

Psychological Hardiness and Depressive Symptoms among athlete students versus non-athletes: Comparative Study

Hosnia Shehata Mohamed, Mona Fawzy Hussien

Psychiatric Mental Health Nursing, Faculty of Nursing - Assiut University

Correspondence: Mona Fawzy Hussien; Email: monafawzy7760@yahoo.com

Abstract

Background: Sport has been shown to be effective both in treating symptoms of major depression and raising hardiness but it is still underutilized in clinical practice. **Aim:** This study aimed to investigate the relation between, psychological hardiness and depression among the athlete students versus non-athletes. **Design:** It was a causative comparative and correlational study in terms of descriptive designs. **Setting:** It was carried out at faculty of Nursing and faculty of Physical Education at Assiut University. **Subjects:** Simple random sample composed of 218 non-athlete university female students and 218 athlete university female students. **Tools:** The study's questionnaire consisted of three parts; involving demographic data, Beck depression inventory (BDI) to measure the degree of depression, and Kobasa hardiness questionnaire (KHQ) to measure hardiness. **Results:** The result conveyed that non-athlete females under study had lower depression scores than athlete females with no statistical significant differences. Also, there were significant differences between athletic and non-athletic females as regard to total psychological hardiness all subscale except for commitment subscale. **Conclusion:** Athlete female students under study had higher psychological hardiness mean scores than non-athletes with higher statistical significant differences & depression mean score with no statistical significant difference. **Recommendations:** The important of practicing sport to improve psychological hardiness and mental health wellbeing.

Key Word: Psychological hardiness, Sport, Athletes, Depression symptoms, Female students.

Introduction

Psychological hardiness, as a personality trait, represents the peerless and active understanding of one's relationship with others and consists of three components, namely, challenge, control, and commitment (Civitci & Civitci., 2015). As a personality trait, hardiness has also been defined as a factor to prevent the adverse effects of depression on health. This trait, as a combination of thinking, emotions and behavior, helps individuals move toward a dynamic life and enrich their lives. Hardy people are highly curious and tend to think about their life as an interesting phenomenon and to make it meaningful (Jowkar & Kamali., 2016). Psychological hardiness modifies the way to cope with stressors and helps individuals to transform stressful conditions from potentially harmful situations to opportunities to promote function, leadership, affairs, health, and psychological development (Asli et al., 2016).

Psychological hardiness was found to be positively correlated with activations of brain

areas related to affective processing, integration, and regulation. It played a role in weakening the inverse correlation between negative and positive emotions in confronting daily stress. People with higher level of hardiness engaged and savored more in positive events in daily life. Hardiness was also related to adaptive coping. People with high level of hardiness were associated with few depressive symptoms. It seems that hardiness can be a protective factor of affective dysregulation causing depressive symptoms. Hardiness is one of the mechanisms underlying the relationship between perceived loneliness and depressive symptoms (Sin & Tatia., 2020). According to the Diagnostic and Statistical Manual of Mental Disorder criteria, edited by the American Psychiatric Association (APA), depression is defined as a disorder characterized by a depressed mood and a significant loss of interest in doing activities which used to be source of pleasure. Depression is the most common psychotic disorder, with prevalence of approximately 17% of the population. There is an early tendency for the onset of the illness,

with estimated risk between 5-12% for men and 10-25% in women (Araújo et al., 2017). Females, have many roles in the life. As mother, wife, employee, friend, healer, caregiver, and the list go on. The complexity of all of these roles can cause ups and downs throughout life. Some of these mood changes may be due to life events or may be due to hormones. Depression is almost twice more likely to affect females than males and tends to have different contributing causes in women than it does in men. Contributing factors include reproductive hormones, a differing female response to stress, and social pressures that are unique to a woman's life experiences (Kandola et al., 2020)

Depression is one of the most commonly diagnosed psychological disorders affects females, which is associated with a feeling of despair and hopelessness, discomfort, no motivation and hope, a decline in self-esteem, and pessimism. Most people who are depressed are always sad, and do not enjoy the activities that they previously enjoyed or experience a combination of these two conditions (Ghasemi & Kajbaf., 2019)

Sport has been recognized as one of the most influential factors for improving depression. (Zhang & Chen., 2020). Sport may be especially helpful in the context of medical problems and major life stressors, while encouraging depressed patients to engage in physical activity is likely to have potential benefits on clinical depression symptoms. Females adolescents who remain physically active across time demonstrate lower levels of depression symptoms compared to those who adopt inactive lifestyles when they get older. The beneficial effects of physical activity and exercise on depression symptoms and general mood have been confirmed in individuals of all ages (Dinas, et.al. 2016).

