



Physical Activity Levels of the Young Adults in an Economically Developing Country: The Turkish Sample

by

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The purpose of this study was to examine the physical activity levels of the young adults in Turkey, selected as an example of an economically developing country.

A total of 1027 university students voluntarily participated in this study. The sport and household activity indexes of the Physical Activity Assessment Questionnaire (PAAQ) were administered to the subjects.

Student t-test showed gender differences in the intensity of the sport activities index ($p < 0.001$). The results of 2 (gender) \times 2 (intensity of sport activities) univariate ANOVA revealed significant gender, intensity differences and significant gender \times intensity interaction on participation duration in the sports activities. This finding showed that males spent more time in both vigorous and non-vigorous sport activities than females. In terms of the type of engagement in sport activity, the majority of males primarily played soccer, while females had primarily walked. The Student t test revealed gender differences in both the duration of housework and sitting in the house.

To conclude, males participated in sport activities with a higher intensity and spent more time on these activities than females. On the other hand, females spent much more time on housework activities and sitting in the house than males.

Key words: physical activity level, gender, young adult, developing country

Introduction

Recent research emphasizes the health benefits of moderate increases in daily activities and the development of active lifestyles (Pahkala et al., 2007; Sjolie and Thuen, 2002). Health-risk behaviors such as being physically inactive are generally established during adolescence and young adulthood. Early intervention (e.g. during the transition from adolescence to adulthood) may be useful for preventing chronic diseases, including coronary heart disease and metabolic syndrome (McCracken et al., 2003). Exercise or regular physical activity (PA) also plays an important role in the management of psychological stress (Heyward 1991); it promotes psychological well-being (Weinberg and Gould, 2007) and leads to

less substance abuse and more positive feelings toward school (Saunders et al., 1997). Despite the extensive evidence for the physical, social and psychological benefits of regular PA and years of individually focused interventions, exercise and total PA levels continue to decline in industrialized countries (Phongsavan et al., 2007). People lose less energy because of modern life style, the decreasing level of energy consumption both in the workplace and transportation, choosing a sedentary life style, the differentiation of activities at home and outdoors, watching more TV, using computer, and video games etc. (Kahn et al., 2002). Socio-cultural factors may be influencing physical activity levels or inactivity. Mexican Americans, for example, are the largest subgroup of Hispanics and have a higher prevalence of physical inactivity during leisure time than non-His-

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panics whites. Although Hispanics engage in more occupational PA than non-Hispanics whites, leisure time inactivity has also been found to be higher amongst Mexican Americans who are blue-collar workers (Crespo et al., 2001).

Recently, numerous studies have been conducted on the PA levels of children (Lasheras et al., 2001), adolescents (Lowry et al., 2002; Nelson et al., 2005; Schmitz et al., 2002; Talema and Yang, 2000), late adolescents (college students) (Brown and Trost, 2003; Haase et al., 2004), and adults (Gordon-Larsen et al., 2004; Talema et al., 2005); and gender differences in PA levels have also been examined. Earlier studies showed that males were physically more active than females (Grundy et al., 1999; Johnson et al., 1998; Macera et al., 2001; Moore et al., 2005; Trost et al., 2002; Utter et al., 2006). In addition, Malina (2006) states that the magnitude of gender differences in activity and inactivity varies from country to country. As can be seen from the literature, the majority of studies examining the PA in different samples have been primarily focused on well-developed countries. However, it is not known what the PA levels of people are in developing countries, for example, that of Turkish young people. Haase et al. (2006) reported that the classification of countries in terms of economic development showed significant associations with the prevalence of physical inactivity among students regardless of age, gender, and health beliefs. They argued that there was a broad association between the economic development stage of countries and leisure-time PA, coupled with specific cultural and geopolitical determinants. They found that the levels of leisure PA in young adults were generally higher in more economically developed countries. According to the World Bank (2005), Turkey is an economically developing country and there have been few attempts to study the PA levels in Turkey. For example, Çağlar and Aşçı (2006) reported that males were found to be more physically active than females, although that study did not directly focus on the PA levels of Turkish university students. In Turkey, the PA opportunities are different for males and females. Sport and leisure time ac-

tivities are not part of the lifestyle of the majority of Turkish females and the value of PA or sport is not well understood. Furthermore, Turkish parents may prevent their children, especially their daughters, from engaging in sport. This might be seen as a form of parental "protection". The cultural expectations for females may limit their participation in PA (Çağlar and Aşçı, 2006). In Turkey, sport is also becoming a more powerful phenomenon. According to Fasting and Pfister (1997), Turkey is a very diverse country, and participation in sport, as well as the general practice of experience and PA, varies considerably in the various regions of Turkey. They concluded that some parts of Turkey at least, are changing in that the younger generation is more active in sport and it encourages its children, especially girls, to enjoy sport because sport is considered to be something positive.

