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DIFFERENCES IN PERCEIVED PHYSICAL ACTIVITY CONSTRAINTS BETWEEN TURKISH AND 4TH GENERATION TURKISH-GERMAN YOUNG ADULTS

RAZLIKE V ZAZNANIH OMEJITVAH TELESNE DEJAVNOSTI MED TURŠKO IN TURŠKO-NEMŠKO MLADINO ČETRTE GENERACIJE

ABSTRACT

The aim of this study was to examine perceived leisure-time physical activity constraints between Turkish young people living in Germany and Turkey. The current study was conducted with a causal-comparative model to examine the differences in perceived physical activity constraints between Turkish youth living in Turkey and fourth-generation Turkish-German youth who grew up and lived in Germany. 196 young adults from Germany and 201 young adults from Turkey participated in this study. A 2-way Multivariate Analysis of Variance test was used to assess the effects of country of residence and gender background on perceived physical activity constraints. Analysis revealed that there was a statistically significant interaction effect between the country of residence and gender on perceived physical activity constraints of Body Perception, Facilities, Income, Family, Skill Perception, Time, Willpower, and Society. There was also a statistically significant simple main effect of country of residence on all subscales except the skill perception, and the significant simple main effect of gender on facilities, income, time, willpower, and society subscales. Young adults living in Turkey and female precipitants reported higher physical activity constraints compared to participants living in Germany and males. These differences might be associated with the differences in economic development and physical activity norms in Turkish and German societies. These factors are vital for the number of environmental and organizational opportunities to increase leisure-time physical activity participation.

Keywords: physical activity, migrant, physical activity barriers

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IZVLEČEK

Namen te študije je bil preučiti zaznane omejitve telesne dejavnosti v prostem času med turško mladino, ki živi v Nemčiji in Turčiji. Pričujoča študija je bila izvedena z vzročno-posledičnim primerjalnim modelom, da bi preučili razlike v zaznanih omejitvah telesne dejavnosti med turško mladino, ki živi v Turčiji, in turško-nemško mladino četrte generacije, ki je odraščala in živela v Nemčiji. V tej študiji je sodelovalo 196 mladih odraslih iz Nemčije in 201 mladi odrasli iz Turčije. Za oceno vpliva države prebivališča in spolnega ozadja na zaznane omejitve telesne dejavnosti je bil uporabljen dvosmerni test multivariatne analize variance (MANOVA). Analiza je pokazala, da obstaja statistično pomemben interakcijski učinek med državo prebivališča in spolom na zaznane omejitve telesne dejavnosti na področjih zaznavanja telesa, objektov, dohodka, družine, zaznavanja spretnosti, časa, volje in družbe. Prav tako je bil statistično pomemben učinek države prebivališča na vse pod lestvice, razen na pod lestvico zaznavanja spretnosti, in statistično pomemben glavni učinek spola na pod lestvice objektov, dohodka, časa, moči volje in družbe. Mladi odrasli, ki živijo v Turčiji, in prekarci ženskega spola so poročali o večjih omejitvah telesne dejavnosti v primerjavi z udeleženci, ki živijo v Nemčiji, in moškimi. Te razlike so lahko povezane z razlikami v gospodarski razvitosti in normah telesne dejavnosti v turški in nemški družbi. Ti dejavniki so ključnega pomena za število okolijskih in organizacijskih priložnosti za povečanje udeležbe pri telesni dejavnosti v prostem času.

