

# Exercise in Argentine Physicians: Survey on Physical Activity Habits and Attitudes

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## ABSTRACT

### Introduction

Sedentarism is associated with higher cardiovascular morbidity and mortality and is increasing in the general population. Physicians should have the best preparation to instruct patients on physical activity. There are, however, no validated local data regarding physician's habits and attitudes towards physical exercise.

### Objectives

The aim of the study was to analyze the characteristics of physical activity in a medical population, determine the attitude towards patients regarding exercise, study the relationship between physical activity and age, gender and specialty and evaluate the population's risk factors.

### Methods

We surveyed physicians from the Autonomous City of Buenos Aires and the Greater Buenos Aires using the International Physical Activity Questionnaire (IPAQ). To assess the physical activity level, a scale based on weekly METS (<600 METS = low physical activity, > 3000 METS = vigorous physical activity) was applied.

### Results

Five hundred and fifty physicians were included (53% men, mean age 38 years). Physical activity levels were low, moderate or vigorous in 37.5%, 57.5%, and 5% of cases, respectively. Eighty percent of the medical population likes to exercise, 92% recommends exercise to their patients and 97% considers it beneficial for health. The main reason for not performing exercise is lack of time. Men perform more vigorous physical activity than women (20 vs.15%,  $p < 0.01$ ). Cardiology is the specialty which recommends exercise most frequently to patients (75%)

### Conclusions

In this medical population there was a lower prevalence of low physical activity than in the general population, independently of gender, age group or specialty analyzed. Exercise recommendation to patients was generally high, though more elevated in clinical specialties.

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**Key words >** Physicians - Physical activity - Lifestyle - Sedentarism - Risk Factors

## Abbreviations >

<b>CABG</b> Body Mass Index	<b>METS</b> Metabolic equivalent Units
<b>GPAQ</b> Global Physical Activity Questionnaire	<b>NSRF</b> National Survey of Risk Factors
<b>IPAQ</b> International Physical Activity Questionnaire	

## INTRODUCTION

The increasing prevalence of sedentarism is the result of a cultural transformation process that has occurred in most developed countries and is consolidating in developing countries (1), with the consequent individual and community impact in terms of disability and mortality. (2) Different studies have shown that physically active subjects have less morbidity and mortality and a lower incidence of cardiovascular, metabolic and oncological diseases, (3, 4) even showing a general decline in overall age-adjusted mortality. (5, 6) It is estimated that physical inactivity is responsible for 6%, 7%, 10% and 10 % of coronary heart disease, type 2 diabetes, breast cancer, and colon cancer morbidity burden, respectively. Furthermore, it is estimated to be responsible of 9 % premature mortality. (7)

In our country about 39000 deaths occur in people aged 40 to 79 years from causes associated with physical inactivity, a figure close to the 40000 deaths a year produced by tobacco consumption. (7, 8) In Argentina, sedentarism is the risk factor which has most grown in recent years. This is demonstrated by the National Survey of Risk Factors (NSRF) conducted in 2005 and 2009, which respectively revealed that 46.2% and 54.9 % of the population over 18 years had poor levels of physical activity. (9-10)

Physicians would be the most prepared professionals to encourage their patients to exercise as their personal health habits are related to the perception of a healthy or unhealthy lifestyle by the community of a given country. (11) Physician's attitude towards physical activity in Argentina is unknown. This is the first study that uses a validated, reproducible measurement tool, comparable with other published physical activity studies. Therefore, the objectives of this study were: 1) to analyze the characteristics of physical activity in a population of physicians, 2) to determine the physician's attitude towards patient exercise, 3) to assess the two previous objectives according to age, gender, professional specialty or area of work, and 4) to assess this population's risk factors.

## METHODS

### Design and variable collection

This is a cross-sectional study, conducted from April to August 2012. Physicians of both genders and of different specialties, selected in a non-probabilistic manner in different clinics and hospitals of the Greater Buenos Aires and the Autonomous City of Buenos Aires, were evaluated. Data were collected through an anonymous self-reported questionnaire based on the short version of the International Physical Activity Questionnaire (IPAQ), an instrument with important validation and reproducibility studies, as that performed by Craig et al. (12) in twelve countries, enabling the creation of new instruments (13), which is used in most scientific works to collect data on physical activity, and is accepted by WHO (World Health Organization) and recommended by PAHO (Pan American Health Organization). The survey collected information on demographic variables, risk factors and previous history of cardiovascular disease, laboratory and blood pressure controls performed in the last year,

medications used for hypertension, dyslipidemia, or diabetes and body mass index (BMI) estimated by the Quetelet index (kg/m<sup>2</sup>). Several qualitative and quantitative questions on physical activity were performed (see Appendix). Physicians were considered to be hypertensive, dyslipidemic or diabetic if they acknowledged having the disease or received specific treatment for it. Overweight was defined as BMI  $\geq 25$  and  $<30$  and obesity as BMI  $\geq 30$ . Family history of coronary disease was assigned to those referring parents or siblings with history of acute myocardial infarction.

