Ministry of Health

Health Behaviors

Promoting Physical Activity

Healthy Israel 2020

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Statement of the Director General

The purpose of the Ministry of Health is to promote the health and quality of life of the citizens of the state. The natural focus of activity is therapeutic care, although investing in the primary prevention of disease is the true strategic choice.. This is not solely a theoretical notion; it is a growing reality.In recent years, the obesity epidemic has been spreading throughout the population, striking children and adolescents as well as adults.If not stopped in its tracks, it threatens to reverse existing positive health trends and increase chronic disease-related morbidity and mortality rate in Israel.

Fully appreciating the importance of health promotion and disease prevention, already in 2006, the Ministry of Health started systematic planning of preventive activity, launching the Healthy Israel 2020 initiative. Twenty professional committees worked to evaluate the disease burden, define objectives and quantitative targets for 2020, and develop interventional strategies founded upon the best scientific evidence. The reports of three central subcommittees: promoting physical activity, the prevention and treatment of obesity, and healthful nutrition are currently being published. We hope they will help focus prevention efforts so we can ever more successfully cope with the main causes of obesity: poor nutrition and physical inactivity.

But theoretical guidelines are not enough; it is important to turn them into an operational plan. Therefore, within the “Pillar of Fire”, the work plan of the Ministry of Health for 2011, I established the promotion of public health as one of the five key goals of the ministry. To implement the plan, it was decided to form and lead a multi-ministerial national program for promoting an active and healthy lifestyle. Based on the scientific recommendations in these reports and the experience of many professionals and policymakers, a proposal for decision makers specifying legislative proposals and ancillary initiatives to allow citizens of all ages to live healthier, more complete lives, has been drafted.

I wish to thank Dr. Boaz Lev, who heads this initiative, Dr. Elliot Rosenberg and his team for coordinated its development, and all of the chairpersons and members of the committees who have devoted considerable time effort to promote this important initiative.

Well done, and may we all see it to fruition.

Prof. Ronni Gamzu,

Director General

Statement of the Assistant Director General

In the spirit of the present

The people want choice

The people want health

The people wish to muster around values of health and disease prevention

The people want healthcare justice

The Ministry of Health considers health promotion and disease prevention to be a key “lodestar” for policy and courses of action.

Shared responsibility for health between individuals, communities, local authorities, and the government has the potential to optimize the health of the nation.

Healthy Israel 2020 offers achievable health objectives and tools for reaching them.

We are well on the way.

I extend my hearty wishes and gratitude to all those who have worked to move this major project forward.

Dr. Boaz Lev.

Assistant Director General

Healthy Israel 2020: From Vision to Realization

The quest for good health has accompanying mankind since the dawn of history. The sages of the past gave useful advice regarding the means to maintain and improve one's health that would also be appropriate for a 21st century preventive medicine textbook as.The father of medicine, Hippocrates, stated back in the fifth century BCE that "walking is the best medicine known to man". Maimonides, who lived in the 12th century, cited in his famous book Mishneh Torah, a set of wise tips for a healthy, lifestyle. Here are several in the field of healthful nutrition "A person must be kept away from things that cause the body to deteriorate and he must direct himself towards those things that bring wellness and speed recovery. And they are as follows: a man should never eat unless he is hungry… a person is not to eat to his full".

But the sages of yesteryear lacked two vital elements for achieving the desired health objectives: substantiated scientific knowledge about **what** should be done, and proven methods showing how to effect change in the behaviors of the individual and society.

Significant change occured in the 1970s, when three key documents were published: in 1974, the report of the Canadian Minister of National Health, Marc Lalonde, was published, emphasizing the importance of the contribution of a healthy lifestyle and the physical and social environment to health; in 1976, the Canadian Task Force on Preventive Health Care was established, developing for the first time, scientific methodology for determining the level of evidence supporting preventive interventions; and in 1979 the Health People Report of the U.S. Department of Health was published, setting out preventive healthcare objectives at the national level.

These developments encouraged the World Health Organization to establish in1984, the Health for All initiative, following which, in 1989, the Israeli Ministry of Health undertook a process of crafting healthcare objectives for the year 2000. While that initiative did not advance beyond publication of objectives, it did prepare the ground for the current initiative, which was launched in 2006.

Twenty committees were created, many of which were divided into subcommittees. These were composed of subject experts from the Ministry of Health, other government ministries, healthcare organizations, the academia, and other organizations. The focus areas dealt with by the committees spanned a wide spectrum of preventive topics: some focused on health behaviors such as smoking, nutrition, physical activity, alcohol consumption or alertness. Others concentrated on the health states characteristic of a certain age group, such as neonatal anemia, occupational diseases, and hip joint fractures in the elderly. Yet other committees dealt with the prevention of diseases major body systems: e.g., infectious diseases, oral health or mental health. A final group explored methods and tools considered essential for the success: information, training and education, and health communication and marketing. The task of the committees was threefold: estimating the disease burden and economic burden resulting from risks and diseases in their domain, examining broad strategies and specific interventions to prevent or minimize this burden, and setting of objectives and targets to reach by 2020 for those issues that created a significant health burden and for which an effective and practicable interventions could be found. If baseline data was unavailable or it was decided that interventional research was required to explore the utility of a promising approach in Israel, a "developmental objective" was set, with the aim of directing future applied research to that issue.

Equality in the provision of healthcare services is a basic right of every citizen. To exercise this right, the committees were directed to reduce health disparities between the various population groups. Among the various efforts expended in this area was the strategy of choosing target values that fit the needs of each groups, with the expectation that the setting of an ambitious target would generate greater resources, define the need for persistence, and spark innovation to help "hit the mark" by 2020.

The current management of the Ministry of Health has decided to prioritize the issue of health promotion and disease prevention it its multi-annual work plan. The first topics to be addressed were tobacco control, obesity prevention and treatment, the promotion of physical activity, and healthful nutrition. The reasons are clear: these issues account for close to half of the chronic disease burden in developed countries. Tobacco control has been dealt with separately. The other three subjects constitute the core issues of a program that is currently being launched, the National Program for a Healthy and Active Lifestyle. The reports of the subcommittees dealing with these three subjects are contained in the current volume . During the next few months, the remaining reports will follow. We hope that over the upcoming years the Ministry of Health and other partners in the government ministries, healthcare organizations, and other participating organizations will develop implementation programs for the remaining issues as well.

I extent my wishes and gratitude to all of the participants in this tremendous effort: the Director General, Prof. Ronniy Gamzu, for his vision and support since assuming his office and the head of the initiative, the Assistant Director General, Dr. Boaz Lev, who has been leading and steering the initiative since its beginning. Many thanks to Dr. Tunie Dweck, who has been taking a key role in all of the activities of the initiative since 2007, Thanks to Dr. Laura Rosen, who helped initiate and promote the initiative, while she served as a national coordinator for the initiative in its formative years. And thanks to Miri Cohen, Prof. Gabi Bin-Nun and Dr. Tuvia Horev, members of the Healthy Israel 2020 directorate, for their continued support and good advice.

And last but not least, a hearty thank you to the members of the committees, consisting of more than 300 senior professionals from government ministries, healthcare organizations, the academia, and other organizations, and dozens of consultants from abroad. All of them have contributed greatly to the effort. .

It is our hope that the vision manifest in this first volume will translate into preventive action, thus bringing into greater focus the ancient biblical promise of wellness : "and I will remove sickness from your midst…and let you enjoy the full count of your days" (Exodus XXIII:25-26).

Dr. Elliot Rosenberg

National Coordinator

The Healthy Israel 2020 Initiative

Ministry of Health

Promoting Physical Activity

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We express our gratitude to the following two international consultants who assisted the subcommittee:

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1. Executive Summary

1.1 Background

Physical activity can prevent or, at least reduce the rates of morbidity and mortality due to a range of chronic diseases, while it improves physical fitness, strengthens muscles, and generally improves quality of life. In contrast, physical inactivity or sedetariness exacts a heavy health and social toll from both the individual and from society as a whole. Physical inactivity causes, inter alia, overuse of healthcare resources, decreased work productivity, increased absenteeism, and an increase in functional limitation and frailty, leading to an increased need for home care etc.. According to a report of the World Health Organization based on studies conducted in England and Switzerland, physical inactivity may cost the state 150 to 300 euro per person per year. The direct cost of physical inactivity in Israel in 2008 was estimated to be approximately NIS 1.5 billion.

International guidelines for adults and seniors recommend engaging in 150 minutes of moderate intensity aerobic physical activity or 75 minutes of vigorous aerobic physical activity or a combination of both per week. Each 10 minute stint counts toward this goal. Strength-building exercise involving the major muscles groups of the body should be undertaken on at least two days per week. Children and adolescents should engage in 60 minutes of moderate-vigorous intensity aerobic activity on a daily basis, as well as muscle and bone strengthening activity on at least three days per week.

The adult population in Israel is not sufficiently physically active. In the United States, 43.5% of the population meets the afore-mentioned international recommendations, in contrast to Israel, in which only 9.7% of the population does so. Men are more active than women. The percent of the Arab population meeting the guidelines is much lower than that of the Jewish population (2.8% and 11%, respectively).

Youth in Israel are also much to sedentary. Newly released data from the WHO-HBSC 2011 survey show that only 17.4% of 6th to 10th grade youth meet the guideline recommendations. This percentage decreases with age: while 25.7% of 6th graders are active daily as recommended, only 10.6% of the 10th graders do so. Girls are much less active than boys (11.0% vs. 23.5%, respectively), and most sedentary of all are 10th grade Jewish girls (only 4.8% meet guideline recommendations. One of the likely underlying causes of this lack of physical activity is the many hours Israeli youth spend watching television and using computers: 35.9% spend at least four hours daily watching television, while 28.9% are busy playing computer games for this duration of time each day.

At 17.2%, the percentage of older adults 65+) engaging in physical activity is higher than that for their younger counterparts.

1.2 Objectives

A. Teenagers (aged 11-17 years, inclusive)

1. Increase the proportion of adolescent boys in the Jewish population engaging in moderate or vigorous physical activity for 60 minutes at least, on all days of the week by 20%.
2. Increase the proportion of adolescent Arab population and of Jewish girls engaging in moderate or vigorous physical activity for 60 minutes at least, on all days of the week by 25%.
3. Decrease the proportion of adolescents watching television for two hours or more, on average, per day by 20%.

B. Adults (aged 20-64)

1. Increase the proportion of adults engaging in moderate physical activity for at least 150 minutes per week, or vigorous physical activity for at least 75 minutes per week, or a combination of both by 22%.
2. Increase the proportion of men in the Jewish population engaging in moderate physical activity for at least 150 minutes per week, or vigorous physical activity for at least 75 minutes per week, or a combination of both by 20%.
3. Increase the proportion of men in the Arab population engaging in moderate physical activity for at least 150 minutes per week, or vigorous physical activity for at least 75 minutes per week, or a combination of both by 25%.
4. Increase the proportion of women in the Arab population engaging in moderate physical activity for at least 150 minutes per week, or vigorous physical activity for at least 75 minutes per week, or a combination of both by 30%.

C. Seniors (65 and over)

1. Increase the proportion of seniors engaging in moderate physical activity for at least 150 minutes per week by 22%.
2. Increase the proportion of male seniors in the Jewish population engaging in moderate physical activity for at least 150 minutes per week by 20%..
3. Increase the proportion of male seniors in the Arab population engaging in moderate physical activity for at least 150 minutes per week by 25%.
4. Increase the proportion of female seniors engaging in moderate physical activity for at least 150 minutes per week by 40%..

1.2.1 Developmental objectives

1. Increase the proportion of children up to the age of 10, inclusive, engaging in moderate or vigorous physical activity on a daily basis for at least 60 minutes.
2. Increase the proportion of 18-19 year old IDF (Israel Defense Forces) servicemen and civilians who are physically active in accordance with the generally accepted international recommendations.

3. Increase the proportion of adults in the general population engaging in muscle-strengthening physical activity of all major muscle groups at least twice a week, while performing at least 8 repetitions.
4. Increase the proportion of seniors engaging in strengthening exercises of all major muscle groups at least twice a week, with at least 8 repetitions.
5. Increasing the proportion of seniors engaging in stretching and flexibility exercises for 10 minutes at least twice a week.
6. Increase the proportion of seniors in the community, particularly those who are at high risk for falls, engaging in exercises for maintenance and improvement of balance at least three times a week.

1.3 Strategies and interventions

Strategies and interventions have been chosen in accordance with the level of evidence in the scientific literature as well as expert opinions of specialists in the field. The evidence is elaborated in Appendix no. 8 below. The strategies and interventions have been ranked as per the strength of the evidence supporting them.. The rank of 1 indicates the highest level of evidence, i.e. systematic reviews or recommendations of national task forces, such as the TFCPS (U.S. Task Force on Community Preventive Services), or NICE (the [British] National Institute for Health and Clinical Excellence), which conclude that the evidence is strong. A rank of 2 indicates a moderate level of empiric support (sufficient evidence). Recommendations that have been proposed on the basis of expert consensus only received a rank of 3. Recommendations for changing legislation or procedures have not been included in this ranking method. The recommendations in each field are listed in descending order of scientific support. Details appears in the body of the chapter.

Local authorities / communities / workplaces

1. Create community programs to encourage physical activity (such as supporting walking groups). [1]
2. Increase of the accessibility of locations where one can engage in physical activity , combined with effective conveying of information (outreach), in various settings, such as workplaces, universities, government agencies and low income level communities. [1]
3. Post signs next to stairs to encourage their use instead of elevators. [1]
4. Extensive urban planning that brings residential areas closer to schools, stores, workplaces and physical activity infrastructures and providing continuity, safety and convenience of sidewalks and streets to encourage physical activity.[2]
5. Promotion of a street planning policy and use of municipal land supporting conduct of physical activity in small geographic areas, usually on a scale of a few streets. [2]
6. Increase awareness and motivation of employers through health promotion and financial incentives to increase physical activity among their employees. These include provision of on-site facilities to perform physical activity along with facilities such as lockers, showers, and bicycle-racks, and authorizing physical activity during the work day.[2]

The educational system

1. Increase the time allocated to moderate to vigorous physical activity per week, with emphasis on raising the awareness of the importance of health promoting physical activity, including implementation of initiatives such as “active breaks”. [1]
2. Integration of family and/or community involvement within a junior high and high school program to develop student skills and self efficacy to be physically active, along with a variety of physical activity curricula and a supportive school environment, including having the staff provide a personal example [1]
3. Maintain a high level of skill among physical education teachers. [2]
4. Encourage walking and cycling to school while observing appropriate safety rules.. [3]
5. Implementation of a healthy lifestyle program (“The Active, Healthy Kindergarten Program”) at kindergartens [3]
6. Expand and improve infrastructures for physical activity for students, faculty and staff at institutes. [3]

Media and social marketing

1. Conduct a broad-sweeping public information campaign using the mass media that has been adapted to the specific target audiences, and which emphasizes the following: provision of social support, health education in a range of places, and use of environmental interventions.[1]

Note: as these interventions have been examined as part of an “intervention package” with other clinical interventions, such as screening for risk factors, it is appropriate to combine them with these interactions so as to maximize their chances of success.

