



# *Walk Smart, Virginia!* Technical Assistance Guide



Walk Smart  
Virginia!



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Governor Warner wishes to thank the following organizations whose generous support has made this program possible:



***Governor Warner also extends his thanks to Virginia educators, for their commitment to promoting physically active lifestyles for Virginia's youth.***



COMMONWEALTH of VIRGINIA  
Office of the Governor

Mark R. Warner  
Governor

January 22, 2004

Dear Health Education Advocate:

Thank you for engaging your students in Walk Smart, Virginia! It is my hope that you will find this program useful in increasing the amount of physical activity that your students achieve each day. The information included in this guide can be used to tailor the program to the needs of your students. I hope that you will encourage all of your students to set individual goals for physical activity and that you find exciting ways to support their achievement.

Your commitment to health education is to be commended. We all recognize the escalating problem of childhood / adolescent overweight and obesity. According to the Surgeon General's report, today there are nearly twice as many overweight children and almost three times as many overweight adolescents as there were in 1980. In addition, the average American child watches at least 17 hours of television a week, and few meet the Surgeon General's recommendation of 60 minutes of physical activity each day. Thank you for working to reverse these trends and for initiating Walk Smart, Virginia! in your school.

Walk Smart, Virginia! has been designed to integrate elements of physical education, health, geography, history, and other subject areas. I hope that you will share the materials provided on the Web site with other teachers who may be interested in implementing this program in their curriculum.

Thanks again for joining me in this effort to empower Virginia students to embrace healthy lifestyles.

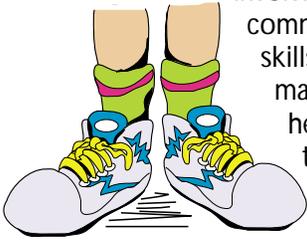
Sincerely,

A handwritten signature in blue ink that reads 'Mark R. Warner'.

Mark R. Warner

# INTRODUCTION

Governor Mark R. Warner's Walk Smart, Virginia! program was created through a public-private partnership to reach out to youth by involving schools, families, and communities to help them build skills that empower our students to make smarter activity choices for a healthier future. The basic goal of the program is to get students to move more and sit less in their daily routines. It is our hope that a few changes in physical activity habits and the awareness of the importance of active living can make a difference in a student's health now and in the future.



Today's youth are bombarded by choices that challenge their ability to make wise decisions about being active. Parents, schools, and the health community are increasingly concerned about the growing number of children, especially preteens and teens, who are overweight or at risk of becoming obese adults. Given the growing epidemic of obesity and the link between physical activity and academic performance, the Walk Smart, Virginia! initiative advocates increasing daily physical activity for Virginia students.

There is a lot of research that shows increased physical activity has a positive effect on academic achievement, including increased concentration; improved mathematics, reading, and writing test scores; and reduced disruptive behavior. In addition, research also indicates that aerobic conditioning may help to improve memory, exercise may strengthen particular areas of the brain, and oxygen intake during exercise may enhance greater connections between neurons.

Unfortunately, as our children are getting fatter they are developing "adult" diseases. According to a Surgeon General's report, today there are nearly twice as many overweight children and almost three times as many overweight adolescents as there were in 1980. Type 2 diabetes in adolescents increased ten-fold between 1982 and 1994; and, the CDC warns, one in three U.S. children born in 2000 will become diabetic unless they start eating less and exercising more.

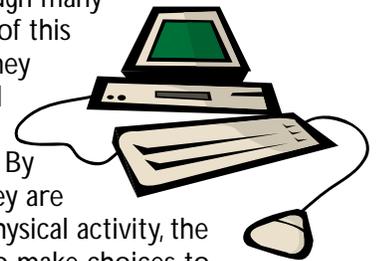
Childhood obesity is a physical, mental, and emotional health issue. In addition to adult diseases such as heart disease, diabetes and hypertension,

overweight children are also at risk for developing depression, mood swings, symptoms that mock Attention Deficit Disorder, increases in allergies, joint problems, severe headaches, vision loss, and breathing difficulties.

The initial phase of the Walk Smart, Virginia! program targets fourth-, seventh-, and ninth-grade students, challenging them to "walk" across Virginia. Participating schools will receive pedometers to provide students with a reliable way of measuring physical activity and setting achievable goals. They will be loaned to students in a manner similar to the method used for lending textbooks; in this way, Walk Smart, Virginia! will be a sustainable program and will offer a long-term resource to schools that want to address physical inactivity and help their students maintain a healthy weight.

Students will log on to the Walk Smart, Virginia! Web site, ([www.walksmartvirginia.com](http://www.walksmartvirginia.com)) set goals, enter the number of steps they have walked, and view a map of Virginia and their position along the walking route they have selected. The Web site will also include information about the locations along the route and integrate aspects of history, geography, government, recreation, a steps-to-miles converter, a body-mass index calculator, and links to nutrition and physical activity Web sites.

