

The Role of University Students' General Self-Efficacy, Depression and Psychological Well-being in Predicting Their Exercise Behavior

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Abstract

The aim of this research is to examine the relationship between exercise and general self-efficacy, depression, and psychological well-being of college students. Five hundred and twenty-two university students ($n_{male}= 273$; $X_{age}= 23.33\pm 4.36$ and $n_{female}= 279$; $X_{age}=25.91\pm 7.11$) have participated in this research. The General Self-Efficacy Scale (GSES), Beck Depression Inventory (BDI), Physical Activity Stages of Change Questionnaire (PASCQ), and "Psychological Well-Being Scale (PWBS) have been applied to the sample group in this study. While differences in participants' self-efficacy, depression, and psychological well-being levels with regard to the stage of changes in exercise are calculated with one way analysis of variance (ANOVA), the relationship between these ideas discussed in the research have been determined with Pearson Moments Product Correlation Analysis. According to the stages of exercise behavior, significant disparities have been found between participants' level of self-efficacy, depression, and psychological well-being, and the relationship between those notions has been observed. According to the results, the participants' general self-efficacy and psychological well-being levels were high and the depression levels were low when on advanced levels of exercise. In light of the findings obtained from this research, it has been concluded that continuity in exercise has a positive effect on psychological effects like general self-efficacy, depression and psychological well-being.

Keywords: general self-efficacy, depression, psychological well-being, stage of change in exercise, trans-theoretical model

1. Introduction

World health authorities have accepted the theory that regular physical activity is the basis of a healthy life (World Health Organization, 1995). Exercise has many psychological benefits on emotional processes like stress and depression, and physiological processes like heart diseases, hypertension, diabetes, and obesity (U.S. Department of Health and Human Service, 1996). Even though this positive relationship between exercise and health is known, most people prefer an inactive lifestyle (Georgiadis, Biddle & Chatzisarantis, 2001). For example, according to a study conducted in England, 72% of English, 69% of Irish, and 69% of Scottish people are not physically active. Similarly, according to statistics from health scans conducted in Canada, 47.8% of the population is identified as inactive during leisure time (Lowther, Mutrie & Scott, 2007). An extensive study with the participation of 23 countries by Haase, Steptoe, Sallis and Wardle (2004) revealed that college students do not engage in physical activities at recommended levels. In addition, a study conducted on 1,097 college students by Savcı et al. (2006) in Turkey found that students' activeness levels are low.

There has been an increase in studies that focus on researching the psychological processes of those who do not exercise or think about exercising (Rodgers, Hall, Duncan, Pearson, & Milne, 2010). The results of these studies in the very vast field of exercise have been added to our knowledge related to psychological processes (Thøgersen-Ntoumani & Ntoumanis, 2006; Maiolino & Kuiper, 2016). Studies on exercise behavior are usually conducted with participants who continue to exercise, while studies that focus on psychological factors during this habit are extremely rare (Rodgers et al., 2010).

In this way, several models have been revealed that attempt to explain exercise behavior processes (Spencer, Adams, Malone, Roy, & Yost, 2006). For example, the Trans-theoretical Model has been frequently applied and explains differences in a person's health behavior with the stage of changes paradigm (Prochaska & DiClemente, 1984). The

Trans-theoretical Model has been used to explain many health behaviors, like nutritional, addictive drug, and smoking habits before focusing on a person's exercise behavior (Adams & White, 2002; Marshall & Biddle, 2001; Spencer et al., 2006). This model focuses on situations in which individuals desire behavior modification, and then help the person realize this change, understand the modification process, and identify the procedure of developing this habit as a gradual, continuous, and dynamic structure. This model defends the perspective that an individual does not directly travel from old problematic behavior (not exercising) to new behavior (exercising), but rather does so through a gradual series (Burbank, Reibe, & Padula, 2002). Change begins with a person realizing the behavior is unhealthy and continues until the problematic habits change over time and new positive behavior becomes adopted in accordance with the individual's desires (Marshall & Biddle, 2001). The Trans-theoretical Model has been used for the purposes of physical activity and modification of behavior in exercise, implying that this model could be beneficial in this field (Cengiz, Aşçı, & İnce, 2010; Prochaska & Velicer, 1997). Studies support that research on understanding exercise behavior that is grounded in the Trans-theoretical Model is beneficial (Purath, Miller, McCabe, & Wilbur, 2004; Woods, Mutrie, & Scott, 2002).