EL-Ruby,(2019) indicated that, when tough and rigid personality faced with negative variables, it encountered practices related to the health of the body, including the practice of relaxing, health nutrition, and doing sports exercises which would be a positive association between psychological hardiness and physical health. Sports are a type and form of

achievement motivation. The concentration on motivation associated with the sports activity, and the motivation to accomplish considered a source of significant change in the person's performance. The motivation may change one's life to be successful one. The strong achievement stimulates ones to increase their skills and knowledge to become proficient in their fields. Therefore, learn faster and perform their work in less time than others perform.

Significance of the study:

The study significance lies in identify the relationship between depression, psychological hardiness and sport. There are many reasons why sport is good for human body – having a healthy heart and improving joints and bones are not just two, but it's important that sport is also beneficial for mental health and wellbeing. Sport has a huge potential to enhance psychological wellbeing. Even a short burst of 10 minutes' brisk walking increases mental alertness, energy and positive mood. Sport also seems to reduce the likelihood of experiencing psychotic problems. So, sport can be an alternative treatment for depression. It can be used as a standalone treatment or in combination with medication and/ or psychological therapy. It has few side effects and does not have the stigma that some people perceive to be attached to taking antidepressants or attending psychotherapy and counseling.

Aim of the study:

To investigate the relation between, psychological hardiness and depression among the athlete students versus non-athletes

Hypothesis:

Athlete Females students who practice different kinds of sport will have fewer depressive symptoms and psychological harder than non-athletes.

Methods:

Research Design: The present study was a causative comparative and correlational study in terms of descriptive designs.

Research setting: The study was carried out at faculty of Nursing and faculty of Physical Education at Assiut University.

Subjects: Simple random sample of 218 non-athlete (faculty of Nursing) university female students and 218 athlete (faculty of Physical Education) university female students participated in this study. The total number of students in faculty of Physical Education was 329 students (3rd year and 4th year only, the students had chosen in this two levels because sport not practiced before this levels and during 1st and 2ed year the study was theoretical), so the same number of students was taken from faculty of Nursing . By using software EPI/info, version3.3 with 95% confidence interval (CI), the final estimated sample was 436 students. Exclusion criteria were health problems such as psychiatric, respiratory, metabolic, cardiac, or autonomic nervous system diseases that might change the depression parameters.

Instruments: Each participant was evaluated through the following tools

1- Demographic data sheet. This tool was developed by the researcher to collect the information about the demographic data such as (age, residence, and marital status,).

2- Beck Depression Inventory (BDI) it compromised 21-item, self-report rating inventory that measures characteristic, attitudes and symptoms of depression. The BDI developed in different forms, including several computerized forms, a card form (Beck et al.,1988) Those items rated on a 4-point Likert scale (0 - 3). The minimum and maximum attainable scores on the inventory are 0 and 63, respectively. By summing scores on all items, the score of the respondent can be easily obtained. Scores on this scale categorized as follows: 0- 13 (no or least depression), 14 - 19 (mild depression), 20 - 28 (moderate depression), and 29 - 63 (severe depression). Reliability and validity of the inventory had been frequently evaluated since its development until now, and the reported results had been mainly acceptable. The concurrent validity correlation coefficient (r) with clinical grading for psychiatric patients was obtained as 0.55 - 0.96. The reliability of the inventory in

the current was calculated at 0.84 using Cronbach's alpha coefficient.

3- Kobasa Hardiness Questionnaire (KHQ) it was used to measure hardiness. The questionnaire was developed by Kobasa (1984) and consisted of 12 items. The items scored on a Likert scale between zero (strongly disagree) and 3 (strongly agree). Therefore, the scores on the questionnaire ranged from 0 to 36. The total score is calculated with the sum of the items of the scale and a higher score indicates a hardier participant. The questionnaire consists of three subscales commitment which makes person become involved in situations and remain devoted to them (items 3, 4, 9, and 10), control, the feeling that an individual is effective in the events in which they are involved (items 1, 2, 7, and 8), finally, challenge makes the individual to understand that change is a normal and positive thing (items 5, 6, 11, and 12). Items 2, 4, 5, 6, 10, 12 scored inversely (0=3; 1=2; 2=1; 3=0) and the rest of the items scored directly. This scale, was translated into Arabic language to suit patients' culture and was revised by a jury of five experts in the psychiatric nursing and medicine field (3 professors of psychiatric nursing- psychiatric department- faculty of nursing- Assiut university, and 2 professors of psychiatric medicine faculty of medicine – Assiut University) to ensure that it gave the same meaning of the original ones and the face and content validity of its subscales, commitment, control, and challenge, as well as their reliability coefficients (0.70, 0.74 and 0.69, respectively) were reported, with the reliability coefficient of 0.75 for the whole questionnaire.

