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MODULE

4

Promoting Physical Activity

Physical activity is defined as bodily movement produced by skeletal muscles that requires the expenditure of energy and produces progressive health benefits (National Institutes of Health, 1995). Physical inactivity, on the other hand, implies a level of activity that is lower than that required to maintain good health.



A life spent with little or no physical activity has grave consequences to one's health. The lack of adequate physical activity has been associated with increased risk for cardiovascular diseases, diabetes mellitus, and obesity. It also increases the risks of colon and breast cancer, high blood pressure, lipid disorder, osteoporosis, depression and anxiety.

Promoting physical activity is one of the major strategies in promoting healthy lifestyle. Integrating 30-minutes of physical activity and exercise into one's daily life is a sure way of keeping healthy and keeping away the risks of developing major NCDs. Advocating for improved levels of physical activity among individuals and in communities is a very important role of health workers in promoting healthy lifestyle.

Objectives

At the end of this module, you should be able to:

1. Recognize the magnitude of NCD problems related to sedentary lifestyle
2. Explain the benefits of physical activity
3. Discuss the principles of promoting physical activity
4. Describe the recommended guidelines for promoting physical activity among different age groups
5. Perform strategies to promote physical activity among:
 - a. School-based population
 - b. Workplace population
 - c. Community-based population
6. Perform strategies to promote physical activity among individuals with chronic conditions
7. Plan for physical activity programs for individuals and groups of persons
8. Advocate for a supportive environment on physical activity



1. Epidemiology of Major NCDs related to Lack of Physical Activity

World Health Organization (2002) estimates that around 1.9 million people die each year as a result of physical inactivity. At least 60% of the world’s population fails to complete the recommended amount of physical activity required to induce health benefits. This is partly due to insufficient participation in physical activity during leisure time and an increase in sedentary behaviour during occupational and domestic activities. An increase in the use of “passive” modes of transport has also been associated with declining physical activity levels.

Recent studies revealed that levels of inactivity are high in virtually all developed and developing countries (WHO, 2009). In developed countries more than half of adults are insufficiently active. In rapidly growing large cities of the developing world, physical inactivity is an even greater problem. Urbanization has resulted in several environmental factors which may discourage participation in physical activity, such as: population over-crowding, increased poverty, increased levels of crime, high-density traffic, low air quality and lack of parks, sidewalks and sports / recreation facilities.

In the Philippines, the proportion of physically inactive Filipino adults > 20 years is shown to be as high as 92.6 in transport-related activities and leisure-related activities in 2003 (see Table 4.1). In the same year, more females are inactive in occupational-related activities while more males are inactive in non-occupational related activities.

In a more recent survey (2008), more males have become sedentary in their occupational work and transport-related activities. Females had a slight decrease in sedentary occupational work but with increase in transport-related and leisure time activities (see Figure 4.1).

Table 4.2 shows the distribution of population by physical inactivity domains and age group. Figure 4.2 shows the graphical presentation of data in Table 4.2

Table 4.1 Prevalence of physically inactive Filipino adults > 20 years by sex based on Global Physical Activity Questionnaire, 2003 & 2008, FNRI (2008)

| Physical Inactivity Domains | All (%) | 2003 | | 2008 | |
|-----------------------------|---------|----------|------------|----------|------------|
| | | Male (%) | Female (%) | Male (%) | Female (%) |
| Occupational | 72.2 | 67.0 | 82.1 | 76.3 | 76.2 |
| Non-occupational | 81.5 | 90.1 | 72.4 | - | - |
| Transportation-related | 92.6 | 91.0 | 94.3 | 93.8 | 95.2 |
| Leisure time | 92.6 | 90.0 | 95.5 | 89.1 | 95.7 |

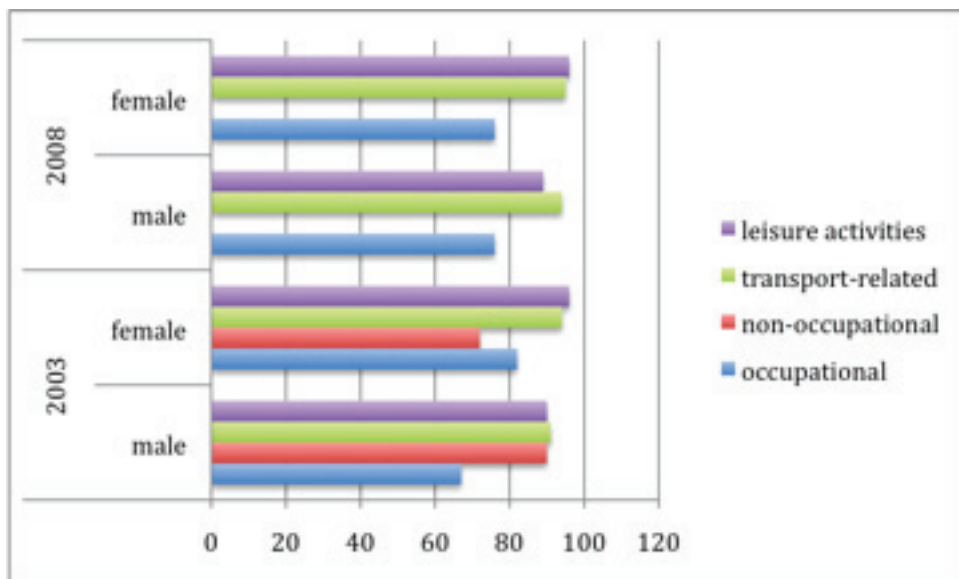


Figure 4.1 Prevalence of physically inactive Filipino adults ≥ 20 years by sex, 2003 & 2008 (FNRI (2008))

Table 4.2 Prevalence of physical inactivity by domain and age group, based on Global Physical Activity Questionnaire, 2003 (FNRI, 2003)

| Age group | Occupational | | Non-Occupational | | Transport-related | | Leisure | |
|-----------|--------------|------|------------------|------|-------------------|------|---------|------|
| | n | % | n | % | % | % | n | % |
| All | 1517 | 72.2 | 2489 | 81.5 | 3027 | 92.6 | 3050 | 92.6 |
| 20-35 | 560 | 70.3 | 961 | 87.4 | 1053 | 93.3 | 1067 | 92.4 |
| 36-49 | 410 | 73.7 | 640 | 79.1 | 763 | 91.7 | 760 | 93.1 |
| 50-65 | 547 | 75.5 | 888 | 70.2 | 1211 | 92.3 | 1223 | 92.2 |

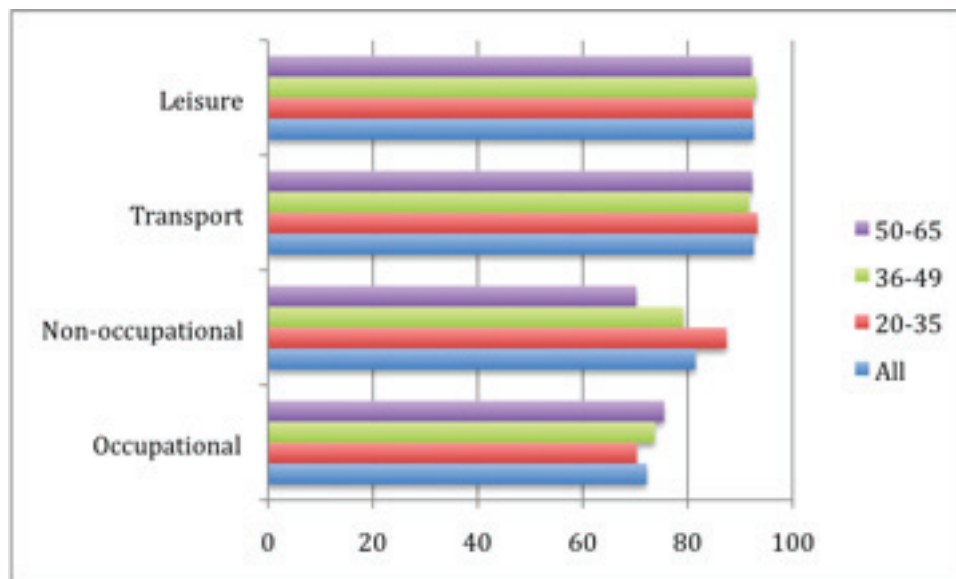


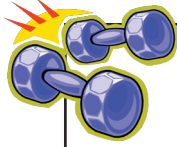
Figure 4.2 Prevalence of physically inactive Filipino adults ≥ 20 years by domain and age-group, 2003 (FNRI (2003))

