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Effect of Physical Sports and Exercise on the Mental Health of the Citizen of Karachi

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Abstract: The study attempts to demonstrate the effects of physical sports or exercise on the mental health of individuals who take part in physical sports or exercise (sports group) and who do not take part in sports (non-sports group) among the citizens of Karachi, on the variable of depression, anxiety and stress, optimism, resilience and hope. It was hypothesized that 1) Physical sports or exercise have positive effects on mental health. 2) Individuals who take part in physical sports or exercise will score low on depression, anxiety and stress scale and score high on optimism, hope, and resilience. 3) Individual who do not take part in physical sports or exercise will score high on depression anxiety and stress scale and score low on hope, resilience, and optimism. 4) There will be a significant difference between the scores of men and women on depression, anxiety, stress scale and hope, optimism, resilience. It was a comparative study between sports group: individuals who play physical sports or do exercise and have membership in a sport club or gym and non-sports group: individuals who do not play physical sports or exercise. Data was collected from different areas of Karachi during the month of March 2015 to April 2015. By using convenient sampling technique a sample of 80 individuals (males and females) was approached in this study. Age range was 18 to 40 years. Mean age of the participants was 25 years. Depression Anxiety Stress scale (DASS) was used to measure depression anxiety and stress, Life orientation test revised (LOT-R) was used to measure optimism, Adult hope scale (AHS) was used to measure hope, and Breif resilience scale (BRS) was used to measure resilience. The findings revealed that there is a positive effect of sports on mental health. Individuals who play physical sports scored low on DASS and high on LOT-R, AHS, and BRS. No significant differences were found between the scores of males and females. Over all findings of the research are consistent with previous researches but there is a need of exploration because both groups have scored same on hope and resilience.

Keywords: Physical Sports, Exercise, Anxiety, Depression, Hope, Optimism and Resilience

1. Introduction

"Lack of activity destroys the good condition of every human being, while movement and methodical physical exercise saves it and preserve it [1]." According to WHO the nervous, psychological problems and social disorders are common among 150 million population of the world [2]. Researchers suggest that physical exercise can be proved as an effective tool of treatment of mental illnesses such as depression and anxiety. It is also associated with improved respiratory, musculoskeletal and cardiovascular and hormonal states [3].

The Centers for Disease Control and Prevention (CDC) reports that taking part in sports helps to burn calories, maintains weight and healthy cholesterol level. Exercise keeps your mental skills (thinking, learning, and using good judgment) sharp as you age [4]. Whether individuals are playing sports, working out at a gym, or taking a brisk walk, physical activity reduces depression, increases relaxation and happiness along with the inclusion of a good diet plan and a good night sleep. It has tremendous control over obesity, diabetes and heart diseases According to the American Heart Association, doing a mix of aerobic and muscle-strengthening activities, which are common to most sports, three to five times a week for at least 30 minutes can provide mental health benefits [5].

1.1. Physical Activity

Any movement or musculoskeletal activity that results in energy expenditure by changing the resting state [6].

1.2. Mental Health

A state of well-being where an individual realises his productivity, capacities, coping to stress, abilities to enhance adeptness of her/his community [7], enhanced ability to enjoy life and deal with the challenges we face along with positive sense of emotional and spiritual well-being [8].

In Pakistan, attention has not been paid to the impact of physical activity on mental health. By considering the circumstances of metropolitan city like Karachi a need of research in this particular area was recognized. So for this purpose the conduction of this study was stimulated. By doing this the impact of physical activity on mental health would be explored with reference to the citizens of Karachi.

2. Literature Review

Most people are familiar with the idea that taking exercise is a key to a healthy life (optimism, hope, resilience). Although there is growing evidence that physical activity may help to ease depression, anxiety, stress. Doing a mix of aerobic and muscle-strengthening activities, which are common to most sports, can provide mental health benefits. During the last two decades psychology seems to be following enabling model like developing natural strengths and wellbeing, hardiness, learned optimism, hope, resilience [9. 10], positive emotions, stress management and many more experiences with positive offshoots [11].