2. Behaviorally-oriented interventions, which include goal-setting and monitoring their achievement, use of reinforcements/incentives, and teaching methods for problem solving and relapse prevention. Programs should be adapted to the group or individual level and conveyed either face to face, by telephone, or via direct mailing. [1]

The healthcare system

Individual counseling on physical activity with the assistance of a range of professionals with appropriate training in accordance with accepted behavior change models in primary care (such as 5As, motivational interviewing, stages of change): the interventions should include behavioral prescriptions, activity planning and execution tracking, recurrent, strengthening interventions (booster strategies) that have been conveyed through a range of media channels. [1]

Legislation

1. Implement the clause of the Sports Law (1988) that requires a local authority to facilitate physical activity in sports facilities in its jurisdiction while these facilities are not in use.
2. Amend the Fitness Institutes Law (1994) to allow people who are interested in training at fitness gyms to declare their health condition without categorically requiring a physician's approval and/or a preliminary examination.
3. Integration of counseling for health promoting physical activity in the State Healthcare Insurance Law (1995) as a means for preventing and treating chronic diseases, on the condition that there is adequate allocation of these resources for implementation.

2. Health Promoting Physical Activity

2.1 Introduction

The methodology of the committee included the following:

1. Familiarization with national recommendations that were published in the Circular of the Director General of the Ministry of Health in August 2004. These recommendations were based on a position paper that was written by the Committee for the Promotion of Physical Activity headed by Prof. Meir Brezis, which was appointed by the National Council for Health in 2003.[1]
2. An extensive scientific literature review for to evidence-based interventions, as well as a search for relevant up-to-date policy documents issued by leading international organizations in the field of physical activity.
3. Identification and analysis of relevant data on physical activity in Israel, including trends observed over the years.
4. A series of face-to-face meetings and a extensive electronic media consultations to review the relevant materials and making decisions concerning recommended objectives and strategies.

2.2 Background

The 20th century was characterized by social and economic changes that led to a decrease in physical activity, an increase in body weight and an increase in the rate of chronic disease in the populations of western countries. Improvements in motor transport to the workplace, expansion in the scope of sedentary employment and the increase in leisure activities of a sedentary nature all contributed to a decrease in the extent of physical activity[2].

2.2.1 The importance of physical activity for the health of the individual [2-11]

Engaging in physical activity prevents premature morbidity and mortality, slows down disease progression, improves physical fitness, strengthens muscles and improves the quality of life. The health effects of engaging in physical activity include a reduced risk for chronic diseases such as heart disease, stroke, obesity, type 2 diabetes mellitus (the risk among physically active individuals is 30% less than in those who are inactive), hypertension, bone and joint disease, osteoporosis and osteoarthritis, malignant diseases such as colon cancer and breast cancer (a decrease of 30%-40% in the relative risk for colon cancer in both sexes; a 20%-30% decrease in the relative risk for breast cancer in women) and falls among elderly individuals, which may lead to hip joint fractures. Moreover, physical activity leads to an improvement in blood cholesterol levels[2, 3] (Appendix no. 1).

In addition, physical activity improves psychological well-being through its contribution to a decrease of depression, anxiety, and stress, as well as through its influence over other factors such as an improvement in the self-esteem in children and adults, the self-image of women etc.[2, 5].

It has been shown that engaging in an hour of brisk walking per day contributes to a 34% decrease in the risk for diabetes mellitus and a 24% decrease in the risk for obesity. In contrast, an addition of two hours a week of sedentary activity (such as television watching) increases the risk for diabetes mellitus by 14% and for obesity by 23%[7, 10].

Aside from primary prevention, physical activity also has benefit in secondary disease prevention. Patients who are physically active have a lower risk of death due to heart disease and diabetes mellitus and have lower blood sugar levels. In addition, constant physical activity is effective in maintaining bone density in people with osteoporosis. Physical activity is also related to other positive health behaviors, such as healthful nutrition and abstention from smoking, and may lead to other positive behavioral changes.

Besides the personal benefits embodied in physical activity, there are also social benefits, such as the formation of social-community relations[2].

2.2.2 The importance of physical activity at the national level

2.2.2.1 Burden of disease

Physical inactivity contributes to burden of disease, mortality and disability (Appendix no. 2). According to European data, physical inactivity accounts for 600,000 deaths per year and a loss of 5.3 million years of healthy life, due to early death and disability each year[1]. Worldwide, it was estimated that in 2000, physical inactivity accounted for 1.9 million deaths and the loss of 19 million DALYs[3]. It is estimated that physical inactivity contributes to 10%-16% of all cases of breast cancer, colorectal cancer and cases of diabetes and to approximately 22% of ischemic heart disease worldwide[3].

The distribution of morbidity attributable to physical inactivity is as follows: heart disease (22%), colon cancer (22%), osteoporosis (22%) and diabetes mellitus and hypertension (12%).

Physical inactivity also exacts a high toll from society in terms of overuse of healthcare services, decreased work productivity, increased absenteeism, increased outlays for home care for the frail and disabled etc.[10].

2.2.2.2 Cost and resources [12-13]

It is difficult to estimate the exact cost of physical inactivity. In the United States it has been estimated that approximately 10% of the healthcare system costs originate from diseases attributable to obesity, unhealthy eating habits, and physical inactivity. The percentage attributable to physical inactivity alone has been estimated at 3%.

In 2004, the British Government estimated the cost of physical inactivity to be approximately 8.2 billion pounds per year (cost of healthcare services and work absences as a result of physical inactivity-related morbidity). According to a report of the World Health Organization and based on studies undertaken in England and Switzerland, physical inactivity may cost these countries between 150-300 euros per person per year[1].

The direct cost of physical inactivity in Israel was estimated in 2008 at approximately NIS 1.5 billion.[14]

2.2.3 The scope of physical activity in Israel[15-23]

In 2007-2008, international scientific recommendations on physical activity became more demanding. As opposed to the recommendation to the previous recommendation to exercise for 20 minutes, 3 times a week, it was recommended that adults be active for at least 30 minutes, 5 times a week (further details in Section 2.3 below)[33].

Therefore, previous health behavior surveys did not reflect the desired criterion. However, the 2009 health survey did gathered data that allowed, for the first time, for an estimate to be made on the scope of physical activity in adults according to the new recommendations. The survey was administered to a sample of more than 18,000 respondents aged 20 or older and was based on self-reporting (or reporting by a proxy respondent)[15].

In general, few people are active at the recommended level: only 9.7% of all individuals aged 20 and older engage in exercise for at least 150 minutes per week. While 11% of the Jewish population is active as recommended, only 2.8% of the Arab population do so. Men are slightly more active than women, at 10.5% compared to 8.9%. Seniors (65+) are more active than 20-64 years olds: 17.2% meet the new requirements compared to 8.4% among younger adults. Among seniors, the greatest gaps between ethnic groups and between men and women were revealed: among Jewish men, 22.1% reached the recommended level, whereas only 3.6% of Arab men did so. 15.7% of Jewish women were defined as active, but there are almost no Arab women who are active at the recommended level (0.7%).

That said, the prevalence of those meeting the guideline recommendations is probably more higher than that reflected by these figures. This stems from the fact that the survey assessed exercise periods lasting at least 30 minutes, but did not document the total number minutes of exercise if they lasted beyond this in any one exercise period. Therefore, if a respondent in the survey concentrated his physical activity into a few long sessions, he or she might reach the desired level of 150 weekly minutes despite not being active 5 days a week. In addition, the weekly 150 minute level was established for those engaging in moderate intensity exercise, but for those who engage in vigorous exercise, 75 minutes per week suffice. The survey did not ask about the intensity of the activity. Therefore, the survey might have excluded those who reached the desired amount of physical activity through shorter duration but more intense activity.

Current guidelines recommend that children and adolescents engage in aerobic physical activity af moderate-vigorous intensity for 60 minutes daily. Data show that young Israelis are not sufficiently active physically on a daily basis. Newly released data from the WHO-HBSC 2011 survey show that only 17.4% of 6th to 10th grade youth meet the guideline recommendations. This percentage decreases with age: while 25.7% of 6th graders are active daily as recommended, only 10.6% of the 10th graders do so. Girls are much less active than boys (11.0% vs. 23.5%, respectively), and most sedentary of all are 10th grade Jewish girls (only 4.8% meet guideline recommendations. One of the likely underlying causes of this lack of physical activity is the many hours Israeli youth spend watching television and using computers: 35.9% spend at least four hours daily watching television, while 28.9% are busy playing computer games for this duration of time each day.

2.2.4 Factors affecting physical activity

Daily exercise may be divided into the following types: that performed on the way to work / school and back (transport-related activity), during work time as part of work (functional activity) and health-oriented physical activity, for pleasure and to improve the quality of life (usually during free time).

The factors affecting the performance of physical activity maybe divided into three groups: personal / behavioral factors, social/ environmental factors and legislative factors.

2.2.4.1 Personal / behavioral factors

The personal factors related to engaging in physical activity are varied and include, inter alia, the following list: a feeling of vitality, enjoyment of physical activity, health perception, social support surrounding the individual, and what he or she deems effective. Attitudes and beliefs that may reduce engagement in physical activity include, among others: lack of awareness of the importance of physical activity and its benefit[24]; the thought that there is no free time to engage in physical activity; a personal perception that one is not “athletic”; lack of confidence/self-efficacy; fatigue and preference for resting during free time; and the thought that one is active enough in everyday life[2].

2.2.4.2 Environmental/ social factors

Engagement in physical activity is also related to the environment in which the activity is conducted. Regions in which there is a safe environment for walking and being physically active during one’s free time, encourage and facilitate physical activity for the individual and family and promote a social norm of engagement in this activity. Conversely, in an unsafe environment, parents prefer to drive their children to school or leisure activities, thus reducing the opportunity to engage in physical activity[2].

In most countries in the western world, higher socioeconomic level correlated with a higher rate of physical activity. This fact is a result, inter alia, from increased access to facilities, which provide for physical activity in general and safe physical activity in particular[2].

2.3 Recommendations for engaging in physical activity

In August 2007, recommendations of the American College of Sports Medicine and the American Heart Association for the healthy 18-65 year old population were published[25], and in 2008 the recommendations of the U.S. Department of Health and Human Services (the USDHHS[33]) were published. The main recommendations are as follows:

1. Physical activity for at least 150 minutes a week at moderate intensity (such as walking at a brisk pace) or 75 minutes of vigorous physical activity (such as running, swimming, cycling) or a combination of both is recommended. For example, aerobic exercising at moderate intensity for at least 30 minutes 5 times a week or vigorous aerobic exercising for at least 25 minutes 3 days a week. For children, 60 minutes a day are recommended.
2. Engagement in moderate and vigorous intensity physical activity may be combined, for example: moderate intensity activity for 3 minutes 3 times a week and vigorous intensity activity for 25 minutes for two other days that week.

3. Moderate intensity activities may be accrued during the day by engaging in activity that increases the heart rate. Each activity must last at least 10 minutes. For example, walking 10 minutes from a vehicle that is parked some distance for the workplace or a store adds up to the daily total by walking both to the destination and back.
4. To prevent obesity and benefit health, it is advisable to engage in more than 150 minutes of physical activity during the week. The more minutes of exercise are added, the more successful it is. It is important to note that alongside physical activity, it is important to restrict caloric intake. To maintain weight loss for an extended period, more than 300 minutes of medium intensity exercise per week may be needed (i.e., 60-90 minutes per day).
5. In addition to aerobic physical activity, it is advisable to engage in activities for strengthening and building the endurance of major muscles at least twice a week.
6. These are the basic recommendations. Those who are interested in doing so can engage in physical activity beyond this level. Generally speaking, the more active one is, the more benefit one gains. Therefore, it is desirable to aim to increase the duration of activity to up to twice the durations above (i.e. 300 minutes per week of moderate intensity exercise, 150 minutes of strenuous exercise per week, or a combination of them).
7. These recommendations also apply to elderly people and those with handicaps. If one's health condition precludes activity at these levels, it is desirable to be as active as possible. Seniors who have chronic diseases and suffer from disease symptoms (i.e. symptomatic diseases) and individuals with handicaps should consult a physician to plan the activity suitable for them.
8. It is recommended for children to engage in at least 60 minutes of moderate or vigorous exercise every day of the week. The activity should be divided up to include vigorous exercise and activity to strengthen muscles / build bone for at least 3 days a week.

2.4 Select interventions existing in Israel for engaging in physical activity

These interventions are defined in accordance with the strategies of the Ottawa Charter for Health Promotion, the World Trade Organization[30,34].

2.4.1 Health promoting policy

In Israel, the subject of physical activity is relevant to a number of government ministries: the Ministry of Education, the Ministry of Transport, the Ministry of Science, Ministry of Culture and Sport, the Ministry of Health, the Ministry of Labor and Social Affairs, the Ministry for Environmental Protection, and the Ministry of the Interior.

2.4.1.1 Legislative and regulatory factors

The State of Israel has enacted laws dealing with this topic, but there is relatively little attention to leisure time physical activity per se; The laws coveraging physical activity primarily deal with competitive sporst and preliminary examinations that are intended to protect the athlete's health. Major laws include the following[27]:

1. **The Sports Law (1988)** – the use of sports facilities (Section 13, subsection A) – this law states that the Minister of Education (and Culture) may, with the consent of the Minister of the Interior, establish in the regulations conditions whereby a local authority may be required to allow sports activity at sports facilities located in the educational institutions, in public buildings or in public grounds that belong to that local authority, while the activities are not in use, as long as priority will be given to all residents of that local authority, and charge payment for the use of these facilities.
2. **The Fitness Facility Law** (1994) – this law requires a person who wishes to train in a fitness gym to provide a medical certificate that confirms his medical fitness. In addition, the law requires proprietors to hold a license to open a fitness gym and stipulate the need for the constant presence of a licensed fitness instructor in the fitness room.
3. **The State Healthcare Insurance Law** (1994) – Section 7 of this law does not refer to physical activity as part of the offering of services defined in the law, except the case of cardiac rehabilitation, in which people who are in a cardiac rehabilitation period are entitled to supervised physical training for a defined time.

2.4.1.2 The Physical Activity Promotion for Employees Regulations

Section 06.51 of the Civil Service Regulations

"… With intent to encourage personnel to engage in sports activity… the supervisors of the offices must allow interested workers to take a break of up to one hour a week that will be devoted to sports activity within the workplace. Splitting of this hour into shorter times and/or more than one session per week will not be permitted… the time stipulated above includes the time for organization at the beginning and end of the activity (changing of clothes, washing and so on)".