Physical inactivity is a major risk factor for developing coronary artery disease and it also increases the risk of obesity, low HDL levels or good cholesterol, high blood pressure, stroke and diabetes mellitus (AHA, 2005). Disease outcomes related to physical inactivity in prospective observational studies include cardiovascular disease, thrombo-embolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety and depression (Kesaniemi, Y.A. et al, 2001).

Consequently, NCDs associated with physical inactivity are the greatest public health problem in most countries around the world. Effective public health measures are urgently needed to improve physical activity behaviours in all populations. WHO (2002) identified four domains of physical activity in people’s day-to-day lives: (1) at work (especially if the job involves manual labour); (2) in transport (walking or cycling to work); (3) in domestic duties (housework); and (4) in leisure time (sports and recreational activities). Improving physical activity can focus on any or all these domains of physical activity in daily life.

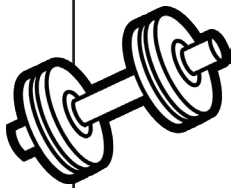
2. Benefits of Regular Physical Activity

Increased physical activity helps with controlling weight, raising good cholesterol, reducing blood pressure and risk of diabetes and some types of cancer. Physical activity also improves psychological well-being, including gaining more self-confidence and higher self-esteem.



Increased physical activity has been associated with decreased risk of cardiovascular disease and increased life expectancy (AHA, 2007). Physical activity produces overall physical, psychological and social benefits.

WHO (2002) reports that regular physical activity reduces the risk of several common NCDs in adults, such as cardiovascular disease, stroke, type-2 diabetes, colon cancer and breast cancer. In general, physical activity improves glucose metabolism, reduces body fat and lowers blood pressure. These are the main ways in which it is thought to reduce the risk of cardiovascular diseases and diabetes. Physical activity may reduce the risk of colon cancer by effects on prostaglandins, reduced intestinal transit time, and higher antioxidant levels. Physical activity is also associated with lower risk of breast cancer, which may be the result of effects on hormonal metabolism. Participation in physical activity can improve musculoskeletal health, control body weight, and reduce symptoms of depression.



There is also evidence to suggest that increasing levels of various types of physical activity may benefit health through positive effects on:

- hypertension;
- osteoporosis and falls risk;
- body weight and composition;
- musculoskeletal conditions such as osteoarthritis and low back pain;
- mental and psychological health by reducing depression, anxiety and stress;
- control over risky behaviors particularly among children and young people (e.g. tobacco use, alcohol/substance use, unhealthy diet and violence).

Regular physical activity may also give social benefits to communities and economies through increased productivity in the workplace, lower worker absenteeism and turnover, and better performing schools.

3. Principles of Promoting Physical Activity

3.1 Physical activity and exercise

Promoting physical activity means improving performance of daily activities. People who have been sedentary can improve their health and well-being by regularly including even moderate levels of activity throughout the



day. Scientific evidence explains that physical activity does not need to be strenuous to achieve health benefits (USDDHS, 1996).

Everyday physical activity counts. Putting in more activities into daily routines makes one more fit. Examples of physical activity are walking to and from work, school, store or church, taking stairs instead of elevators and escalators, gardening, doing household chores, playing with the kids or walking the dog.

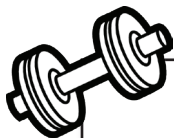
Exercise is considered a type of physical activity that requires planned, structured and repetitive bodily movement to improve or maintain one or more components of physical fitness (National Institutes of Health, 1995). Examples of exercise include a regular weekly program of walking, jogging, cycling, swimming, aerobics, strength training and stretching exercises.



The mode of exercise that develops the cardio-respiratory system has to be aerobic in nature. Aerobic exercises involve activities that require oxygen to produce the energy necessary to carry out the activity. Aerobic exercise has to involve the major muscle groups of the body, and it has to be rhythmic and continuous. Examples of aerobic exercise include walking, jogging, cycling, swimming, aerobics, and stair climbing.

3.2 FIT Principle

Exercise effectiveness depends on three factors: how often is the exercise, how hard is the exercise and how long is the exercise at each session. These factors make up the FIT principle: Frequency, Intensity and Time. To achieve fitness, there is a need to incorporate in the exercise program the minimum requirements for each factor.



- **Frequency of Exercise.** Studies suggest that moderate-intensity exercise can be achieved by exercising 3-4 times a week, spread over the week. Doing a once a week intense workout may result to injuries.
- **Intensity of Exercise.** If the goal is cardio-respiratory endurance, the heart and lungs need to work with greater than normal effort through aerobic exercise. The intensity of a workout is indicated by the number of times the heart beats per minute the more intense the exercise, the faster the heart rate. (Refer to the portion on “Monitoring Exercise Intensity” to estimate exercise target heart rate.)
- **Exercise Time.** If the goal is cardio-respiratory improvement, exercise within the exercise heart range for 20-30 minutes each session. If the goal is to reduce body fat, a longer exercise period is needed, a minimum of 30 minutes each time. An increasing time period is recommended until the exercise program is well established. For a start, 10 or 15 minutes of exercise is good and then gradually increase the time to 30 minutes.



3.3 Monitoring Exercise Intensity

Exercise intensity can be monitored by determining whether a person's pulse or heart rate is within the target zone during exercise. For moderate physical activity, a person's target heart rate should be 50-70% of his or her maximum heart rate. For middle-aged persons, start at 50-60% of your maximal capacity and gradually increase to desired level. For older persons aged 50 years and above, the target heart rate ratio is usually lower, about 40-50% of MHR. For weight loss, maintain heart rate at 60-75% of maximal exercise capacity for about 20-30 minutes of exercise. The higher end of the range (75-85%) should be reserved for athletes with a training goal such as to improve speed time.

3.4 Computing Target Exercise Heart Rate

- Step 1:** Determine resting heart rate (RHR). Count your pulse rate for one minute while sitting quietly to get beats per minute (bpm).
- Step 2:** Determine maximal heart rate (MHR). This can be obtained by subtracting a person's age from 220; that is, $MHR = 220 - \text{age in years}$
- Step 3:** Determine target exercise heart rate (THR). THR is 50-70% of the maximum heart rate. Example: For a 40-year old person, the estimated maximum age-related heart rate would be calculated as $220 - 40 \text{ years} = 180$ beats per minute (bpm). The 50% and 70% levels would be:

$$50 \% \text{ level : } 180 \times 0.50 = 90 \text{ bpm}$$

$$70 \% \text{ level : } 180 \times 0.70 = 126 \text{ bpm}$$



WHO recommends maintaining at least 30 minutes of regular moderate intensity physical activity on five days per week reduces the risk of several major NCDs.