Research that attempts to understand the mechanisms underlying exercise and health behavior usually apply a social cognitive model (Bandura, 1977). One of the factors most researched in this model is general self-efficacy, identified as the belief in one's abilities that allows a person to manage situations expected of him or her (Luszczynska, Gutiérrez - Doña, & Schwarzer, 2005). Since exercising requires personal characteristics like exertion, effort, and patience, general self-efficacy has an effect on this behavior (McAuley & Blissmer, 2000). Research in the field of exercise psychology that runs parallel to this belief revealed that general self-efficacy is effective on participating in exercise (McAuley, 1992), weight control (Bernier & Avard, 1986), and improving health-related behavior (O'Leary, 1992). For example, McAuley and Jacobson (1991) found that once female participants exercised after a sedentary period, general self-efficacy was related to commitment to the exercise and exercise duration. McAuley, Lox and Duncan (1993) reported that general self-efficacy predicts exercise continuity in adults.

One of the psychological notions in this research is depression, an emotional situation that negatively affects the quality of life of millions around the world (Gelenberg, 2010). Pharmacotherapy and psychological interventions has been used in the past in order to treat depression. However, recent studies revealed that exercise reduces depression symptoms with the help of traditional treatments (Antunes, Stella, Santos, Bueno, & Mello., 2005; Singh, Clements, & Singh, 2001; Callaghan, Khalil, Morres, & Carter., 2011). Former studies indicated that exercise has the same effect as medication (Brenes et al., 2007; Blumenthal et al., 2007) or psychological interventions (Fremont & Craighead, 1987). The National Service Framework for Mental Health (NICE) suggested for individuals to incorporate exercise while undergoing depression treatment during the process (Donaghy & Durward, 2000). According to the NICE depression guide, mild exercise performed with a consultant three times a week (45 minutes–1 hour) for 10–14 weeks regulates symptoms of depression (NICE, 2009). According to another guide published by the Scottish Intercollegiate Guidelines Network (SIGN), exercise can help adults cope with depression without the need to take medication (Network, 2002). An exercise guidance system has been established in England (DOH, 2001) and support has been provided for those who want to receive assistance with exercising, but after general assessment, not enough evidence has been found to defend the efficiency of this system and no recommendations have been made for future studies (Sorensen, Skovgaard, & Puggaard, 2006).

Another subject related to exercise is psychological well-being. Muraven and Baumeister (2000) assert that individuals have a limited amount of energy to alter their behavior, and mental stress might reduce this energy. Depressed or stressed individuals may have problems completing an exercise program, and this situation negatively affects their psychological situation (Jones, Harris, Waller, & Coggins, 2005). The relationship between psychological well-being and physical activity is supported by previous studies (Sebire, Standage, & Vansteenkiste, 2009; Sebire, Standage, & Vansteenkiste, 2011).

This study is important to perspectives on community health care since encouraging individuals to increase physical activities, including regular and medium level exercise, in their daily routines and contributing to this effort signifies support of community health care. In addition, this result of this study will expand knowledge related to the effects of attempts to alter physical activity based on a stage of change model regarding psychological notions like general self-efficacy, depression, and psychological well-being. This study's aim is to examine the relationship between exercise behavior and the general self-efficacy, depression, and psychological well-being of university students. Based on the extant research, we hypothesised that: (1) general self-efficacy and psychological well-being would be positively associated with the stages of exercise behavior; (2) Depression would be negatively associated with the stages of exercise behavior; (3) general self-efficacy would be higher in later stages of change; (4) depression would be higher in earlier stages of change; (5) psychological well-being would be higher in later stages of change.

