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Influence of daily physical activity and Body Mass Index on the incidence and severity of injuries during hiking – retrospective analysis of a cross-sectional Questionnaire Survey

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Abstract

Introduction and Objective. Hiking is becoming an increasingly popular leisure activity, practised due to its benefits, often regardless of people's exercise capacity and Body Mass Index (BMI) values. The aim of the study was to investigate the relationship between the level of daily physical activity and BMI, as well as the incidence and severity of injuries experienced during hiking.

Materials and Method. A total of 230 individuals fulfilled completed questionnaire forms. Questionnaires were distributed via Google form between 15 January 2021 and 23 February 2021. A modified Global Physical Activity Questionnaire (GPAQ) and BMI values were used to check how the hikers' health and physical condition influenced the incidence and severity of trauma while hiking. 162 mountain hikers were included in the final analysis.

Results. Using independence tests, it was shown that in the cases there was no relation between the created BMI categories and the occurrence of injury (p-value=0.708), or between physical activity groups and the occurrence of injury (p-value=1). The results also showed no statistically significant correlation between the severity of the injury sustained during hiking, or both daily physical activity level (p-value=0.754) and BMI value (p-value=0.854).

Conclusions. The study might indicate that proper, adjusted hiking could be the correct way of spending free time, regardless of pre-existing levels of physical activity and/or BMI.

Key words

physical activity, injury, hiking, Body Mass Index, Global Physical Activity Questionnaire

INTRODUCTION

Hiking is an active form of leisure, involving long walks in the countryside [1]. It also improves mental and physical health in people with sedentary and inactive lifestyles [2]. In addition, Chae et al. described that forest therapy can also improve immune function [3]. It is very important to point out that more and more doctors are promoting hiking as a preventive and therapeutic method, noting that most adults with controlled medical problems can adequately and safely exercise by hiking without compromising their health [4]. However, it should be remembered that practicing mountain tourism is associated with injuries, mainly of the musculoskeletal system. In a study analyzing the accident rate in the Bieszczady Mountains in south-east Poland in 2009 – 2013, it was found that the highest number of accidents took place during mountain hiking. The authors analyzed not only injuries, but also such events as getting lost or hypothermia. However, they focused on the immediate causes of the accidents without taking into account the preparations made by the tourists; although the necessity of fitness preparation was mentioned, this aspect was not analyzed [5]. Faulhaber et al., in a retrospective study covering the period 2006 – 2014, analyzed the circumstances of 5,665 cases of fatal and non-fatal falls in mountain conditions [6]. There had been a steady increase in the annual number of accidents from

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467 in 2006 to 700 in 2014. Fatal accidents included 5.8% of all victims.

Comparing the occurrence of injuries while practicing different sports, on the basis of some studies it can be concluded that hiking is relatively safe. There are also studies examining the impact of obesity on the mechanism of injury, although they involve mainly car accidents. Obese, traumatized patients have different injury patterns compared to those who are lean. A systematic review evaluating the relationship between obesity and various patterns of injury and trauma, concluded that obesity is associated with a reduced risk of head injury, but an increased risk of limb and chest injury [7]. An interesting observation was made by Juhler et al. A review of data from four independent prospective studies found that the rate of running-related knee injuries was 13% lower among overweight runners, compared to normal weight runners. Similarly, the rate of running-related knee injuries was 12% lower among obese runners, compared to normal-weight runners [8].

However, there is a need to evaluate the safety of hiking to increase its popularity among healthy and unhealthy individuals. Therefore, the aim of this study was to explore whether the pre-existing level of daily physical activity, as well as Body Mass Index (BMI) of hikers, influences the incidence and severity of trauma while hiking.