Some moderate-intensity physical activity includes walking briskly, mowing the lawn, dancing, swimming, or bicycling on level terrain. People who do not have 5 times a week for physical activity can maintain at least 20 minutes of vigorous intensity physical activity on 3 days of the week. Some vigorous-intensity physical activity includes jogging, chopping wood, swimming continuous laps, or bicycling uphill. Appendix 4-1 gives a list of physical activities defined by their level of intensity. Light or very light physical activities are generally performed at <50% of age-related maximum heart rate. Moderate physical activities generally



require sustained, rhythmic movements that are performed at 50-70% of an individual's age-related maximum heart rate. Vigorous physical activities generally require activities with rhythmic movements at >70% of an individual's age-related maximum heart rate.

3.5 Safety Guidelines

There are certain guidelines that need to be kept in mind when implementing physical activity programs. These include warm-up and cool down, common risks, recognizing normal from abnormal symptoms, and need for medical evaluation.

- Warm-up and Cool-down

Exercise sessions always should be preceded by a 5-minute warm-up and followed by a 5-minute cool-down.

The warm-up should consist of general calisthenics, stretching exercises, or exercising at a lower intensity level than the target zone. Warm-up prepares the body for exercise, enhances exercise performance and decreases the chances of injury. Muscles that are warmed-up are easier to stretch and prepared for the more intense activity of the workout itself. Warm-up helps the body's physiology gradually progress from rest to exercise. Circulation of blood needs to be redirected to active muscles and this takes time. The heart most specially needs time to adapt to the increased demands of exercise. Warm-up also helps spread synovial fluid through the joints to help protect the articular spaces and, therefore, prevent injury.

Cool-down is just as important as warm-up. The cool-down entails decreasing the intensity of the exercise gradually. The body needs to slow down gradually to its resting level following the challenge of exercise. Stopping abruptly causes blood to pool in the exercised body parts, diminishing the return of blood to the heart. Less blood return can cause dizziness and fainting or even caused cardiac abnormalities.

- Common Risks

Injury to the musculoskeletal system is the most common reported problem, therefore, precaution should be observed. To avoid soreness and injury, individuals who have not been active should start slow and gradually build up to the desired amount of activity until the body can adjust to the intensity level. Make sure to consult the doctor for any medical condition that may make a person prone to this problem, such as osteoporosis or arthritis. Walking exercises will be safe in these.

- Normal Symptoms

When doing moderate intensity exercise, the following may be observed:

- o Some change in the breathing pattern of a person yet, is able to carry out a conversation without breathlessness; difficulty of breathing and chest pain are not normal.
- o No sensation of pain or strain - one perceives the feeling of being able to continue activity.
- o Some may experience arm or leg fatigue, but it should not be painful.



- Medical Evaluation

Individuals who experience some form of cardiovascular disease need medical consultation before engaging in exercise programs. It is also recommended for men over 40 years of age and women over 50 years of age. For individuals with the following risk factors, it is best to seek medical evaluation for better planning and monitoring of activities: high blood pressure, high blood cholesterol, family history of heart disease, diabetes mellitus, and obesity.

The Philippine National Guidelines on Physical Activity (2010) also recommended specific implementing guidelines or simple rules in adopting the physical activity prescriptions.

1. As a general precaution, all individuals who would want to engage in more vigorous physical activity should get clearance from a physician. Before engaging in any physical activity, a pre-participation evaluation should be performed on the participation. Examples of pre-participation evaluation that may be used are the Physical Activity Readiness Questionnaire (Appendix 4.2) or American College of Sport Medicine's Pre-Exercise Health Assessment (Appendix 4.3).
2. Individuals who are considered to be with medical contraindications to exercise and with diseases symptoms and risk factors should be cleared first by a physician. While they are not precluded from participating in physical activities, their safety should be ensured first and foremost.
3. If classified as apparently healthy, start slow within comfortable effort levels. Progress slowly and according to improved work capacity. Do not over-exert.
4. Stop at any point during the physical activity if dizziness, nausea, shortness of breath and chest pains manifest.
5. Consider reducing the intensity of the exercise, or stopping totally if physical or verbal manifestations of severe fatigue, joint and muscle pains, and cramps start.
6. Participants are encouraged to keep a Daily Physical Activity Record (see 4.4) for better monitoring and tracking.
7. Participant should be allowed to stop if and when he/she requests at any point to stop.
8. Ensure proper hydration by encouraging drinking $\frac{1}{4}$ liter or a cup of fluid (water, fresh fruit juices, sports drinks) every 15 to 20 minutes during the activity
9. Encourage wearing proper attire and footwear during programmed activities such as exercise and sports and games for thermal stress management and protection from injuries.
10. Allow ample recovery after physical activities.



4. Recommended Guidelines for Promoting Physical Activity

4.1 Recommended physical activity guidelines for each age group

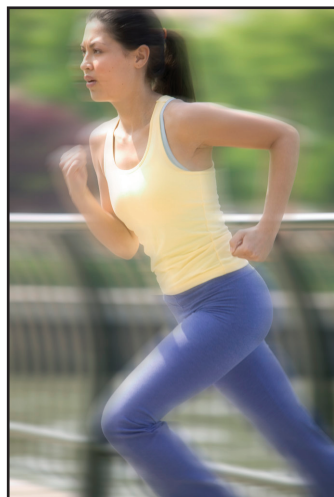
Specific recommendations for each age group are also provided by the American College of Sports Medicine and the American Heart Association (2007).

For children

All children age 2 and older should participate in at least 30 minutes of enjoyable, moderate-intensity physical activities every day that are developmentally appropriate and varied. If the child or children don't have a full 30-minute activity break each day, try to provide at least two 15-minute periods or three 10-minute periods in which they can engage in vigorous activities appropriate to their age, gender and stage of physical and emotional development.



For adults



All healthy adults aged 18 to 65 yr need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 minutes on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 minutes on three days each week. Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. For example, a person can meet the recommendation by walking briskly for 30 minutes twice during the week and then jogging for 20 min on two other days.

Moderate-intensity aerobic activity, which is generally equivalent to a brisk walk and noticeably accelerates the heart rate, can be accumulated toward the 30-min minimum by performing bouts each lasting 10 or more minutes. Vigorous-intensity activity is exemplified by jogging, and causes rapid breathing and a substantial increase in heart rate.

In addition, every adult should perform activities that maintain or increase muscular strength and endurance a minimum of two days each week. Because of the dose-response relation between physical activity and health, persons who wish to further improve their personal fitness, reduce their risk for chronic diseases and disabilities or prevent unhealthy weight gain may benefit by exceeding the minimum recommended amounts of physical activity.



For older adults



The recommendation for older adults is similar to the updated ACSM/AHA recommendation for adults, but has several important differences including: the recommended intensity of aerobic activity takes into account the older adult’s aerobic fitness; activities that maintain or increase flexibility are recommended; and balance exercises are recommended for older adults at risk of falls. In addition, older adults should have an activity plan for achieving recommended physical activity that integrates preventive and therapeutic recommendations. The promotion of physical activity in older adults should emphasize moderate-intensity aerobic activity, muscle-strengthening activity, reducing sedentary behavior, and risk management.

4.2 Physical Activity Prescriptions

The Philippine National Guidelines on Physical Activity (2010) came up with physical activity prescriptions for different age groups: children (5-12 years old), adolescents to young adults (13-21 years old), adults (22-45 years old), older adults (46-59 years old) and seniors (60 years old and above). The physical activity prescriptions are based on the different forms of physical activity (see Table 4.1).

