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An Evaluation of Exercise Prescribing Patterns Among Primary Care Physicians at the Medical University of Ohio at Toledo

Submitted by

Sarah O'Brien Landis

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Academic Advisory Committee

Major Advisor
Michael Guerra, M.S., PA-C

Department Chairperson
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An Evaluation of Exercise Prescribing Patterns among Primary Care Clinicians at The Medical University of Ohio at Toledo.

Sarah O'Brien Landis, PA-S III

Medical University of Ohio at Toledo

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DEDICATION

I would like to dedicate this work to my many families. They are my foundation.

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Michael Guerra, PA-C, MS

Jolene Miller, MLS

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INTRODUCTION

Lack of exercise and poor nutrition are two major factors leading to obesity. Easy access to fast food restaurants and the use of motorized transportation has resulted in obesity becoming far too common in the United States. According to the National Health and Nutrition Examination Survey (NHANES) the number of obese or overweight Americans over the age of 20 has increased from 56% in1988-1994 to 64% in 1999-2000 (NHANES, 2003). Of further concern, obesity alone is responsible for 300,000 deaths annually and costs $61 billion in direct medical expenses every year (U.S. Department of Health and Human Services, 2000). These statistics suggest the public is not initiating exercise as part of their daily routine. Failure to exercise is a major risk factor for obesity, and the data show obesity is now a nationwide epidemic holding serious implications for the development of debilitating diseases such as diabetes, hyperlipidemia, and coronary artery disease (CAD) (Mokdad, et al., 2003).

In response to the ongoing obesity crisis in this nation, Healthy People 2010 lists physical activity as the number one leading health indicator (Healthy People 2010, 2000). As the number one indicator, increasing physical activity is now the focus of efforts to improve the health of the nation.

To achieve the Healthy People 2010 target providers must make a conscious effort to address the consequences of obesity and the benefits of continued physical activity during routine office visits. Currently, research from the Centers for Disease Control and Prevention (CDC) indicates only 13.7% of patients receive counseling about diet while 9.8% receive counseling about exercise (Cherry D.K., Burt C.W., Woodwell D.A., 2002). In the era of evidence-based medicine, providers are expected

to base their practices on scientifically proven research data. The literature indicates improvement is needed on the part of the care provider to increase health awareness.

The purpose of this study is to evaluate the exercise prescribing patterns (frequency, intensity, type, and duration of prescribed exercise regimens) among primary care providers and the implications this may have on meeting Healthy People 2010 targets.

LITERATURE REVIEW

Lack of Physical Activity by Americans:

Despite advances in medical technology and an expanding body of knowledge Americans have failed to embrace data affirming the benefits of physical activity and regular exercise. According to Healthy People 2010 in 1999 only 65 % of adolescents engaged in the recommended amount of physical activity (Healthy People 2010, 2000). It is also important to note the highest rate of decline in physical activity occurs in the early adulthood period between 18 and 24 years of age (Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., Kang, D., 2004). In 1997, only 15 % of adults performed the recommended amount of physical activity, and 40 % of adults engaged in no leisure-time physical activity (Figure 14) (Healthy People 2010, 2001). Physically active Americans are now in the minority. In 2000, the U.S. Department of Health and Human Services reported that poor diet coupled with lack of exercise was the second leading cause of death. It was also determined that the gap between lack of exercise and tobacco use, currently the leading preventable risk factor contributing to premature death, has narrowed substantially over the past decade (U.S. Department of Health and Human Services, 2004). Knowing that a sedentary lifestyle is quickly overcoming smoking as the single most preventable cause of disease is of great concern.

Sedentary Behavior as a Risk Factor:

Data from the CDC has established the activity levels of Americans are well below the recommended levels (Healthy People 2010, 2000). Literature published in 2001 by Glasgow and colleagues found sedentary lifestyle was an independent risk factor in the cause of heart disease (Glasgow, R.E., Eakin, E.G., Fisher, E.B., Bacak, S.J., Brownson, R.C., 2001). The reality is that inactivity alone increases the risk for heart disease, independent of co-morbid diseases and weight status (Glasgow, et al., 2001). The findings suggest all individuals would benefit from exercise regardless of weight status.

In 2005 Ford, et al. corroborated Glasgow's work with their study which confirms participants not engaging in physical activity have twice the risk of developing metabolic syndrome when compared to participants engaging in 2.5 hrs of physical activity a week (Ford, E.S., Kohl, H.W. III, Mokdad, A.K., Ajani, U.A., 2005). Those with metabolic syndrome are at greater risk of CAD and therefore, MI. Furthermore, depressive symptoms, smoking, and sedentary behavior are independent predictors of mortality in CAD patients (Brummett, et al., 2003). Brummett also noted a lack of exercise is related to a host of maladaptive behaviors which increase the likelihood of developing physical as well as psychological sequelae.

The work of Brummet et al supports the existance of a direct correlation between exercise and heart disease. Another study based on data that sedentary behavior nearly doubles the risk of heart disease, estimates $6.4 billion per year would be saved if all sedentary people in the United States began a program of regular walking (Fletcher, G., Trejo, J.F., 2005). Hwu, et al. goes on to make the connection between

sedentary behavior in hypertensive patients and insulin resistance. His results substantiate the claim that sedentary hypertensive patients are more insulin resistant than those who are non-sedentary. This suggests physical activity is an important lifestyle determinant of insulin resistance in hypertensive patients (Hwu, C., et al., 2004).

Benefits of Exercise:

The benefits of exercise are numerous and well documented. For example, exercise has been found to be a potent stress reducer. In individuals who exercise regularly a decrease in baseline anxiety levels compared to sedentary adults can be seen (Bartlett, S., 2005). In addition, overall psychological well-being is enhanced. It appears that exercise may decrease the risk of developing depression by improving energy and mood (Healthy People 2010, 2000). Heath and Stuart, 2002 found that 16 weeks of exercise was as effective in relieving symptoms as was treatment with antidepressants. Heath and Stuart also noted exercise increases sleep by 40%, helps preserve cognitive function, decrease depression and provides a sense of well being (Heath, J.M., Stuart, M.R., 2002). Furthermore, according to Bartlett's article on the benefits of exercise in the elderly arthritic population, the National Institutes of Health believe exercise can be used in the treatment of depression. The combination of exercise and group counseling, by clinicians who are qualified to assess and monitor the disorder are currently being tested as a primary treatment for mild depression by the NIH (Bartlett, S., 2005). Preliminary studies also suggest that moderate-intensity physical activity, such as walking, is as effective as traditional vigorous aerobic exercise

in improving mood although vigorous physical activity is necessary to increase fitness (Bartlett, S., 2005).

Exercise and physical activity have been shown to increase muscle and bone strength (Healthy People 2010, 2000). The impact on bone strength is especially important in growing children who require weight bearing exercise for normal skeletal development and young adults trying to achieve peak bone mass. The increase in bone density and strength accompanying weight bearing exercise is also beneficial to the elderly population who are at greater risk of bone fracture due to a decrease in bone mineral density secondary to aging. In frail elders exercise enhances overall mobility and strength as well as arthritis outcome markers and prevents falls and their sequelae. (Heath, J.M., Stuart, M.R., 2002). As a result older adults are better able to maintain an independent living status.

Exercise increases lean muscle and helps decrease body fat as well as aiding in weight control (Healthy People 2010, 2000). In combination with diet, exercise is a vital part of any weight loss program. In addition, regular physical activity reduces the risk of diabetes and coronary artery disease beyond what may be attributed to weight loss alone (Hill, S.O., Wyatt, H., 2002) and increases the ability of people with certain chronic, disabling conditions to perform activities of daily living (Healthy People 2010, 2000). It is important to note that these results are based on the benefits of exercise as an independent variable separate from diet and weight loss.

Risks of Exercise:

There are few absolute contraindications to exercise. Severe heart disease, unstable CAD, chronic heart failure with dyspnea at rest, tachyarrhythmia induced by exercise, and critical aortic stenosis complete the list of absolute contraindications (Heath, J.M., Stuart, M.R., 2002). However, there are conditions requiring special consideration, such as chronic obstructive pulmonary disease, ischemic heart disease, diabetes, and osteoarthritis (Heath, J.M., Stuart, M.R., 2002). It is important to recognize these conditions in patients and employ the necessary precautions. Consequences of neglecting the dangers associated with exercise in this higher risk population are immense. The risk of sudden cardiac death and acute myocardial infarction as serious complications of exercise in adults is significantly increased in patients with these disease processes (Thompson, P., 2001).

It is thought sudden cardiac death and acute MI stem from atherosclerotic plaque rupture with acute coronary thrombosis. Black and colleagues postulated that the increased "twisting and bending" of coronary arteries during vigorous exertion increases the frequency of plaque rupture (Black, A., Black, M.M., Gensini, G., 1975). Furthermore, within the abnormal epicardial arteries found in patients with CAD, exercise has the ability to produce vasoconstriction rather than vasodilatation in the atherosclerotic segments, further increasing the likelihood of an adverse event (Black, A., et al., 1975). In addition, those patients who do not have diagnosed co-morbid conditions, but who are sedentary, the relative risk of exercise-related MI is 107 times higher during exercise than it is at rest (Thompson, P., 2001).Those with diabetes are at 18.9 times greater risk, while individuals who regularly exercise at least five times a week

only have 2.7 times the risk of having an exercise related MI. Altogether, between 4% and 10% of MIs are associated with exercise (Thompson, P., 2001).

Ory and colleagues, 2005 examined the occurrence of adverse events among participants enrolled in separate physical activity programs taking part in a National Institutes of Health (NIH) collaborative known as the Behavior Change Consortium, 2005. No serious study-related adverse events (SRAEs) were reported and relatively few minor SRAEs occurred in any of the physical activity programs. The minor SRAEs were primarily musculoskeletal injuries, which emphasizes the need to be aware of potential musculoskeletal sequelae during exercise interventions. One common characteristic of these studies is that they recommend “starting low and going slow,” with moderate intensity physical activity as the goal (Ory, M., Resnick, B., Jordan, P.J., Coday, M., Riebe, D., et al., 2005). The American College of Sports Medicine (ACSM) recommends maintaining muscle strength, flexibility, and aerobic capacity as that the best way to prevent common injuries (Loyd, L.K, 2005). Higher fitness levels are associated with less exercise-induced muscle fatigue, improved strength, better exercise capacity and less risk of muscle and ligament sprains and strains (Loyd, L.K, 2005). A sprain is an injury to the ligament and a strain is an injury to the muscle (Loyd, L.K., 2005). Some behavioral risk factors for injury include: lack of sleep, emotional stress (a major cause of back injuries), smoking (risk factor for back injuries), fatigue-specifically a lack of muscle endurance, overuse (tendonitis) or too much exercise without taking enough days off (Loyd, L.K., 2005).

Overall there is no consensus that physicians can reduce the risk of adverse events such as sprains and strains. However, patients should be advised not to exceed

60-70% of their maximal heart rate (MHR) during exercise to help decrease the risk of acute cardiac events occurring (Fletcher, G., Trejo, J.F., 2005). The MHR can be calculated using the equation MHR = 220-age (Heath, J.M., Stuart, M.R., 2002).

Personnel involved with sports should always be able to recognize cardiac symptoms, and be certified in cardiopulmonary resuscitation (Thompson, P., 2001). It is important for patients to consult a care provider prior to starting an exercise program so that health and fitness levels may be assessed, and the proper regimen developed for each patient's needs.

Barriers to Exercise:

Recent literature suggests there are real barriers to exercise. Healthy People 2010 cites the major barriers as lack of time, lack of access to convenient facilities, and lack of safe environments in which to be active (Healthy People 2010, 2000). When people have to put forth both time and effort above and beyond what is normal it decreases the likelihood of following through with well intentioned plans. Lack of time, facilities and safe environments are significant barriers and clinicians must be creative in finding solutions to these problems if these barriers are to be overcome. A study of women 50 and older conducted in rural South Carolina (Wilcox, S., et al., 2005), examined the barriers and motivators related to exercise. Unique to the over age 50 population was the concern of "overdoing it" and being "too old". Results of the study also indicate the need to tailor recommendations and advice specifically to older women (Wilcox, S., et al., 2005). Pain and poor perceived health are variables which may prompt the elderly to discontinue exercise as well (Tu, W., Stump, T.E., Damush, T.M.,

Clark, D.O., 2004). In these situations, it would be of benefit to dispel any concern by counseling about the benefits of exercise for the elderly. As noted previously, moderate physical activity and exercise have been shown to decrease arthritis pain, improve joint flexibility and increase bone density and strength. Weather is another variable which must be taken into consideration. In an inner city exercise study with older women, adverse weather conditions including heat index above 90 degrees, wind-chill index below 20 degrees, overcast sky and snow are associated with intermittent non-attendance (Tu, W., et al., 2004).

