

2020

Perceived Benefits and Barriers to Participation in Exercise among Jordanian University Students

Khaldoun Hamdan
Al Ahliyya Amman University, Khaldon_hamdan@hotmail.com

Follow this and additional works at: <https://digitalcommons.aaru.edu.jo/albalqa>

 Part of the [Applied Ethics Commons](#), [Banking and Finance Law Commons](#), [Criminology and Criminal Justice Commons](#), [Geography Commons](#), [History Commons](#), [International and Area Studies Commons](#), [Other History of Art, Architecture, and Archaeology Commons](#), [Public Affairs, Public Policy and Public Administration Commons](#), [Reading and Language Commons](#), [Religion Commons](#), and the [Tourism Commons](#)

Recommended Citation

Hamdan, Khaldoun (2020) "Perceived Benefits and Barriers to Participation in Exercise among Jordanian University Students," *Al-Balqa Journal for Research and Studies* **البلقاء للبحوث والدراسات**: Vol. 23 : Iss. 1 , Article 10.

Available at: <https://digitalcommons.aaru.edu.jo/albalqa/vol23/iss1/10>

This Article is brought to you for free and open access by Arab Journals Platform. It has been accepted for inclusion in Al-Balqa Journal for Research and Studies **البلقاء للبحوث والدراسات** by an authorized editor. The journal is hosted on [Digital Commons](#), an Elsevier platform. For more information, please contact rakan@aar.edu.jo, marah@aar.edu.jo, u.murad@aar.edu.jo.

Perceived Benefits and Barriers to Participation in Exercise among Jordanian University Students

المنافع والمعوقات المدركة لممارسة النشاط البدني من قبل طلبة الجامعات الأردنية

Abstract

Insufficient physical activity is a risk factor for many non-communicable diseases, therefore; the purpose of this study is to examine university students' perceived exercise benefits and barriers. This cross-sectional descriptive study used Exercise Benefits/Barriers Scale to examine perceived benefits and barriers to exercise among a convenience sample of 517 university students in Jordan. Participants reported significantly higher perceived barriers to exercise than perceived benefits from exercise. The most important perceived barrier to exercise was "I am too embarrassed to exercise". Moreover, "I will live longer if I exercise" and "exercising increases being accepted by others" were the most important perceived benefits from exercise. Students' age was negatively correlated with perceived barriers to exercise. Unemployed students perceived more benefits from exercise than employed students. Physical activity promotion programs should assist university students to overcome perceived barriers, and further highlight the health benefits of exercise.

Keywords:

Exercise, Jordan, Perceived barriers, Perceived benefits, Socio-demographic factors, University students.

DR. Khaldoun Hamdan
الدكتور: خالدون حمدان
Al Ahliyya Amman University
khaldon_hamdan@hotmail.com

Received: 17/7/2018

Accepted: 4/4/2019

المخلص

النشاط البدني غير الكافي هو عامل خطورة للعديد من الأمراض غير السارية. من هنا جاءت هذه الدراسة لدراسة المنافع والمعوقات المدركة لممارسة النشاط البدني من قبل طلبة الجامعات الأردنية. استخدمت هذه الدراسة الوصفية المقطعية مقياس المنافع/المعوقات لمراجعة المنافع والمعوقات المدركة لممارسة النشاط البدني باستخدام عينة من 517 طالبا جامعيًا في الأردن. وقد أبلغ الطلبة عن وجود معوقات لممارسة النشاط البدني أكثر بكثير مقارنة بفوائد ممارسة النشاط البدني. وكان من أهم المعوقات المدركة لممارسة النشاط البدني "أنا محرج للغاية من ممارسة الرياضة". ومن أهم المنافع المدركة لممارسة النشاط البدني "سأعيش فترة أطول إذا مارست الرياضة" و "ممارسة الرياضة تزيد قبولي من قبل الآخرين". كما وجد الطلبة الأكبر عمرا معوقات لممارسة النشاط البدني أكثر من الطلبة الأصغر عمرا. وجد الطلاب العاطلون عن العمل فوائد أكثر من ممارسة النشاط البدني مقارنة بالطلاب العاملين. لذا، يجب أن تساعد برامج تعزيز النشاط البدني طلاب الجامعات على التغلب على معوقات ممارسة النشاط البدني، وإلقاء المزيد من الضوء على الفوائد الصحية لممارسة النشاط البدني.

الكلمات المفتاحية

ممارسة النشاط البدني، الأردن، المعوقات المدركة، المنافع المدركة، العوامل الاجتماعية الديموغرافية، طلبة الجامعات.

Introduction

There is incontrovertible evidence that regular physical activity improves physiological and psychological health outcomes (Janssen and LeBlanc 2010). The physiological benefits of physical activity include weight control and reduced risk of heart disease, type-two diabetes, and some cancers. Other physiological benefits of physical activity are stronger muscles, increasing life span, improving blood cholesterol levels, reducing blood pressure, increasing energy levels, and improving sleep patterns. There are also several psychological benefits associated with regular physical activity such as decreased tension and stress, improved body image and mood, reduced anxiety and depression, and increased enthusiasm and optimism (American Heart Association 2011, Centre of Disease Prevention 2011).