### Physical activity

To assess the level of physical activity an overall scale based on METS (metabolic equivalent units) per week was used, according to the following equation:  $(3.3 \times \text{total minutes of walking per week}) + (4 \times \text{total minutes of moderate activity per week}) + (8 \times \text{total minutes of vigorous activity per week})$ . Thus, less than 600 weekly METS and over 3000 weekly METS were considered as low level and vigorous level of physical activity, respectively. (14)

Moderate activities were those requiring faster breathing and some effort to be performed such as: housework, slow cycling, recreational swimming or brisk walking, while vigorous activities were those requiring faster breathing and more physical exertion, as for example, running, manual work, sports (such as soccer or tennis). Consequently, those without informed physical activity or who were not included in the above definitions were considered as low physical activity. (14)

### Statistical analysis

Statistical analysis was performed on the total population and in four subgroups according to gender, age  $< 40$  or  $\geq 40$  years, type of specialty and work in emergency departments or common areas. Continuous variables were expressed as mean  $\pm$  standard deviation, while categorical variables were expressed as percentages.

Continuous data between two groups were compared with the t test or with the Wilcoxon Mann Whitney test for normal and non-normal variable distribution, respectively. Categorical data were analyzed using the chi-square test. A p value  $< 0.05$  was considered as statistically significant.

## RESULTS

The study included 550 physicians (47 % female) from different specialties (cardiology 29%, clinical specialties 41 %, surgical specialties 16 %, indirect care 1%, and others 13 %). Regarding risk factors, 15%, 11% and 2% had medical history of hypertension, dyslipidemia, or diabetes, respectively. Eighty-two percent of physicians had checked their blood pressure in the previous year, while 57% and 70 % had performed blood tests in the last 12 months to assess their cholesterol or glucose levels, respectively. (Table 1)

Overall, 37.5%, 57.5%, and 5 % of physicians were within the range of low, moderate and vigorous physical activity, respectively. (Figure 1)

Sixty three per cent of physicians walked at least 10 minutes per day on three or more days per week, with an average of  $25 \pm 10$  minutes per session, and 29% and 17 % of physicians performed 3 or more days of moderate or vigorous physical activity per week, respectively.

Eighty per cent of physicians enjoyed physical activity and 97 % of them considered that exercise is beneficial to health. Forty-five percent of physicians reported that the main difficulty to practice physical activity was lack of time and almost all usually recommended physical activity to their patients.

Data analysis by gender showed that women were significantly younger ( $38 \pm 10$  vs.  $40 \pm 11$  years,  $p = 0.02$ ) and had a lower BMI than men ( $23.2 \pm 4$  vs.  $26.3 \pm 3$  kg/m<sup>2</sup>,  $p < 0.001$ ), but there were no dif-

ferences in the prevalence of dyslipidemia, hypertension, smoking or diabetes compared to men. Regarding physical activity, men liked to exercise more often than women (84% vs. 74 %,  $p < 0.01$ ). Sixty-two per cent of women and 64% of men walked at least 3 days per week, while 29% of women and 28% of men did 3 or more days per week of moderate physical activity. Men performed significantly higher vigorous exercise 3 or more times per week than women (20% vs. 15%,  $p < 0.01$ ). The preference in the type of physical activity among both genders showed a greater use of the gym by women (70% vs. 30%) and sports practice by men (67% vs. 32%). Finally, women knew more often than men where to get information to perform physical activity (69% vs. 60 %,  $p = 0.04$ ). (Table 2)

When specialties were analyzed, there were no significant differences in the frequency of walking, moderate or vigorous physical activity (Figure 2). There were also no differences in why physicians of different specialties did not exercise, in the preference of physical activity or knowledge of how and where to get information. The indication of exercise was higher for patients in cardiology (75 %), followed by clinical (51%), indirect care (50 %) or surgical specialties (43 %),  $p < 0.001$ .