Ključne besede: telesna dejavnost, migranti, ovire pri telesni dejavnosti

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INTRODUCTION

In the face of vast and expanding numbers of migrants and their culturally adapted descendants in host countries, knowledge of the influence of factors related to health-related behavior raises a substantial issue for the field of public health, as migrants seem to be a population at risk for health outcomes (WHO, 2017). Epidemiologic studies indicated that migrants and their descendants are at a higher risk of non-communicable diseases and poor mental health than natives of the host country (Belhadj Kouider et al., 2014; Solé-Auró & Crimmins, 2008; Ujcic-Voortman et al., 2012). Physical inactivity is a key risk factor for many adverse health conditions, including major non-communicable diseases, in highly developed countries with high migration rates (Ding et al., 2016). To illustrate, a lack of participation in physical activity is associated with obesity (Kobel et al., 2019; Murphy et al., 2017; Sarkar et al., 2017), poor mental health (Kim et al., 2016), and metabolic diseases (Dhillon et al., 2016; Piao et al., 2020) among migrant populations. To illustrate, Spaas et al. (2022) highlighted that migrants in Europe experience stress from a young age. Rosenthal, Touyz, and Oparil (2022) indicated that cardiovascular diseases and metabolic syndrome are prominent factors contributing to poorer physical health conditions among migrants. Given the extensive benefits of PA participation in mitigating the negative health outcomes associated with the aforementioned conditions, it is imperative to enhance our understanding of PA behavior and the factors influencing it within this population.

Although the widely acknowledged positive outcomes of PA are evident, studies indicate that non-western migrants living in the United States and Europe tend to be physically inactive, and therefore more vulnerable to potential health problems (Banna et al., 2012; Hosper, Klazinga, et al., 2007; Kandula & Lauderdale, 2005). The constraints of PA participation among these non-western migrant populations are crucial for assessing their needs and planning culture-specific interventions. Many studies and reviews of the constraints of PA in migrants have been conducted (Bradbury, 2011; Doherty & Taylor, 2007; Holdsworth et al., 2017; Kay, 2006; Langøien et al., 2017; Patel et al., 2012); such reports present a diverse range of social, psychological, behavioral, environmental constraints of PA. A recent review (Smith et al., 2019) particularly indicated that many of these constraints are directly linked to migrants' pre-existing cultural capital. Accordingly, the PA environment is one of the sites where migrant-specific culture is reproduced, and where cultural traits are negotiated concerning the host culture. Hence, negative pre-existed cultural attitudes towards PA can limit the participation among migrants (Dagkas & Benn, 2006).

Latter generation migrants are a special group as they have grown up in the host culture. For example, European Commission has addressed the importance of including EU citizens with a migration background in the 2021-2027 integration action plan, as 10% of young (15-34 years old) EU citizens born in the EU have at least one foreign-born migrant parent (European Commission, 2020). Studies indicate differences between first and second-generation migrants in terms of various health outcomes and behaviors in European countries and the United States (Hosper, Nierkens, et al., 2007). Greater social and cultural adaptation is associated with higher PA participation among migrants in European countries (Afable-Munsuz et al., 2010; Hosper, Klazinga, et al., 2007). Social and cultural adaptation processes might be easier for second and third-generation migrants who are also a citizen of the host country, as they are born and enrolled in the education system of the host country. In this way, second and third-generation migrants would be more likely to adopt the health norms of the society in the host country. To illustrate, latter-generation migrants' PA behavior seemed to approach the level of individuals from the host ethnicity in the Netherlands (Hosper, Nierkens, et al., 2007). This adaptation process might engender alteration of PA behavior and perceptions towards PA including constraints between migrants and non-migrants from the same ethnicity and culture.

Although individuals from different countries share the same ethnicity and culture, perceived constraints may differ with respect to the type of leisure time constraints. According to Crawford and Godbey (1987), who distinguished between three categories of constraints: structural, intrapersonal, and interpersonal, the entire process of leisure desire and involvement is impacted by constraints. External obstacles, such as a lack of resources like time, money, or transportation, that are present before involvement but before leisure preferences have been established are referred to as structural constraints. The development of interests and preferences is limited and shaped by intrapersonal and interpersonal constraints, on the other hand, which are known as "antecedent constraints". Interpersonal constraints are social factors, such as friends or family who prefer different leisure activities, whereas intrapersonal constraints are psychological characteristics of the individual that influence the formation of leisure preferences, such as anxiety or perceived lack of skill. Participation in physical activity among individuals may also be significantly hampered by intrapersonal restrictions, which are personal psychological concerns (Mulligan et al., 2012; El Masri, Kolt & George, 2021). Moreover, Marconnot et al. (2019) highlighted the importance of the sense of fear and insecurity among immigrant children as possible PA participation constraints. Interpersonal constraints refer to social factors, such as the influence of family, friends, or community