Furthermore, regular physical activity is linked to the primary and secondary prevention of many non-communicable diseases (e.g. cardiovascular disease, diabetes, hypertension, obesity, and osteoporosis) and premature death (Lee, Shiroma et al. 2012). Non-communicable diseases are responsible for death, disability, and economic burden worldwide especially in developing countries (Lee, Shiroma et al. 2012). At the national level, there is a noticeable increase in the prevalence of non-communicable diseases which may have consequences on both the economy and the health care system (World Health Organization 2014). Despite the high prevalence and cost of non-communicable diseases, the elimination of major risk factors of such diseases will prevent at least 80% of all cardiovascular diseases, stroke, and diabetes (Lee, Shiroma et al. 2012).

Healthy behaviors at a young age are important determinants of the individual risk for non-communicable diseases afterward (Hoyt, Chase-Lansdale et al. 2012, Liu, Daviglius et al. 2012, Racette, Inman et al. 2014). University students go through transitional periods in their lives. They experience many developmental changes when they start going to university, such as increased independence, leaving their homes, creating new peer groups, and new academic responsibilities (Taylor, Bramoweth et al. 2013). Promoting healthy behaviors including physical activity during this period will increase their chance to be healthy adults in the future (Hoyt, Chase-Lansdale et al. 2012). Despite the known benefits of physical activity in the literature, university students do not engage in sufficient physical activity, specifically during the study period at university (Rouse and Biddle 2010, Deliens, Deforche et al. 2015, Aceijas, Bello-Corassa et al. 2016). According to the World Health Organization (WHO) statistics 23% of adults aging 18 and over are insufficiently active in 2010 (WHO 2015). International studies conducted in Iran, Thailand, Turkey which investigated different health behaviors among university students found that physical activity ranked

the lowest among all the health behaviors examined including; health responsibility, nutrition, spiritual growth, interpersonal relationship, and stress management (Thanawat, Nualnetr et al. 2009, KARADAĞ and Yildirim 2010, Rezaei-Adaryani and Rezaei-Adaryani 2012). Also, national studies that examined the health behaviors of university students revealed that students' mean score of physical activity scale is the lowest among all the health behaviors' scales that were examined (Shaheen A 2015). University students could benefit from educational training programs to improve their health behaviors (Abu-Moghli, Khalaf et al. 2010).

Individual participation and adherence to physical activity are influenced by personal, interpersonal, environmental, and policy factors (Taber, Meischke et al. 2010). Different studies revealed that perceived barriers to exercise are key predictors of exercise behavior. Individuals who encounter more barriers are less likely to become physically active (Gómez-López, Gallegos et al. 2010, Gómez-López, Granero-Gallegos et al. 2011). However, more recent studies suggested that the ratio of perceived barriers to perceived benefits of exercise is more predictive of exercise behavior. Individuals who perceive more benefits from exercise and fewer barriers to exercise are more likely to be physically active than those who perceive high barriers and low benefits of exercise (Lovell, El Ansari et al. 2010, Poobalan, Aucutt et al. 2012, King, Vidourek et al. 2013).

Previous studies found that the greatest perceived barriers to exercise were lack of time, lack of social support, and feeling lazy (Lovell, El Ansari et al. 2010, El-Gilany, Badawi et al. 2011, Gómez-López, Granero-Gallegos et al. 2011, Mudronja, Petratic et al. 2011, Yan and Cardinal 2013). Other significant reported barriers were physical exertion (Lovell, El Ansari et al. 2010), respondents neither like physical activity, nor recognize its usefulness plus their belief that they are not competent in these type of activities (Gómez-López, Granero-Gallegos et al. 2011). Moreover, other barriers reported by university students were cultural barriers, lack of how to information (Yan and Cardinal 2013), exercise interferes with their studies (Mudronja, Petratic et al. 2011), and lack of accessible sporting places (El-Gilany, Badawi et al. 2011).

Studies found that motives for exercise among university students were to improve and maintain their health and for enjoyment and feeling good (Lovell, El Ansari et al. 2010, Poobalan, Aucutt et al. 2012, Yan and Cardinal 2013). Other important benefits were stress reduction, physical performance, psychological outlook, life enhancement, and social interaction (Lovell, El Ansari et al. 2010).

Research problem

In light of previous studies, university students do not engage in sufficient physical activity. Considering the fact that there is an increasing prevalence of non-communicable diseases and its related health complications, more exploration of this topic is highly required. Examining factors affecting university students' exercise behavior is extremely important. The motivating university students to be physically active increases their chances to be healthy adults in the future. Universities constitute a vital setting in which the physical activity of young adults can be changed. Building effective physical activity promotion programs requires an understanding of university students' attitudes towards exercise in terms of perceived benefits and barriers. However, only a few studies have investigated university students' attitudes towards exercise. Therefore, this study aims to fill the gap in the literature related to university students' perceived benefits and barriers to exercise. This study may help in developing physical activity promotion interventions to achieve better health outcomes for this population. The aims of this study are to assess university students' perceived benefits and barriers to exercise and to examine differences of perceived benefits and barriers to exercise in relation to demographic variables. The study aims at answering the following questions:

- What are the most significant perceived benefits and barriers to exercise among university students?
- Do university students have more perceived benefits than barriers to exercise?
- Are their differences in perceived benefits and barriers to exercise among university students in relation to their demographic variables?

