PREScribing PHYSICAL ACTIVITY FOR OVERWEIGHT/OBESE

PATIENTS IN THE PRIMARY CARE SETTING

By

GREGORY LYNN MOON

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To the Faculty of Washington State University:

The members of the Committee appointed to examine the project of

GREGORY LYNN MOON find it satisfactory and recommend that it is accepted.

Ginny Guido, JD, MSN, RN, FAAN, Chair

Melody Rashor, RN, MSN, FNP, COHN-S

Dawn Rondeau, DNP, ACNP, FNP
This paper offers a practical patient-practitioner approach to the growing epidemic of overweight and obese individuals taking place in the United States, which currently affects three-quarters of the population. Healthcare providers can slow and even reverse this growing trend by working cooperatively with patients to design individualized programs of physical activity and exercise tailored specifically to patients' interests, abilities and lifestyles. The process is incorporated into a written prescription, designed specifically for personalized physical activity and exercise. This paper discusses and recommends strategies for implementing effective physical activity and exercise guidelines, which are intended to assist the practitioner and encourage patient accountability, compliance, and success.

*Keywords: overweight, adult obesity, physical activity, exercise prescription*
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Obesity A Growing Epidemic

A critical epidemic is taking place in the United States, directly affecting the health and well being of three-quarters of all citizens, nationwide, who are over overweight or obese. This epidemic has been directly tied to a decrease of physical activity and healthy diet and an increase in chronic disease (Khan, Weiler & Blair, 2011). This public health crisis has steadily increased over the past fifty years with continued and rising costs affecting society financially, physically, psychologically, and socially (Wang, Beydoun, Liang, Cabellero, & Kumanyika, 2008).

Purpose

The purpose of this paper is threefold: 1) review the literature to support the need for physical activity, including the early stages of development, 2) suggest guidelines for how to increase physical activity in the overweight/obese population, 3) and provide strategies for providers to write activity/exercise prescriptions.

Measurement

Overweight and obesity are commonly determined by use of the body mass index (BMI). The BMI is a measurement of weight in kilograms divided by height in meters squared (kg/m²). For clinical purposes, the BMI is commonly divided into the following categories: normal range is 18.5%-24.9%; overweight, 25.0%-29.9%; obese, 30.0%-39.9%; and extreme obesity, 40.0% and greater (Ogden & Carroll, 2010).

The BMI does not discriminate between fat mass and lean mass and does not take into account the amount of muscle versus fat, but even with these limitations, the BMI is considered an overall valid and reliable measuring tool for providers to assess adults at greater than average
risk due to obesity related disease and death (Stein & Colditz, 2004). The BMI is considered a screening tool and not a diagnostic tool.

The U. S. Preventative Services Task Force 2010 recommended obesity screening at age 6 years. The tracking of childhood data has shown a correlation between the early overweight and obesity years of life, with higher percentages correlating in adulthood. One study showed a relationship where children with a BMI-for-age that was less than the 85th percentile, greater than or equal to the 85th percentile, and greater than or equal to the 95th percentile, corresponded with percentages of those who were obese at 25 years of age, being 10 %, 75%, and 80%, respectively (Guo & Chumlea, 1999). These percentiles show how critical it is to act early in a child's life in order to prevent developing into an obese adult.

The effects of chronic disease tied to obesity are more universal among older adults, but they still can affect people of all age groups and are now becoming recognized as a leading health concern nationwide (Centers for Disease Control and Prevention [CDC], 2010). A list of major examples of chronic diseases related to and including obesity are coronary heart disease (including atherosclerosis, stroke, heart failure and hypertension), Type II diabetes, arthritis, osteoporosis, and cancer (Booth, Gordon, Carlson & Hamilton, 2000). A detailed list of health risks associated with being overweight and obese is found in Table 1 (U.S. Department of Health and Human Services, 2001).

