

## **ROLE OF PHYSICAL ACTIVITY AND SPORTS IN MENTAL HEALTH OF YOUTH: A REVIEW ARTICLE**

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### **ABSTRACT:**

*Mental health disturbances are getting significant attention over time for public health concerns. Physical activity (PA) and sports are presumed to have a vigorous role in decreasing the impact of depression, anxiety, and stress and enhancing one's psychological and emotional well-being. The present systematic review was conducted to examine the role of physical activity and sports in the mental health of the young population so that recommendations for future research and therapy protocols could be made. Electronic databases including Medline, Science Direct, Psych Info, Pub med, Google Scholar, and Web of sciences were used for this review to maintain the reliability of the data. Keywords of physical activity, sports, mental health, and youth were used for data search for the last five years from 2016 to 2021. Full-length English language articles, mostly published in open-access journals were considered for the review. Based upon inclusion/exclusion criteria 20 articles were selected for the present review. Published articles both cross-sectional and longitudinal studies indicated a moderate impact of physical activity, exercise, and sports on alleviating symptoms related to depression, anxiety, stress, and substance-related problems. Moreover, physical activity and sports helped to improve social skills, positive self-image, cognitive functioning, and psychological well-being among youth. The relationship between physical activity, sports, and mental health was also determined by some of the demographic variables such as gender, education level, and socioeconomic status. Some studies also indicated an inverse relationship, especially in alcohol intake. To sum up it is concluded that there is a significant impact of physical activities and sports on the mental health of the young population. PA and sports not only decrease the already existing mental health-related issues e.g., depression, anxiety, stress, and suicidal behavior, drug use also help to maintain psychological well-being and quality of life.*

**Keywords:** Physical Education, Sports, Mental Health, Youth, students

### **Introduction:**

Physical and Mental health is related to each other, and a plethora of research could explain their relationship for decreasing

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the level of depression, stress, and anxiety and increasing individuals' self-esteem, happiness, resilience, and enhancing optimism in them. Present research helps to review all these related researches which could determine the impact of physical activity and sports on the mental health of the young population.

Adolescents and early adulthood are critical periods as during these years of development individuals are getting their autonomy, identity, and self-image. Likewise, they are also vulnerable to developing many psychological disorders as the onset of most the psychological disorders is before the age of 25 years. It may further complicate the situation with depression, anxiety, suicidal ideation, or substance-related disorders if not diagnosed early and well-treated (Blackmore, 2019; Mcmanus et al, 2019). The bio-psychosocial model suggested that adolescents and early adulthood are a period of reflective biological, psychological, and social changes which are also mediated by some of the socio-economic life conditions e.g., child neglect and abuse, poverty, parental psychological disorders, and drug use (Blackmore, 2019; Marmot et al, 2019; Orben et al, 2020). Among the affected populations' children and adolescents' percentages are 10% to 20% according to World Health Organization (2020), though its prevalence and trends could vary in different countries and cultures (Smith, 2020). Suicide which is also prevalent in many psychological disorders like depression, schizophrenia, and substance-related disorders is the third leading cause of death worldwide among adolescents aged ranging from 15 to 19 years (WHO, 2020).

According to World Health Organization (WHO, 2020), physical activity involves body movement that is produced by the skeletal muscles which energy consumes. All bodily movement including cycling, running, swimming, and working that consumes a person's energy leads to the improvement of health. Physical activity can ensure instinctively during leisure time or work-related activities and could be divided into different purposeful segments

which aimed to improve physical health and overall quality of life. Determinants of growth and development range from genetics to children's traits and behavioural patterns which are very different from the children of their age 20 years ago. The reason is most likely their sedentary lifestyle which brought a change in their phenotype. The need for physical activity and sports are evident in the present era not only to reduce the risks of physical damage in the form of heart attacks, diabetes, and obesity but it is essential for the mental health of younger generations (Milina, 2007; Teele et al, 2008). Mental health benefits of PA and sports are reported to reduce of anxiety in both state and trait, enhance higher-order brain functioning, improve sleep, and enrich adolescents' ability to control emotions (Centre for Disease Control and Prevention, 2021).