Theoretical framework

Nola J. Pender's Health Promotion Model (HPM) was used as a theoretical framework for this study (Pender, Murdaugh et al. 2006). The HPM is a framework for integrating nursing and behavioral science perspectives on factors influencing health behaviors. It is a social-psychological model which assumes that an individual will take a health-related action to avoid a negative health condition if the recommended action will prevent a negative health outcome and if there is a likelihood of successfully accomplishing that action. Pender built on Albert Bandura's work with the social cognitive theory which focuses on the learning that occurs within a social context. It considers that people learn from one another by observing, imitating and modeling (Pender, Murdaugh et al. 2006).

The model hypothesized that there are three factors affect the individual engagement in healthy behaviors; individual characteristics and experiences, behavior-specific cognitions and affect, and situational/interpersonal influences. Individual characteristics include behavioral factors and personal factors (biological, psychological, sociocultural) that influence health behavior such as age, personality, and socioeconomic status. Cognitive-perceptual factors are the main motivational mechanisms that affect the acquisition and maintenance of health-promoting behavior. Cognitive factors include activity-related effect, perceived self-efficacy, perceived benefits, and perceived barriers. According to HPM the likelihood that an individual will engage in a health behavior (e.g., physical Activity) depends largely on their perceived magnitude of the barriers against being physically active, their perceived benefits to being physically active (Pender, Murdaugh et al. 2006). The present study was designed to test behavior-specific cognitions factors including perceived benefits and perceived barriers to exercise.

Methods

Design and sample

A cross-sectional descriptive design was used in this study. The sample size was calculated using G power soft program. Using $\alpha = 0.05$ two-tail level of significance, effect size = 0.2 (low medium), and power = 0.8. According to previous measures, at least 369 students were needed for this study. A convenient sampling technique was used to select the sample of the study. Convenience sampling allows researchers to select the most accessible participants. Participants were included if they were university students, agreed to participate, and not disabled or had acute medical conditions that influence their participation in exercise activities.

Procedure

Students were selected from two public and two private universities in Jordan between October 2013 and February 2014. Research assistants approached different faculties in the universities after obtaining the required approval from those universities. Then, research assistants entered different classrooms in the participating universities, explained the purpose of the study to students, answered any questions related to the study, and invited the students to participate. Students who agreed to participate signed the consent form. Questionnaires were administered at the beginning of the lecture. Then, students were asked to return them to the research assistants in the same lecture in a sealed envelope. Data were not collected during the period of exams to avoid influencing the emotional state of the participants and the results.

Measures

Demographic information

Demographic characteristics were obtained from participants through the questionnaire that was developed by the researcher. The demographic data sheet included information about participants' gender, academic year, university type, age, employment status, marital status, and monthly family income in Jordanian dinner.

Perceived benefits and perceived barriers to exercise

The Exercise Benefits/Barriers Scale (EBBS) was used to measure perceived benefits and perceived barriers to exercise. The instrument can be used and scored as a single scale or as two separate scales including the Exercise Benefits Scale and the Exercise Barriers Scale. In a previous study, Cronbach's alpha for the total instrument was 0.95, 0.95 for Exercise Benefits Scale, and .86 for the Exercise Barriers Scale. Also, test-retest reliability for the total instrument was 0.89, 0.89 for Exercise Benefits Scale, and 0.77 for the Exercise Barriers Scale (Sechrist, Walker et al. 1987). The instrument has a four-response, Likert-type format with responses ranging from 4 (strongly agree) to 1 (strongly disagree). Scores on the total instrument may range from 43 to 172. For the total instrument the higher the score, the more positively the individual perceives the exercise. When the Exercise Benefits Scale is used as a separate scale, the score range is between 29 and 116, higher scores indicate a higher perception of perceived benefits. If the Exercise Barriers Scale is used as a separate scale, scores range between 14 and 56, and a higher scores indicate a higher perception of perceived barriers (Sechrist, Walker et al. 1987).

The EBBS was translated into Arabic language using back-translation and back-translations as described by the World Health Organization (WHO, 2018). First, a bilingual researcher translated the EBBS into the Arabic language. Second, five researchers in the field of healthy behavior reviewed the translated questionnaire and checked its appropriateness and relevance to Jordanian culture. Third, an independent

translator back-translated the instrument into English. Fourth, the questionnaire was pilot tested on 45 students who were excluded from the final analysis. In the current study, the Cronbach alpha coefficient was 0.88 for the EBBS scale, 0.83 for the Exercise Barrier Scale, and 0.94 for the Exercise Benefit Scale.

Data analysis

Data were analyzed using the Statistical Package for Social Science (SPSS) version 17 (IBM SPSS Statistics for Windows, 2012). Descriptive statistics (percentage, mean, standard deviation, minimum, and maximum) were used to describe the demographics and to describe general levels of perceived benefits and perceived barriers to exercise.