Procedure of data collection:

After obtaining the approval to conduct the research from the officials of the two ³¹ colleges (The Dean of faculty of Nursing and Dean of faculty of Physical education.), the schedule of lectures and practical sessions was identified for the students and the places where they receive teaching or practical training. Then dates were set for meeting students according to their schedules. Researchers were interviewed the students in their classes which identified, after the end of their lecture or practical sessions. All participants were asked to complete BDI to measure symptoms of

depression. Also, they were asked to rate the KHQ to assess the level of hardiness after explaining the aim of study to them. Participants were interviewed in groups (5-15 students). Each faculty' students were interviewed separately in their faculty. Scales had taken about 25 minutes to be responded. The study conducted (from October 2020 to December 2020).

Ethical Considerations:

Before the data collection procedure, the participants were informed about the study's aim and confidentiality concerns. Additionally, the participants' consents were acquired, and participation was voluntary. The participants were assured that withdrawal or non-participation would not result in any disciplinary action.

Following the development of a questionnaire, a pilot study was carried out before starting data collection. It was carried out on 10 percent of sample to test clarity and applicability of the study tools and to estimate the time needed to collect data. These 10% were included in the study because no modification was done.

Statistical analysis:

Data were fed to the computer and analyzed using IBM Statistical Package for Social Sciences (SPSS) software version 20.0. (Armonk, NY: IBM Corp). The qualitative data were described using numbers and percents. While the quantitative data were described using range (minimum and maximum), mean, standard deviation and chi-square. The Student t-test was used for normally distributed quantitative variables, to compare between two studied groups. While the one-way analysis of variance (ANOVA) was used to determine whether there were any statistically significant differences between the means of three or more groups. The significance of the results was judged at the 5% level. For detecting test-retest reliability of ordinal data, Kendall's tau and Spearman's rho were utilized, as well as Cronbach's coefficient alpha.

Results:

Table (1) showed that, the mean age of participant students was (21.2 ± 0.35) ranged from (20-23years old). As regard to residence 54.4% of the participant were urban. The majority of participants (97.5%) were single with no statistical significant difference $P > 0.5$.

Figure (1) presented the prevalence of depression by severity levels. For athlete students 28.4% had developed natural depression, while 21.6% had severe depression.

Figure (2) showed the prevalence of depression by severity levels for non-athlete students, (37.2%), (22.5%), (24.3%) and (16.1%) had developed, natural, mild, moderate and severe depression, respectively. The main result conveyed that non-athlete females had lower depression mean scores than athlete females.

Table (2) demonstrated that, 81 non-athlete students out of 218 (equal to 37.2%) had natural depression and Thirty-five (16.1%) had developed severe depression. As regard to group of athlete students, around 28.4% ($n=62$) with score 0-13 experienced natural depression. In addition, 21.6($n=47$) of athlete students suffered from severe depression. However, there was no significant difference between athlete and non-athlete students as regard level of depression $P > 0.5$.

Regarding the components of hardiness scale among athletes female students, it should be noted that challenge has the highest, while control has the lowest mean score (7.47) & (6.45) respectively. But the mean score of the overall response of psychological hardiness scale reached to (21.04). Figure (3)

The mean scores of 3 hardiness subscales were relatively high in the non-athletes female students. The "commitment" sub-scale score was the highest in the group (6.89). While the participants scored lowest for challenge sub-scale (5.63), with mean score of the overall response of psychological hardiness scale reached to (18.31). Figure (4)

Tables (3) depicted, the comparison of total psychological hardiness and its subscales

(Commitment, Control and Challenge) between two groups, there were highly significant differences between athlete and non-athlete females as regard to all hardiness subscale except for commitment subscale $P < 0.01$. Furthermore, there was highly significant difference between two groups in relation to total score of hardiness $P < 0.01$.

According to the result presents in Table (4), the Pearson correlation coefficient and the

significance level of the test are calculated to be -0.176 for athletes group and 0.263 for non-athletes respectively in concerning to the relation between depression and total score of hardiness; this table conveyed that, there was a significant relation between the commitment subscale of hardiness only and depression among athlete females, while there were significant differences between control, commitment subscales and depression in non-athlete group.