Students will learn to monitor and adjust their activity levels on a regular basis using a Web site monitoring program. Even though many motivating ideas will be a part of this program, when students find they are not active enough, they will be encouraged to set activity goals and strive to reach them. By reinforcing to students that they are responsible for their level of physical activity, the program will empower them to make choices to maintain or improve their health. Making a decision to be more active teaches personal responsibility and helps to develop a positive self-esteem.



Each student is an individual, developing at a different rate, having different interests, learning in different ways, and growing up in a different family. The Walk Smart, Virginia! team recognizes that each person brings a unique set of family and personal experiences, needs, and skills to the program. Hence, this technical assistance guide offers teachers a variety of ideas to make the Walk Smart, Virginia! learning experiences relevant and fun.



# HOW MUCH ACTIVITY IS NECESSARY FOR TODAY'S YOUTH?

The negative health consequences of physical inactivity take years to present themselves clinically, but it is reasonable to believe that students who learn the importance of an active lifestyle will have the foundation for lifetime physical activity. On December 30, 2003, the National Association for Sport and Physical Education (NASPE) released the following physical activity recommendations (Corbin and Pangrazi, 2003), for children five to 12 years of age.

- Children should accumulate at least 60 minutes and up to several hours, of age-appropriate physical activity on all, or most days of the week.
- Children should participate in several bouts of physical activity lasting 15 minutes or more each day.
- Children should participate each day in a variety of age-appropriate physical activities designed to achieve optimal health, wellness, fitness, and performance benefits.
- Extended periods (periods of two hours or more) of inactivity are discouraged for children, especially during the daytime hours.

Each day, children should be involved in 10 to 15 minutes of moderate to vigorous activity. This activity should alternate with brief periods of rest and recovery. The natural movement pattern of children is an intermittent style of all-out activity that alternates with periods of rest and recovery. Continuous moderate to vigorous physical activity periods lasting more than five minutes without rest or recovery are rare among children prior to age 13. Because typical activities of children involve sporadic bursts of energy, greater time rather than greater intensity of continuous involvement is recommended. Several (three to six or more) activity sessions spaced throughout the day are necessary to accumulate adequate activity time for elementary school children. Some of these periods should be 10 to 15 minutes or more in length, alternating intermittent activity and rest within this time period. Even though not recommended, if long periods of continuous activity are prescribed for children, the reasons for doing so should be well established and made clear to the children performing them.

## Guidelines for Adolescents

A consensus statement recommending the amount of activity adolescents should have delineates the amount of activity adolescents need (ages 11 to 21) and contains two basic guidelines (Sallis and Patrick, 1994). Guideline 1 states that "All adolescents should be physically active daily, or nearly every day, as part of play, games, sports, work, transportation, recreation, physical education, or planned exercise, in the context of family, school, and community activities." Guideline 2 states that "Adolescents should engage in three or more sessions per week of activities that last 20 minutes or more and require moderate to vigorous levels of exertion."

Meeting the first guideline should be a priority and a minimum. Participation in 30 minutes of daily activity is a reasonable goal, even for sedentary youth. Beyond this, the second guideline is a desirable goal. The consensus statement includes brisk walking, jogging, stair climbing, basketball, racquet sports, soccer, dance, swimming laps, skating, strength (resistance training), lawn mowing, and cycling as some examples of activities that meet **guideline 2**. Maintaining the heart rate at a pre-selected target heart rate for the full 20 minutes is not necessary to meet **guideline 2**, and many of the activities listed above will not produce such a result.

## What Should Physical Education Contribute to Children?

Physical education means many things to many people. Physical education professionals often describe it as essential subject matter dedicated to learning in the psychomotor domain and committed to developing lifetime physical activity patterns. However, some individuals mistakenly consider physical education to be the same as athletics or competitive sports, or to be nothing more than recess. So, what is physical education? It is part of the total educational program that contributes, primarily through movement experiences, to the total growth and development of all children. **Physical education** is education through movement. It is an instructional program



that gives attention to all learning domains: psychomotor, cognitive, and affective. According to the Virginia Standards of Learning strands, a physically educated person:

- ✓ Demonstrates proficiency in all fundamental movement skills and patterns and competence in several specialized movement forms. **(Skilled Movement)**
- ✓ Applies movement principles and concepts to learning and developing motor skills and specialized movement forms. **(Movement Principles and Concepts)**
- ✓ Achieves and maintains a health-enhancing level of personal fitness. **(Personal Fitness)**
- ✓ Demonstrates responsible personal and social behaviors in physical activity settings. **(Responsible Behaviors)**
- ✓ Demonstrates a physically active lifestyle, including activity within and outside of the physical education setting. **(Physically Active Lifestyle)**

According to Dr. Charles Corbin of Arizona State University: "Within a quality school physical education program, physical education teachers should:

1. expose youngsters to a wide variety of physical activities;
2. teach physical skills to help maintain lifetime health and fitness;
3. encourage self-monitoring so youngsters can see how active they are and set their goals;
4. individualize intensity of activities;
5. focus feedback on progress of doing your best rather than on product; and
6. be active role models."

Through cross lateral movement activities, physical education also develops neurological connections between the hemispheres of the brain, contributes positively to other nervous system function, and maximizes the potential of all body systems.