The particular area of psychology that does not only focuses on the treatment of mental illness but also helps people to lead proper and healthy life is known as Positive Psychology. Pioneer describes positive psychology as "We believe that a psychology of positive human functioning will arise that achieve a scientific understanding and effective interventions to build thriving in individuals, families, and communities." Some of the major topics of interest in positive psychology include: Happiness, Optimism and helplessness, Mindfulness, Character strengths and virtue, Flow, Hope, Positive thinking, Resilience, Well-being. PEMRA (positive affect, engagement, meaning, relationship, accomplishment) is a theory of happiness which tries to identify the building blocks of well-being. This model suggests five essential elements for human well-being: Positive affect, Engagement, Meaning, Relationship, accomplishment [12].

Optimism and hope are viewed as positive mindsets which some people do or do not have. Hope is defined as a goal directed cognitive construct which has two components [13]; 1- Agency- a goal directed determination and 2- Pathway- potential routes that an individual make to reach the goal [14]. Hopeful individuals are optimistic agentic thinkers with clear pathways. Optimism is defined as an enlightened approach of mind that discriminates between 'continued striving' [15] and 'giving up and turning away' [16]. Hopeful individuals have willpower and determination to overcome obstacles that block their way to success. Adolescents who were engaged in sports had higher levels of well-being, activity, affect and optimistic thinking as compared to those who stated being trained [17].

Resilience is the capacity to "bounce back" from the stressful, traumatic, dramatic positive change related to daily life, unexpected disturbance and events [18]. Every individual has resilience because it's not a trait that someone may lack completely. It can be developed and learned through behavior and actions. It's one's positive belief about his/her abilities to have an optimistic approach about future environment and situation. Exercisers in a study reported greater positive mood during stress exposure, which served as a protective factor against the development of disease [19. 20]. Whereas, non-exercisers showed decrease in positive mood and regular exercisers showed friendlier mood. Findings of another study reported that regular exercise protects against the negative emotional consequences of stress [21]. Resilience is found to be a protective factor for athletes in order to optimize their state to face stressors [22].

A number of researches have confirmed the consistent association between positive mood and psychological well-being. Researchers observed that physical activity can be useful for people suffering from mental disorder because of its ability to increase some affect [23]. Meta analytical evidence suggests that aerobics can increase some mind power by decreasing similar magnitude of negative emotions as well as tension, aggression, confusion. Low, medium and high intensity of exercise impacts differently on mental health. Positive impact increases with high exercise [24]. A significant difference between mental health of athlete and non-athlete students was found, as sports were found to be advantageous for students [25]. People engage in different types of activities to enhance their well-being, from reading, gardening, engaging in philanthropic work to adopting different types of sports, aerobics and yoga. Not only psychology but medical professionals also recommend these physical activities to balance hormonal imbalances to rectify the impact of stress. The types of behaviors and mental processes of people who engage in sports and exercise is the subject matter of sports psychology [26].

Exercise can reduce the trait anxiety even a single session reduces short term physiological reactivity to stressors by enhancing recovery [27]. Aerobics exercise is having anxiolytic and antidepressant effects [28]. Physical exercise reduces the risk of developing clinically defined depression, its antidepressant effects are of same magnitude as other psychotherapeutic interventions and if continued over time then exercise therapy could have significant benefits for major depressive disorders. Mostly aerobics and resistant exercise are used treat moderate or more severe depression, while in adolescence habitual exercise is correlated with low depression [29]. Findings of a study reported exercise as an adjunct to drug and psychotherapies as prevention against depression and anxiety [30]. Researchers concluded from

their meta analytical review that exercise plays important role in reducing anxiety [31]. Just as mental illness is equated with the diagnosis of DSM based disorders, mental health is regarded as the syndrome of subjective wellbeing, i.e. diagnosis of mental health is made when an individual exhibit flourishing and positive functioning in life [32].