2.4.2 Creating a supportive environment to facilitate physical activity

Some areas of the country benefit from a supportive environment that facilitates physical activity, mainly owing to the allocation of facilities and complexes for sports and physical activity:

- Dozens of municipalities have created walking paths. In some, guided activity for the promotion of walking is routinely held along these paths. Some paths have been created by and are jointly supported the following organizations: healthcare organizations (the Sick Funds), the Israel Association of Community Centers, and others.
- In some municipalitiesettlements around the country, areas and facilities for public use for popular physical activity have been defined, both by local authorities and by community organizations.
- The Healthy Cities network has been promoting a systems approach to physical activity within the cities that have signed the network's charter and in other cities.

- Some workplaces have opened fitness gyms and/or subsidize membership inoff-site fitness gyms.
- A supportive social / media environment includes initiatives for advancing physical activity from time to time through the mass media; unfortunately, due to the high cost involved in running these initiatives, media activity is not regular.

2.4.3 Promotion of physical activity in the community and development of personal skills

- At the community level, a wide array of activities are offered by national organizations and by the sports departments of local authorities, local organizations, and institutes and private organizations.
- In school settings and in some kindergartens, physical education is part of the fixed syllabus. Today, all grades up to the 12th grade are required to provide two weekly hours of physical education.
- In some local authorities in Israel, the Israel Association of Community Centers and additional organizations and NGOs run programs for physical activity that are tailored to participants' age, gender (with an emphasis on women), culture, special health needs, handicaps, as well as for new immigrants and many other subpopulations.
- Some workplaces in Israel hold noncompetitive physical activity, which is intended for all of their workers, some during the workday and some outside of working hours. In addition, some workplaces encourage competitive physical activity.
- The IDF is running a program for promoting physical activity for regular and reserve duty servicemen.

2.4.4 Promotion of physical activity through the healthcare services

Although the subject of physical activity is not covered by the State Health Insurance Law, some healthcare organizations have adopted this topic as part of their interestin ensuring high medical quality in general, and for specific populations, in particular (e.g., the elderly, chronic patients and others).The physical activity "field" has been included in the electronic medical record of some healthcare organizations.

In recent years there has been an increase in the activity of healthcare organizations in the field of physical activity. This has included the construction of walking paths, hosting running, fitness and walking groups, incorporation of messages that encourage physical activity in the organization's media, distribution of instructional materials, training of professionals and other activities.. In certain areas there are special activity intended for subpopulations such as persons with diabetes mellitus and other chronic diseases. Some activities are not included in the Health Basket and therefore require participant payment.

Despite the scope of interventions described above in the field of physical activity, there is a need to define national objectives and modes of intervention to significantly improve the prevalence of physical activity among Israelis.

3. International Objectives

3.1 The World Health Organization[28]

In the European region of the World Health Organization, to which Israel belongs, national targets ("objectives" in the terminology used in this report) were set prior to the year 2000 within the scope of an initiative called Health21. Physical activity was naturally included in one of these targets: target 11 – healthier living. The target is worded as follows:

"By the year 2015, people across society should have adopted healthier patterns of living. In particular: healthier behavior in such fields as nutrition, physical activity and sexuality should be substantially increased".

3.2 The Healthy People 2020 initiative in the United States[29]

See Appendix 6 for the effect objectives of the U.S. initiative.

4. Israeli Objectives

Rationale

The objectives below have been established on the basis of current Israeli national baseline data. The objectives reflect the various needs of the population in Israel, by gender and ethnicity (Jews / Arabs) with the aim to reduce the current disparity between population groups.

Year 2020 target values were set in accordance with the rate of improvement thought achievable in the defined time range, i.e. by 2020. This latter estimate considered the impact of interventions present in the scientific literature and adjusted expectations to account for real world implementation in Israel. The interventions have been selected based on their demonstrated impact in controlled trials, their scientific validity, and an assessment regarding their adaptability to conditions in Israel.

The recommendations in this chapter are suitable for the general public.

It is important to emphasize that recommendations for physical activity should take into account the health status and needs of the population: age/ functional age, presence of chronic diseases, risk factors, etc. On the other hand it is important to stress that even for those with chronic diseases, physical activity constitutes an important preventive and therapeutic element in persons with chronic diseases. The "Healthy Israel 2020" initiative also created a special committee that submitted recommendations for the prevention of chronic diseases in persons with handicaps. The report of that committee extensively discussed the objectives, interventions, and research required to promote physical activity among individuals with handicaps. Additional information is provided on the website of the initiative on the Ministry of Health website.

4.1 Overarching objective

Improvement in health and quality of life through health promoting physical activity, throughout the continuum of life.

4.2 Outcome objectives

4.2.1 Children and adolescents (up to age 17, inclusive)

4.2.1.1 Children

Increase the proportion of children up to the age of 10, inclusive, engaging in moderate or vigorous intensity physical activity on a daily basis for at least 60 minutes.

★ Developmental objective.

4.2.1.1 Adolescents*

Table 1. Proportion engaging in 60 minutes of PA on each of previous 7 days

Population	Current (%)
Jews	
Boys	18.6
Girls	7.0
Total	13.0
Arabs	
Boys	34.4
Girls	19.6
Total	27.1

Source: WHO-HBSC 2011 survey-Y Harel-Fish

4.2.1.1.1

Increase the proportion of Arab boys engaging in moderate or vigorous intensity physical activity on a daily basis for at least 60 minutes by 10%

Population	Current (%)	2020 Target (%)
Arab Boys	34.4	37.8

Method for determining target value: Arab boys engage in appreciably more physical activity than Jewish boys or girls of both ethnic groups. With the goal of increasing the level of their activity, but also working to lessen disparities between the four subgroups, 10% was chosen as an appropriate increase over the next 8 years.

4.2.1.1.2

Increase the proportion of Jewish boys and Arab girls, engaging in moderate or vigorous intensity physical activity on a daily basis for at least 60 minutes by 25%.

Population	Current (%)	2020 Target (%)
Jewish Boys	18.6	23.3
Arab Girls	19.6	24.5

Method for determining target value: A similar proportion of Jewish boys and Arab girls engage in physical activity. Yet this is appreciably lower than the activity level of Arab males. Hence, a 25% increase was chosen to substantially increase their level of physical activity and also to help lessen the gap between the subgroups by the year 2020.

* 11-17 year-olds

4.2.1.1.3

Increase the proportion of Jewish females engaging in moderate or vigorous intensity physical activity on a daily basis for at least 60 minutes by 35%.

Population	Current (%)	2020 Target (%)
Jewish Girls	7.0	9.5

Method for determining target value: Jewish girls are very sedentary relative to the other three subgroups. Hence it was felt an ambitious target should be set to motivate significant change

4.2.1.2 A 20% decrease in the proportion of adolescents watching television two hours or more on average per day[25]

The television viewing rates on weekdays (two hours or more per day) (HBSC 2005/2006)[20]:

Table 3

Population (age)	Current (%)		Target (%)	
	Boys	Girls	Boys	Girls
11	72	78	58	62
13	75	85	60	68
14	74	78	59	62

Method for determining target value: according to the HSBC survey[20], Israeli teenagers, particularly 11 year old girls and 15 year old boys, were leaders in computer viewing hours compared to North American or European teenagers. However, the objective of sedentary activity is defined in terms of television viewing hours, as a major proportion of computer hours occur at school / for academic and homework purposes.

Note: The WHO-HBSC 2011 data regarding television viewing for 2+ hours/day will become available shortly and will supersede the above data from 2006/2006. As has been mentioned in a previous section, the new survey already shows that 35.9% of youth watch 4+ hours of television daily.

4.2.2 Adults (aged 20-64)

4.2.2.1 Increase the proportion of adults engaging in moderate intensity physical activity for at least 150 minutes per week, or vigorous intensity exercise for at least 75 minutes a week or a combination of both by 22%

Method for determining target value: in view of the health importance of engaging in physical activity and the fact that adults in Israel are not sufficiently active, and despite the improvement in the activity trend that has occurred in recent years even without a concentrated national initiative, it was decided to adopt a challenging target value of 20% improvement by 2020 for the Jewish population. As described below, a more ambitious value of 25% for the male Arab population and 30% for the female

Arab population, which suffer from greater rates of sedentary lifestyle, has been adopted. Weighting of the percentages of decrease among Jews (0.76x20%) and among Arab men (0.25x0.5x25%) and among Arab women (0.24x0.5x30%) in accordance with their proportion in the population leads to the target value of 22% for the entire population.

4.2.2.2 Increase the proportion of adults in the Jewish population engaging in moderate intensity physical activity for at least 150 minutes per week, or vigorous physical activity for 75 minutes per week or a combination of the two by 20%.

The proportion of persons engaging in physical activity for 30 minutes at least 5 times (or more) per week (Health survey, Central Bureau of Statistics, 2009)[15]:

Table 4

Population	Current (%)	Target (%)
Total	8.4	10.1
Jews	9.6	11.5

4.2.2.3 Increase the proportion of men in the Arab population engaging in moderate intensity physical activity for at least 150 minutes per week, or vigorous physical activity for 75 minutes per week or a combination of the two by 25%.

4.2.2.4 Increase the proportion of women in the Arab population engaging in moderate intensity physical activity for at least 150 minutes per week, or vigorous physical activity for 75 minutes per week or a combination of the two by 30%.

The proportion of persons engaging in physical activity for 30 minutes at least 5 times (or more) per week (Health survey, Central Bureau of Statistics, 2009)[15]:

Table 5

Population	Current (%)	Target (%)
Arab men	3.1	3.9
Arab women	2.7	3.5

4.2.2.5 Increase the proportion of 18-19 year old IDF servicemen and civilians physically in accordance with the generally accepted international recommendations.

★ Developmental objective.

4.2.2.6 Increase the proportion of adults in the general population engaging in strengthening exercises of all major muscle groups at least twice a week, with at least 8 repetitions.

★ Developmental objective

4.2.3 Seniors (age 65 and over)

4.2.3.1 Increase in the proportion of seniors engaging in moderate intensity physical activity for at least 150 minutes per week.by 22%

4.2.3.2 Increase in the proportion of men aged 65+ in the Jewish population engaging in moderate intensity physical activity for at least 150 minutes per week by 20%.

4.2.3.3 Increase in the proportion of men aged 65+ in the Arab population engaging in moderate intensity physical activity for at least 150 minutes per week by 25%.

4.2.3.4 Increase in the proportion of women aged 65+ engaging in moderate intensity physical activity for at least 150 minutes per week by 40%.

Method for determining target value: In general, there is a higher rate of physical activity among 65+ year olds than 20-64 year old adults. But this does not apply to Arab women, few of whom reach the required level of physical activity. Therefore, with regard for all seniors, Jews and Arab men, it has been decided to adopt the target values set for adults, but for Arab women it has been decided to set a high level, which is a 40% improvement.

The proportion of persons engaging in physical activity at least 30 minutes per day **at least 5 times a week** (2009 health survey, Central Bureau of Statistics).[15]

Table 6

Population	Current %	2020 Target %
Total	17.2	21.0
Men	20.5	-
Women	14.6	-
Jews	18.5	22.2
Arabs	2.1	-
Arab men	3.6	4.5
Arab women	0.7	1.0

4.2.3.5 Increase the proportion of seniors engaging in strengthening exercises of all major muscle groups at least twice a week, with at least 8 repetitions.

★ Developmental objective

4.2.3.6 Increase the proportion of seniors engaging in stretching and flexibility exercises for 10 minutes at least twice a week.

★ Developmental objective.

4.2.3.7 Increase the proportion of seniors in the community who are at high risk for falls engaging in exercises for retention and improvement of balance.

★ Developmental objective.

5. Strategies and Interventions

5.1 Background

A number of methods for adopting physical activity were reviewed: community initiatives such as building sports facilities and walking paths, individual counseling, group counseling, social marketing and others. The strategies and interventions have been chosen and ranked in accordance with the level of evidence supporting them in the scientific literature with additional input where needed by experts in the field. The evidence is elaborated in Appendix no. 8 below. A ranking of 1 indicates the strongest evidence, i.e., systematic reviews or recommendations of national scientific task forces, such as the TFCPS (U.S. Task Force on Community Preventive Services), or NICE (the [British] National Institute for Health and Clinical Excellence), which in this case would conclude that the evidence is strong. A rank of 2 indicates a moderate level of support (sufficient evidence). Recommendations that have been proposed based on expert consensus alone,have been ranked 3.. Recommendations for changing legislation or procedures have not been included in this rating method. The recommendations in each field are listed in descending order in accordance with their degree of scientific support. Details appears in the body of the chapter.

It is important to note that the concurrent, system-wide implementation of multiple interventions on the same target population is expected to increase the chance of achieving the targets defined.

5.2 Interventions

5.2.1 Local authorities / communities / workplaces

1. Create community programs for encouraging physical activity while strengthening and maintaining a social support network that encourages support of behavioral change (such as: encouragement of walking groups, other support groups, establishing “contracts” with others for executing a certain level of physical activity and so on).[1]

★ The TFCPS has defined the evidence level as **strong evidence**[40].

2. Increase the accessibility of places in which physical activity can be undertaken, combined with effective conveying of information (outreach), in various settings such as workplaces, universities, government agencies and low income level communities. This activity includes construction of walking paths, physical activity facilities, and ensuring access to existing facilities (in most programs, participants are also trained to use equipment and programs have been proposed on various subjects such as health education, review of risk factors, referrals to physicians and additional services and more). [1]

★ The TFCPS has defined the evidence level as **strong evidence**[40].

3. Post signs next to stairs to encourage their use instead of elevators.[1]

★ The TFCPS has defined the evidence level as **strong evidence**[40].

4. Extensive urban planning that brings residential areas closer to schools, stores, workplaces and physical activity infrastructures and provides continuity, safety and convenience of sidewalks and streets to encourage physical activity.[2]

★ The TFCPS has defined the evidence level as **sufficient evidence**[40].

5. Promotion of a street planning policy and use of municipal land supporting conduct of physical activity in small geographic areas, usually limited to a few streets. This includes an effort on the part of city planners, architects, engineers, developers and public health personnel; planning of roads, improvement in street lighting; use of measures to slow traffic, such as roundabouts; etc.. [2]

★ The TFCPS has defined the evidence level as **sufficient evidence**[40].

6. Increase awareness and motivation of employers through health promotion and financial incentives to increase physical activity among their employees. These include provision of on-site facilities to perform physical activity along with facilities such as lockers, showers, and bicycle-racks, and authorizing physical activity during the work day.[2]

5.2.2 The educational system

Aim: Develop a school culture to advance adoption of behaviors that encourage engaging in physical activity, such as intervening to change the social and physical environment, including planning of buildings and facilities, to encourage physical activity in general and structured activity in particular (including after school and preschool activity hours).

