a special focus on children and older people, WHO Regional Office for Europe, Copenhagen, 2002

http://www.who.dk/document/Trt/Booklet.pdf

Issues related to violence and crime are further barriers to young people's participation in physical activity and the provision of save play areas and secure cycle storages should thus be ensured *(47;95).* Within the community, schools can advocate safe walking trails, adequate lighting during night and safety patrols to ensure children can safely get back and forth to school and take part in community sports and recreation.

Poor air quality is a major hindrance for physical activity, especially in urban areas *(96).* Reducing the intensity of outdoor activities and organising indoor activities are some of the measures to consider when confronted with poor air quality. Lobbying and collaborating with local government and municipalities for clean air regulations can be important steps towards improving the air quality. Active transport to school is another step towards reducing air pollution.

Injury prevention during physical activity:

Overall, the health benefits of physical activity far outweigh the risks. Having said this, adequate safety precautions should be established and enforced to prevent physical activity injuries and illness *(97;98).* All stakeholders such as teachers, parents, community officials as well students should forge an alliance to minimise physical activity related injuries and illness among young people.

Preventive measures include:

- adequate education about safety rules such as the use of protective clothing and equipment.
- provision of protective clothing and equipment appropriate to the type of physical activity and the environment, for example appropriate footwear, helmets for bicycling, face-guards and reflective clothing *(97).*
- ensuring compliance with safety supervision.

Exposure to the harmful rays of the sun can be minimised by the use of protective hats, full clothing, and sun screen. On hot days, children should drink adequate water during play and exercise and should avoid playing in the direct sun. Activities can be scheduled to avoid midday sun exposure and use of shaded spaces or indoor facilities. Students should also be taught to recognise the early signs of heat exhaustion *(99).* Please refer to 'Sun Protection: An important Element of a Health Promoting School' mentioned at the front cover of this document.

Cold related injuries can be avoided by ensuring that young people wear multilayered clothing while playing outside, increasing the intensity of outdoor activities in order to produce more body heat, using indoor facilities during extremely cold weather, and ensuring proper water temperature for aquatic activities. Children should be provided with adequate training to recognise the early signs of frostbite and hypothermia such as dizziness and fatigue *(99)*.

In general, children should be taught to stop exercising and report to teachers or parents if they feel pain, fatigue, dizziness, nausea or serious breathing difficulty.

5.9 Involving the community and families

A Health-Promoting School addresses health promotion and physical activity by engaging students, school personnel, families and community members in collaborative and integrated efforts to improve health in the school and through school/community projects and outreach. Community members and parents should believe that their school is open and receptive to their ideas and participation.

Family and community members can be involved in Health-Promoting Schools in various ways:

- **Taking part in planning and decision making;** for instance, by participating in the school health team or community advisory committee.
- **Participating in activities and services offered through schools;** for instance, attending projects to gain specific knowledge and skills relating to physical activity, such as exhibitions, festivals, health fairs, and opportunities for families to engage in physical activity at the school.
- **Providing support and resources;** for instance, supplying financial or material donations, being guest speakers or providing specialist services related to health and physical activity. Local sports clubs can provide their facilities; local police can offer family cycle and road safety training.
- **Advocating for health;** for instance, knowledge and skills acquired in a school/community project can be used by community and family members to take communal actions that will result in creating environments that are safe and supportive of sustainable physical activity patterns.

5.9.1 Involvement of parents and family members

Parents and families play a pivotal role in shaping a child's physical activity behaviour. Children and adolescents are more likely to be physically active if their parents and siblings are active. Parental support positively influences physical activity among children and adolescents, and parents' attitude towards physical activity may influence children's involvement in physical activity *(100;101).* Schools should thus be receptive and open to ideas from parents and provide them with information on various ways they could participate in physical activity.

Home is the first setting where children have opportunities to foster an active life and motivate family members to be active. There, students can practice and share what they learn about health and physical activity in the classroom (102-104).

Important roles for parents in promoting physical activity:

- Ensure that their children participate in physical education classes, extracurricular physical activity programmes, community sports and recreation clubs.
- Monitor children's participation in such activities, and encourage and enable children to engage in more physically active leisure activities.
- Learn about the specific interests of their child.
- Assist children select appropriate activities and help them with transportation to these recreational activity sites.
- Limit the time children spend in sedentary activity such as watching TV, and playing video and computer games.
- Encourage children do some stretching or exercise while watching TV.
- Take children bicycle riding, hiking, or for walks.
- Involve children in household chores such as sweeping, washing and tidying rooms.
- Do physical activity 'home-work' assigned by the school physical education teacher.
- Discuss with other parents the value of physical activity and innovative ways to make their children active.
- Advocate for safe walking trails and close-to-home parks and lobby with local government for local parks.
- Encourage girls as well as boys to dance to the music they hear.
- Encourage children to teach peers the skills necessary to be active and to play sports.
- Encourage children to climb stairs rather than taking the elevator.
- Provide children with healthy nutritious food at home.

5.9.2 Collaboration with the community

Community support and resources are vital for fostering physical activity through schools and with organisations which are responsible for the well-being of youth (58). Potential partners within a community include recreation and sports organisations, pool halls, volunteer organisations, churches, temples and mosques and NGO programmes. These partners within a community can assist in creating awareness, publicity and visibility for physical activity. Communities can contribute by endorsing, collaborating and co-sponsoring various physical activity programmes for young people.

Important roles for the community in promoting physical activity:

- Make schools a priority location for exercise and sports in community planning efforts.
- Link community health services to the resources that promote and support physical activity of the young people.
- Develop parks or playgrounds in vacant lots, make roof tops accessible or convert / rebuild the community construction into parks and recreation facilities, increase access to community parks and trails, for walking, cycling and hiking.
- Provide children and adolescents with opportunities to engage in various types of physical activity that are not offered in school, e.g. transportation, fees, access and special equipment.
- Rebuild traffic roads to ensure appropriate traffic calming and zoning as well as convert certain vehicular roads to pedestrian walks and bicycle traffic.
- Help pass regulations and ordinances for
  - Building sidewalks/ bicycle paths along the roads by schools.
  - Construction of sidewalks and bicycle paths in any new communities.
  - Bicycle helmet use.
- Encourage parents to walk children to school.
- Establish safe, well-lit walking, jogging and bicycle paths.
- Provide safe and easy transportation to places for physical activity.
- Advocate the benefits of physical activity to parents, children, school staff, and other community members through workshops.
- Help schools recruit qualified teachers/instructors for physical education as well as health education.
- Establish a community steering committee for physical activity promotion with representatives from schools.
- Encourage schools to open their recreational facilities to community members during the weekends and holidays.
- Develop community sports and recreation programmes accessible to out-of-school young children (particularly important in places where a high percentage of young people do not attend school).

6. EVALUATION

Evaluation is a powerful tool that can be used to inform about and to strengthen school health programmes. Evaluation is defined as "the systematic examination and assessment of the features of an initiative (programme, intervention) and its effects, in order to produce information that can be used by those who have an interest in its improvement or effectiveness" *(105).* A well-conducted evaluation is useful for policy and consequently for obtaining the resources needed for physical activity programmes, facilities and equipment.

