IJFANS INTERNATIONAL JOURNAL OF FOOD AND NUTRITIONAL SCIENCES
ISSN PRINT 2319 1775 Online 2320 7876
 Journal Volume 11, S.Iss 06, 2022

Exploring the Impact of Sports Participation on the Health Aspect of Women Athletes

Shalu Sinha (Research Scholar)
(Department of Development Studies, Central University of South Bihar)
Mob- 7042732767
Mail. shalu786sinha@gmail.com
Samapika Mohapatra (Associate Professor)
(Department of Development Studies, Central University of South Bihar)

Abstract

The relationship between sports participation and the health outcomes of women athletes is intricate and multifaceted, influenced by factors like the type of sport, competition level, individual traits, and sociocultural context. This research aims to identify the key health domains of female athletes which have been significantly impacted by their participation in sports. By using secondary literature, the present paper could identify a few specific health domains of female athletes such as their physical fitness, mental health, lifestyle choices, and overall quality of life and explore the impact of their sports participation on it. Further, the present research intends to provide insights into the unique health challenges female athletes face due to their participation. The findings of the study underline the multifaceted benefits of sports participation for female athletes, encompassing improvements in their physical health, mental well-being, social outcomes, subjective well-being, self-esteem, and body image. These results show the positive impact of sports engagement on women athletes' overall health and holistic development.

Keywords: Sports, female athletes, Physical Health, Mental Wellbeing, Khelo India

Introduction

"Studying the health aspect of women athletes' participation in sports is crucial due to the unique physiological differences between men and women, such as women's body composition, hormonal fluctuations, and menstrual cycles etc. For optimal health and performance, we must address the specific energy and fluid needs of female athletes. Micronutrient deficiencies, like

ISSN PRINT 2319 1775 Online 2320 7876
 Journal Volume 11, S.Iss 06, 2022

iron, vitamin D, and calcium, are common in female athletes, highlighting the importance of proper nutrition intake and supplementation in their day-to-day lives. Research specific to the health aspects of female athletes is lacking, leading to potential suboptimal recommendations. Therefore, understanding women's physiology, menstrual patterns, and nutrient requirements is essential for designing effective nutrition plans tailored to female athletes (Sattar et al., 2020). "The impact of self-esteem and body image on sports participation of female athletes is significant and can affect their overall health. Female athletes should pay attention to their nutritional intake to prevent issues like Relative Energy Deficiency in Sport (RED-S). Low energy availability (EA) can lead to various health problems and should be monitored closely. Female athletes are encouraged to consult sports dietitians for personalised nutrition plans. The female athlete triad is a well-known issue in female athlete health, but there is a lack of research specific to female athletes, highlighting the need for more studies in this area (Holtzman & Ackerman, 2021; Sattar et al., 2020)

Literature Review

Existing studies highlight various female athletes' health domains and their potential impact on sports participation. Research indicates that elite female athletes often face musculoskeletal issues like hip/groin, knee, foot/ankle injuries, and low back pain, impacting their long-term health and quality of life (Cooper et al., 2021). Additionally, reproductive health problems, such as the female athlete triad, amenorrhea, and endocrine disruptors, pose risks to professional sports women's reproductive function (Tsyhanenko et al., 2022). Recommendations have been made to categorise female athlete health problems across the lifespan, including menstrual health, mental health, and sports environments, to enhance injury and illness prevention strategies (Bahr et al., 2020). Studies also suggest that increased access to high school athletic opportunities, as seen through Title IX, can lead to improved mental health, reduced obesity rates, and lower smoking rates in women later in life (Callison & Lowen, 2022).

(Badola, 2021) highlighted the important role sport and physical activity play in the socio-emotional development, physical fitness, and health of girls and women, and identified barriers that prevent access to physical activity opportunities for everyone as Existing studies show disparities in access to sports for girls and women of colour and those from working-class backgrounds, impacting their health and participation opportunities. Heavy menstrual bleeding

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

(HMB) is prevalent in female athletes, impacting exercise performance and iron deficiency. Intravenous iron repletion can improve functional exercise capacity in iron-deficient exercising women. According to Bruinvels et al. (2018), Heavy menstrual bleeding (HMB) is prevalent in female athletes, impacting their exercise performance and iron deficiency. Intravenous iron repletion can improve functional exercise capacity in iron-deficient exercising women. According to (Tsyhanenko et al., 2022) Professional women athletes face reproductive health risks due to high physical demands, including the female athlete triad energy deficits, endocrine disruptors, and hyperandrogenism, impacting sports participation.

The female athlete triad, as described by Karen Birch in BMJ (2005), consists of three interrelated disorders: osteoporosis, disordered eating, and menstrual disorders. This syndrome affects female athletes and can have detrimental effects on both performance and health. The three corners of the triad are interconnected through psychological and physiological mechanisms. Psychological pressures to maintain a low body mass for optimal performance can lead to a high volume of training and low energy intake, affecting the endocrinological control of the menstrual cycle. This disruption can result in amenorrhea, leading to decreased estrogen production and subsequently low bone mineral density, increasing the risk of osteoporosis. The components of the female athlete triad are energy imbalance with or without an eating disorder, menstrual disturbances, and decreased bone mineral density with or without osteoporosis, all of which are interconnected and can have serious long-term health consequences.