A number of ways to improve compliance have been explored. Wilcox and colleagues found enablers for exercise include transportation, free facilities, and age-appropriate programs (Wilcox, S., et al., 2005). Transportation can be a key role in avoiding the adverse weather conditions noted by Tu et al. 2005, which hinder participants from attending and participating in activity programs.

Providing social support is of further benefit, and whenever possible, efforts should be made to include age appropriate social support as a component of structured exercise programs. Social support is a multi-dimensional concept that describes relationships individuals maintain with others (Von Ah, D., et al., 2004). A direct association exists between participation in positive health practices such as adequate nutrition, exercise, relaxation, safety and health promotion, and the perceived level of social support (Von Ah, D., et al., 2004). Overall, literature encourages providing social support and access to facilities whenever possible. It is clear that patients will benefit if all the social, psychological and physical components related to exercise are considered and addressed.

Drug Compliance:

The question may be asked, if the medical provider takes the time to counsel patients regarding physical activity and writes an exercise prescription will patients embrace the prescribed exercise? One way to assess this question is to investigate medication compliance.

When taking medication the most common mistake is the omission of single doses of antibiotics secondary to forgetfulness (Karadas, P., 2002). Additional doses of antibiotics, especially at the beginning of the treatment are also common and thought to be a result of patients wanting prompt relief from their symptoms (Karadas, P., 2002). However, there appears to be a vicious circle in that patients also stop taking medications once the desired symptomatic relief occurs (Karadas, P., 2002). Adverse effects related to the medication, as well as large and difficult-to-swallow pills, or the unpleasant flavor of a suspension are also factors thought to increase non-compliance (Karadas, P., 2002).

There are a host of factors affecting medication compliance, but key among them are social and economic circumstances; particularly health literacy, patient belief systems, patient education, acceptability, palatability of the medication, and adverse effects of the medication (Winnick, S., Lucas, D.O, Hartman, A.L., Toll, D., 2005). Similarly, when prescribing exercise it is essential goals be obtainable and within reason. Recommendations should also be clear and concise so instructions are easily understood, even by educationally challenged patients.

Research conducted by Karadas reveals that indeed, compliance does decrease as the complexity of the regimen increases (Karadas, P., 2002). Literature published by

the MASCOT study group adds that compliance decreases over the treatment period in medications for acute infection, and that compliance with long term therapy has also been noted to decrease over time (MASCOT Study Group, 2002). Therefore, to increase success rates one must decrease the complexity by tailoring the program to the individual's physical and psychological needs. Important considerations in tailoring the advice are: 1) level of readiness to be more active; 2) confidence to begin exercising; 3) expectations about the benefits the person will receive by being more active; 4) previous experience with physical activity; and 5) current lifestyle (Bartlett, S., 2005). These must be addressed in an effort to increase the long term compliance and overall success rate associated with exercise prescriptions, as well as with pharmaceutical prescriptions.

Currently, the National Pharmaceutical Council estimates that $8.5 billion is spent annually on unnecessary hospitalizations and physician visits caused by noncompliance to prescription regimens (Winnick, S., et al., 2005). Winnick et al's study does not take into account exercise prescriptions. However, when taking into account the numerous health problems associated with a sedentary lifestyle, the consequences of failure to comply with an exercise prescription may be of even greater magnitude in terms of cost to the nation.

Provider Influence:

Doctors and other health care professionals continue to maintain positions of respect in their communities. Regarded as scholars, their advice and counsel are taken to heart by the public. Today the practice of evidence-based medicine further enhances confidence in the competency of medical professionals. Throughout time, health care providers have utilized this influence to inform and educate patients on the manner in which their daily activities will both influence and affect their health. Recent literature continues to support this practice by providing statistically significant evidence concerning the impact of a physician's medical advice on patient behavior. In fact, research conducted in 2004 found patients who recalled being counseled to lose weight were more likely to understand the risks of obesity, the benefits of weight loss, and were at a higher stage of readiness for weight loss (Huang, J., Yu, H., Marin, E., Brock, S., Carden D., Davis, T., 2004). In addition, the CDC data analyzed from the 1998 National Health Interview Survey (NHIS) further supports Huang et al's data stating, "the prevalence of older adults who meet recommended levels of physical activity is higher among those asked about their current routine, 36% vs. 23%, than those who are not asked" (NHIS, 2001).

A study conducted by Kruter in 2000, discovered patients who receive physician advice to quit smoking, adapt to a low fat diet, and exercise prior to receiving intervention materials on these same topics, are more likely to remember the materials and perceive the materials as applying to them specifically (Kreuter, M.W., Chheda, S.G., Bull, F.C., 2000). Patients are also reportedly more likely try to quit smoking, and make changes in diet and physical activity when given physician advice and

interventional materials on the topic (Kreuter, M.W., et al., 2000). It is important to note that this study incorporated interventional materials, such as pamphlets on the risk factors of obesity and the benefits of exercise. These materials may provide an added benefit to aide in a patient's decision to make lifestyle changes.

Several other articles support the finding that providers possess an innate influence over patient behavior. In Spain, Ortega –Sanchez et al. considered the effect of office based physician advice on adolescent exercise behavior. The results reveal a 41.5% increase in activity within the group provided with exercise counseling, as well as a 26.8%, 38.0%, and 26.2% higher duration, frequency and intensity of the exercise than the control group (Ortega-Sanchez, R., et al., 2004). In addition, their research supports the superior nature of providing reinforcement counseling as opposed to initiating a new exercise routine due to the ease of strengthening already existing behaviors. Ortega-Sanchez and colleague's research also demonstrates advice from a health care professional has a great deal of power in affecting an adolescent's decision to exercise (Ortega-Sanchez, R., et al., 2004).

Researchers have also discovered simply asking patients about their exercise practices is enough to motivate them to increase their activity levels. A study monitoring the prevalence of health care providers asking older adults about their exercise habits established that patients who were asked about physical activity were 1.7 times more likely to engage in recommended levels of physical activity then those who were not asked (Morbidity & Mortality Weekly Report, 2002). Additionally, the prevalence of older adults meeting recommended levels of activity was higher among those asked, 36% vs. 23% (Morbidity & Mortality Weekly Report, 2002).

The literature is making it increasingly clear that merely addressing the subject of exercise can result in statistically significant increases in patient activity levels. Flocke and colleagues explored this very subject and found the strongest predictor of patient recall of exercise advice to be the duration (Flocke, S.A., Stange, K.C., 2004). It was also noted that an additional minute discussing the target behavior was associated with a 2.5 fold increase in recall (Flocke, S.A., Stange, K.C., 2004). Further evidence by Huang and colleagues supports the need to dispense advice on physical activity. Results of their study reveals that patients who recalled being counseled to lose weight were more likely to understand the risks of obesity, the benefits of weight loss, and were at a higher stage of readiness for weight loss (Huang, J., et al., 2004).

Providers may frequently lose sight of their influence on patient conduct and fail to utilize their ability to promote awareness and encourage fitness and exercise. Opportunities for patient education can be missed due to the misconception that the focus of the visit needs to center around behavior modification. Too often the power of suggestion is underestimated. For example, Flocke and Stange, 2004 were able to demonstrate that the use of illness visits to provide instruction on the importance of exercise as a part of one's daily activities was not detrimental to a patient's satisfaction with the visit. Furthermore, the presence of a health behavior-relevant diagnosis during an illness visit was associated with a two fold increase in patient recall of advice given on physical activity (Flocke, S.A., Stange, K.C., 2004). Reinforcement for this assessment is provided by research conducted with geriatric patients, which reveals patients who report receiving a physician's recommendation to exercise are 60% more

likely to enroll in a physical activity promotion program than those who do not receive recommendations (Mills, K.M., et al, 1997).

Although utilization of the sick visit for exercise counseling has been established as non-detrimental to patient satisfaction, advice provided during well care visits was more likely to be recalled by patients than during illness visits (Flocke, S. A., Stange, K.C., 2004). This article supports the use of both well and sick visits to educate and encourage patients on the importance of developing an exercise regimen within their daily schedules.

Frequency of Exercise Advice:

Currently, there is a large disparity between the proven importance and need for exercise and the degree to which primary care providers are addressing the problem by prescribing it. Literature published by Flocke, 2004 and colleagues reinforces this statement. In this study, a group of 2,670 patients were recorded during a regular office visit with their primary care provider. After the visit, the patients were interviewed and subsequently questioned about any type of advice they were given concerning exercise. The results revealed exercise having been discussed in only 23% of the visits. Furthermore, on average, a minute or less was spent discussing exercise (Flocke, S.A., Stange, K.C., 2004).

Among the indicators prompting practitioners to dispense exercise advice, self-rated health status is the strongest predictor of advice followed by BMI (Honda, K., 2004). Self-rated health status refers to the patient’s personal estimation of their overall health, taking into account physical activity and healthy food choices. Being younger

and sedentary are also independently and positively associated with increased reports of having ever received a physician's advice to exercise (Damush, T. M., Stewart, A. L., Mills, K.M., King, A.C., Ritter, P.L, 1999).

Impact of Written Exercise Prescriptions:

Based on the evidence that physicians and other providers are able to change patient behavior with verbal advice, the implications of both verbal and written advice being given simultaneously could be of even greater importance. Bull and Jamrozik, 1998 set out to determine the effectiveness of verbal advice on exercise from a family physician, combined with supporting written info in the setting of primary health care. Participants (6,351) were split into two separate randomized groups. The control group was provided with oral advice only, while the second group was provided with both written and oral exercise advice. Results demonstrated that at one month significantly more subjects in the combined intervention groups reported doing some physical activity, 40% vs. the control group, 31%. At 6 months, 30% of the control and 38% of the combined intervention groups were "now active" (Bull, F.C., Jamrozik, K., 1998). This study demonstrated a 9% increase in physical activity among patients participating when given combined written and verbal advice vs. verbal advice alone. Furthermore, it is crucial to note that the combined prescription helps patients maintain the long term benefits as well (Bull, F.C., Jamrozik, K., 1998).

The Green Prescription Study conducted by Swinburn and colleagues further validates the work completed by Bull and Jamrozik. The collected data reveals that when a group is given a written exercise prescription the number of people doing any

recreational activity increases from 54% to 81% after a period of six weeks, with an average increase in duration of 78 min per week (Swinburn, B.A., Walter, L.G., Arroll, B., Tilyard, M.W., Russell, D.G., 1998). Overall, the Green Prescription group was found to have significant improvement compared to the verbal advice group (Swinburn, B.A., et al., 1998). It is also important to point out that the assessment and prescribing of exercise only took approximately five minutes of the general practitioner's time in *The Green Prescription study* (Swinburn, B.A., et al., 1998). Not only are written exercise prescriptions proven to be beneficial above and beyond that of verbal advice alone, this study demonstrates that it is feasible for practitioners to incorporate exercise counseling within a regularly scheduled visit. However, current literature from Walsh and Swangard published in the American Journal of Preventative Medicine on exercise counseling by primary care providers established that only 14% of physicians actually prescribed exercise for half of their patients (Walsh, J. M., Swangard, D. M., Davis, R., McPhee, S.J., 1999).

One way to increase the awareness of practitioners regarding the discrepancy between the benefits of exercise prescriptions and the lack of prescriptions written is to modify the curriculum of medical students. Changes in the curriculum may be warranted based on the results of a study by Connaughton and colleagues, 2001 on graduating medical students' exercise prescription competence as perceived by deans and directors of medical education in the United States. Results of this study show that 58% of respondents feel their students are competent in conducting a patient evaluation for the purpose of approving a patient to begin exercise. However, only 10% think their students are competent in the ability to *design an exercise prescription* (Connaughton,

A.V., Weiler, R.M., Connaughton, D.P., 2001). Connaughton et al., 2001 found that the perception of the importance is significantly greater, compared to respondent's perceptions about their students competence on conducting a patient evaluation and designing a prescription. Even then, only 47% of the students thought it was important to have the ability to design an exercise prescription (Connaughton, A.V., et al., 2001). In addition, Connaughton et al. suggest that health promoting beliefs and practices are fairly well fixed by the time physicians graduate from medical school.

Prescribing Exercise:

An important aspect in the methodology of prescribing exercise is how to target the information to the appropriate population. Recent research directs attention to the populations with the greatest disease-related health problems. For example, Podl and colleagues found that physicians tailored provision of exercise advice to patients with specific diseases for which increased physical activity is known to have clinical benefit (Podl, T.R., Goodwin, M.A., Kikano, G.E., Stange, K.C., 1999). It is logical to target the population with the greatest potential to benefit from the education. With this mindset, advice will be reaching those with the most need while allowing providers to effectively compartmentalize their time and efforts towards the common factor at the heart of most of the most debilitating diseases we face today, the lack of physical activity. Glasgow and Eakin uphold this concept by noting in their article on physician advice and support for physical activity, that physical inactivity is an independent risk factor for heart disease of similar magnitude to smoking, hypertension and hypercholesterolemia (Glasgow, R.E., et al., 2001). It is also necessary to target populations with low rates of

physical activity, such as lower income individuals with less education, minorities, the elderly, women, those with disabilities, and individuals in the NE and SE parts of the United States (Healthy People 2010, 2000).