33

Table (1):- Frequency & Percentage Distribution of Personal data of athletic and non-athletic students under study

	Faculty of Physical education(n=218)		Faculty of Nursing(n=218)		Total (n=436)		P.value
	No	%	No	%	No	%	
Age							
20 years	34	15.6	25	11.5	59	13.5	0.626
21 years	100	45.9	106	48.6	206	47.2	
22 years	65	29.8	75	34.4	140	32.1	
23 years	19	8.7	12	5.5	31	7.1	
Mean \pmSD(range)	21.32 \pm 0.84		21.39 \pm 0.81		21.2 \pm 0.35		0.387
Grade							
3 grade	135	61.9	123	56.4	258	59.2	0.284
4 grade	83	38.1	95	43.6	178	40.8	
residence							
Urban	108	49.5	129	59.2	237	54.4	0.054
Rural	110	50.5	89	40.8	199	45.6	
Marital Status							
Single	214	98.2	211	96.8	425	97.5	0.544
Married	4	1.8	7	3.2	11	2.5	

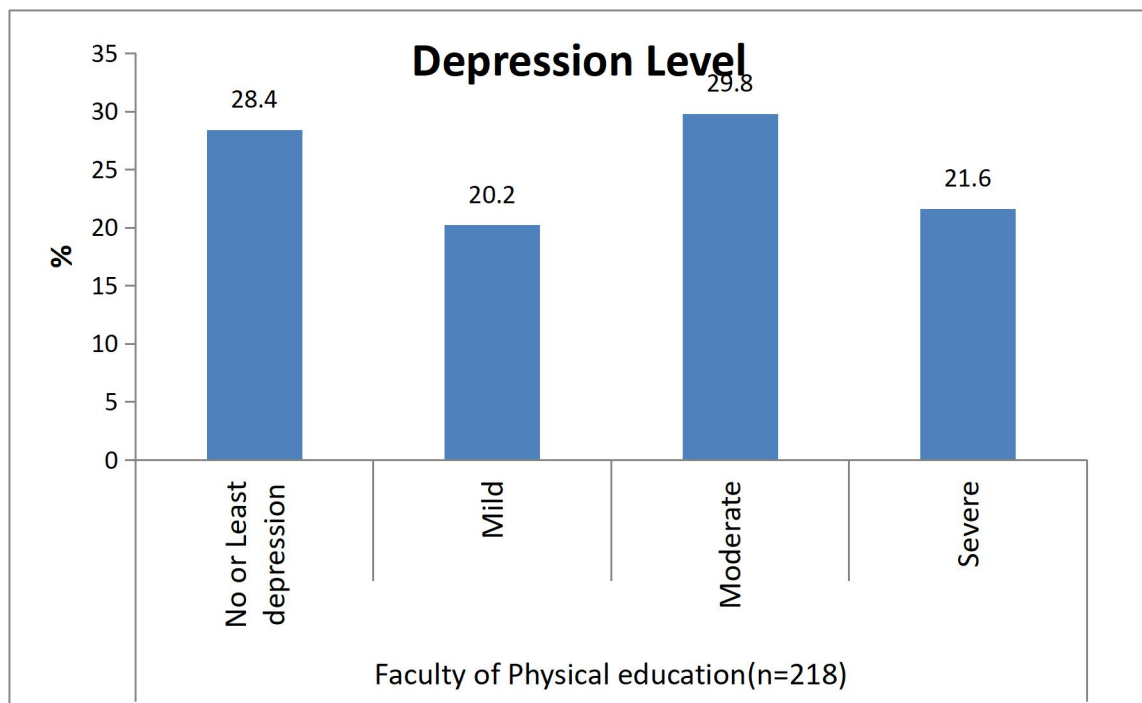


Fig1. Distribution of students under study (athlete) according to the severity level of depression

