Physical activity profile of adult males in Riyadh City

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ABSTRACT

Objectives: To assess the patterns and determinants of physical activity among Saudi adult males living in Riyadh.

Methods: Self-administered questionnaires were filled out by 1333 randomly selected Saudi males 19 years and older, during the Fall of 1996.

Results: Over 53% of Saudi males were totally physically inactive, and another 27.5% were irregularly active. Only 19% of the entire sample were active on a regular basis. A curvilinear relationship was found between age and inactivity, with the middle age group the least active. Physical activity was lower among those who were married, work in the private sectors, working 2 shifts, less educated, or who had only one day off during the week. Time constraint seems to be the major contributing factor to inactivity, while maintaining health and losing weight were the most important reason for being physically active among Saudi males.

Conclusion: The proportion of Saudi males who are at risk for inactivity is very high. Indeed, it is exceedingly higher than those who are at risk for hypertension, hypercholesterolemia, obesity, or cigarette smoking. Public policies are needed to encourage active living and discourage sedentary habits. Health care providers have an important role in promoting physical activity among the population.

Keywords: Physical activity, inactivity, exercise, males, coronary heart disease risk factors, public health, health promotion.

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Physical activity is defined as any bodily movement produced by skeletal muscles that results in energy expenditure above basal level.[1,2] Regular physical activity has long been associated with a wide range of physical and mental health benefits.[2-10] In addition, exercise training was shown to exhibit numerous positive functional adaptations to the human body.[11-13] Physical inactivity, on the other hand, has been considered one of the coronary artery disease (CAD) risk factors.[3,5,6,14-16] Indeed, research on physical activity epidemiology in the United States of America (USA) revealed that physical inactivity appears to be a far more important risk factor than was previously estimated.[17-19] Reasons pertain to the fact that there are higher proportions of the USA population who are inactive and at risk of CAD than those who have high serum cholesterol, high systolic blood pressure, or cigarette smoking. Studies conducted a decade ago indicated that the percentages of the USA population at risk of CAD were 10% for high serum cholesterol, 10% for high blood pressure, 18% for cigarette smoking and 59% for physical inactivity.[17,19] Thus, it appears that physical activity and fitness are considered important components of public health measures.[20] Therefore, it is not surprising that physical activity has been listed as the first priority area for the newly released "Healthy People 2010" objectives, of the USA

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Department of Health and Human Services.[21] Moreover, many scientific, medical, and public health organizations around the world have issued position statements on physical activity and human health and well being.[2,6,8,10,14,22] These statements have called for establishing public policies and legislative initiatives encouraging active living and discouraging sedentary habits. During recent years, Saudi society has witnessed tremendous lifestyle changes, including those related to physical activity habits.[23,24] The impact of these lifestyle changes on societal health is considerable. In fact these changes were thought to be responsible for the epidemic of non-communicable diseases along with their complications in the region.[25] Research findings on Saudi College subjects have shown that only 15% of males were active enough to achieve cardiorespiratory benefits.[26] Furthermore, studies on Saudi children have demonstrated that a considerable proportion were not active enough to maintain proper cardiovascular fitness, and that they exhibit one or more CAD risk factors.[27,28] However, published studies on the physical activity patterns of Saudi adults are lacking, despite the fact that such data represents an important public health concern. Therefore, this paper presents findings on the physical activity profile of Saudi adult males living in Riyadh City.

Methods. The questionnaire method was used in collecting information regarding physical activity patterns of Saudi adult males. This method is considered most appropriate in large scale population studies.[19,29,30] The questionnaire form included extensive details on physical activity habits, including type, frequency, duration, and intensity. Experts validated the form before its distribution to the subjects. Since the primary objective of the study was to provide reliable population estimates of physical activity patterns, the sample design called for wide geographical coverage of Riyadh City, with careful representation of the population in both public and private sectors. Therefore, 2 sampling strategies were employed. The first involved a random distribution of the questionnaire form to Saudi adult males through their sons in public schools. Six primary, 3 intermediate, and 3 secondary schools, representing all geographical areas of Riyadh City were randomly chosen for this purpose. Children were asked to hand out the forms to their parents and then bring them back to schools. The 2nd sampling strategy involved a random selection of 3 public and 3 private institutions and random distribution of the questionnaire forms to their employees. A total of 1780 questionnaire forms were sent, and approximately 75% were returned. The needed sample in this study was determined so that the sample proportion would be within +/- 0.05 of the population proportion with a 95% confidence level.[31]