members on PA participation. For immigrants, interpersonal constraints may include pressure to conform to cultural norms around PA or a lack of social support for engaging in PA To illustrate, the duration of settlement, and the influence of key persons and community groups were providers of necessary conditions and opportunities for Chinese immigrants to interact with locals and experience local culture in sport and leisure activities (Li, Sotiriadou, & Auld, 2015). Finally, structural constraints refer to external factors such as lack of time, money, and transportation. For immigrants, these factors can be particularly challenging, as they may face language barriers, limited access to resources, and discrimination, which can all impact their ability to engage in PA (Marconnot et al., 2019). Furthermore, in more developed countries, people may have more opportunities for leisure time physical activity due to better infrastructure, access to recreational facilities, and more flexible working hours (Cameron et al., 2013). Therefore, it is important to understand the perceived PA constraints by migrant populations, especially in different countries with different development levels.

Factors influencing leisure time PA behaviors may differ for ethnic groups concerning their culture and level of adaptation to the host culture (Crespo et al., 2000; Whitt-Glover et al., 2009). Moreover, the perceived PA constraints might be specific to the culture of migrants and the host country. Therefore, focusing on specific migrant populations from the same indigenous culture and living in the same alternative culture and comparing them with non-migrant individuals from their country of origin would pave the way for a better understanding effect of culture on perceived PA constraints. In this sense, Turkish immigrants in Europe and specifically in Germany represent a special population as third and fourth-generation youths were born, raised, and get educated in the host country. Turkish-origin migrants and their descendants constitute the biggest ethnic minorities in European Union countries. Turkish migration to Europe started in the early 1960s, due to the seeking for foreign labour caused by the economic boom in Western Europe, and continued with family reunification. According to the European Commission (2011), Turkish citizens make up the biggest group of non-nationals in 2009 and comprise 2.4 million people accounting for 7.5% of all foreigners living in European Union countries. In Germany, 25.5% of the population has a migration background, either having ancestors who immigrated or having personally moved and 2.8 million Turkish-origin individuals constitute the largest ethnic group in this country (Federal Statistical Office, 2019). Considering, the history of Turkish migration, young Turkish-origin populations living in Europe culturally adapted to host countries based on their length of residency and language proficiency (Koca & Lapa, 2014).

Haase et al. (2004) indicated that international comparisons are important for defining variations in PA in different cultures from the perspective of global public health. In this manner, comparing physical activity constraints between individuals with a migrant background and their counterparts in the country of origin would point to common and different perceived leisure time PA constraints, and suggest the areas in most need of amendment for physical activity promotion across different countries and highlight the important points of good practice for both migrants and non-migrant populations. To date, current migrant literature investigating the PA constraints is limited to differences between host and indigenous cultures. Therefore, examining how Turkish young fourth-generation migrants perceive constraints in German society and comparing them with natives of their origin country would enhance our understanding of perceived PA constraints in migrants from and in specific host and indigenous cultures. Due to the lack of comparison analyses with individuals from the same origin but various cultures, the aim of this study was to compare the perceived constraints related to physical activity among fourth-generation Turkish origin youth living in Germany who speak both German and Turkish as their mother tongue to their Turkish counterparts residing in Turkey.

METHODS

Research Model

The current study is a prospective causal-comparative study that examines the perceived PA constraints differences between Turkish youth living in Turkey and fourth-generation Turkish-German youths who grew up and have lived in Germany. A prospective causal-comparative study is a type of research design where the researcher aims to identify the cause-effect relationship between two or more variables. The cause-effect relationship of country of residence and perceived PA constraints were examined in this study. The ethical approval of the research was obtained by the decision of Anadolu University Health Sciences Scientific Research and Publication Ethics Board No:42615.