The fact of working in an emergency department was associated with a significantly greater performance of vigorous exercise three or more times per week (18% vs. 14 %,  $p = 0.04$ ).

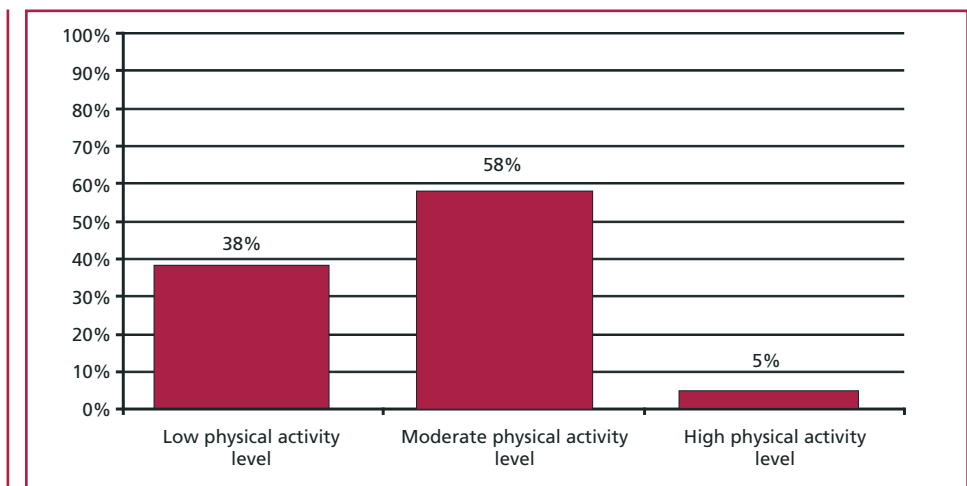
Notably, there were no differences in age ( $40 \pm 10$  vs.  $39 \pm 11$  years,  $p = 0.46$ ) or in the proportion of men (60% vs. 52 %,  $p = 0.11$ ) between both groups (emergency / non-emergency). In addition, professionals who do not work in the emergency room, think more frequently that there are fewer facilities for doing exercise than emergency physicians (20% vs. 17 %,  $p < 0.01$ ). The rest of the variables analyzed showed no differences when comparing both groups.

The evaluation of groups according to age ( $< 40$  vs.  $\geq 40$  years) showed that younger physicians had significantly greater interest in exercise compared to

**Table 1.** Baseline population characteristics

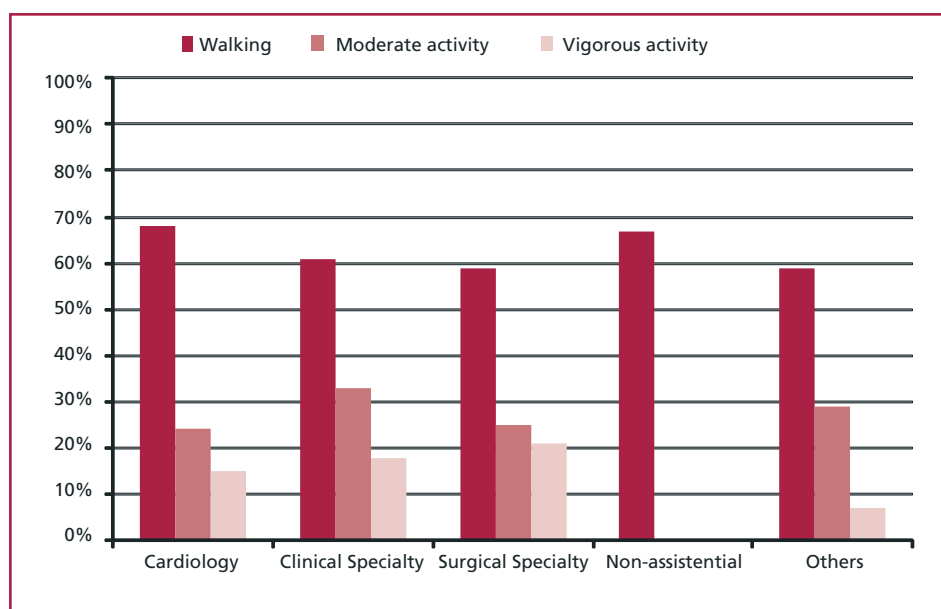
Assessed population (n=550)	
Continuous variables, mean (SD)	
Age, years	40 (11)
Body mass index, kg/m <sup>2</sup>	24.85 (3.9)
Time from graduation, years	13 (10)
Categorical variables, %	
Male gender	53
Smokers	17
Hypertension	15
Dyslipidemia	11
Diabetes	2
History of cardiovascular disease	7
Antihypertensive treatment	14
Hypolipidemic treatment	8
Blood Cholesterol test performed in the last year	57
Blood sugar test performed in the last year	70
Blood pressure evaluation in the last year	82
Family history of acute myocardial infarction	19
Emergency service	57
Specialty	
Cardiology	29
Clinical specialties	41
Surgical specialties	16
Indirect care specialties	1
Others	13

