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The Association Between Sports Participation and Mental Health Across the Lifespan

Shazia Tahira [1, *]

[1]Department of Psychology, Virtual University of Pakistan, Lahore, Pakistan

[*] *Corresponding author*: Department of Psychology, Virtual University of Pakistan, Lahore, Pakistan. Email: shaziatahira@gmail.com

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Abstract

Context: Mental health problems are extremely common all over the world and contribute significantly to illness and impairments. There is an acknowledged need for interventions that focus on prevention to foster mental health, and to fulfill this need, sports offer a promising way to promote mental health and avoid the beginning of a mental illness. In this study, a literature review is presented about the association between sports participation and mental health across the lifespan.

Objectives: To determine the association between sports participation and mental health and get information about the mental health benefits that can be achieved by increased participation in sports, both by the general public and professional athletes at any age.

Methods: To conduct the literature review, a search on different databases was carried out for research articles with the key terms "sports participation" and "mental health" to find their association.

Results: Participation in sports was found to be positively associated with psychological well-being and connected with fewer mental health problems. Sports participation was associated with higher self-esteem and a lower risk of anxiety, depression, and social-behavioral inhibition in adolescents. Sports participation led to reduced smoking and a type of personality that was resistant to alcohol and drug addiction. Sports club membership, high or moderately frequent sports participation, participation in outdoor sports, team sports, contact sports, and competition were all linked to fewer internalizing problems.

Conclusions: Participation in sports is beneficial to the mental health of children, adolescents, and adults. Team sports and sports clubs are especially advantageous for mental health due to social and psychological support. Creating opportunities for sports participation can lead to the promotion of mental health.

Keywords: Sports, Mental Health, Depression, Anxiety

1. Context

Mental health is a condition of well-being in which an individual recognizes his or her own potential, is able to cope with everyday stressors, can work creatively and fruitfully, and can contribute to his or her community (1). Mental health problems including schizophrenia, anxiety disorders, depressive disorders, bipolar disorders, childhood behavioral disorders, and autism spectrum disorders are extremely common all over the world and contribute significantly to illness, impairments, and premature deaths (1). One of the risk factors that may lead to lower levels of emotional well-being and the development of mental health problems including anxiety, depression, and sleep disorders is a physically inactive lifestyle (2). Physical activity is any skeletal muscle-produced movement of the body that involves energy expenditure and may take place during work, travel, domestic activities, and leisure time (3, 4). It is believed that physical activity is linked with a number of health benefits, including improved mental health (5, 6). Physical activity may lead to improved quality of life, reduced anxiety, reduced risk of depression, improved cognition, reduced risk of dementia, and improved sleep (5).

Sport is an organized and competitive type of leisure-time physical activity that requires physical effort and is played or performed in accordance with rules for enjoyment or as a profession (7, 8). As sport is a form of physical activity, and as the health advantages of physical activity become more widely known, so has the significance of sport in society for the advancement of public health (7, 9). The primary benefits of participation in sports are the result of physical activity, and it also leads to secondary benefits like personal and psychosocial development as playing sports can provide both healthy people and those with mental illness a feeling of identity, purpose, and belonging

(9). Compared to other forms of physical activity, the sport appears to score higher on scales measuring mental health benefits (10). Participation in organized sports has been shown to improve aspects of mental and social well-being, including social connection and bonding, improved social support, improved self-esteem, and higher life satisfaction, which may result in lower stress, anxiety, and depression (10). There is an acknowledged need for community mental health measures that focus on prevention and early intervention to foster mental health, and to fulfill this need, organized sports offer a promising way to promote mental health and avoid the beginning of a mental illness (11). Acknowledging the importance of how sports participation might affect mental health, in this study, a literature review is presented about the association between sports participation and mental health across the lifespan.