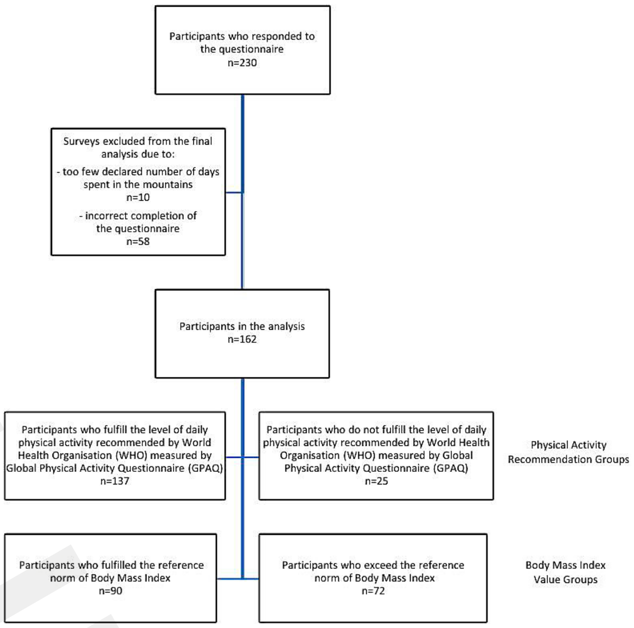

Figure 1. Flow chart of participant recruitment considering the level of daily physical activity and BMI value

MATERIALS AND METHOD

Participants. The study was undertaken by a cross-sectional questionnaire survey. The research was exempted from ethical rules by the Independent Bioethics Committee for Research at the Medical University of Gdańsk. A total of 230 individuals completed questionnaires, from which 162 were selected for analysis. All individuals completed the questionnaire voluntarily and anonymously. The respondents were first divided according to their level of daily physical activity, according to the recommendations of the World Health Organisation (WHO) and measured by Global Physical Activity Questionnaire (GPAQ) (Fig. 1). Secondly, the respondents were divided according to their BMI value (Fig. 1).

Inclusion and exclusion criteria. Inclusion criteria: 1) adults of both genders, 2) spending at least five days hiking in the mountains during the year, 3) correct completion of the questionnaire. Exclusion criteria: 1) spending less than five days hiking in the mountains during the year, 2) incorrect completion of the questionnaire.

Study Design. The questionnaire data was acquired by distributing the questionnaire through Google Form. Next, the data was downloaded from the Google Forms system.

Statistical analysis was performed using the functions and procedures of the R package [9]. The $\chi 2$ test, Fisher's exact test for count data, and Cochran-Mantel-Haenszel test were used to examine the independence of the qualitative variables collected in Tables presenting the size of individual groups. The differences between the two groups of quantitative variables were tested using the Wilcoxon test or t-student test. The type of the above-mentioned tests (and additional options) were selected depending on the p-value of the Shapiro-Wilk test and the homogeneity of variance test. For each of the tests used, the significance level was set at $\alpha = 0.05$.

The questionnaires were sent to respondents on 15 January 2021 and collection of responses completed on 23 February 2021. The survey was distributed among the Student Associations of Beskidy Mountain Guides Poland and through mountain tourism Facebook groups, by e-mail and telephone contact with leaders and administrators of the organizations. Personal contacts (e-mail and telephone) of the researchers were also used to obtain additional respondents for the survey.

The study was conducted using a modified Global Physical Activity Questionnaire (GPAQ) which included additional questions (Appendix – Details information about the questionnaire). The GPAQ is a validated test recommended by the WHO [10], which consists of 31 questions in the Polish language, developed by Józef Bergier, Małgorzata Wasilewska and Adam Szepeluk from the Pope John Paul II State School of Higher Education in Biała Podlaska, Poland [11]. The first seven questions concern basic information about the respondents: age, gender, height, body weight, taking medications, being under the care of a specialist doctor, and a subjective assessment of the respondent's daily activity. The next three questions refer to mountain hiking and the occurrence of injury while hiking during the last five years – declared number of hiking days per year during the last five years; number of years of hiking. The next four were about the specificity of injuries during hiking. The remaining questions were taken from the GPAQ form in the Polish version. The last question on the questionnaire concerns sedentary activity has been modified by the additional division of this activity into working days and non-working days. The nature of the additions did not require additional validation of the test because the added questions concerned participant information only.

