

## Physical Activity is Associated with Depression and Self-Esteem Levels among Omani Female Children

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### ABSTRACT

**Background:** While the message springing from exercise; physiological research has eulogized its advantages in general in terms of physical health, the equivalent psychological literature has revealed a more complex relation; hence a scientific argument still existed. **Objectives:** The purpose of the study was to identify the level of self-esteem and depression of the Omani female due to the need for greater understanding on the relationship between self-esteem, depression and physical activity. **Subjects and Methods:** Self-esteem and Arab List of child depression validated questionnaires tool were used by 165 Omani females with ages ranging between 10 to 13 years old. The reliability test-retest was established using Cronbach's alpha to determine the internal consistency or average correlation of items in our survey instrument to gauge its reliability. For the 165 females, the scores were 0.82, and 0.88 indicating an appropriate degree of internal consistency for both instruments respectively. **Results:** The descriptive statistics indicate that 32% of the study sample never exercised, 41% exercised but at low rates, and 27% of them exercised regularly. ANOVA, post hoc, and Pearson correlation-coefficient were used and indicated that female actively linked with PA ought to mental health improvement, physical self-perception which may lead to high self-esteem and low depression and vice versa. **Conclusion:** Engagement in regular physical activity can lead to an increased level of self-esteem among teenage Omani girls reducing negative emotions that may haunt in such a critical stage of age and thus prevent of symptoms of depression.

**Keywords:** Omani Females, Self-Esteem, Depression, Physical Activity.

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### INTRODUCTION

Physical activity is an important component of a healthy lifestyle, and the benefits of regular exercise have been well established. The relation between physical activity and psychological health is gaining momentum in recent years. While the message springing from exercise, physiological research has eulogized its advantages in general in terms of physical health.

The equivalent psychological literature has revealed a more complex relation; hence a scientific argument still existed. Recommendations for exercise regimens emphasize the physical benefits that accompany increased physical activity (1) and the priorities for child and adolescent physical activity and sedentary behaviors (2). For example, the American College of Sports Medicine (ACSM) has recommended that young adults who have no medical problems may limit their acceptable level of activity and should engage in moderate intensity aerobic exercise for at least a minimum of 30 minutes per day, 5 days a week(3). In addition to the recommendations for aerobic exercise, the guidelines also specify that healthy adults should engage in moderate resistance (strength) training at least twice per week, and should aim all of the major muscle groups to work (4).

For the psychological perspective, the benefits associated with physical exercise are not well-documented. Having hard evidence to support an equivalent relation between exercise and psychological wellbeing is scarce. Evidence supporting the efficacy of exercise in the treatment of clinical anxiety disorders exists, although further evidence may soon become available (5). Indeed, neither the ACSM nor many of the available international public guidelines document on physical activity-inactivity, making specific recommendations concerning exercise intensity, volume, type and duration and psychological health (6).

Several reviews examined the literatures on the relationship between psychological health problems and exercise interventions in children, young adults and old people. The interview survey of Smith et al bolsters a notion that the psychosocial benefits of physical exercise may equal, if not surpass the physiological benefits (7). The role that exercise can play in the promotion of positive mental health and regular physical activity has been repeatedly shown to be associated with improved emotional wellbeing (8), while inactivity, with poorer emotional wellbeing (9-11, 5) especially for Arab women (12).

This confidence is found on growing numbers of controlled studies which have identified the positive effects of exercise, mainly among solid experimental research. At the same time, caution is expressed both in relation to the direction of causality and in the use of reductionist arguments to interpret findings. For instance, McAuley has considered the relation between exercise and positive and negative psychological health (11). In similarity with other review articles, McAuley identifies the positive correlation between exercise and self-esteem, self-efficacy, psychological wellbeing, and cognitive functioning; and the negative correlation between exercise and anxiety, stress, and depression (11). Martinsen found that depressive patients tended to be physically sedentary and were characterized by a reduced physical work capacity compared with the general population (10).

Although a number of studies stress the importance of using aerobic exercise in the treatment of clinical depression (13), Martinsen, found that the effect of aerobic and anaerobic exercise equally suppress depression (11). He also found that those who continued to exercise regularly after termination of a one-year training program were found to have lower depression scores than their inactive counterparts. A recent study conducted by Kilani *et al* showed that there is a significant difference on the prevalence of the symptoms of depression among Omani children (32%) ranging from mild to severe depression with negative correlation with vitamin D deficiency(14). In general, between 10% and 20% of children and adolescents have psychological and behavioral problems; and about 7% need psychological treatment (15, 16). For the above, portrayed systematic reviews and meta-analyses of observational studies and randomized controlled trials were published between 1990 and 2009.