**Fig. 1.** Exercise intensity in the medical population.



Physical activity	Male n=292	Female n=258	p
Enjoys exercise	84%	74%	< 0.01
Knows where to get information	60%	69%	0.04
Indicates exercise to his patients	54%	46%	0.31
Exercise intensity per week			
Walking 3 or more days	64%	62%	0.42
Moderate activity 3 or more days	28%	29%	0.10
Vigorous activity 3 or more days	20%	15%	< 0.01
Exercise is beneficial	98%	97%	0.88
Was adviced to exercise	64%	70%	0.26
There are facilities to exercise	41%	36%	0.61
Reasons for not exercising			
Lack of time	52%	48%	0.86
Lack of will	50%	50%	
Lack of facility	48%	51%	
Lack of money	40%	60%	
Exhaustion	47%	53%	
Others	54%	46%	
Type of physical activity			
Walking	52%	48%	< 0.01
Jogging	61%	39%	
Cycling	55%	45%	
Gym	29%	71%	
Sports	67%	33%	
Other	45%	55%	
None	50%	50%	
Reasons for advising exercise			
To stay healthy	20%	23%	0.60
To control weight	49%	45%	
As complement to treat an illness	18%	21%	
Another reason	8%	8%	
Does not know the reason	4%	3%	

**Table 2.** Physical activity characteristics of according to gender



**Fig. 2.** Three or more days per week of physical activity according to specialty

older professionals (84% vs. 74 %,  $p < 0.01$ ). Moreover, older professionals knew more often where to get information to perform physical activity (74% vs. 57 %,  $p < 0.01$ ) and acknowledged in a higher proportion of cases the existence of facilities for conducting them (82% vs. 78 %,  $p = 0.04$ ) compared to younger physicians. There was no difference in exercise intensity when comparing both age groups (Table 3).

## DISCUSSION

Regular physical activity is associated with favorable effects on cardiovascular risk factors such as lipid profile improvement, insulin resistance, blood pressure and weight reduction, hemostasis optimization with decreased platelet aggregation, and endothelial function restitution. (15)

In general, we have little information on the prevalence of cardiovascular risk factors in the medical population. Moreover, in Argentina, data on physical activity in health professionals collected by validated instruments are scarce. The data obtained in the general population by the NSRF show that low physical activity is over 50%, with an increase of 9% between 2005 and 2009. (9-10) In our study, the prevalence of poor physical activity was lower than in the results of the last national survey (37.5% vs. 46.2%). This difference could be explained, coinciding with that observed in both NSRFs, by better income and higher education in the analyzed group, although the prevalence of physical inactivity is still high despite the surveyed subjects are people with attitude, understanding and able to promote healthy habits.

In our study, as in the 2005 survey, men did more vigorous physical activity than women, although unlike the survey, which found an inverse relationship between physical activity level and age, our study showed no differences in the level of exercise in the various age groups analyzed. In the 2009 survey, the low level of physical activity was more evident in men than in women (50.9 vs. 58.5 %), a result not observed in our work and in the 2005 survey.

In Latin America, we find disparate data. Coinciding with the general population in Argentina, a study in Bogotá showed that 37 % of the population between 18 and 65 years was regularly active. (16, 17) In Mexico, the situation is similar to our physician

population, where 68.2 % of the population between 20 and 55 years is physically active. (18) These data contrast with that of Chile, where low physical activity is markedly higher, although declining from 2006 to date (87.2 % in 2006, 86.4 % in 2009 and 82.7 % in 2012). (19) In this survey the close relationship between socioeconomic status and physical activity (the higher the socioeconomic level the higher the physical activity) is also seen. Although we have found no data of Chilean doctors with respect to physical activity, a study in medical students of Chile, shows no difference with the selected general population (physical inactivity of 76% in undergraduate students and 87% in internship students). (20) The variation on physical activity in different countries could be related to non-use of internationally validated questionnaires such as the IPAQ or Global Physical Activity Questionnaire (GPAQ).