Table 1. General information about respondents according to level of daily physical activity and gender

Variables	Group 1 (n=137)		p-value	Group 2 (n=25)		p-value
	Female 68 (49.6%)	Male 69 (50.4%)		Female 13 (52.0%)	Male 12 (48.0%)	
Age (years): mean value (min-max value)	35.1 (21–68)	39.5 (21–72)	0.014^{w}	33.7 (25–43)	40.8 (28–70)	0.072^{w}
Body height (cm): mean value (min-max value)	166.5 (152–179)	179.4 (160–198)	<0.001^{t}	165.5 (156–177)	182.1 (169–195)	<0.001^{t}
Body weight (kg): mean value (min-max value)	62.9 (43–90)	80.4 (57–120)	<0.001^{t}	59.2 (48–75)	84 (70–108)	<0.001^{t}

n – number of people in the group (% – percent within the group); Group 1 – participants who fulfilled the criteria of level of daily physical activity recommended by the WHO; Group 2 – participants who did not fulfil the criteria of the level of daily physical activity recommended by the WHO; ^{w} – Wilcoxon rank sum test with continuity correction; ^{c} – Pearson's χ^2 test with Yates' continuity correction; ^{t} – Student's t-Test

Table 2. General information about the respondents, including BMI and gender.

Variables	Group 3 (n=90)		p-value	Group 4 (n=72)		p-value
	Female 49 (54.4%)	Male 41 (45.6%)		Female 32 (44.4%)	Male 40 (55.6%)	
Age (years): mean value (min-max value)	33.4 (21–68)	38.1 (21–72)	0.018^{w}	37.1 (22–60)	41.3 (23–70)	0.105^{t}
Body height (cm): mean value (min-max value)	166.5 (154–178)	178.8 (168–195)	<0.001^{t}	166.2 (152–179)	180.8 (160–198)	<0.001^{t}
Body weight (kg): mean value (min-max value)	59.7 (48–75)	72.9 (58–91)	<0.001^{t}	66.3 (43–90)	89.2 (57–120)	<0.001^{w}

Group 3 – participants who fulfilled the reference norm of BMI; Group 4 – participants who did not fulfil the reference norm of BMI

RESULTS

General information about the respondents considering both the level of daily physical activity and the Body Mass Index values are shown respectively in Tables 1 and 2. Overall statistics, including participants divided by level of daily physical activity and BMI, are also shown in Tables 1 and 2, respectively.

Of the 162 respondents, 137 people (Group 1) declared high daily physical activity, while 25 people (Group 2) declared no such activity. Despite the significant difference in numbers, these groups did not differ significantly in gender or BMI. In Group 1 there were 68 (49.6%) women and 69 (50.4%) men, while in Group 2 there were 13 (52.0%) women and 12 (48.0%) men.

The respondents were also divided according to their BMI. Of the 162 respondents, 90 (Group 3) were found to have normal body weight with an average BMI. In this division, a predominance of women can be observed in the group with normal body weight (54.4%), and a predominance of men in the overweight group (55.6%) (Table 2).

Statistical tests conducted for Groups 1 – 4 (Tab. 1 and 2) showed that there were no statistically significant differences between the variables in the compared groups. A statistically significant difference was found only for body weight and age in Groups 3 and 4. In the case of body weight, obtaining a statistically significant difference resulted from the division into the value of the BMI variable. The difference in age of the respondents may also be due to the same reason. The data collected from respondents allowed for the creation of contingency Tables (presented below).

To determine whether the categories of examined features presented in the Tables were interdependent, Fisher's exact test for count data and Pearson's χ^2 test with Yates' continuity correction were used. Analyzing the groups in terms of physical activity and BMI, no statistically significant correlation were observed between these factors. However, some substantive significance can be observed. In the group of people with high physical activity, there were 75 (54.8%) people with normal body weight and 62 (45.2%) with overweight. In the group of people with low physical activity, there were 15 (60.0%) with normal body weight and 10 (40.0%) with overweight. In both groups with different levels of physical activity, people with normal body weight predominate.