Statistical analysis. Data was analyzed using the SAS statistical program. Chi-square (x^2) tests were performed, and follow up tests were conducted as needed using the cross tabs procedures. Type I error was protected at 0.05 level using Bonfferoni procedure.

Table 1 - Descriptive characteristics of the subjects (n = 1333).

Variable	Mean (SD)	Range
Age (years)	41.1 (9.7)	19-68
Body mass (kg)	74.8 (11.2)	45-120
Body height (cm)	167.5 (7.4)	153-189
Body mass index (kg.m^{-2})	26.7 (4.0)	18.2-39.9
SD - standard deviation		

Results. Physical characteristics of the subjects are shown in Table 1. Over 89% of the entire sample are married. Figure 1 illustrates the physical activity profile of the study's subjects. The findings of the study also indicated that physical inactivity is prevalent among Saudi males. All in all, the Saudi adult males who do not engage in any physical activity on a regular basis can be summed to nearly 81% of the entire sample (inactive plus irregularly active). Among the regularly active group (physically active for 30 or more minutes, 2 or more days per week), 45% have been active for more than 10 years, while 11% were active for less than a year, 12.5% for >1-5 years, and 16% for >5-10 years. The type of physical activity most practiced by the active group was walking (70%), jogging (40%), soccer (33%), swimming (27%), calisthenics (17.5%), and gardening and yard work (14%). The average time spent in activity for the regularly active males (19.5% of the total sample) was 4.6 hours per week

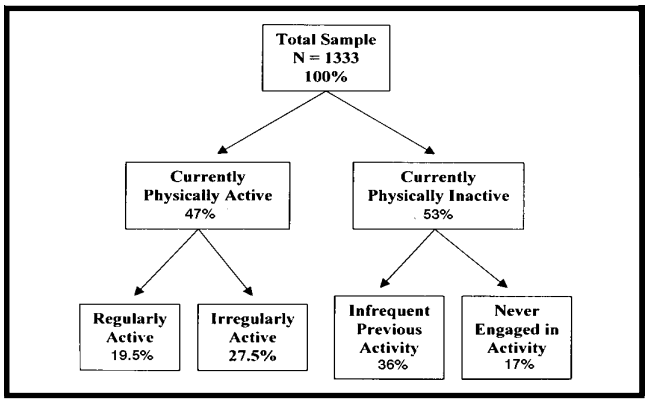

Figure 1 - Physical activity profile of Saudi adult males.

Table 2 - Most important reasons for being physically active among Saudi males (n = 621).

Reason	Percentage (%)
Maintaining health	43
Losing weight	21
Recreation	19
Socializing	6
Medical advice	5.5
All other reasons	5.5
TOTAL	**100**

(or 39.8 minutes per day) over 39% of the regularly active males were physically active on a daily basis (7% of the entire sample). Furthermore, most of the active Saudi males took part in activities either alone (40%) or with friends (29%). The most important reasons for being physically active are shown in Table 2.

Further analyses of the data indicated that physical activity level was lower among those who are married, work in the private sectors, working 2 shifts, or who have only one day off during the week. Approximately 33% of the regularly active and just over 28% of the inactive Saudi males have college degrees or higher, while 67% of the regularly active and 78% of the inactive Saudi males have a high school education or lower. Thus the ratio of high versus low education level among the regularly active is higher than among the inactive group (49% versus 36%). Inactivity was more prevalent among less educated males. In addition, the proportion of overweight (BMI = 25-29.9 kgm^{-2}) males among the active group was 30% and the inactive group 33% (no significant differences at 0.05 level). However, the percentage of obesity (BMI = 30 kgm^{-2} and above) appeared slightly higher among inactive (18%) than among active (13%) groups, though the difference was not significant.