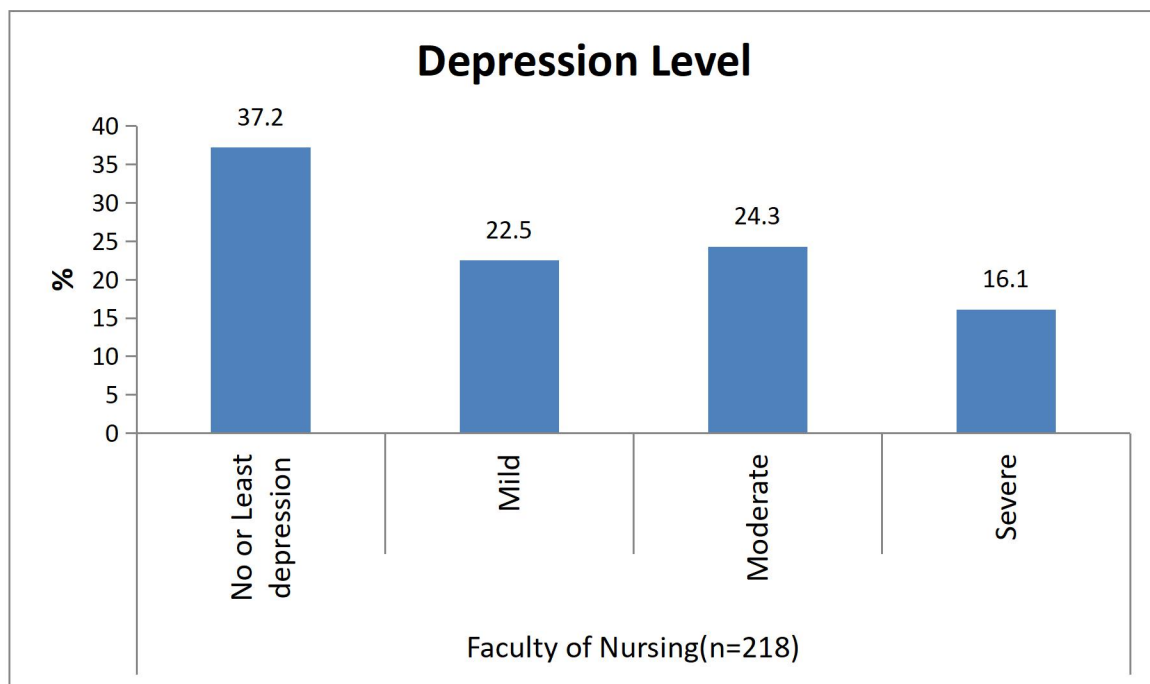


Fig1. Distribution of students under study (non-athletic) according to the severity level of depression

Table (2):- Comparison between the studied athletic and non-athletic students as regard severity levels of depression of Beck depression rating scale

	Max Score	Faculty of Physical education(n=218)		Faculty of Nursing(n=218)		Total(n=436)		P. value
		No	%	No	%	No	%	
Depression Level								
Natural depression	0-13	62	28.4	81	37.2	143	32.8	0.123
Mild	14-19	44	20.2	49	22.5	93	21.3	
Moderate	20-28	65	29.8	53	24.3	118	27.1	
Severe	29-63	47	21.6	35	16.1	82	18.8	
Mean±SD	63	20.56±11.31		18.76±10.67		19.66±11.02		0.060

Chi square test for qualitative data between the two groups

Mann Whitney test for non-parametric quantitative data between the two groups

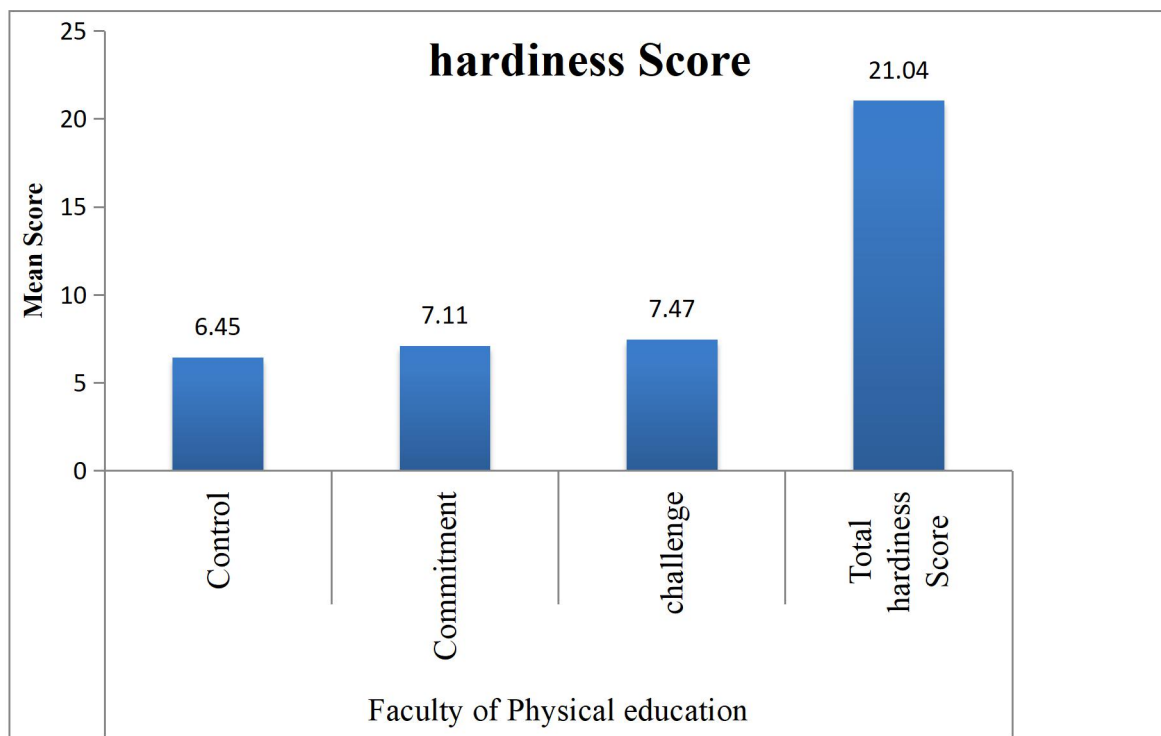


Fig3. Distributions of students under study (athlete) according to psychological hardiness mean scores.