There have been few direct attempts to examine the PA levels of young people with regard to gender in Turkey. Therefore this study aimed to determine the PA levels of young adults using the example of Turkey as an economically developing country. In this way, the present study may extend the previous PA research from economically developed countries to a developing country by focusing on the gender differences in the PA levels of Turkish young adults.

Methods

Subjects

Five hundred and four female and 523 male, a total 1027 university students from three universities in Ankara, the capital city of Turkey, voluntarily participated in this study. Subjects were from moderate-income families and majority was from the urban regions of Turkey. Data regarding the age, height and weight of the subjects are given in Table 1. The university students filled out informed consent forms before participation in the study.

Table 1

	<i>Physical characteristics of the subjects</i>					
	Female (n = 504)		Male (n = 523)		Total (n = 1027)	
	M	SD	M	SD	M	SD
Age (year)	20.72	2.07	20.98	1.95	20.85	2.01
Height (cm)	164.72	5.63	178.37	6.13	171.67	9.01
Weight (kg)	55.02	6.64	71.47	9.13	63.40	11.48

Measures

Physical Activity Assessment Questionnaire (PAAQ): PAAQ is a self-report questionnaire, which asks participants to give their weekly average frequency and duration they engaged in PA over the last year (Karaca et al.,2000). In this study, the household and sport activities of PAAQ were analysed. Respondents indicated whether the activities that are listed under these categories were done and if so, on how many days (frequency) and how many hours per day (duration) the activity was generally performed in a week. Each activity was assigned an intensity value (Metabolic expenditure units-MET) based on the work of Ainsworth et al. (2000). Formulas by which weekly and daily durations and intensity (METs/hour) of the activities were calculated are given below:

$$\text{Hours / week} = \text{frequency} \times \text{duration}$$

$$\text{Hours / day} = \frac{\text{hours / week}}{7 \text{ days}}$$

$$\text{METs / hour} = \frac{(\text{frequency} \times \text{duration} \times \text{intensity})}{\text{hours / week}}$$

The PAAQ has been shown to have acceptable reliability and validity for research purposes. Two week test-retest reliability of METs/week for household activities and sport activities for university students were found as $r=.61$ ($n=245$), and $r=.70$ ($n=185$), respectively ($p<0.001$) (Karaca, 2000). The PAAQ has been found to be significantly and strongly correlated ($r= .72$) with daily 24-hour diary measures of PA (Karaca et al.,2000).

Procedure

The PAAQ was administered to subjects in a group at classroom settings. Researchers provided verbal and visual information on how to respond to items in the questionnaire. Participation in the study was voluntary and self-report questionnaire responses were anonymous.

Data Analysis

Descriptive statistics, student t test, and univariate ANOVA were used to analyze the data. Duration of the activities was calculated for both indexes but intensity [average METs in an hour (METs/hour)] was calculated for the only sport index. It was used some classifications about duration and intensity of activities based on previous studies. In this study, intensity of sport activities were classified as vigorous (≥ 6 METs) and non-vigorous (< 6 METs) based on the study of Lee and Paffenbarger (1998). American College of Sport Medicine recommended being moderately active for at least 30 minutes every day for health and fitness benefits (Whaley and Kaminisky, 2001). According to this suggestion, durations of sport activities were classified into two categories (≤ 3.5 h/week and > 3.5 h/week). Furthermore, durations of sitting in a day were classified in two categories (< 2 h/day and ≥ 2 h/day) depending on studies of Gordon-Larsen et al. (2004) and Schmitz et al. (2002) and also housework duration were classified in four categories (none, < 0.5 h/day, $0.5-1$ h/day, > 1 h/day) based on the study of Shi et al. (2006).

Results

The descriptive statistics of duration and intensity of sport activities for males and females are presented in Table 2.

Table 2

		<i>Durations and intensities of sport activities for females and males</i>							
		Female				Male			
Sport activities		n	%	M	SD	n	%	M	SD
No activity		125	24.81	-	-	95	18.17	-	-
Duration (h/week)	≤ 3.5 h/week	194	38.49	1.89	0.84	178	34.03	1.97	0.84
	> 3.5 h/week	185	36.70	7.52	3.41	250	47.80	8.38	3.87
	Total (h/week)	504	100.0	4.64	3.74	523	100.0	5.71	4.36
Intensity (METs/h)	Non-vigorous (< 6 METs/h)	282	55.95	4.43	0.75	215	41.30	4.77	0.68
	Vigorous (≥ 6 METs/h)	97	19.24	6.52	0.72	213	40.53	6.86	.99
	Total (METs/h)	504	100.0	4.96	1.18	523	100.0	5.81	1.35