No other area of the curriculum is designed to help children learn motor and lifetime activity skills and enhance health and fitness. These critical contributions to maturational development make physical education an essential component of the total school curriculum.

Fit kids perform better academically. It is not enough, however, to only educate children academically; they must also be educated physically.

Quality physical education programs place emphasis on learning physical skills and teaching students to develop active lifestyles while reinforcing core academic skills. If students, particularly the unskilled, don't receive quality instruction in physical education, there is little opportunity for them to learn skills as adults. Inactive youth often have little opportunity to learn skills they can use to maintain high levels of physical activity. For example, there are all types of opportunities for skilled youngsters to participate in physical activities such as little league, gymnastics clubs, and sport clubs. But for the unskilled or economically disadvantaged child, physical education may be the only place that offers them an opportunity to learn new skills.



The Walk Smart, Virginia! program is the perfect venue for schools to encourage all students to get a "jump start" on an active lifestyle and earn the reward of good health. The program also contributes to the development of effective physical education programs that place emphasis on helping all students succeed regardless of ability or skill level.

Students enrolled in Virginia's "New PE" programs that stress lifetime activities are not only receiving a physical education, they are also getting more activity during physical education class than the students enrolled in those lingering, ineffective, "one size fits all" 20th Century programs. Unfortunately, too many of our middle and high school programs are still frozen in time. These age-old programs focus on large-group games or team sports, do not accommodate individual abilities, spend too much time on roll call, and base student achievement on what students wear ("dressing out") and a subjective measurement of student participation. While our "New PE" programs use cooperative-learning, problem solving, or a choice format that emphasizes individual skill and health-fitness concepts while maximizing activity for all students in the class-not just the physically gifted. These programs have a clear instructional purpose, teach towards learning, provide equipment for all students, give students activity choices, provide time for student achievement of important learning outcomes, and use meaningful assessments that include technology, self, partner, or teacher-directed methods to determine what students are learning. They focus on what matters most-



# PEDOMETERS AND PHYSICAL EDUCATION

increasing the physical activity and fitness levels of all students while helping them gain the essential skills and behaviors to be active for a lifetime.

Pedometers have been used for hundreds of years (they were said to be invented by da Vinci) as people tried to measure distances they traveled by walking. Because some of these early pedometers were not highly accurate, researchers were hesitant to use them to evaluate activity levels of children and adults. Newer electronic pedometers are much more sensitive and accurate in delivering step counts and are now used in many studies to measure walking-related activity. Electronic pedometers detect movement through a spring loaded, counter-balanced mechanism that records vertical acceleration at the hip. Compared to previous assessment tools for quantifying physical activity, such as self-report questionnaires or diaries, pedometers offer a more accurate and objective measurement.



Pedometers fasten to the waist and measure physical activity in a vertical plane—the “up and down” motion of an individual’s hip. Numerous studies have examined the validity of pedometers in assessing the physical activity levels of children and have concluded that the pedometer is a suitable tool for assessing the physical activity patterns of children (Welk, Differding, Thompson, Blair, Dzura, & Hart, 2000).

Pedometers do have some limitations. They are not able to measure the intensity of an activity, or water activities or activities performed on wheels, such as bicycles or skateboards. Notwithstanding these limitations, however, they do provide physical educators with a valid, reliable, inexpensive, easy to maintain, practical, unobtrusive tool to measure the physical activity levels of their students.

The usefulness of pedometers for measuring physical activity among children and for providing a means of accountability for physical education programs is widely accepted (Beighle, Pangrazi, & Vincent, 2001). Consequently, this inexpensive, user-friendly device has become a widely used objective measurement tool for assessing total physical activity in a variety of populations. In today’s era of accountability, pedometers offer evidence to students and their parents of the

progress made toward attaining the desired physical activity outcomes. This small instrument can actually help bridge the gap between science and practice by providing a means of applying lifetime activity concepts to the physical education curriculum.

Recommendations for the amount of physical activity youth should accumulate each day are usually expressed in minutes per day. When students are asked to self-report on the amount of activity they performed throughout the previous day, they almost always overestimate. Using the approach of asking students to evaluate their activity levels without some type of objective measuring tool has its disadvantages. While using a pedometer, an instrument that is objective, allows students to move while their activity levels are being recorded and provides them with a more valid assessment of the volume of activity performed.

Often physical activity assigned as homework is an under-utilized dimension of physical education programs. The Walk Smart, Virginia! pedometer provides the ideal tool to encourage and measure physical activity homework. It is hoped that the legacy of the Walk Smart, Virginia! program will be to promote a lifetime of activity, improve public health, and contribute to the development of quality, accountable physical education programs.

## Pedometers and Accountability in the School Setting

A common issue for physical education teachers is what they should be held accountable for in the school setting. Typically, they have chosen fitness or skill development as outcomes they are willing to be evaluated on as a measure of their success. However, fitness is a not the wisest choice, particularly for teachers of preadolescent children. Fitness scores in the United States haven’t significantly improved over the past 40-50 years (Corbin & Pangrazi, 1991). Virginia has also seen this steady drop in fitness scores. One can assume the decrease in fitness scores is related to inactivity and the increase in body fat. Certainly, aerobic power and various strength measures are directly impacted by the increase in body fat. Consequently, to use fitness as an indicator of their teaching success may be inviting failure. In addition,



both students and teachers become discouraged when fitness scores do not improve.