Table 3 - Most important reasons for being physically inactive among Saudi males (n = 712).

Reason	Percentage (%)
Lack of time	47.5
Lack of facilities	23.5
Health condition	10
Fear of embarrassment	9
Not convinced of benefits	4
all other reasons	6
TOTAL	**100**

There appears to be a curvilinear relationship between inactivity prevalence and age. The proportion of inactive young males at 19-29 year-olds reached 50%. The prevalence of inactivity increases among the middle age group to a high of 60%. Inactivity then declines to 53% among the 50-59 age group and to a low of 47% at age 60 years and above. The major barriers to physical activity among Saudi males are presented in Table 3. Time constraint seems to be the major factor contributing to inactivity, lack of facility was listed next, followed by health condition. It was interesting to note that over 9% of the inactive males stay so because they were afraid of being embarrassed if they exercise. This reflects some cultural conceptions that might still exist about those who exercise.

Discussion. Current recommendations from the USA Surgeon General's Report,[2] and from other consensus documents[6,8,22] have all called for accumulating 30 minutes or more of moderate intensity physical activity on most, preferably all, days of the week. However, the findings of this study demonstrated a high prevalence of inactivity among randomly selected Saudi males living in Riyadh. Nearly 81% of the sample in this study do not exercise on a regular basis (53% inactive plus 27.5% irregularly active), and therefore fall below the current recommendation. Healthy People 2010 objectives of the USA calls for reducing to no more than 20% the proportion of people aged 18 years and older who are inactive.[21] Although differences in survey sampling and assessment methods make the task of comparing inactivity estimates across countries extremely difficult, current estimate of inactivity level found in the present study appeared higher than reported in many western countries. The prevalence of sedentary living habits among adults in the USA varied from 22% to 29%.[2,32] Results from the National Health and Nutrition Examination Survey indicated that the prevalence of physical inactivity among USA males 20 years and older was 23%.[33] However, data from the National Health Interview Survey[21] indicated that 36% of American males aged 18 years and older engaged in no leisure physical activity in 1997. Furthermore, analysis of activity trends among 26 states in the USA placed the population estimate of physical inactivity at 31%.[34]

A high prevalence of physical inactivity was also reported in many other countries around the world. According to the World Health Organization (WHO) report, 60% of the world population is not active, and that activity declines significantly starting with adolescent years.[16] Caspersen et al, reported on the

prevalence of inactivity in Australia, Canada, Finland, and the USA. The proportion of inactivity (defined as no physical activity or a few times a year) ranged from 16% in Finland to 43% in Canada, with Australia (26.5%) and USA (30.5%) placed in between.[35] The current proportion (19.5%) of regularly active Saudi males does not seem high at all. In fact it is lower than reported in many countries elsewhere. The 1997 National Health Interview Survey of the USA showed that 31% of males engaged in moderate activity for 20 minutes or more, 3 or more days per week.[21] The survey also showed that the proportion of those engaged in vigorous physical activity for 20 or more minutes, 3 or more days per week was 23%. Moreover, in a review paper, Oja presented the health-related physical activity profile from several European and North American countries.[36] The review indicated that the proportion of males who engaged in moderate to vigorous leisure-time physical activity 3 or more days per week varied from 21% in Sweden to nearly 50% in Canada and England. In the neighboring Gulf State of Bahrain, approximately 13% of men aged 30-79 years were reported to exercise regularly.[37] We were able to locate only one published local study on physical activity among primary health care physicians.[38] Its findings showed that 55% of Saudi primary care physicians did not have satisfactory levels of physical activity. Only 23.5% of the physicians were active enough to promote aerobic fitness. Walking was the activity most practiced by the physicians. In the present study, walking was the activity of choice for over 70% of our subjects.