A total score was obtained for the EBBS after the Exercise Barriers Scale items were reverse coded, and a separate total score was obtained for the Exercise Benefits and the Exercise Barriers scales. Standardized scores out of 100 were calculated for the Exercise Benefits Scale and Exercise Barriers scale to compare between the two scales that have a different number of items. A paired sample t-test was used to assess whether students have more perceived barriers to exercise than perceived benefits. Pearson correlation was used to assess the correlation between age and Exercise Benefit and Exercise Barriers scales. Independent sample t-test

and ANOVA were used to examine differences in Exercise Barriers and Exercise Benefits scales according to categorical demographics including gender, marital status, and employment status. Findings were considered as statistically significant if the p value was $\leq .05$.

Results

A total of 650 students were invited to participate in the study. Finally, 517 questionnaires were returned (response rate= 79.5%). The mean age of the students was 20.65 ± 2.42 years and 71.8% (N= 517) of the students were females. Only 13% of the students (n= 68) were employed. The mean family income per month was 820.2 ± 981 JD see (Table 1).

The mean total score of the EBBS was 89.16 (SD = 13.69) and the mean total score for the Exercise Barriers Scale was 36.86 (SD = 6.62). "I am too embarrassed to exercise" was the most important perceived barrier to exercise. Other important items included "I think people in exercise clothes look funny", "it costs too much to exercise", and "my family members do not encourage me to exercise". Participants had a low level of agreement towards the following items: "there are too few places for me to exercise", "places for me to exercise are too far away" and "I am fatigued by exercise". Table 2 shows the means and standard deviations for each item of the Exercise Barriers Scale.

Table 1
Socio-demographic Characteristics of the Study Sample (N = 517)

Variables	Frequency	Percentage
Gender (N = 516)		
Male	139	26.5
Female	377	71.8
Academic year (N = 517)		
1st year	77	14.7
2nd Year	166	31.6
3rd Year	141	26.9
4th year or above	133	25.4
University type (N = 517)		
Public	466	90.1
Private	51	9.8
Marital status (N = 516)		
Single	481	91.6
Married	33	6.3
Divorced	2	0.4
Employment status (N= 504)		
Employed	68	13.0
Unemployed	436	83.0
	M (SD)	range
Students' age (N = 517)	20.65(2.42)	17-35
Family income per month in JD (N = 517)	820.2(981)	100-10000
EBBS	89.16(SD= 13.69)	-
	Raw score M (SD)	Transformed score out of 100 M (SD)
Perceived Barrier Scale	36.9 (6.6)	65.8 (11.8)
Perceived Benefit Scale	52.3 (12.7)	45 (10.9)

The mean score for the Exercise Benefit Scale was 52.3 (SD= 12.74). "I will live longer if I exercise", "exercising increases my acceptance by others", and "exercising allows me to have contact with friends and persons I enjoy" were the most important perceived benefits from exercise. The respondents showed a low level of agreement with "exercise improves the way my body looks", "exercising increases my level of physical fitness", and "exercising improves functioning of my cardiovascular system". Table 3 illustrates the means and standard deviations for each item of the Exercise Benefit Scale.

Paired sample t-test was conducted to assess whether university students have more perceived benefits of exercise than perceived barriers to exercise. The results revealed that participants reported significantly higher perceived barriers to exercise than perceived benefits from exercise ($t(517) = 27.9, p < 0.001$). Pearson correlation test results showed that students' age was negatively correlated with perceived barriers to exercise ($r(517) = -0.11, p = 0.01$). Employed students perceived benefits from exercise more than unemployed students ($t(517) = 2.97, p = 0.003$).

No significant differences were found in perceived benefits from exercise or perceived barriers to exercise in relation to students' gender, marital status, and family income.

Discussion

Sufficient physical activity is a key element in achieving physiological and psychological wellbeing and improving the quality of life (Janssen and LeBlanc 2010). University study is often accompanied by a

decline in physical activity levels but university contexts provide unlimited opportunities to promote physical activity in youth. However, there is a lack of information regarding university students' behavioral determinants toward exercise. The present study examined the perceived exercise benefits and barriers of university students in Jordan. These results could be used to design effective physical activity promotion programs.

In the current study, the mean scores of both perceived barriers and perceived benefits scale were 36.9 ± 6.6 and 52.3 ± 12.7 , respectively. A study conducted in Iran to determine perceived benefits and barriers to exercise of university students found that perceived barriers and perceived benefits were 31.9 ± 6.1 and 96 ± 12.5 , respectively (AGHA, Tavafian et al. 2008). Compared to this Iranian study, the perceived barriers were higher while the perceived benefits were lower among students in this study. The sample's general levels of perceived benefits or barriers to exercise indicated that participants either 'agreed' or almost 'strongly agreed' with most of the barrier items, while "disagreed" or at "strongly disagreed" with many of the benefits items. This suggested that this sample of university students perceived higher levels of barriers to exercise than benefits from exercise. This was inconsistent with previous research conducted in the United Kingdom among university students in which students reported significantly higher perceived benefits from exercise than perceived barriers to exercise (Lovell, El Ansari et al. 2010). Also, a cross-sectional study that was conducted on 706 students in a Turkish university revealed that the majority of the students 98.7% believed that physical activity was beneficial (Dayi, Acikgoz et al. 2017).