As important as targeting the proper population is the content of the exercise prescription. An exercise prescription should contain four key components. The four components are referred to as the FITT prescription which stands for the frequency, intensity, time and type of the exercise to be performed (Fletcher, G., Trejo, J.F., 2005).

Frequency specifies how often exercise should be performed. The ACSM promotes participation in physical activity on most days of the week (Pyron, M., 2001). As previously stated, when beginning an exercise routine it is important to “start low and go slow.” It would be reasonable to start with 2 days of exercise every week for the first 2-4 weeks and add a day of exercise every month until the goal of exercising four or more days of the week is attained. When exercise is being used for the purposes of weight loss the ACSM recommends exercising a minimum of five days a week (Pyron, M., 2001).

The intensity of the exercise should be defined by the maximum heart rate (MHR) which is 220-age, and patients should be advised to stay at 40-60% of their MHR for moderate intensity exercise and at 60-70% of the MHR for vigorous exercise (Heath, J. M., Stuart, M. R., 2002). The intensity of the exercise should always be determined by a health care provider based on the physical condition of each patient.

Time refers to the duration of the exercise. The current recommendation is to warm up five to ten minutes before any aerobic activity and to cool down by stretching for another five to ten minutes to conclude the activity. Including the 10 minute warm up

and cool down, aerobic activity should be maintained for a total of 30-45 minutes with a gradual decrease in the intensity occurring as the workout concludes (Pyron, M., 2001). New research has found that the recommended 30-45 minutes of physical activity does not need to be completed all at once. The benefits from three 10 minute walks or one 30 minute walk have been found to be comparable (Bartlett, S., 2005). A more recent consensus statement from the International Association for the Study of Obesity includes the recommendation of 60 to 90 minutes of daily physical activity for prevention regaining weight already lost in formerly obese individuals (Saris, W.H., Blair, S.N., van Baak, M.A., et al., 2003).

Finally, type of the exercise refers to the three different categories of exercise; aerobic, strength, and flexibility training. Aerobic exercise involves dynamic exercise consisting of alternately contracting and relaxing the muscles in large muscle groups and causes the greatest increase in maximum oxygen consumption (Fletcher, G., Trejo, J.F., 2005). This includes walking, running, jogging, swimming, biking, and hiking among others. Strength or resistance training involves activities using repeated movements against low or moderate resistance such as weight lifting (Fletcher, G., Trejo, J.F., 2005). Weight lifting is a form of weight bearing exercise and helps to improve muscle and bone strength, which is important for balance and prevention of osteoporosis. Strength training is recommended two to three days of the week and if focus is placed on working the major muscle groups improvement should be seen when a single set of eight to ten different exercises are completed within a workout (Fletcher, G., Trejo, J.F., 2005). Recommending lower intensity levels for the elderly and cardiac patients is essential.

Maintaining flexibility is also important in preventing sprains and strains during exercise. Flexibility training or stretching focuses on improving range of motion in the joints and is beneficial to people of all ages (Fletcher, G., Trejo, J.F., 2005).

Weight loss is the objective goal of most exercise programs. In order to maintain an exercise program and sustain weight loss patients need to be well educated and informed about healthy weight loss expectations. Currently, the NHLBI guidelines suggest setting an initial goal of 5-10% decrease in body weight during the first six months and aiming for a rate of weight loss of 1-2 lbs/wk (NIH, 2002). After six months, patients are able to increase the intensity of their workouts, and combined with a healthy diet should continue to lose weight at a steady pace until they have met their weight loss goals.

Barriers to Prescribing Exercise:

Modern day medicine encounters barriers to the delivery of care in many forms. In the area of exercise counseling, this is of particular concern. There is no set billing code for the delivery of advice on physical activity. The best a provider is able to do is to code for the amount of time spent counseling the patient. As a result, clinicians are insufficiently reimbursed for office time spent counseling patients in need of an exercise program (Fletcher, G., Trejo, J.F., 2005).

Providers also underestimate their ability to encourage patients to modify behaviors (Fletcher, G., Trejo, J.F., 2005). This rationale may in part stem from the previously discussed topic of prescription compliance. If a clinician believes the patient will be non-compliant with the prescribed exercise plan, they may simply refrain from giving advice the advice altogether, since they would likely see it as a misuse of their time.

Yet another barrier to prescribing exercise is the lack of available reference materials to guide providers and ancillary staff in the numerous aspects of exercise prescriptions for different patient needs (Fletcher, G., Trejo, J.F., 2005).

Overall, there are a number of barriers to prescribing exercise in various physician practices. The focus must now be placed on how to overcome these barriers in an effort to reach the goal of increasing the physical activity of Americans, set by Healthy People 2010.

PROBLEM STATEMENT

Sedentary lifestyle has been established as an independent risk factor in the cause of heart disease (Glasgow, R. E., et al., 2001). Overweight and obese people suffer many sequelae such as hyperlipidemia, diabetes mellitus, and CAD resulting in higher morbidity and mortality rates. Promoting exercise by writing exercise prescriptions gives primary care providers an imperative role in helping patients develop a healthy regimen of physical activity, allowing them to decrease their risk factors for comorbid diseases associated with being overweight or obese.

PURPOSE

The purpose of this study is to evaluate the exercise prescribing patterns (frequency, intensity, type, and duration of prescribed exercise regimens) among primary care providers and the implications this may have on meeting Healthy People 2010 targets.

SCOPE

The survey will be distributed to the primary care clinicians at the Medical University of Ohio at Toledo (MUOT) hospital and outpatient clinics.

DESIGN

The design of my study is descriptive. I will be conducting a survey to assess the number of primary care physicians writing exercise prescriptions for their patients. The research instrument is the Primary Care Exercise Prescription Survey, a multiple-choice questionnaire. It will be used not only to define the percentage of primary care providers discussing and writing recommendations for physical activity for their patients, it will also establish the frequency, intensity, type, and time interval of these exercise prescriptions.

METHODS

Sample:

One hundred fifty-six copies of the Primary Care Exercise Prescription survey with attached cover letters will be e-mailed to primary care providers via Perseus. Participating locations include the Medical University of Ohio at Toledo hospital and its outpatient clinics. The criteria to participate in the study are that the participants are employed at the aforementioned institution and serve as a primary care provider. The questionnaires will be sent via email and responses will be submitted into a private password protected e-mail account. Confidentiality will be maintained at all times. The submitted surveys are void of all participant information, making them unidentifiable. After a period of two weeks a reminder e-mail will be sent. At the end of one month I will begin to compile and analyze the data from the survey responses. It is my hope that there will be a response rate greater than 30%.

Instrument:

The Primary Care Exercise Prescription survey is a four-part survey. Part I consists of a demographic questionnaire.

Part II is designed to assess the importance of taking an exercise history, the frequency with which this screening was performed based on age of the patient and the level of confidence that primary care providers have in their ability to perform physical activity screening. Part II will utilize a multiple-choice question format that will assess the frequency, importance, and level of preparation indicated by the respondents in regard to obtaining an exercise history.

Part III of the study will identify the frequency and content of provider written exercise prescriptions. This section will also utilize a multiple-choice question format. For example, to answer the question, “How frequently do you write a prescription for physical exercise?” Respondents will be able to chose from a list of choices such as, Never, Once a year, Once a month, Once a week, Once a day, Greater than once a day. Providers will also be asked to specify the frequency at which the patient is to perform the prescribed exercise, its intensity, type of activity and the duration of each session.

Part IV of the survey will ask participants to rank three given barriers to exercise screening (time, comfort with the subject knowledge, perceived lack of patient interest) and prescription writing. These barriers are to be ranked on a scale of one to three, with one being the most commonly encountered. Participants will also be given a space to indicate and rank a barrier not listed.

Procedure:

Approval of the IRB must first be obtained. Running a pilot study consisting of five MUOT faculty members will then validate the survey. Necessary corrections will be made to the questionnaire and it will be sent and received within the period of one month. A reminder e-mail will be emailed two weeks into the study.

RESULTS

A total of 156 surveys were administered to primary care providers at MUOT via e-mail. Altogether, The Primary Care Exercise Prescription Survey yielded a total of 20 responses after the primary and secondary mailings.

The influence of providers personal exercise habits were compared to the frequency of writing an exercise prescription and the data reveals a positive correlation (Figure 1). Sixty-five percent of those who exercise three or more times a week are writing exercise prescriptions monthly or daily while 55% of those who do not exercise three or more days a week are never writing any exercise prescriptions. One respondent who marked “other,” noted they do not prescribe exercise. Instead that provider refers patients out for physical therapy when necessary.

One-hundred percent of providers who place an extreme amount of importance on exercise histories obtain a history some or all of the time (Figure 2). When analyzing the subsequent bracket of physicians who indicate exercise histories are important to take, 50% are taking exercise histories now and then and the other half never take exercise histories.

The extent to which physicians place importance on the role of exercise in the maintenance of health and disease prevention was then compared to the likelihood they would prescribe exercise (Figure 3). Roughly 50% of participants who responded exercise is extremely or somewhat important in the maintenance of health and in disease prevention were writing exercise prescriptions on at least a monthly basis. Those placing extreme importance vs. those who simply place importance on this variable were similar in the amount of daily and weekly exercise prescriptions written.

However, the group indicating exercise as extremely important overall wrote 60% more exercise prescriptions than those simply placing importance on the role of exercise in health maintenance.

Next, the ability of providers to include all four components of the exercise prescription was analyzed (Figures 4-7). Frequency of the exercise to be performed was the most commonly included component of the exercise prescription at 59% and intensity as well as type of exercise was the least likely to be included at 40%. Results show that all four components are rarely being included by providers when writing exercise prescriptions. Only 59% included frequency all or most of the time compared to 36% who never include it. Forty percent specify the intensity all or most of the time while 35% never include it at all. A difference of 5% is all that separates those who include the intensity of the exercise and those who do not. Approximately 48% include the duration all or most of the time and 35% never include it. Similarly 44% specify the type of exercise to be performed all or most of the time while 42% never include it at all.

Finally, the barriers to exercise were examined (Figures 8-11). The survey asked participants to rate barriers they encounter in writing exercise prescriptions with 1 being the greatest obstacle and 3 being the least. The time necessary to write an exercise prescription was the most frequent response indicated with 66%. Knowledge and interest were a close second at 60% respectively. Interestingly, a number of participants (approximately 65%) felt that to some extent they did not experience any barriers to prescribing exercise in their practice.

DISCUSSION

Exercise has consistently been proven to decrease the complications of diseases such as diabetes and CAD. Based on the survey responses, the medical community at MUOT does not appear to be embracing the current recommendations to increase physical activity by prescribing exercise. Unfortunately, 45% of respondents never prescribed exercise and only 20% prescribed it once a month despite > 60% taking exercise histories some or all of the time. How is headway going to be made in the fight against obesity if physicians and other providers do not act upon findings gathered from the exercise history? With the majority of Americans being overweight, the medical community must begin to take action. It is imperative for providers to advise patients on the importance of decreasing caloric intake while simultaneously increasing the amount of daily exercise. Long term, if passive attitudes toward risk factors associated with sedentary lifestyle and obesity continue, there will be a significant effect on the ability to attain targets set by Healthy people 2010 to increase physical activity in an effort to decrease obesity. To reach Healthy People 2010 goals a great deal of change needs to be made in the philosophy and practice of many providers.

A provider's personal exercise habits appear to have a significant impact on whether or not they will write an exercise prescription. Sixty-five percent of physicians who exercise three or more times a week are writing exercise prescriptions monthly or daily, while 55% of those who do not exercise routinely are never writing exercise prescriptions. Respondents who participate in physical activity on a regular basis may have a first hand opportunity to experience the capability exercise has to increase energy, mood, and overall feelings of wellbeing. Personally experiencing these benefits

may have a considerable influence on determining their willingness to take the time and effort required to advise patients on exercise and develop exercise plans tailored to each patient's needs. Providers should be positive role models for their patients to follow in an effort to increase patient compliance with prescribed exercise programs.

Various aspects of the exercise prescription being included by physicians were explored. Results demonstrate providers rarely include all four components of a complete prescription; frequency, intensity, duration, and type of activity to be performed in their exercise prescriptions. Of the four components, frequency is the most likely to be specified, with 59% of physicians including it in their prescriptions. Intensity and type of exercise are the two components least likely to be incorporated in most exercise prescriptions. It appears the emphasis is placed on incorporating physical activity as a part of one's daily routine, with the mindset that repetition is the key to forming lifelong habits. Once exercise is established as a long term part of a patient's routine, time can then be allocated toward refining the specific type and intensity of exercise necessary to acquire the maximum benefit. By incorporating prewritten exercise handouts explaining the intricate details of a complete exercise prescription, physicians can include all four components without jeopardizing the main goal of improving the total amount of time spent participating in physical activities. Physicians should be encouraged to seek alternative means of advising patients on the four fundamental components of exercise if they personally lack the knowledge or time to do so. When exercise is going to be used for the improving strength and mobility after an injury or in efforts to improve a disease state such as diabetes physicians can also utilize their ability to refer to non physician providers. However, the overall message is

the importance of customizing exercise to the capabilities and needs of each individual patient.