Skill development and understanding movement sequences is certainly an important objective for physical education teachers. While evaluating student understanding of skill sequences is viewed as one of the most important program outcomes, a large part of skill performance is genetically endowed, much in the same way that some students are better artists or musicians. Additionally, physical skills are difficult to evaluate and perfection is never reached in skill performance. For example, even the best basketball players in the world miss as many shots as they make. Baseball players make an out three times out of 10 at bat. Since the nature of physical skill performance is one of imperfection, it is asking a lot of teachers to stake their program success on the skill performance of students, some of who are genetically limited in their ability levels.

Today's better alternative for teachers and program accountability hinges on looking at daily physical activity and Body Mass Index. Physically educating students to monitor their nutritional intake and volume of physical activity as it relates to Body Mass Index should be critical outcomes of any quality physical education program.

Most students, regardless of genetic limitations, can move and be physically active. They can walk, skip, run, and move in many different settings. Unless there is a physical disability, all students can monitor their physical activity levels using pedometers. An excellent goal and outcome for teacher accountability is to see if students are more active today than they were a month or year ago. Most parents would be delighted if their children were taught to live an active lifestyle. This would be one of the best legacies physical education teachers could leave their students. Pedometers can be used to evaluate daily baseline activity levels of students followed by goal setting + regular monitoring of activity levels throughout the school year. Activity goals should be achievable and reflect the teachers' ability to instill positive physical activity behaviors in their students. Activity levels, both in and out of school, are important program outcomes. Out of school activity can be regarded as physical education homework. A teacher who can develop positive attitudes toward physical activity and increase the amount of physical activity students accumulate on a daily basis makes a valuable contribution to students, the school, and the community.

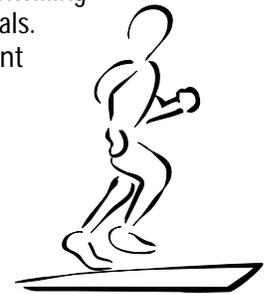
## All Activity is Beneficial Activity

How can we help students gain the skills to lead an active life now and in the future? Get pedometers! Among many benefits of using pedometers is that they measure weight-bearing activity such as running, jumping, and walking. Since most students are capable of such activity, there is no hierarchy of physical activity. If all physical activity is beneficial to health, teachers need to show students they value all activity regardless of the intensity of the activity. Physical educators have often reinforced students who performed at a high intensity and somewhat ignored those who were not capable of such activity. Students soon learn that not all activity is created equal and that teachers only value activity that is intense, i.e., high heart rate activities. The knowledge that all types of physical activity are beneficial and contribute to a healthy lifestyle needs to be communicated to students.

In the activity hierarchy example mentioned above, the one factor that people used to determine that one type of activity was better than another was the intensity of the activity. Certainly, if one can exercise at a high intensity for long periods of time, that is an excellent trait and reflects a certain degree of genetic blessing. For the vast majority of children and adults, however, intense activity is not a form of physical activity they will participate in over their lifespan. Most adults do not engage in high intensity activities and are unwilling to go all out to achieve health goals.

That is the primary reason current health-related guidelines call for 30 - 60 minutes of moderate to vigorous activity nearly everyday (Surgeon General, 2001).

Moderate to vigorous activity is defined as brisk walking at 3 to 3.5 mph. A strength of using a pedometer to monitor student activity is that it provides an objective measure that shows no discrimination between different intensities of physical activity. Teachers can focus more on the amount of movement students receive and less on trying (and often failing) to develop high levels of physical fitness in all students. Wearing a pedometer and recording their daily steps and activity time is not only a great motivating tool for students, it helps physical educators do a better job.



Do your students know that walking has been heralded as the most beneficial physical activity that can be done by just about anyone, anytime, anywhere at virtually no cost? Walking places the right amount of stress on the joints; helps maintain muscle mass, metabolism, and bone density; and reduces the risk of heart disease, hypertension, high cholesterol, diabetes, and cancer. When implementing your Walk Smart, Virginia! program, don't forget to encourage your students to choose safe routes, consider walking with others, and wear shoes that fit and feel comfortable.

## **The Accuracy of Pedometers**

The accuracy of the pedometer has been evaluated many times. A recent study (Crouter, et al., 2003) evaluated 10 different electronic pedometers and found them to be "most accurate" in measuring physical activity. The Walk4Life pedometer selected for this program is listed among the pedometers identified as most accurate.

Pedometers do have some limitations and are less accurate when people move slowly (less than 4 km/h) or walk with an uneven gait. Pedometers depend on a fairly consistent up and down motion with each step and the uneven gait and slow movement may not create enough movement for the pedometer to measure. Another factor that causes undercounting errors occurs with highly obese students. On these students, the orientation of the pedometer is often turned away from the body (toward a parallel plane with the floor) caused by the excess body fat around the waist. If the pedometer is not parallel with the vertical plane of the body, it will not record steps accurately, if at all. In spite of these limitations, however, pedometers are still the most accurate and reasonably priced tools for measuring movement.