In this sample of university students, the strongest perceived benefits from exercising were "living longer life" and "increasing

Table 2
Exercise Barriers Scale Items Means and Standard Deviations

Item	M	SD
I am too embarrassed to exercise.	3.08	0.92
I think people in exercise clothes look funny.	3.07	0.92
It costs too much to exercise.	2.86	0.84
My family members do not encourage me to exercise.	2.83	0.93
My spouse (or significant other) does not encourage exercising.	2.76	0.93
Exercise takes too much time from my family responsibilities.	2.71	0.84
Exercise is hard work for me.	2.70	0.80
Exercise takes too much time from family relationships.	2.65	0.77
Exercising takes too much of my time.	2.59	0.78
Exercise makes me tired.	2.42	0.81
Exercise facilities do not have convenient schedules for me.	2.33	0.86
Places for me to exercise are too far away.	2.30	0.90
I am fatigued by exercise.	2.30	0.77
There are too few places for me to exercise.	2.25	0.82

M= Mean, SD= Standard deviation

Table 3
Exercise Benefits Scale Items Means and Standard deviations

Item	M	SD
I will live longer if I exercise.	2.18	0.92
Exercising increases my acceptance by others.	2.18	0.77
Exercising allows me to have contact with friends and persons I enjoy.	2.15	0.86
Exercise helps me decrease fatigue.	1.96	0.75
Exercising helps me sleep better at night.	1.91	0.77
Exercising is a good way for me to meet new people.	1.91	0.75
Exercise improves the quality of my work.	1.90	0.70
Exercising makes me feel relaxed.	1.90	0.75
Exercising improves my self-concept.	1.83	0.72
Exercise gives me a sense of personal accomplishment.	1.82	0.77
Exercising will reduce or help prevent high blood pressure.	1.82	0.69
I will avoid heart attacks by exercising.	1.81	0.74
Exercising increases my mental alertness.	1.80	0.69
Exercise is good entertainment for me.	1.79	0.71
My muscle tone is improved with exercise.	1.79	0.72
Exercise allows me to carry out normal activities without becoming tired.	1.79	0.71
I enjoy exercise.	1.79	0.72
My disposition is improved with exercise.	1.77	0.70
Exercise increases my stamina.	1.76	0.71
I have improved feelings of well being from exercise.	1.73	0.65
Exercise improves overall body functioning for me.	1.70	0.67
Exercise increases my muscle strength.	1.70	0.69
My physical endurance is improved by exercising.	1.68	0.65
Exercise decreases feelings of stress and tension for me.	1.68	0.70
Exercise improves my mental health.	1.66	0.73
Exercise improves my flexibility.	1.63	0.66
Exercising improves functioning of my cardiovascular system.	1.56	0.64
Exercising increases my level of physical fitness.	1.55	0.68
Exercise improves the way my body looks.	1.53	0.67

M= Mean, SD= Standard deviation

acceptance by others". This was followed by "increasing social interaction". Psychological outlook and enhancement of physical fitness were perceived notably lower. Linking exercise to life enhancement is not surprising since exercise was always connected to better health outcomes. Also, many health promotion materials at the university emphasized this issue (Abu Moghli, Khalaf et al. 2010). In relation to social interaction, Lovell et al. (2010) suggested that social issue was an important factor that motivates individuals to be physically active. Regarding increasing acceptance by others, another research study that included 406 university students in the United States also found that both females and males who perceived that others accept their bodies were more likely to engage in physical activity (Tylka and Homan 2015).

The perceived benefits in the current study differed slightly from previous research findings that included university students, which showed that the most common perceived benefits of physical activity were to improve health and appearance and maintain a healthy weight (El-Gilany, Badawi et al. 2011, King, Vidourek et al. 2013, Dayi, Acikgoz et al. 2017). Other significant benefits from exercise revealed by a previous study were physical performance (i.e. fitness, stamina, muscle tone, and physical appearance), psychological outlook, and preventive health (Lovell, El Ansari et al. 2010). Another research study suggested that performing the physical activity for the purposes of enjoyment, appearance and feeling good were considered important benefits (Poobalan, Aucott et al. 2012).

The current sample of university students considered decreasing fatigue as a significant benefit of exercise. University students experience high levels of fatigue related to their studies (Law 2007). A randomized controlled trial that tested the effectiveness of exercise intervention in reducing study-related fatigue and sleep quality among university students found that students who exercise showed a larger decrease in study-related fatigue and improvement in sleep quality (de Vries, van Hooff et al. 2016). An important perceived benefit of exercise reported in this study was helping the students to sleep better at night. University students exhibit many developmental changes during their study period such as leaving their homes, creating new friends, and new academic duties which make them vulnerable to poor sleep quality and sleep disturbances (Taylor, Bramoweth et al. 2013, Baert, Omey et al. 2015). A recent study found that physical activity can buffer the negative effects of stress on health-related outcomes and can enhance the time and quality of sleep for university students (Wunsch, Kasten et al. 2017).