According to the CDC (2009) report, chronic disease is the cause of 7 out 10 deaths in the U. S. each year; 133 million Americans have chronic disease and nearly one out of every two adults live with at least one chronic illness. The increase in children and adolescents with chronic health conditions has risen from 1.8% during the 1960s to 7% in 2004. It has been estimated that
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in the U.S.; approximately 300,000 individuals die each year due to diseases related directly to overweight and obesity (Allison, Fontaine, Manson, Stevens & Vantallie, 1999; CDC, 2010). They are considered the most common and costly of all health problems in the U.S. today and yet are some of the most preventable. Four of these chronic-causing modifiable behaviors are tobacco, insufficient physical activity, inadequate diet, and excessive alcohol use (CDC, 2009).

In 2000, the U.S. Department of Health & Human Services launched the "Healthy People 2010" initiative, providing goals to meet by 2010. One of the top 10 leading indicators that needed to change for improved health was lifestyle challenges, specifically physical activity for the overweight and obese (Satcher, 2010). The seriousness of the condition of being overweight and obese is the associated morbidity may be just as detrimental to human health as the effects which are caused by smoking, poverty, and alcohol (Sturm, 2002).

Studies performed by Stein & Colditz (2004) have shown that excess body weight may account for between 20-30% of all cardiovascular disease (CVD) mortality. This is important since heart disease is the number one killer in the U.S. These studies also showed that overweight or obese men and women are two to three times more prone to develop CVD, as opposed to peers of normal weight ratios.

Two of the most common disorders directly linked to the problem of overweight and obesity are those of hypertension (HTN) and diabetes mellitus type II (DM II). It was estimated that overweight women were 300% more prone to HTN and obese women 600% more, when compared to leaner body mass females. One study showed a significant finding that as many as 80% of those with DM II could be attributed to physical inactivity, overweight and obesity (Hu, et al., 2001). Additional findings show "a strong linear relation between Body Mass Index (BMI)
and risk of diabetes mellitus in obese individuals, who have almost 10 times the risk of diabetes, compared with their non-obese peers" (Stein & Colditz, 2004, p. 2523).

The results from the 2007-2008 National Health and Nutrition Examination Survey (NHANES) estimated that approximately 34.2% of all U.S. adults who were age 20 years and older are now overweight, 33.8% are obese, and another 5.7% are extremely obese. That is a change from 23% obesity in the late 1980s, up to approximately 35.5% in 2010 (Ogden & Carroll, 2012). During this same time period, NHANES calculated that obesity increased among children ages 2-5 years from 5.0% to 10.4%, ages 6-11 from 6.5% to 19.6%, and in ages 12-19 from 5.0% to 18.1%, approximately 17% overall (Ogden & Carroll, 2010). The obesity prevalence among boys in 2009-2010 was 18.6% and among girls was 15.0% (Ogden, Carroll, Kit, & Flegal, 2012; Stein & Colditz, 2004).

Of major concern is the estimate that 80% of obese children grow up to remain obese adults (McCarthy, Burg, Smith & Burns, 2002). One study shows how having obese parents as a child can increase your chances by over 200% of becoming obese as an adult (Whitaker, Wright, Pepe, Siedel, & Dietz, 1997). In 2010, the CDC published the finding that more than 72 million Americans are now considered obese with a BMI greater than or equal to 30.0, affecting all 50 states.

The escalating obesity problem across the U. S. has become a real health challenge and is more pronounced among females, minorities, and the less educated. In a study by the CDC (2009), a survey was taken nationwide to calculate the obesity climate per race, sex, age group, education level, state, and region. This study showed that the highest percentage of obesity was found among Black females with less than a high school degree at an estimated 53.9% average
VERSUS THE LOWEST PERCENTAGE OF OBESITY FOUND AMONG WHITE FEMALE COLLEGE GRADUATES AT 18.6%.

The age group with the highest obesity rate was 50-59 year olds at 31.1% as opposed to those 18-29 years old at 26.7%. The highest regional obesity percentage was the South at 28.4% versus the Northeast at 24.3% (Muennig, Lubetkin, Jia, & Franks, 2006).

An additional major concern in the arena of overweight and obesity is the speed of which this health crisis has been increasing nationwide. In a study conducted by Wang et al. (2008) using estimates of the past four decades based on data collected in the NHANES studies, if the U. S. continues with same increase in its obesity patterns, it is predicted that by the year 2030, 86% of adults in the U. S. will become overweight or obese, and 34% of all children will be overweight or obese. By the year 2048, it is estimated that all adult Americans will become overweight or obese.