5.2.2.1 Preschool and schools

1. Increase the time allocated to moderate to vigorous physical activity per week, with emphasis on raising the awareness of the importance of health promoting physical activity, including implementation of initiatives such as “active breaks. Longer, more active activities for achieving physical activity of moderate to vigorous activity also may also include health education.[1]

★ The TFCPS has defined the evidence level as **strong evidence**[40].

2. Integration of family and/or community involvement within a junior high and high school program to develop student skills and self efficacy to be physically active, along with a variety of physical activity curricula and a supportive school environment, including having the staff provide a personal example. [1]

★ According to a systematic review[35].

3. Maintain a high level of skill among physical education teachers [2]

The level of evidence has been defined as **moderately good evidence** according to a systematic review of studies[36].

4. Encourage walking and cycling to school while observing appropriate safety rules. [3]

★ Expert opinion

5. Implementation of a healthy lifestyle program (“The Active, Healthy Kindergarten Program”) at kindergartens.[3]

★ Expert opinion.

Process index: Increase the number of these kindergartens by 50% by the year 2020.

5.2.2.2 Higher education institutes

Expand and improve infrastructures for physical activity for students, faculty and staff at institutes. [3]

★ Expert opinion (recommended as a pilot study).

5.2.3 Media and social marketing

1. Conduct a broad-sweeping public information campaign using the mass media that has been adapted to the specific target audiences, and which emphasizes the following: provision of social support, health education in a range of places, and use of environmental interventions.[1]

Note: as these interventions have been examined as part of an "intervention package" with other clinical interventions, such as screening for risk factors, it is appropriate to combine them with these interactions so as to maximize their chances of success.

★ The TFCPS has defined the evidence as **strong evidence**[40].

★ The results of the national initiative for promoting physical activity among teenagers in the United States (the VERB program)[37].

2. Personalized behaviorally-oriented interventions, which include goal-setting and monitoring their achievement, use of reinforcements/incentives, and teaching methods of structured problem solving and relapse prevention. Programs should be adapted to the group or individual level and conveyed either face to face, by telephone, or via direct mailing. [1]

★ The TFCPS has defined the evidence as **strong evidence**[40].

★ Telephone intervention: 9/14 controlled and randomized studies in the 2007 systemic survey showed significant results[41].

5.2.4 The healthcare system

Individual counseling on physical activity with the assistance of a range of skilled professionals with appropriate training in accordance with accepted behavior change models in primary care (such as 5As, motivational interviewing, stages of change): the interventions should include behavioral prescriptions, activity planning and execution tracking, recurrent-strengthening interventions (booster strategies) that have been conveyed through a range of media channels.39.[1]

Process index: increase in the proportion of people (using the healthcare system) who are recipients of this counseling each year.

★ A systematic review that included a meta-analysis of randomized, controlled trials[38].

★ An evidence-based recommendation of NICE in 2006[42] (see Appendix no. 8).

[1]

5.2.5 Legislation

1. Implement the clause of the Sports Law (1988) that deals with the use of sports facilities (Section 13, subsection A) that requires a local authority to facilitate use of sports facilities in its jurisdiction for the purpose of physical activity while these facilities are not in use..[27]
2. Amend the provision in the Fitness Institutes Law (1994), which currently requires individuals interested in training at fitness gyms to provide a medical clearance form, such that it would be sufficient for the applicant to fill out and submit a health declaration form.The health declaration form would be renewed annually. This legislation would reinstate the previous legislation and follow best international practice.,
3. Integration of counseling for health promoting physical activity in the State Healthcare Insurance Law (1995) as a means for preventing and treating chronic diseases, on the condition that there is adequate allocation of these resources for implementation.

5.2.6 Reduction of information / infrastructural gaps

1. Integration of physical activity (theoretical and practical studies) in the basic training and continuing education courses of teacheers of primary schools and high schools.[3]

★ Expert opinion.

2. Increasing the proportion of medical and healthcare practitioners who receive theoretical and practical training on providing counseling for physical activity during their primary training.[3]

★ Expert opinion.

3. Connecting students at the various physical education colleges with local authorities, schools and workplaces, with the aim of developing physical fitness programs for them. This activity should be encouraged by recognizing it as a credi-bearing component in their studies and by provision of scholarships for students engaging in it.[3]

★ Expert opinion.

4. Training personnel to counsel individuals with specific health conditions that require special physical activity support (such as exercises to strengthen back muscles for osteoporosis and back pain sufferers, or counseling patients with diabetes mellitus, obesity or hypertension),and for patients with various disabilities (so they may be instructed in the correct use of fitness facilities or their adaptation to their special needs), in arrangement with the medical staff.[3]

★ This recommendation is in line with the spirit of the recommendations of the committee for prevention of chronic disease in individuals with disabilities of the “Healthy Israel 2020” initiative.

Issues dealt with by other Healthy Israel 2020 Committees

Improvement in the education and training of medical staff in the field of health promotion and preventive medicine had been dealt with by the “Education and Training Committee of the “Healthy Israel 2020” initiative.

5.2.7 Monitoring, tracking, research and evaluation

1. Develop a system which regularly does the following:
   - Regular measurement of the level of physical activity in the population.
   - Evaluation of the effectiveness, benefit and cost-benefit ratio of these programs and recommend accordingly.
2. Additions/ changes to questions on national surveys:
   - Additionalparameter to be measured in children:
     - engaging in at least 60 minutes of aerobic physical activity every day.
   - Additional parameters to be measured in adults:
     - Accumulation of 150 minutes of medium intensity aerobic physical activity per week or 75 minutes of vigorous intensity aerobic physical activity per week, or a combination of both.
     - Assessing the level of intensity of physical activity.
     - Performing muscle strengthening and endurance exercises at least twice a week.
   - Additional indices for seniors (in addition to those recommended for younger adults)
     - Performing stretching exercises for at least 10 minutes, twice weekly.
     - Performing exercise to maintain and improve balance in community seniors 3 times a week, particular for individuals who are at high risk for falls.

Appendix 1: Data on the Prevalence of Physical Inactivity Related Diseases

Disease	Prevalence of diseases attributable to sedentariness
Heart disease	Self reported ischemic heart disease (myocardial infarction or angina pectoris)[1]: Men: Tota:l 6.6%* Jewish men: 6.9% (7.8%**) Arab men: 4.9% (8.9%**) Women: Total: 4.4%* Jewish women: 4.8% (4.4%**) Arab women: 1.9% (3.5%**) * Weighted for population group and age. ** Age standardized
	Physician-diagnosed heart disease[2] at some point: Total: 342,800 (8.7 per 100 residents) Men: 183,400 (9.6 per 100 residents) Women: 159,400 (7.8 per 100 residents) Jews: 278,800 (8.5 per 100 residents) Arabs: 31,900 (6.3 per 100 residents)
	Self-reported myocardial infarction[3]: 2.3% have suffered myocardial infarction at some point in time. Men: Total: 3.3% Jewish men: 3.6%* Arab men: 1.9* Women: Total: 1.4% Jewish women: 1.7% Arab women: 0.0% Total Jews: 2.9% Total Arabs: 0.7% * Age standardized
Stroke	Self- reported stroke3: 0.6% reported having had a stroke at some point. Men: Total: 0.7% Jewish men: 0.7%* Arab men: 0.7* Women: Total: 0.5% Jewish women: 0.5%* Arab women 0.6%* * Age standardized
Breast cancer	Incidence of breast cancer for 20024: Women Jewish women ASR = 96.5 Non-Jewish women: ASR 41.3

Disease	Prevalence of diseases attributable to sedentariness
Colorectal cancer	Incidence of colon cancer for 20024: Men Jewish men: ASR 29.0 Non-Jewish men: ASR 12.47 Women Jewish women: ASR 24.4 Non-Jewish women: ASR 15.2
	Incidence of rectal cancer for 20024: Men Jewish men: ASR 13.0 Non-Jewish men: ASR 7.5 Women Jewish women: ASR 9.2 Non-Jewish women: ASR 4.3
Diabetes mellitus	Self-reported diabetes mellitus1: Men: Total: 6.3%* Jewish men: 6.2% (7.1%**) Arab men: 6.6% (12.5%**) Women: Total: 5.2%* Jewish women: 5.0% (5.3%**) Arab women: 6.3% (11.5%**) * Weighted for population group and age. ** Age weighted.
Diabetes mellitus	Physician-diagnosed diabetes mellitus / high blood sugar at any time2: Total: 319,700 (8.1 per 100 residents) Men: 144,700 (7.6 per 100 residents) Women: 175,100 (8.5 per 100 residents) Jews: Total: 267,500 (8.2 per 100 residents) Men: 122,300 (7.8 per 100 residents) Women: 145,300 (8.5 per 100 residents) Arabs: Total: 38,700 (7.7 per 100 residents) Men: 18,800 (7.5 per 100 residents) Women: 20,000 (7.9 per 100 residents)
	Self-reported diabetes mellitus3: 6.4% were diagnosed at some point Men: Total: 6.7% Jewish men: 5.7%* Arab men: 9.4* Women: Total: 6.1% Jewish women: 4.9%* Arab women: 13.5%* Total Jews: 5.7% Total Arabs: 8.3% * Age standardized

References for table

1. 2003-2004 Israel National Health Interview Survey (INHIS-1), a project of the World Health Organization, European region, selected findings, the Israel Center for Disease Control, October 2006.
2. 2003-2004 National Health Survey, National Bureau of Statistics and Information and Computer Division, Information Field at the Ministry of Health. http://www.health.gov.il/pages/default.asp?PageId=3885&catID=688&maincat=3, downloaded in 2007.
3. Ministry of Health – 1999-2001 MABAT-first national health and nutrition status survey, part A, general findings, the Israel Center for Disease Control and the Food and Nutrition Services at the Ministry of Health, November 2003.
4. The Israel National Cancer Register, annual reports, 2006 login. http://www.health.gov.il/pages/default.asp?maincat=22&catId=183&PageId=3088

Appendix 2: Disease Burden from Diseases Attributed to Physical Inactivity / Low Physical Activity

% of total DALY resulting from physical inactivity[1*]	PAF** (% of total DALY) in the EUR-A region[2]
Total **EUR-A: 4.4%** **In Israel[3]: 2.8%**	**Ischemic heart disease:** **Men: 23%** **Women: 22%**
	Ischemic stroke: **Men: 12%** **Women: 13%**
	Breast cancer: **Women: 11%**
	Colorectal cancer: **Men: 16%** **Women: 17%**
	Diabetes mellitus: **Men: 15%** **Women: 15%**

References for table

* Physical inactivity is defined as a very low to nonexistent level of physical activity; the report relates to individuals aged 15 and older

** PAF= Population Attributable Fraction

1. WHO, Global Burden of Disease, Annex A, Table A4: Attributable DALYs by risk factor and income group in WHO regions, estimates for 2004, Geneva, 2009.
2. The world health report 2002: reducing risks, promoting healthy life. Chapter 4: Quantifying selected major risks to health (http://www.who.int/whr/2002/en/whr02_en.pdf, accessed 2006).
3. Data from Gary Ginsberg, PhD., Ministry of Health.

Appendix 3: Physical Activity Prevalence Data

Part A: Activity ≥ 3 times a week

	Israel National Health Interview Survey (INHIS-1)1 (Every day / almost every day)	National Health Survey2	Ministry of Health – MABAT- first national health and nutrition status survey, part A, general findings	Health status of the Arab population in Israel4	Health knowledge, attitudes and practices in Israel (KAP)5 (Every day or almost every day)	Physical activity habits in IDF officers and career servicemen – situation report6	Youth in Israel, social welfare, health and risk behaviors in an international view (HBSC)7	Health of the elderly in the community8
Adult population								
Total	-	28.7%	20.2%	-	32.3% (weighted by age and sex)	20.7%	-	-
Total men	33.2% (weighted for age and population group)	31.5%	20.1%	-	-	-	-	-
Total women	30.9% (weighted for age and population group)	26.2%	20.3%	-	-	-	-	-
Jewish adult population								
Total	-	30.3%	23.8%	33.3%	-	-	-	-
Men	-	33.3%	22.7% (age standardized)	37.5%	-	-	-	-
Women	-	27.6%	23.7% (age standardized)	30.3%	-	-	-	-
Arab adult population								
Total	-	14.7%	10.1%	25.4%	-	-	-	-

	Israel National Health Interview Survey (INHIS-1)1 (Every day / almost every day)	National Health Survey2	Ministry of Health – MABAT- first national health and nutrition status survey, part A, general findings	Health status of the Arab population in Israel4	Health knowledge, attitudes and practices in Israel (KAP)5 (Every day or almost every day)	Physical activity habits in IDF officers and career servicemen – situation report6	Youth in Israel, social welfare, health and risk behaviors in an international view (HBSC)7	Health of the elderly in the community8
Men	22.4% (weighted by population age distribution)	16.9%	11.2% (age standardized)	32.8%	-	-	-	-
Women	17.0% (weighted by population age distribution)	12.6%	8.0% (age standardized)	19.1%	-	-	-	-
Persons aged 65 and older								
Total	-	Aged 65+: 41.3%	-	-	-	-	-	Aged 60+: 21%
Men	Aged 65-74: 47.7% Aged 75+: 46.2%	Aged 65+: 49.1%	-	-	-	-	-	-
Women	Aged 65-74: 43.0% Aged 75+: 32.1%	Aged 65+: 35.3%	-	-	-	-	-	-

		Israel National Health Interview Survey (INHIS-1)1 (Every day / almost every day)	National Health Survey2	Ministry of Health – MABAT- first national health and nutrition status survey, part A, general findings	Health status of the Arab population in Israel4	Health knowledge, attitudes and practices in Israel (KAP)5 (Every day or almost every day)	Physical activity habits in IDF officers and career servicemen – situation report6	Youth in Israel, social welfare, health and risk behaviors in an international view (HBSC)7	Health of the elderly in the community8
Jews	Total	-	Aged 65+: 42.3%	-	-	-	-	-	-
	Men	-	Aged 65+: 50.7%	-	-	-	-	-	-
	Women	-	Aged 65+: 35.7%	-	-	-	-	-	-
Arabs	Total	-	Aged 65: no data	-	-	-	-	-	-
	Men	-	Aged 65: no data	-	-	-	-	-	-
	Women	-	Aged 65: no data	-	-	-	-	-	-

	Israel National Health Interview Survey (INHIS-1)1 (Every day / almost every day)	National Health Survey2	Ministry of Health – MABAT- first national health and nutrition status survey, part A, general findings	Health status of the Arab population in Israel4	Health knowledge, attitudes and practices in Israel (KAP)5 (Every day or almost every day)	Physical activity habits in IDF officers and career servicemen – situation report6	Youth in Israel, social welfare, health and risk behaviors in an international view (HBSC)7	Health of the elderly in the community8
Teenagers, aged 11, 13, 15								
-	-	-	-	-	-	-	At least an hour a day of moderate to vigorous activity at ages: 11 – 30% boys, 15% girls 13 – 24% boys, 12% girls 15 – 13% boys, 6% girls	-

References for table

1. Project of the World Health Organization, Europe region, the Israel Center for Disease Control, 2003-2004, persons aged 21 and older, N=9509, Jewish and Arab population, telephone interview, “physical activity such as walking, swimming or workout lasting 20 consecutive minutes or longer in the last 30 days”.
2. Central Bureau of Statistics and the Information and Computer Division, Information Field at the Ministry of Health, within the International Mental Health Survey of the World Health Organization, 2003-2004, persons aged 21 and older, N=4859, face to face interview at the interviewee’s home, “physical activity such as walking, swimming or workout lasting 20 consecutive minutes or longer in the last 30 days”.
3. The Israel Center for Disease Control and the Food and Nutrition Services at the Ministry of Health, 1999-2000, persons aged 25-64, N=3246, face to face interview, “engagement in physical activity in the last year on a regular basis in free time for at least 20 consecutive minutes causing more rapid breathing and sweating and at what frequency”.
4. The Israel Center for Disease Control, 2004, based on data from KAP 2002, “physical activity at least 3 times a week 20 minutes each time”.
5. The Department of Education and Health Promotion, the Israel Center for Disease Control, 2004-2005, persons aged 18 and older, N=4379, the report shows data for the Jewish population only, telephone interview, “physical activity on a regular basis such as walking, swimming or workout… that lasts 20 consecutive minutes”.
6. 2003, telephone survey, N=1064, “regular engagement in any physical activity in the last 3 months”.
7. World Health Organization, Health Behavior of School-Aged Children Study: Inequalities in Young People’s Health 2005-2006. Health Policy for Children and Adolescents: 110-111. Children aged 11, 13, 15, N=5350 “Activity at medium to vigorous exertion level for at least 60 minutes per day”.
8. Ministry of Health, 1997-1998, persons aged 60+, N=5055, “engagement in physical activity on a regular basis such as walking, workout, cycling, at least 4 times a week, 20 minutes each time”.