A study of 16,483 university undergraduates found a correlation between physical activity and mental health along with fewer symptoms of depression and anxiety, similar results were found in a general population sample of 55,000 [33]. Positive effects of regular exercise were found on depression, anxiety, stress [34]. A study reported the success of exercise in reducing depression even after the termination of exercise [35], whereas, others reported such effects only for those who were mild to moderately depressed [36-39]. Great many researches prove the effectiveness of physical activity, but amount of physical activity required for mental well-being is not decisive, 30 to 20 minutes for different number of days is suggested [40].

Stopping excessive exercise suddenly can compromise mental health by producing adverse effects, may create a change in mood. Feelings of depression and agitation can occur when withdrawal from the natural endorphins produced by exercise occurs specially in those who performed it intensely earlier. After two weeks of cessation of regular running increased complaints of the symptoms of anxiety and depression were reported [41]. Physical well-being positively impact psychological well-being and serves as a buffer against stress [42. 43]. Researchers found an inverse relationship between exercise and stress [44]. Findings of a study reported reduction in depressive symptoms as the amount of physical activity increases [45]. Whereas others explained that even strength training can have beneficial effect if it is done by choice, otherwise exercise by force is of no use [46]. Physical exercise and stress are influential for mental health in both positive and negative manner [47].

Many researchers suggest that physical exercise can have more positive effects upon girls' psychological well-being that contribute to the reduction of problematic levels of anxiety and depression because girls may respond more strongly than boys in terms of short-term benefits. There is equal susceptibility in girls and boys to become depressed [48]. After puberty and after becoming young adult, depression prevails greater in girls. Male and female athletes were found to be less pessimistic than their control groups, whereas, no significant difference was found in the level of optimism of athlete group and control group [49]. Sports and physical fitness impacts mental health positively in employees. A gender difference was also explored on these variables as males had higher levels of physical fitness and mental health as compared to females [50].

3. Hypotheses

As researches mentioned above have shown numerous evidence of positive, healthy and useful effects of physical activity in terms of exercise and sports on mental health and well-being. The present study would provide useful insight about the psychological well-being of the citizens of Karachi. Keeping this thing in mind following hypotheses was formulated.

i. There would be a significant difference between the mental health of individuals who take part in physical sports or exercise and the individuals who do not take part in physical sports or exercise.
ii. Individuals who take part in physical sports or exercise will score low on depression anxiety and stress scale and high on optimism, hope, resilience.
iii. Individuals who do not take part in physical sports or exercise will score high on depression anxiety and stress scale and low on optimism, hope, resilience.
iv. There would be a significant difference between the scores of men and women on depression anxiety and stress scale, optimism, hope and resilience.

4. Methodology

4.1. Sample

A purposive convenient sampling technique was used in this research. The sample consisted of 80 individuals (40 sports group and 40 for non-sports group) including both males and females from different areas of Karachi. Their age ranged between 18 to 40 years. The selection criterion for the sample (sports group and non-sports group) was, only those individuals who were present at sports club or gym and had membership, and were willing to participate enthusiastically were approached.

4.2. Measures

4.2.1. Depression, Anxiety, Stress Scale (DASS)

DASS comprised of 42 items, which includes three self-report scales designed to measure the negative emotional states of depression, anxiety and stress [51].

4.2.2. Revised Life Orientation Scale (LOT-R)

LOT-R was used to measure the optimism level of both groups. This scale consisted of 10 items [52].

4.2.3. The Adult Hope Scale (AHS)

AHS was used to measure hope. It is a 12 item scale; sub divided into two sub scales 1) Agency (i.e. goal-directed energy) and 2) Pathways (i.e. planning to accomplish goals). Each item is answered using an 8-point likert-type scale. Total scores are taken by adding the scores of both items [13].

4.2.4. The Brief Resilience Scale (BRS)

BRS was used to measure the resilience. The scale consisted of 6 items. The total scores are obtained by finding the mean of all positively and negatively worded items [18].

4.3. Procedure

A demographic information sheet was designed consisted

of a consent form, and information regarding gender, age, qualification, marital status, monthly household income group, and question regarding membership in any club or gym and the type of physical activity or sports played there. Then participants were asked to answer the items of scales by marking the response which is best suited to them.