There has been a gradual increase in years of life expectancy over the last few centuries, except for occasional periods impacted by war or infectious disease. With the advent of progressive modern western medical interventions, coupled with public health programs and improved living conditions, the U. S. has become a standard to the world in global health and well being. Yet, over the last 30 years a new trend has occurred nationwide. Instead of acceleration in life expectancy, a deceleration has begun to take place and those gains at older ages have become smaller than in previous years (Bell & Miller, 2002).

According to findings by Olshansky et al. (2005), the substantial negative effects of severe obesity on longevity will reduce life expectancy by an estimated 5 to 20 years. "Although the life-shortening effect of obesity is evident for people who are obese, its negative effect on future life expectancy of the population is also critically important to public policy" (Olshanyk et
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al., 2005, pp. 1140). For the first time in decades, we may actually see a younger generation's life expectancy decrease from the previous generation, all in large part due to the increasing effects of overweight and obesity.

The Rising Costs of the Overweight and Obese

With the constant expansion of the overweight and obesity epidemic, not only is there a deep concern about the physical health and wellbeing of U. S. citizens, but there is also a significant economic impact from the associated rise in health care costs. As obesity rises, so will health care costs. According to a study by Finkelstein, Trogdon, Cohen and Dietz (2009), the estimated spending for costs related to overweight and obesity was as high as $78.5 billion in 1998, and approximately half of this sum was funded by Medicare and Medicaid. In 2008, the estimated amount spent on obesity was $147 billion, or 10% of total medical expenditures (CDC, 2010). It has been estimated that the prevalence of obesity and its associated costs may continue to double every decade, to between $860.7 and $956.9 billion by 2030, accounting for 16-18% of total health care dollars in the U. S. (Wang et al., 2008). Between 1987 and 2001, it was estimated that health spending for obesity showed a 27% increase, adjusting for inflation. (Finkelstein et al., 2009).

Not only is society affected as a whole by the effects of obesity and its costliness, but it becomes more of a potential economic burden for the individual as well. One study by Finklestein and colleagues (2009) used obesity-attributable health care spending estimates at the national level, based on personal health care spending presented in the National Health Expenditure Accounts (NHEA) in addition to Medical Expenditure Panel Surveys (MEPS), which are a record of an individual's total medical expenditure per year. A combination of the
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NHEA and MEPS surveys can be used to analyze per capita expenses, with NHEA being considered the gold standard of data in the health care setting (Finkelstein et al., 2009). The increase in health care dollars spent on people with obesity in the year 1998, and then again in 2006, was remarkable. In 2006, the costs per person with obesity had increased by 36% for Medicare, 47% for Medicaid, and 58% for private insurance.

Obesity's increasing economic burden is reflected in the following statistical comparison: had obesity prevalence remained at 1998 levels, spending attributable to obesity would have been $47 billion in 2006 rather than $86 billion (based on MEPS spending data). This implies that the rise in obesity prevalence accounted for 89% of the increase in obesity spending that occurred during this period (Finkelstein et al., 2009).

There was an average increase of $1,429 more per year, per obese person, in 2006, which was up from $930 per person in 1998; these costs were approximately 37%-42% higher than for individuals of normal weight (Finkelstein, et al., 2009). A new study by Behan and Cox (2011), states that the total cost of obesity in the U. S. was estimated at just over $270 billion in 2010. Expenditures for healthcare in the U. S. for 2010 were close to $2.6 trillion, again with 10% being spent on the effects of overweight and obesity alone (Kaiser Permanente, 2011).

Causes of Physical Activity Decline

It is not surprising that children are not as physically active as in past decades. One study has shown that 26% of U. S. children spend four or more hours sitting in front of the television every day and 67% watch at least two hours daily (Anderson et al., 1998). Electronic media has become embedded into the lives of our children. A review by Rideout, Roberts & Foehr (2005) found that children spend on average 6.5 hours a day using multiple electronic devices. Our
children not only watch too much television, they are also using computers, iPods, iPads, cell phones, smart phones, DVDs, CDs, MP3s, email, texts, tweets, etc. Due to multiple simultaneous media usage, some children are actually getting 8.5 hours of electronic stimuli pressed into the same 6.5 hour time block, the equivalent of having a full-time job with overtime (Rideout et al., 2005).