Table 4.1 Distribution of physical activity types among the different age groups

| Types of physical activity | Children | Adolescents to young adults | Adults | Older adults | Seniors |
|------------------------------------|----------|-----------------------------|--------|--------------|---------|
| Active daily tasks | ✓ | ✓ | ✓ | ✓ | ✓ |
| Programmed physical activity | ✓ | ✓ | ✓ | ✓ | ✓ |
| High impact play | ✓ | ✓ | | | |
| Muscle strengthening & flexibility | | ✓ | ✓ | ✓ | ✓ |
| Activities in the workplace | | | ✓ | ✓ | ✓ |
| Balance and coordination | | | | ✓ | ✓ |

Active daily tasks:

- Active daily tasks for children, adolescents to young adults, and adults include active travel (walking, cycling, stair climbing) and active daily tasks (household and school chores such as scrubbing, mopping floors, fetching water in a pail, raking leaves, bathing dog, cleaning the car, rearranging household furniture, etc.)
- Active daily tasks for seniors should only be active travel and some mild active daily tasks.



Programmed physical activity differs from one age group to another:

- For children – 20-30 minutes daily of sports and/or active games
- For adolescents to young adults – at least 40 minutes of fitness exercise, rhythmic or sports activities
- For adults and older adults – moderate intensity aerobic physical activity resulting in noticeable increase in heart rate and breathing but still able to carry on normal conversation. Examples are brisk walking, dancing, cycling, swimming done continuously for a minimum of 30 minutes or accumulated bouts of 10 minutes or longer. For more active people with no risk factors, vigorous intensity aerobic activity such as jogging, vigorous dancing, ball games done continuously for a minimum of 20 minutes and done at least three times a week. For fitness purposes, adults should work towards 20-30 minutes continuous physical activity for a minimum of three days per week
- For seniors aged 60-69 years old – any rhythmic and continuous physical activity that uses large muscle groups with special stress on load bearing activities to arrest rate of osteoporosis and to maintain bone density. Examples are moderate to brisk walking, dancing, biking, calisthenics, swimming, rowing and stair climbing.
- For seniors aged 70-79 years old – light intensity aerobic physical activity such as leisurely walk around the neighborhood, parks and malls. Any rhythmic and continuous light physical activity that uses large muscle groups while standing independently or assisted, seated, reclined or lying down.
- For senior aged 80 and above – continuous light intensity physical activity such as leisurely walk around the neighborhood, yard or living area. Any rhythmic and continuous light physical activity that uses large muscle groups while standing independently or assisted, seated, reclined or lying down.

High impact play:

- For children – most days of the week of running, jumping, hopping, skipping, walking, stair climbing, playground activities, Filipino outdoor games (*luksong tinik, patintero, tumbang preso, agawan-base*, etc)
- For adolescents to young adults – at least 20 minutes of sustained to vigorous physical activities resulting in rapid breathing such as brisk walking, jogging, Filipino outdoor games and dancing

Muscle strengthening and flexibility:

- For adolescents to young adults – two to three times a week of activities that build muscle and bone strength and flexibility such as weight-bearing calisthenics and other load-bearing exercises involving major muscle groups.
- For adults, older adults and seniors – perform activities using all major muscles of the body that maintain or increase muscular strength and endurance. Examples are weight-bearing calisthenics, stair climbing, weight training done at least twice a week, on non-consecutive days. A light load allowing for a set of 10-15 repetitions (for adults), 8-12 (for older adults), and 10-20 (for seniors) resulting in momentary muscle fatigue. Perform gentle stretched to the point of tension after aerobic exercises or at cool down. At least 20 seconds per position per muscle group. Maintain four times per week.



Activities in the workplace:

- For adults and older adults – Employees should have opportunities to be active at work and through activities organized, with provision of the necessary facilities and/or equipment. Two minute physical activities (walking, stair climbing, stretching) for every hour of sitting is highly encouraged.

Balance and coordination:

- For older adults – specific activities for balance and coordination 2-4 days per week. Examples are walking, gentle yoga, tai-chi, dance, aquatic activities.
- For seniors – perform simple but dynamic movements that challenge postural and positional stability such as single-leg stands or supports, exercise ball-sitting, and weight-shifting. Take up specific activities for balance and coordination. Examples are walking, gentle yoga, tai-chi, dance, aquatic activities, 2-4 days per week.

5. Key areas for promoting physical activity:

Strategies to promote physical activity in different settings: (1) school-based population, (2) workplace population, and (3) community-based population.

5.1 Promoting Physical Activity in Schools

Establishing school-based programs increases the likelihood of children and families to commit to enjoyable and lifelong physical activities. School-based programs influence the lives of youth, families and the community at large. The school curricula can facilitate the learning of the knowledge, skill and attitudes of students about healthy lifestyles and regular physical activity. Creativity and innovative ideas of the physical education instructors ensure programs that are enjoyable and of interest.

The guidelines state that physical activity programs for young people are most likely to be effective when they:

- Emphasize enjoyable participation in physical activities that are easily done throughout life.
- Offer a diverse range of noncompetitive and competitive activities appropriate for different ages and abilities.
- Give young people the skills and confidence they need to be physically active.
- Promote physical activity through all components of a coordinated school health program and develop links between school and community programs





5.2 Promoting Physical Activity in the Workplace

A healthy workplace considers occupational risk of limited physical activity and provides policies, facilities, and environment that support regular physical activity programs to maintain overall health and work efficiency. Employers can influence the employees toward health by establishing supportive policies to provide an environment for physical activity program. Encouraging health behaviors can reduce preventable diseases, disabilities and even death. Planners can help decision makers understand the health benefits of the program by translating the cost (in monetary terms) of the program vis-à-vis the benefits in terms of overall health work efficiency.

5.3 Promoting Physical Activity in the Community

Community programs for physical activity need to consider the diversity of target population. Thus, in planning, implementation and evaluation, diverse sports and recreation activities need to be considered. Group-based physical activity programs can be targeting specific groups of individuals such as women or older adults. Mass-media campaigns promoting physical activity are also known to be effective when associated with community-based activities and policies that address local environment barriers.



For the population to participate in activities that promotes a healthy community through optimum regular physical activity, facilities are made available, accessible, affordable and attractive to people.

6. Specific Physical Activity Program for different chronic conditions

Development of a program of regular physical activities aims to meet the social needs of individuals with chronic conditions to gradually increase physical activity, reduce tension, or anxiety, improve tolerance, and promote comfort and safety. Medical consultation is also recommended before engaging in strenuous physical activity.

- Increase physical activity
- Reduce tension or anxiety
- Improve tolerance
- Promote comfort and safety



6.1 Cardiovascular diseases

For individuals who have suffered from cardiovascular diseases, regular physical activity can help reduce the risk of another heart attack and help decrease blood cholesterol. Gradual increase in the intensity of regular physical activity increases the efficiency of the pumping action of the heart, improve blood supply to the heart, elevate high-density lipoprotein (HDL or good cholesterol), blood volume, red blood cell count, and decrease levels of triglycerides, total cholesterol and low density lipoprotein (LDL or bad cholesterol).

Walking is usually recommended. Other forms of exercise will require consultation with a doctor for clearance. Warm-up exercise is very important when engaging in moderate-intensity physical activity. These individuals must be advised to have longer time for warm-up and gradual progression to more strenuous activity. They must be taught to watch out for signs and symptoms of over-exertion, like increased pulse rate, increased breathing, chest pain or general tiredness.

6.2 Diabetes mellitus

The standard recommendation for physical activity is the same as in non-diabetic individuals. However, the individual with diabetes needs to be carefully screened for the presence of macro- and micro-vascular complications that may be worsened by the exercise program. A careful history and physical examination should focus on the signs and symptoms of the disease affecting the heart and blood vessels, eyes, kidneys and nervous system.