Another risk factor in the Argentine medical population was smoking in the TAMARA study (Tobacco use in doctors of Argentina), (21) in which 6497 physicians (63 % male) were assessed, and 40% of the population corresponded to the same areas evaluated in our study (Greater Buenos Aires and Autonomous City of Buenos Aires). The proportion of smokers was similar to that of our study with low physical activity level (30% and 37.5 %, respectively). In our study, we found no gender differences in the prevalence of hypertension, smoking, dyslipidemia, or diabetes. The TAMARA study also found no significant differences in the prevalence of smoking among men and women (29.4% vs. 31%,  $p = 0.18$ ), although there were significant differences in the prevalence of hypertension, dyslipidemia and diabetes.

The different specialties were not decisive in physical activity levels, unlike the TAMARA study, where the highest incidence of smokers appeared in the surgical specialties. Furthermore, although according to the TAMARA study, working in an emergency department increased smoking probability, physicians working in our emergency services performed more vigorous physical activity. With respect to age, older physicians knew more frequently where to get more information to perform physical activity, while the younger ones showed more interest in physical activity, with no difference in its intensity.

**Table 3.** Physical activity characteristics according to age

	< 40 years	≥ 40 years	p
<b>Continuous variables, mean (SD)</b>			
Minutes walking #	20 (13)	21 (14)	0.42
Minutes of moderate exercise#	9 (15)	7 (14)	0.14
Minutes of vigorous exercise #	4 (11)	5 (11)	0.36
<b>Categorical variables, %</b>	67	58	0.07
Walking 3 or more days per week*	29	27	0.16
Moderate activity 3 or more days per week*	33	19	0.46
Vigorous activity 3 or more days per week*			

(SD) = standard deviation.

# Exercising day, time in minutes.

\* At least 10 minutes.

Some studies show that physicians with healthy habits are more likely to recommend preventive behaviors to their patients. (22) Similarly, previous data show that physicians who have performed some treatment or training for smoking cessation give their patients more and better advice, indicating more medication to quit smoking. (21) In our study, however, low physical activity level was not related to the indication or not of exercise to patients, as almost the entire population assessed admitted making that recommendation.

#### Limitations

The sample of physicians was not randomized and only represents a small portion of doctors of the Greater Buenos Aires and the Autonomous City of Buenos Aires which are fully urbanized areas. Thus, our results may not be extrapolated to other provinces or rural areas where habits, distances and technology may be quite different.

#### Clinical implications

It is evident that despite medical knowledge, and good recommendations, for some reason, doctors do not always put into practice what they recommend to their patients. Knowing the physician's attitude regarding physical activity could help raise the medical community awareness to continue working on the promotion of healthy habits.

#### CONCLUSIONS

Low physical activity level in the assessed medical population was less than that of the general population of our country. Most doctors enjoy physical activity which is frequently recommended to their patients, regardless of specialty, age, sex or work area and even their own attitude towards exercise. Tastes and exercise intensity are different in men and women. The greatest difficulty in performing physical activity was lack of time.

#### RESUMEN

##### Ejercicio en médicos argentinos: encuesta sobre hábitos y actitudes frente a la actividad física

#### Introducción

La inactividad física se asocia con mayor morbimortalidad cardiovascular y está en aumento en la población general. Los médicos serían los mejor preparados para brindar asesoramiento sobre actividad física a los pacientes; no obstante ello, no existen datos locales validados relativos a los hábitos y las actitudes de los médicos frente al ejercicio.

#### Objetivos

Analizar las características de la actividad física en una población de médicos, determinar la actitud del médico frente al paciente con respecto al ejercicio, estudiar la relación entre la actividad física y la edad, el sexo y la especialidad y evaluar los factores de riesgo de esta población.

#### Material y métodos

Se realizó una encuesta a médicos de la Ciudad Autónoma de Buenos Aires y del Conurbano bonaerense. Se utilizó el International Physical Activity Questionnaire (Cuestionario Internacional de Actividad Física). Para evaluar el nivel de actividad física se empleó una escala basada en los MET semanales (< 600 MET = baja actividad física; > 3.000 MET = actividad física vigorosa).