4.4. Statistical Analysis

t-test for independent sample was calculated to compare the score of sports and non-sports group through SPSS (22).

4.5. Operational Definitions

Depression: Dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest or involvement, anhedonia, inertia [51].

Anxiety: Autonomic arousal, skeletal muscle affect, situational anxiety, subjective experiences of anxious effects [51].

Stress: Chronic non-specific arousal, difficulty in relaxing, nervous arousal, being easily upset and agitated, irritable or over reactive, and impatient [51].

Optimism: Sense of self-worth, expectation of favorable outcomes, good things, better coping strategies, better health habits and lesser physical symptoms, less distress [52].

Hope: A cognitive set comprising agency (belief in one's capacity to initiate and sustain actions) and pathways (belief in one's capacity to generate routes) to reach goals [13].

Resilience: Resistance to illness, adaptation, thriving and the ability to bounce back or recover from the stress [18].

5. Results

Table 1. *Following are the socio-demographic characteristics of the participants recruited.*

	Frequency	Percentage
Groups		
Sports group	40	50%
Non-sports group	40	50%
Total	80	100%
Marital status		
Married	9	11.25%
Single	71	88.75%
Total	80	100%
Gender		
Male	40	50%
Female	40	50%
Total	80	100%
Socio-economic Status		
Lower Class	40	50%
Middle Class	35	43.8%
Upper Class	5	6.2%
Total	80	100%

Table 2. *Mean, Standard Deviation and t-Values for DASS, LOT-R, BRS, AHS scores, gender (males, females), groups (Sports, non-sports) Scores.*

	N	M	SD	Levene's Test for Equality of Variance	*t*	*Df*
DASS						
Groups						
Sports group	40	25.28	14.002	.461	-3.607**	76.124
Non spots group	40	37.58	16.403			
Gender						
Males	40	34.25	18.505	.123	1.558	71.510
Females	40	28.60	13.561			
LOT-R						
Groups						
Sports group	40	29.68	3.460	.751	2.323*	77.772
Non-sports group	40	27.93	3.277			
Gender						
Males	40	28.85	3.793	.279	.128	75.405
Females	40	28.75	3.144			
BRS						
Groups						
Sports group	40	3.1380	.61563	.323	.287	72.652
Non-sports group	40	3.1030	.46608			
Gender						
Males	40	3.1070	.60857	.282	-.221	73.692
Females	40	3.1340	.47553			
AHS						
Groups						
Sports group	40	68.83	12.486	.208	-.119	74.780
Non-sports group	40	69.13	10.011			
Gender						
Males	40	68.65	10.027	.621	-.257	74.579
Females	40	69.30	12.466			

"* means $p<0.05$ and ** means $p<0.01$".

6. Discussion

The purpose of the study was to explore the effects of physical sports and exercise on the mental health of individuals' of Karachi and to determine is there any gender differences on the variable of depression, anxiety, stress, optimism, hope, resilience. For this purpose, individual from different areas, sports clubs and gyms of Karachi were approached. The data supported the first hypothesis that there is a significant difference between the mental health of individuals who take part in sports and who do not take part in sports, so the null hypothesis is rejected that there will be no difference between the mental health of individuals who take part in sports or exercise and who do not take part in sports or exercise. Exercise reduces the levels of stress hormones in your body, such as adrenaline and cortisol by increasing the production of mood lifter endorphins that lower your stress levels, makes individual feel relaxed. Positive effects of high-intensity aerobics exercise are clearer on the well-being of adolescents [29].