2. Methods

2.1 Participants

The study sample consist of 279 (%51) female, 273 (%49) male for a total of 552 ($X_{age} = 24.63 \pm 6.05$) university students who age ranged 17 to 30 years old. All participants participated to the study voluntarily. Prior to the study, approval to conduct research with human participants was obtained from the university's ethical committee. All participants provided signed an informed consent before taking part in the study.

2.2 Instruments

“General Self-Efficacy Scale (GSES)”, “Beck Depression Inventory (BDI)”, “Psychological Well-Being Scale (PWBS)” and “Physical Activity Stages of Change Questionnaire (PASCQ)” were administered to all participants. The details of each questionnaire were given below:

2.2.1 General Self-efficacy Scale (GSES)

The self-efficacy level of participants was measured by a 17-item scale which is originally developed by Sherer and Adams (1983) and adapted to Turkish by Yıldırım and İlhan (2010). The participants were asked to answer the question of “How much do the following statements describe you?” based on a 5-point Likert scale ranging from 1-“Strongly not describe” to 5-“Strongly describe”. The scale has a three-factor structure to measure the various aspects of self-efficacy, including initiation, effort, and persistence. Sample questions include: “When I make plans, I am certain I can make them work”, “I give up easily”, “I am a self-reliant person”, and “I avoid facing difficulties”. The total score reflects the level of self-perceived general self-efficacy. Eleven out of 17 items in the scale are reverse coded. The total scale score ranges from 17 to 85. Any increase in a participant's total score indicates the increase in his/her general self-efficacy level (Sherer & Adams, 1983). In the adaptation study of the scale into Turkish, the Cronbach's alpha internal consistency coefficient, Guttman split-half coefficient, and Pearson correlation coefficient for test-retest reliability were found to be 0.80, 0.77, and 0.69 respectively (Yıldırım & İlhan, 2010), indicating high reliabilities. In this study, Cronbach's alpha was calculated as 0.85.

2.2.2 Beck Depression Inventory (BDI)

The BDI is a 21-item self-report inventory designed to assess the behavioral and cognitive symptoms of depression (Beck & Steer, 1987). Each item consists of several statements describing symptoms of depression. Participants were asked to circle the statement that best described their symptoms related to that particular aspect of depression (i.e. feelings of guilt, changes in sleep). The statements are numbered from “0” to “3”, with higher numbers indicating more severe symptoms. Scores for responses are summed to obtain an overall score. The overall sum can range from 0 to 63, with higher scores indicating more severe depression. This inventory has demonstrated acceptable internal consistency with the authors reporting Cronbach's alphas ranging from 0.92 to 0.93 (Beck & Steer, 1987). The cut-off score for validity and reliability in the Turkish version of the scale is 17. The scale was adapted for Turkish populations by Hisli et al. (1989). Internal consistency for this study was examined using Cronbach's alpha and was deemed acceptable with $\alpha=0.91$.

2.2.3 Psychological Well-being Scale (PWBS)

The eight-item PWBS was identified to positive relationship, feeling competencies and having meaningful and purposeful life. It was developed by Diener et al. (2010) and The Turkish adaptation of the scale has been done by Telef (2013). The response scale was a 7-point likert-type scale ranging from 1 (I don't agree at all) to 7 (I completely agree).The researcher has determined as a result of descriptive factor analysis that the single dimensional structure explains 53% of the variance. The factor loadings of the scale were changing between 0.61 to 0.77. The internal consistency coefficient of the orijinal scale was 0.87. In the present study, Cronbach's alphas of the scale was 0.85.