Table 3

Durations of sport activities (h/week) with regard to gender and intensity of sport activities

Intensity of sport activities	Female (n=379)		Male (n=428)		Total	
	M	SD	M	SD	M	SD
	<6 METs/h	4.63	3.63	6.65	4.53	5.51
≥6 METs/h	4.66	4.04	4.77	3.97	4.73	3.99

Gender differences were found in the intensity of sport activities ($t=9.43$, $p<.001$). Males participated in sport activities with a higher intensity than females. A greater percentage of females engaged in non-vigorous sport activities (55.95%). Additionally, the engaging percentages of vigorous and non-vigorous sport activities in males were almost equal (41.30% and 40.53%, respectively). The amount of time spent in sport activities (above 3.5 hours per week) was relatively higher in males than in females. In addition, results revealed that a quarter of the female subjects and about one fifth of the male subjects did not participate in any sport activity (Table 2).

The descriptive statistics of duration of sport activities (hours/week) with regard to gender and intensities of sport activities are given in Table 3.

The results of 2 (gender) \times 2 (intensity of sport activities) univariate ANOVA revealed significant gender and intensity differences on the participation durations in the sport activities ($F(1,803) = 11.97$; $p<.01$; $F(1,803) = 9.14$; $p<.01$, respectively). This finding showed that males participated in non-vigorous activities for longer periods than females. Also, significant gender \times intensity interaction was found ($F(1,803) = 9.73$; $p<.01$). As can be seen from Table 3, the significant interaction effect of gender \times intensity was due to the fact that males engaged for longer periods of time in both vigorous and non-vigorous sport activities than females.

Participation percentages of both genders in different sports are given Table 4. On examining sport

participation percentages, it was seen that the majority of males primarily played football, while females walked.

Table 5 shows the descriptive statistics of duration of housework and sitting in the house for males and females. It was found that the time 69.84% of females and 76.67% of males spent sitting at home was below 2 hours per day. In terms of the duration of housework, only 29.96% of females did not do it, while about half of the males (47.04%) did not do it. The Student t test revealed gender differences in both duration of housework and sitting in the house ($t=-2.04$, $t=-3.01$, respectively; $p<.05$). Females spent much more time on housework activities and sitting in house than males.

Discussion

This study intended to determine the PA levels of young adults in Turkey as an economically developing country.

As is consistent with previous studies in developed countries (Haase et al., 2004; Kronenberg et al., 2000; Malina, 2006;), gender differences were obtained in the duration and intensity of sport activities. Males are found to be more physically active than females. Results also showed that females engaged in non-vigorous sport activities for shorter periods of time than males. In addition, males participated in both moderate and vigorous activities for longer periods of time than females. These findings are in line with the earlier studies which found that boys were physically more active than girls (Katzmarzyk et al., 1999; Lasheras et al., 2001; McKenzie et al., 2000; Pahkala et al., 2007; Peiro-Velert et al., 2008), and also that males were more active than females (Grundy et al., 1999; Johnson et al., 1998; Kronenberg et al., 2000; Lowry et al., 2002; Macera et al., 2001; Moore et al., 2005; Trost et al., 2002; Utter et al., 2006). Moreover, the results of the present study revealed that males were more likely than females to

Table 4

Participation percentages of females and males in different sports

SPORTS	Female (n= 379)		SPORTS	Male (n= 428)	
	n	%		n	%
Walking	215	35.24	Soccer	160	20.51
Table Tennis	81	13.27	Basketball	144	18.46
Volleyball	68	11.14	Table Tennis	125	16.02
Aerobics	61	10.00	Running and jogging	93	11.92
Running and jogging	53	8.68	Walking	66	8.46
Others*	132	21.63	Others*	192	24.61
Total	610	100.00	Total	780	100.00

*Tennis, trekking, badminton, handball, cycling, etc

Table 5

		<i>Descriptive statistics of duration of the housework and sitting in house for male and female</i>							
		Female				Male			
		n	%	M	SD	n	%	M	SD
Sitting in house	<2 h/day	352	69.84	1.04	0.56	401	76.67	1.03	0.52
	≥2 h/day	152	30.16	3.10	1.34	122	23.33	3.06	1.40
	Total (h/day)	504	100	1.66	1.28	523	100	1.50	1.18
Housework	None	151	29.96	-	-	246	47.04	-	-
	<0.5 h/day	149	29.56	0.24	0.12	103	19.69	0.24	0.13
	0.5-1 h/day	109	21.62	0.73	0.15	88	16.83	0.73	0.16
	>1 h/day	95	18.84	1.85	0.90	86	16.44	1.65	0.59
	Total (h/day)	504	100	.57	.78	523	100	.44	.65

play team sports such as soccer and basketball, while female participation was concentrated on individual exercise and sport activities such as walking and table-tennis. Similarly, West et al. (2002) found similar results in which males played soccer. Soccer is the most popular sport in Turkey, as in most of the world (Metzl et al., 1998; Okay, 2002; Şentürk, 2007). Therefore it is not surprising that a high percentage of males participated in soccer.