This section provides ideas about a variety of measures and methods for evaluating physical activity programmes. As explained in section 4.3, evaluation must begin with clearly defined goals and objectives. Well developed goals and objectives facilitate evaluation.

6.1 Purpose of evaluation

Evaluation helps to:

- **Provide information** to policy-makers, sponsors, planners, administrators, teachers and parents about the implementation, progress, limits and effect of the physical activity programme.
- **Assess and improve** physical activity policies, space and facilities, instruction and programmes, training of personnel, health services, and students' achievements.
- **Provide feedback** to those involved in the planning of physical activity programmes in and through schools to determine which parts of the programme are working well and which are not.
- **Make improvements or adjustments** in the process of implementation.
- **Value the effort** of schools, parents and communities.
- **Systematically document** the experiences gained in planning and implementing physical activity interventions in and through schools so that it can be shared with others.

It is seen that many health promotion programmes, especially in developing countries, are either not evaluated at all or are evaluated inadequately *(106).* The main reasons are lack of resources, lack of skills and the lack of perceived importance of evaluation. However, if systematically conducted, efficient evaluation could be done with limited resources and simple techniques.

6.2 Types of evaluation

There are two major types of evaluation which are most relevant to evaluating school health programmes: process and outcome evaluation.

Process evaluation aims to measure the effectiveness of the process of implementing physical activity programmes or policies.

Process evaluation answers questions such as:

- To what extent are the interventions being implemented the way they are intended? This would involve an assessment of what is being implemented and comparing the findings with what was planned.
- To what extent are the interventions reaching the individuals who may need them, e.g. students, parents, teachers, community members?

Outcome evaluation measures whether and to what extent outcome objectives have been achieved. It is concerned with the effects of interventions and helps to determine whether any changes have occurred following the implementation of a programme. Traditionally this is done by comparing data collected before and after the implementation of the interventions. The data can be qualitative such as subjective perceptions of impact, and/or quantitative such as the number of participants, test results, or changes in knowledge, attitudes, skills, behaviours and conditions (equipment, facilities, space, etc.).

Outcome evaluation can be used to answer the following questions:

- Are the interventions accomplishing what was expected, as expressed in the objectives?
- To what extent did students adopt regular physical activity habits?
- To what extent did various indices of physical fitness of the students improve?
- To what extent did the programme achieve increases in students' knowledge, attitudes and skills related to physical activity?
- Which parts of the programmes worked best? Which interventions did not work?
- Where should we place more of our efforts in the future? What can be improved?
- Are programme planners and participants satisfied with the outcomes?
- How did students feel about the interventions?

Where resources such as time, personnel, and budget for evaluation may be scarce, it may be sufficient and more feasible to conduct a process rather than an outcome evaluation. Too often, programmes rush to study their impact on youth without fully understanding whether or how well implementation of the intervention occurred.

To conduct an evaluation, it is necessary to have the following:

- A good understanding of the intervention's goals, objectives and planned activities.
- A commitment to learning more about the strengths and weaknesses of the efforts and improving their delivery.
- At least one person who is willing to be responsible for the evaluation and who may receive some training in design and implementation of an evaluation.
- Assistance from a person trained in research or assessment, e.g. from the department of health or education or a local college, university or NGO, who has experience and can help develop an assessment plan.

6.3 Sample evaluation questions for various components

The following table provides an overview of various components of a Health-Promoting School that can be evaluated and examples of quantitative and qualitative questions for process and outcome evaluation. It might not always be possible to evaluate outcomes for each component separately. This table is not all-inclusive and needs to be adapted to different settings. Evaluation should be based on the objectives established in the planning phase and should be conducted in collaboration with the school health team.

Following components should be considered while evaluating schools for their performance in physical activity:

Components	Examples of process evaluation questions	Examples of outcome evaluation questions
▸ **Supportive school policies**	- Does the school have comprehensively written policies on helping students adopt and maintain a physically active life? - Does the school have unwritten or informal policies on physical activity? - Are physical activity programmes offered from preschool to secondary school? - Are resources designated to support physical activity programmes? - What do administrators, teachers, community people, students and parents think of the policies?	- What impact did the school policy have on any of the components of a Health-Promoting School? For example how have physical education classes been changed by policy to support physical activity, how has the school's physical environment changed by policy to support physical activity, etc.
▸ **Physical education**	- What do students, teachers and parents think of the physical education curriculum? - How frequently do students participate in physical education? - How much of the physical education class is devoted to physical activity? - What proportion of school children has been reached by physical education programmes? - Are there different physical activity programmes to suit girls and boys? - Are programmes tailored to meet the needs of physically and cognitively impaired students? - Are the physical activities perceived as fun and enjoyable by the students?	- To what extent are physical education programmes improving the health and fitness status of students? - To what extent are physical education programmes increasing activities for improving flexibility, strength, coordination and endurance? - Are the physical activity programmes demonstrating any tangible results? - To what extent did girls' attendance rates of physical education increase?

Components	Examples of process evaluation questions	Examples of outcome evaluation questions
▸ **Extracurricular activity**	- Do students have opportunities to participate in vigorous physical activity during recess? - Does the community offer various physical activity programmes before or after school? - Do physically and cognitively impaired students have access to and participate in both school and extracurricular physical activity?	- To what extent do students participate in inter-school and intra-school physical activity?
▸ **Active transport to and from school**	- Does the community provide safe walking or cycling paths to and from school? - Does the school make it easy for persons to be active in getting to and from school, such as providing space to park bicycles?	- To what extent did students' habits change positively towards active transport to and from school?
▸ **School health education & teachers training**	- Are all physical activity-related lessons and learning activities for health education implemented as planned? - Are in-service-trainings provided, as planned, for educators responsible for implementing physical and health education?	- To what extent have knowledge, attitudes, skills and practices of students and staff changed? (Use specific questions tailored to the objectives and activities of physical activity conducted at school.)
▸ **Nutrition**	- To what extent are nutrient rich and nutrient poor food choices offered on school grounds?	- Do nutrition and food interventions demonstrate any perceptible results such as reported changes food practices among students?

Components	Examples of process evaluation questions	Examples of outcome evaluation questions
▸ **School health services**	- Are students, teachers and parents satisfied with the support provided by school health services for physical activity? - Do school health services provide screening, counselling and other services related to physical activity? - Is first aid and other health services readily available to treat injuries that may occur during the performance of physical activity?	- To what extent has the monitoring of students' physical activity levels improved? - To what extent have the school health services been used by students and staff in regard to physical activity?
▸ **Health promotion for school staff**	- Do health promotion activities offered for school staff include physical activity? - How many staff members participate in these physical activities?	- To what extent does health promotion for school staff help them to take on physical activity or create conditions that foster physically active behaviour?
▸ **Healthy school environment**	- Are physical activity facilities, equipment and space available during recess and at other times? - Are safety precautions being followed during curricular and extracurricular physical activities? - Can schools offer physical activity opportunities in extreme weather conditions?	- What impact do students and staff report that resources and displays had on them? - To what extent did recess become more physically active?
▸ **Community and family involvement**	- Are community members involved in planning, implementing and evaluating physical activity programmes through schools? - What do parents and community members think about the health promotion and physical activity programmes? - Do the parents understand the importance of physical activity for their children?	- Have the parents' attitudes and practices on physical activity changed as a result of school physical activity programmes? - Which changes in knowledge, attitudes, skills and practices occurred in family and community members who participated in school-based interventions that addressed physical activity? - What changes of conditions have occurred in the community (e.g. safe playgrounds, available sport facilities)?