According to a study by Matthews et al., (2012) there is a positive correlation between increased mortality and increased sedentary behaviors in adults, especially older adults, who are inactive for an estimated 60% of their day. Much of the sedentary lifestyle includes sitting for extended periods while involved in activities, such as watching television, using a computer, playing video games, sitting in the workplace, or even driving for extended times (Owen, Healy, Matthews, and Dunstan, 2010). It has been shown that sitting for extended periods of time is a risk factor for all-cause mortality (Van Der Ploeg, H. P., Chey, F., Korda, R. J., Bank, E., & Bauman, A., 2012). A study by Zimmet, Shaw, Ball, & Cameron (2005) demonstrated that sitting and watching television had detrimental effects on waist circumference, BMI, HDL cholesterol, fasting insulin, fasting triglycerides, and systolic blood pressure.

**Guidelines for Physical Activity in Primary Care**

The need for regular physical activity is well established. Physical activity and exercise have been recommended for decades for promoting better health and greater longevity. One survey's data estimated that over 50% of the U. S. adult population does not meet the minimum recommended guidelines for physical activity (Leitzmann et al., 2007). Similarly, a study among U. S. adolescents, estimated that only two-thirds of boys and half of girls met the guidelines suggested for vigorous physical activity (Patrick et al., 2001).
Multiple government health related agencies have made it a goal to increase physical activity, including U. S. Department of Health and Human Services (DHHS), CDC, U.S. Surgeon General’s Office, Institute of Medicine of the National Academy of Sciences, American College of Sports Medicine (ACSM), and American Heart Association (AHA). Over the last two decades, these agencies have all approved a benchmark guideline for the average American, namely, exercise daily for thirty minutes of moderate activity, five days a week, minimum (Leitzmann et al., 2007).

In 2005 the Dietary Guidelines for Americans, whose main focus is diet, was revised to incorporate the need for greater focus on physical activity, weight status, and obesity. The secretary of the DHHS mandated for the first time in history a set of federal physical activity guidelines similar to the dietary guidelines. These new guidelines, synthesized from evidence-based reviews and scientific literature, were created by the Institute of Medicine, the Physical Activity Guidelines Advisory Committee, and the DHHS staff. The results were the Physical Activity Guidelines for Americans, which were launched in 2008 (Pate, Yancey, & Kraus, 2010). Health providers now have a federally sponsored physical activity program using the same guidelines nationwide (see Table 2).

Contained in the Physical Activity Guidelines of Americans are recommendations for children, adults, the elderly, pregnancy (pre- and post-), and adults with disabilities and chronic conditions (see table 3). The basics of these guidelines for physical activity are 60 minutes, daily, for children and 150 minutes per week in 30-60 minute intervals for adults. Older adults and those with disabilities should do as much as their bodies will allow for their circumstances. A minimum of 10 minutes at a time of aerobic activity are needed for best results (Pate et al., 2010). The AHA stated that one will also receive benefit from dividing physical activity time
into 10 and 15 minute segments, if unable to exercise 30 minutes at one time (AHA Guidelines, 2012). The Dietary Guidelines for Americans' most recent suggestions to prevent weight gain was 30-60 minutes of physical activity per day. Consistent data has shown that physical activity which is performed for 60-90 minutes daily is actually associated with weight loss (Hill & Wyatt, 2005). Clients of Kaiser Permanente are now asked two questions each time they come to the clinic: how many days per week do you engage in at least moderate exercise, and on average how many minutes per session? These two numbers are multiplied to give minutes per week of physical activity and are recorded in the electronic medical record as a vital sign (Salis, 2006).