At 66%, the most frequent response indicated by providers as being a barrier to prescribing exercise was a lack of time. However, Swinburn and colleagues found the assessment and prescribing of exercise only took approximately five minutes of the general practitioner's time in *The Green Prescription study* (Swinburn, B. A., Walter, L. G., et al., 1998). Assessing a patient's need for exercise and recommending appropriate training for their age and health status does not require excessive amounts of time on the part of the practitioner. One way to decrease time as a barrier is to develop prewritten exercise prescriptions for different patient populations. For example, separate exercise regimens specifying the frequency, intensity, duration and type of exercise to be performed by healthy patients, elderly patients and those who are coping with diseases such as CAD, CHF and COPD could be developed. By including information pertaining to the potential risks of exercise and how to avoid injuries may also help to distill patient fears about exercise. Furthermore, providing pamphlets containing information on the benefits of exercise in general, as well as the positive contribution it may produce on a number of disease processes, may increase patient compliance leading to weight loss that may lead to the elimination of medication in some cases. Having information for the patient already written out in a very clear and concise manner decreases time spent on the part of the physician explaining the various aspects of exercise. These packets of information can be presented, explained and clarified by a nurse or medical assistant after the patient is seen by the doctor as an additional way to conserve time. However, if a provider would prefer patients receive advice about

exercise face to face, they can schedule a visit solely dedicated to exercise or refer them to non-physician providers such as a physician assistants, nurse practitioners, or personal trainers.

Lack of knowledge and the perception that patients lack interest in exercise advice are also barriers indicated by survey respondents. To combat the lack of exercise knowledge indicated by 60% of respondents, providers can utilize CME as an opportunity to become more educated on the benefits of physical activity, exercise prescriptions and how to apply the recommendations to their particular patient population. According to Connaughton and colleagues health promoting beliefs and practices are fairly well fixed by the time physicians graduate from medical school. Therefore, to increase physician knowledge Medical University programs need to emphasize the importance of exercise and the negative outcomes associated with obesity by including additional lectures on the topic in an effort to cement future physician's health promoting beliefs. Although 60% of providers perceive a lack of interest from patients for exercise prescriptions, research conducted by Potter et al. indicates the types of weight management assistance patients want most from physicians are dietary advice, assistance in setting realistic weight goals and exercise recommendations (Potter, M.B., Vu, J.D., et al., 2001). It is also beneficial for providers to realize that while they may not see immediate action on the part of the patient they should be reassured by the data which demonstrates patients are at a higher stage of readiness for change when they receive counseling from a physician. Regardless of patient interest the providers still hold the responsibility to educate patients on the risks

associated with sedentary behavior and the numerous benefits of physical activity and exercise.

Now, providers need to take the next step and begin to practice preventative medicine. Prevention provides an opportunity to solve to the problem before it ever begins, opposed to managing an already existing, well-developed disease processes. Overall, the key is to increase both patient and provider awareness of the documented success of exercise in the prevention and treatment of obesity as well as substantially decreasing risk factors associated with a sedentary lifestyle.

LIMITATIONS OF STUDY/ RECOMMENDATIONS FOR FUTURE RESEARCH

This project was significantly hindered by the lack of responses and many of the surveys were missing responses to individual questions. Using yes/ no responses would provide a clear and concise question format, decreasing confusion on how to respond. The Perseus system also presented unique obstacles. Upon opening the e-mail the survey appeared in the text of the e-mail as well as an attachment. If completed within the text box it would not be submitted. However, if the attached survey was completed, it would be properly submitted. This could explain the low response rate of 20 out of 156 surveys. Overall, the greatest limitations of the study were the lack of survey responses and the glitch with the Perseus system. Response rate could be improved by increasing the survey population and formatting the survey so that the survey only appears as an attachment to the email to prevent confusion.

Future research on the attitudes of newly graduated physicians concerning health promotion and disease prevention vs. their feelings after 2-5 years of independent practice would be of interest. The data would aid in determining the emphasis medical schools are placing on lectures concerning the importance of exercise in health maintenance, disease prevention and how to utilize exercise prescriptions. It could then be determined if the emphasis placed on the importance of exercise has any affect on how physicians will prescribe exercise in their own practices. Studying the outcomes of providing physicians with prewritten exercise prescriptions and monitoring the degree to which they prescribe exercise before and after having the prewritten prescriptions would also be of interest. Hopefully current research will

continue to increase both the public and provider's knowledge and awareness concerning exercise and its benefits, so that it can be utilized to its fullest potential.

CONCLUSIONS

In conclusion, physicians who place greater meaning on the importance of exercise histories and the role of exercise in health maintenance and disease prevention are more likely to take an exercise history and write an exercise prescription. The majority of primary care providers at MUOT are taking exercise histories. Forty five percent of respondents indicate that they are not currently prescribing exercise for their patients. Sadly, only 20% of respondents indicate they write an exercise prescription on average once a month.

There needs to be push made by MUOT as an institution to adopt the philosophy that prevention is better than the management of already existing diseases. All of the research presented in this study validates the superiority of exercise in the treatment of disease, and the chances for successful cost reduction are increased exponentially when a disease never occurs in the first place. The health care system simply cannot afford the billions of dollars it will be burdened with as a result of the sequelae of inactivity and obesity. Currently, the costs to society being incurred as a result of the effects of a sedentary lifestyle are staggering. Fletcher and colleagues estimate that $6.4 billion per year could be saved if all sedentary people in the United States would begin a program of regular walking (Fletcher, G., Trejo, J.F., 2005). Now is the time for providers to rise to the occasion and make a difference in the war against obesity by educating themselves and patients on the rewards of exercise. Overall, this will have a significant effect on the ability to attain targets set by Healthy people 2010 implemented with the hopes of increasing physical activity in efforts to decrease obesity in this nation.

FIGURES

Figure 1: Percent of physicians writing exercise prescriptions based on their personal exercise habits.

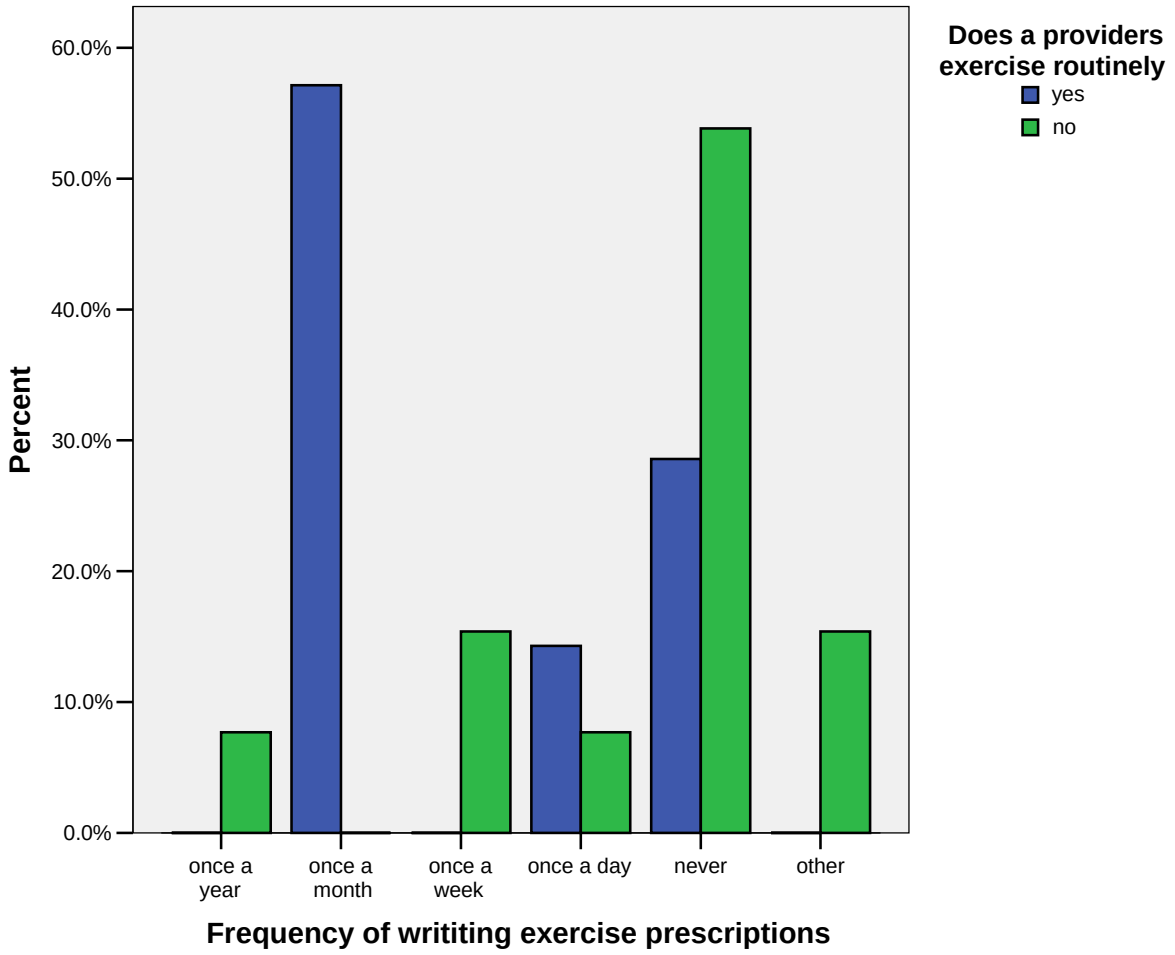


Figure 2: Percent of physicians taking an exercise history based on the importance they place on it.

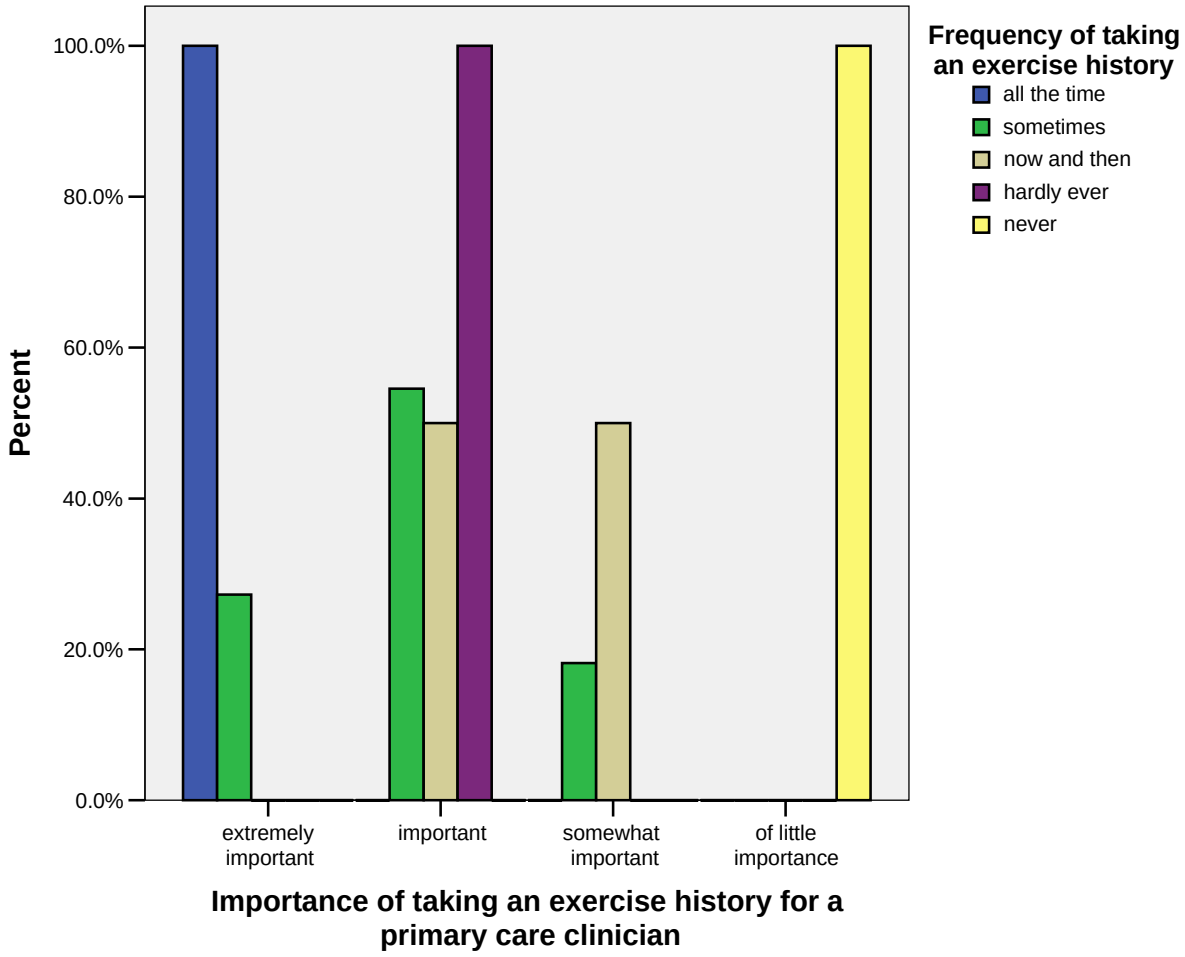


Figure 3: Percent of physicians writing exercise prescriptions based on their view on the importance of exercise in health maintenance and disease prevention.