2.2.4 Physical Activity Stages of Change Questionnaire (PASCQ)

The PASCQ consists of 4-items and it assesses individuals' level of readiness to attend exercise (Marcus & Lewis, 2003). The questionnaire group individuals into 1 of the 5 stages of exercise behavior (pre-contemplation, contemplation, preparation, action, and maintenance) by using a scoring algorithm. It is a binary type (yes/no) questionnaire. Participants in the pre-contemplation stage are inactive and have no intention to become active over the next 6 months. In the contemplation stage, people are inactive but plan to begin exercising within the next 6 months. The preparation stage includes individuals who exercise sometimes but not regularly. Individuals in the action stage have been exercising regularly less than 6 months. Individuals in the maintenance stage have been exercising regularly 6 months or longer. We used the Turkish version, which was previously validated among Turkish college students and demonstrated good psychometric properties (Cengiz, Aşçı, & İnce, 2010).

2.3 Data Analysis

Data obtained on the research were transferred to SPSS 18.0 program. Data were tested for normal distribution and homogeneity of variance using Kolmogorov–Smirnov and Levene's test before statistical procedures were applied. To determine the relationships among the means of general self-efficacy, psychological well-being and depression scores Pearson Moment of Correlation analysis method was used. ANOVA was used to analysis the differences of general self-efficacy, psychological well-being and depression scores in terms of stage of changes in exercise. If in ANOVA analysis was found a difference, post hoc Tukey's test was used for analysis for the difference between groups. Statistical significance level was considered as $p < 0.05$.

3. Results

Table 1. Means and Standard Deviations for general self-efficacy, depression and psychological well-being scores of participants

Variables	Female (n=279)	Male (n=273)	Total participants (n=552)
	M±SD	M±SD	M±SD
General self-efficacy	45.77±16.57	47.59±15.29	46.67±15.96
Depression	18.66±12.25	15.10±11.98	16.92±12.24
Psychological well-being	34.74±16.80	38.85±15.43	36.77±16.26

Means and standard deviation of general self-efficacy, depression and psychological well-being scores of participants are shown in Table 1.

Table 2. Correlation Coefficients between General Self-Efficacy, Depression And Psychological Well-Being

		Stage of Change in Exercise
1	General self-efficacy	.17**
2	Depression	-.26**
3	Psychological well-being	.19**

** : $p < 0.01$

Pearson correlations between general self-efficacy, depression and psychological well-being findings are presented in Table 2. As is seen on the Table 2, there is a positive small relationship between general self-efficacy ($r = .17, p < 0.01$), psychological well-being ($r = .19, p < 0.01$) and stage of change in exercise. In contrast, there is a negative small relationship between depression ($r = -.26, p < 0.01$) and stage of change in exercise. These findings provided support for the first and second hypotheses.

Table 3. Mean Differences Among the Stages of Change in General Self-Efficacy, Depression And Psychological Well-Being

	Stage of Change in Exercise											
	Pre-Contemplation (n=103)		Contemplation (n=124)		Preparation (n=115)		Action (n=70)		Maintenance (n=140)		F	p
	M	SD	M	SD	M	SD	M	SD	M	SD		
General self-efficacy	27.59	1.42	33.86	1.30	32.90	1.35	48.91	1.72	51.44	1.22	59.46	<.001***
Depression	22.26	1.08	23.52	0.99	12.41	1.02	15.01	1.31	12.63	0.93	28.05	<.001***
Psychological well-being	15.17	1.95	22.06	1.78	26.73	1.82	20.23	2.33	22.80	1.65	5.03	<.01**

** $p < 0.01$ *** $p < 0.001$

A significant difference for stage of change in exercise was observed in a ANOVA with general self-efficacy as the dependent variables ($F_{(4, 547)} = 59.46, p < 0.001$). Tukey's post hoc tests indicated that participants in the maintenance stage reported higher *general self-efficacy* scores than participants in the pre-contemplation, contemplation and preparation stages. These findings provided support for the third hypothesis.