Research indicated the benefits of physical activity range from physical health to mental health and well-being, including maintaining body weight, preventing high blood pressure, risks of heart diseases, diabetes, quality of life, and emotional well-being. Regular physical activity and exercise played a vital role in reducing the impacts of some psychological disorders like depression, anxiety, and Attention Deficit and Hyperactivity Disorder (ADHD). It also helps to improve one's sleep and overall mood, sharpen one's memory and relieve stress (Robinson, Segal & Smith, 2020). Research also indicated that whatever the age, body shape, and size even a moderate level of physical activity in form of exercise and sports can give many mental health benefits like relieving stress and improving energy and quality of life. The mental toughness that is an ultimate goal to achieve through sports means diligence and conviction despite adversities or pressures (Middleton et al. 2004). It helps players to remain resilient and face all challenges with more conviction and perform well with strong physical and cognitive abilities (Crust, 2007). The Royal College of Psychiatrists recognized the importance of physical exercise in the treatment of many psychological disorders and mental health conditions through stigma against participation in sports and physical exercise is still to be shaken.

Outdoor physical activities are proven highly beneficial for reducing both trait and state anxiety scores in individuals who are involved in regular exercise and sports. Regular exercises proved a good anti-anxiety especially the physiological reactions of anxiety as increased heart rate, muscle tension, and sweating (Anderson & Shivakumar, 2013). The relationship between psychological well-being and physical activity whether planned in the form of organized sports or leisure-time physical activity has been proved with the help of a surfeit of research (Lawton et al, 2017; Penedo & Dahn, 2005; Piñeiro-Cossio et al, 2021). Regular physical activities and exercises have an impact on quality of life and well-being when compared with the results the people who are not involved in regular modes of exercise (Stubee et al, 2007). In addition, research has presented that autonomy which is a component of psychological well-being is extrapolative of enriched mental health aftermaths in people who are involved in regular leisure-time exercise and physical activities (Denovan & Macaskill, 2016).

Physical activities like regular exercise are beneficial for the brain due to their ability to stimulate the brain's reward pathways and help to release endorphins, dopamine, norepinephrine, and serotonin. Physical activities and organized sports especially in a natural environment will help to learn strategies, competitiveness, and urge to achieve goals which indirectly prevent teens' craving for drugs and make them more resistant towards any other unhealthy activities (NIDA, 2011). Teenagers and students at high school who are involved in regular exercise and sports are less involved in smoking and marijuana abuse (NIDA, 2009).

Substance use disorder in adults could be traced back to adolescents before age 18 years (McCambridge, McAlaney, & Rowe, 2011) and the need for early intervention especially during early adolescents is endorsed by many studies (Brellenthin, & Lee, 2018). Regular PA and sports have an imperative influence on both the physical and mental health of individuals and could be an important preventive measure for many health conditions (CDC,

2021). Encouraging sports and regular physical activity in early developmental age groups evidenced better physical, cognitive, and psychological health results (CDC, 2021; WHO, 2021).

Keeping in mind the tremendous benefits of physical activity and sports on the mental health of youth both children and adolescents, the present review was conducted to see the relationship between them.

### **Materials and Method:**

Contemplation of the type and extent of research perspective to be available managed to the addition of studies with cross-sectional, longitudinal research design and randomized control trials for the present review. To capture as many pertinent citations as possible, an extensive range of psychological databases was searched to ascertain studies related to the impact of physical activities and sports on the mental health of the young population. An electronic search was preferable to save time and energy. Reliable electronic sources like Science Direct, Psych Info, Med line, Pub med, Google Scholar, and Web of sciences between the years 2016-2021 were explored. Furthermore, for web page exploration numerous internet engines were searched to obtain relevant references. The terms used for searching were physical activity, sports, impact on mental health, young population, children, and adolescents. This effort resulted in 2236 citations, their potential relevance was examined, and 1415 citations were debarred as irrelevant. The full papers of the remaining 821 citations were assessed to select those studies that directly related to physical activity and sports and their effects on mental health. Further search excluded 481 studies and left with 340. To ascertain quality papers abstracts were screened and articles published in peer-reviewed journals were chosen. Every single article was studied comprehensively, and all the proclamations of the authors were judged based on the endorsement by data credibility, proven by references, only evidence-based literature was extracted. Supplementary reports

were identified from the reference lists of key manuscripts and review articles. To recapitulate the evidence from studies of different variables, design and quality was a challenging task. After screening 45 research papers that discussed the effects of physical activity and sports on the mental health of youth, 23 studies full-length articles mostly published in open-access journals and in the English language meeting the inclusion criteria were considered suitable for systematic review.