Part B: execution up to twice a week

	Israel National Health Interview Survey[1]	Health knowledge, attitudes and practices in Israel (KAP)[2]	Health knowledge, attitudes and practices in Israel (KAP)[3]	Physical activity habits in IDF officers and career servicemen – situation report[4]	Youth in Israel, social welfare, health and risk behaviors in an international view (HBSC)[5]	Young National Health [Health and Nutrition Status] Survey – first national health and nutrition status survey for 7th-12th graders, part A: general findings6	
Adult population							
Total	-	-	1-2 times a week: 26.4%* 1-2 times a month: 2%* Less than once a month: 0.3%* Age and sex weighted	60% at least once a month 39% 1-2 times a week	-	-	
11, 13, 15 year olds							
Total	-	-	-		Once a week: 15.3% Once a month: 4.8% Once a month or outside school hours: Total: 14.7% Jews: 14.9% Arabs: 28% Boys: 11.4% Girls: 23.6%	-	
Adolescents: 7th-12th graders							
Total	-	-	-	42.2% at least once a week	30.8% at least once a week	Aerobic activity at least once a week	Walking at least once a week
Boys	-	-	-	-	-	45.4% (weighted by school set variable)	16% (weighted by school set variable)

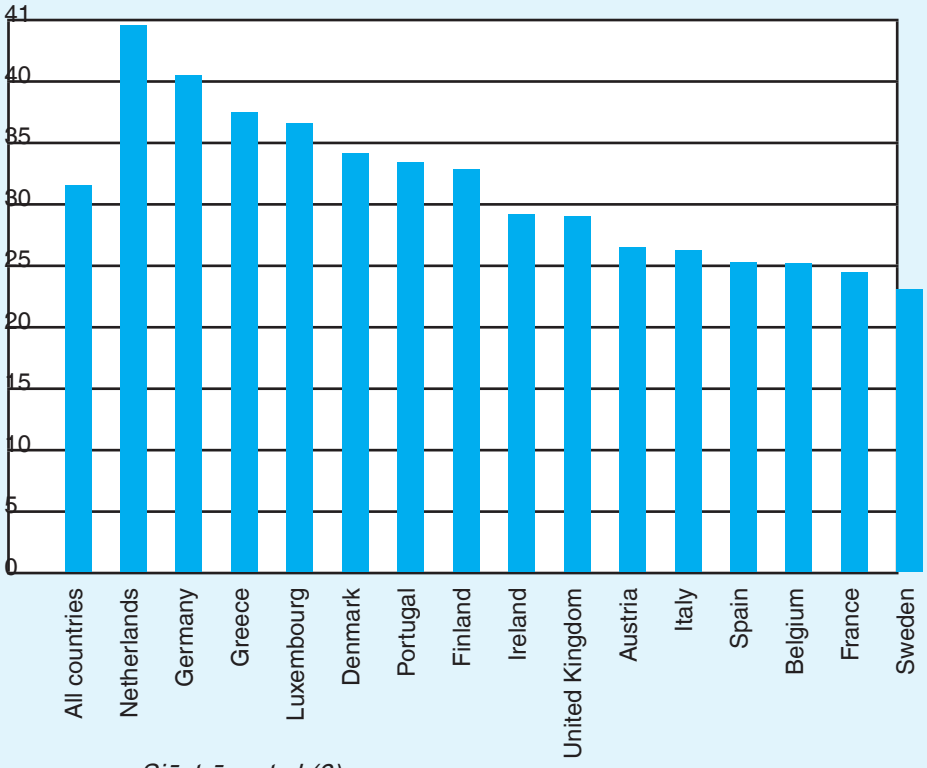
			Israel National Health Interview Survey[1]	Health knowledge, attitudes and practices in Israel (KAP)[2]	Health knowledge, attitudes and practices in Israel (KAP)[3]	Physical activity habits in IDF officers and career servicemen – situation report[4]	Youth in Israel, social welfare, health and risk behaviors in an international view (HBSC)[5]	Young National Health [Health and Nutrition Status] Survey – first national health and nutrition status survey for 7th-12th graders, part A: general findings6	
Girls			-	-	-	-	-	39.8% (weighted by school set variable)	42.4% (weighted by school set variable)
Junior high set	**Total**		-	-	-	-	-	-	
	Boys		-	-	-	-	-	50.3%	16.4%
	Girls		-	-	-	-	-	46.0%	38.2%
	Low socio economic status	**Boys**	-	-	-	-	-	50.3%	14.2%
		Girls	-	-	-	-	-	43.2%	37.5%
	High socio economic status	**Boys**	-	-	-	-	-	50.2%	14.8%
		Girls	-	-	-	-	-	48.9%	38.8%
High set	**Total**		-	-	-	-	-	-	
	Boys		-	-	-	-	-	41.9%	17.1%
	Girls		-	-	-	-	-	35.3%	45.5%
	Low socio economic status	**Boys**	-	-	-	-	-	38.1%	18.8%
		Girls	-	-	-	-	-	33.9%	47.1%
	High socio economic status	**Boys**	-	-	-	-	-	45.9%	15.6%
		Girls	-	-	-	-	-	36.2%	44.2%

References for table

1. Central Bureau of Statistics and the Information and Computer Division, Information Field at the Ministry of Health, within the International Mental Health Survey of the World Health Organization, 2003-2004, persons aged 21 and older, N=4859, face to face interview at the interviewee's home, "physical activity such as walking, swimming or workout lasting 20 consecutive minutes or longer in the last 30 days".
2. Department of Education and Health Promotion, the Israel Center for Disease Control, 2002, N=3225, Jewish population, telephone interview, "activity such as walking, swimming or workout lasting 20 consecutive minutes or longer".
3. The Department of Education and Health Promotion, the Israel Center for Disease Control, 2004-2005, persons aged 18 and older, N=4379, the report shows data for the Jewish population only, telephone interview, "physical activity on a regular basis such as walking, swimming or workout… that lasts 20 consecutive minutes".
4. 2003, telephone survey, N=1064, "regular engagement in any physical activity in the last 3 months".
5. Center for Children and Youth, JDC Brookdale Institute, Department of Sociology and Anthropology, Bar Ilan University, the Israel Center for Disease Control, the Ministry of Health and the Office of the Chief Scientist, Ministry of Education, 1998, page 237. Children aged 11, 13, 15, N=6169, "activity at a moderate exertion level for 60 minutes 5 or more days a week".
6. The Israel Center for Disease Control and the Food and Nutrition Services at the Ministry of Health, 2003-2004, N=3265 junior high set, N=3009 high set, face to face interview, "any physical interview inside or outside school, such as running, swimming, soccer, walking/ cycling to school and so on".

Appendix 4: Active adults in a Number of EU Countries

Fig. 1. Proportion of adults (aged 15 years or over) in the EU classified as sufficiently active, 2002



source: Sjöström et al.(8).

Physical activity and health in Europe: Evidence for action/edited by Nick Cavil, Sonja Kahlmeier and Francesca Racioppi,WHO, 2006, (http://www.euro.who.int/document/e89490.pdf, accessed 8 July 2007).

Appendix 5: Physical Activity Recommendations for the Adult Population, American College of Sports Medicine and American Heart Association

TABLE 4. Summary of physical activity recommendations for older adults – 2007.

1. To promote and maintain good health, older adults should maintain a physically active lifestyle. I (A)
2. They should perform moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic activity for a minimum of 20 min on three days each week. I (A) Moderate-intensity aerobic activity involves a moderate level of effort relative to an individual's aerobic fitness. On a 10-point scale, where sitting is 0 and all-out effort is 10, moderate-intensity activity is a 5 or 6 and produces noticeable increases in heart rate and breathing. On the same scale, vigorous-intensity activity is a 7 or 8 and produces large increases in heart rate and breathing. For example, given the heterogeneity of fitness levels in older adults, for some older adults a moderate-intensity walk is a slow walk, and for others it is a brisk walk.
3. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. IIa (B) These moderate- or vigorous intensity activities are in addition to the light intensity activities frequently performed during daily life (e.g., self care, washing dishes) or moderate-intensity activities lasting 10 min or less (e.g., taking out trash, walking to parking lot at store or office).
4. In addition, at least twice each week older adults should perform muscle strengthening activities using the major muscles of the body that maintain or increase muscular strength and endurance. IIa (A) It is recommended that 8–10 exercises be performed on at least two nonconsecutive days per week using the major muscle groups. To maximize strength development, a resistance (weight) should be used that allows 10–15 repetitions for each exercise. The level of effort for muscle-strengthening activities should be moderate to high.
5. Because of the dose-response relationship between physical activity and health, older persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities, or prevent unhealthy weight gain will likely benefit by exceeding the minimum recommended amount of physical activity. I (A)
6. To maintain the flexibility necessary for regular physical activity and daily life, older adults should perform activities that maintain or increase flexibility on at least two days each week for at least 10 min each day. IIb (B)
7. To reduce risk of injury from falls, community-dwelling older adults with substantial risk of falls should perform exercises that maintain or improve balance. IIa (A)
8. Older adults with one or more medical conditions for which physical activity is therapeutic should perform physical activity in a manner that effectively and safely treats the condition(s). IIa (A)
9. Older adults should have a plan for obtaining sufficient physical activity that addresses each recommended type of activity. IIa (C) Those with chronic conditions for which activity is therapeutic should have a single plan that integrates prevention and treatment. For older adults who are not active at recommended levels, plans should include a gradual (or stepwise) approach to increase physical activity over time. Many months of activity at less than recommended levels is appropriate for some older adults (e.g., those with low fitness) as they increase activity in a stepwise manner. Older adults should also be encouraged to self-monitor their physical activity on a regular basis and to reevaluate plans as their abilities improve or as their health status changes.

Nelson ME, Rejeski WJ, Blair SN Duncan PW et al. Physical activity and public health in older adults: recommendation from the American College of Sports Medicine and the American Heart Association. Med Sci Sports Exerc. 2007;39:1435-45. Review.

Appendix 6: U.S. Healthy People 2020 Objectives-Physical Activity

Healthy People 2020 initiative

PA-1 Reduce the proportion of adults who engage in no leisure-time physical activity

Baseline:	36.2% of adults engaged in no leisure-time physical activity in 2008
Target:	32.6%
Target-Setting Method:	10% improvement
Data Source:	National Health Interview Survey (NHIS), CDC, NCHS

PA-2 Increase the proportion of adults who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity

PA-2.1 Increase the proportion of adults who engage in aerobic physical activity of at least moderate intensity for at least 150 minutes/week, or 75 minutes/week of vigorous intensity, or an equivalent combination	
Baseline:	43.5% of adults engaged in aerobic physical activity of at least moderate intensity for at least 150 minutes/week, or 75 minutes/week of vigorous intensity, or an equivalent combination in 2008
Target:	47.9%
Target-Setting Method:	10% improvement
Data Source:	National Health Interview Survey, CDC, NCHS
PA-2.2 Increase the proportion of adults who engage in aerobic physical activity of at least moderate intensity for more than 300 minutes/week, or more than 150 minutes/week of vigorous intensity, or an equivalent combination	
Baseline:	28.4% of adults engaged in aerobic physical activity of at least moderate intensity for more than 300 minutes/week, or more than 150 minutes/week of vigorous intensity, or an equivalent combination in 2008
Target:	31.3%
Target-Setting Method:	10% improvement
Data Source:	National Health Interview Survey, CDC, NCHS

PA-2.3 Increase the proportion of adults who perform muscle-strengthening activities on 2 or more days of the week	
Baseline:	21.9% of adults performed muscle-strengthening activities on 2 or more days of the week in 2008
Target:	24.1%
Target-Setting Method:	10% improvement
Data Source:	National Health Interview Survey, CDC, NCHS
PA-2.4 Increase the proportion of adults who meet the objectives for aerobic physical activity and for muscle-strengthening activity	
Baseline:	18.2% of adults met the objectives for aerobic physical activity and for muscle-strengthening activity in 2008
Target:	20.1%
Target-Setting Method:	10% improvement
Data Source:	National Health Interview Survey, CDC, NCHS

PA-3 Increase the proportion of adolescents who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity

PA-3.1 Aerobic physical activity	
Baseline:	18.4% of adolescents met current physical activity guidelines for aerobic physical activity in 2009
Target:	20.2%
Target-Setting Method:	10% improvement
Data Source:	Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP
PA-3.2 (Developmental) Muscle-strengthening activity	
Potential Data Source:	Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP
PA-3.3 (Developmental) Aerobic physical activity and muscle-strengthening activity	
Potential Data Source:	Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP

PA-4 Increase the proportion of the Nation's public and private schools that require daily physical education for all students