In this study, the strongest perceived barriers to exercise were 'I am too embarrassed to exercise', 'I think people in exercise clothes look funny', and followed by 'it costs too much to exercise'. This result was consistent with previous studies which found that lack of money was one of the barriers that had a negative influence on physical activity among university students. In Jordan, the economic factor plays an important role as most of the sport centers' subscriptions demand moderate to high fees that cannot be afforded by university students (Deliens, Deforche et al. 2015, Aceijas, Bello-Corassa et al. 2016). Universities should consider providing physical and sports offers adapted to their students to promote their exercise practice. Although students considered a lack of money an important barrier to exercise, perceived barriers to exercise were not significantly correlated to family income among this study sample. In the same way, embarrassment can be explained from a cultural point of view since performing exercise is not accepted within Jordanian culture especially for females who constitute the largest percentage of our sample. Previous studies also found that cultural barrier was an important determinant of exercise among university students (Yan and Cardinal 2013). This was consistent with the findings of a study conducted among a stratified random sample of university students in the United Kingdom in which 11%

of the students reported that embarrassment was the reason for their inactivity (Aceijas, Bello-Corassa et al. 2016).

Other important perceived barriers items reported by students in this study were "my family members do not encourage me to exercise" and "my spouse (or significant other) does not encourage exercising". Lack of social support is an important barrier of exercise that was reported also by previous studies that examined exercise behavior among university students (Gómez-López, Gallegos et al. 2010). This lack of support may be because those significant others did not allow them to practice or those students lack the proper role models to follow. Another explanation for the lack of social support could be a lack of friends to practice with them.

Perceived barriers to physical activity reported in this study were inconsistent with previous studies which revealed that time limitation due to school overload and assignments or family and social responsibilities were the most recurrent perceived barriers to physical activity (Gómez-López, Gallegos et al. 2010, Lovell, El Ansari et al. 2010, El-Gilany, Badawi et al. 2011, King, Vidourek et al. 2013, Aceijas, Bello-Corassa et al. 2016). Other significant barriers to exercise reported in the literature were lack of motivation (King, Vidourek et al. 2013), physical exertion (Lovell, El Ansari et al. 2010), feeling lazy, lack of social support (Gómez-López, Gallegos et al. 2010), and lack of accessible and suitable sporting places (El-Gilany, Badawi et al. 2011).

Conclusions and Implications

University students perceived more barriers from exercising than benefits. Since risk factors for non-communicable diseases begin in young age, health promotion programs should be designed to target this important segment of the population. Implications of this study include the necessity of interventions. Such interventions may help students to decrease the perceived barriers and further highlight the benefits of regular exercise to attract university students to the various advantages of physical activity.

Limitations

Several limitations must be noted. First, the data were measured by a self-reported questionnaire, which may have resulted in some students offering socially desirable responses. Another limitation is the cross-sectional nature which hinders the ability to infer causality between study variables. Finally, a convenience sampling method was used for selecting the study sample. Therefore, the sample may not be truly representative of the whole population.

Key points

- The purpose of this study was to examine the perceived benefits and barriers to exercise among university students.
- The result showed that "feeling too embarrassed to exercise" was the most important perceived barrier to exercise. On the contrary, "living longer if exercise" and "exercising increases my acceptance by others" were the most important perceived benefits from exercise.
- This study was cross-sectional, future comprehensive studies employing different sampling methods are recommended.

References

1. Moghli, F. A., I. A. Khalaf and F. F. Barghoti (2010). "The influence of a health education programme on healthy lifestyles and practices among university students." *International journal of nursing practice* 16(1): 35-42.