Social and psychological reasons can be postulated for the higher PA levels of males compared with females. The gender stereotyping of physical activities leads to gender differences in participation motivations, the length of activity participation and the type of activity preference (Koivula, 1999). Koivula (1999) states that gender differences in sport participation motivation are likely to have emerged due to the expectations of society of "appropriate" behavior for men and women. Men are expected to be competitive, and women are expected to be yielding and concerned about, rather than competing with others. While body-related and social factors are stronger motives for women, competition and competence motives are more valued by men. Generally, males are encouraged to participate in competitive sports to develop masculine aspects of their self-identity, but females are often discouraged from participating in competitive athletics because of the fear of "masculinizing" their physiques, attitudes, and behaviours (Eitzen et al., 1997). In other words, the notion of sport as a very masculine activity probably influences quite strongly the way in which men and women view sport, in regard to their motivation to participate, the expected outcomes of participation, and the time spent participating (Koivula, 1999). The reasons why females in the present study engaged in non-vigorous sport activities can be explained from these perspectives.

As discussed earlier, the gender differences in PA levels can be interpreted by there being more opportunities for athletic competition for males to develop their physical skills, abilities and there being different patterns of sports or PA participation for males and females. These differences in participation are inevitably influenced by the stereotyping of male and female physical and psychological attributes. It is possible to place sports on a continuum from the "most masculine" to the "most feminine" on the basis of ratings of "appropriateness" for men and women (Colley et al., 2005).

In the current study, the results indicated significant differences between males and females on the duration of housework and sitting in the house. Examination of duration showed that females spent much more time on housework activities and sitting in the house than males. This finding contrast with earlier studies (Katzmarzyk et al., 1999) where it was reported that duration of sitting in the house (TV viewing or using the computer etc.) was higher in boys than girls. In the present study, the gender differences in duration of sitting in the house might originate from spending time at home. The total time spent at home for females is longer than that for males. The American Academy of Pediatrics recommends sitting at home for 2 hours per day (TV and video viewing and computer/video game use) (Gordon-Larsen et al., 2004). In the present study, the percentages of both genders in recommended duration of sitting were quite high. In terms of the duration of the housework activities, gender differences may be a function of social influences and cultural factors. For example, in Turkish culture, men who do housework may be called names and looked down on as being "weak" and "not manly" (Aycan, 2004).

The present study has some limitations that should be taken into account. Firstly, the findings may be relevant only for male and female young

adults in urban settings, which limit the generalizability of the results, if considering young adults living in other parts of the country or in rural areas. The second limitation of this study is the cross-sectional design and self-reported PA. Using a longitudinal approach provides an opportunity to track the developmental and socio-cultural variables in relation to PA level. Thirdly, the students in the present study completed the sport index of PAAQ by considering elective practical courses (such as basketball, soccer, volleyball, tennis), which they were enrolled in, as well as their leisure time physical activities. Participation in these courses might have contributed to the relatively high PA levels of the students.

To conclude, the present study indicates that males participated in sport activities with a higher intensity and for longer periods than females. A greater percentage of females engaged in non-vigorous sport activities while the engaging percentages of vigorous and non-vigorous sport activities in males were almost equal. A quarter of the females and about one fifth of the males did not participate in any sport activity. In addition, findings revealed that females spent much more time on housework activities and sitting in the house than males. Sed-

entary young adults and those who reported low levels of PA, especially females, should therefore be the focus for active efforts to increase their leisure-time PA due to the aforementioned benefits of PA. This study also indicates that the PA pattern of young adults in Turkey as a developing country is becoming similar to the PA pattern of young adults in well-developed countries. Reasons such as the modern life style, the decreasing levels of energy consumption both in the workplace and in transportation, the watching of more TV and the greater use of computers begins to threaten the PA level of these young adults as well.

It is possible to provide some suggestion for future research. The reasons underlying the differences between the genders in PA preferences and participation frequencies need to be explored in more detail. For example, qualitative studies could be made to determine these reasons. In addition, further studies could examine the PA levels of different age groups from childhood to older adulthood in order to define the PA pattern of the overall Turkish population. Furthermore, as previously mentioned, a longitudinal study of design could be useful to observe the changes of PA levels with regard to age.

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