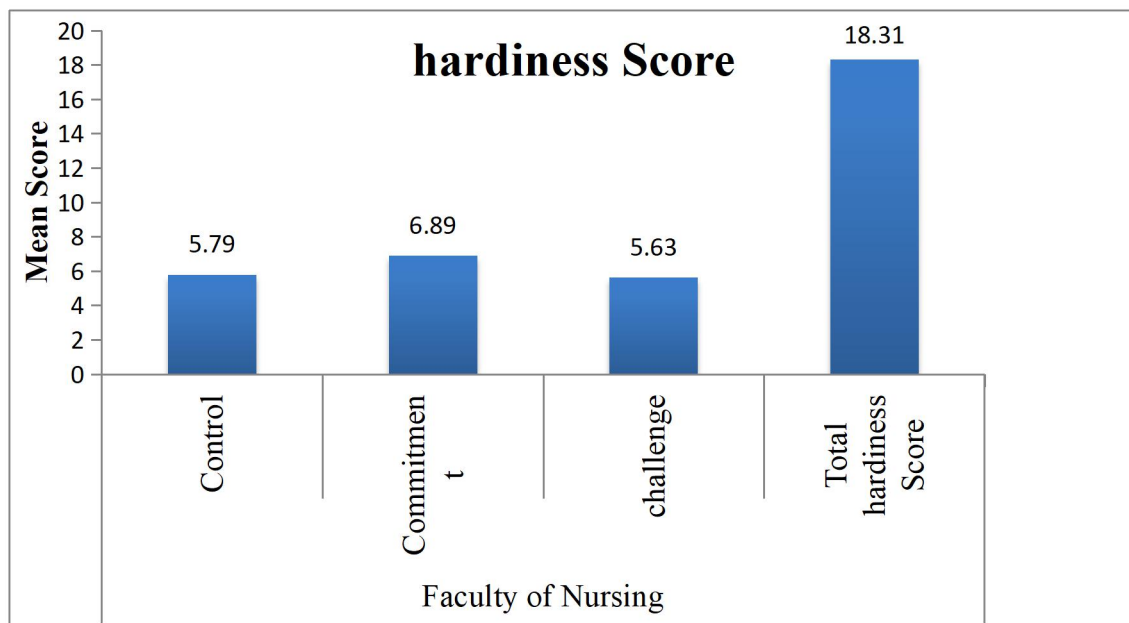


Fig4. Distributions of students under study (non-athlete) according to psychological hardiness mean scores.

Table (3):- Comparison of psychological hardiness among different groups of female students under studied

Hardiness subscales	Max Score	Faculty of Physical education(n=218)	Faculty of Nursing(n=218)	P. value
		Mean ±SD	Mean ±SD	
Control	12	6.45±2.39	5.79±1.81	0.001**
Commitment	12	7.11±2.35	6.89±2.29	0.312
Challenge	12	7.47±1.91	5.63±1.82	<0.001**
Total hardiness Score	36	21.04±4.73	18.31±4.35	<0.001**

- Independent T-test quantitative data between the two groups
- **Significant level at P value < 0.01

Table (4):- Correlation Co-efficient between total Depression and psychological hardiness scores among different groups of female students under studied

	Depression			
	Faculty of Physical education		Faculty of Nursing	
	r	P	r	P
Control	.039	.568	-.152*	0.025*
Commitment	-.305**	.000	-.287**	<0.001**
Challenge	-.110	.106	-.115	0.090
Total hardiness Score	-.176**	.009	-.263**	<0.001**

- * Statistically Significant Correlation at P value < 0.05
- ** Statistically Significant Correlation at P value < 0.01

Discussion:

Sport has been proven to benefit the general population in terms of mental health and psychological wellbeing. On the whole, the regular practice of sport can help fight against life stressors and depression and also promote general health. The regular practice of physical exercise is recommended to middle-aged females as a strategy to treat anxiety and depression and increase hardiness (Vieira et al., 2018).

The results of the present study clearly indicated an increase percentage in depression severity level among the athlete females than non-athlete with no statistical significant differences. This was inconsistent with (Yaprak et al., 2018) who reported happiness and mental health are associated with physical exercises participation across multiple countries. (Zhang &Chen., 2020) concluded that, sport has been recognized as one of the most influential factors for improving psychological well-being and mood. This can be explained by that, clinical education is always more complex and presents many more realities than can be captured by theoretical alone and clinical practicum helps students to build and strengthen skills in critical thinking and problem solving which lead to increase self-dignity and enhance mood .Additionally it is widely accepted that nursing as a career is viewed favorably by the society in that it offers job security, mobility, and career variety. Economic issues and a clear image of the career cannot be denied.