There has been a considerable research interest in the effects of exercise upon depression outcomes. Craft, and Landers attempted to provide more precise answers regarding the relationship of depression and exercise by including studies only where individuals had been diagnosed with clinical and co-morbid depression with another mental illness (e.g. schizophrenia, anxiety and paranoia) (17). Sjosten and Kivela concluded in their meta-analysis that exercise interventions may be efficient in reducing depression or high levels of depressive symptoms (18). Exercise might be effective in the short-term but such effects tended to reduce over time, in studies reporting follow-ups beyond the length of the intervention (19). Additional systematic reviews indicate a positive effect of physical activity on depression, anxiety, and behavioral problems in children and adolescents (20, 21). Ströhle reviewed the association of physical activity, exercise, the prevalence and incidence of depression and anxiety disorders; and the potential therapeutic activity of exercise training in patients with depression or anxiety disorders (22).

Although the evidence for positive effects of exercise and exercise training on depression & anxiety is growing, the established clinical treatment approach is still at the foundation. Further studies on the clinical effects of exercise, interaction with standard treatment approaches and details on the optimal type, intensity, frequency and duration may further support the clinical administration in patients. Furthermore, there is lack of knowledge on how to best deal with depression- and anxiety-related symptoms which hinder patients to participate and benefit from exercise training. In addition, some symptoms of depression remain despite anti-depressant treatment. For example, fatigue and reduced cognitive function and evidence have shown that exercise can improve these symptoms (23, 24). Collectively, this may make exercise an ideal ‘all round’ treatment for depression. The effect of physical activity on self-esteem in children has also been investigated. Self-esteem is the value we place on ourselves. Improving it may help prevent the development of psychological and behavioral problems which are common in children and adolescents.

Ekeland *et al.*, in their review, tried to determine if exercise alone or exercise as part of a comprehensive intervention can improve self-esteem among children and young adults (25). Although strong evidence for the benefits of exercise on physical health exists, evidence for the effects of exercise on mental health is scarce. The purpose of the study was to identify the level of self-esteem and depression of the Omani female with ages ranging between 10 to 13 years due to the need for greater understanding on the relationship between self-esteem and depression and physical activity in Omani children, which have never been addressed with such a topic in research. Determining the prevalence of depressive symptoms among girls, as well as the level of self-esteem by identifying the nature of the relationship among self-esteem, depression and exercise, is our sought.

## SUBJECTS AND METHODS

### *Study Subjects*

The study sample included 165 Omani girls aged between 10 - 13 years, and were randomly selected from nearly 500 children and adolescents, including 125 girls were studying in general government schools, and 40 of them were studying in private schools, participated in the Summer Club Program 2012 organized by Sultan Qaboos University.

Tools of the study: The study used the following psychometrics measures:

Measure of self-esteem: a modified measure consisting of 14 words, including 6 positive (2, 4, 6, 8, 10, 12) and 8 negative (1, 3, 5, 7, 9, 11, 13, 14) was developed to measure the self - esteem (26) Scores were calculated as follows: For items 2, 4, 6, 8, 10, and12: [Strongly agree = 4; Agree = 3; Disagree = 2; and strongly disagree = 1]. For items 1, 3, 5, 7, 9, 11, 13, and14 (which are reversed in valence): [Strongly agree = 1; Agree = 2; Disagree = 3; and strongly disagree = 4].

The scores were calculated by the average response from each girl by dividing the total scores obtained by the number of phrases total (14) thus, the average of respondents per capita was between (1-4) degrees. The higher the level of the arithmetic average of the paragraph or the scale as a whole (2.5) points reflects a rise in the level of self - esteem, and the lower the arithmetic mean of the paragraph or the whole scale of the (2.5) points it crosses a decrease in the level of self - esteem. We determined the content validity to see that the tool is measuring what it is intended to measure. The reliability was 87% using test-retest on a random sample consisted of 23 girls and with a time lag of 3 weeks.

In the current study, Cronbach's alpha was used to determine the internal consistency or average correlation of items in our survey instrument to gauge its reliability. This consists of indexed responses to dichotomous or multi-point questionnaires, which are later summed to arrive at a resultant score associated with a particular respondent.

For the 165 females, the score was 0.82, indicating an appropriate degree of internal consistency. Athanasio *et al.*, provided the association of self-reported global self-esteem, vitality and athletes' moderate-to-vigorous physical activity in young soccer players and these associations across different European populations (27).