6.4 Reporting progress and achievements

The final step in the evaluation process is to publish an evaluation report. Any evaluation is useful and complete only when its results are reported and communicated to those who need and can use them, including those involved in planning and managing the interventions. The evaluation report can be an excellent advocacy tool for influencing policy makers and other partners. It can defend intervention programmes and help justify necessary resources. Moreover, the probability of implementing the recommended actions made in the evaluation report highly increases if the evaluation report is shared.

Before writing an evaluation report, schools should decide how the programme data should be shared with others. The evaluation report could be published quarterly, semi-annually or annually, can list details or simply provide a summary of actions and results. Depending upon the administrative setting, reporting could also be done orally together with the written report.

Measuring students' achievement in physical education and fitness requires a comprehensive assessment of their knowledge, motor and behavioural skills related to physical activity. The evaluation report should be designed in such a way that it is easy to understand and interesting to read. A report should be concise, direct and to the point and thus more likely to be valued and to be used. While preparing the report confidential issues should be dealt with caution and with sensitivity.

The following different topics should be included as part of the report:

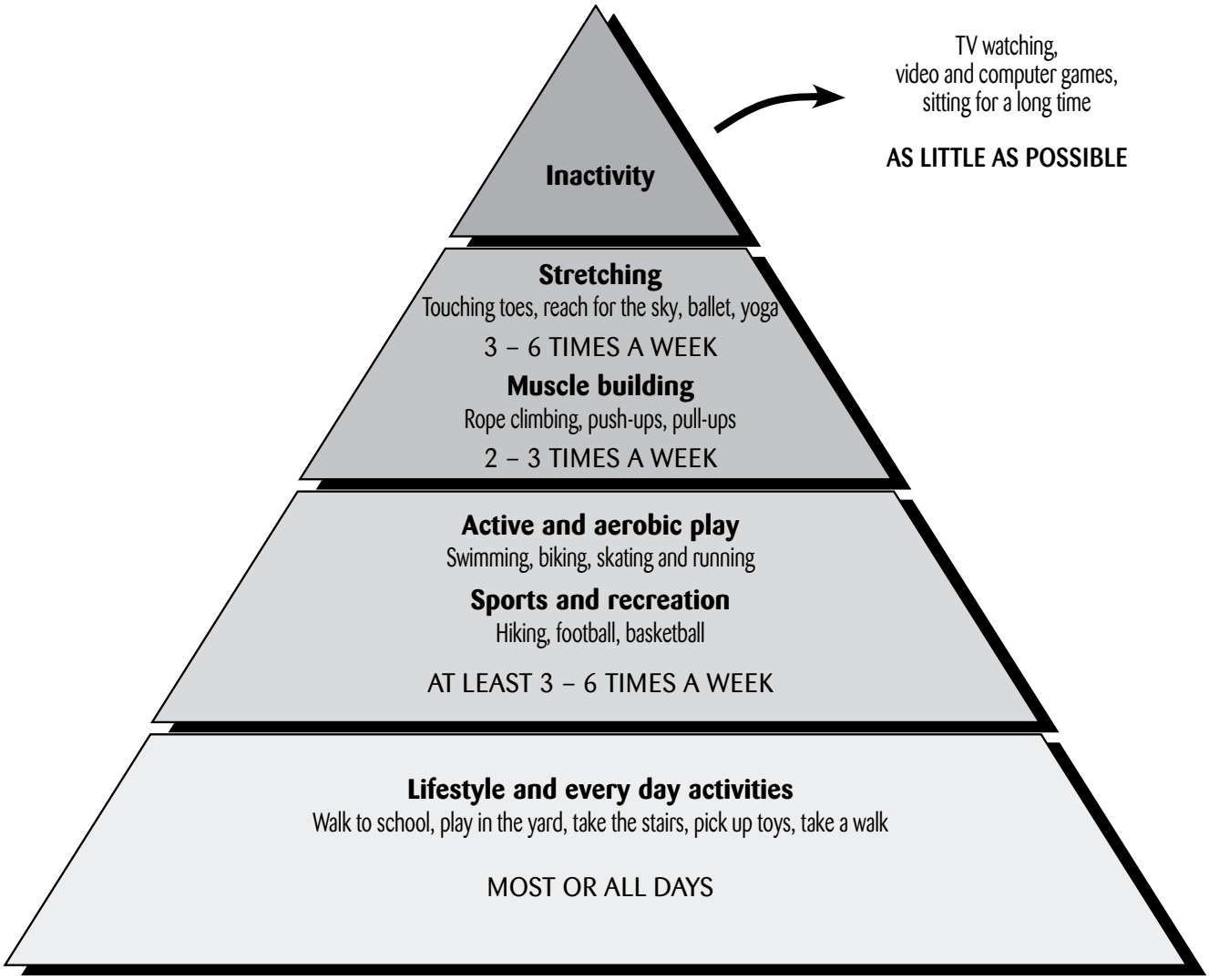
- A summary or abstract
- Purpose of physical activity programmes
- Description of the programmes
- Methods of the evaluation used
- Major findings of the evaluation
- Conclusions and recommendations

7. CONCLUDING REMARKS

This document aims to make two powerful cases. First it defines the importance of physical activity for today's children and adolescents – developing flexibility, endurance, strength and coordination as well as motor skills –, and second, it illustrates how schools, together with families and communities, can assist students to be active in these ways and to develop skills and interests that will enable them to be physically active throughout their lives.

Physical activity is a fundamental building block of children's present and future health and the school is an indispensable forum to initiate and maintain physically active living among children. WHO has compiled this document to provide basic recommendations for schools to be dynamic settings for creating an environment for young people to adopt and maintain physically active lifestyles.

Annex 1: Physical activity pyramid:



Source: e.g. http://www.classbrain.com/artread/publish/article_31.shtml;

http://www.schoolmenu.com/activity_pyramid.htm

Annex 2: USEFUL RESOURCES

National Physical Activity Guidelines:

Canada: http://www.hc-sc.gc.ca/hppb/paguide/

Australia: http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-pubhlth-publicat-document-physguide-cnt.htm

USA: http://www.cdc.gov/nccdphp/dnpa/physical/recommendations/index.htm

Guidelines for the quality of physical education: NASPE (National Association for Sport and Physical Education)
http://www.aahperd.org/naspe/template.cfm?template=qualityPePrograms.html

WHO Initiatives:

Move for Health Initiative:
http://www.who.int/moveforhealth/en/ World Health Day Report, 2002 *(107)*

Alliance of Healthy Environment for Children:
http://www.who.int/heca/en/; World Health Day Report, 2003 *(108)*

Tobacco Free Sports:
http://www.who.int/mediacentre/background/2002/back2/en/

Tobacco Free Initiative:
http://www.who.int/tobacco/en/

World Health Organization. Myths about Physical Activity: reading documents for World Health Day:
http://www.who.int/archives/world-health-day/fact_sheets7.en.shtml . 2002.