2. Objectives

Sports participation can be a potentially effective solution to increasing mental health problems. The objective of this study is to do a comprehensive but concise literature review to determine the association between sports participation and mental health, as this can provide information about the mental health benefits that can be achieved by increased participation in sports, both by the general public and professional athletes at any age.

3. Methods

To conduct the literature review, a search for research articles in the English language was carried out in December 2022 using the key terms "sports participation" and "mental health" in a number of databases, including Google Scholar, PubMed, and Scopus. To maintain the conciseness of the review, only published research articles from these databases were considered, excluding other sources of research literature. The articles' relevance to the key terms and the selection of original research, including cross-sectional and longitudinal studies, served as inclusion criteria that were met by a total of 27 studies that were published between 2002 and 2022. Pertinent data from each study were evaluated to determine the impact of sports participation on mental health.

4. Results and Discussion

To find the association between sports participation and mental health, a total of 27 studies were reviewed, as shown in Table 1. Samples for the studies were collected from 15 countries, including Scotland (6), Australia (12-15), Belgium (16, 17), Canada (18-22), Iran (23, 24), USA (25-27), Norway (28, 29), Denmark (30), Finland (31), Germany (32), Netherlands (33), Spain (34), England (35), Pakistan (36) and Bangladesh (37). The studies had about equal numbers of male and female participants, with the exception of a few studies, including those with solely male participants (15, 30, 31).

A positive association was found between sports participation and mental health. Sport participation was found to have a positive and significant relationship with psychological well-being and fewer symptoms of depression and anxiety at later time points (12, 17, 23). Children who participated in sports demonstrated less hyperactivity/inattention and impulsivity when compared to non-participant children (14). Participation in sports was associated with higher self-esteem and a lower risk of anxiety, depression, and social behavioral inhibition in adolescents (19, 28, 29, 32). Sports participation in childhood and adolescence was linked to improved mental health in young adulthood (20, 31). Individuals who continued team sport participation from adolescence through young adulthood reported lower stress and better coping levels than non-participants or those who stopped (21). Team sports participating peer-victimized children showed fewer externalizing problems, fewer depression symptoms and a reduction in victimization two years later when compared to non-participant victimized children (22). Participation in team sports during adolescence was significantly linked with reduced risk of current depression symptoms or future diagnosis of anxiety or depression among those with adverse childhood experiences (25). More boys than girls reported participating in physical activity and team sports, and more girls, compared to boys, reported having unhappy feelings (26). Sports participation was connected with fewer mental health and dietary problems for boys and girls (27). Participation in team sports was associated with a lower risk of psychological distress and reduced depression symptoms in adolescent females (29, 37). Sports participation led to reduced smoking and a type of personality that was resistant to alcohol and drug addiction (32, 34). Sports club membership, high or moderately frequent sports participation, participation in outdoor sports, team sports, contact sports, and competition were all linked to fewer internalizing problems (33). Sports club membership and high or moderately frequent sports participation were linked to better pro-social behavior over time, with stronger associations in girls (33).

Regular physical activity enhances mental health, and compared to inactive people, children and adults who engage more in moderate or vigorous-intensity physical activity have a reduced risk of depression (5, 38). Reduced risk

of anxiety and improvement in sleep is seen in physically active adults (5). Cognitive improvement is observed in physically active children and adults, and in all age groups, there is a lower risk of developing cognitive impairment, including Alzheimer's disease or other types of dementia in older adults (5). Improved cognition due to its impact on cognitive-behavioral factors is negatively associated with the incidence of mental health problems, including psychiatric disorders and self-reported mental health symptoms, and positively associated with psychological well-being, as indicated by notions like positive affect, happiness, and life satisfaction (39). In those having anxiety or depression, engaging in regular physical activity reduces the symptoms of anxiety and depression, while improvements in cognition are observed in those with impaired cognitive health, including patients with schizophrenia, stroke, Parkinson's disease, multiple sclerosis, and attention deficit hyperactivity disorder (5). Mood disorders, anxiety, schizophrenia, and drug abuse disorders have all been linked to a significant reduction in health-related quality of life, while, physical activity levels are linked to improved quality of life in people with mental illnesses (5, 40).