A significant difference for stage of change in exercise was also observed in a ANOVA with the depression as the dependent variables, $F_{(4, 547)} = 28.05, p < 0.001$. Also, as detailed in Tukey's post hoc tests indicated that participants in the pre-contemplation and contemplation stages reported higher depression scores than participants in the preparation, action and maintenance stages. These findings partially supported for the fourth hypothesis.

A significant difference for stage of change in exercise was observed in a ANOVA with psychological well-being as the dependent variables ($F_{(4, 547)} = 5.03, p < 0.01$). Tukey's post hoc tests indicated that participants in the pre-contemplation stage reported lower *psychological well-being* scores than participants in the preparation and maintenance stages. These findings provided support for the fifth hypothesis.

4. Discussion

This study aimed to examine the psychological factors (general self-efficacy, depression, and psychological well-being) associated with stage of change in exercise in Turkish university students. According to the findings, general

self-efficacy and psychological well-being averages were high and depression levels were low when comparing those who exercise and those who do not. In comparison to these results, previous studies found a positive relationship between regular exercise and general self-efficacy (Fontaine & Shaw, 1995; Yeh et al., 2011). By examining literature on the relationship between regular physical activity and depression, being physically inactive in fact does have a positive effect on depression, which supports this study's findings (Camacho, Roberts, Lazarus, Kaplan, & Cohen, 1991; Paffenbarger, Lee & Leung, 1994; Strawbridge, Deleger, Roberts, & Kaplan, 2002). However, contrary to this study, several studies found no relationship between exercise and depression (Cooper-Patrick, Ford, Mead, Chang, & Klag, 1997; Weyerer, 1992). From the point of view of psychological well-being, many studies show that exercise has a positive effect, which supports the results of this research (Rejeski et al., 2001; Arent, Landers, & Etnier, 2000; Lotan, Merrick & Carmeli, 2005).

In this research, self-efficacy levels of participants in the maintenance stage of exercise behavior were higher than participants in early stages (pre-contemplation, contemplation and preparation stages). When previous studies were examined, a positively high relationship was found between self-efficacy and continuity in exercise (Marcus, Selby, Niaura, & Rossi, 1992; Sarkin, Johnson, Prochaska & Prochaska, 2001). Through analysing studies regarding the Trans-theoretical Model, we observed that self-efficacy levels of individuals in the pre-contemplation stage are lower than those in the contemplation stage (Armstrong, Sallis, Hovell, & Hofstetter, 1993), while during the continuity stage self-efficacy is at the highest level (Marcus et al., 1992). This research supports the findings obtained from our study.

By considering depression, another psychological factor in our research, we observed that participants in the research group who exercise regularly and are in later exercise stages of change have lower depression points than those who are in the behavior modification of pre-contemplation stage of exercise. According to studies on the behavior modification step in exercise, depression levels are low during the advanced stages of exercise (Lee and Park, 2004; Lee, Park, & Kim, 2006). This study's results support previous research.

In addition, psychological well-being is considered as having an effect on continuity in exercise, which has been researched in conjunction with exercise applied longitudinal studies. The result was that after 12 weeks of exercise, psychological well-being levels increased of those who continued (Scully et al., 1998; Jones et al., 2005). Since research on the notion of psychological well-being based on the behavior modification step has not been encountered in literature, our results have not been discussed in this frame.

In this study, it has been found that those who exercise and show continuity in exercise positively affects psychological phenomena like self-efficacy and psychological well-being, while not engaging in exercise or not considering exercise has a positive relation with depression. The accumulation of knowledge on this account should be helpful for practitioners working in psychological health or recreation centers in understanding university students' underlying psychological factors for continuing exercise. The study was limited to university students and it used only quantitative methods to examine psychological factors associated with exercise behavior. Another limitation can be the measure for exercise behavior, which was self-reported. Future studies are needed to use longitudinal study designs and different statistical analyses in order to draw conclusions for the potential link between psychological aspects and exercise behavior.

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