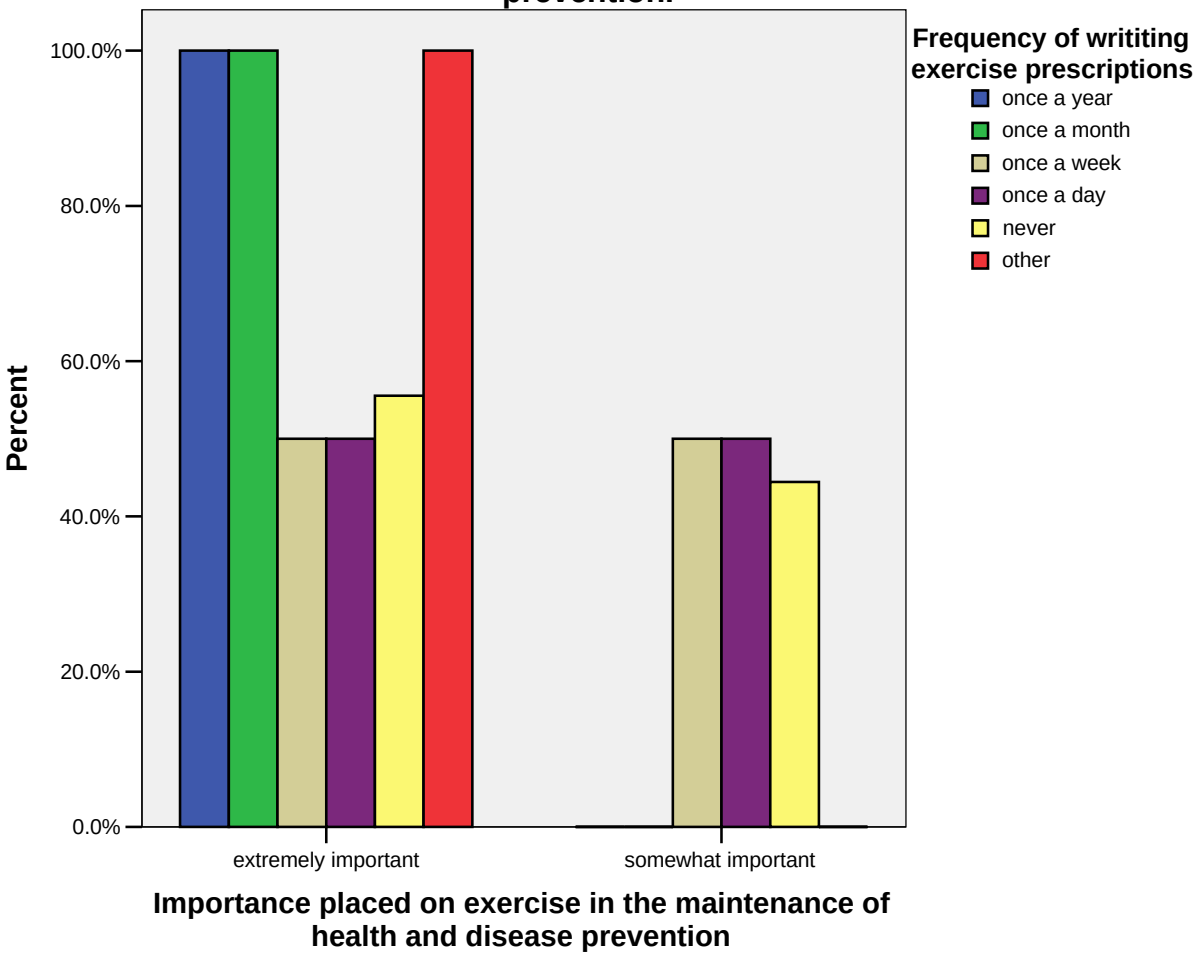


Figure 4: Percent of physicians specifying the frequency of the exercise to be performed.

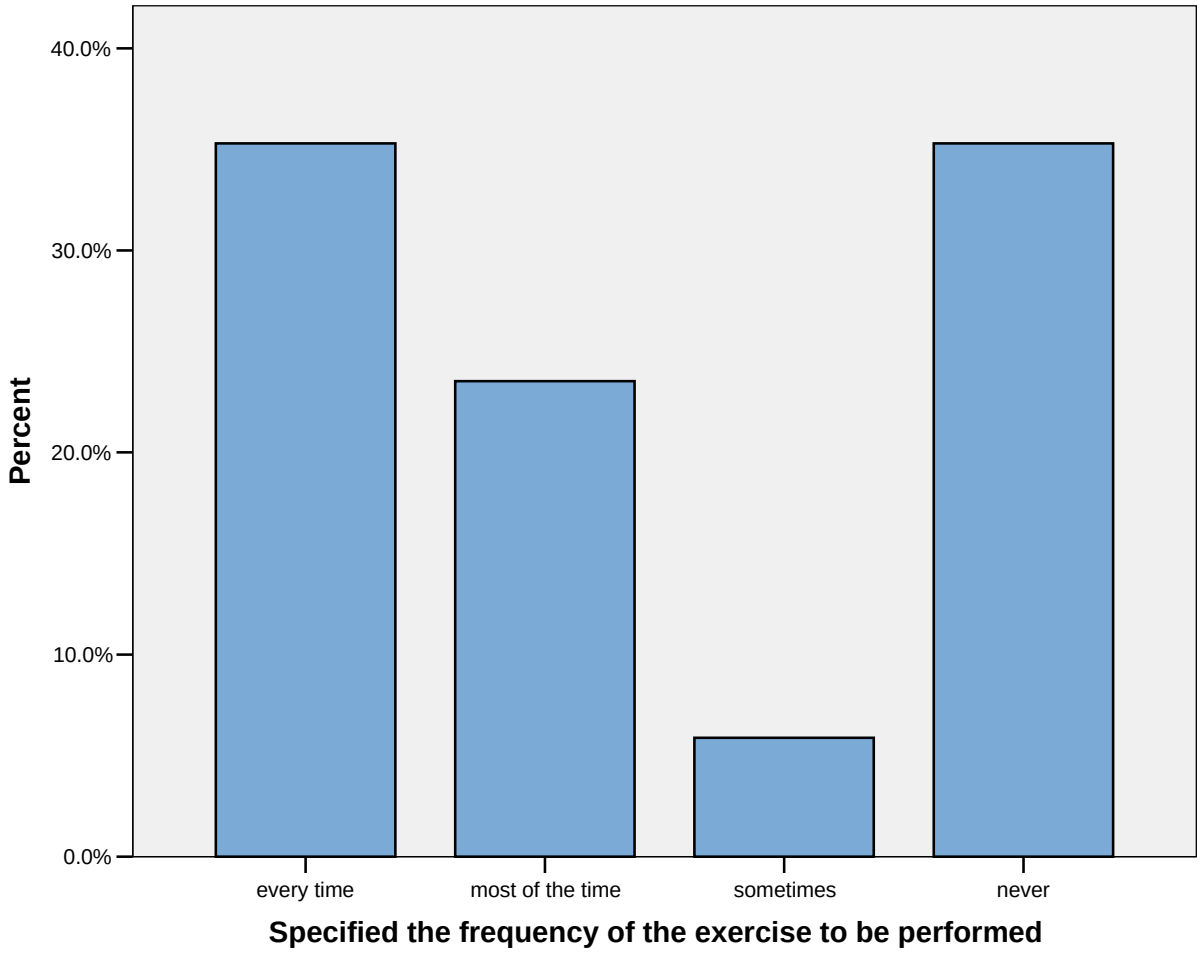


Figure 5: Percent of physicans specifying the intesity of the exercise to be performed.

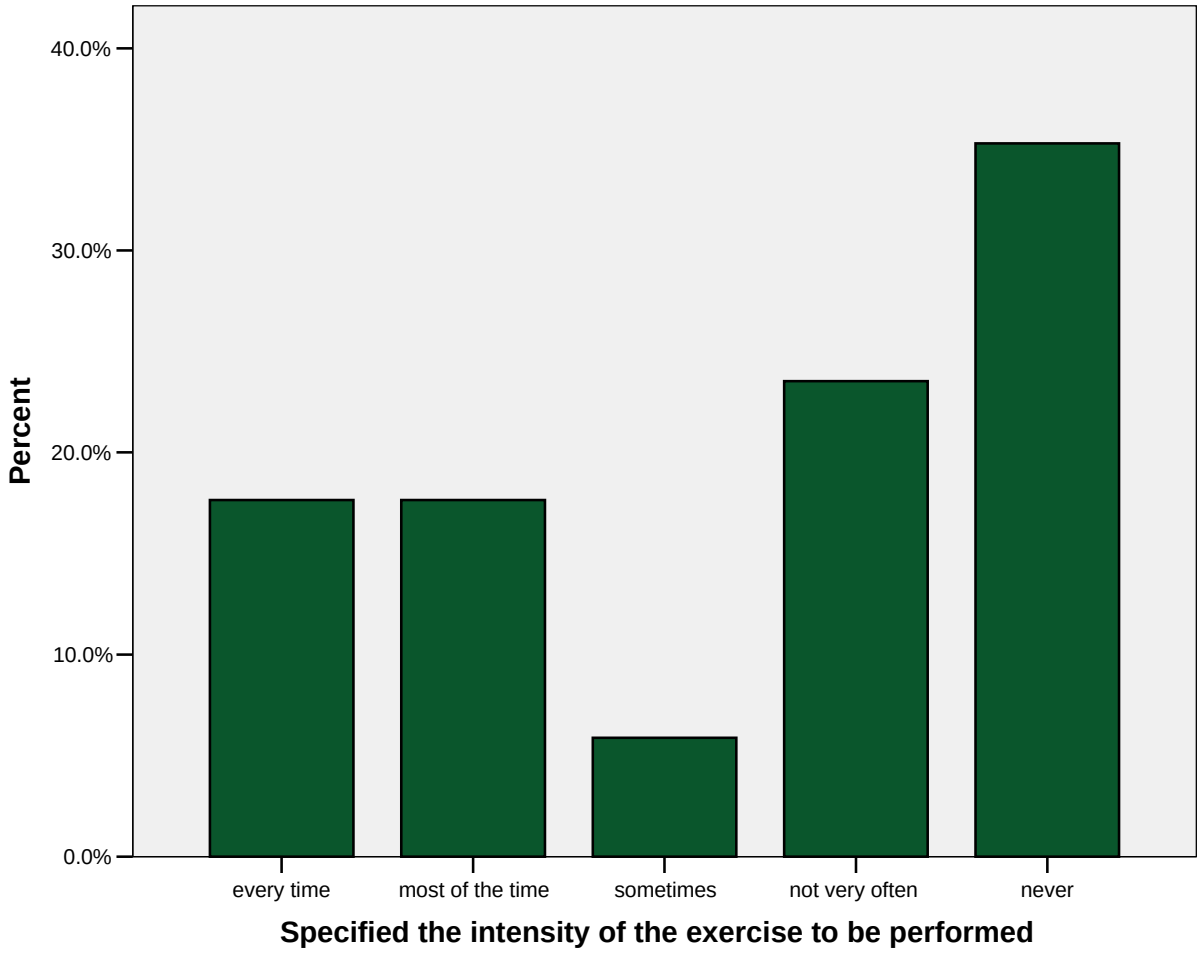


Figure 6: Percent of physicians specifying the duration of the exercise to be performed.