Teaching Aids:

National Center for Chronic Diseases Prevention and Health Promotion CDC (USA): Healthy Youth Physical Activity Brochures:
http://www.cdc.gov/HealthyYouth/physicalactivity/brochures/text.htm

also: CDC Body and Mind Teacher's Corner:
http://www.bam.gov/teachers/activities/index.htm

American Heart Association: Lesson Ideas and Activities:
http://www.americanheart.org/presenter.jhtml?identifier=3003345

PE Central:
http://www.pecentral.org/

Teaching Aids Private Sector:

International Life Sciences Institute (ILSI):
http://www.take10.net/teachertoolbox.asp

Nestle Australia:
http://www.nestle.com.au/ais/teachers/body.asp

NGOs:

Federation Internationale de Football Association (FIFA):
http://www.fifa.com

International Council for Sports Sciences and Physical Education (ICSSPE):
http://www.icsspe.org

International Diabetes Federation:
http://www.idf.org

International Federation of Sports Medicine:
http://www.fims.org

International Obesity Task Force:
http://www.iotf.org

International Olympic Committee (IOC):
http://www.olympic.org

International Union for Health Promotion and Education (IUHPE):
http://www.iuhpe.nyu.edu

Red Deporte:
http://www.redeporte.org

Right to Play:
http://www.righttoplay.com

Sport Sans Frontières:
http://www.sportsansfrontieres.org/fr/

World Heart Foundation:
http://www.worldheart.org

Disability and physical activity:

Inclusive Physical Education:
http://www.ncpad.org/fun/fact_sheet.php?sheet=285

Youth with Disabilities: What Parents Need to Know:
http://www.ncpad.org/fun/fact_sheet.php?sheet=103

International Paralympic Committee:
http://www.paralympic.org

Blazesports:
http://www.blazesports.com

Annex 3: Popular local games

Botswana:

Deweke

Three children play this game, one in the middle and two at both sides of the playground. Also in the middle there is a small tub with some tins aside of it. The child in the middle has to take the tins between her feet and then throw these tins in the tub while jumping. Meanwhile the two other children must try to throw off the child in the middle with the ball. If the ball hits her, then the child who hits her goes into the middle. The trick is not to be hit while standing in the middle and to try to get the tub full of tins. If the tub is full, then she throws out the tins and knocks with the tub on the floor to show the others that she has completed one round.

Brazil:

Ovo choco

A group of children are discussing who will be the first 'runner'. He/she takes a piece of cloth. Then they sit on the ground in a circle and the runner walks along the circle. He/She must drop the cloth behind the back of one of the children in the circle, who are clapping and singing. When they stop singing (after 'un-dos-tres') the 'runner' must drop the cloth. As soon as a child in the circle finds out that the cloth is behind her back, she has to stand up and run after the 'runner' and try to touch her. The runner has an escape: she can sit down, before being touched, at the place where she left the piece of cloth. If she is not touched, the game continues and starts all over again.

Denmark:

Bo Bo Brille

Four groups of two children each are standing opposite each other and having their arms tight and lifted in the air like a gate. All children are walking in a circle through these 'gates' while singing a song belonging to this game. At the end of the song the 'gates' are closing, so that one child (sometimes two) is caught. Every child who is caught must answer a question, depending the answer he/she must stand either at the right or at the left of the 'gate'. When all children have been caught and have taken their position at a side at the 'gate', they start pulling. The children must try to pull the other part of the 'gate' over an imaginary line. Most of the time it is very obvious who is the winner. After having done the pulling, the game starts all over. When you have a smaller number of children, you can have also only one 'gate'.

Nepal:

Dandi-Biyo

This game is played between two teams, each has one or more children. One 1 to 1 1/2 feet long rounded firm wood *(Dandi)* and one short sharp ended wood *(Biyo)* is required. A shallow elongated pit is dug in a playing field. The *Biyo* is placed on top of this pit. *Dandi* is put beneath the *Biyo* and is thrown towards the opponent in 45 degree angle. If the opponent catches the *Biyo* then the thrower is out. If the *Biyo* lands without being caught then the thrower continues to make *thyak*. He strikes the pointed end of the *Biyo* with *Dandi*; a successful strike would raise the *Biyo* in air allowing the thrower to bounce *Biyo* in air. One bounce is counted as one *Thyak*. The thrower makes as many thyaks as he could before the *Biyo* falls off.

The thrower gets points based on how far the *Biyo* landed from the pit and how many thyaks he makes. The distance is measured with the length of *dandi*. The total points is total distance times the number of *thyaks*. For example, if the distance measured with *Dandi* is 25 and he makes 5 *thyaks* then the total points are 125. The throwers continues until the opponent catches *Biyo* or until he cannot make *thyak*. Safety precaution is very important in this game so that children are not accidentally hit by the point *Biyo*.

Thailand:

Mark-kep:

A game played by girls using five small pebble stones. One stone will be thrown into the air while the player will use the same hand that throws the stone to collect the stone left on the ground and use the same hand to catch the one that is falling down. The game is over if the player misses the stones, either the ones on the ground or the one in the air.

Wing Peow:

This is a competition between two groups of children; the number of players is not limited, but should not be much different between the groups. The two groups, each group members stand in line, facing each other, about 100 meters apart.

The first person of each group hold a piece of cloth or a stick and both start running at the same time and send the cloth or stick to the next member, who will continue the race, when he/she finishes his/her round. The winner will have to touch the back of the rival.

Viet Nam:

Da cau

Two children kick a feather with their feet to each other. It may not touch the ground but it is allowed to catch it on your breast or on your knee and then kick it again with your foot. Normally this game is played with the point of your shoe. A single player can also play this game; the feather is then repeatedly kicked up in the air and caught on breast, knee or foot.

Cuop co

Two parties play this game. The playground is divided into two parts, on which two parties are standing. The flag is put right in the middle of the field in a small circle. By calling a number, only two children of both parties run to the small circle. (Every child gets a number) Every player must try to pick up the flag without being tagged by the other player and then run back to their own party on the side of the playground. If he (or she) succeeds to bring home the flag safely without being tagged by the other player, then that party gets a point. This game can also be played with more children at the same time: then the person, who calls the numbers, is calling two or three numbers at a time. The game ends when one of the parties has reached a predetermined number of points.

Zimbabwe:

Zity zity go touch

Some children jump into a rope and while doing so they say some text. When you jump correctly, the next round the rope will be hold a little higher. (From ankles, knees middle and neck.) When the rope breaks, you just tie it together and continue.

Zity zity gosha

In this game children have to jump at different levels. (Ankle, hips and under the armpit) The girl who jumps has different varieties in the way she jumps over the rope. The children here have made the rope out of pieces of clothes. When the rope breaks, they just tie a knot and continue the game. They make their own rules when someone has to go out and another child takes over.