### **Results:**

For the present review, 23 studies were included based on the appropriate research design, selected sample characteristics, and required variables including depression, anxiety, physical exercises, and sports.

### **Impact of Physical Activity and Sports on Depression:**

Oguz and Oksay (2017) studied the role of sports and exercise in a cohort of elementary school-level children and concluded that those who are involved in regular sports, games, and the athletic lifestyle scored low on measures of depression. Research indicated that physical activity and taking part in organized sports increase self-esteem, and cognitive performance and decrease symptoms of depression and anxiety in children (Biddle et al, 2019).

A national survey was conducted in the United States with 6,438 adolescents to examine the relationship between the mental health of the young population and their time spent in physical activities and sports. The results indicated lower odds for mood disorders like Bipolar II and stress in general (He, Paksarian, & Merikangas, 2018). During the year 2019, a review of reviews was conducted to see the research carried out in the field of physical activity, sports, and mental health and the results found a partial causal relationship between PA, sports, and depression in children and adolescents (Bidel et al, 2019).

Physical activity and sports are proven as a source of distraction from worries and intrusive, disruptive thoughts which ultimately improve mood and reduce depression and psychosocial and personal development (Abduaziz & Muhsen, 2020). Activity scheduling which includes physical activity for at least 15 minutes could reduce the symptoms of depression and anxiety and also proved a steadfast source of intervention that produces sundry positive changes within the brain and have no side effects like medication (Clough et al, 2016).

For the alleviation of symptoms of depression, many psychotherapists include physical activities as sometimes primary and many times the secondary mode of treatment which established beneficial impacts in reducing depression and enhancing personal and psychosocial development (Malm, Jakobsson & Isaksson, 2019). Furthermore, physical activity and sports enhance social skills, self-esteem, and overall quality of life which subsequently provide adequate coping skills for depression (Abduaziz & Muhsen, 2020).

The integration of physical activities and sports with the treatment and prevention of psychological disorders could achieve better results over time as compared to just the use of medications (Pascoe & Parker, 2019; Reber et al 2016). Randomized control trials concluded that those participants who spent more time and frequently visited websites met with a larger effect on physical activities and symptoms of depression. Those who engaged with the web-based interventions and computer tailoring and its interactive features were more involved with physical activities which facilitated them to reduce their symptoms of depression. In a ten-month randomized control trial, the efficacy of yoga for feasibility, practicality, and safety was tested for bipolar depression and established a medium effect on depression and quality of life (Weinstock et al, 2016).

### **Impact of Physical Activity and Sports on Anxiety**

Stubbs et al (2017) analyzed the community-based data from the world health survey and concluded that the global prevalence of anxiety among 47 countries is 11.4%. As far as available data regarding physical activities are concerned only 38 countries reported 62.5% high, 20.2% moderate, and 17.3 % mild levels of physical activity. The countries which are involved in physical activities reported low levels of anxiety. Seventeen out of 38 countries show a significant relationship between low levels of physical activity and anxiety. Some demographics like being female, elderly, having poor social-economic status, and having less education are moderators of the direct connection between physical activity and anxiety.

Dale et al (2019) conducted an umbrella review and examined the effects of physical activity on the mental health of children and the young population. They found that regular physical exercise and organized sports activities could lower the symptoms of depression and anxiety and enhance individual physical self-perception. Psychological distress in 7619 high school students ages ranging from 13 years to 19 years was investigated regarding regular physical exercise and organized sports and it was established that both are contrariwise related to anxiety, especially in female students (Guddal et al, 2019). In another nationwide, big data, and epidemiological cross-sectional study found that regular PA and Sports reduced the level of hyperactivity and inattention and overall enhance the mental health of German children and adolescents (Ganjeh et al, 2021).

Lower Somatic anxiety levels during outdoor physical activities are also reported in a study carried out on participants aged range from 18 to 70 years (Lawton et al, 2017). In a longitudinal study, it was found that physical activity and sports can lessen depression and anxiety in adolescents but not with a high significance level as the emotional subscale of SDQ and regular exercise are inversely related to each other at the age of 12 to 13 years (Bell et al, 2019).