The Walk4Life LS 2505 pedometer you will be using for the Walk Smart, Virginia! program measures steps and activity time. Every time a student moves, the pedometer begins accumulating time in minutes and seconds. When a student is sitting or standing, the timing function stops. By pushing the white mode button on the LS 2505 pedometer, you can toggle between the number of steps accumulated and the number of minutes and seconds of accumulated physical activity.

## **How Active Are Students?**

Research (Vincent, et al., 2003) shows that in a typical group of children, the bottom third (least active) accumulate 5,000 -7,000 steps less than the most active students each day. It is difficult to look at a group of children and identify how active or inactive they are. Even if it were possible, behavior changes are more likely when students gather accurate data and make activity decisions based upon their current activity levels.

Pedometers also give teachers a way to evaluate the effectiveness of their physical education program based on maximizing the physical activity levels of participants. Determining the effectiveness of a program designed to promote physical activity is difficult without a reliable tool to measure physical activity.

All physical activity accumulated throughout the day has health benefits for students. The Walk Smart, Virginia! pedometer travels with the student throughout the regular school day, measures the number of steps or minutes of movement during that time and during physical education class, and then measures the physical activity steps and time accumulated after school. It also raises parents' awareness of their children's activity levels and encourages family discussions about the value of an active and healthy lifestyle.

## **Daily Step Goals**

How many steps should we expect students to accumulate each day? There are a number of alternatives for determining how many steps should be taken on a daily basis. The first approach is a "one standard fits all" approach. This approach assumes that a single standard is the correct dosage for all types of people regardless of age, gender, or health. The most commonly referenced standard is 10,000 steps each day (Hatano, 1993). This standard was designed for cardiovascular disease prevention for adults, but has grown in popularity throughout the country. The commonly cited standard for children are 11,000 steps per day for girls and 13,000 steps per day for boys. This standard is based on the President's Challenge (PCPFS, 2003) award program. See <http://www.presidentschallenge.org/> to learn more about this activity award program. Children



participating in this program who reach these step standards over a six-week period are eligible for the Presidential Active Lifestyle Award.

The problem with a single standard goal is that it does not take into account the tremendous individual differences between people of different age, ability, and gender. Genetic and environmental differences make it much easier for some students to reach the step criteria while others may find it next to impossible. So, how many steps should we set for the standard? Should it be set high so only a few very active individuals can reach it? Should it be set low so the vast majority of people are able to reach the goal? If you accumulate more than 10,000 steps, is there any point in moving beyond the 10,000-step threshold? If you accumulate 4,000 steps each day, is there any use in trying to reach 10,000 steps since it seems an impossible goal? Consequently, setting one goal often works against the students who need it the most, the inactive ones.



A recommended approach is the **baseline and goal-setting** technique (Pangrazi, Beighle, & Sidman, 2003). This method requires that each individual establish their regular daily activity (baseline) level. Establishing an accurate baseline necessitates recording four days of pedometer step counts for elementary school students and eight days of step counts for adolescents and adults. The reason for the longer period of monitoring for older individuals is that their days are much more variable. The baseline step count is calculated by finding the mean step count for the four or eight days of accumulated activity. The baseline data is then entered into a chart located in Appendix D.

After the baseline level of activity has been established, a personal goal is set. The personal goal

is established by taking the baseline activity level and adding 10 percent more steps to that level. For example, assume your

baseline count is 8,000 steps per day. Your personal goal would be 8,000 steps plus 800 more steps for a total of 8,800 steps. That is your personal goal for the next two weeks. If you reach

that goal for a majority of the days during this two-week period, add another 10 percent (800 steps) to your goal and repeat the process. For most people, it is probably reasonable to think that a top goal of 2,000 to 4,000 steps above their baseline level is considered attainable. Using the example here, a goal of 10,000 to 12,000 steps would be the ultimate goal.

This baseline and goal-setting technique takes into consideration the fact that all individuals are unique. It also gradually increases personal goals so they seem to be achievable to even the inactive student. Most individuals are interested in knowing what their baseline level of activity is and this offers the physical educator a window of opportunity for creating an awareness and student interest in establishing a realistic and attainable movement goal.



## Implementing The Pedometer Program

Researchers use protocols that assure they can replicate the gathering of data. Protocol is nothing more than establishing a set way to use the pedometers. The following are procedures commonly used to issue pedometers and to gather data. If the steps shown below are followed, it will assure confidence in the accuracy of the measuring activity and enhance program accountability.