Research has shown that endogenous opioid serum concentrations, particularly beta-endorphin and beta-lipotrophin, rise in response to exercise, and these exercise-induced increases in serum-endorphin concentrations have been related to a variety of psychological and physiological alterations, including mood changes, changed pain perception, exercise-induced euphoria, and hormonal stress responses (41). According to one hypothesis, sustained rhythmic exercise, with each skeletal muscle contraction, causes an increase in the discharge of group III or A-delta mechanosensitive afferent nerve fibers, and this results in the activation of the central opioid system, causing many of the behavioral effects of exercise and a possible therapeutic role in the treatment of anxiety, depression, alcoholism, addiction, anorexia nervosa, and bulimia (42).

The U.S. Bureau of Labor Statistics estimates that 21.5 percent of Americans participated in sports and exercise every day in 2021, compared to 19.3 percent of Americans who did so daily in 2019 (43, 44). In 2019, the participation rate of men was higher (20.7%) than that of women (18%) (44). Sports participation is highest among young people and accounts for about 23 - 60% of youth physical activity (4). During the 2018 - 2019 academic year, almost 4.53 million male students and 3.4 million female students in the USA participated in high school sports (44).

The most often reported psychological and social advantages of sports participation include increased self-esteem, reduced depressive symptoms, and improved social connection; furthermore, there is widespread agreement that sports participation is associated with greater improvement in psychological and social health compared to other leisure-time physical activities (45). Participation in sports, whether non-competitive or competitive, is linked to a lower risk of mental illness (28). Compared to inactive children, children who participated in sports have a greater health-related quality of life as young adults (46). In middle-aged and older people greater than 35 years of age, sports participation is linked with various psychosocial advantages and a better quality of life (47, 48).

Although sports participation may decrease alcohol consumption and psychological symptoms, some studies show that compared to non-athlete populations, athletes have greater rates of alcohol consumption and violence, furthermore, masculinity, violent social identity, and antisocial norms associated with specific sports, younger males of color who reside in metropolitan areas and participate in competitive, team-based contact sports are all potential elements that could influence the link between sport and violence in athlete groups (34, 49, 50). Athletes also face additional mental health risks than the general population, such as concussions, identity crisis, high training loads, overtraining, difficult competitions, and a stressful lifestyle (51). Irritable episodes, increased anxiety, or depression are common mental health problems after a concussion or head injury in athletes (52). Excessively rigorous athletic training may lead to overtraining, which exhibits symptoms that are comparable to those of clinical depression, with sleep problems in 90% of instances (53, 54). The increased stigma against admitting weakness may prevent athletes from seeking mental health support, resulting in ineffective care (53).

Irrespective of any physical or mental health problem, age, or any specific kind of team sport, participating in a team sport is consistently linked to better psychological and social health, furthermore, social networking, a feeling of belonging, social communication, social-psychological support, and increased self-esteem are all identified as most common psychosocial health benefits linked with participation in team sports in different studies (55). The advantages of team sports may also be linked to how positive experiences in peer support, coaching, and skill development improve the perception of social acceptance and lead to a reduction in body dissatisfaction (56). Due to the social nature of the participation, team sports may be more effective than individual sports in terms of encouraging health and making certain that participants participate in and continue workouts, however, due to the inherent competitive aspect of team sports, caution must be exercised when using them for health objectives (55).