PA-4.1 Elementary schools	
Baseline:	3.8% of public and private elementary schools required daily physical education for all students in 2006
Target:	4.2%
Target-Setting Method:	10% improvement
Data Source:	School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP
PA-4.2 Middle and junior high schools	
Baseline:	7.9% of public and private middle and junior high schools required daily physical education for all students in 2006
Target:	8.6%
Target-Setting Method:	10% improvement
Data Source:	School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP

PA-5 Increase the proportion of adolescents who participate in daily school physical education

Baseline:	33.3% of adolescents participated in daily school physical education in 2009
Target:	36.6%
Target-Setting Method:	10% improvement
Data Source:	Youth Risk Behavior Surveillance System (YRBSS), CDC, NCCDPHP

PA-6 Increase regularly scheduled elementary school recess in the United States

PA-6.1 Increase the number of States that require regularly scheduled elementary school recess	
Baseline:	7 States required regularly scheduled elementary school recess in 2006
Target:	17 States
Target-Setting Method:	One State per year
Data Source:	School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP

PA-6.2 Increase the proportion of school districts that require regularly scheduled elementary school recess	
Baseline:	57.1% of school districts required regularly scheduled elementary school recess in 2006
Target:	62.8%
Target-Setting Method:	10% improvement
Data Source:	School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP

PA-7 Increase the proportion of school districts that require or recommend elementary school recess for an appropriate period of time

Baseline:	61.5% of school districts required or recommended elementary school recess for an appropriate period of time in 2006
Target:	67.7%
Target-Setting Method:	10% improvement
Data Source:	School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP

PA-8 Increase the proportion of children and adolescents who do not exceed recommended limits for screen time

PA-8.1 Increase the proportion of children aged 0 to 2 years who view no television or videos on an average weekday	
Baseline:	40.6% of children aged 0 to 2 years viewed no television or videos on an average weekday in 2007
Target:	44.7%
Target-Setting Method:	10% improvement
Data Source:	National Survey of Children's Health (NSCH), HRSA, MCHB
PA-8.2 Increase the proportion of children and adolescents aged 2 years through 12th grade who view television, videos, or play video games for no more than 2 hours a day	
PA-8.2.1 Children aged 2 to 5 years	
Baseline:	75.6% of children aged 2 to 5 years viewed television, videos, or played video games for no more than 2 hours a day in 2005–08 (NHANES)
Target:	83.2%
Target-Setting Method:	10% improvement
Data Source:	National Health and Nutrition Examination Survey (NHANES)

PA-8.2.2 Children and adolescents aged 6 to 14 years	
Baseline:	78.9% of children and adolescents aged 6 to 14 years viewed television, videos, or played video games for no more than 2 hours a day in 2007 (NSCH)
Target:	86.8%
Target-Setting Method:	10% improvement
Data Source:	National Survey of Children's Health (NSCH)
PA-8.2.3 Adolescents in grades 9 through 12	
Baseline:	67.2% of adolescents in grades 9 through 12 viewed television, videos, or played video games for no more than 2 hours a day in 2009 (YRBSS)
Target:	73.9%
Target-Setting Method:	10% improvement
Data Source:	Youth Risk Behavior Surveillance System (YRBSS)
PA-8.3 Increase the proportion of children and adolescents aged 2 years to 12th grade who use a computer or play computer games outside of school (for non-school work) for no more than 2 hours a day	
PA-8.3.1 Children aged 2 to 5 years	
Baseline:	97.4% of children aged 2 to 5 years used a computer or played computer games outside of school (for nonschool work) for no more than 2 hours a day in 2005–08 (NHANES)
Target:	Not applicable
Target-Setting Method:	This measure is being tracked for informational purposes. If warranted, a target will be set during the decade
Data Source:	National Health and Nutrition Examination Survey (NHANES)
PA-8.3.2 Children aged 6 to 14 years	
Baseline:	93.3% of children and adolescents aged 6 to 14 years used a computer or played computer games outside of school (for non-school work) for no more than 2 hours a day in 2007 (NSCH)
Target:	100%
Target-Setting Method:	10% improvement
Data Source:	National Survey of Children's Health (NSCH)

PA-8.3.3 Adolescents in grades 9 through 12	
Baseline:	75.1% of adolescents in grades 9 through 12 used a computer or played computer games outside of school (for nonschool work) for no more than 2 hours a day in 2009 (YRBSS)
Target:	82.6%
Target-Setting Method:	10% improvement
Data Source:	Youth Risk Behavior Surveillance System (YRBSS)

PA-9 Increase the number of States with licensing regulations for physical activity provided in child care

PA-9.1 Require activity programs providing large muscle or gross motor activity, development, and/or equipment	
Baseline:	25 States required activity programs providing large muscle or gross motor activity, development, and/or equipment in 2006
Target:	35 States
Target-Setting Method:	One State per year for each measure
Data Source:	National Resource Center for Health and Safety in Child Care and Early Education maintain a public access database of licensing regulations for all 50 U.S. States and the District of Columbia
PA-9.2 Require children to engage in vigorous or moderate physical activity	
Baseline:	3 States required children to engage in vigorous or moderate physical activity in 2006
Target:	13 States
Target-Setting Method:	One State per year for each measure
Data Source:	National Resource Center for Health and Safety in Child Care and Early Education maintain a public access database of licensing regulations for all 50 U.S. States and the District of Columbia
PA-9.3 Require number of minutes of physical activity per day or by length of time in care	
Baseline:	1 State required a number of minutes of physical activity per day or by length of time in care in 2006
Target:	11 States
Target-Setting Method:	One State per year for each measure
Data Source:	National Resource Center for Health and Safety in Child Care and Early Education maintain a public access database of licensing regulations for all 50 U.S. States and the District of Columbia

PA-10 Increase the proportion of the Nation's public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during summer and other vacations)

Baseline:	28.8% of the Nation's public and private schools provided access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during summer and other vacations) in 2006
Target:	31.7%
Target-Setting Method:	10% improvement
Data Source:	School Health Policies and Programs Study (SHPPS), CDC, NCCDPHP

PA-11 Increase the proportion of physician office visits that include counseling or education related to physical activity

PA-11.1 Increase the proportion of office visits made by patients with a diagnosis of cardiovascular disease, diabetes, or hyperlipidemia that include counseling or education related to exercise	
Baseline:	13.0% of physician office visits made by patients with a diagnosis of cardiovascular disease, diabetes, or hyperlipidemia included counseling or education related to exercise in 2007
Target:	14.3%
Target-Setting Method:	10% improvement
Data Source:	National Ambulatory Medical Care Survey, CDC, NCHS
PA-11.2 Increase the proportion of physician visits made by all child and adult patients that include counseling about exercise	
Baseline:	7.9% of physician office visits made by all child and adult patients included counseling or education related to exercise in 2007
Target:	8.7%
Target-Setting Method:	10% improvement
Data Source:	National Ambulatory Medical Care Survey, CDC, NCHS

PA-12 (Developmental) Increase the proportion of employed adults who have access to and participate in employer-based exercise facilities and exercise programs

Potential Data Source:	National Health Interview Survey (NHIS), CDC, NCHS

PA-13 (Developmental) Increase the proportion of trips made by walking

PA-13.1 (Developmental) Adults aged 18 years and older, trips of 1 mile or less	
Potential Data Source:	National Household Travel Survey (NHTS), Department of Transportation (DOT), Federal Highway Administration (FHWA)
PA-13.2 (Developmental) Children and adolescents aged 5 to 15 years, trips to school of 1 mile or less	
Potential Data Source:	National Household Travel Survey (NHTS), Department of Transportation (DOT), Federal Highway Administration (FHWA)

PA-14 (Developmental) Increase the proportion of trips made by bicycling

PA-14.1 (Developmental) Adults aged 18 years and older, trips of 5 miles or less	
Potential Data Source:	National Household Travel Survey (NHTS), Department of Transportation (DOT), Federal Highway Administration (FHWA)
PA-14.2 (Developmental) Children and adolescents aged 5 to 15 years, trips to school of 2 miles or less	
Potential Data Source:	National Household Travel Survey (NHTS), Department of Transportation (DOT), Federal Highway Administration (FHWA)

PA-15 (Developmental) Increase legislative policies for the built environment that enhance access to and availability of physical activity opportunities

PA-15.1 Community-scale policies	
Potential Data Source:	CDC Division of Nutrition, Physical Activity, and Obesity Legislative Database
PA-15.2 Street-scale policies	
Potential Data Source:	CDC Division of Nutrition, Physical Activity, and Obesity Legislative Database
PA-15.3 Transportation and travel policies	
Potential Data Source:	CDC Division of Nutrition, Physical Activity, and Obesity Legislative Database

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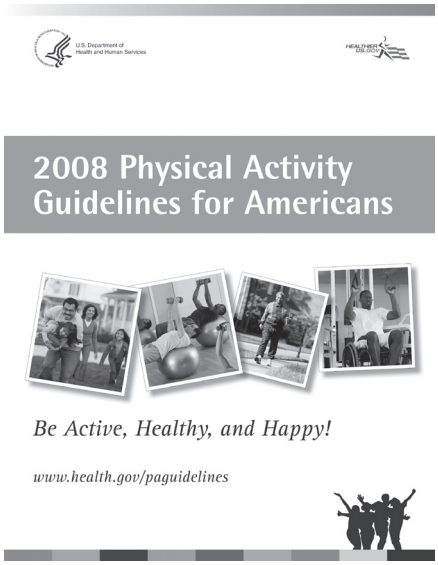
Appendix 7: U.S. Department of Health and Human Services Physical Activity Guidelines for Americans, October 2008

2008 Physical Activity Guidelines for Americans

The Federal Government has issued its first-ever Physical Activity Guidelines for Americans. They describe the types and amounts of physical activity that offer substantial health benefits to Americans.

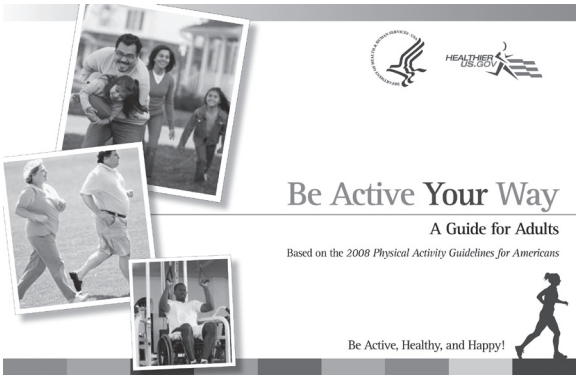
2008 Physical Activity Guidelines for Americans

For policy makers and health professionals



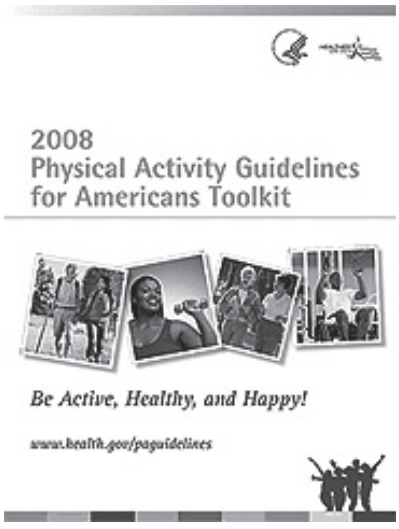
Be Active Your Way:A Guide for Adults

For adults aged 18—64

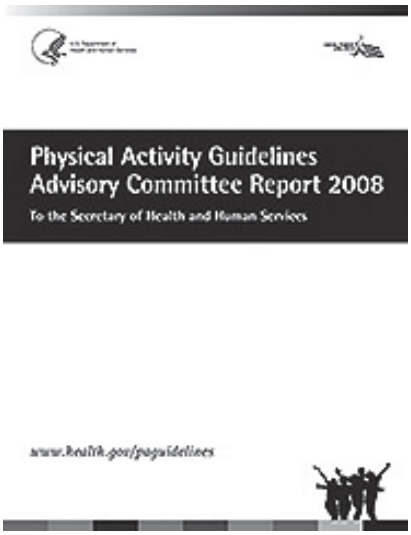


2008 Physical Activity Guidelines for Americans Toolkit

For organizations and communities



2008 Physical Activity Guidelines Advisory Committee Report For health professionals and researchers



http://www.health.gov/PAGuidelines/

Appendix 8: Physical Activity Interventions: Systematic Reviews and Controlled StudiesPublished between 2002-2011

Physical activity interventions in SRT and RCTs ranked by study validity and impact, 2002-2011

1. Systematic Reviews

Search strategies:

a. Search in September 2011: Includes PubMed search for period 2008-2011 with the following keywords: 'systematic review' and 'physical activity' and 'intervention'; Search of Cochrane review database by keyword "physical activity"; and inclusion of most recent US Preventive Services recommendation for counseling for physical activity.

b. Search in January 2009: Medline, search terms: "physical activity" and "interventions" and "effective". No time limits, but relevant articles from 2005- 2009 were reviewed.

c. Search up to August 2007: Medline, search term: "physical activity interventions" systematic reviews, Limitations: last 5 years (unless older major review has not been superseded by similar major systematic reviews (specifically, Kahn EB et al. The Effectiveness of Interventions to Increase Physical Activity. Am J Prev Med 2002;22(4S):73-107)

Intervention	Source	Validity	Impact	Comments
Media				
Computer-tailored interventions	Krebs P, Prochaska JO, Rossi JS. A meta-analysis of computer-tailored interventions for health behavior change. Prev Med 2010;51:214-21	25 studies focusing on PA during 1988-2009.	Small but clinically and statistically significant effect sizes (e.g., 43% of intervention subjects were adherent to PA recommendations vs. only 34% of controls)	Dynamically tailored interventions with multiple follow up assessments showed increased efficacy over time.
Internet or telephone support or marketing to households	Ogilvie D et al. BMJ 2007 doi:101136/ bmj.39198.722720. BE	SR of RCTs and NRCTs. External validity limited for a variety of reasons: almost exclusively NRT data (household marketing)	Maximum change in better studies of 30-60 minutes/wk on average	Targeting to highly motivated populations and tailoring the households by inviting them to choose from a menu of information resources and incentives promoting environmentally friendly modes of transport to make walking a more common form of active transport
Website-delivered	Vandelanotte C et al. Am J Prev Med 2007;33:54-64	SR of RCTs and NRCTs	8/15 studies reported positive outcomes, but only a minority showed a significant effect	A significant effect was define as including both the typical definition of $p \leq 0.05$ between the intervention vs. the non-intervention arm and achieving at least a small effect size ($ES \geq 0.2$).