The scores of sports group on the variables of depression, anxiety, stress, optimism, hope and resilience indicates that they are in a good mental health. Exercise and sports do help them to be mentally and physically fit. Stress due to workload, changing environment and situation, which they encounter in their daily lives is exerted out through physical workout. Participants of sports group reported that they feel much relaxed and light after physical work out. They thought that the stress, anxiety, depression which they feel in all day long seemed to be released out through exercise, gym, sports (football, cricket, basketball, hockey), swimming, boxing, karate, yoga, aerobics. Mostly people who do meditation, aerobics and yoga on regular basis for last 6-8 months reported to be more positive, relaxed and open minded during stressful situations. These findings are similar to earlier studies. Several types of exercise are effective in changing self-perceptions, but most of the supporting research evidence clusters around aerobic exercise and resistance training, with the latter showing greater effectiveness in the short term [53. 54].

While participants of non-sports group reported and admitted that they got distressed and depressed rather easily mainly because of the changing environment, bad and worst situations of the city. They found it difficult to be relaxed in such situations. But they always hope that good will happen to them and the bad situation will be soon over. They reported to be distracted from noise pollution, anxious and stressed in novel situations and feel mental pressure. But like sports groups they were also resilient, especially, against the bad circumstances of the city and worst political situations of the country. Participants of non-sports groups who were students were very much hopeful for future and were very good GPA holders. They were very confidents about their future results and were hoping to eliminate, improve, and work harder on their weaker areas of studies. Secure attachment, experiencing positive emotions and having a purpose in life are three important psychological building blocks of resilience [55].

The data has supported the hypothesis that people who take part in physical sports and exercise will score low on depression, anxiety, stress scale (DASS) and high on optimism, hope, resilience, but it is evident from the results that there is no significant difference between hope and resilience of sports and non-sports group. Mostly participants of sports group reported that they took new and unfamiliar task enthusiastically and if they get stressed because of workload and routine, they get rid from it through sports and gym, they showed care for their personal grooming, health related issues and life style. They said they can easily find out different ways for handling problems after relaxation. A meta analytic review proved the relationship between exercise and mental health such as reduction in anxiety and depression. Researcher concluded that "exercise is related to a relief in symptoms of depression and anxiety [56]." Another research suggests that greater health related quality of life can be assured by high level of physical activity for individuals who are with diagnosed mental disorders. Quality of life was considered across eight dimensions: vitality, social functioning, mental health, role limitations related to emotional health, those related to physical health, bodily pain, physical function, and general health, whereas, participants of non-sports groups could not easily tackle their depression, anxiety, stress caused by workload. The possible reason could be multitasking, part time job along with studies, financial status [18]. Those individuals who exercised rarely were suffering more from negative impact of life events than those who exercised regularly [57].

The data did not support the hypothesis that there would be a significant difference between the score of men and women on the variables of depression, anxiety, stress, optimism, hope and resilience. So, the null hypothesis is accepted that there is no difference between the scores of men and women. This is because nowadays life has become almost equally challenging for both genders whether they are single or married students or not students. Both males and females are struggling for their future. These days both genders want to be independent, want to make their own identity, want to achieve and excel their goals and want to be professional too.

Over all, this can be said that physical sports and exercise has positive impact on mental health on individuals. It helps people relax, divert their attention from stressful, depressed, anxious situations, allows them to think aloud about possible ways to solve puzzled and complexed situations, also arouse a fighting spirit in a positive way like a sport person.

7. Conclusion

By paying attention on the results carefully it can be concluded that there is a significant difference between the mental health of individuals who take part in physical sports

and exercise and who do not because individuals of sports group are less depressed, anxious, distressed and more optimistic than individuals of non-sports group. But individuals of both groups are equally hopeful and resilient. There is no significant difference between the mental health of males and females because their scores on all scales were almost alike. Positive effects of physical sports and exercise have been seen. At this point, it is imperative to explore the role of moderating variables.

8. Limitations and Recommendations

Present study relied on self-report of physical activity whereas, more objective method of gaining information about physical activity should be used. The sample size of the research is very small, so the findings of the study cannot be generalized to the whole population of Karachi. These results are representing the findings of the citizens of Karachi only not other places of the Pakistan more research is required to explore this area of interest. In order to obtain much more authentic and generalizable results sample size of the study should must be increased and participants must be approached from all over the Pakistan. Moreover, potential sources of hope and resilience in our society should be explored.

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