According to a study on Icelandic adolescents, club sports are more advantageous for mental health as com-

pared to individual or informal group sports and have a social integrative effect that is favorable for mental health, especially in urban areas (57). Youth sports clubs have great potential to become environments that promote health; hence, the youth sports club should have an encouraging and healthy atmosphere with activities tailored to the age group or developmental stage of the young people (58). Youngsters have an elevated rate of mental health issues, yet they are less likely to seek help, therefore, dependable elders in their lives, for instance, sports coaches, can make a significant difference in their mental health (59). Sports coaches may be able to help young people with their mental health through the prevention of mental health problems, promotion of mental health, and early intervention, assisting athletes who are already undergoing mental healthcare, facilitating care-seeking, and promoting team cultures that encourage athletes' mental health (60, 61).

4.1. Limitations, Strengths, and Implications

One of the limitations of this study is that, to maintain the conciseness of the study, the data from only published research articles were reviewed, although a vast reservoir of related information could be found in other sources of research literature. Another limitation is that most of the studies that were reviewed were about the younger populations, including children, adolescents, and young adults, and much less literature about middle-aged and older adults was reviewed because most of the literature that is currently available is about the younger population. One other limitation is that much fewer data about professional athletes were reviewed, as this study was more about the association between sports participation and mental health for the benefit of the general public and not exclusively athletes.

The strength of this study is that it reviewed the association between sports participation and mental health across both genders and all age groups, including children, adolescents, and adults. Along with younger adults, studies about middle-aged and older adults were also reviewed. Another strength is that, as this study pertains more to the public health benefits that can be achieved through sports, most of the studies that were reviewed were not about professional athletes but about students and the general public participating in sports. The implication of this study is that it helps determine the mental health benefits that a common person can achieve by increasing their participation in sports. Another implication is that this increased awareness of mental health benefits may lead to increased participation in sports and more mentally healthy people.

5. Conclusions

Participation in sports is beneficial to the mental health of children, adolescents, and adults alike, and can play an important role in the prevention of mental health problems and the fostering of mental health, though professional athletes may face additional mental health risks. Team sports and sports clubs are especially advantageous for mental health because they encourage social networking and a sense of belonging, which lead to social and psychological support. Additionally, motivated sports coaches can significantly help young people with their mental health. Creating sports clubs and other opportunities for sports participation, along with spreading awareness about its mental health benefits, can lead to the promotion of mental health and mentally healthy people and communities.

Footnotes

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Table 1. The Association Between Sports Participation and Mental Health