Source: http://www.2ukids.nl/Pages/Games.html; and others.

REFERENCES

(1) Department of Health Physical Activity Health Improvement and Prevention. At least five a week: Evidence on the impact of physical activity and its relationship with health. 2004. London, UK.

Ref Type: Report

(2) King A, Wold B, Tudor-Smith C, Harel Y. The Health of Youth: A Cross-National Survey. 1999. Canada, World Health Organization.

Ref Type: Report

(3) Mokdad AH, Serdula MK, Dietz WH et al. The spread of the obesity epidemic in the United States, 1991-1998. *Journal of The American Medical Association,* 1999, 282:1519-1522.

(4) James PT. Obesity: the worldwide epidemic. *Clin Dermatol,* 2004, 22 (4):276-280.

(5) Boutayeb A, Boutayeb S. The burden of non communicable diseases in developing countries. *International Journal of Equity in Health,* 2005, 4(2).

(6) Yamori Y. Worldwide epidemic of obesity: hope for Japanese diets. *Clin Exp Pharmacol Physiol,* 2005, 31 Suppl 2:S2-4.

(7) Weber E. *Ideas Influencing Early Childhood Education.* New York, NY, 1984.

(8) World Health Organization. Health Promotion: Ottawa Charter; Promotion santé: Charte d'Ottawa. 1995.

Ref Type: Generic

(9) Caspersen CJ, Powell KE, Christenson GM. Physical activity, exercise, and physical fitness: definitions and distinctions for health-related research. *Public Health Rep,* 1985, 100(2):126-131.

(10) Oja P. Frequency, duration, intensity and total volume of physical activity as determinants of health outcomes. In: Oja P, Borms J, eds. Health enhancing physical activity. Meyer & Meyer Sport, 2004.

(11) U.S.Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention. *Promoting physical activity: a guide for community action.* Champain, IL, Human Kinetics, 1999.

(12) National Association for Sport and Physical Education. *Moving into the future: national standards for physical education. A guide to content and assessment.* Reston, VA, Mosby, 1995.

(13) Boreham C, Riddoch C. Physical Activity and Health through the Lifespan. In: McKenna J, Riddoch C, eds. Perspectives on Health and Exercise. Basingstoke; New York, Palgrave Mcmillan, 2003.

(14) Boreham C, Riddoch C. The physical activity, fitness and health of children. *Journal of Sports Sciences,* 2001, 19(12):915-929.

(15) Nixon PA. Role of exercise in the evaluation and management of pulmonary disease in children and youth. *Med Sci Sports Exercise,* 1996, 28(4):414-420.

(16) Tomassoni TL. Introduction: the role of exercise in the diagnosis and management of chronic disease in children and youth. *Med Sci Sports Exercise,* 1996, 28(4):403-405.

(17) Andersen LB. Tracking of risk factors for coronary heart disease from adolescence to young adulthood with special emphasis on physical activity and fitness. A longitudinal study. *Dan Med Bull,* 1996, 43(5):407-418.

(18) Williams C, Hayman LL, Daniels SR et al. Cardiovascular Health in Childhood: A Statement for Health Professionals from the Committee on Atherosclerosis, Hypertension, and Obesity in Young (AHOY) of the Council on Cardiovascular Diseases in the Young. *American Heart Association Circulation,* 2002, 106:143-160.

(19) Epstein LH, Coleman KJ, Myers MD. Exercise in treating obesity in children and adolescents. *Med Sci Sports Exercise,* 1996, 28(4):428-325.

(20) De Onis M, Blössner M. Prevalence and trends of overweight among pre-schoolchildren in developing countries. *Am J Clin Nutr,* 2000, 72:1032-1039.

(21) Deckelbaum RJ, Williams CL. Childhood Obesity: The Health Issue. *Obes Res,* 2001, 9:239S-243.

(22) Stubbs CO, Lee AJ. The obesity epidemic: both energy intake and physical activity contribute. *MJA,* 2004, 181(9):489-491.

(23) Drake AJ, Smith A, Betts PR et al. Type 2 diabetes in obese white children. *Arch Dis Child,* 2002, 86:207-208.

(24) Wabitsch M, Hauner H, Hertrampf M et al. Type II diabetes mellitus and impaired glucose regulation in Caucasian children and adolescents with obesity living in Germany. *Int J Obes Relat Metab Disord,* 2004.

(25) Story M, Evans M, Fabsitz RR et al. The epidemic of obesity in American Indian communities and the need for childhood obesity-prevention programs. *Am J Clin Nutr,* 1999, 69:747S-7754.

(26) Sibley BA, Etnier JL. The relationship between physical activity and cognition in children: A meta-analysis. *Pediatric Exercise Science,* 2003, 15:243-256.

(27) Sallis JF, McKenyie TL, Kolody BL et al. Effects of health-relationed physical education on academic achievement: project SPARK. *Research Quarterly for Exercise and Sport,* 1999, 11:129-143.

(28) Annesi JJ. Relationship between self-efficacy and changes in rated tension and depression for 9- to 12-yr.-old children enrolled in a 12-wk. after-school physical activity program. *Percept Mot Skills,* 2004, 99(1):191-194.

(29) Keays JJ, Allison KR. The Effects of Regular Moderate to Vigorous Physical Activity on Student Outcomes: A Review. *Canadian Journal of Public Health,* 1995, 86.

(30) Calfas KJ, Taylor WC. Effects of physical activity on psychological variables in adolescents. *Pediatr Exercise Science,* 1994, 6:406-423.

(31) Brosnahan J, Steffen LM, Lytle L et al. The relation between physical activity and mental health among Hispanic and non-Hispanic white adolescents. *Arch Pediatr Adolesc Med,* 2004, 158(8):818-820.

(32) Gruber J. Physical activity and self-esteem development in children: A meta-analysis. *American Academy of Physical Education Papers,* 1986, 19:330-348.

(33) Fox KR. The effects of exercise on self-perceptions and self-esteem. In: Biddle S, Fox KR, Boutcher S, eds. Physical activity and psychological well-being. London, Routledge, 2000: 88-117.

(34) Robbins LB, Pis MB, Pender NJ et al. Exercise Self-Efficacy, Enjoyment, and Feeling States Among Adolescents. *West J Nurs Res,* 2004, 26:699-715.

(35) The United Nations Inter-Agency Task Force on Sport for Development and Peace. Sport for Development and Peace: Towards Achieving the Millennium Development Goals. 2003. United Nations.
Ref Type: Report

(36) Spray CM, Wang CK. Goal orientations, self-determination and pupils' discipline in physical education. *J Sports Sci,* 2001, 19(12):903-913.

(37) McAuley E, Blissmer B, Katula J et al. Physical activity, self-esteem, and self-efficacy relationships in older adults: a randomized controlled trial. *Ann Behav Med,* 2000, 22(2):131-139.

(38) Pate RR, Trost SG, Levin S et al. Sports participation and health-related behaviours among US youth. *Arch Pediatr Adolesc Med,* 2000, 154(9):904-911.

(39) Jakes RW, Wareham NJ. Epidemiology of Activity and Physical Health. In: McKenna J, Riddoch C, eds. Perspectives on Health and Exercise. New York, Palgrave Mcmillan, 2003.