1. Number the pedometers with an engraver or write a number, using an indelible ink pen, on the inside label. This number will be recorded on the record sheet for each student in a manner similar to the method used for issuing textbooks.
2. Handout a letter to the parents (see sample letter in appendix A) that explains the pedometer program. Students will be held responsible for not losing and taking care of their pedometers and must return them at the end of the year. If a pedometer is lost, a replacement may be purchased from Walk4Life at a special price of \$10.00.
3. For at least the first week, students should practice using the pedometers during physical education class. The easiest way to organize this process is to use a large tackle box, number the slots in the box, number the pedometers, assign each student a number, and have students put on their assigned pedometer as they come into the gymnasium to begin their instant activity. This is also a quick way to take roll.
4. At the end of the period, have students record their steps and activity time in their student portfolios or on a master list, reset their pedometers, and place them in the appropriate slot in the tackle box. The teacher can use the students' step counts to measure the effectiveness of the lesson and evaluate student activity. You may also want to assign a student to monitor the box to make sure no students forget to return their pedometers.

5. Explain to students that:
  - the Walk Smart, Virginia! pedometers are devices that measure the number of steps and the amount of activity time they accumulate.
  - it is possible to make the results inaccurate by shaking the pedometer or behaving in a way they don't normally do, i.e., running in place all the time.
  - you are most interested in helping them learn about their level of physical activity.
  - it is impossible to know whether they need more or less activity, if the results are inaccurate.
  - these results are confidential; they will not be shared with others unless they give them permission.
6. Have students practice opening their pedometer cases. To open the cover, have them grasp the back clip of the pedometer with one hand, and using the thumb on the other hand, push the projecting portion of the body case away from the clip.
7. Explain the Reset button and Mode buttons. The reset button is yellow and has a time-delay feature built into it so that the pedometer is not accidentally reset.

Have them reset the pedometer by holding the button down for about two seconds until the pedometer displays zeros. Resetting the pedometer clears both the steps and activity time counters. The mode button is white and switches the display back and forth between the step counter and the exercise time counter. They can move back and forth between the time and steps mode as often as they like.
8. Let students hold a pedometer, shake the pedometer, and then check both the step counter and the activity time. Reset the pedometer. Allow students to repeat shaking and clearing the pedometers a number of



times so they move beyond the curiosity stage. Explain how the arm moves up and down and let them examine the mechanism.

9. Explain that the pedometers must be worn on the waistband or belt, in line with the right kneecap **parallel to the ground**. The pedometer will **not give an accurate** reading if it is tilted to



**one side or another** or is not completely closed. The Walk4Life pedometers are just as accurate when placed over the left kneecap. However, it is much easier for the teacher to check



placement if they are all situated on one side of the body. Let students practice putting the pedometer on and then do a “class check” to make sure they are properly placed. The pedometers must remain in the upright vertical plane of the body (perpendicular to the floor) in order to accurately register counts. Remind them to periodically check the pedometer position a few times a day. As previously mentioned, a common problem occurs with obese youngsters. Sometimes, their waist body fat will push over the belt and force the pedometer into a horizontal plane. In most cases, if the pedometer is in a horizontal plane, it will not record at all. The best alternative is to wear an elastic Velcro belt, i.e., the Walk4Life belt that comes in two different sizes. Also, if students are not wearing clothes with a firm waistband, they will need to wear a belt.

10. Have students try out different positions along their waist by counting steps they take and the number of steps recorded on the pedometer. If the pedometer is recording too many steps, move it towards the navel away from the hip. If they find the pedometer not recording enough steps, have them move it closer to the hipbone. Have your class do this simple walk test until they find the correct zone for their body type. Most will place it directly over the kneecap.
11. Make sure they use the safety strap with the alligator clip to help eliminate any possibility of damage or loss. It is strongly recommended that safety straps be used at all times.

12. Explain how the pedometer step and movement time will be logged into the Walk Smart, Virginia! Web site as students move across the state. Students will learn to monitor and adjust their activity levels on a regular basis using the Walk Smart, Virginia! Web site's monitoring program. Students will log on to the Walk Smart, Virginia! Web site, set goals, enter the number of steps they have walked, and view a map of Virginia and their position along a selected walking route. The Web site includes information about the locations along the route and integrates aspects of history, geography, recreation, and nutrition education. The site also includes a steps-to-miles converter, a body-mass index calculator, and links to other health and physical activity Web sites.
13. The steps used in teaching students how to collect their activity data should be applied consistently. Otherwise, it is difficult to know whether the results are measured the same way on all students or if they all wore the pedometers in different ways. Students also have to understand the importance of closing the pedometer case and placing the pedometer correctly on the waist to get an accurate step count. Using a consistent method of gathering data assures that comparisons can be made among schools throughout your division and state.
14. To determine the distance traveled, have students measure their stride length. Using a tape measure, have students walk 10 steps, measure the total distance and divide by 10. For example, 21 feet would translate into a 2 foot 1 inch stride length.
15. After the week-long practice period, check out a pedometer to each student. Record the student's name and pedometer number. While they will be entering their total daily step count in their Walk Smart, Virginia! online portfolio, you can also have them record their step counts during physical education class, during school, and after school (activity homework) to analyze activity levels throughout the day.
16. Several sample student record forms are located in the appendix section. On one, students reset their pedometers each day. On the other, they “do the math” each day but only reset their pedometers after they have reached one million steps.