**Mortality and Increased Health Benefits**

With so much emphasis on getting and staying active, it seems appropriate to investigate whether the recommended guidelines for physical activity are beneficial in decreasing mortality and if remaining physically active decreases the effects of obesity. A study by Leitzmann et al. (2007) found that engaging in lower than the recommended amount of activity was still positive for providing some level of protection from mortality, and the data pointed to increased health benefits.

Research has suggested between 20-30% decreases in all-cause mortality rates among those who met Healthy People 2010 guidelines, even with minimum achieved physical activity recommendation adherence (Eden et al., 2002). This study concluded that more than 3 hours of consistent moderate intensity physical activity each week was found to dramatically reduce the risks of mortality by 27%, and 20 minutes of vigorous activity three times a week had substantial reductions as well. The study concluded, "Following physical activity recommendations is associated with lower risk of death" (Leitzmann et al., 2007, p. 2459).
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It has been shown that individuals who remain physically active across their life span report a higher quality of life, functionality, overall improved cognition, as well as increased longevity. Longitudinal studies have found that the value of constant physical activity and fitness is not only linked to increased physical wellness, but has positive effects on social functioning, self-reliance, and activities of daily living (see Table 4), thus increasing one's overall quality of life (Wolin, Glynn, Colditz, Lee, & Kawachi, 2007). One study suggested that physical activity, especially in older adults, had a positive correlation to improved executive functioning and cognition, potentially slowing the deterioration of the frontal lobe, which usually has the fastest rate of decline (Bixby et al., 2007).

How to Monitor and Implement Physical Activity

Before implementation, almost all physical activity, fitness and exercise programs begin with a statement such as, "always consult with your physician first before beginning any workout program." Practitioners will need to know how to effectively counsel patients throughout their workout plan. The first thing the practitioner must find out is if the patient is willing to begin a physical activity program. Most practitioners do this by using what are known as the "six A's": assess, advise, agree, assist, arrange, and assess again. This is to direct the patient in assessing their needs and abilities related to performing and maintaining physical activity and exercise. According to Pate et al. (2010) assessing the physical activity of all patients during each visit has become a sixth vital sign. This will clearly demonstrate the magnitude of how important physical activity is to both the provider and the patient. The World Health Organization's (WHO) global physical activity plan also is supports providers by strongly recommending counseling and monitoring patients during each visit (Khan, Weiler, & Blair, 2011).
When assessing patients for the start of physical activity and exercise, the provider must also be aware of any contraindications at that time. Providers must be aware of contraindications for physical activity such as recent myocardial infarction (within two weeks), unstable angina, decompensated congestive heart failure, left ventricular outflow obstruction, uncontrolled dysrhythmias, uncontrolled diabetes or diabetic complications, and uncontrolled hypertension (Whyte, 2010). There are many people who believe they are not candidates for physical activity due to their "condition," yet in reality they may be the very individuals who could benefit. There are the occasional patients who may need a cardiac and lab work-up before starting any exercise program.

The guidelines for weekly physical activity have already been established, such as the AHA's recommendations for adults 18-65 years old to engage in aerobic physical activity for 30 minutes, at moderate intensity, five days a week, or vigorous intensity activity for 20 minutes, three days a week (Whyte, 2010). Intensity is reflective of resistance to a given activity or exercise and its energy requirements. One easy way to measure intensity is by calculating heart rate. Individuals can calculate their own personal maximal heart rate by using the number 220 minus their age while taking their pulse (e.g. 220-55=165). In a study by Warburton, Nicol, and Bredin (2006), indications for maximal heart rate in obese individuals were considered to be 220-(0.5 x age), or half their age. Intensity ratings are as follows: low-intensity is below 50% maximal heart rate, moderate-intensity is between 50-70% maximal heart rate, and high-intensity is between 70-85% of maximal heart rate. The higher the maximal heart rate, the greater the amount of calories used (Whyte, 2010).

Providers will need to take inventory and monitor how much activity the patient will be able to accomplish in the beginning of their activation program. It is estimated that
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approximately 50% of people who start exercise programs will quit in six months (Whyte, 2010). Some keys to assist individuals with physical activity start-ups are to make the activity cost effective (walking is free), pleasurable, set short-term and long-term goals, always encourage the patient each visit and work to get other providers involved, encourage activities with family and friends, acknowledge that it is difficult in the beginning, but let them know they will be successful if time is an issue, suggest breaking activity sessions into 10 or 15 minute periods, and prescribe outside counseling if needed (Whyte, 2010).