(40) Twisk JW, Kemper HCG, van Mechelen W. The relationship between physical fitness and physical activity during adolescence and cardiovascular disease risk factors at adult age: The Amsterdam Growth and Health Longitudinal Study. *International Journal of Sports Medicine,* 2002, 23:S8-S14.

(41) Boreham C, Twisk J, Neville CE et al. Associations between physical fitness and activity patterns during adolescence, and cardiovascular risk factors in young adulthood: The Northern Ireland Young Hearts Project. *International Journal of Sports Medicine,* 2002, 23:S22-S26.

(42) World Health Organization. Myths about Physical Activity: reading documents for World Health Day. http://www.who.int/archives/world-health-day/fact_sheets7.en.shtml . 2002.
Ref Type: Electronic Citation

(43) Fox KR, Riddoch C. Charting the physical activity patterns of contemporary children and adolescents. *Proceedings of the Nutrition Society,* 2000, 59:497-504.

(44) World Health Organization. The Status of School Health. Report of the School Health Working Group and the WHO Expert Committee on Comprehensive School Health Education and Promotion. 1996. Geneva, WHO.
Ref Type: Report

(45) Sallis JF, McKenzie TL, Conway TL et al. Environmental interventions for eating and physical activity: A randomized controlled trial in middle schools. *American Journal of Preventive Medicine,* 2003, 24:209-217.

(46) Timpero A, Salmon J, Balt K. Evidence-based strategies to promote physical activity among children, adolescents and young adults: review and update. *Journal of Science and Medicine in Sport,* 2004, 7(1): Supplement:20-29.

(47) Fox KR, Harris J. Promoting physical activity through schools. In: McKenna J, Riddoch C, eds. Perspectives on health and exercise. Basingstoke, New York, Palgrave-Macmillan, 2003.

(48) World Health Organization. Local Action: Creating Health-Promoting Schools. The WHO Information Series on School Health. 2000. Geneva, WHO.
Ref Type: Report

(49) McLellan L, Rissel C, Donnelly N et al. Health behaviour and the school environment in New South Wales, Australia. *Social Science & Medicine,* 1999, 49:611-619.

(50) Mcbride N. The Western Australian School Health Project: comparing the effects of intervention intensity on organizational support for school health promotion. *Health Educ Res,* 2000, 15:59-72.

(51) Sahota P, Rudolf MCJ, Dixey R et al. Evaluation of implementation and effect of primary school based intervention to reduce risk factors for obesity. *BMJ,* 2001, 323:1027.

(52) Manios Y, Moschandreas J, Hatzis C et al. Health and nutrition education in primary schools of Crete: changes in chronic disease risk factors following a 6-year intervention programme. *Br J Nutr,* 2002, 88(3):315-324.

(53) Gregory J, Lowe S. *National Diet and nutrition Survey: Young People Aged 4 to 18 Years.* London, The Stationery Office, 2005.

(54) Crawford P.B., Story M., Wang M.C. et al. Ethnic issues in the epidemiology of childhood obesity. *Pediatr Clin North Am,* 2001, 48(4):855-878.

(55) Bungum TJ, Vincent ML. Determinants of physical activity among female adolescents. *Am J Prev Med,* 1997, 13(2):115-122.

(56) Hogan A, McLellan L, Bauman A. Health promotion needs of young people with disabilities - a population study. *Disabil Rehabil,* 2000, 22(8):352-357.

(57) Guerin PB, Diiriye RO, Corrigan C et al. Physical activity programs for refugee Somali women: working out in a new country. *Women Health,* 2003, 38(1):83-99.

(58) Kelder SH, Perry CL, Klepp K-I. Community-wide youth exercise promotion: long-term outcomes of the Minnesota Heart Health Program and the Class of 1989 Study. *J Sch Health,* 1993, 63(5):218-223.

(59) Cheng K.Y., Cheng P.G., Mak K.T. et al. Relationships of perceived benefits and barriers to physical activity, physical activity participation and physical fitness in Hong Kong female adolescents. *J Sports Med Phys Fitness,* 2003, 43(4):523-529.

(60) Tappe MK, Duda JL, Ehrwald PM. Perceived barriers to exercise among adolescents. *J School Health,* 1989, 54 (4):153-155.

(61) Zakarian J.M., Hovell M.F., Hofstelter C.R. et al. Correlates of vigorous exercise in a predominantly low SES and minority high population. *Prev Med,* 1994, 23:314-321.

(20) De Onis M, Blössner M. Prevalence and trends of overweight among pre-schoolchildren in developing countries. *Am J Clin Nutr,* 2000, 72:1032-1039.

(21) Deckelbaum RJ, Williams CL. Childhood Obesity: The Health Issue. *Obes Res,* 2001, 9:239S-243.

(22) Stubbs CO, Lee AJ. The obesity epidemic: both energy intake and physical activity contribute. *MJA,* 2004, 181(9):489-491.

(23) Drake AJ, Smith A, Betts PR et al. Type 2 diabetes in obese white children. *Arch Dis Child,* 2002, 86:207-208.

(24) Wabitsch M, Hauner H, Hertrampf M et al. Type II diabetes mellitus and impaired glucose regulation in Caucasian children and adolescents with obesity living in Germany. *Int J Obes Relat Metab Disord,* 2004.

(25) Story M, Evans M, Fabsitz RR et al. The epidemic of obesity in American Indian communities and the need for childhood obesity-prevention programs. *Am J Clin Nutr,* 1999, 69:747S-7754.

(26) Sibley BA, Etnier JL. The relationship between physical activity and cognition in children: A meta-analysis. *Pediatric Exercise Science,* 2003, 15:243-256.

(27) Sallis JF, McKenyie TL, Kolody BL et al. Effects of health-relationed physical education on academic achievement: project SPARK. *Research Quarterly for Exercise and Sport,* 1999, 11:129-143.

(28) Annesi JJ. Relationship between self-efficacy and changes in rated tension and depression for 9- to 12-yr.-old children enrolled in a 12-wk. after-school physical activity program. *Percept Mot Skills,* 2004, 99(1):191-194.

(29) Keays JJ, Allison KR. The Effects of Regular Moderate to Vigorous Physical Activity on Student Outcomes: A Review. *Canadian Journal of Public Health,* 1995, 86.

(30) Calfas KJ, Taylor WC. Effects of physical activity on psychological variables in adolescents. *Pediatr Exercise Science,* 1994, 6:406-423.

(31) Brosnahan J, Steffen LM, Lytle L et al. The relation between physical activity and mental health among Hispanic and non-Hispanic white adolescents. *Arch Pediatr Adolesc Med,* 2004, 158(8):818-820.

(32) Gruber J. Physical activity and self-esteem development in children: A meta-analysis. *American Academy of Physical Education Papers,* 1986, 19:330-348.

(33) Fox KR. The effects of exercise on self-perceptions and self-esteem. In: Biddle S, Fox KR, Boutcher S, eds. Physical activity and psychological well-being. London, Routledge, 2000: 88-117.