(Reid et al., 2000) shows that sport-based interventions can effectively target health outcomes such as gender-based violence, HIV prevention, reproductive health, and child marriage among women and girls. By engaging in sports activities, females can benefit from improved physical fitness, enhanced mental health, and increased social support, leading to better overall health and well-being. Sport-based interventions have the potential to address health equity issues by providing opportunities for women and girls to participate in physical activities, access health education, and develop life skills through sports engagement. These interventions contribute to reducing disparities in health outcomes and promoting gender equity by empowering females to take control of their health and fitness. Flatz A. et al., (2016) Sport-based interventions have the potential to address health equity issues by providing opportunities for women and girls to

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

participate in physical activities, access health education, and develop life skills through sports engagement. These interventions contribute to reducing disparities in health outcomes and promoting gender equity by empowering females to take control of their health and fitness.

Sport-based interventions play a crucial role in empowering women and girls by addressing various aspects of their well-being. These interventions not only contribute to physical health but also nurture leadership qualities by equipping females with teamwork, communication, and decision-making abilities, enhancing their capacity to lead effectively and inspire others, foster positive body image, and enhance self-esteem, thereby promoting holistic development and overall success (Collumbien et al., 2019). Kwauk (2022) examines the gender transformative potential of sport-based life skills programs by exploring the skills that are being targeted, especially for girls' empowerment, by the sport for development (SFD) community. Additionally, sport-based programs for individuals with severe mental disorders have demonstrated improvements in physical health, personal functioning, and quality of life, highlighting the broader benefits of such interventions. Participation in sports provides a platform for women and girls to cultivate resilience, confidence, and a sense of achievement, challenging stereotypes and building self-efficacy both on and off the field. Moreover, engagement in sports promotes a positive body image by emphasising abilities and strengths over appearance, fostering a healthy relationship with one's body and boosting self-confidence. Through setting and achieving goals, overcoming challenges, and experiencing success in sports, females enhance their self-esteem, developing a sense of accomplishment and pride. The research underscores the profound impact of sports activities on the holistic development and well-being of females.

The relationship between female sports participation and long-term health-related quality of life (HRQoL) has been a subject of research interest. Studies have shown that sports participation among female athletes is associated with predominantly positive health outcomes. The study by (Mohsen et al., 2013) shed light on the potential benefits of engaging in public sports for women's quality of life, providing valuable insights into how Participation in public sports positively correlates with the quality of life for women, impacting parameters like health status, joy, and emotional well-being in women. While engaging in sports activities, female athletes are more likely to exercise regularly, perceive themselves in good health, and have lower rates of

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

smoking and recreational drug use compared to non-athletes. Additionally, female athletes report lower incidences of hypertension, high cholesterol, and obesity. However, participation in sports is also linked to decreased mobility and increased anxiety in quality-of-life scores. This suggests that while sports involvement offers numerous health benefits, it may also present challenges in certain aspects of HRQoL. Overall, the research indicates a complex relationship between female sports participation and long-term health-related quality of life, highlighting the need for further investigation into the nuanced effects of sports engagement on female athletes' well-being (Moeijes et al., 2019; Stracciolini et al., 2020).

The female athlete triad: factors contributing to health problems in female athletes

The female athlete triad, as highlighted by(Barrack & Van Loan, 2011; George, 2011; House et al., 2013; Javed et al., 2013; Malara & Lutosławska, 2016; Mountjoy et al., 2020; Nose-Ogura, 2021; Petrović, 2020; Tenforde et al., 2016; Weiss Kelly et al., 2016), involves the interplay of three components: energy availability, menstrual function, and bone health. Insufficient energy intake or excessive energy expenditure, as noted by contributing factors identified in the research, can predispose female athletes to low energy availability, impacting their overall health. This imbalance can lead to menstrual irregularities, hormonal imbalances, and compromised bone health, increasing the risk of injuries, stress fractures, and long-term health consequences. The research emphasises the importance of early diagnosis and a multidisciplinary approach to treatment, involving healthcare professionals, coaches, and family members. Additionally, the sources underscore the significance of prevention strategies to minimise the complications associated with the female athlete triad, emphasising the need for optimising energy availability, vitamin D, and calcium intake to support bone health and overall well-being in female athletes. Understanding and addressing these factors are crucial in promoting the health and well-being of female athletes, emphasising the importance of proper nutrition, adequate energy intake, and holistic care to mitigate the risks associated with the female athlete triad.

Research Objectives

1. To Identify key health domains being affected by female athletes' sports participation.
2. To investigate and understand the impact of sports participation on the health of female athletes.

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

The research aims to investigate and understand the impact of sports participation on the health of female athletes. This study seeks to explore how engaging in sports activities influences various aspects of female athletes' health, encompassing physical well-being, mental health, lifestyle choices, and overall quality of life. By examining the relationship between sports participation and health outcomes, the research intends to identify the potential benefits and challenges that female athletes may encounter as a result of their athletic involvement.