Table 3. Number (and percentage) of respondents in daily physical activity groups and BMI groups

Groups	Group 3 (n=90)	Group 4 (n=72)	p-value
Group 1 (n=137)	75 (54.8%)	62 (45.2%)	0.789^{c}
Group 2 (n=25)	15 (60.0%)	10 (40.0%)	

The lack of statistical significance obtained in the χ^2 independence test allows the conclusion that there was no relation between the BMI groups and the groups related to daily physical activity. There was also no correlation between physical activity and injury. In Group 1, 27% of people suffered an injury, and in Group 2 – 28% (Table 4).

Table 4. The number (and percentage) of people who suffered or did not suffer an injury among daily physical activity groups

Groups	Injury		p-value
	No	Yes	
Group 1 (n=137)	100 (73.0%)	37 (27.0%)	1^{c}
Group 2 (n=25)	18 (72.0%)	7 (28.0%)	

The p-value obtained as a result of statistical inference is higher than the assumed level of statistical significance. This means that in the group of people we study, whether or not the respondent suffered an injury does not depend on whether he or she belongs to groups with specific daily physical activity.

BMI also did not affect the frequency of injuries. However, we can observe that overweight people were less likely to sustain an injury (25%) than people with a normal body weight (28.9%) (Table 5).

Table 5. Number (and %) of people who suffered/did not suffer an injury among BMI groups

Groups	Injury		p-value
	No	Yes	
Group 3 (n=90)	64 (71.1%)	26 (28.9%)	0.708^{c}
Group 4 (n=72)	54 (75.0%)	18 (25.0%)	

The result of χ^2 independence test used allows the conclusion that there was no relationship between belonging to BMI groups, and whether the respondents suffered injuries while hiking. In the group of people with low daily activity, a predominance of slight injuries can be observed (71.4%) compared to those who were active (45.9%) (Table 6).

Table 6. Number (and %) of people who suffered a specific type of injury among daily physical activity groups

Groups		Group 1^A (n=37)	Group 2^A (n=7)	p-value
injury	Very slight	7 (19.0%)	1 (14.3%)	0.754^f
	Slight	17 (45.9%)	5 (71.4%)	
	Moderate	11 (29.7%)	1 (14.3%)	
	Severe	2 (5.4%)	0 (0%)	

Group 1^A – number (and %) of people in Group 1 who suffered a specific type of injury; Group 2^A – number (and %) of people in Group 2 who suffered a specific type of injury; ^{f} – Fisher's exact test for count data

The p-value obtained from the Fisher's exact test (Tab. 6) did not allow rejection of the null hypothesis of this test. The severity of injuries reported by respondents was not related to assignment in the defined daily physical activity groups.

Depending on BMI, a predominance can be observed of slight injuries in the overweight group (44.4%), compared to slim people (53.8%) (Table 7).

Table 7. Number (and %) of people who suffered a specific type of injury among BMI groups

Groups		Group 3^B (n=26)	Group 4^B (n=18)	p-value
Injury	Very slight	5 (19.2%)	3 (16.7%)	0.854^f
	Slight	14 (53.8%)	8 (44.4%)	
	Moderate	6 (23.1%)	6 (33.3%)	
	Severe	1 (3.9%)	1 (5.6%)	

Group 3^B – number (and %) of people in Group 3 who suffered a specific type of injury; Group 4^B – number (and %) of people in Group 4 who suffered a specific type of injury

The result of the Fisher's exact test allows us the conclusion that there was no relationship between the created BMI groups and the severity of the injury sustained during a mountain hike.