### **Role of Physical Activity and Sports in Drug Use:**

Eighteen cross-sectional surveys with 191 682 participants of high school students result indicated that regular exercise and sports whether it is organized or leisure time activity inversely related to the use of drugs (Veliz, Boyd & McCabe, 2016). Randomized control trial of youth college athletes who were involved in drug consumption results indicated that those athletes who were in the experimental group having mental sports programming therapy show decreasing dysfunctional thoughts, stress, and alcohol consumption (Donohue et al, 2016). Physical exercises and sports are also helpful in reducing drugs craving and drug dependence as proved by a cross-sectional study in Tehran with 1173 university students designed to examine the relationship between physical activity like sports and the use of alcohol and cigarette smoking (Ahmadabadi, 2018). A randomized control trial with patients with alcohol dependence disorder indicated that if in early recovery phases of such patients' physical exercise like aerobics is included it will decrease the level of anxiety and craving for alcohol as well as there will be a pleasant change in their mood could also be observed which ultimately contributed to relapse prevention (Brown et al, 2016).

A national survey in the United States with 6,438 adolescents age ranging from 13 to 18 years found negative effects of physical activities and sports in the form of an alcohol use disorder, binge eating, Generalized Anxiety Disorder (GAD) and Post Traumatic Stress Disorder (PTSD) (He, Paksarian, & Merikangas, 2018). A Longitudinal Study with 4023 Australian adolescents with a mean age of 12 years investigated the role of organized sports in the mental health of the young population and found a bidirectional relationship between internalizing problems like depression, stress, and anxiety and those who scored high on externalizing problems like oppositional and conduct problems reported later involvement in sports (Vella et al, 2017). A study conducted with 13318 Canadian adolescents claimed that binge drinking could be reduced in both girls and boys if they are prevented from organized sports activities (Boyes et al, 2017).

### **Impact of Physical Activity and Sports on Psychological Well-being and Quality of Life:**

School sports and physical activities are a powerful source of teaching appropriate health-related strategies and reducing risky behavioural tendencies among students and enhancing their psychological well-being (Piñeiro-Cossio et al, 2021). In a cross-sectional study, an association between physical activity levels including low, medium, and high were evaluated with the psychological well-being of students by using Ryff psychological well-being measure in a university of Nigeria, for ranging from 18 to 30 and concluded that significant positive relationship presents between physical activity and psychological well-being of students (Ugwueze, et al, 2021). Likewise, a cross-sectional survey with big data of 11,110 adolescents from ten countries in Europe was studied on measures of mental health including depression, anxiety, and psychological well-being, and physical and sports activities with low medium, and high levels. The results indicated that individuals with a medium level of physical activity scored low on anxiety and depression scales while showing increased scores on well-being measures (McMohan et al, 2017). Another cross-sectional survey with 10464 adolescents in Norway revealed that those adolescents who were moderately involved in team sports and physical activities have lower psychological distress and higher levels of self-esteem with greater life satisfaction (Guddal et al, 2019).

Improved level of mental health and quality of life is related to high levels of sports and physical activity in college students (Snedden, et al, 2019). Female students who were involved in sports and physical activities were rated high on all domains of quality of life including physical, psychological, and environmental when compared with those who self-rated low in physical activities (Kotarska et al, 2021). In another cross-sectional survey of three generations, students' their parents' and grandparents' results indicated that students scored high on physical activities and with raised scores in all domains of the quality-of-life scale (Kotarska et

al, 2021). The relationship between combat sports and martial arts with quality of life was also assessed in people with a mean age of 24 years and found that those who are involved in combat sports and martial arts, non-smokers, and non-drinkers achieved higher scores on physical, psychological, and environmental domains of quality-of-life scale (Kotarska et al, 2019). A cross-sectional survey with female students in Poland universities indicated that many demographic variables affect the direct relationship between physical activities and sports with the mental health of students. The female students who were in between 23 to 25 years of their age, employed, had a positive-natured spouse, studied physical education, and were involved more in recreational activities scored high on all domains of the Quality-of-life scale.