(34) Robbins LB, Pis MB, Pender NJ et al. Exercise Self-Efficacy, Enjoyment, and Feeling States Among Adolescents. *West J Nurs Res,* 2004, 26:699-715.

(35) The United Nations Inter-Agency Task Force on Sport for Development and Peace. Sport for Development and Peace: Towards Achieving the Millennium Development Goals. 2003. United Nations.
Ref Type: Report

(36) Spray CM, Wang CK. Goal orientations, self-determination and pupils' discipline in physical education. *J Sports Sci,* 2001, 19(12):903-913.

(37) McAuley E, Blissmer B, Katula J et al. Physical activity, self-esteem, and self-efficacy relationships in older adults: a randomized controlled trial. *Ann Behav Med,* 2000, 22(2):131-139.

(38) Pate RR, Trost SG, Levin S et al. Sports participation and health-related behaviours among US youth. *Arch Pediatr Adolesc Med,* 2000, 154(9):904-911.

(39) Jakes RW, Wareham NJ. Epidemiology of Activity and Physical Health. In: McKenna J, Riddoch C, eds. Perspectives on Health and Exercise. New York, Palgrave Mcmillan, 2003.

(40) Twisk JW, Kemper HCG, van Mechelen W. The relationship between physical fitness and physical activity during adolescence and cardiovascular disease risk factors at adult age: The Amsterdam Growth and Health Longitudinal Study. *International Journal of Sports Medicine,* 2002, 23:S8-S14.

(41) Boreham C, Twisk J, Neville CE et al. Associations between physical fitness and activity patterns during adolescence, and cardiovascular risk factors in young adulthood: The Northern Ireland Young Hearts Project. *International Journal of Sports Medicine,* 2002, 23:S22-S26.

(42) World Health Organization. Myths about Physical Activity: reading documents for World Health Day.

http://www.who.int/archives/world-health-day/fact_sheets7.en.shtml . 2002.
Ref Type: Electronic Citation

(43) Fox KR, Riddoch C. Charting the physical activity patterns of contemporary children and adolescents. *Proceedings of the Nutrition Society,* 2000, 59:497-504.

(44) World Health Organization. The Status of School Health. Report of the School Health Working Group and the WHO Expert Committee on Comprehensive School Health Education and Promotion. 1996. Geneva, WHO.
Ref Type: Report

(45) Sallis JF, McKenzie TL, Conway TL et al. Environmental interventions for eating and physical activity: A randomized controlled trial in middle schools. *American Journal of Preventive Medicine,* 2003, 24:209-217.

(46) Timpero A, Salmon J, Balt K. Evidence-based strategies to promote physical activity among children, adolescents and young adults: review and update. *Journal of Science and Medicine in Sport,* 2004, 7(1): Supplement:20-29.

(47) Fox KR, Harris J. Promoting physical activity through schools. In: McKenna J, Riddoch C, eds. Perspectives on health and exercise. Basingstoke, New York, Palgrave-Macmillan, 2003.

(48) World Health Organization. Local Action: Creating Health-Promoting Schools. The WHO Information Series on School Health. 2000. Geneva, WHO.
Ref Type: Report

(49) McLellan L, Rissel C, Donnelly N et al. Health behaviour and the school environment in New South Wales, Australia. *Social Science & Medicine,* 1999, 49:611-619.

(50) Mcbride N. The Western Australian School Health Project: comparing the effects of intervention intensity on organizational support for school health promotion. *Health Educ Res,* 2000, 15:59-72.

(51) Sahota P, Rudolf MCJ, Dixey R et al. Evaluation of implementation and effect of primary school based intervention to reduce risk factors for obesity. BMJ, 2001, 323:1027.

(52) Manios Y, Moschandreas J, Hatzis C et al. Health and nutrition education in primary schools of Crete: changes in chronic disease risk factors following a 6-year intervention programme. *Br J Nutr,* 2002, 88(3):315-324.

(53) Gregory J, Lowe S. *National Diet and nutrition Survey: Young People Aged 4 to 18 Years.* London, The Stationery Office, 2005.

(54) Crawford P.B., Story M., Wang M.C. et al. Ethnic issues in the epidemiology of childhood obesity. *Pediatr Clin North Am,* 2001, 48(4):855-878.

(55) Bungum TJ, Vincent ML. Determinants of physical activity among female adolescents. *Am J Prev Med,* 1997, 13(2):115-122.

(56) Hogan A, McLellan L, Bauman A. Health promotion needs of young people with disabilities - a population study. *Disabil Rehabil,* 2000, 22(8):352-357.

(57) Guerin PB, Diiriye RO, Corrigan C et al. Physical activity programs for refugee Somali women: working out in a new country. *Women Health,* 2003, 38(1):83-99.

(58) Kelder SH, Perry CL, Klepp K-I. Community-wide youth exercise promotion: long-term outcomes of the Minnesota Heart Health Program and the Class of 1989 Study. *J Sch Health,* 1993, 63(5):218-223.

(59) Cheng K.Y., Cheng P.G., Mak K.T. et al. Relationships of perceived benefits and barriers to physical activity, physical activity participation and physical fitness in Hong Kong female adolescents. *J Sports Med Phys Fitness,* 2003, 43(4):523-529.

(60) Tappe MK, Duda JL, Ehrwald PM. Perceived barriers to exercise among adolescents. *J School Health,* 1989, 54 (4):153-155.

(61) Zakarian J.M., Hovell M.F., Hofstelter C.R. et al. Correlates of vigorous exercise in a predominantly low SES and minority high population. *Prev Med,* 1994, 23:314-321.

(62) World Health Organization. Promoting active living in and through schools: policy statement and guidelines for actions: report of a WHO meeting, Esbjerg, Denmark, 25-27 May 1998. 2000. Geneva, Switzerland, WHO.
Ref Type: Report

(63) Willis G. Drafting Issues, Objectives, Policies and Methods in Regional Policy Statements and District Plans: A Report prepared for the Ministry for the Environment, Government of New Zealand. www.mfe.govt.nz . 2003. Enfocus Limited.
Ref Type: Electronic Citation

(64) Caballero B, Clay T, Davis SM et al. Pathways: a school-based, randomized controlled trial for the prevention of obesity in American Indian schoolchildren. *Am J Clin Nutr,* 2003, 78:1030-1038.

(65) Inchley J, Currie C. Physical Activity in Scottish Schoolchildren (PASS) Project. 2004. Edinburgh, Scotland, Report of findings from PASS 2003/04 Pupil Survey. Child and Adolescent Health Research Unit.
Ref Type: Report

(66) Faucette N, Sallis J, McKenzie T et al. Comparison of Fourth Grade Students' Out-of-School Physical Activity Levels and Choices by Gender: Project SPARK. *Journal of Health Education,* 1995, 26:82-90.

(67) Taylor WC, Beech BM, Cummings SS. Increasing physical activity levels among youth: A public health challenge. In: Wilson DK, Rodriguez JR, Taylor WC, Cummings SS, eds. Health-promoting and health-compromising behaviors among minority adolescents. Washington, DC, American Psychological Association, 1997: 107-128.