Contingency Tables 4, 5, 6 and 7 were supplemented with information specifying the gender of respondents. Using the Cochran-Mantel-Haenszel test, the independence of the categories in the contingency tables containing the three qualitative variables was tested. In each case, a non-significant statistical result was obtained: p-value=1, p-value=0.271, p-value=0.759, and p-value=0.399, respectively. The result obtained means that gender was not a differentiating factor with respect to the categories of the other qualitative variables from the aforementioned contingency tables.

DISCUSSION

Due to the increasing popularity of mountain tourism, the number of injuries related to this activity has increased dramatically. It is therefore important to study the factors that increase or decrease the risk of bodily harm [12]. Studies indicate that most publications rely on the Mountain Rescue Service database, thus excluding people who did not ask rescuers for help, reached the hospital on their own, or were assisted by third parties [13, 14].

In the current study, the results of the proprietary questionnaire were used, and not the data of emergency services, thus taking into account cases without specialist intervention. Of 44 identified injuries, only one required the intervention of rescuers, which shows that in 98% of incidents, specialist services were not involved and the injured were not included in official statistics.

The aim of the study was to investigate the relationship between the level of daily physical activity and the BMI and the occurrence and severity of injuries suffered by people during mountain hiking.

In the study by Faulhaber et al., the level of physical activity and its possible impact on the accident rate during mountain trips were examined [15]. The men interviewed showed a higher average number of hours of physical activity, compared to women (4.7 vs. 3.9 hours per week). A similar percentage of women (38%) and men (35%) did not achieve the level of regular physical activity recommended by the WHO of 150 minutes a week [16]. The tourists surveyed had higher-than-average levels of physical activity compared to the general population; however, accident victims in this study appeared to show lower levels of physical activity, compared to general hikers surveyed in the Austrian Alps.

Biela et al. studied the accident rate in the Polish Tatra mountains [17]. They noted that falls were the most common cause of accidents – 38% of all accidents. The authors emphasize that one of the reasons for such negative situations is the lack of physical preparation before undertaking hiking. However, they did not analyze the daily physical activity of tourists. This is inconsistent with the results of the current study in which the incidence of mountain hiking injuries in relation to the level of daily physical activity was analyzed. In the group of participants who declared the level of physical activity recommended by WHO, 27% suffered an injury. In the group of people whose physical activity was lower than that recommended by the WHO, 28% suffered an injury. Statistical analysis showed no significant differences in the incidence of injuries depending on the level of physical activity (Table 4).

An interesting study was conducted by Amarowicz et al. [18], the aim of which was to investigate whether age and gender are correlated with the frequency and type of mountain injuries requiring search and rescue missions. An analysis of the Tatra Mountain Rescue Team (Tatra MRT) incident reports for 2012 – 2013 was carried out, whichs contain information about the mechanism of the injury, weather conditions, and demographic data of the injured tourists. 844 cases were analyzed: median age of the injured – 37 years (range 18 – 90 years). It was checked whether the age and gender of the injured tourists were correlated with the mechanisms of the injury, or with the scores of their National Aeronautics Advisory Committee – International Alpine Rescue Committee (NACA – ICAR). Analysis of the Tatra MRT data showed that age and gender were risk factors for the frequency and severity of injuries in the mountain environment. Injured men were more likely to require resource-intensive search and rescue missions, and typically had a poorer NACA – ICAR score (p-value=0.041). In addition, it was found that the elderly were more likely to be seriously injured, and younger men (20–40 years) required rescue at higher altitude (>1,500m; p-value<0.001).

Swiss researchers came to similar conclusions, and found a higher accident rate during mountain trips in the 50 – 70 age group. A high percentage of falls among the elderly was a consequence of declining postural stability [19]. In studies by Gasser et al. which analyzed the causes of accidents depending on age, it was found that older hikers had a more severe trauma in the NACA Index compared to younger ones. This may be due to an age-related decline in postural stability, which causes a fall during hiking and predisposes hikers to more severe injuries [20].