A comparison of frequency and mean values obtained from non-athlete students and athlete students under study with regard to severity levels of depression, the current study showed there is no significant difference between two groups. This was in agreement with (Vancini et al., 2019) who founded no significant differences between the groups that practiced and did not

practice sports in relation to depression and quality of life. Also, (Barmi., 2011) clearly showed, there was no significant difference between athlete students engaged in team sports and non-athlete students in depression.

The present study suggested that overall mean scores of psychological hardiness among the athletes achieved a high level than non-athletes with highly statistical significant difference. This was in line with the result concluded by (Shahraki et al., 2018) that, physical exercises have been shown to have a significant positive effect on self-efficacy and hardiness. In this context (Murphy et al., 2020), (Ghasemi.&Kajbaf., 2019), (Yaprak., 2018), (Azarian et al., 2016), and (Abdel-Fattah., 2015), indicating that sports is important for athletes, and it is a source of significant change in the performance of the player. It stimulates athletes to increase their skills and knowledge so that they can be proficient in their favorite sport. However, (Wadey et al., 2020) reported that, certain athletes had low in hardiness and they coped with stressful events and subsequent strain responses by denying the existence of the events or venting their reactions uncontrollably with others. This might be due to differences in sample compositions and culture.

The current study compared total psychological hardiness and sub-scales mean scores among the athletes female students and non- athletes. The findings provided evidence that confirmed highly significant differences in these variables in these two groups except commitment subscale. Research results by (Devin et al., 2015) in the field of psychological hardiness and its components showed that, there was significant difference concerning hardiness components between athletes and non-athletes., in other words, harder people

choose physical exercises along with other activities of daily life, and higher amount of hardiness can increase the likelihood of athletic achievement and success. Moreover, (Yaprak et al., 2018) founded that, there were a high significance-level of difference (with “challenge” and “control”) and moderate (with commitment”) sub-scales of hardiness.

The current study concluded that there was a significant negative relationship between the hardiness and the depression in two groups (athletes and non- athletes female students). This was in agreement with (Sin & Tatia., 2020) who observed that people with higher level of hardiness were associated with fewer depressive symptoms. Also (Tadayon et al., 2018) who investigated the relationship between psychological hardiness and resilience with depression in women with breast cancer and concluded that all women with severe depression had had low levels of hardiness. Therefore, it can be said that the hardiness percentage has decreased with increasing depression rate. .

Conclusion:

Athlete female students under study had higher psychological hardiness mean scores than non-athletes with higher statistical significant differences & depression mean score with no statistical significant difference.

Recommendations:

Based upon the aforementioned findings, the study suggested the following recommendations.

- Physical education subject should be obligatory in all schools and universities, because sport has a positive effect on mental health and psychological well-being.

- Psychological hardiness program must be developed as a method for easing stresses facing females.
- There is a need for further studies to evaluate the long-term effects of sport and its cost-effectiveness, clinicians in the mental health sector.

Conflict of interest: No conflicts of interest.

Funding: This research is entirely self-funded, without any sources of financial support.

References:

- Abdel-Fattah, S. S., (2015):** The Effectiveness of a Pilot Program to Develop Psychological Hardiness Factors in Reducing Psychological Stress among the Teachers of Special Groups in Minya, Minya University, College of Education, Department of Psychological Health, unpublished PhD Thesis.
- Araújo C.M., de Deus L.A., Rodrigues F.B., (2017):** RESISTENCE EXERCISE IMPROVES ANXIETY AND DEPRESSION IN MIDDLE-AGE WOMEN. *Journal of Physical Education*; 28:2448-2455.
- Asli A.M, Rajaei R, Farhadi T, Aghasi A,& Shahidi L.(2016):** Investigating the relationship between hardiness as well as resiliency and burnout aspects in the care givers of the physically, mentally and multiple retarded patients at the welfare organization in 2015. *Community Health journal*; 10(2):24-32. [Persian]
- Azarian,A., Farokhzadian,A.A., and Habibi.E.(2016):** Relationship between psychological Hardiness and Emotional Control Index: A Communicative Approach. *International Journal of Medical Research & Health Sciences*, 5, 5(S):216-221