Author(s)	Study Design & Sample	Findings
Hamer et al. (6)	Cross-sectional survey of 19842 Scottish adults.	Physical activity of any kind on a daily basis was linked to a reduced risk of psychological distress. There was a dose-response relationship, with less frequent activity resulting in moderate lowering of psychological distress. Sports, walking, and domestic activities (gardening and housework) were all independently linked with reduced risk of psychological distress, with sports having the strongest effects.
Graupensperger et al. (12)	Longitudinal study of Australian participants T1 = 3956 participants, mean age = 12.41 years, T2 = 3537 participants, mean age = 14.41 years, T3 = 3089 participants, mean age = 16.46 years.	Participation in team sports was associated with reduced symptoms of anxiety and depression at later time points.
Vella et al. (13)	Two-year longitudinal study of 4042 Australian children between ages 8 and 10 years.	At 10 years, in comparison with dropouts, children who continued to participate in sports had lower incidence of psychological issues. Also, in comparison with non-participants or dropouts, organized sports participants had fewer internalizing problems.
Watson et al. (14)	Cross-sectional survey of parents of 568 Australian children (age 9 - 11 years) regarding child participation in sports and classroom behavior.	Sports participant children demonstrated less hyperactivity/inattention and less impulsivity when compared to non-participant children. There were no differences in associations based on gender.
Swann et al. (15)	Cross-sectional study of 55 Australian adolescent male basketball, football, soccer, cricket, tennis, and swimming players (aged 12 - 17).	Participants perceived sport as an interesting way to support mental health. Team sports and the presence of interest in the mental health of elite athletes were considered especially helpful. Coaches and family/parents were regarded as important sources of support.
Asztalos et al. (16)	Cross-sectional study of 1919 Flemish Belgians participants (age 20 - 65 years).	The only type of physical activity inversely related to both stress and distress was sports participation. Unemployed middle-aged adults who participated in sports were less distressed. Unemployed young adults, unemployed women, and young blue-collar workers who participated in sports were less stressed.
Marlier et al. (17)	Cross-sectional study of 414 Flemish Belgians underprivileged communities' adults (aged 18 - 56).	Participation in sports, rather than total physical activity, was linked with improved mental health.
Murphy et al. (18)	Cross-sectional study of 70,449 Canadian high school students.	When compared to non-participants, students who participated in varsity sports showed fewer anxiety and depression symptoms, independent of participation in outside of school sports. The strongest associations were found among students who engaged in both varsity sports and outside of school sports, as well as males.
Briere et al. (19)	Longitudinal study of 17550 Canadian adolescents (grade 7 - 10, mean age = 14.4 years) and 1 year later.	Sports participation resulted in less loneliness and lower social anxiety symptoms and in adolescents with higher baseline scores, resulted in much reduction in loneliness, depressive symptoms and social anxiety symptoms.
Jewett et al. (20)	Longitudinal study of 853 Canadian adolescents throughout the 5 years of secondary school and in early adulthood.	School sports participation throughout adolescence was found to be a statistically significant determinant of better self-rated mental health, lower felt stress, and reduced depressive symptoms during young adulthood.
Murray et al. (21)	Longitudinal study of 1294 Canadian adolescents during grades 7 - 11, 733 of them as young adults 3 years post-high school.	Individuals who continued team sport participation from adolescence through young adulthood reported less stress and improved coping compared to post-adolescence-dropouts or non-participants and were less likely than non-participants to have symptoms of panic disorder.
Perron et al. (22)	Longitudinal study of 1250 Canadian children followed from age 7 to 10 years.	Team sports participating peer-victimized children at the age of eight showed remarkably fewer depression symptoms, and also, significantly reduced externalizing problems, fewer depression symptoms and a reduction in victimization two years later at the age of ten, when compared to non-participant peer-victimized children. Individual sports participating peer-victimized children did not reap the same benefits.
Pourranjbar et al. (23)	Cross-sectional study of 360 Iranian medical students.	Sport participation was found to have a positive and significant association with psychological well-being and a negative association with physical complaints.
Motallebi and Noorbakhsh (24)	Cross-sectional study of 200 Iranian students. Group 1 = 100 university sports participants, mean age = 24.51. Group 2 = 100 non-participants (mean age = 22.91.	Significant differences were found between the sports participant and non-participant groups in social function, mental health, anxiety, somatic symptoms, and sleep disorders. However, there was no significant difference between the two groups in terms of depression symptoms.
Easterlin et al. (25)	9668 American participants of national longitudinal study of adolescent to adult health wave 1 and wave 4 with data on exposure to adverse childhood experiences.	Participation in team sports during adolescence was significantly linked with reduced risk of current depression symptoms and reduced risk of future diagnosis of anxiety or depression among those with adverse childhood experiences. Significant associations were present for anxiety, depression, depressive symptoms in males, and for anxiety in females.