17. To measure Body Mass Index (BMI), measure the student's height and weight. Student understanding of their BMI provides important data for developing a personal fitness plan. The Center for Disease Control's BMI-for-Age growth charts are included on the Walk Smart, Virginia! Web site to allow students to estimate body composition. BMI-for-Age is a useful tool for children and teens because it compares well to laboratory measures of body fat. The analysis of Body Mass Index has also been included on the new Virginia online fitness data collection system.
18. In the appendix section, you will also find several certificates, including the Million-Step Governor's Awards Certificate!

### **Maintaining Pedometers**

As with any mechanical device, pedometers require maintenance. Fortunately, the maintenance is not technical and is minimal. Keeping pedometers working includes changing batteries and periodically checking the pedometers for accuracy. These two tasks require relatively small amounts of time and are easy to do. Pedometers run on the current of small watch-type batteries. Generally, the battery placed in the pedometer by the manufacturer will last one to two years. Most pedometers do not quit working when the battery is low, but rather they begin to undercount steps. For this reason, the accuracy test described below is recommended every semester.

### **Checking for Accuracy**

An easy way to check pedometers in physical education classes is to ask students to walk a certain number of steps. Have students reset their pedometers and then ask them to walk 200 steps in a straight line across a field. Each student can count their steps and freeze when they reach 200 steps. Assuming there may be some minor counting errors, the pedometers should be within 5% of each other. In this example, the variation in step counts should range from 190 to 210 steps. Have the students who are outside this range raise their hand and then record their pedometer number so they can have the battery replaced. Repeat the test two or three times before making conclusions. In most cases, the reason for inaccuracy is a discharged battery. If a new battery does not solve the problem, the only alternative is to replace the pedometer.

### **Changing Batteries**

The LS-2505 pedometer features a secured battery to insure an accurate measurement of activity. To change the battery, insert a coin into the dime-sized slot on the side of the pedometer and twist the coin to snap open the battery cover. Loosen the screw and pop the battery out. Replace the new battery with the numbered side up. The battery model number is L1142 and is available from Walk4Life for \$1.00 per battery plus postage.

### **Walk Smart Virginia! Web Site**

This is the foundation activity for the Walk Smart, Virginia! program where students input their data into a Web-based collection system. Detailed instructions on how to use the site are located on the home page at [www.walksmartvirginia.com](http://www.walksmartvirginia.com). The Web site developers have designed this interactive tool to encourage students to evaluate their physical activity levels and calorie intake in hopes of stemming the increasing rise of childhood obesity.

Students will learn to monitor and adjust their level of activity on a daily basis using pedometers and a Web-based monitoring system. They will select a virtual walk on the site, set realistic goals, and on a regular basis, log their daily step counts on the Web site. As they log their steps they will move along a virtual timeline. As they move along their route they will encounter milestones that will provide them with information about the Commonwealth of Virginia, basic nutrition, and other fun and important facts.



## **Teacher Registration**

Teachers will set up their classes by providing their name, school name, class period, grade level, and time of each class. Once they enter this information they are in the Walk Smart, Virginia! database and officially registered in the program. For additional information see Appendix E.

## **Student Registration**

The registration process is very simple and should only take a few minutes. It is recommended that you take each class to the computer lab to accomplish this task. They will fill in the basic information, such as their name, school, teacher, period, favorite activity, eating and sleeping habits, etc. They will also be asked to enter their weight and height. Height and weight will be used to help them establish an energy balance, analyze their calorie intake compared to calorie expenditure, and set goals. Once they have completed the registration process, the student will be assigned a Username and Password to log onto the Web site.

## **Starting the Program**

There are two approaches to consider when deciding on how your students will maintain a record of their daily physical activity. In the first approach, the teacher instructs the students to push the reset button on their pedometers and not to reset the pedometer again until after they have recorded their steps on their logs or on the Web site each night. In the second approach, the teacher tells the students NOT to touch the reset button until they reach one million steps. In this approach, students will subtract their step totals for each day from the previous day's step totals. This approach not only allows students to use basic math skills but may also cut down on inflated daily stepcounts.

Students should try and record the total number of steps they take each day, including weekends, at the same time every night, around 7 or 8 p.m.

On a regular basis, the student will log onto the Walk Smart, Virginia! Web site, and click on the "Log In" link. When entering information, students will be asked to enter their User Name and Password and click the "Submit" Button. After clicking on this button they are taken to the

"Welcome" screen. This screen is where they can access all their information about the program. The links they will see are:

- Log Steps
- Diet Diary
- Daily Journal
- My Goals
- Places I've Been
- Bonus Items
- My Statistics

The student will click on "Log Steps" and enter in their information in the appropriate fields. When they are done entering their information, they will click the "Enter" button. After entering their steps they can explore the other links and become familiar with the Web site.

As the students records their steps they will be taking a virtual journey through Virginia. They will explore historic battlefields, small towns and learn about nutrition and health facts at different mile-stones. They will also be surprised with Bonus Items that will magically appear as they reach certain goals in their journey.