The current study analyzed the relationship between the level of daily activity and severity of the injury suffered while hiking. In the group of people who demonstrated the level of daily physical activity recommended by the WHO, 27% suffered an injury. In this group, 19% described the injury as very light, 46% as light, 30% as medium and 5% as severe. In the group of people with lower daily physical activity, 28% suffered an injury, 14% described it as very light, 74% as light, and 14% as moderately severe. No one indicated that the injury was severe. In the statistical analysis, no correlation was found between the level of physical activity and severity of the injury (Tab. 6).

A study by Faulhaber et al. assessed the characteristics of accidents caused by falls during mountain hiking in the Tyrol region [15] in which the authors considered a three-year period from 2016 – 2018. The tourists included in the study were selected on the basis of data from Alpine rescue services regarding all interventions that had occurred in the studied region. From among all the victims who received help from rescuers, those who were engaged in other tourist activities, e.g. climbing or cycling, were rejected. Ultimately, 405 mountain hikers took part in the study, who completed a questionnaire which including questions about the level of daily physical activity, BMI, taking medications, eye defects, breaks, fluid intake, fatigue, muscle soreness, use of backpacks, use of hiking poles, and type of footwear. Among the 405 tourists, 232 (57%) were women and 173 (43%) men. The location in which of the injuries occurred was determined in 396 of the 405 accidents. The most common trauma involved the ankle (42.4%), then the head (13.4%) and the shin (10.6%).

When analyzing body weight, a study by Gao et al. determined that the BMI of male tourists was higher than that of women (25.7 vs 24.1), and that more men (52%) than women (34%) were overweight (BMI> 25). It was also observed that the participants the study had a higher mean BMI. A higher BMI in the whole trekking population seems to indicate the influence of BMI on the risk of fall-related accidents during mountain hiking. This phenomenon can be explained by the relationship between an increased BMI and the stability of dynamic walking in the elderly [21].

The relationship between a BMI index greater than 30 kg/m^2 and injuries of the locomotor system was also observed not only during hiking in the mountains [22]. In the group of study participants with normal body weight according to BMI, 29% suffered injuries. In the group of participants who did not meet the BMI standard, those after injuries constituted 25% of this group. Statistical analysis did not show any relation between the BMI value and the occurrence of injuries during mountain hiking (Table 5).

The current study also assessed the association of BMI with severity of injury, with most injuries described as very light and minor (73%). Only 27% of people described the injury as moderate or severe. Similar results were obtained in the group of people who did not meet the BMI standard, where 24% of them suffered injuries. 61% in this group rated the injury as light or very light, while 39% rated it as moderate or severe. However, there was no relation between the severity of the injury and the BMI value (Table 7).

CONCLUSIONS

The results obtained do not negate the need to maintain both the recommended level of physical activity and normal BMI values for safe mountain hiking. A positive conclusion from the present study is that the aforementioned factors do not seem to increase the likelihood of injury during mountain hiking. This may indicate that mountain hiking is a suitable activity for people who have previously been inactive and whose BMI values were not within acceptable limits. Moreover, this may provide a basis for health organizations to promote mountain tourism more widely as a form of obesity prevention and treatment. In addition, based on the presented results, people with above-normal BMI values may undertake various moderate forms of mountain hiking to improve their mental and physical health, especially under professional guidance.

It should also be noted that this study has some limitations, the main one being the disparity between Groups 1 and 2 (137 to 25, respectively). There is also a risk of misinterpretation of the results presented, which would be the case if proper physical preparation and maintenance of a normal BMI value were neglected before undertaking mountain hiking.

In the future, it would be interesting to study which physical activities can safely help reduce mountain hiking injuries, especially in groups of people with elevated BMI values and/or who neglect the recommended level of physical activity.

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Appendix

Details information about questionnaire

Questions 1-14 are added to original version of GPAQ, questions 15–29 are questions P1–P15 from GPAQ. Question P16 was modified for this survey (divided in two: about working and non-working days).