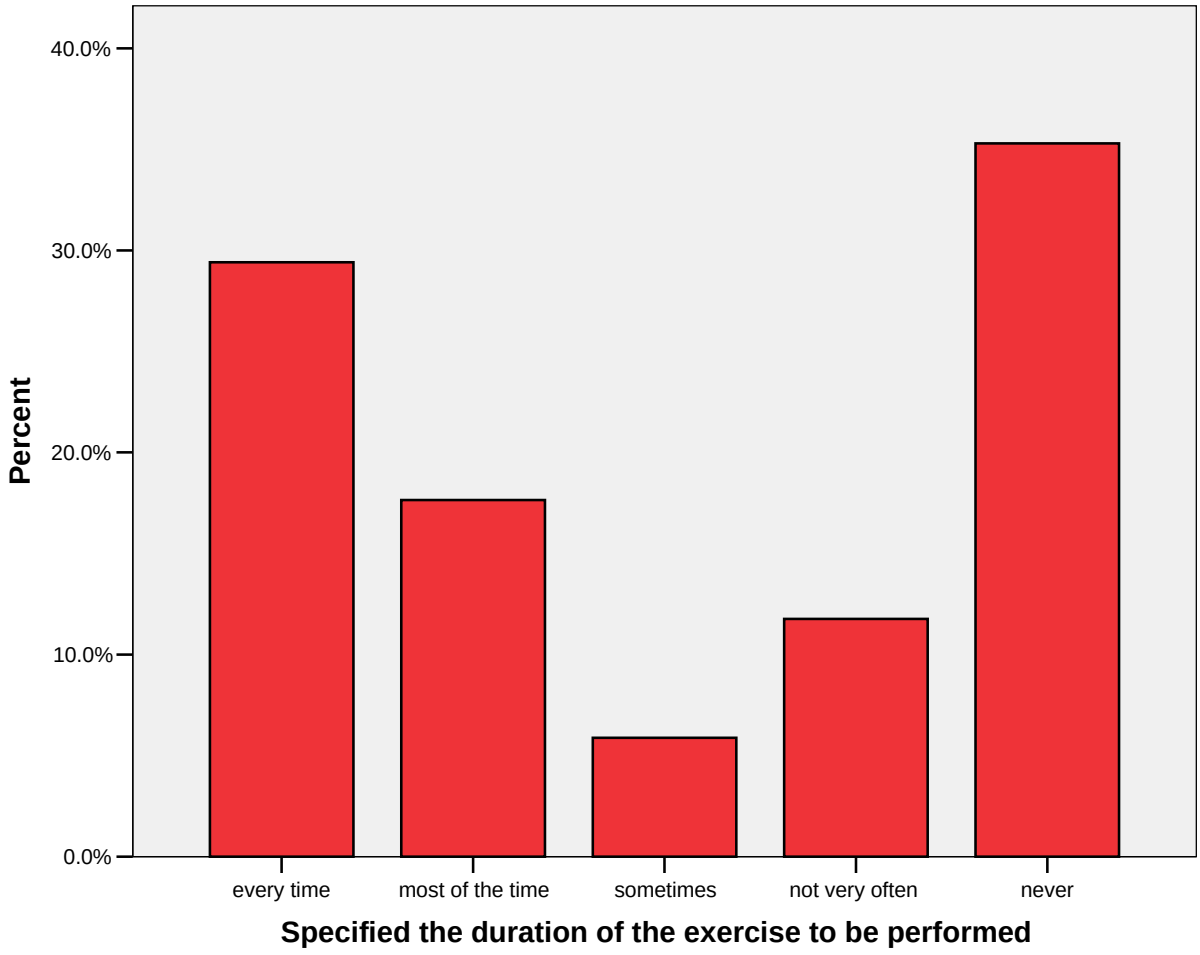


Figure 7: Percent of physicians specifying the type of exercise to be performed.

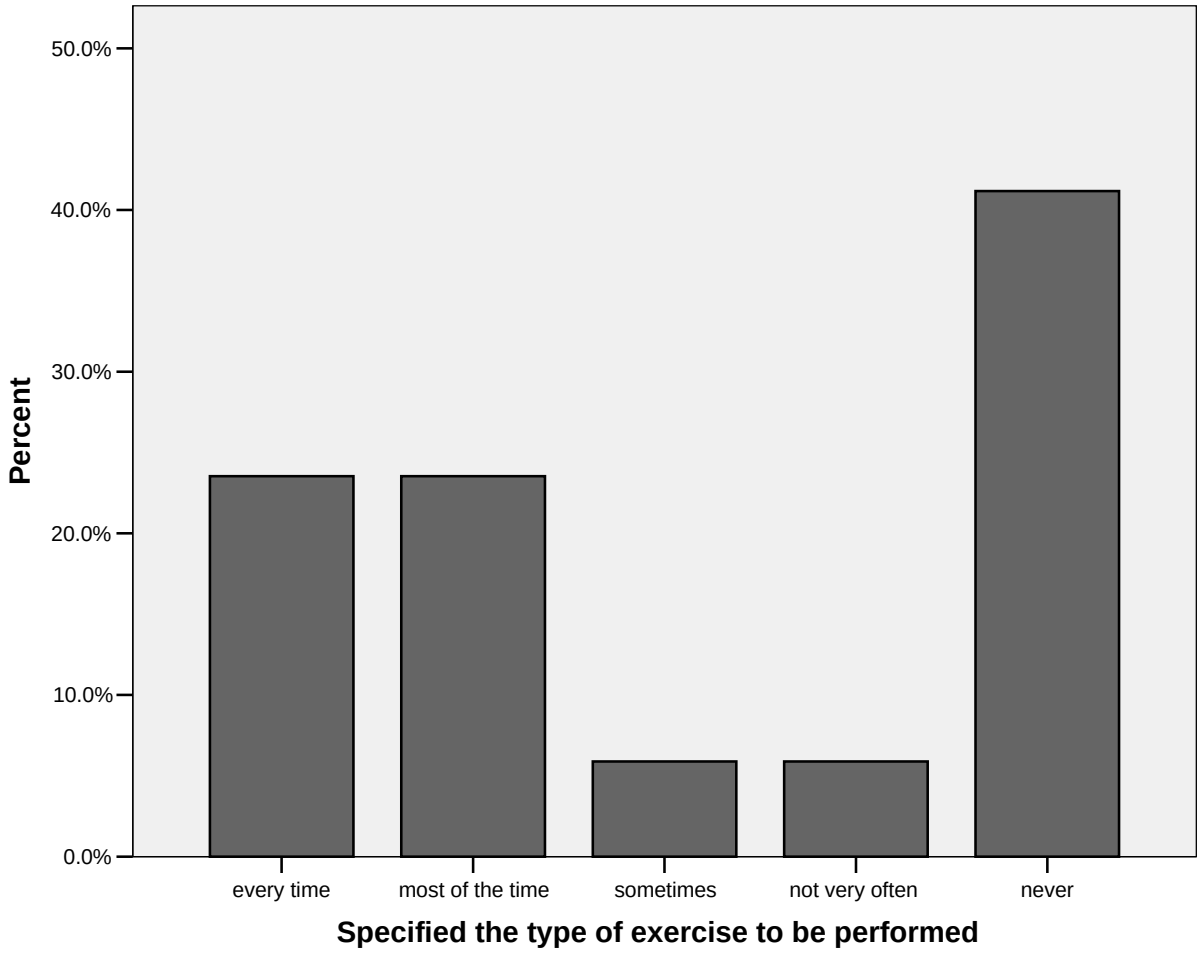


Figure 8: Percent of physcians who feel that time is a barrier preventing them from addressing patient's exercise needs.

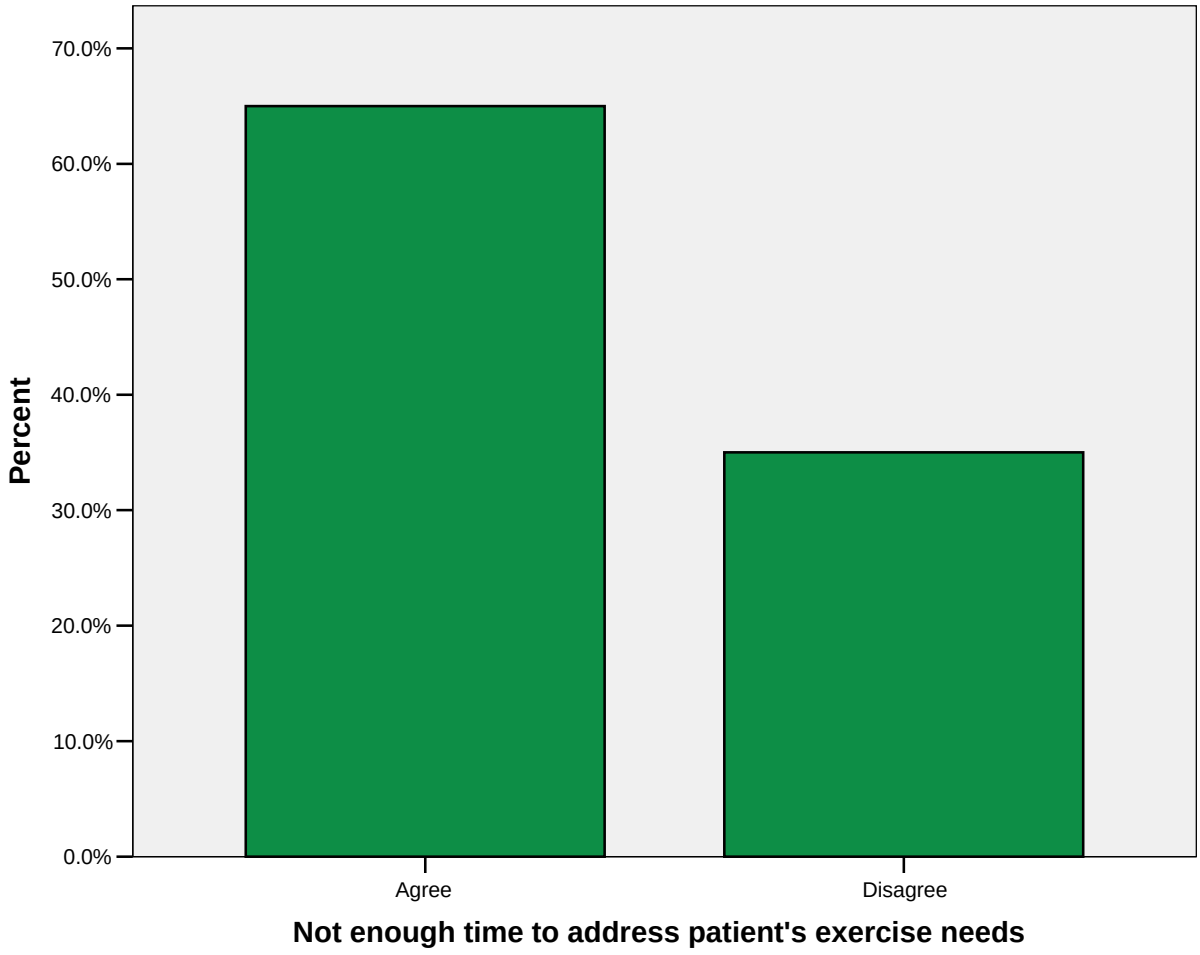


Figure 9: Percent of physcians who feel they lack the knowlege needed to write an exercise prescription.

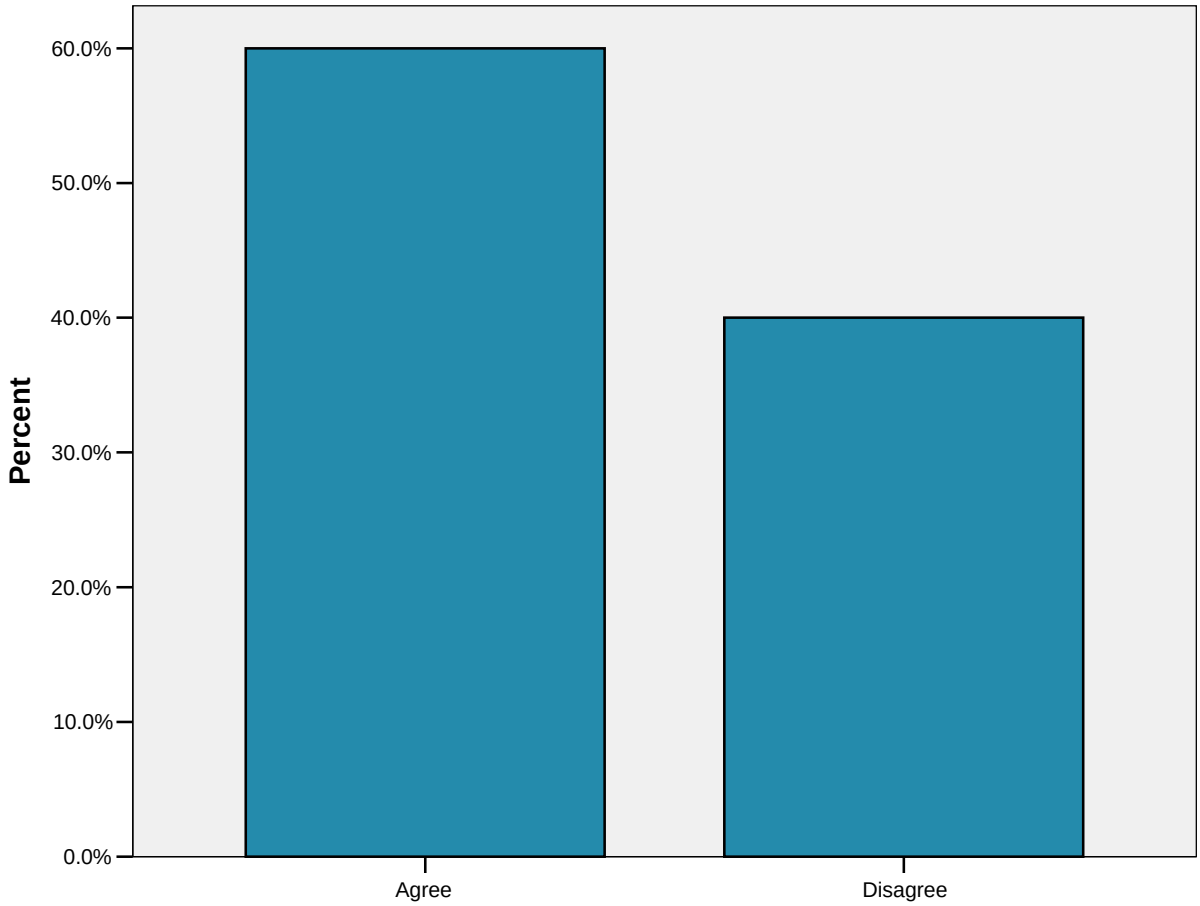


Figure 10: Percent of physicians who feel there is a lack of patient interest for exercise prescriptions