According to the CDC (2010) physical activities are generally classified into four category domains which reflect the purpose of that activity: occupational (work related), domestic (housework, yard work, physically-active childcare, and chores), transportation (walking or biking for the purpose of going somewhere), and leisure-time (discretionary or recreational time for hobbies, sports, and exercise).

**Guidelines to Increase Physical Activity**

There are a number of specific strategies that can be used by practitioners to increase physical activity in the overweight/obese population, but perhaps the most important is to ensure than any program be set up with the participation and choice of the patient. Client involvement is key to any successful activity program. Without patient involvement, there is little likelihood of success (Jorgensen, Nordentoft, & Jasper, 2012). This is especially true with adult and elderly patients who have long established patterns (lifestyles) incorporating little or no physical activity (Neidrick, Fick, & Loeb, 2012; Yeom, Keller, & Fleury, 2009). What the practitioner should seek to avoid is creating a program or setting a goal without patient input. In such cases, non-compliance is almost a foregone conclusion.
A skilled practitioner begins with assessment, asking the patient what physical activities the patient is currently engaged in to determine an activity baseline. During the initial interview, the patient is encouraged to describe which activities are of interest to them. A checklist can be helpful in making this determination. For example, a patient may be asked to check items of interest from a list such as gardening, dancing, walking a pet, cycling, hiking, shopping, exercise classes, stretching, yoga, group activities, golf, bird watching, traveling, home improvement, swimming, sports participation, etc.

This is an opportunity for the practitioner to explore various options, but it is the patient who indicates what activities are of interest. Prescribing, for example, a swimming regimen for a patient, who expresses no interest in swimming or being around water, would likely lead to zero compliance. The patient needs to be engaged in designing their activity program. The practitioner suggests specific activities and asks the client what he/she would be willing to give up to become more physically active. Underlying this process is the assumption that the patient is motivated to make changes. As an example, if a patient will begin by committing to one-half hour a day of increased activity, (e.g., walking), preferably in exchange for some type of sedentary activity (e.g., watching TV), this could be the beginning of an activity program upon which the patient can build, both in terms of time commitment and intensity.

Walking is perhaps the most basic physical exercise and part of a patient's activities of daily living (ADL). The patient interview can quickly determine how much walking the patient does and establish a baseline upon which to build. The idea behind this is to make permanent lifestyle changes which (1) incorporate an increased amount of physical activity while at the same time (2) lessen periods of inactivity, such as TV watching, computer use, couch surfing, reading, game playing, commuting, and the almost endless variety of sedentary activities which
are so common in today's society (Zimmet et al., 2005). Any activity which expends energy and decreases inactivity can be included as part of the program. For example: using stairs instead of an elevator or escalator, parking the car away from the entrance to a store, performing chair aerobics when sitting, stretching when waiting in line, walking instead of driving short distances, cutting back on TV watching, Internet surfing, gaming, and other passive activities, can all decrease a sedentary lifestyle.

Any effective activity program should be accompanied by a sound nutritional program and periodic monitoring. It makes no sense to increase physical activity without also providing nutritional counseling. Thus practitioners must also know and provide dietary plans and guidelines to individual patients.

It is strongly recommended that an activity or self-monitoring journal be maintained by the client (Wang, Fetzer, Yang, & Wang, 2012). This will enable the client to take an active part in his/her progress and provide a means for feedback so the practitioner can monitor and maximize progress. The ultimate goal will be for the client to take charge of his/her own activity program and increase the frequency and intensity as progress is being made.