Arab List of child depression: we used this tool to estimate the children's depression level (28). In this study, we used the rationing approved version of Saudi Arabia due to the similarity between the environment of Oman and Saudi Arabia, and this has been the process of reviewing the list with a number of specialists in psychological measurement, with a coefficient of internal consistency according to the responses of (0.88) for a list of twenty seven items; where eight items for positive, indicating the absence of depressive symptoms, while the remaining items nineteenth indicate the presence of depressive symptoms. The scale has three grades (rarely, sometimes, and often) Scores were calculated as follows:

For eight items: [rarely = 3; sometimes = 2; and often = 1]; For nineteenth items (which are reversed in valence): [rarely = 1; sometimes = 2; and often = 3].The higher the level of the arithmetic average of the paragraph or the scale as a whole point reflects a rise in the level of the presence of the maximum degree of depression, while the lowest score of any which refers to the absence of symptoms of depressive at all degrees.

#### ***Physical activity questionnaire***

This was measured using interview questionnaire that consists of the first two paragraphs concerning the number of occurrences of the practice of physical activity per week; and the second relates to the duration of the practice at a time. According to the subjects' respondents of total hours of exercise per week, we classify them into inactive and active, one varying from mild or moderate, and active.

## **RESULTS AND DISCUSSION**

As presented in figure 1; the depression symptoms of Omani girls were classified into three levels according to their physical activity. The descriptive statistics indicates that 32% of the study sample never exercised, 41% exercised but at low rates, and 27% of them exercised regularly. This indicates that a large proportion of up to 73% of the study sample were not engaged do not engage in physical activity, or their enrolment to practice physical activity was limited. Kilani *et al.*, found similar results of Omani adolescent's ages 14-18 in Muscat City as high prevalence of sedentary behaviors and a low level of physical activity, especially among females 76.9% (29). Furthermore, Trudeau *et al.*, found that adolescents appear to experience a marked decline in PA as they get older, which increases the likelihood of having non-communicable diseases in the future (30). This fact requires gathering efforts to stimulate the children to practice PA and facilitate human resources for this purpose (31).

In order to find out the differences between these levels we conducted one-way ANOVA for the significance. As shown in Table 1, the differences between the means of variable exercise level was statistically significant, and to identify the source of these differences post hoc test (Scheffe) was used for comparisons which revealed that these differences were among a group of girls that never exercised ( $n = 53$ ,  $P = 1,663$ ) and a group of girls who exercised regularly ( $n = 44$ ,  $P = 1,463$ )

Table 2 illustrated that joy, pleasure and self-liberation of tensions were linked to PA improving mental health and improve physical self-perception in adolescent girls is logical and consistent with the literature of the findings of several studies (8, 11). The self esteem level was also classified in to three levels according to the subject's physical activity: mild, moderate and active as in table 1. In order to find out the differences between these levels, we conducted one-way ANOVA for the significance.

The differences between the mean variable exercise was statistically significant, and to identify the source of these differences, post hoc (Scheffe) was used for comparisons which revealed that these differences were among a group of girls that never exercised ( $n = 53$ ,  $P = 3.250$ ) and a group of girls who does PA regularly ( $n = 44$ ,  $P = 3.654$ ), tables 3 &4. These results were in agreement with those studies conducted in different environment and varied subjects. This may attribute PA impact on self-esteem that works to promote awareness, capacity to control and achievement which improve their self-concept and self-confidence. It is possible that girls in such a critical stage of growth may be subjected to psychological and personality disorders and thus getting to have the need to prove themselves through their involvement in PA in order to enhance self-esteem.

Although low PA was not correlated with self-esteem, regular PA is beneficial for both physical and psychological merits. This is an important factor that requires a lot of attention since duration, intensity and volume of PA is sustained. Females at this age commence to perceive themselves as an image of an adult lady, thus improving their posture by working out regular PA which strengthens their appearance. Consequently, their perspective on themselves will improve the physical self-image and thus gaining appreciation towards themselves (34). In general, self-esteem results consistently with the findings of the study of Schmalz *et al.*, that physical activity increases self-esteem of the white American adolescent girls (35), which also agrees well with the findings of the Abedalhafiz, who used a sample of children and adolescents of Americans of Arab descent (36).

What type of correlation exists between self-esteem and depression? To answer this question, Pearson correlation-coefficient was calculated (Pearson Correlation) between the scores of the study sample based on a scale of Arab children's depression and self-esteem scale for children as shown in Table 5.

The following results have been achieved: A negative correlation was found between depression and self-esteem in the sense that children having a high level of low self-esteem, at least, have symptoms of depression and vice versa. In this study, the validity of measures used, to the extent that the outcome is represented in addition to what has been found previously through a variety of studies, (37) is emphasized. It remains to point out that the findings of this study deserve to receive the appropriate amount of attention especially for educators and parents who are demanding to intensify interests in directing children and adolescents to exercise, because it enhances their self-confidence thus, improve self-esteem, and work to achieve healthy mental health. In addition, other factor could be involved as nutritional practices (nutritional knowledge, eating habits and daily nutrients intake) which has been investigated among Omani adults (38).