Brosnahan et al. (26)	Cross-sectional study of 1870 American Hispanic and non-Hispanic white adolescent high school students (aged 14 - 18).	More boys than girls reported participating in physical activity and team sports, and more girls than boys admitted to feeling sad and thinking about or planning suicide. In comparison to Hispanic girls, more non-Hispanic white girls reported moderate physical activity, participation in team sports, and the absence of sad or hopeless feelings. Higher attendance and participation in physical education class, increased physical activity, and participation in at least one sports team were found to be inversely related to feelings of sadness and suicidal attempts.
Pyle et al. (27)	Cross-sectional study of 770 American high school students.	Competitive sports participation was connected with lower total risks, and fewer mental health and dietary problems for boys and girls when compared to less active students.
Breistøl et al. (28)	Cross-sectional survey of 9414 Norwegian junior high and 10,571 high school students (aged 13 - 22 years).	Sports participation in adolescence, including both competitive or non-competitive sports, is linked to less mental health problems. The negative association is more pronounced among adolescents who participate in team sports and most pronounced among competitive sports participants.
Guddal et al. (29)	Cross-sectional study of 7619 Norwegian adolescents (aged 13 - 19).	Senior high school students participated comparatively less in team sports than junior high students. Adolescents who were physically active and team sports participants had higher life satisfaction and self-esteem. Among senior high school students, a high level of physical activity was associated with a lower risk of psychological distress. Participation in team sports was associated with a lower risk of psychological distress in senior high school female students.
Pedersen et al. (30)	Cross-sectional experimental study of 72 Danish older adults (25 men and 47 women) aged 67 - 93, mean age = 80 divided in team training, resistance training, and control groups.	In comparison with the control group, participants in the team training group and resistance training group had higher psychological well-being scores and reduced anxiety and depression levels. Both training groups had high levels of motivation, but team training (team sports) participants had a higher level of satisfaction and intrinsic motivation due to social contact while engaging in the activity, while resistance training participants were more motivated by extrinsic considerations such as advantages to one's health and fitness.
Appelqvist-Schmidlechner et al. (31)	Cross-sectional study of 680 Finnish males (age 20 - 35 years).	Participation in sports at the age of 12 was linked to improved mental health in young adulthood, including improved mental well-being and reduced mental distress. Higher intensity of sports participation and the level of competitive sports in childhood were linked to reduced mental distress in adulthood.
Kirkcaldy et al. (32)	Cross-sectional survey of 1000 German adolescents (aged 14 - 18).	Regular participation in aerobic activities including sports resulted in a better self-image. Sports participation was strongly linked with an alcohol- and drug addiction-resistant personality. Physical activity was also linked to higher levels of physical and psychological well-being. Physically active adolescents had lower anxiety-depression scores and much reduced social behavioral inhibition compared to their less active peers.
Moeijes et al. (33)	Longitudinal study of fourth-grade primary school Dutch children aged 10 - 12 years. (baseline = 695 children; after 10 - 13 months = 487 children).	Sports club membership, high or moderately frequent sports participation, participation in outdoor sports, team sports, contact sports, and competition were all linked to fewer internalizing problems. Relation between increased frequency of sports participation and less internalizing problems became stronger with the increase in a child's BMI. Only boys were found to have a link between participating in team sports and having fewer internalizing problems. Sports club membership and high or moderately frequent sports participation were also linked to better pro-social behavior over time with stronger associations in girls. None of the sports participation characteristics studied were found to be linked with externalizing problems over time.
Pastor et al. (34)	Cross-sectional study of 1038 Spanish adolescents (aged 15 - 18).	Participation in sports influenced perceived health both directly and indirectly by reducing alcohol consumption and smoking, depressive symptoms, and psycho-physiological symptoms.
Downward et al. (35)	Longitudinal study of 14452 British participants (wave 4) and 14102 British participants (wave 6) of the Taking Part survey.	The structural equation modeling revealed a concurrent relationship between sport and subjective well-being.
Rauf and Umme-Haram (36)	Cross-sectional study of 80 Pakistani adults (aged 18 - 40).	Sports had a beneficial impact on mental health. Sports participants had lower Depression-Anxiety-Stress-Scale score and higher Adult-Hope-Scale, Brief-Resilience-Scale and Life-Orientation-Test-Revised scores. There was no significant difference between male and female scores.
Khan et al. (37)	Cross-sectional study of 320 Bangladeshi adolescents (aged 13 - 17).	While playing non-team sports was better only for boys' mental health, playing team sports was good for both genders' mental health and linked with reduced depression symptoms. For both boys and girls, team or non-team sports participation was positively correlated with life satisfaction.