#### Resultados

Se incluyeron 550 médicos (53% hombres, edad media 38 años). El 37,5%, el 57,5% y el 5% realizan baja, moderada o vigorosa actividad física, respectivamente. Al 80% de la población le gusta hacer ejercicio, el 92% recomienda hacer ejercicio a sus pacientes y el 97% lo considera beneficioso para la salud. El principal motivo para no realizar ejercicio es la falta de tiempo. Los hombres realizan más actividad física vigorosa (20% vs. 15%;  $p < 0,01$ ) que las mujeres. La especialidad cardiología es la que indica más frecuentemente realizar ejercicio (75%).

#### Conclusiones

En esta población médica, independientemente del sexo, el grupo etario o la especialidad analizada, se observó una prevalencia menor de baja actividad física en comparación con la población general. La recomendación de ejercicio a los pacientes fue globalmente elevada, aunque mayor en las especialidades clínicas.

**Palabras clave** > Médicos - Actividad física - Estilo de vida - Sedentarismo - Factores de Riesgo

#### Conflicts of interest

None declared.

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Appendix. Survey used

### SAC Epidemiological Council Survey on Physician Physical Activity

#### PHYSICAL ACTIVITY

It is important that the answers about your physical activity reflect the exercise you have done during **the last 2 weeks**.

Do you like to do physical exercise?       Yes       No

How many times a week do you walk at a normal pace at least during 10 minutes to go from one place to another, to practice sports or recreational activities, or for leisure?	Days per week ..... Refuses to answer <input type="checkbox"/> Does not know <input type="checkbox"/>
In the days in which you walk, how long do you walk?	Hours ..... Minutes .....
How many days in a typical week (usual, average, normal) you perform moderate physical activities for at least 10 minutes, such as cycling at a normal rhythm, raking or collecting leaves or sweeping the floor?	Days per week ..... Refuses to answer <input type="checkbox"/> Does not know <input type="checkbox"/>
In the days when you perform this type of physical activity, how long do you take in the activity?	Hours ..... Minutes .....
How many days in a typical week (usual, average, normal) you perform vigorous physical activities for at least 10 minutes	Days per week ..... Refuses to answer <input type="checkbox"/> Does not know <input type="checkbox"/>
In the days when you perform this type of physical activity, how long do you take in the activity?	Hours ..... Minutes .....
Do you consider that physical activity is beneficial for health?	Yes <input type="checkbox"/> No <input type="checkbox"/> I don't know/I'm not sure
Has a doctor, nurse or another healthcare professional ever recommended or indicated you to perform physical exercise?	Yes <input type="checkbox"/> No <input type="checkbox"/> I don't remember/I'm not sure <input type="checkbox"/>
What has been the main reason you or your doctor has recommended you to perform physical exercise?	1. <input type="checkbox"/> To stay healthy 2. <input type="checkbox"/> To maintain or control weight 3. <input type="checkbox"/> As complement to treat a certain illness 4. <input type="checkbox"/> For another reason 5. <input type="checkbox"/> I don't know the reason
If you decide to start or already perform physical exercises, do you know any place where you can receive advice/help on how to perform them?	Yes <input type="checkbox"/> No <input type="checkbox"/> I don't remember/I'm not sure <input type="checkbox"/>
If you decide to start or already perform physical exercises, do you consider there are adequate facilities (space, dedicated areas, safety to perform them) for you to do them?	Yes <input type="checkbox"/> No <input type="checkbox"/> I don't remember/I'm not sure <input type="checkbox"/>
What type of exercise do you like to perform?	<input type="checkbox"/> Walking <input type="checkbox"/> Gym <input type="checkbox"/> Jogging <input type="checkbox"/> Sports <input type="checkbox"/> Cycling <input type="checkbox"/> None <input type="checkbox"/> Other      Specify
Why do you never exercise (or have not exercised during the last 2 weeks)?	<input type="checkbox"/> Lack of time <input type="checkbox"/> Lack of will <input type="checkbox"/> Lack of place to perform it <input type="checkbox"/> Lack of money <input type="checkbox"/> Exhaustion <input type="checkbox"/> Others Which?
In your normal clinical practice, do you recommend your patients to perform physical activity?	<input type="checkbox"/> I tell them to exercise <input type="checkbox"/> I tell them what exercise, how and when to perform it <input type="checkbox"/> I don't make any recommendation about exercise