### **Discussion:**

The present review aimed at identifying, assessing, summarizing, and analyzing good quality articles related to the impact of PA and sports on the mental health of youth both children and adolescents. Results indicated that from a broader perspective physical activities and sports have a positive impact on the mental health of youth. Many studies indicated an inverse relationship between PA, organized sports, and depression (Abduaziz & Muhsen, 2020; Bidel et al, 2019; He, Paksarian, & Merikangas, 2018; McMohan et al, 2017). Some studies also highlighted the role of PA and sports along with traditional psychotherapies and medications for the treatment of depression (Malm, Jakobsson & Isaksson, 2019; Pascoe & Parker, 2019). Children and adolescents who spent more time in computer-based development programs for physical activity also reported a reduction in depression (Reber et al, 2016; Weinstock et al, 2016).

Physical activity and sports are a potential source of reducing both state and trait anxiety in youth (Bell et al, 2019; Dale et al, 2019; Guddal et al, 2019; Lawton et al, 2017; McMohan et al, 2017; Stubbs et al, 2017). PA is also helpful in reducing the symptoms of restlessness, hyperactivity, and inattention in teens

who are already diagnosed with ADHD (Ganjeh et al. 2021). In addition to a direct relationship between PA, sports and anxiety were moderated by age, gender, and socioeconomic status (Bell et al, 2019; Stubbs et al 2017).

Studies conducted in the field of drug use and the role of physical activities concluded both positive and negative effects of drugs (Brellenthin & Lee, 2018). Some studies' results are in favour of PA and sports for reducing chances of illicit drug use and cigarette smoking (Ahmadabadi, 2018; Donohue et al, 2016; Veliz, Boyd & McCabe, 2016). While others found an increased rate of alcohol use disorder or at least binge drinking in young individuals who are involved in a team and more competitive sports (Boyes et al, 2017; He, Paksarian, & Merikangas, 2018; Vella et al, 2017).

High self-esteem, life satisfaction, improved quality of life, and psychological well-being are some positive outcomes related to involvement in PA and sports, especially with the young population (Guddal et al, 2019; Piñeiro-Cossio et al, 2021; Ugwueze, et al, 2021). High school, College, and university students are also get benefited from the PA and sports activities along with their curricular activities and scored high on all domains of quality of life including physical, psychological environmental, and social (Kotarska et al, 2021; Kotarska et al, 2019).

To be more conclusive about the impact of physical activities and sports on the mental health of youth more research-based studies are required as many problems could be identified with the present literature review. Studies were conducted in different countries and different cities on varied periods with different data sets. Most of the studies were cross-sectional which gave compromised results. Methodological issues of the articles included wide variation in the operational definition of PA, sports, and mental health, inconsistent measurement tools of physical activity, sports, and mental health. Some studies used self-report measures for PA and mental health. There is always a problem of subjectivity, social desirability, and response bias with self-report

measures (Adams et al, 2005). Some quantify the time durations for sports though the level of physical involvement and time is different for different sports. Type of sports whether competitive, social or leisure, team or individual, and the level of physical involvement high, medium, or low relevant to mental health varies in different studies. Some articles reported specific measures for specific disorders like depression, generalized anxiety disorder, substance use disorder other measures of mental health in general. Many confounding variables in the mentioned studies could reduce the generalizability and external validity of the review.

### **Directions for Future Research:**

Most of the research included in the present review investigated the direct impact and relationship of PA and sport on mental health, psychological well-being, and quality of life of the young population. Further research should be taken into account the indirect effects and research for most potential, moderators or mediators in between the present found relationships. With strong methodology, standardized assessment tools, and randomized control trials results will be more authentic and conclusive. The use of technology in the planning and execution of PA and sports will be beneficial. Outcome-based studies could be planned to design and implement artificial intelligence in the field of physical education, physical activity, and sports both organized and leisure time.

Future researchers should consider objective measures of PA, sports, and mental health. Direct observations, parents, teachers, and peers' accounts, use of digital gadgets for time duration spent in physical activity and sports could resolve many problems of response bias and social desirability. More longitudinal and randomized control trials.

According to CDC (2021) children and adolescents require a minimum of 60 minutes of physical activity and muscle-building involve in climbing, pushing, or jumping for three days a week in maintaining an appropriate level of physical and mental health.

Awareness-based programs and research studies could be planned to spread the knowledge that how present sedentary behaviours in school and at home raise health problems both physical and mental.

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