## **During the Journey**

During their journey the students can click on the "Statistics" link to see how they are doing from day-to-day, week-to-week, or month-to-month. They can see whether they are reaching their personal goals, which days they are more active, and analyze their activity levels.

## **At the End of Their Walk**

Once the students reach their goals, the teacher can review the students' accomplishments and discuss the benefits of proper nutrition and being physically active.

## **Teacher Tools**

Teachers will be able to log into the Web site and review their students' progress. They can look at individual students or the entire class. They can also compare one class to another or even see how their school is doing compared to another school.



They will be able to view this information in attractive color bar, line, and pie charts.

All this information will be stored so teachers can access it from year to year to see if their physical activity program is improving or needs some modification to get their students moving more and sitting less.

## Using Pedometers in Health and Physical Education

**Active or Inactive.** Students can participate in a variety of physical education lessons and try to predict which lessons are high-activity and which are low-activity. An enjoyable related activity is to try and guess how many steps they will take in the activity. Over time, they begin to understand the activity value of different sports and games.

**A Safe Walk to School.** Walking to school is a good activity for teaching students about safe walks, walks that increase the distance (and steps), and walks that avoid traffic. Student can learn to chart safe routes to school and make a map showing different routes, intersections, and landmarks.

**My Activity Graph.** Students can design a data spreadsheet and make graphs to illustrate their activity levels. Students can identify such environmental factors as climate, day of the week, school homework, etc., to see how these variables impact their activity levels and heart rates.

**Active Intramurals.** Lunch time and before and after school intramurals are an excellent venue for using pedometers and promoting lifestyle activity. The following are some ideas for emphasizing activity through intramurals.

- Scoring based on steps. Every child wears a pedometer and pedometer steps are logged on “stat” sheets after each game. Game points and total step counts for a team (or average step counts) are added and the team with the highest total wins. Using this strategy, a team could be outscored by 50 points and still win.
- Awards based on steps and if desired the traditional awards based on wins and scoring could be given as well. The “Step” awards can be given for each intramural season.

- “Most Improved Stepper” The person who increases their average step counts per game the most, wins a prize.
- “Most Valuable Stepper” The person who accumulates the most steps during the intramural season or the person who averages the most steps per game. Both can be awarded if they are different children.
- The team that averages the most steps per game wins a prize.
- The team that accumulates the most steps during intramurals wins a prize.

Active intramurals emphasize physical activity rather than skill which has two purposes. The first purpose is to promote lifestyle activity and teach children the importance of being active regardless of ability. The other purpose is for children that are less skilled to contribute to the team goal and to experience success.

**School Steps Contest.** This is a school-wide contest with all classes participating. The step counts of all students in each class, including the teacher, are added and then divided by the number of students. Finding the average number of steps for the entire class makes this a group effort. A gentle reminder here is that students should not be expected to reveal their step counts. A sensitive approach is to have the students add up their step counts and give them to the teacher to anonymously place on a tally sheet.

**Rhyming Walking.** Walkers have their pedometers on and proceed to walk around the school or neighborhood. They are given a worksheet that has 10 to 15 words such as man, top, fog, pat, ash, free, czar, pine, and pass. As the students walk they try to find objects that rhyme with the words on their worksheet. Each time they find a rhyming object, they record the name of the object on their worksheet and the number of steps they have accumulated to that point.

**Activity Calendar.** Students are given a blank monthly calendar with room to write activity tasks for each day. They plan activities they want to do and write them on their calendars. Examples of activities are walking to school, walking in place while watching TV, or walking with a friend for 15 minutes. Each of the tasks has to be done for a minimum of 1,000 steps. Students record on their



calendar when each task has been satisfactorily completed.

**How Many Steps Does it Take?** Measure off a distance that is exactly one-eighth or one-fourth of a mile in length. Students put on their pedometers, clear them at the starting line and walk at a normal pace to the end of the distance. Depending on whether they walked a one-eighth or one-fourth-mile distance, they multiply the number of steps they accumulated by 8 or 4. That is the number of steps it takes them to walk one mile.

**Burn the Fast Food Calories.** Approximately 100 calories are burned for each mile a student moves. Approximately, 2400 steps equals one mile of movement for most students. Of course, the number of steps needed to cover exactly one mile would vary with each individual depending on their stride length. If more accuracy is desired, the number of steps each student calculated in the activity above (How Many Steps Does it Take?) can be used. A food is picked and students then walk to see how far and long they have to walk to burn off one of the food listed below:

<u>Fast Food</u>	<u>Calories</u>
Domino's® thin crust cheese pizza-1 slice	253
Kentucky Fried Chicken® breast	400
McDonald's Big Mac®	600
Taco Bell Taco Salad®	850
Burger King Whopper®	640
Whopper® with cheese	800
Wendy's Big Bacon Classic®	580
Sausage biscuit	410
Egg McMuffin®	300
Hotcakes with syrup	600
Chicken sandwich	560
Large French fries	540
Oreo McFlurry®	570
Medium Coke®	210
Medium Burger King® Chocolate Shake	790
Medium Frosty®	440