2. Aceijas, C., R. Bello-Corassa, S. Waldhäusl, N. Lambert and S. Cassar (2016). "Barriers and determinants of physical activity among UK university students" *Carmen Aceijas.* *European Journal of Public Health* 26(suppl_1).
3. AGHA, M. T., S. Tavafian and L. Hasani (2008). "Exercise self-efficacy, exercise perceived benefits and barriers among students in Hormozgan University of Medical Sciences." *Iranian Journal of Epidemiology*.
4. American Heart Association (2011). "Physical Activity Improves Quality of Life." from http://www.heart.org/HEARTORG/GettingHealthy/PhysicalActivity/StartWalking/Physicalactivity-improves-quality-of-life_UCM_307977_Article.jsp
5. Baert, S., E. Omev, D. Verhaest and A. Vermeir (2015). "Mister Sandman, bring me good marks! On the relationship between sleep quality and academic achievement." *Social Science & Medicine* 130: 91-98.
6. Dayi, A., A. Acikgoz, G. Guvendi, L. Bayrak, B. Ersoy, C. Gur and O. Ozmen (2017). "Determination of factors affecting physical activity status of university students on a health sciences campus." *Medical science monitor: international medical journal of experimental and clinical research* 23: 325.
7. de Vries, J. D., M. L. van Hooff, S. A. Geurts and M. A. Kompier (2016). "Exercise as an intervention to reduce study-related fatigue among university students: A two-arm parallel randomized controlled trial." *PloS one* 11(3): e0152137.
8. Deliens, T., B. Deforche, I. De Bourdeaudhuij and P. Clarys (2015). "Determinants of physical activity and sedentary behaviour in university students: a qualitative study using focus group discussions." *BMC Public Health* 15(1): 201.
9. El-Gilany, A. H., K. Badawi, G. El-Khawaga and N. Awadalla (2011). "Physical activity profile of students in Mansoura University, Egypt." *Eastern Mediterranean Health Journal = La Revue De Santé De La Méditerranée Orientale = Al-Majallah Al-Sihhiyah Li-Sharq Al-Mutawassit* 17(8): 694-702.
10. Gómez-López, M., A. G. Gallegos and A. B. Extremera (2010). "Perceived barriers by university students in the practice of physical activities." *Journal of sports science & medicine* 9(3): 374.
11. Gómez-López, M., A. Granero-Gallegos, A. Baena-Extremera and F. Ruiz-Juan (2011). "The abandonment of an active lifestyle within university students: Reasons for abandonment and expectations of re-engagement." *Psychologica Belgica* 51(2): 155.
12. Hoyt, L. T., P. L. Chase-Lansdale, T. W. McDade and E. K. Adam (2012). "Positive Youth, Healthy Adults: Does Positive Well-being in Adolescence Predict Better Perceived Health and Fewer Risky Health Behaviors in Young Adulthood?" *Journal of Adolescent Health* 50(1): 66-73.
13. IBM Corporation. (2012). *IBM SPSS Statistics for Windows, V. N. I. C.* (2012).
14. Janssen, I. and A. G. LeBlanc (2010). "Review Systematic review of the health benefits of physical activity and fitness in school-aged children and youth." *International Journal of Behavioral Nutrition and Physical Activity* 7(40): 1-16.
15. KARADAĞ, M. and N. Yildirim (2010). "HEALTH BEHAVIORS IN HEALTH SCIENCES UNIVERSITY STUDENTS IN TURKEY" *Social Behavior & Personality: An International Journal* 38(1).
16. King, K. A., R. A. Vidourek, L. English and A. L. Merianos (2013). "Vigorous physical activity among college students: using the health belief model to assess involvement and social support." *Archives of Exercise in Health and Disease* 4(2): 267-279
17. Law, D. W. (2007). "Exhaustion in university students and the effect of coursework involvement." *Journal of American College Health* 55(4): 239-245.
18. Lee, I. M., E. J. Shiroma, F. Lobelo, P. Puska, S. N. Blair and P. T. Katzmarzyk (2012). "Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy." *The Lancet* 380(9838): 219-229.
19. Liu, K., M. L. Daviglius, C. M. Loria, L. A. Colangelo, B. Spring, A. C. Moller and D. M. Lloyd-Jones (2012). "Healthy Lifestyle Through Young Adulthood and the Presence of Low Cardiovascular Disease Risk Profile in Middle Age: The Coronary Artery Risk Development in (Young) Adults (CARDIA) Study." *Circulation* 125(8): 996-1004.
20. Lovell, G. P., W. El Ansari and J. K. Parker (2010). "Perceived exercise benefits and barriers of non-exercising female university students in the United Kingdom." *International journal of environmental research and public health* 7(3): 784-798.
21. Mudronja, L., T. Petravic and Z. Pedisic (2011). "PHYSICAL ACTIVITY AND BARRIERS TO EXERCISE AMONG STUDENTS FROM THE FACULTY OF PHILOSOPHY IN ZAGREB." *6th International Scientific Conference on Kinesiology: Integrative Power of Kinesiology*: 343-346.
22. Pender, N. J., C. L. Murdaugh and M. A. Parsons (2006). *Health promotion in nursing practice*.
23. Poobalan, A. S., L. S. Aucott, A. Clarke and W. C. S. Smith (2012). "Physical activity attitudes, intentions and behaviour among 18-25 year olds: A mixed method study." *Bmc Public Health* 12.
24. Center of Disease Prevention (2011). "Physical activity and good nutrition: Essential elements to prevent chronic diseases and obesity. " from <http://www.cdc.gov/nccdphp/publications/aag/dnpa.htm>.
25. Racette, S. B., C. L. Inman, B. R. Clark, N. K. Royer, K. Steger-May and S. S. Deusinger (2014). "Exercise and Cardiometabolic Risk Factors in Graduate Students: A Longitudinal, Observational Study." *Journal of American College Health* 62(1): 47-56.
26. Rezaei-Adaryani, M. and M. Rezaei-Adaryani (2012). "Health-promoting lifestyle of a group of Iranian medical, nursing and allied health students." *Journal of clinical nursing* 21(23-24): 3587-3589.
27. Rouse, P. C. and S. J. Biddle (2010). "An ecological momentary assessment of the physical activity and sedentary behaviour patterns of university students." *Health Education Journal* 69(1): 116-125.
28. Sechrist, K. R., S. N. Walker and N. J. Pender (1987). "Development and psychometric evaluation of the exercise benefits/barriers scale." *Research in nursing & health*