Special precautions need to be observed to include the following:

- The physician will most likely have to adjust (decrease) the insulin dosage to accommodate exercise.
- Consider gradual increase of physical activity towards the conditioning program to accommodate adjustment of any existing cardiovascular impairment.
- Persons with diabetes have to eat a controlled amount of carbohydrates before exercising to prevent hypoglycemia.
- Care of the feet is essential - Use of good shoes and wrinkle-free socks to prevent blisters and trauma to the lower extremities
- Do not allow clients to be overly fatigued.

6.3 Hypertension

Aerobic exercise training can be effective in controlling mild hypertension, either without medication or in conjunction with medication. Experts recommend an aerobic capacity of 60-75% of the maximal heart rate. Walking is the ideal exercise to produce these physiologic results. Of course, if hypertension is acute or uncontrolled, delay exercise until it is controlled.



6.4 Overweight or Obesity

Sustained physical activity is most helpful in the prevention of weight gain. Studies have shown that exercise alone without diet will not produce greater weight loss. Most weight losses occur because of decreased caloric intake. Develop a regular program of physical activity that includes thorough assessment of other existing conditions that would affect tolerance, comfort, safety, medication adjustment, and prevention of complications.

6.5 COPD and Asthma

Regular form of physical activity that is programmed according to the individual's tolerance is essential to improve lung function, and strengthen muscles of respiration safely and without complications.

In some people, exercise can trigger an asthma attack. This is more common in children than in adults. This does not mean that exercise should be avoided. They need exercise to be physically fit, improve lung functions and build muscles. It also helps to ask the doctor for the best exercise program and to switch to another if one cannot tolerate one exercise regimen.

To prevent an attack, it is also recommended to take medications at least 15-20 minutes before exercising. If the weather is cold, persons with asthma are advised to wear a soft scarf or cold-air mask over mouth and nose. Or better still, exercise indoors since cold, dry air can worsen symptoms. Of course, one is not advised to go on an exercise program during an acute attack of asthma.



These are other important facts about asthma and exercise.

- Asthma is a common but serious condition.
- If asthma is well controlled with appropriate treatment, exercise need not be avoided or limited.
- Having asthma does not mean you cannot exercise. Many well-known athletes have managed their asthma to successfully compete in their chosen sports.
- Avoid exercise that dry up the air passages like running and track and field.
- Swimming is recommended.



6.6 Musculoskeletal problems

Chronically-ill clients with limited mobility or decreased tolerance for exercise, e.g. osteoarthritis, should be encouraged to develop an exercise program to meet their special needs. Promote the use of active exercise to the extent possible.

The following are guidelines for structuring exercise programs for them:

- Begin physical activity program gradually, since clients tire easily.
- Teach clients relaxation skills to reduce muscle tension or anxiety during exercise.
- Avoid excessive force against joint or muscle resistance during exercise; avoid high impact and step aerobics.
- Maintain good posture and body alignment during exercise.
- Provide feedback as needed to facilitate the correct sequence of movements.
- Encourage clients despite difficulties and slow pace of progress.
- Exercise can be good to all people.

7. Planning for Physical Activity Programs

Engaging in regular physical activities has been identified as one of the strategies for health. This overall goal can guide planners in the workplace, schools, community and local governments when developing mission statements. One example is HATAW, a short exercise program launched by DOH in 1994. This can be integrated into activities of schools, offices and communities at start of day at least three times a week. It is equally important to write specific behavioral and instructional objectives, taking into account who is to perform the activity, what is the actual behavior to be demonstrated, the observable result that need to be mastered, the relevant conditions under which the behavior is demonstrated. By identifying these important points, evaluation of the program's success can be evaluated.

7.1 Principles of Planning a Physical Activity Program

To be able to design effective physical activity programs to promote health, several planning principles are recommended.

- Survey - gather as much information as possible about the target population, goals and expectations of the program.
- Continue to ask questions, summarize responses, meet with the planning group.
- Establish sound rationale for making decisions.
- Identify important indicators, sponsors, partners for the program.
- Put the plan in writing focusing on the goals.



7.2 Some Guide Questions for the Planning Physical Activity Program

- Why are we doing this?
- What results do we want?
- What needs are we trying to answer?
- What are the needs of the target population?
- What principles and values will guide our behavior?
- What is the cost?



7.3 Sample Program

Goal: A majority (e.g.65%) of the residents of Barangay X will engage in physically active lifestyle.

Outcome Objective: By (target date), to increase the proportion (by %) of adults aged 18 and above who will report/or will be observed to engage in regular physical activity, such as walking, run-jogging, or bicycling

Partners: local government units, community organizations, schools, workplace

| HOW (Process Objectives) | Target Date | Indicators/ Measures of Success |
|---|--------------------|---|
| Establish neighborhood walking groups/clubs in two target communities of the Barangay | e.g. 1 year | <ul style="list-style-type: none"> • neighborhoods identified • meeting of residents (local) • number of members per group • number and category of walking group |
| Establishing walking lanes (or bicycle lanes) in the park. | | <ul style="list-style-type: none"> • sponsors/partners identified • launching • regular meetings/feedback • survey of needs targets • meeting with partners • written plan • walking lane plan • meeting with sponsors and partners • cost estimate • meeting with decision makers, e.g. local government heads - mayors, councilors, etc. • launching and monitoring • regular meetings/feedback |



8. Advocating for supportive environment for physical activity

Health workers play a big role in motivating individuals and groups to prevent living sedentary lifestyles that increase their risk for NCD. You have the responsibility to increase their knowledge and skills needed to engage in physical activities and exercise. It is also your role to motivate them enough to start being physically active and to encourage them to maintain this behavior. The overall challenge for health professionals is to be able to enroll increasing numbers of participants in physical activity programs and be able to support them through behavioral management and environmental change strategies to sustain a physically active lifestyle.

To enhance motivation, it is important that clients are aware of:

1. The consequences of sedentary life or physical inactivity
2. The health benefits of engaging in regular, moderate physical activity
3. The minimum recommended amount of physical activity needed to achieve health benefits
4. How to get started on increasing physical activity or participating in exercise programs
5. The resources available to sustain behavior
6. The important considerations in relation to specific medical conditions, such as cardiovascular diseases or asthma

Knowing the answers to some frequently asked questions (FAQ) can also help in motivating people to start and sustain a physically active lifestyle.

Table 2. Some Frequently Asked Questions on Physical Activity

| Question | Answer |
|---|--|
| 1. How can one tell if he/she is overdoing the physical activity or exercise? | The best way is to check the heart rate (through pulse rate) and make sure it does not exceed the limits of target zone. |
| 2. What time of day is best for exercise? | <p>Some physical signs may also be observed: rapid or irregular heart rate, difficult breathing, nausea, vomiting, lightheadedness, headaches, dizziness, pale skin, flushness, extreme weakness, lack of energy, shakiness, sore muscles, cramps, and chest tightness.</p> <p>“Talk test” can also be used; that is, if someone is starting to have difficulty talking while doing physical activity or exercise, this means he/she is going beyond the target limit.</p> <p>A person can engage in exercise any time of the day except about 2</p> |