**Exercise Prescription**

Studies have shown how a written 'green' prescription, otherwise known as an exercise prescription, has increased the physical activity levels among patients, with and without sedentary lifestyles (Colley, Hills, King, & Byrne, 2010; Swinburn, Walter, Arrol, Tilyard & Russell, 1997). The exercise prescription, which incorporates exercise and lifestyle goals, is an indication to patients of the seriousness of active physical therapy as a remedy for illness, which is just as potent and useful a daily dose of medication (Khan, et al., 2011). There is a much growing need for health care providers to become more comfortable with discussing or even
introducing exercise goals and expectations with their patients, just as the growing evidence has shown how physical activity should be recommended as a preventative treatment for all ages (Warburton et al., 2006). One survey has reported that more than 80% of those patients polled would engage in an exercise program if only their healthcare provider advised them towards increased activity. Regrettably, it has been revealed that only three out of 10 physicians address patients' physical activity status during their clinical visits (Phillips & Roy, 2009).

In order for a patient to follow a prescribed "order," such as a pharmaceutical medication order, they must have the proper information available: drug, dose, route, and the frequency parameters. The information needed for an exercise prescription is similar, in that the patient is given instructions regarding the desired outcome. The main components of the exercise prescription are activity selection, duration, frequency, intensity, progression, resistance training, and flexibility training (Gauer & O' Conner, 2000).

**Conclusion**

The evidence from multiple studies demonstrates that being overweight or obese correlates with higher rates of morbidity and mortality, and that all age groups can benefit from physical activity and exercise. As has been exhibited, many disease processes, even chronic diseases, can be halted or even reversed by adopting a more physically active lifestyle. With health care costs continuing to increase, and the availability of healthcare providers and adequate insurance coverage decreasing, it is vitally important that overweight/obese individuals obtain medical counseling/intervention as early as possible to avoid the many expensive disease complications which can burden both patients and the health care system.
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While many patients attempt somewhat ambitious, temporary "solutions," such as crash diets and extensive repetitious exercise programs which fail to address personal core issues such as lifestyle, behavior, personal habits, and motivation, a practitioner's prescription for physical activity based on patient interview, assessment, activity patterns, level of fitness, and routine can make a significant difference in patient compliance and outcome.

For a physical activity/exercise program to be effective over the long-term, the patient must have personal commitment, motivation, and a dedicated practitioner. An exercise diary and patient selection of the prescribed activities are crucial for patient involvement and compliance. The need is for providers to change their focus from reaction of disease to promoting positive lifestyle habits through physical activity and exercise. A prescription for physical activity, written cooperatively with the patient, can be an effective approach to reducing the overweight/obesity problem currently plaguing our health care system.
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**Health Risks Associated with Obesity**

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<td>- stroke</td>
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<td>- osteoarthritis (degeneration of cartilage and bone in joints)</td>
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<td>- complications of pregnancy</td>
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<td>- menstrual irregularities</td>
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<tr>
<td>- hirsutism (presence of excess body and facial hair)</td>
</tr>
<tr>
<td>- stress incontinence (urine leakage caused by weak pelvic-floor muscles)</td>
</tr>
<tr>
<td>- increased surgical risk</td>
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<tr>
<td>- psychological disorders such as depression</td>
</tr>
<tr>
<td>- psychological difficulties due to social stigmatization</td>
</tr>
</tbody>
</table>

SOURCE: Surgeon General's Call to Action to Prevent and Decrease Overweight and Obesity, 2001
Table 2

2008 Physical Activity Guidelines for Americans

Children and adolescents
Children and adolescents should do 60 minutes or more of physical activity (PA) daily.

- Aerobic: Most of the 60 or more minutes a day should be either moderate- or vigorous-intensity aerobic PA and should include vigorous-intensity PA at least 3 days a week.
- Muscle strengthening: As part of their 60 or more minutes of daily PA, children and adolescents should include muscle strengthening PA on at least 3 days of the week.
- Bone strengthening: As part of their 60 or more minutes of daily PA, children and adolescents should include bone strengthening PA on at least 3 days of the week.

Adults
Adolescents should do at least 150 minutes a week of moderate-intensity, 75 minutes a week of vigorous-intensity aerobic PA, or an equivalent combination. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week.

- For additional health benefits, adults should increase their aerobic PA to 300 minutes a week of moderate-intensity, 150 minutes a week of vigorous-intensity aerobic PA or an equivalent combination.
- Adults should also do muscle-strengthening activities that are moderate or high intensity and involve all major muscle groups on 2 or more days a week.