Intervention	Source	Validity	Impact	Comments
Telephone-based	Eakin EG et al. Am J Prev Med 2007;32:419-34	SR of RCTs of primary or secondary prevention*. 9/14 studies reported significant results.	Six of the nine significant studies reported effect sizes: two showed high ESs, 3 moderate, and 2 small.	*Only primary prevention studies tabulated for this table Calls made by a variety of counselors: research staff, nurses, health educators, health behavior specialists, exercise specialists, automated
Community – wide media campaigns	Kahn EB et al. Am J Prev Med 2002;22(4S):73-107 (TFCPS)	Study design Greatest: 7 Moderate: 3 Defined by TFCPS as "Strong evidence". Consistent effects in all 10 studies reviewed.	The median estimates from the reviewed studies suggest the intervention can result in a 5% increase in proportion of people who are physically active and a 16% increase in energy expenditure	Messages directed to large audiences through different types of media. Effective in urban & rural, and among different socioeconomic and ethnic groups
Individually-adapted health behavior change delivered in group settings or by mail, telephone, or directed media	Kahn EB et al. Am J Prev Med 2002;22(4S):73-107 (TFCPS)	Study design Greatest: 11 Moderate: 4 Least: 3 Defined by TFCPS as "Strong evidence". Consistent effects in all 18 studies reviewed.	35% increase in the amount of time people spend being physically active. 64% increase in energy expenditure	Individually tailored (to specific interests, preferences, and readiness for change) teaching of behavioral skills such as: 1. goal-setting and self-monitoring of progress towards those goals 2. building social support for new behaviors 3. behavioral reinforcement through self-reward and positive self-talk 4. structured problem solving to maintain the behavior change 5. prevention of relapse
Other technology				
Pedometers in children and adolescents in a variety of roles: 1.Open-loop feedback to make access to sedentary activities contingent on achieving PA targets. 2. Self-monitoring 3. As part of an integrated school curriculum	Lubans DR, Morgan PJ, Tudor-Locke C. A systematic review of studies using pedometers to promote physical activity among youth. Prev Med 2009; 48:307-15.	14 studies included	12 studies resulted in increased PA.	Successful use of pedometers in a variety of ways, but need more studies.

Intervention	Source	Validity	Impact	Comments
Pedometers	Ogilvie D et al. BMJ 2007 doi:101136/ bmj.39198.722720. BE	SR of RCTs and NRCTs. External validity is limited for a variety of reasons: selected groups, short term (up to three months- change was not sustained in longer term studies)	Maximum change in better studies of 30-60 minutes/wk on average	Targeting sedentary or university populations and including group review sessions, 10,000 step goal, or postal support increased walking
School-based				
Active transport to school interventions	Chillon P, Evenson KR, Vaughn A, Ward DS.A systematic review of interventions for promoting active transportation to school. Int J Behav Nur Phys Act 2011;8:10.	Review of studies through 2010. Fourteen interventions focused mainly on primary school children in the US, UK, and Australia.	6/14 studies reported a small effect size.	Higher quality study designs required.
Multicompo-nent school based inter-vention strat-egies (includ-ing family components)	Kriemler S et al. Effect of school-based interventions on physical activity and fitness in children and adolescents: a review of reviews and systematic update. Br J Sports Med 2011;45:923-30.	Relevant 2007-10 systematic reviews and RCTs of school-based trials with a PA or fitness outcome, duration of ≥ 12 weeks, sufficient quality in 6-18 year-olds.	47-65% of trials were effective. Effects mostly seen in school- related PA but not outside of school.	Effectiveness of family involvement controversial.
Interventions implemented, facilitated, or promoted by staff in local public health units, and implemented in a school setting using a combination of printed educational materials and changes to school curriculum	Dobbins M, DeCorby K, Robeson P, Husson H, Tinlis D. School-based physical activity programs promoting physical activity and fitness in children and adolescents aged 6-18. Cochrane Database of Systematic Reviews 2009, Issue 1.Art. No.: CD007651. DOI:10.1002/ 14651858.	26 strong and moderate quality studies.	Good evidence for effectiveness in increasing the duration of PA (though not during leisure time), VO2max, and reducing the time spent watching television.	Studies from Australia, Europe, North and South America.
After-school programs	Beets MW, Beighle A, Erwin HE, Hu-berty JL. After-school program impact on physical activity and fitness: a meta-anal-ysis. Am J Prev Med 2009;36:527-37.	Eight interventions from 1980-2008 period in youth ≤ 18 years of age.	Small-moderate (SMD=0.44[95% CI=0.28-0.60]) effect size for physical activity.	Considered limited evidence by the authors.

Intervention	Source	Validity	Impact	Comments
School-based PA with family or community component	Van Sluijs EMF et al. BMJ. 2007 6;335:703.	SR of 57 studies: Children-33, Adol's-24. Due to heterogeneity, no MA done, so 5-level ranking used, based on: study design, methodologic quality, and sample size, rating strength of evidence as strong, moderate, limited, in-conclusive, no evid. Consistency = 66% of relevant studies significant in the same direction.	Strong evidence for combined school-based interventions including family or community involvement in adolescents. A. 9% (45% vs. 36%) greater participation in ≥ 1 daily 30 min. period of vigorous PA in intervention arm. B. 1.73-3.38 OR for increased leisure organized PA in boys and girls, respectively. Only limited evidence supporting environmental interventions in children.	Supported by two key studies: 1. Conducted over one academic year in 2744 9th grade girls in S. Carolina (12 vs. 12 schools), avg. age = 13.6 years. Used LEAP (Lifestyle Education for Activity Program) intervention with 6 components: PE classes (with increased choice of activities for young women in addition to traditional activities & intent to engage in moderate-vigorous PA ≥50% of PE class time), health education (with goals to increase self efficacy & enjoyment of PA and to teach lifelong skills necessary for an active lifestyle) and supportive school environment (role modeling by faculty and staff, increased communication about PA, promotion of PA by school nurse, and family and community-based activities). 2. Conducted over 6 months in avg. 11.6 yr. old 954 boys & girls in France. Focused on changing knowledge and attitudes, providing social support, and environmental conditions encouraging PA inside and outside of schools.
School-based PA	Matson-Koffman DM et al. AJHP 2005;19:167-93	SR of 3 RCTs (two significant and one only significant in boys) and 1NRCT (significant only for PE in school). Defined by Am J Health Prom as moderately good evidence.	Up to 122% increase in time spent being physically active and large effect size (d=1.10) in two studies of SPARK PE classes, 26% increase in daily vigorous activity (but same PE duration) in CATCH trial.	School–based PE with better trained PE teachers and increased length of time led to more physically active students Note: SPARK = Sports, Play, and Active Recreation for Kids curriculum, CATCH = Child and Adolescent Trial for Cardiovascular Health. Note: Evidence exists showing that the school-based changes noted in CATCH can be maintained and institutionalized after research funding ends (Hoelscher DM et al. School-based health education programs can be maintained over time: results from the CATCH Institutionalization study. Prev Med 2004;38:594-606.

Intervention	Source	Validity	Impact	Comments
School-based PA	Kahn EB et al. Am J Prev Med 2002;22(4S):73-107 (TFCPS)	Study design Greatest: 12 Least: 1 Defined by TFCPS as "insufficient evidence". Consistent effects in all 14 studies reviewed.	Five arms from four studies showed increases in exercise related knowledge and self-efficacy about exercise, but only three arms from two studies showed increases in activity.	There were inconsistent findings regarding the effectiveness of classroom-based health education focused on providing information to develop skills needed increase levels of physical activity and fitness.
Workplace				
Integration of short bouts of physical activity (10-15 minute length) into organizational routine	Barr-Anderson DJ, AuYoung M, Whitt-Glover MC, Glenn BA, Yancey AK. Integration of short bouts of physical activity into organizational routine: a systematic review of the literature. Am J Prev Med 2011;40:76-93.	Relevant peer-reviewed journal articles and abstracts (>75% RCTs) up to July 2010. Averaged study duration was over one year. Several reported 3-6 year outcomes.	Majority of studies found a positive effect on physical activity levels and ~ 50% observed improvements in other relevant outcomes (e.g., productivity)	Effects termed modest but consistent.
Interventions to increase physical activity of decrease sitting	Chau JY et al. Are workplace interventions to reduce sitting effective? A systematic review. Prev Med 2010; 51:352-6.	Six studies (5 RCT's and one pre-post study) published up to April 2009	Negative findings	Self-report of sitting. 5/6 assessed overall (i.e., not specifically occupational) sitting time
Variety of motivational or educational sessions and/or supervised or unsupervised physical activity	Conn VS, Hafdahl AR, Cooper PS, Brown LM, Lusk SL. Meta-analysis of workplace physical activity interventions. Am J Prev Med 2009;37: 330-9.	Meta-analysis of 138 studies from 1969-2007 which included over 38,000 subjects.	Significant positive (but small) effect size for PA behavior (d=0.22; the equivalent of 612 extra steps/d)	Significant heterogeneity between studies. Self-reported PA. Unclear if additional PA achieved was sufficient to meet public health goals.
Providing social support in community settings outside the family (such as in the workplace)	Kahn EB et al. Am J Prev Med 2002;22(4S):73-107 (TFCPS).	Study design Greatest: 8 Moderate:1 Defined by TFCPS as "Strong evidence". Consistent effects in all 9 studies reviewed.	The median net estimates from the reviewed studies suggests the interventions can lead to a 44% increase in time spent being physically active and a 20% increase in the frequency of PA.	Building, strengthening, and maintaining social networks that provide supportive relationships for behavior change (e.g., setting up a buddy system, making contracts with others to complete specified levels of PA, or setting up walking groups or other groups to provide friendship and support).

Intervention	Source	Validity	Impact	Comments
Family				
Family and community PA promotion interventions	Van Sluis EM, Kriemler S, McMinn AM. The effect of community and family interventions on young people's physical activity levels: a review of reviews and updated systematic review. Br J Sports Med 2011;45:914-22.	Included a review of three previous reviews that included 13 family-based and 3 community-based interventions, followed by a new review from 2007-10 of 6 family-based and four community-based interventions in youth ≤ age 18.	Significant effects on PA only for 3 family-based and one community-based study.	Uncertain effect, with more potential for those targeted at families and set in the home. Further detailed research needed.
Integration of short bouts of physical activity (10-15 minute length) into organizational routine	Barr-Anderson DJ, AuYoung M, Whitt-Glover MC, Glenn BA, Yancey AK. Integration of short bouts of physical activity into organizational routine: a systematic review of the literature. Am J Prev Med 2011;40:76-93.	Relevant peer-reviewed journal articles and abstracts (>75% RCTs) up to July 2010. Averaged study duration was over one year. Several reported 3-6 year outcomes.	Majority of studies found a positive effect on physical activity levels and ~ 50% observed improvements in other relevant outcomes (e.g., productivity)	Effects termed modest but consistent.
Interventions to increase physical activity of decrease sitting	Chau JY et al. Are workplace interventions to reduce sitting effective? A systematic review. Prev Med 2010; 51:352-6	Six studies (5 RCT's and one pre-post study) published up to April 2009	Negative findings	Self-report of sitting. 5/6 assessed overall (i.e., not specifically occupational) sitting time
Variety of interventions to engage parents to increase youth PA: Face-to-face parental educational programs or parent training, family participatory exercise programs, telephone communication, organized activities, and educational materials sent home	O'Connor TM, Jago R, Baranowski T. Engaging parents to increase youth physical activity: a systematic review. Am J Prev Med 2009;37:141-9.	35 articles, including 14 RCT's reviewed in 2008. Only 5 met at least 70% of the CONSORT checklist items (CONsolidated Standards of Reporting Trials) for study quality.	Lack of uniformity in reporting trials and varied measurement of PA outcomes prohibited systematic conclusions.	Interventions with educational or training programs during family visits or via telephone communication with parents have some promise.

Intervention	Source	Validity	Impact	Comments
Variety of motivational or educational sessions and/or supervised or unsupervised physical activity	Conn VS, Hafdahl AR, Cooper PS, Brown LM, Lusk SL. Meta-analysis of workplace physical activity interventions. Am J Prev Med 2009;37: 330-9.	Meta-analysis of 138 studies from 1969-2007 which included over 38,000 subjects.	Significant positive (but small) effect size for PA behavior (d=0.22; the equivalent of 612 extra steps/d)	Significant heterogeneity between studies. Self-reported PA. Unclear if additional PA achieved was sufficient to meet public health goals.
Environmental				
Point-of-choice prompts to encourage stair climbing	Nocon M, Muller-Riemenschneider F, Nitzschke K, Willich SN. Review article: Increasing physical activity with point-of-choice prompts-a systematic review. Scand J Public Health 2010;38:633-8.	25 studies with 42 results. Prompts were predominantly posters or stair-riser banners in public traffic stations, shopping malls, or office buildings.	28/32 results in escalator settings reported a significant increase in stair climbing, but this was so only for 3/10 of interventions in elevator settings.	Long-term efficacy and the most efficient message format have yet to be determined.
Street-scale urban design and land use policies and practices	Heath GW, Brownson RC, Kruger J, Miles R, Powell KE, Ramsey LT, Task Force on Community Preventive Services. The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. J Phys Act Health 2006;3(Suppl 1):S55-S76.	6 studies qualifying for review, including pre-post and cross-sectional designs. Defined by TFCPS as "Sufficient evidence".	The median improvement in some aspects of PA (e.g., number of walkers or percent of active individuals) was 35%.	• Involve street-scale urban design and land use policies that support physical activity in small geographic areas, generally limited to a few blocks. • Involve the efforts of urban planners, architects, engineers, developers, and public health professionals. • Policy instruments employed include building codes, roadway design standards, and environmental changes. • Design components include improved street lighting, infrastructure projects to increase safety of street crossing, use of traffic calming approaches (e.g., speed humps, traffic circles), and enhancing street landscaping.

Intervention	Source	Validity	Impact	Comments
Community-scale urban design and land use policies and practices	Heath GW, Brownson RC, Kruger J, Miles R, Powell KE, Ramsey LT, Task Force on Community Preventive Services. The effectiveness of urban design and land use and transport policies and practices to increase physical activity: a systematic review. Journal of Physical Activity and Health 2006;3(Suppl 1):S55-S76.	12 studies qualifying for review including pre-post and cross-sectional designs. Defined by TFCPS as "Sufficient evidence"	The median improvement in some aspect of PA (e.g., number of walkers or bicyclists) was 161%.	• These interventions involve community-scale urban design and land use policies that support physical activity in urban areas of several square miles or more. • The interventions involve the efforts of urban planners, architects, engineers, developers, and public health professionals. • Design elements include the proximity of residential areas to stores, jobs, schools, and recreation areas; the continuity and connectivity of sidewalks and streets; and the aesthetic quality and safety aspects of the physical environment. • Policy instruments employed include zoning regulations, building codes, other governmental policies, and builders' practices.
Creation and/or enhanced access to places for PA combined with informational outreach activities	Kahn EB et al. Am J Prev Med 2002;22(4S):73-107 (TFCPS).	Study design Greatest: 7 Least: 3 Defined by TFCPS as "Strong Evidence". Consistent effects in all 10 studies reviewed.	The median estimates suggest that the intervention can produce a median increase in exercise expenditure of 8.2% and aerobic capacity of 5.1%. Median increase in some leisure time physical activity was 2.9%.	Involve worksites, universities, federal agencies, and low income communities. Include changes such as creating walking trails, building exercise facilities, or providing access to nearby facilities. Many programs also train participants to use the equipment and offer health education, risk factor screening, referrals to physicians or additional services, health and fitness programs, and support or buddy systems.
"Point of decision" prompts	Kahn EB et al. Am J Prev Med 2002;22(4S):73-107 (TFCPS).	Study design Moderate: 6. Defined by TFCPS as "Strong evidence" Consistent effects in all 6 studies reviewed.	The median net estimates from the reviewed studies suggest the prompts can increase relative stair use by 50%	Messages on signs recommend stair use for weight loss or health benefit. They encourage stair use vs. escalators or elevators. Effective in a variety of settings, in men and women and in obese as well as not obese. There were not enough studies to determine if stair or stairwell enhancements (e.g., paint, carpet, signs, music) increased the effectiveness of these interventions.