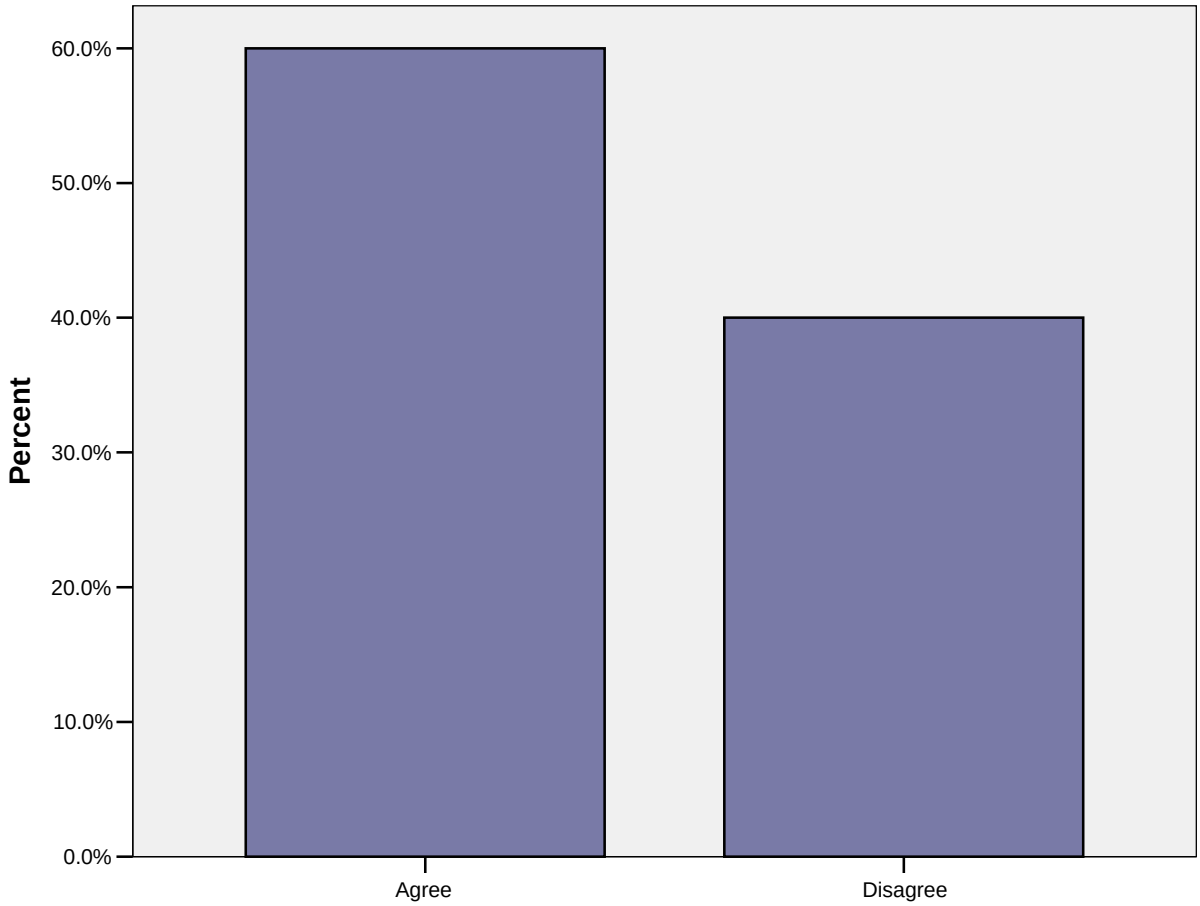


Figure 11: Percent of physicians who feel they do not encounter any obstacles to prescribing exercise.