| Question | Answer |
|--|---|
| | <p>hours following a regular meal or during hot and humid days. Many people enjoy exercising early in the morning because it gives them a good boost to start the day. Some prefer lunch hour to help them keep down caloric intake by not eating a big lunch. Some highly stressed people prefer at night because of the relaxing effects of exercise.</p> |
| <p>3. Why is exercising in hot and humid conditions unsafe?</p> | <p>When a person exercises, 60-70% of the body's energy is converted into heat. If this heat cannot be dissipated properly because the weather is too hot or the relative humidity is too high, the body temperature increases and can result to death in extreme cases.</p> |
| <p>4. How long should a person wait after a meal before engaging in strenuous physical activity or exercise?</p> | <p>The length of time to wait before exercising after a meal depends on the amount of food eaten. On the average, a person should wait about 2 hours after a regular meal. However, light physical activity such as walking is fine.</p> |
| <p>5. What amount of aerobic exercise is needed for cardio-respiratory fitness</p> | <p>The amount of exercise required to maintain cardiorespiratory fitness calls for a training session approximately every 48 hours for 20 to 30 minutes in the appropriate target heart rate.</p> |
| <p>6. How fast should heart rate decrease following aerobic exercise?</p> | <p>Recovery heart rate is related to fitness level. A person who has better cardiorespiratory fitness level will have his/her heart rate decrease faster after an exercise regimen. After 5 minutes of exercise, the heart rate should already be below 120 beats per minute. If it is still higher than 120 bpm, it is likely that he/she has over exerted or has some cardiac problems.</p> |
| <p>7. What causes muscle soreness or stiffness?</p> | <p>Muscle soreness and stiffness are common in individuals who (1) begin an exercise program or participate after a long absence from it, (2) exercise beyond their usual intensity and duration, and (3) perform eccentric muscle training (dynamic contraction in which the muscle fibers lengthen while developing tension).</p> |
| <p>8. What causes side stitch?</p> | <p>Side stitch is a sharp pain in the side that occurs primarily in the early stages of participation in exercise or when individuals exercise at higher intensities than usual. Its exact cause is unknown; although some suggests that it is related to the lack of blood flow to the respiratory muscles during strenuous physical exertion. This can be stopped by</p> |



| Question | Answer |
|--|---|
| | slowing down or lying down and gently bringing both knees to the chest and holding that position for 30 to 60 seconds. |
| 9. What causes cramps? | Muscle cramps are caused by the body's depletion of essential electrolytes or a breakdown in coordination between opposing muscle groups. To ease the cramp, attempt to stretch the muscles involved. For example, during calf muscle cramp, pull toes up toward the knees. |
| 10. What are the recommended guidelines for fluid replacement during prolonged aerobic exercise? | Adequate fluid replacement is the most important factor in preventing heat disorders. Fluid replacement during prolonged aerobic exercise aims to maintain the blood volume so circulation and sweating can continue at normal levels. Drinking about 6 to 8 ounces of cool water every 15 to 20 minutes during exercise seems to be ideal to prevent dehydration. Cold fluids are absorbed more rapidly from the stomach. |
| 11. Does running immediately after eating cause appendicitis? | The cause of appendicitis is not always clear. Sometimes it is due to an obstruction, such as food waste or hard piece of stool trapped in an orifice of the cavity that runs the length of the appendix, or sometimes an infection. Either may result to bacteria invasion causing the appendix to become inflamed and filled with pus. Running immediately after eating has nothing to do with developing appendicitis. |
| 12. Is sex considered a physical activity? | Sex can be a form of physical activity if it is a moderate-intensity activity that last at least 10 minutes. Moderate intensity means it is equivalent to a brisk walk or indicative of "breaking a sweat". In terms of the relationship between sex and physical activity, physical activity is shown to condition one's body to sexual response and improves one's self-esteem, which also contributes to sexual satisfaction. People who engage in sex in a healthy relationship are shown to benefit from the social interaction and support that provides sense of general well-being. |
| 13. Is it advisable for women to do physical activity/ exercise during menstruation? | Women can do moderate-intensity physical activity even during menstruation provided that there is painful abdominal cramps or heavy bleeding. Some studies have shown that having regular physical activity and exercise decreases occurrence of painful menstruation (dysmenorrhea). |



| Question | Answer |
|---|--|
| 14. Should pregnant women engage in physical activity and exercise? | Pregnant women are encouraged to engage in physical activity and exercise in preparation for labor and delivery. However, there should be consultation first with the physician to check if there are no contraindications and to get advice on what specific exercises can be done. |

References: Hoeger & Hoeger, 2002; Mayo Clinic, 2009; ACSM, 2010)

Individually adapted behavior change is critical to facilitate a physically active lifestyle, but the process involves a number of factors, including personal, programmatic, social, environmental and related factors. To achieve long-term changes in health-related behaviors, these and medical factors must be addressed collectively.

Health professionals should broaden their advice to clients beyond the traditional prescriptive program. Health workers can initially encourage them to accumulate moderate-intensity physical activity as specified in the present recommendation. Furthermore, different activities should be identified that meet each person’s interests, needs, schedule and environment, family, work and social commitments. Education and counseling can be provided guided by the principles and recommended guidelines discussed in previous sections.

Environment also plays a role in promoting or inhibiting physical activity even among the most motivated persons. Efforts to promote physical activity must consider how people interact with their environment. Provision of exercise facilities and area in communities, schools and workplaces could mean a lot to the sustainability of physical activity programs. Provision of safe transport or road network, pedestrian lanes and bicycle lanes can encourage more people to engage in physical activity such as walking, jogging, cycling.

Policies encouraging implementation of physical activity programs and provision of physical environment conducive to physical activity also contribute in a big way in promoting physical activity programs, whether for individuals or groups of people. Policies in schools and workplaces should include encouraging improving physical activity of its members. The same can be said to communities where different population sectors can be encouraged to come up with physical activity clubs.

At the national level, there are several policies that have been passed and are being implemented to promote physical activity. Executive Order No. 14 in 2001 mandated the conduct of a one-hour, bi-weekly physical fitness program called “Hataw Na: The Taebo Challenge.” In 2003, then Department of Health (DOH) Secretary Dayrit introduced the “Hataw” program to address the increasing cases of Noncommunicable diseases in our country. President Gloria Macapagal-Arroyo, through Proclamation Order No. 258, declared the year



2005-2015 a Decade for Healthy Lifestyle. In connection with this, the DOH issued Memorandum Circular 2006-2004 directing all concerned sectors of government and civil society to plan and promote activities in support to President Arroyo's proclamation. The Civil Service Commission (CSC) issued a memorandum circular on July 2009 engaging civil servants in various physical fitness activities to improve their well-being. The CSC stressed that government workers should maintain a healthy lifestyle so they will be fit to handle the increasing demands of the public. Government agencies can hold such physical fitness activities as regular briefing on health and wellness during flag raising ceremonies, one-day fun games for all officials and employees where nutritious food will be served, calisthenics and aerobics once a week every Wednesday at 4:30 pm and special "cheering" activity daily. Employees can also be encouraged to take the stairs instead of the elevator when going up or down by two floors.

There are also some examples of policies such as ordinances at the local level for promoting physical activity, which include:

1. Ordinance to allow government employees time to do exercise daily at the office premises;
2. Ordinance that would dedicate certain part of the city/municipality where mass exercise can be held daily;
3. Ordinance dedicating certain lane to be used by pedestrians walking going to their offices, or rerouting the traffic at least an hour before and after office hours;
4. Ordinance designating certain day or week of the year to celebrate Healthy Lifestyle;
5. Ordinance creating a multi-sectoral coalition to coordinate the healthy lifestyle promotion in the locality;
6. Ordinance allocating and/or mobilizing additional resources for the promotion of healthy lifestyle in the locality.

Knowing the existing local policies will also help in supporting physical activity programs. If there are no local policies, it might be a good idea to start on establishing some to help create a supportive environment for promoting physical activity in the local area.