- Barmi, M.R. (2011):** A comparative study of depression level among male athletic students engaged in individual and team sports versus male nonathletic students of schools from the second board of education in Karaj, Iran. *Social and Behavioral Sciences*. 30; 352 – 356
- Beck, A. T., Steer, R.A., & Garbin, M.G. (1988):** Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8(1), 77-100.
- Civitci N& Civitci A (2015):** Social comparison orientation, hardiness and life satisfaction in undergraduate students. *Procedia-Social and Behavioral Sciences*. 205:516-523.
- Devin, H.F., Farbod, D., Ghasabian, H., Bidel, T., & Ghahremanlou, F. (2015):** Comparative and Correlative Study of Psychological Hardiness and Competitiveness among Female Student Athletes in Individual and Team Sports. *Sport Science Review*, vol. XXIV, no. 3-4, 2015, 201 – 214
- Dinas, P.C., Koutedakis, Y. & Flouris, A. D. (2016):** Effects of exercise and physical activity on depression. *Irish Journal of Medical Science*; 180:319-325.
- L-Ruby, A.A.M. (2019):** Psychological Hardiness and Its Relationship to Achievement Motivation among Players of Some Sporting Activities. *Assiut Journal of Sport and Art*; 114(1):332-350
- Ghasemi, Z & Kajbaf, M.B. (2019):** The Relationship of Mindfulness, Psychological Hardiness and Spirituality with Depression in Mothers. *Journal of Social Behavior Research & Health*. 3(1), 287-297.
- Jowkar B, Kamali F. (2016):** The relationship between spirituality and cognitive emotion regulation. *Developmental Psychology (Journal of Iranian Psychologists)*; 12(48):377-385. [Persian]
- Kandola, A., Lewis, G., Osborn, D., Stubbs, B., & Hayes, J. F. (2020):** Depressive symptoms and objectively measured physical activity and sedentary behaviour throughout adolescence: A prospective cohort study. *Lancet Psychiatry*, 7, 262---271.
- Kobasa, S. O. (1984):** How much stress can you survive? *American Health*, pp. 64-77.
- Mehrpour, A & Mazaheri, M., (2012):** A Comparative Study of Psychological Hardiness in Athlete and Non-Athlete students. *European Journal of Experimental Biology*, 2012, 2 (5):1514-1516.
- Murphy, T., Sweeney, M.R. and McGrane, B. (2020):** Physical Activity and Sports Participation in Irish Adolescents and Associations with Anxiety, Depression and Mental Wellbeing. Findings from the Physical Activity and Wellbeing (Paws) Study. *Physical Activity and Health*, 4(1), pp. 107-119
- Ramzi, S & Besharat, MA., (2010):** The impact of hardiness on sport achievement and mental health. *Procedia Social and Behavioral Sciences* 5 (2010) 823-826.
- Shahraki, M., Esmaceli, M.R. and Ganjouei, F.A. (2018):** THE EFFECT OF SPORT PARTICIPATION AND HARDINESS ON SELF-EFFICACY IN FEMALE HIGH SCHOOL STUDENTS. *Indian Journal of Fundamental and Applied Life Sciences* ISSN: 2231- 6345.
- Sin M N & Tatia M. C. L (2020):** The mediating role of hardiness in the relationship between perceived loneliness and depressive symptoms among older, *Aging & Mental*

- Health, 24:5, 805-810, DOI: 10.1080/13607863.2018.1550629
- Tadayon, M., Dabirizadeh, S., Zarea, K., Behroozi, N., & Haghizadeh, M. (2018):** Investigating the relationship between psychological hardiness and resilience with depression in women with breast cancer. *The Gulf journal of oncology*. 1. 23-30. Comp-Report WEB.pdf: 2019; accessed at 5 May 2020.
- Vancini, R.L., Gomes, A.A., Andrade, M.S., (2019):** Quality of Life, Depression, Anxiety Symptoms and Mood State of Wheelchair Athletes and Non-athletes: A Preliminary Study. *Frontiers in Psychology*;10:1848
- Vieira JLL, Rocha PGM, Porcu M.(2018):** Influência do exercício físico no humor e na depressão clínica em mulheres.;14(02):179-186.
- Wadey, R Evans, L., Hanton, S. and Neil, R.(2020):** An examination of hardiness throughout the sport-injury process: A qualitative follow-up study. *British Journal of Health Psychology*, 17, 872–893
- Yaprak, P. GÜÇLÜ, M and AYYILDIZ D, T.(2018):** The Happiness, Hardiness, and Humor Styles of Students with a Bachelor's Degree in Sport. *Sciences. Journal of Behavioral Sciences*;8(82):1-21.
- Zhang, Z & Chen, W.(2020):** Effects of team sports on anxiety, depression, perceived stress, and sleep quality in college students. *Journal of Affective Disorders*; 256:473-485
- Zhang, Z. & Chen, W.(2020):** A systematic review of measures for psychological well-being in physical activity studies and identification of critical issues. *Journal of Affective Disorders*; 256:473-458.