Respondent's data

1. Age
2. Sex
   a. Male
   b. Female
3. Height [cm]: ___
4. Body weight [kg]: ___
5. Are you under the care of a specialist doctor?
   a. Yes
   b. No
6. Do you take any medications regularly?
   a. Yes
   b. No
7. What is your subjective assessment of your daily physical activity. Please, take into consideration only the period when fitness clubs, pools etc. were open.
   a. Very low
   b. Low
   c. Moderate
   d. Vigorous
   e. Very vigorous

Questions about mountain hiking

8. How many years you do mountain hiking?
   a. Less than 5 years
   b. 5–10 years
   c. 10–15 years
   d. More than 15 years
9. In a period of last 5 years, how many days per year you do hiking?
   a. Less than 5 days
   b. 5-10 days
   c. 10-15 days
   d. 15-20 days
   e. More than 20 days
10. Have you suffered any injuries while mountain hiking in a period of last 5 years?
    a. Yes
    b. No

Questions about an injury

11. What were the circumstances of an injury?
    a. While hiking on the trail
    b. While resting on the trail
    c. In a place of accomodation
    d. Other
12. What is the area of your body damaged by an accident? (more than one answer possible)
    a. Upper limbs
    b. Lower limbs
    c. Head and neck
    d. Torso (spine, back, abdomen, thorax)
13. What is your subjective assessment of the severity of the injury suffered?
    a. Very slight
    b. Slight
    c. Moderate
    d. Severe
14. Was the intervention of mountain rescue services (like GOPR or TOPR) necessary?
    a. Yes
    b. No

Questions about an activity at work

15. Does your work involve vigorous-intensity activity that causes large increases in breathing or heart rate like [carrying or lifting heavy loads, digging or construction work] for at least 10 minutes continuously?
    a. Yes
    b. No
16. In a typical week, on how many days do you do vigorous-intensity activities as part of your work?
    number of days ___
17. How much time do you spend doing vigorous-intensity activities at work on a typical day?
    hours ___ minutes ___
18. Does your work involve moderate-intensity activity that causes small increases in breathing or heart rate such as brisk walking [or carrying light loads] for at least 10 minutes continuously?
    a. Yes
    b. No
19. In a typical week, on how many days do you do moderate-intensity activities as part of your work?
    number of days ___
20. How much time do you spend doing moderate-intensity activities at work on a typical day?
    hours ___ minutes ___

Questions about a travel to and from places

21. Do you walk or use a bicycle (pedal cycle) for at least 10 minutes continuously to get to and from places?
    a. Yes
    b. No
22. In a typical week, on how many days do you walk or bicycle for at least 10 minutes continuously to get to and from places?
    number of days ___
23. How much time do you spend walking or bicycling for travel on a typical day?
    hours ___ minutes ___

Questions about the recreational activities

24. Do you do any vigorous-intensity sports, fitness or recreational (leisure) activities that cause large increases in breathing or heart rate like [running or football,] for at least 10 minutes continuously?
    a. Yes
    b. No
25. In a typical week, on how many days do you do vigorous-intensity sports, fitness or recreational (leisure) activities?
    number of days ___
26. How much time do you spend doing vigorous-intensity sports, fitness or recreational activities on a typical day?
    hours ___ minutes ___
27. Do you do any moderate-intensity sports, fitness or recreational (leisure) activities that causes a small increase in breathing or heart rate such as brisk walking,(cycling, swimming, volleyball)for at least 10 minutes continuously?
    a. Yes
    b. No
28. In a typical week, on how many days do you do moderate-intensity sports, fitness or recreational (leisure) activities?
    number of days ___
29. How much time do you spend doing moderate-intensity sports, fitness or recreational (leisure) activities on a typical day?
    hours ___ minutes ___

Questions about a sedentary behaviour

30. How much time do you usually spend sitting or reclining on a typical working day?
    hours ___ minutes ___
31. How much time do you usually spend sitting or reclining on a typical non-working day?
    hours ___ minutes ___