- 10(6): 357-365.
29. Shaheen A , N. O., Amre H, Hamdan- Mansour A (2015). "Factors Affecting Health-promoting behav-iors of University Students in Jordan." Health
30. Taber, D. R., H. Meischke and M. L. Maciejewski (2010). "Testing Social Cognitive Mechanisms of Exercise in College Students." American Journal of Health Behavior 34(2): 156-165.
31. Taylor, D. J., A. D. Bramoweth, E. A. Grieser, J. I. Tatum and B. M. Roane (2013). "Epidemiology of insomnia in college students: relationship with mental health, quality of life, and substance use difficulties." Behavior therapy 44(3): 339-348.
32. Thanawat, T., N. Nualnetr and W. Eungpinichpong (2009). "Health-promoting behaviors of physical therapy students in Khon Kaen University." Journal of Medical Technology and Physical Therapy 21(3): 268-276.
33. Tylka, T. L. and K. J. Homan (2015). "Exercise motives and positive body image in physically active college women and men: Exploring an expanded acceptance model of intuitive eating." Body image 15: 90-97.
34. World Health Organization (2014). "World Health Organization - Noncommunicable Diseases (NCD) Country Profiles , 2014.", 2017, from http://www.who.int/nmh/countries/jor_en.pdf.
35. World Health Organization (2015, Januray 2015). "Physical activity " Retrieved June 4, 2016, from <http://www.who.int/mediacentre/factsheets/fs385/en/>.
36. World Health Organization (2018). Retrived February 20, 2018 https://www.who.int/substance_abuse/research_

- tools/translation/en/
37. Wunsch, K., N. Kasten and R. Fuchs (2017). "The effect of physical activity on sleep quality, well-being, and affect in academic stress periods." Nature and science of sleep 9: 117.
38. Yan, Z. and B. J. Cardinal (2013). "Perception of Physical Activity Participation of Chinese Female Graduate Students: A Case Study." Research Quarterly for Exercise and Sport 84(3): 384-396.

Appendix 1

Ethical considerations

Ethical approval was obtained from the Research Ethical Committee at the faculty where the researcher works. The informed consent for the students was obtained prior to data collection as well. This form explained the purpose of the study and the right of the students to withdraw at any time without any consequences.

Appendix 2

جدول فوائد \ حواجز ممارسة الرياضة

التعليمات: فيما يلي عبارات لها علاقة بممارسة الرياضة. الرجاء الإشارة الى مدى الموافقة أو عدم الموافقة مع هذه العبارات بوضع إشارة × تحت الخانة المناسبة

لا أوافق بشدة	لا أوافق	أوافق	أوافق بشدة	
				أنا أستمتع بالتمارين الرياضية
				التمارين الرياضية تقلل من الشعور بالتوتر و الضغوطات بالنسبة لي
				التمارين الرياضية تحسن من صحتي النفسية
				ممارسة الرياضة تأخذ الكثير من وقتي
				سوف أمتنع حدوث الجلطات القلبية بممارسة الرياضة
				التمارين الرياضية ترهقني
				التمارين الرياضية تزيد من قوتي العضلية
				التمارين الرياضية تمنحني الشعور بإنجاز
				أماكن ممارسة الرياضة بعيدة جدا عني
				ممارسة الرياضة تشعرني بالإسترخاء
				ممارسة الرياضة تجعلني على تواصل مع الأصدقاء و الأشخاص الذين أستمتع معهم
				أشعر بالإحراج من ممارسة الرياضة
				ممارسة الرياضة تمنعني من الإصابة بارتفاع ضغط الدم

				ممارسة الرياضة مكلفة جدا
				ممارسة الرياضة تزيد من مستوى لياقتي البدنية
				عدم مناسبة الأوقات المخصصة من قبل الصالات الرياضية لي
				الإنقباض العضلي لدي يتحسن بممارسة الرياضة
				ممارسة الرياضة تحسن من وظائف جهاز القلب الوعائي
				أشعر بالإجهاد من التمارين الرياضية
				شعوري بالصحة قد تحسن من ممارسة الرياضة
				زوجي أو الأشخاص المهمين في حياتي لا يشجعوني على ممارسة الرياضة
				التمارين الرياضية تزيد من قدرتي على الإحتمال
				التمارين الرياضية تزيد من مرونتي
				التمارين الرياضية تأخذ من وقت التواصل مع العائلة
				مزاجي يتحسن بممارسة الرياضة.
				ممارسة التمارين الرياضية تساعدني على النوم بشكل أفضل بالليل
				سأعيش لفترة أطول إذا مارست الرياضة
				أعتقد أن الأشخاص يبدون مضحكين بملابس الرياضة
				التمارين الرياضية تساعدني على التقليل من الإجهاد
				ممارسة الرياضة طريقة جيدة للتعرف بأشخاص جدد
				ممارسة الرياضة تزيد من قدرة التحمل البدني
				ممارسة الرياضة تحسن من مفهومي للذات
				أفراد عائلتي لا يشجعوني على ممارسة الرياضة
				ممارسة الرياضة تزيد من انتباهي العقلي
				ممارسة الرياضة تمكنني من القيام بنشاطاتي الطبيعية بدون تعب
				التمارين الرياضية تحسن من نوعية عملي
				التمارين الرياضية تأخذ الكثير من الوقت المخصص لمسؤولياتي العائلية
				التمارين الرياضية تعتبر مصدر ترفيه جيد بالنسبة لي
				ممارسة الرياضة تزيد من قبول الآخريين لي
				التمارين الرياضية تعتبر عمل شاق بالنسبة لي
				التمارين الرياضية تحسن من وظائف جسمي بشكل عام
				هنالك أماكن قليلة متوفرة للرياضة بالنسبة لي
				التمارين الرياضية تحسن من شكل جسمي