The finding that inactivity exhibits a curvilinear relationship with age is not surprising. During middle age years (30-49), individuals may indulge heavily in work and find little time for leisure-type physical activity (knowing that the most important reason for being inactive in the present study was time constraint). By the age 50-59 years, many of the lifestyle-related chronic diseases are manifested. The individual become more health conscious and might start to exercise. After the age of 60, with retirement, more time can be spent in activity. Similar curvilinear trends between activity and age were seen in Canada[35,39] and in Finland,[35] but not in the USA.[32,35] Caspersen et al,[35] attributed such findings to the fact that with increasing age almost any activity is harder to perform. Thus activities such as brisk walking may produce a conditioning stimulus for older adults but not for the younger ones. The end result is that even small amounts of intense activity performed regularly by the older adults can be seen as high level of physical activity, thus leading to a decreased prevalence of inactivity among the older age group.

The finding that physical activity was higher among those Saudi males with college degrees is consistent with studies elsewhere.[21,32,33] Data from the USA National Health Interview survey indicated that the proportion of moderately or vigorously active males with college degrees was higher than those with lower educational attainment.[21,32] In another study in the USA, inactivity was found to be more prevalent among less educated people.[33]

Research on physical activity epidemiology in the United States revealed that inactivity appears to be a far more important risk factor than was previously estimated.[17-19] Physical inactivity is as strong a risk factor for coronary heart disease (CHD) as the 3 commonly accepted CHD risk factors, namely hypertension, hypercholesterolemia and cigarette smoking.[17-19] In fact, it is estimated that 35% of all coronary heart disease deaths, 35% of diabetes deaths and 32% of colon cancer deaths in the USA were due to sedentary living habits.[40] In the USA, also, inactivity-related diseases cause over 14 times more deaths annually than acquired immune deficiency syndrome (AIDS).[41] Furthermore, among commonly recognized risk factors for CHD, there are more people who are at risk for inactivity than those who are at risk for the other CHD risk factors.[17-19] Table 4 illustrates this point using some published data for Saudi males. It clearly demonstrates that the percentage of Saudi males who are at risk for inactivity is exceedingly much higher than those for hypertension,[42] hypercholesterolemia,[43] obesity,[44] and cigarette smoking.[45] Therefore, health care providers have an important role to play in promoting active living, by providing routine assessment and counseling on physical activity and fitness for their patients. However, the primary health care providers in the Kingdom still fall short from fulfilling such a role. A recent survey found that less than one-quarter of the primary health care physicians in Riyadh were able to achieve satisfactory scores in health-educating their patients on physical activity.[38] Indeed, 10% of the physicians never counseled their patients at all on exercise.[38]

The findings of the present study have also

Table 4 - The percentages of Saudi males at risk of high systolic and high diastolic blood pressures, high total cholesterol, obestity, cigarette smoking and physical inactivity.

CHD risk factor	Percentage (%)
High systolic blood pressure[42]	5
High diastolic blood pressure[42]	7
High total cholesterol[43]	16
Obesity[44]	18
Cigarette smoking[45]	21
Physical inactivity	53

CHD - Coronary heart disease

indicated that one-fourth of the sample were inactive because of lack of space and facility. Thus public policy and legislative initiatives are needed to restructure physical and social environments, so as to encourage active living and discourage sedentary habits among all segments of Saudi society. Elsewhere, it was shown that the proportion of adults who regularly engage in vigorous physical activity is a matter of national policy and legislative initiatives.[2,21,22] Due to such national policy, several industrialized countries around the world reported increases in physical activity participation among adults in recent years.[2,21,35]

In summary, the findings of the present study demonstrated a high prevalence of inactivity among Saudi males 19 years and older. Nearly 81% of the sample in this study do not exercise on a regular basis (53% is totally inactive and 27.5% is irregularly active). Furthermore, the proportion of Saudi males who are at risk for inactivity is exceedingly much higher than those at risk for hypertension, hypercholesterolemia, obesity, or cigarette smoking. Physical activity was lower among those who were married, work in the private sectors, working 2 shifts, less educated, or who had only one day off during the week. Time constraint seems to be the major contributing factor to inactivity, while maintaining health and losing weight were the most important reason for being physically active among Saudi males. Finally, public policy and legislative initiatives are needed to encourage active living and discourage sedentary habits. Health care providers have an important role to play in promoting physical activity among the population.

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