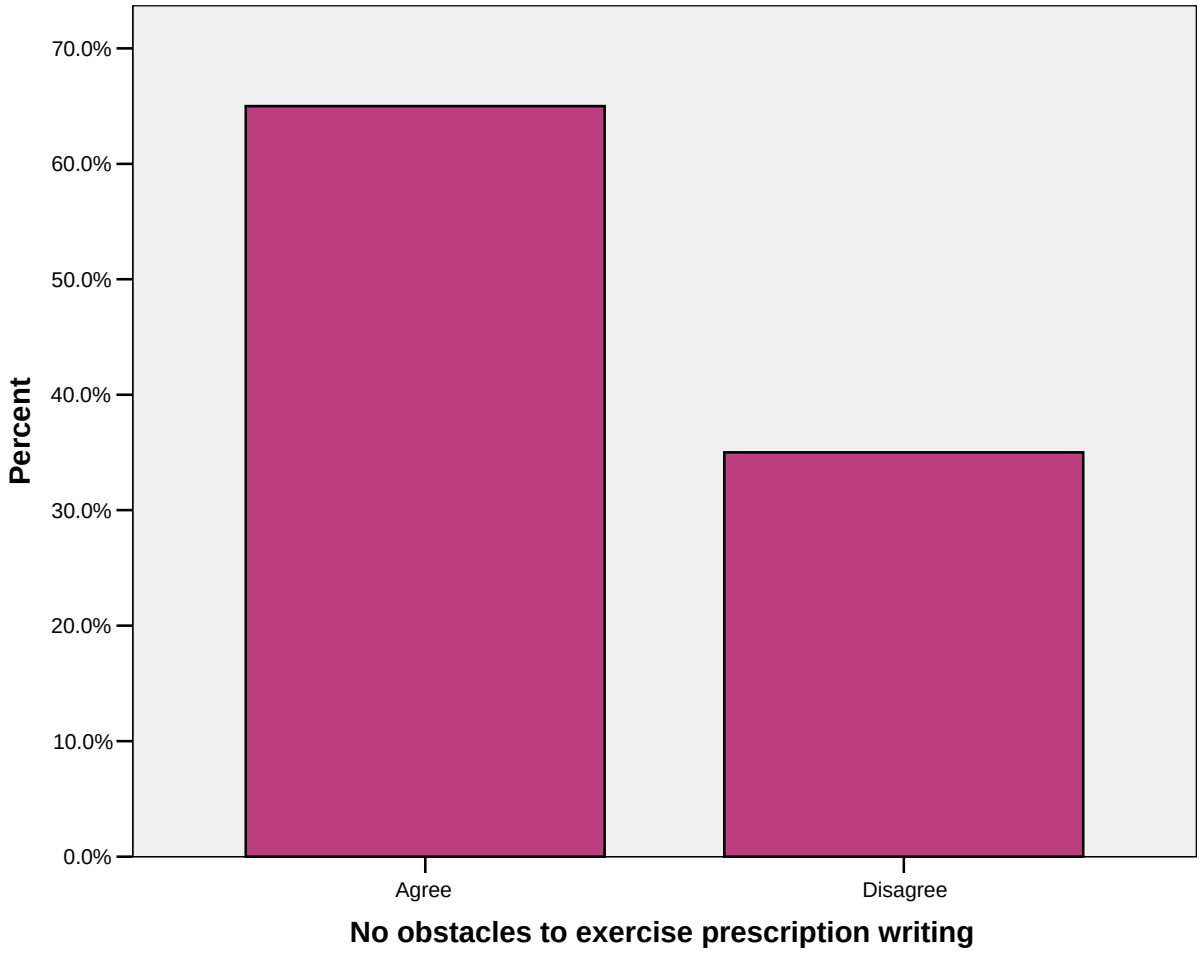


Figure 12: Percent of MUOT physicians writing exercise prescriptions

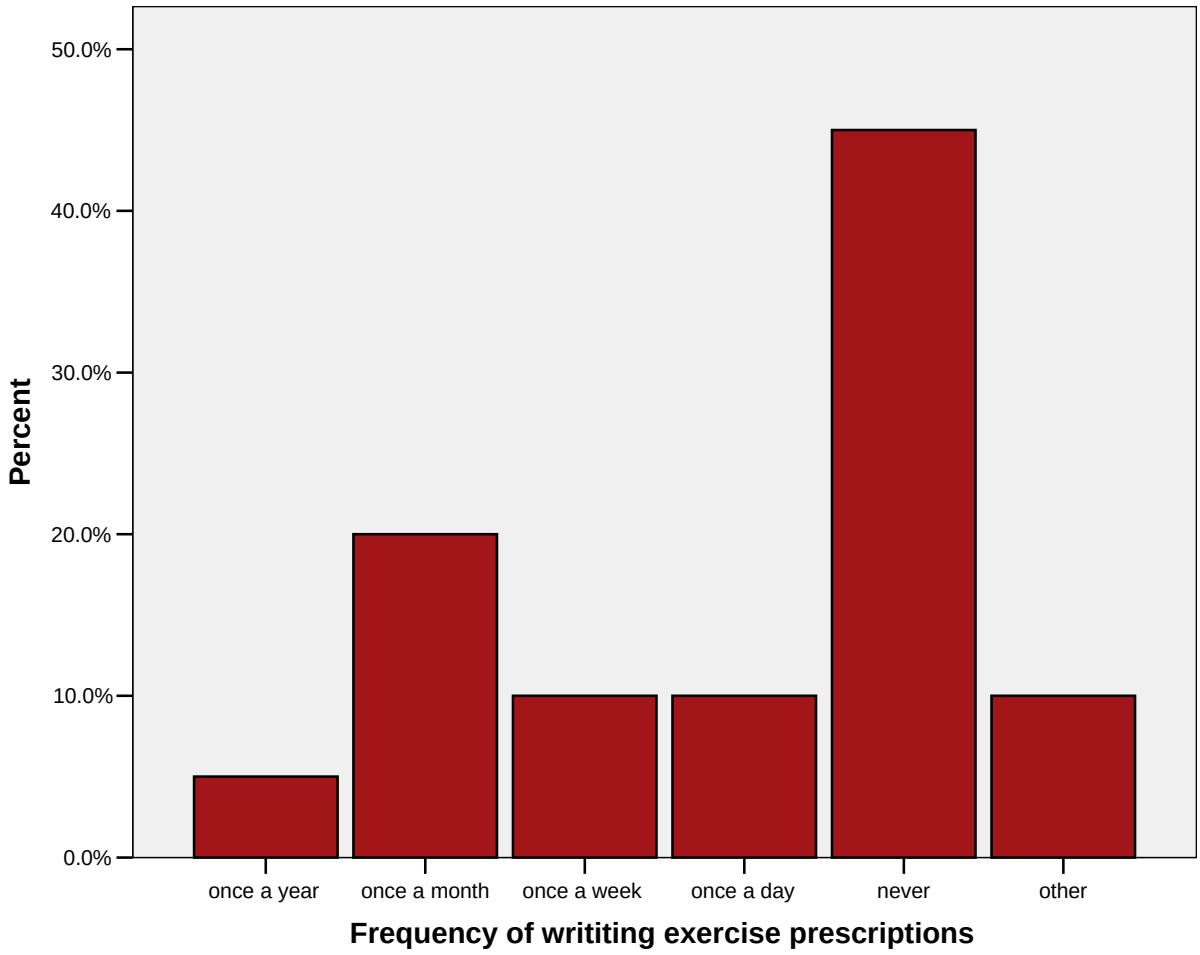


Figure 13: Percent of MUOT physicians taking exercise histories

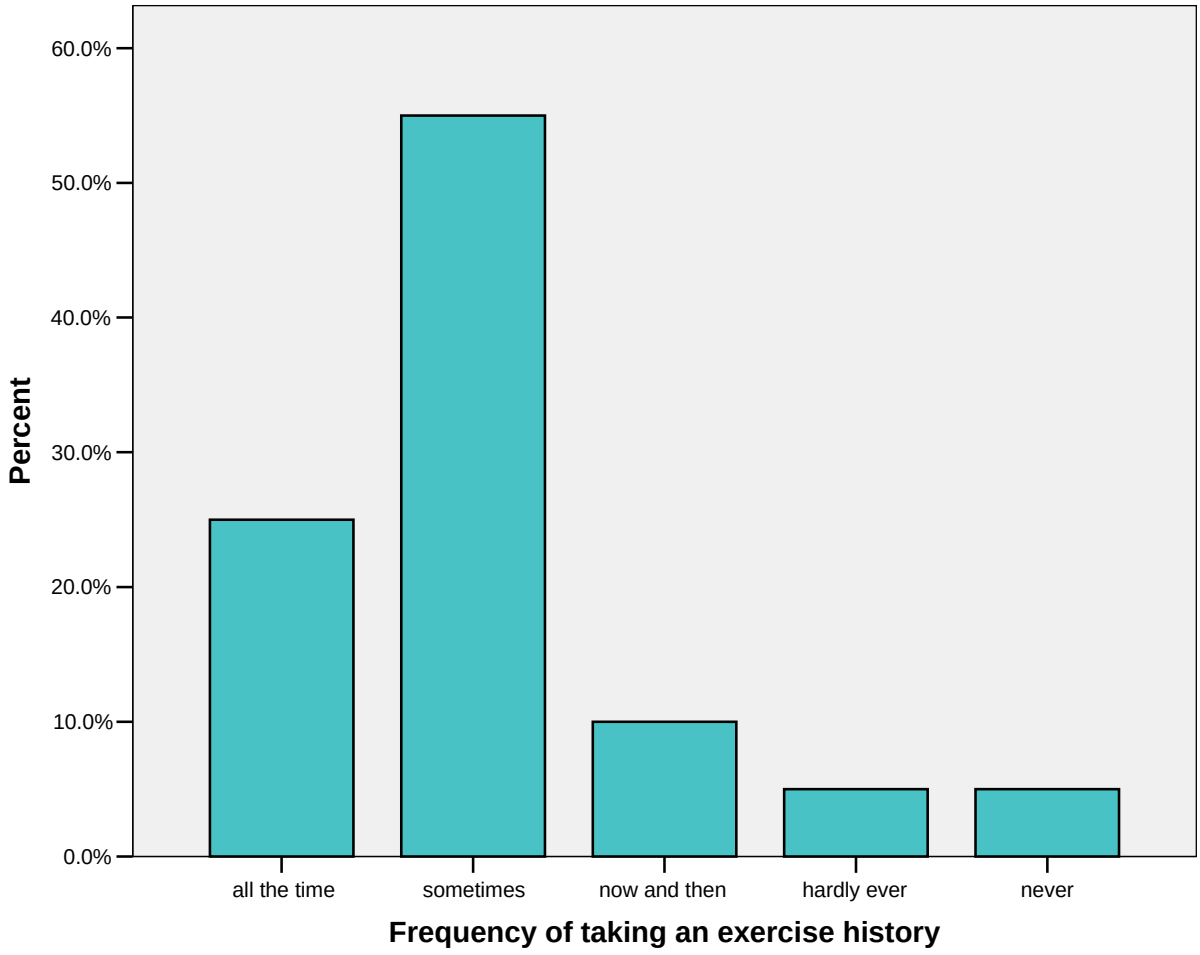
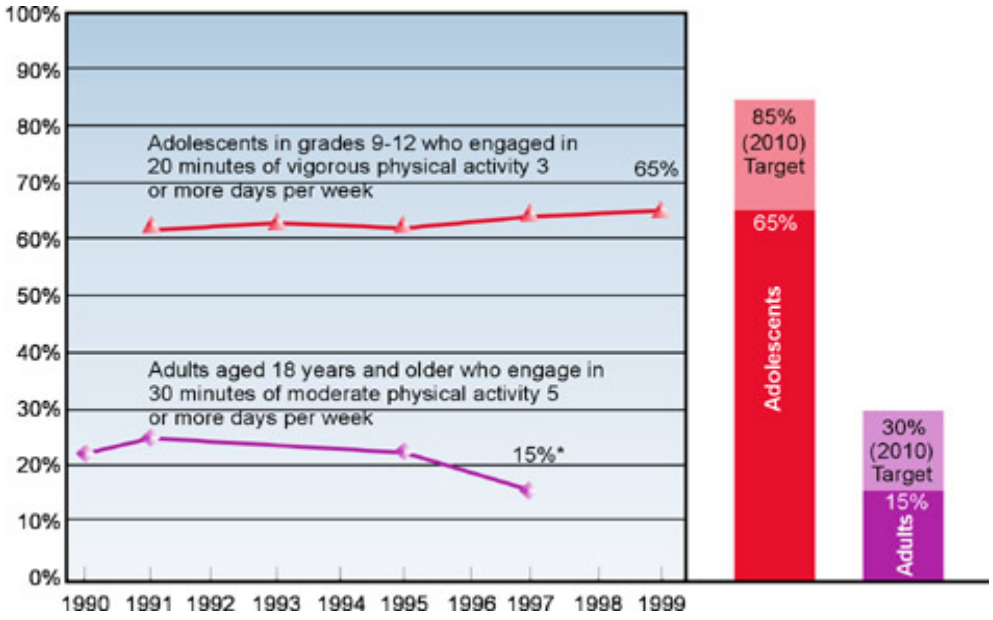


FIGURE 14: Participation in regular physical activity, United States, 1990–99



Sources: Centers for Disease Control and Prevention. Youth Risk Behavior Surveillance System. 1991–97. Centers for Disease Control and Prevention, National Center for Health Statistics. National Health Interview Survey. 1990–99.

DEFINITIONS

Sequelae- any disorder or pathological condition that results from a proceeding disease or accident.

Exercise- activity that is planned, structured, repetitive, and purposeful in the sense that improvement or maintenance of physical fitness is the objective

Physical Activity- bodily movement produced by skeletal muscles that results in energy expenditure beyond the resting level

Routine- Participating in physical activity or exercise three or more times a week.

An Evaluation of Exercise Prescribing Patterns among Primary Care Physicians at the Medical University of Ohio at Toledo

Sarah O'Brien

Advisor: Michael Guerra

ABSTRACT

Objective: To evaluate the exercise prescribing patterns of primary care providers and the implications this may have on meeting Healthy People 2010 targets.

Method: One hundred fifty-six copies of the Primary Care Exercise Prescription survey were e-mailed to primary care providers at MUOT hospital and outpatient clinics via Perseus.

Results: Forty- five percent of providers at MUOT are not prescribing exercise for their patients.

Conclusion: Physicians who place greater meaning on the importance of exercise histories and the role of exercise in health maintenance and disease prevention are more likely to take an exercise history and write an exercise prescription. Forty-five percent of respondents indicated they never prescribe exercise and only 20% were writing prescriptions once a month. This will have a significant effect on the ability to attain targets set by Healthy people 2010 to increase physical activity in an effort to decrease obesity.

The Primary Care Exercise Prescription Survey

PLEASE RESPOND BY 4/11/05

Part I
Demographics

1. Age: _____

2. Gender:
   Male _____ Female _____

3. How long have you worked as a primary care provider?
   Years _____

4. What group of patients do you most often encounter?
   - ❍ Pediatrics (0-18 yrs)
   - ❍ Younger Adults (18-34 yrs)
   - ❍ Middle-Age Adults (35-60 yrs)
   - ❍ Older Adults (>60 yrs)

5. What is your professional degree? _____

6. On average how many patients do you see every day?

7. Do you exercise routinely (>3x week)?
   - ❍ Yes
   - ❍ No

8. In which of the following fitness levels would you place yourself?
   - ❍ Exceptional fitness
   - ❍ Above average fitness
   - ❍ Average fitness
   - ❍ Below average fitness
   - ❍ Poor fitness

9. How important do you feel exercise is to the maintenance of health and disease prevention?
   - ❍ Extremely important
   - ❍ Somewhat important
   - ❍ Of little importance
   - ❍ Not important

Part II

The questions listed below relate to patient history taking. Please read the questions and answer by circling the answer that best describes your thoughts and feelings.

How often do you take an exercise history?

- ❍ All the time
- ❍ Sometimes
- ❍ Now and then
- ❍ Hardly ever
- ❍ Never

How important do you feel the above task is for a primary care clinician to perform?

- ❍ Extremely important
- ❍ Important
- ❍ Somewhat important
- ❍ Of little importance
- ❍ Not important

How well prepared do you feel to complete this task?

- ❍ Extremely prepared
- ❍ Prepared
- ❍ Somewhat prepared
- ❍ Under prepared
- ❍ Not prepared

Part III

The questions listed below relate to the frequency and content of clinician written exercise prescriptions. Please select the answer that most closely represents your typical practice behavior.

How frequently do you write a prescription for physical exercise?

- ❍ Once a year
- ❍ Once a month
- ❍ Once a week
- ❍ Once a day
- ❍ More than once a day
- ❍ Never
- ❍ Other _____

In the written exercise prescription how often do you specify the frequency the patient is recommended to perform the exercise?

- ❍ Every time
- ❍ Most of the time
- ❍ Sometimes
- ❍ Not very often
- ❍ Never

How frequently do you state the type of exercise to be performed in the prescription?

- ❍ Every time
- ❍ Most of the time
- ❍ Sometimes
- ❍ Not very often
- ❍ Never

How often do you specify the intensity of the prescribed exercise?

- ❍ Every time
- ❍ Most of the time
- ❍ Sometimes
- ❍ Not very often
- ❍ Never

In the written exercise prescription do you specify the duration which the recommended exercise is to be performed?

- ❍ Every time
- ❍ Most of the time
- ❍ Sometimes
- ❍ Not very often
- ❍ Never

Part IV

Please rank the following obstacles to writing an exercise prescription that you most often encounter 1-3, with 1 being the most frequently encountered. If there is an obstacle that you frequently encounter that is not listed, please rank this response as *Other* and identify that obstacle in the space provided. If you encounter no obstacles, please check the appropriate response.

I do not have enough time with patients to address their exercise needs
_____

I am not sure that I have the knowledge needed to write an exercise prescription.
_____

It is my perception that there is a lack of patient interest for exercise prescriptions. _____

There are no obstacles to writing an exercise prescription in my practice.
_____

Other _____

COVER LETTER

Dear Survey Participant,

My name is Sarah O'Brien, and I am a Physician Assistant Student pursuing a Master of Science degree at the Medical University of Ohio at Toledo. My study, *An Evaluation of Exercise Prescribing Patterns of Primary Care Clinicians at MUOT,* is being conducted as part of my graduation requirement. Dr. Roland Skeel, the Interim Dean of the School of Medicine at the Medical University of Ohio at Toledo has given me permission to conduct this on-line survey in order to facilitate my research.

Sedentary lifestyle has been established as a key factor in the cause of obesity, according to recent research. Promoting exercise by writing exercise prescriptions gives primary care providers an imperative role in helping Americans develop a healthy regimen of physical activity, allowing them to decrease their risk factors for comorbid diseases associated with being overweight or obese. The purpose of this study is to evaluate the exercise prescribing patterns (frequency, intensity, type, and time interval of prescribed exercise regimens) among primary care providers, and the implications this may have on meeting Healthy People 2010 targets.

One hundred surveys will be emailed using Perseus to primary care clinicians in the Internal Medicine, Family Practice, Cardiology and Pediatric practices here at the Medical University of Ohio Hospital and its outpatient clinics with the written permission of the institute and the IRB. Participation is voluntary and completely anonymous. In order to maintain anonymity, please do not identify yourself. Participation is acknowledged by completion of the survey and implies informed consent. The survey should take approximately **10 MINUTES** of your time.

Please take this opportunity to add to the growing body of knowledge concerning the exercise prescribing patterns among primary care providers at MUOT. Your contribution is greatly needed and appreciated.

Please submit the completed survey by 4/25/2005. A reminder email will be sent two weeks before the deadline. Should you have any questions regarding the survey, please contact Sarah O'Brien (937) 418-4677 or Michael Guerra, Research Advisor, (419) 383-5099.

Thank you for your time and assistance.

Sincerely,

Sarah O'Brien PA-S II

Michael Guerra, PA-C, MS

FOLLOW-UP LETTER

This letter serves as a reminder to the survey you received one week ago. If you have not already, please complete and place the survey in the secured box by, 4/28/2005. This survey serves as my Master's Project and your participation is greatly appreciated.

Thank you.

Sarah O'Brien, PA-S II

Michael Guerra, PA-C, MS

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