Sample design and data collection

The variables in this research are the participants' year of birth, i.e. their chronological age, years of service in profession, and level of education which is differentiated as undergraduate, graduate university, high school and, primary school.

Statistical data processing

A total of 196 young adults from Germany and 201 young adults from Turkey participated in this study with a convenience sampling method. This method involves selecting participants based on their accessibility and willingness to participate, rather than randomly selecting them. Before the data collection, participants were introduced to the study and the data collection tool. Individuals who reported a struggle of understanding at least a single item on the data collection tool were excluded from the study to ensure accuracy and reliability of the data. A total of 11 participants were excluded due to a misunderstanding of items in the data collection tool. The study includes two groups of participants: those who were born in Germany and currently reside there, aged between 18 and 29, and those living in Turkey, aged between 18 and 27. 4th generation Turkish-German participants constituted 104 female (Age: 22.38±2.23) and 81 male (Age: 21.76±1.88) young adults, born and living in Germany. Data was collected from Turkish young adults composed of 89 females (Age: 21.11±1.28) and 112 males (Age: 21.90±1.97) living in Turkey. The German data set was collected in the 2019 annual camp of the Turkish Ministry of Youth and Sports for young Turks living abroad. The inclusion criteria for the study were born and being university students in Germany, speaking German and Turkish fluently for participants from Germany. Participants of the Turkish data set were randomly selected with the stratified random selection method from the universities located in Ankara, the capital of Turkey. Each government university was accepted as strata, then 2 universities randomly selected out of four government universities. All participants were unmarried.

Measurement Instruments

In order to measure the research model constituted; Demographic Information form and "Leisure Time Perceived Physical Activity Constraints Scale" are used (Öcal, 2012).

Demographic Information

Participants self-reported their gender, age, and country of residence.

Data analysis

2-way Multivariate Analysis of Variance (2-way MANOVA) test was used to assess the effects of country of residence and gender background on perceived physical activity constraints between participants. The distribution of all dependent variables was homogenous according to Levene's test of homogeneity. Kolmogorov-Smirnov test indicated that data were normally distributed. Results of the descriptive statistics were presented as mean and standard deviation

(M±SD). As there were only two levels for both independent variables, none of the post-hoc tests were run following the 2-way MANOVA. Post-Hoc power was also reported. However, follow-up ANOVAs were examined for single main effects. All analyses were conducted by using SPSS 25.0.

RESULTS

Descriptive statistics indicate that generally, Turkish females living in both countries perceive higher constraints in all subscales compared to Turkish males. Similarly, participants living in Turkey perceive higher physical activity constraints compared to participants living in Germany. Descriptive statistics are shown in Table 1.

Table 1. Mean and standard deviations of the perceived barrier according to country of residence and gender.

	Country of Residence					
	Germany			Turkey		
	Female	Male	Total	Female	Male	Total
Body Perception	9.55±4.73	10.61±4.20	10.02±4.52	12.19±5.31	11.18±4.94	11.63±5.12
Facilities	18.80±7.90	15.46±6.64	17.34±7.54	24.26±8.60	23.96±8.67	24.09±8.62
Income	14.93±8.26	11.48±6.63	13.42±7.76	16.98±6.35	16.50±6.17	16.71±6.24
Family	7.08±5.20	6.08±3.07	6.64±4.41	9.52±4.22	9.68±4.47	6.43±4.35
Skill Perception	8.33±4.18	7.43±3.99	7.94±4.11	7.38±3.84	7.05±3.49	7.19±3.64
Time	9.50±4.16	7.98±4.42	8.84±4.33	8.06±3.40	7.69±3.15	7.86±3.26
Willpower	8.26±4.05	6.92±3.28	7.68±3.78	11.46±4.54	10.79±4.01	11.08±4.25
Society	12.04±5.45	8.88±4.36	10.66±5.23	14.49±4.85	11.53±4.18	11.96±4.50

A two-way MANOVA was run with two independent variables – country of residence and gender - and eight dependent variables – mean values of subscales of the Leisure-Time Physical Activity Constraints scale. There was statistically significant interaction effect between country of residence and gender on subscales, F $F_{(8,375)}$= 2.037, p= 0.041, Wilks' Λ= 0.958, partial η2= 0.42. Follow-up univariate two-way ANOVAs were run. These tests indicated a statistically significant interaction between the country of residence and gender for perceived physical activity constraints in body perception, income, and society subscales (shown in Table 2).