## CONCLUSION

Although results indicated that active female are likely to engage in regular physical activity can lead to an increased level of self-esteem among teenage girls reducing negative emotions that may haunt in such a critical stage of age and thus prevent of symptoms of depression, more females were in active with low self-esteem and hi depression. This is alarming and risky for children if no intervention has been taken.

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**Table 1: Analysis of variance for the differences between the mean scores of the study sample for depression in accordance to the level of exercise**

	Sum of Squares	df	Mean Square	F	Sig
Between Groups	716.514	2	358.257	4.787	.010
Within Groups	12123.389	162	74.836		
Total	12839.903	164			

**Table 2: Post-Hoc Scheffe Subset for alpha = 0.05**

Sport	N	1	2
Active	44	39.4091	
Moderate	68	41.4706	41.4706
Mild	53		44.7547
Sig.		.471	.150

**Table 3: Analysis of variance for the differences between the mean scores of the study sample on a scale of self-esteem according to the level of exercise**

Self-Esteem	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	546.463	2	273.231	6.444	.002
Within Groups	6868.713	162	42.399		
Total	7415.176	164			

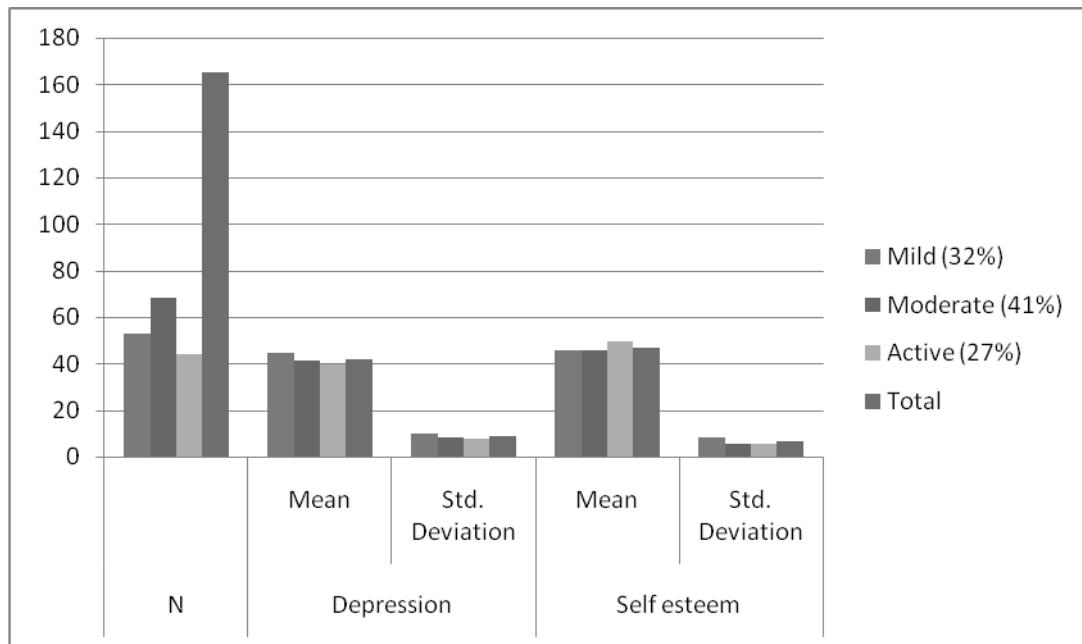
**Table 4: Post-Hoc Scheffe subset for alpha = 0.05**

Sport	N	1	2
Mild	53	45.4151	
Moderate	68	45.7941	
Active	44		49.7273
Sig.		.956	1.000

**Table 5: Mean, standard deviation and person correlations between depression and self-esteem**

	Mean	Std. Deviation	N
Depression	41.9758	8.84828	165
Self-esteem	46.7212	6.72417	165
	Sig. (2-tailed)		.000
	Sum of Squares and Cross-products	1.284E4	-6.900E3
	Covariance	78.292	-42.074
	N	165	165
Self esteem	Pearson Correlation	-.707 <sup>**</sup>	1
	Sig. (2-tailed)	.000	
	Sum of Squares and Cross-products	-6900.115	7.415E3
	Covariance	-42.074	45.214
	N	165	165

\*\*. Correlation is significant at the 0.01 level (2-tailed).



**Figure 1: Classification of Subjects' Level in Exercise Participation and Percentages for Depression and Self-Esteem**