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Appendix 4.1 Selected Physical Activities Defined by Level of Intensity

| Light Activity Less than 3.0 METs (<3.5kCal/min) | Moderate Activity 3.0 to 6.0 METs (3.5-7kCal/min) | Vigorous Activity Greater than 6.0 METs (> 7 kCal/min) |
|---|---|---|
| <ul style="list-style-type: none"> • Walking casually, < 3 mph <ul style="list-style-type: none"> o In the house or yard o Window shopping | <p>Walking at a moderate or brisk pace, 3-4.5 mph on a level surface, inside or outside, such as</p> <ul style="list-style-type: none"> • To class, work or store • For pleasure • As a break from work • Walking downstairs or down a hill • Racewalking, < 5mph • Hiking • Roller skating, leisurely pace | <ul style="list-style-type: none"> • Racewalking and aerobic walking, 5 mph or faster • Jogging or running • Walking and climbing briskly up a hill • Marching rapidly (military) • Mountain climbing, rock climbing, rapelling • Roller skating, fast pace |
| <ul style="list-style-type: none"> • Bicycling, < 5 mph • Stationary bicycling, using very light effort | <ul style="list-style-type: none"> • Bicycling 5-9 mph, level terrain • Stationary bicycling, using moderate effort | <ul style="list-style-type: none"> • Bicycling, > 10mph, or bicycling on steep uphill terrain • Stationary bicycling, using vigorous effort |
| <ul style="list-style-type: none"> • Stretching exercises, slow warm up | <ul style="list-style-type: none"> • Calisthenics, light gymnastics • General home exercises, light or moderate effort, getting up and down from the floor • Jumping on a trampoline | <ul style="list-style-type: none"> • Calisthenics, push-ups, vigorous effort • Karate, judo, tae kwon do, jujitsu • Jumping rope • Performing jumping jacks |
| <ul style="list-style-type: none"> • Ballroom dancing, very slowly | <ul style="list-style-type: none"> • Ballroom dancing • Folk dancing • Modern dancing, disco • Ballet | <ul style="list-style-type: none"> • Professional ballroom dancing, energetically • Folk dancing, energetically |



| Light Activity Less than 3.0 METs (<3.5kCal/min) | Moderate Activity 3.0 to 6.0 METs (3.5-7kCal/min) | Vigorous Activity Greater than 6.0 METs (> 7 kCal/min) |
|---|--|--|
| <ul style="list-style-type: none"> • Table tennis or • Ping-pong, leisurely | <ul style="list-style-type: none"> • Table tennis, competitive • Tennis, doubles | <ul style="list-style-type: none"> • Tennis, singles • Wheelchair tennis |
| <ul style="list-style-type: none"> • Golf, riding a powered golf cart • Golf, driving range • Playing miniature golf | <ul style="list-style-type: none"> • Golf, wheeling or carrying clubs | |
| <ul style="list-style-type: none"> • Playing catch, football or baseball • Throwing a baseball | <ul style="list-style-type: none"> • Softball, fast or slow pitch • Basketball, shooting baskets • Coaching children s or adults sports | <ul style="list-style-type: none"> • Most competitive sports • Football game • Basketball game • Wheelchair basketball • Soccer • Rugby • Kickball |
| <ul style="list-style-type: none"> • Volleyball, recreational | <ul style="list-style-type: none"> • Volleyball, competitive | <ul style="list-style-type: none"> • Beach volleyball, on sand court |
| <ul style="list-style-type: none"> • Billiards • Darts Pistol or rifle target practice • Throwing a Frisbee Bowling, or lawn bowling | <ul style="list-style-type: none"> • Badminton • Fencing Archery (non hunting) • Playing Frisbee • Juggling | <ul style="list-style-type: none"> • Handball, general or team • Racquetball |
| <ul style="list-style-type: none"> • Swimming, floating | <ul style="list-style-type: none"> • Swimming, recreational • Treading water, slowly, moderate effort • Aquatic aerobics • Diving, springboard or platform • Water skiing • Snorkeling • Surfing, board or body | <ul style="list-style-type: none"> • Swimming, steady paced laps • Synchronized swimming • Treading water, fast vigorous efforts • Water jogging • Water basketball • Scuba diving |



| Light Activity | Moderate Activity | Vigorous Activity |
|--|--|---|
| Less than 3.0 METs (<3.5kCal/min) | 3.0 to 6.0 METs (3.5-7kCal/min) | Greater than 6.0 METs (> 7 kCal/min) |
| <ul style="list-style-type: none"> Boating, powerboat Yachting | <ul style="list-style-type: none"> Paddle boating Canoeing or rowing a boat, at < 4mph Sailing, recreational or competition Kayaking, on a lake, calm water | <ul style="list-style-type: none"> Canoeing or rowing, 4 or more mph Kayaking, in whitewater rapids |
| <ul style="list-style-type: none"> Sitting and playing a board game or video game Sitting while reading, writing, coloring, painting, using a computer | <ul style="list-style-type: none"> Playing on school playground equipment, moving about, swinging, or climbing Skateboarding Roller-skating or in-line skating, leisurely pace | <ul style="list-style-type: none"> Jumping rope Running Skipping Performing jumping jacks Roller-skating or in-line skating, fast pace |
| <ul style="list-style-type: none"> Sitting and playing most musical instruments | <ul style="list-style-type: none"> Playing instruments while actively moving; playing in a marching band; playing guitar or drums in a rock band Twirling a baton in marching band Singing while actively moving about | <ul style="list-style-type: none"> Playing heavy musical instrument while actively running in a marching band. |
| <ul style="list-style-type: none"> Gardening and yard work: weeding while sitting or kneeling, pruning Using a riding mower or driving a tractor on firm ground | <ul style="list-style-type: none"> Gardening and yard work: raking the lawn, digging, hoeing, light shoveling (<10 lbs/min), weeding while standing or bending Planting trees, trimming shrubs and trees, hauling branches, stacking wood Pushing a power lawn mower | <ul style="list-style-type: none"> Gardening and yard work: heavy or rapid shoveling (>10 lbs/min), digging ditches, or carrying heavy loads Felling trees, carrying large logs, swinging an ax, hand- splitting logs, or climbing and trimming trees Pushing a non- motorized lawn |



| Light Activity Less than 3.0 METs (<3.5kCal/min) | Moderate Activity 3.0 to 6.0 METs (3.5-7kCal/min) | Vigorous Activity Greater than 6.0 METs (> 7 kCal/min) |
|--|--|---|
| <ul style="list-style-type: none"> Light housework: dusting, sweeping floors, making beds, cooking or serving food, washing dishes, folding and putting away laundry, sewing Most other household tasks done while sitting or standing | <ul style="list-style-type: none"> Moderate housework: scrubbing the floor or bathtub while on hands or knees, hanging laundry on a clothesline, sweeping an outdoor area, washing windows, moving light furniture, walking and putting household items away, carrying water or firewood General household tasks requiring considerable effort | <ul style="list-style-type: none"> Heavy housework: moving or pushing heavy furniture (75 lbs or more), carrying household items weighing 25 lbs or more up a flight of stairs, or shoveling coal in a stove Standing, walking, or walking down a flight of stairs carrying objects weighing 50 lbs or more |
| <ul style="list-style-type: none"> Sitting and playing with children Child care: dressing, bathing, feeding or occasionally lifting young children | <ul style="list-style-type: none"> Actively playing with children: walking, climbing, running Walking while carrying a child <50lbs Walking while pushing or pulling a child in a stroller or an adult in a wheelchair Carrying a child weighing <25lbs up a flight of stairs Child care: handling uncooperative young children (chasing, dressing) or handling several young children at one time Bathing and dressing an adult | <ul style="list-style-type: none"> Vigorously playing with children: running longer distances or playing strenuous games with children Carrying an adult or a child weighing 25 lbs or more up a flight of stairs Standing or walking while carrying an adult or a child weighing 50 lbs or more |
| <ul style="list-style-type: none"> Light home repair: wiring, plumbing, or repairing appliances | <ul style="list-style-type: none"> Home repair: cleaning gutters, refinishing furniture, sanding floors with power sander, or laying or removing carpet or tiles | <ul style="list-style-type: none"> Home repair or construction: very hard physical labor, standing or carrying heavy loads of 50 lbs or more, taking heavy loads of 25 lbs or > up a flight of stairs or |