As such, a simple main effect analysis was also run. There was statistically significant simple main effect of country of residence, F $F_{(8,375)}$= 31.361, p= 0.000, Wilks' Λ= 0.599, partial η2= 0.401 (shown in Table 2). Follow-up ANOVAs indicated a statistically significant main effect of the country of residence on all subscales except skill perception. Turkish participants reported higher constraint scores on body perception, income, facilities, willpower, and society subscales, while Turkish-German participants reported higher scores on family and time subscales. Similarly, the simple main effect of gender was statistically significant on facility, income, time, willpower, and society subscales, $F_{(8,375)}$= = 2.813, p= 0.005, Wilks' Λ= 0.943, partial η2= 0.057. Follow-up analysis indicated that these simple main effects were in favor of males, which indicates female participants reported higher constraints scores.

Table 2. MANOVA Results of interaction and simple effects of country of residence and gender.

Independent variables	Dependent Variables	df	Mean Square	F	p	η^2	1-β
Country of residence	**Body Perception**	1	243.620	10.427	.001	.027	.896
	Facilities	1	4624.296	71.121	.000	.157	1.000
	Income	1	1188.110	24.742	.000	.061	.999
	Family	1	866.775	45.093	.000	.106	1.000
	Skill Perception	1	42.183	2.807	.095	.007	.387
	Time	1	71.329	4.981	.026	.013	.705
	Willpower	1	1183.268	73.373	.000	.161	1.000
	Society	1	227.117	10.073	.002	.026	.886
Gender	**Body Perception**	1	.075	.003	.955	.000	.050
	Facilities	1	315.206	4.848	.028	.013	.693
	Income	1	368.503	7.674	.006	.020	.789
	Family	1	16.778	.873	.351	.002	.154
	Skill Perception	1	36.083	2.401	.122	.006	.340
	Time	1	85.061	5.940	.015	.015	.781
	Willpower	1	95.843	5.943	.015	.015	.681
	Society	1	402.528	17.853	.000	.045	.998
Country of residence x Gender	**Body Perception**	1	101.041	4.324	.038	.011	.646
	Facilities	1	218.399	3.359	.068	.009	.448
	Income	1	208.332	4.338	.038	.011	.647
	Family	1	31.917	1.660	.198	.004	.251
	Skill Perception	1	7.876	.524	.470	.001	.112
	Time	1	31.447	2.196	.139	.006	.315
	Willpower	1	10.889	.675	.412	.002	.130
	Society	1	114.949	5.098	.025	.013	.715

DISCUSSION

The current study's objectives were to analyze the perceived constraints to PA among Turkish youth who reside in Turkey and fourth-generation Turkish-German youth who were raised and now live in Germany, as well as the potential effects of gender and country of residence on these constraints. The study aimed to determine whether there were any significant differences in perceived constraints related to Body Perception, Facilities, Income, Family, Skill Perception, Time, Willpower, and Society between the two groups using a causal-comparative model and multivariate analysis of variance. The study's ultimate goal was to offer information on the variables that affect the disparities in participation and levels of PA between various populations, particularly with regard to the effects of economic development and social standards. Country context is an important determinant of PA behavior among young people with its' unique health communications, political environments, social and cultural environments, institutional environments, physical environments, and accessibility to PA facilities (Langøien et al., 2017). The findings of this study revealed that young Turkish people living in Germany reported significantly fewer constraints in body perception, facilities, income, family, willpower, and society subscales compared to participants from Turkey. These results demonstrate the importance of economic, cultural, and institutional factors in the host country in terms of perceived leisure time PA constraints among acculturated migrants.