Intervention	Source	Validity	Impact	Comments
Multi-strategy community-wide				
Community-wide multi-strategy population-level intervention. Almost all studies included a component of building partnerships with local governments or NGOs.	Baker PRA, Francis DP, Soares J, Weightman AL, Foster C. Community wide interventions for increasing physical activity. Cochrane Database of Systematic Reviews 2011, Issue 4. Art. No.: CD008366. DOI: 10.1002/14651858.	25 studies included (19 of which were conducted in high income countries), all with medium to high risk of some bias.	Inconsistent effects in measures of PA.	Need for better designed interventions, especially regarding quality of measurement of PA, the frequency of measurement, and the allocation to intervention and control communities.
Clinical setting				
Medium (between 31minutes and 6 hours of contact) or high-intensity (> 6 hours of contact) behavioral counseling by specially trained health educators or nurses, counselors or psychologists, or exercise instructors of physiologists (very few studies involved the primary care provider)	Linn JS, O'Connor E, Whitlock EP. Beil TL. Behavioral counseling to promote physical activity and a healthful diet to prevent cardiovascular disease in adults: A systematic review for the U.S. Preventive Services Task Force. Ann Intern Med 2010;153:736-50.	Random effects meta-analysis conducted on 9 studies published between 2001-January 2010. Only assessed primary-care relevant counseling (i.e., conducted in, or feasible in (e.g., via phone or electronic interventions) the primary care setting) to encourage physical activity (e.g., aerobic exercise or resistance training). Compared with usual care or minimal intervention, or an attention allocation equivalent control group. No more than 50% of study populations with heart disease or any one or combination of cardiovascular risk factors. ≥6 month follow-up post-randomization. Limited evidence > 12 months.	Increased PA by 38.3 min/wk (range: 25.9-50.7 min/wk). Evidence for low intensity counseling (≤ 30 minutes) was mixed.	Self-reported PA with objective measurement (e.g. pedometer) in 3 studies.

Intervention	Source	Validity	Impact	Comments
Long term (12-24 month) primary care interventions using a variety of interventions including exercise prescriptions and booster strategies.	Muller-Riemenschneider F et al. Prev Med 2008;47:354-68.	Pooled RCTs of 25 studies of at least 12 month duration in adults. Included only high and good quality rated according to SIGN criteria.	Weekly gain in energy expenditure after 12 months: ~1000kcal. Main evidence of effectiveness came from 3 high quality studies (see Comments) to write exercise prescriptions & use other strategies: (counseling, planning and activity logs). Long term effectiveness more consistent with booster strategies (vs. no strategy or even if repeating the initial intervention).	1. Petrella RJ et al. Can primary care doctors prescribe exercise to improve fitness? The Step Test Exercise Prescription (STEP) project 2003; Am J Prev Med 24;316-22 (used min. intervention group control). 2. Elley CR et al. Effectiveness of counseling patients on PA in general practice: cluster randomized trial. BMJ 2003;326;793 (used no intervention control) 3. Duncan GE et al. Prescribing exercise at varied levels of intensity and frequency: a RCT. Arch Intern Med 2005;165: 2362-2369 (compared different intervention strategies) Booster strategies included the following: mail, phone, internet, group sessions, or combinations. Unclear which were the most effective or efficient among them.
Individual counseling by professionals: physicians, nurses, exercise specialists	Ogilvie D et al. BMJ 2007 doi:101136/ bmj.39198.722720. BE	SR of RCTs and NRCTs External validity limited: selected groups	Improvement in PA duration ranged from 13-44 minutes/wk on average.	Targeting sedentary populations and tailoring the counseling to the participants level of behavior change increased general walking in general.
Primary care practitioners should offer brief counseling to be active for 30 minutes on at least 5 days a week using a validated tool*	National Institute for Health and Clinical Excellence (NICE)-Public Health Intervention Guidance no.2, March 2006.	Evidence for brief counseling from 2 short term (6-12 week, one medium term (12 weeks-12 months), and 2 long term (> 12 months) controlled trials filling at least most design and performance criteria. No explicit evidence source for using written prescription and conducting follow-up.	Moderate increases in PA were seen in middle-aged and older populations.	* Such as the UK Department of Health's general practitioner physical activity questionnaire. Recommendations should be individually tailored. Goals should be agreed upon. Written information about the benefits of PA and local opportunities to be active should be provided. 3-6 month follow-up should be provided at appropriate intervals to achieve extended duration gains.

Intervention	Source	Validity	Impact	Comments
Variety of interventions, including those using professional guidance and ongoing support	Hillsdon M, Foster C, Thorogood M. Interventions for promoting physical activity. Cochrane Database of Syst. Reviews 2005, Issue 1, Art. No. CD003180. DOI:10.1002/14651858.	11 studies, 3940 participants. Due to clinical and statistical heterogeneity of the studies, self reported outcomes, and self-selection of subjects and practitioners in studies, only limited conclusions can be drawn about the effectiveness of individual components of the interventions.	Standardized mean difference=0.31 (moderate effect) for self-reported PA, but only 5/11 studies measuring PA as a continuous variable had positive findings supporting the intervention. There was an some indication (a reduction of significant heterogeneity between studies) that professional guidance when beginning an intervention and ongoing support self-directed interventions were beneficial. None of the 6 studies measuring PA as a continuous variable were positive.	Inclusion criterion: at least a six-month follow-up of sedentary community-dwelling adults. Specific interventions: studies used a single or combination of the following: one on one counseling/ advice or group counseling/ advice; self directed or prescribed physical activity; supervised or unsupervised physical activity; home-based or facility-based physical activity; ongoing face-to-face support; telephone support; written education/motivational material; self monitoring. The intervention was delivered by one or a number of practitioners with various professional backgrounds including physicians, nurses, health educators, counselors, exercise leaders, or peers.
Primary care provider counseling (as brief a 2-4 minutes)	Physical Activity Counseling in the Adult Primary Care Setting: Position Statement of the American College of Preventive Medicine. Jacobson DM et al. AJPM;2005:29:158-62.	Consensus: Integrates SRs and RCTs dealing with counseling in primary care over last decade.	No new impact data is provided. Rationale for implementation hinges on the increasing threat of the obesity/ sedentariness "epidemic" and importance of incorporating lessons learned from translational research over recent years.	• Targeting only one behavior at a time (PA) • Multi-channel communication intervention: telephone, mail, computer/video, self-help guides • Develop office support system • PA counseling guides • Provider reminders • Follow-up counseling using a variety of communication channels (telephone, mailings, computer and video programs, self-help guides) Note: This recommendation explicitly counters the USPSTF's "Insufficient evidence" recommendation.

Abbreviations: ES = Effect size, NRCT = Non-randomized Clinical Trial, RCT= Randomized Clinical Trial, PA = physical activity, PE = Physical exercise, SR = Systematic Review, USPSTF = US Preventive Services Task Force

TFCPS study design suitability terminology:
Greatest: Concurrent comparison groups and prospective measurement of exposure and outcome
Moderate: All retrospective designs or multiple pre or post measurements, but no concurrent comparison group

Least: Single pre and post measurements and no concurrent comparison group or exposure and outcome measured in a single group at the same point in time

2. RCTs

Search strategy**:** Medline, search term: "physical activity interventions", Limitations: RCT, last three years (2005-7)

Intervention	Source	Validity	Impact	Comments
Media				
Standard Internet-based PA intervention	Marcus BH et al. Arch Intern Med 2007. 167:944-9.	Trial ran for 12 months. Authors' conclusion (viz., the equivalency of the three interventions) was based on the lack of a significant difference in the outcomes (but a trend (p=0.15) for lesser PA in the standard Internet arm existed at 6 months). PA was assessed via 7-day recall.	Interventions were equally successful in increasing PA to 90, 90, and 80 minutes per week, respectively	249 adults, mean age 44.5 years, BMI = 29.4 randomized to either motivationally-tailored internet intervention, motivationally-tailored print intervention (same content as above), or 6 researcher-selected websites available to public. Baseline moderate to vigorous exercise was 0, 0, and 10 min/wk, respectively.
Open-loop feedback and reinforcement	Goldfield GS et al. Pediatrics, 2006;118: e157-66.	Small study. PA measured with accelerometers over 8 weeks.	• Daily PA counts: 65% vs 16% increase • Minutes of moderate-vigorous PA:9.4 vs. 0.3	30 overweight or obese eight to ten year-olds. TV/VCR/DVD viewing was made contingent upon exercising (1:1 ratio). Control group also wore accelerometers, but had ad libitum screen access.

Intervention	Source	Validity	Impact	Comments
School-based				
Environmental + computer-tailored intervention + parental support	Haerens L. et al. J Adolesc Health 2007;40:258-65.	Cluster randomized design of 15 schools. Accelerometer validation of PA reports done in a sub-sample of subjects. Intervention lasted one school year (Oct-June).	An average of 6.4 minute/d increase in self-reported school related PA. 4 minute/d increase in moderate-vigorous PA (vs. 7 min/d decrease in controls).	15 Flemish schools assigned to one of three arms: environmental + computer intervention + parental support vs. environmental + computer intervention vs. control group. Environmental intervention included organization of additional PA activities during and after school hours and provision of sports equipment. Parents were invited for an interactive meeting on PA and its relationship with health, as well as receiving home correspondence and an adult version of the computer-tailored intervention used by the children.
Clinical setting				
PACE+	Patrick K et al. Arch Pediatr Adolesc Med 2006;160:217-8.	Relatively large trial of validated PACE intervention in new age group. Accelerometers used in addition to self-report. 12 month intervention.	• Reduced sedentary behaviors: 24% in boys, and 21% in girls (vs. an increase in controls) • More active days/wk in boys: 7% increase (vs. no change in controls) • Relative risk of intervention vs. control boys meeting health guideline recommendations for PA on days/wk: 1.47 (1.19, 1.75)	878 adolescents (boys and girls) aged 11-15. Primary care office-based computer-assisted (diet and) PA assessment + stage-based goal-setting, followed by brief healthcare provider counseling and 12 months of monthly mail and telephone counseling (vs. sun exposure intervention) Note: PACE = Patient-centered Assessment and Counseling for Exercise (and Nutrition) program
Brief advice from a clinician supplemented by telephone counseling by health educators	Pinto BM et al. Am J Prev Med 2005;29:247-55.	Modest number of subjects. Objective monitoring using Biotrainers. Six month follow-up.	Objective activity monitoring showed the following in the intervention vs. control arms: At 3 months: 50.79 vs. -11.11 minutes At 6 months: 42.39 vs. -24.18 minutes.	100 primary care patients, mean age 68.5 years. Control arm only received brief counseling. Counseling encouraged moderate intensity PA.

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Haskell WL et al. Physical activity and public health. Updated recommendations for adults from the American College of Sports Medicine and the American Heart Association. Circulation published online August 1, 2007;QOI: 10.10.1161/CIRCULATIONAHA.107.185649.

Appendix 9: Glossary

(in alphabetical order)

Active recreation – a form of leisure activity done for pleasure and amusement and that combines playing and/or extreme activity using sports and other equipment,

Cardiovascular (aerobic) endurance – a component of physical fitness that describes the ability of the cardiovascular system to maintain the supply of oxygen and vital substances to active muscles for a a prolonged time.

Competitive physical activity – highly intensive and usually very fast sports activity whose purpose is to overcome a rival and achieve a victory and/or a prize.

Coordination – a component of physical fitness that expresses the ability of the nervous system to recruit the exact muscles or parts of muscles required to execute a defined motor task of relatively high complexity.

Extreme sports – sports activity that involving an extreme physical effort and/or a high level of risk.

General physical fitness – the ability of the locomotive system to perform a range of significant efforts, which provide for the maintenance or improvement of maximal functional ability.

Health enhancing physical activity: in accordance with the WHO definition in a 2006 report: any form of physical activity that benefits health and functional ability without risk or damage.

Health promoting physical activity – moderate physical activity that is intended to prevent or improve one or more of the known physical and mental conditions (such as: obesity, osteoporosis, hypertension, hypercholesterolemia, mental stress, depression, etc.).

High intensity physical activity for the elderly population25 – on the same scale as moderate intensity physical activity, activity at an MET level of 7 or 8, causing a significant increase in the heart and respiration rate. The relative level varies in accordance with the individual's physical fitness.

Intensity – classification of physical exertion by difficulty – for health promoting physical activity, a division into three degrees of intensity is typical: mild, moderate and vigorous, in accordance with the METS (Metabolic Equivalent Rate) levels, which express a how many times the energetic cost of this effort is greater than that of resting.

For moderate activity, the METs are between 3.0-5.9.

For vigorous activity, the METs are 6.0 and more.

Joint flexibility – a component of physical fitness that reflects the ability to perform an action with a significant range using the joint.

Leisure-time physical activity – deliberate or spontaneous physical activity whose purpose is effective, pleasurable and healthy use of free time.

Muscular endurance – a component of physical fitness that expresses the ability of the muscle or a muscle group to maintain an activity for a long duration.

Muscular strength – a component of physical fitness that expresses the ability of the skeletal muscles to overcome significant resistance.

Physical activity – the activation of the locomotive system and cardiovascular system while consuming energy above the required resting level.

Physical exertion – the activation of a physical system or systems while investing energy beyond the resting state or above the minimal level of activity required to sustain life.

Physical training – repeat practice of deliberate physical activity, which is intended to maintain or improve a certain physical skill or physical ability in one or more of the physical fitness components.

Specific physical fitness – the ability of to perform significant exertion in a specific field of occupation (such as a sport, manual labor or intensive physical maintenance), which focuses on a certain part of the locomotive system.

Speed of motion – a component of physical fitness that expresses the ability to perform a movement at an extremely high level of urgency.

Sports activity – spontaneous or deliberate physical activity that features playing, amusement, competition, or an ambition to reach a certain physical achievement, whose purpose is pleasure, challenge and a sense of satisfaction.

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