| Light Activity | Moderate Activity | Vigorous Activity |
|--|--|--|
| Less than 3.0 METs (<3.5kCal/min) | 3.0 to 6.0 METs (3.5-7kCal/min) | Greater than 6.0 METs (> 7 kCal/min) |
| • Workshop carpentry | • General home construction work: roofing, painting inside or outside the house, wall papering, scraping, plastering, remodeling | ladder (e.g. carrying roofing materials to the roof), or concrete or masonry work. |
| • Light automobile repair Motorcycle or bicycle repair | • Outdoor carpentry, sawing wood with power saw • Automobile bodywork • Hand washing and waxing a car | • Hand-sawing hardwoods • Pushing a disabled car |
| • Occupations that require extended periods of sitting or standing. Tasks frequently requiring movement of little more than hands and fingers; For example: • Office work: sitting in meetings or classes, laboratory work, computer terminal work • Sales, while sitting or standing • Driving a car, light truck, airplane or heavy equipment that is fully automated with a smooth ride • Operating most machinery from sitting or standing position (e.g. forklift or crane operation) | • Occupations that require extended periods of walking, pushing or pulling objects weighing <75 lbs, standing while lifting objects weighing <50 lbs, walking while carrying objects weighing <50 lbs, or carrying objects of <25 lbs up a flight of stairs • Tasks frequently requiring moderate effort and considerable use of arms, legs, or occasional total body movements; For example: • Briskly walking on a level surface while carrying a suitcase or load weighing up to 50 lbs • Maid service or cleaning services • Waiting tables or institutional dishwashing | • Occupations that require extended periods of running, rapid movement, pushing or pulling objects weighing 75 lbs or more, standing while lifting objects of 50 lbs or >, or carrying heavy objects of 25 lbs or > up a flight of stairs. • Tasks frequently requiring strenuous effort and extensive total body movements; For example: • Running up a flight of stairs while carrying a suitcase or load weighing 25 lbs or more • Teaching a class or skill requiring active and strenuous participation, such as aerobics or physical education instructor • Firefighting |



- Appliance or automotive repair, light
- Most light-to-moderate assembly line work, working with hands
- Directing traffic
- Patient care and nursing
- Driving or maneuvering heavy vehicles (e.g. semi-truck, school bus, tractor, harvester) not fully automated and requiring extensive use of arms and legs
- Operating heavy power tools (e.g. drills and jackhammers)
- Many homebuilding tasks (e.g. electrical work, plumbing, carpentry, dry wall, painting)
- Farming: feeding and grooming animals, milking cows, shoveling grain; picking fruit from trees, or picking vegetables
- Packing boxes for shipping and moving
- Assembly -line work: tasks requiring movement of the entire body, arms, or legs with moderate effort
- Mail carriers: walking while carrying a mailbag
- Patient care: bathing, dressing, and moving patients or physical therapy
- Masonry and heavy construction work
- Coal mining
- Manually shoveling or digging ditches
- Using heavy non powered tools
- Most forestry work
- Farming: forking straw, baling hay, cleaning barn, or poultry work
- Loading and unloading a truck

MET (metabolic equivalent): An alternative method of prescribing exercise intensity; 1 MET represents the body's energy requirement at rest, or equivalent of VO₂ of 3.5 ml/kg/min.

Source: Ainsworth BE, Haskell WL, Leon AS et al. (1993). Compendium of physical activities: classification of energy costs of human physical activities. *Medicine and Science in Sports and Exercise*; 25(1):71-80.



Appendix 4.2

Physical Activity Readiness Questionnaire (AHA, 2007)

- I have a heart condition and my healthcare professional recommends only medically supervised physical activity.
- During or right after I exercise, I often have pains or pressure in my neck, left shoulder, or arm.
- I have developed chest pain within the last month.
- I tend to lose consciousness or fall over due to dizziness.
- I feel extremely breathless after mild exertion.
- My healthcare provider recommended that I take medicine for high blood pressure or a heart condition.
- I have bone or joint problems that limit my ability to do moderate-intensity physical activity.
- I have a medical condition or other physical reason not mentioned here that might need special attention in an exercise program.
- I am pregnant and my healthcare professional hasn't given me the OK to be physically active.
- I am over 50, haven't been physically active and am planning a vigorous exercise program.

Note: If you selected one of more items, it is important that you see your healthcare professional before you



Appendix 4.3 Pre-Exercise Health Assessment (ACSM, 2008)

1. Has anyone in your immediate family (mother, father, sister or brother) had a heart attack or died suddenly of a heart related disorder before age 55 (men) or 65 (women)?
 - a. Yes
 - b. No
 - c. Don't know

2. Are you on medications for high blood pressure or is your blood pressure higher than 140/90?
 - a. Yes
 - b. No
 - c. Don't know

3. Is your total cholesterol greater than 200 mg/dl or is your HDL cholesterol less than 35 mg/dl?
 - a. Yes
 - b. No
 - c. Don't know

4. Do you have diabetes?
 - a. Yes
 - b. No
 - c. Don't know

If you answered yes, what type of diabetes?

- a. Type 1
- b. Type 2

5. Please select the average amount of time you are involved in each of the following activities and also how many times per month.

| Activity of Moderate Intensity or Greater | Minutes per session | Times per month |
|--|---------------------|-----------------|
| Aerobic exercise (walking, jogging, swimming, cycling, etc.) | | |
| Strength training (push-up, pull-ups, crunches, free weights, machines, etc) | | |
| Stretching (stretching exercises, yoga, etc.) | | |
| Sport (tennis, soccer, golf, etc.) | | |
| Occupational activity (walking, lifting, etc.) | | |
| Household activity (housework, yardwork, etc.) | | |

6. Do you smoke cigarettes?
 - a. Yes
 - b. No

7. Has your doctor or other health professional ever told you that you have a heart condition?
 - a. Yes
 - b. No
 - c. Don't know



8. Do you ever feel pain or discomfort in your chest when you do physical activity?
a. Yes b. No c. Don't know
9. Do you ever experience dizziness or even lose consciousness?
a. Yes b. No c. Don't know
10. Do you have a bone, joint or muscle problem that could be made worse by participating in physical activity?
a. Yes b. No c. Don't know
11. If "Yes" to the previous question - What are the bones, joints or muscles might be injured with physical activity? (check all that apply)

| | | | |
|-----------|------------|-----------|------------|
| foot | ankle | lower leg | knee |
| upper leg | hip | groin | lower back |
| chest | upper back | neck | shoulder |
| upper arm | elbow | forearm | hand |

12. What is your current bodyweight? ____ pounds
What is your height? _____ inches
13. Do you know of any reason why participating in an exercise program or any other physical activity might be harmful to your health?
a. Yes b. No c. Don't know
14. Exercise Status:
Choose One:
- Not intending to exercise
 - Intending to exercise but not exercising
 - Exercising irregularly
 - Exercising regularly
15. If female - Are you or might you be pregnant?
a. Yes b. No

If female and NO to previous question - Have you been pregnant within the past six months?

- a. Yes b. No

Note: You can access this pre-exercise health assessment at <http://www.myexerciseplan.com>



Appendix 4.4 Sample Daily Physical Activity Record

Exercise Logs

Name: _____ Address: _____

| Date | Body weight | Exercise Heart Rate | Type of physical activity/exercise | Distance (in meters) | Time (Hrs/Min) |
|------|-------------|---------------------|------------------------------------|----------------------|----------------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
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Source: (Hoeger & Hoeger, 2002)