In this study, fourth-generation Turkish-German participants reported significantly less leisure time PA constraints in facility and income subscales, which are associated with the economic development of the country. The economic environment of the country is one of the most significant factors in the health-related behavior of residents (Lakerveld et al., 2014; Spinney & Millward, 2010), and it is also one of the main determinants of PA among migrants. The economic growth in developed countries is associated with a corresponding PA change in trends among the residents (Bauman et al. 2012). Bauman et al. (2011) indicated that associations of leisure and occupational PA with socioeconomic indicators are likely to reflect the economic development of six Asia-Pacific countries. Developed countries' investment in infrastructures such as traffic and recreational areas that enable people to be physical activity is higher than developing countries (Cameron et al., 2013). Moreover, Haase et al., (2004) also found that national economic development played a significant role in the relationship between leisure time PA and health beliefs, with the association being stronger in higher-income countries. Haase et al., (2004) also indicated that the rate of physical inactivity during leisure time differed based on cultural and economic development factors, with an average of 23% in North-Western

Europe and the United States, 30% in Central and Eastern Europe, 39% in Mediterranean countries, 42% in Pacific Asian countries, and 44% in developing countries. Thus, the economic growth is associated with the leisure time PA participation. The economic growth difference between Turkey and Germany is significant according to World Bank. Germany is a high-income country, whereas Turkey is classified as an upper-middle-income country (World Bank, 2019). In this manner, opportunities for PA are highly developed in Germany, and those opportunities have been steadily increased by local authorities since (Filippidis & Laverty, 2016), while environmental factors including lack of parks and heavy traffic prevent jogging and cycling in big cities, are not organized for promoting physically active lifestyles in Turkey (Hacisoftaoğlu & Pfister, 2012).

Haase et al. (2004) indicated that geographical, political, and cultural criteria are important in physical activity behavior. These factors are important for creating social norms related to physical activity, besides facilitating environmental opportunities for leisure-time PA. Given the fact that social support for physical activity is relatively insufficient among migrant communities (Marquez & Mcauley, 2006), social norms related to leisure-time PA in the host society become even more important for affecting PA behavior. Berry (1998) explained that the duration of residence in a new country increases the number of social interactions and contacts, which in turn increases the PA opportunities for migrants. Moreover, birthplace and duration of residence are important indicators of adopting healthy behavior in the host culture (Rotermann, 2011). Thus, because the PA participation level is higher in German society compared to Turkish (World Health Organization, 2014), it can be concluded that German social norms related to leisure time PA is more sophisticated, and this might be the main reason why German participants perceived significantly less leisure time constraints in society subscale.

Cultural traits of migrant origin citizens and the host country are also an important aspect of perceived PA constraints in society, as the holistic definition of PA strongly emphasizes the cultural spaces and contexts in that people move, act, and perform (Piggin, 2020). To illustrate, social adaptation in Dutch culture was strongly associated with sports participation for only first and second-generation Turkish migrant women, but not for Moroccan women (Hosper et al., 2008). Higher participation was accounted for by the culturally specific beliefs and lesser extent by self-efficacy and perceived disadvantages among Turkish-origin migrants (Hosper et al., 2008). Similar to this explanation, the qualitative study reported that the lifestyle choices of Turkish migrants in Denmark transition from a sedentary lifestyle to physically active health

choices, as their Danish contemporaries (Hacisoftaoğlu & Pfister, 2012). Participants of this qualitative study also said that "sport is always on the agenda in Denmark; it is part of Danish people's lives. You always hear, read about it, and are influenced by that discourse", whereas sports for all is not rooted in Turkish culture as another participant emphasized, "People in Turkey believe that sport is just for losing weight." As it was previously explained by Hacisoftaoğlu and Pfister (2012), encounters in socio-ecological environments such as peers, and with the aid of formal education in schools, which can be seen as more significant for fourth-generation Turkish in Germany, individuals acquire the rules, expectations, and norms that is pertinent in the host culture.