Older adults
- When older adults cannot do 150 minutes of moderate-intensity aerobic activity a week because of chronic conditions, they should be as physically active as their abilities and conditions allow.
- Older adults should do exercises that maintain or improve balance.
- Older adults should determine their level of effort for PA relative to their level of fitness.
- Older adults with chronic conditions should understand whether and how their conditions affect their ability to do regular PA safely.

Women during pregnancy and the postpartum period
- Healthy women who are not already highly active or doing vigorous-intensity activity should get at least 150 minutes of moderate-intensity aerobic activity a week during pregnancy and the postpartum period.
- Pregnant women who habitually engage in vigorous-intensity aerobic activity or who are highly active can continue PA during pregnancy and the postpartum period, provided that they remain healthy and discuss with their health care provider how and when activity should be adjusted over time.

Adults with disabilities
- Adults with disabilities who are able should get at least 150 minutes a week of moderate-intensity or 75 minutes a week of vigorous-intensity aerobic activity.
- Adults with disabilities who are able should also do muscle-strengthening activities of moderate or high intensity that involve all major muscle groups on 2 or more days a week.
- When adults with disabilities are not able to meet the guidelines; they should engage in regular PA according to their abilities and should avoid inactivity.

People with chronic medical conditions
- Adults with chronic conditions should consult their health care provider about the types and amounts of activity appropriate for them.
Table 3

The Benefits of Physical Activity

Many research studies have shown the benefits of regular physical activities. The US Federal Physical Guidelines and many studies show that 150 minutes per week of moderate intensity physical activity is required to achieve these health benefits.

- Research shows that a low level of physical activity exposes a patient to a greater risk of dying than does smoking, obesity, hypertension, or high cholesterol, and for older men, regular physical activity can decrease the risk of death by 40%.
- Active individuals in their 80s have a lower risk of death than inactive individuals in their 60s.
- Regular physical activity can:
  - Reduce mortality and the risk of recurrent breast cancer by approximately 50%.
  - Lower the risk of colon cancer by over 60%.
  - Reduce the risk of developing Alzheimer's disease by approximately 40%.
  - Reduce the incidence of heart disease and high blood pressure by approximately 40%.
  - Lower the risk of stroke by 27%.
  - Lower the risk of developing type II diabetes by 58%.
  - Be twice as effective in treating type II diabetes than the standard insulin prescription and can save $2250 per person per year when compared to the cost of standard drug treatment.
  - Can decrease depression as effectively as Prozac or behavioral therapy.
- Adults with better muscle strength have a 20% lower risk of mortality (33% lower risk of cancer specific mortality) than adults with low muscle strength.
- A low level of fitness is a bigger risk factor for mortality than mild-moderate obesity. It is better to be fit and overweight than unfit with a lower percentage of body fat.
- Regular physical activity has been shown to lead to higher SAT scores for adolescents.
- In an elementary school setting, regular physical activity can decrease discipline incidents involving violence by 59% and decrease out of school suspensions by 67%.
# Exercise Prescription Form

<table>
<thead>
<tr>
<th>PHYSICAL ACTIVITY RECOMMENDATIONS</th>
<th>REFERRAL TO HEALTH &amp; FITNESS PROFESSIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of physical activity:</td>
<td>Name:</td>
</tr>
<tr>
<td>Aerobic</td>
<td></td>
</tr>
<tr>
<td>Strength</td>
<td>Phone:</td>
</tr>
<tr>
<td>Number of days per week:</td>
<td></td>
</tr>
<tr>
<td>Minutes per day:</td>
<td>Address:</td>
</tr>
<tr>
<td>Total minutes per week*:</td>
<td>Web Site:</td>
</tr>
</tbody>
</table>

*PHYSICAL ACTIVITY GUIDELINES

Adults aged 18-64 with no chronic conditions: Minimum of 150 minutes of moderate physical activity a week (for example, 30 minutes per day, five days a week) and muscle-strengthening activities on two or more days a week (2008 Physical Activity Guidelines for Americans).