(68) Right to Play: Annual Report 2003. 2003.
Ref Type: Report

(69) Engstrom L. Exercise adherence in sport for all from youth to adulthood. In: Oja P, Telama R, eds. Sport for all. Amsterdam, Elsevier, 1991: 473-483.

(70) Telama R, Laasko L, Yang X. Physical activity and participation in sports of young people in Finland. *Scandinavian Journal of Medicine and Science in Sports,* 1994, 4:65-74.

(71) Taylor W, Blair S, Cummings S et al. Childhood and adolescent physical activity patterns and adult physical activity. *Medicine and Science in Sports and Exercise,* 1999,118-123.

(72) McKenzie TL, Sallis JF, Faucette N et al. Effects of a curriculum and in service program on the quantity and quality of elementary physical education classes. *Res Q Exercise Sport,* 1993, 64 (2):178-187.

(73) Health Education Authority, Sports Council. Allied Dunbar National Fitness Survey: Main findings. 1992. London, Sports Council and Health Education Authority.
Ref Type: Report

(74) Wechsler H, Devereaux AB, Davis M et al. Using the school environment to promote physical activity and healthy eating. *Preventive Medicine,* 2000, 31:S121-S137.

(75) NHSS Team, Health Development Agency. National healthy school standard: physical activity. 2000. Health Development Agency.
Ref Type: Report

(76) Center for Disease Control and Prevention, MMWR. Behaviors Related to Unintentional and Intentional Injuries Among High School Students -- United States, 1991. http://www.cdc.gov/mmwr/preview/mmwrhtml/00017761.htm 41. 1992.
Ref Type: Electronic Citation

(77) Calfas KJ, Sallis JF, Nichols JF et al. Project GRAD: two-year outcomes of a randomized controlled physical activity intervention among young adults. *American Journal of Preventive Medicine,* 2000, 18:28-37.

(78) Sleap M, Warburton P. Are primary school children gaining heart health benefits from their journeys to school? *Child Care Health Dev,* 1993, 19:99-108.

(79) Cooper AR, Page AS, Foster LJ et al. Commuting to school: Are children who walk more physically active? *American Journal of Preventive Medicine,* 2003, 25:273-276.

(80) World Health Organization, Food and Agriculture Organization. Healthy nutrition: an essential element of a health promoting school. 1998. Geneva, WHO.
Ref Type: Report

(81) Healthy Youth Physical Activity Brochures. www.cdc.gov/HealthyYouth/physicalactivity/brochures/text.htm . 2005.
Ref Type: Electronic Citation

(82) Lesson Ideas and Activities. www.americanheart.org/presenter.jhtml?identifier=3003345 . 2005.
Ref Type: Electronic Citation

(83) www.bam.gov/teachers/activities/index.htm . 2005.
Ref Type: Electronic Citation

(84) www.take10.net/teachertoolbox.asp . 2005.
Ref Type: Electronic Citation

(85) http://www.nestle.com.au/ais/teachers/body.asp . 2005.
Ref Type: Electronic Citation

(86) King AC, Jeffery RW, Fridinger FW et al. Environmental and policy approaches to cardiovascular disease prevention through physical activity: issues and opportunities. *Health Educ Q,* 1995, 22(44):499-511.

(87) Anderssen N, Wold B. Parental and peer influences on leisure-time physical activity in young adolescents. *Res Q Exercise Sport,* 1992, 63(4):341-348.

(88) Sallis JF, Conway TL, Prochaska JJ et al. The association of school environments with youth physical activity. *Am J Public Health,* 2001, 91:618-620.

(89 Stratton G. Promoting children's physical activity in primary school children: an intervention study using playground markings. *Ergonom*, 2000, 43:1538-1546.

(90) Stratton G, Leonard J. The effects of playground markings on the energy expenditure of 5-7-year-old school children. *Ped Exerc Sci,* 2002, 14:170-180.

(91) Bissell O. The effects of playground markings on children's physical activity levels: a review of scientifically based research. 2004.
Ref Type: Report

(92) Tudor-Locke C, Ainsworth BE, Popkin BM. Active commuting to school: An overlooked source of children's physical activity? *Sports Med,* 2001, 31:309-313.

(93) Dellinger AM. Barriers to children walking and biking to school – United States 1999.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5132a1.htm 51(32), 701-704. 2002. MMWR.
Ref Type: Electronic Citation

(94) Calin JB, Stevenson MR, Roberts I et al. Walking to school and traffic exposure in Australian children. *Australian and New Zealand Journal of Public Health,* 1997, 21:286-292.

(95) Timperio A, Crawford D, Telford A et al. Perceptions about the local neighborhood and walking and cycling among children. *Preventive Medicine,* 2004, 38:39-47.

(96) Campbell ME, Li Q, Gingrich SE et al. Should people be physically active outdoors on smog alert days? Can J Public Health, 2005, 96(1):24-28.

(97) Flynn JM, Lou JE, Ganley TJ. Prevention of sports injuries in children. *Current Opinion in Pediatrics*, 2002, 14(6):719-722.

(98) Preventing injuries in young athletes. *Orthopedics Today*, 2002, 22:61.

(99) Dyment PG. *Sports medicine: health care for young athletes.* 2nd ed. Elk Grove Village, IL, American Academy of Pediatrics, 1991.

(100) Brustad RJ. Who will go out and play? Parental and psychological influences on children's attraction to physical activity. *Pediatr Exercise Sci*, 1993, 5:210-223.

(101) Gottlieb NH, Chen M-S. Sociocultural correlates of childhood sporting activities: their implications for heart health. *Soc Sci Med,* 1985, 21(5):533-539.

(102) World Health Organization. Promoting health through schools: a summary and recommendations of WHO's Expert Committee on Comprehensive School Health Education and Promotion. 1996. WHO/HPR/HEP/96.3World Health Organization.
Ref Type: Report

(103) American Academy of Paediatrics. Promoting Physical Activity.
http://www.aap.org/family/physicalactivity/physicalactivity.htm . 2005.
Ref Type: Electronic Citation

(104) Biddle S, Goudas M. Analysis of children's physical activity and its association with adult encouragement and social cognitive variables. *J Sch Health,* 1996, 66(2):75-78.

(105) World Health Organization. Health promotion evaluation: recommendations to policymakers, report of the WHO European working group on evaluation, recommendation made by international working group on evaluation, EUR/ICP/IVST 05 01 03. 2003.
Ref Type: Report

(106) World Health Organization. Evaluation in health promotion: Principles & Perspective. 2001. WHO Regional Office for Europe.
Ref Type: Report

(107) World Health Organization, Health Education and Health Promotion Unit. World Health Day 2002: Move for Health. 2002. Geneva, WHO.
Ref Type: Report

(108) World Health Organization, Sustainable Development and Healthy Environments Cluster. Shape the Future of Life: Healthy Environments for Children: World Health Day Report 2003. 2003. Geneva, World Health Organization.
Ref Type: Report

World Health Organization
School Health and Youth
Health Promotion

Avenue Appia 20
1211 Geneva 27
Switzerland

Phone - 41 22 791 3581
Fax - 41 22 791 4186

ISBN 978 92 4 159599 5