Results of this study also indicated that Turkish participants reported significantly higher perceived constraints in the family subscale. A study focused on the parent-child contact differences between Turkish migrant background families and native German families indicated that contact is more frequent in Turkish families (Steinbach, 2013). Although this finding indicates the power of family ties to direct youth generations to health-related behavior, the PA participation rates are low in first and second-generation Turkish migrants in Germany (Krist et al., 2020) similar to Turkish society (World Health Organization, 2014). However, Turkish origin young Germans attribute more power to themselves in the decision-making process (Schönpflug, 2001), which in turn might be effective on PA choices independent of family ties.

Perceived differences in PA constraints between Turkish and fourth-generation Turkish-origin young people living in Germany also can be attributed to generations included in this study. As this study only includes fourth-generation Turkish-origin German citizens, their adaptation level to German culture is expected to be higher than earlier generations, which in turn affects the level of interiorizing the culture-specific health norms. Given that fourth-generation individuals of Turkish descent in Germany have already undergone a process of acculturation into German society, it is expected that their perceptions of PA constraints would differ from those of individuals living in Turkey. Previous studies examining the effect of acculturation on PA behavior among Turkish migrants in England have reported no effect, and researchers explained that their results might be affected by the composition of participants which only included first-generation migrants (Koca & Lapa, 2014). On the other hand, their participant group from Germany which included second and third generations were more physically active compared to participants from England. To illustrate, compared to Turkish migrants who were born in Turkey, PA behavior of migrant background latter generation individuals who were

born in host culture seemed to approach the level of individuals from the host ethnicity in the Netherlands (Hosper, Nierkens, et al., 2007).

CONCLUSION

In conclusion, this study sheds light on the perceived constraints of leisure-time PA among Turkish young adults living in Turkey and Germany. The findings indicate that the country of residence and gender background have significant effects on PA constraints, with young adults in Turkey and females reporting higher levels of constraints. This study highlights the significant effects of country of residence and gender background on leisure-time PA constraints among Turkish young adults living in Turkey and Germany. Specifically, young adults in Turkey and females reported higher levels of PA constraints, emphasizing the need for targeted interventions and policies to increase PA participation in different cultural and economic contexts. The findings suggest that economic development level and PA norms play a crucial role in shaping attitudes and perceptions towards leisure-time PA (World Bank, 2019; World Health Organization, 2014). As previous research has shown, the availability and accessibility of environmental and organizational opportunities for PA in developed countries influence migrant-origin citizens' behavior toward PA (Hacisoftaoğlu & Pfister, 2012; Hosper, Nierkens, et al., 2007). Therefore, transferring effective policy practices from developed countries that promote PA among migrants should be carefully examined and implemented in sending countries to improve leisure-time PA opportunities for their citizens. Further research is needed to identify underlying factors that contribute to differences in PA constraints and to develop effective strategies to address them.

There were some limitations to this study, firstly the small sample size of both migrant-origin participants and local Turkish participants is not sufficient to represent young people in Germany and Turkey. Secondly, interpreting perceived leisure PA constraints with actual PA levels would improve the data analysis and results. However, data of participants living in Germany collected during their visit to Turkey and 7-day accelerometry-based PA levels would be different than their actual in Germany. Moreover, participants from Germany reported that they understand and speak Turkish clearly, but reaching larger sample and checking the validity of the questionnaire would be necessary to determine the generalizability of these findings to the wider population and ensure the validity of the instrument. Even though the data collection tool does not include any specific item related to country of residency nor culture, it is also

important to note that participants from the Germany were in the annual camp of the Turkish Ministry of Youth and Sports for young Turks living abroad while collecting data. Since they were asked to answer questions by considering their daily routines in Germany, collecting data in Germany would also potentially differ the results. Lastly, collecting data from various European countries with high numbers of Turkish origin people would be able to provide new insights into the research question that investigates geographical, climatic, economic, and sociocultural factors on PA constraints.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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