The study will delve into the association between sports participation and long-term health outcomes among female athletes, considering factors such as exercise habits, general health perceptions, smoking and alcohol consumption, comorbidities, and specific health conditions like hypertension, high cholesterol, and obesity. Additionally, the research will explore how sports participation impacts mobility, anxiety levels, and quality of life scores in female athletes. By comparing female athletes to non-athletes and adjusting for relevant variables, the study aims to provide insights into the overall health profile of female athletes and how sports engagement may influence their well-being over time.

Furthermore, the research will address the need to understand how cultural attitudes, societal norms, and physiological differences unique to women impact their health within the sports context. By examining the specific challenges faced by female athletes, such as menstrual cycle variations, hormonal fluctuations, and anatomical differences, the study aims to highlight the importance of tailored training programmes, nutrition plans, injury prevention strategies, and mental health support for female athletes. Overall, the present research seeks to contribute to a deeper understanding of how sports participation can affect the health and well-being of female athletes, offering valuable insights for promoting their holistic development and performance in sports.

Discussion & Analysis:

Bahr et al., (2020); Randell et al., (2021) identified key health domains impacting female athletes, are as follows: -

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Nutrition and Energy Balance: Proper nutrition is vital for supporting energy needs, optimising performance, and maintaining overall health. Issues like inadequate caloric intake, disordered eating habits, and nutrient deficiencies can hinder performance and recovery.

Menstrual Health and Reproductive Function: Menstrual health significantly influences female athletes' well-being, with irregular cycles and hormonal imbalances potentially impacting bone and cardiovascular health.

Bone Health: Female athletes are at risk of osteoporosis due to factors like low energy availability and inadequate bone-loading activities. Promoting bone health through nutrition and exercise is crucial for injury prevention.

Cardiovascular Health: Unique cardiovascular challenges may arise for female athletes, necessitating attention to menstrual cycle-related changes and long-term effects of intensive training.

Mental Health: Female athletes face mental health challenges such as stress and eating disorders. Access to mental health resources and support networks is essential for psychological well-being.

Injury Prevention and Rehabilitation: Specific injuries like ACL tears and stress fractures are common among female athletes, emphasizing the importance of proper training techniques and recovery strategies.

Social Support and Identity: Positive social interactions and support networks are vital for motivation and confidence in female athletes, contributing to overall well-being.

Sleep and Recovery: Quality sleep and recovery are crucial for optimal performance. Balancing training with other commitments and managing stress is the key for adequate rest.

Safety and Injury Risk: Female athletes face sport-specific safety concerns like concussions and overuse injuries, necessitating proper safety protocols and injury prevention strategies.

Long Term Health and Wellbeing: Monitoring factors like bone density, cardiovascular health, and mental well-being throughout an athlete's career is essential for promoting lifelong health and wellbeing.

In conclusion, addressing these key health domains through comprehensive support systems and proactive interventions is vital for enhancing the health, performance, and longevity of female athletes in sports.

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Impact of sports participation on female athletes' physical and mental health

Participation in sports has a significant impact on the physical and mental well-being of women athletes. The existing studies show that increased athletic opportunities lead to improved health outcomes, including reduced BMI (Body Mass Index), lower smoking rates, lower rates of obesity, and decreased likelihood of a diabetes diagnosis. Additionally, engaging in physical activity through sports can result in improved dietary habits, quality sleep, decreased risk for diseases like breast cancer and osteoporosis, and enhanced socio-emotional development(Samira & Hilmi, 2017). Additionally, engaging in sports, especially team sports, is associated with better mental health outcomes, including higher self-esteem, lower levels of depression, anxiety, and stress, improved social outcomes, and a sense of belonging in adult populations (Andersen et al., 2019; Graupensperger et al., 2021). However, female athletes face gender-specific stressors like exposure to violence, pay disparities, under-representation in the media, and challenges related to family planning and motherhood, which can impact their mental health and wellbeing (Pascoe et al., 2022). Understanding the psychological factors like resilience, mindfulness, anxiety, depression, disordered eating, and social media effects is crucial for optimising female athletes' performance, injury risk management, and successful recovery (Herrero et al., 2021).

Reproductive health in female athletes, the rationale and possibility of hormonal contraception use, as well as the role of licit hormonal agent use in reproductive health maintenance and restoration are key health domains affecting female athletes' health (Dzhemlikhanova et al., 2019). Heather et al(2021)quantify the health status of elite female athletes, and understand socio-cultural factors influencing that status, including demographic, health and athletic performance history, training load, contraceptive use, sport-specific appearance and performance pressures, and communication barriers. Athletes' eating, sleeping, substance use, and aggressive behaviours may provide insight into their mental health functioning, and aggressive behaviours were significantly associated with symptoms of psychological distress and stress in both males and females(De Souza et al., 2021; Matthew Hawkey et al., 2017).

Pugh et al.(2022) discuss localised issues including the Gastrointestinal (GI) structure, function, and microbiome of males and females, discuss GI-related symptoms experienced by athletes,

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

highlight the differences in incidence between males and females and discuss contributing factors.

Randell et al. (2021) investigated the risks and benefits of an elite women's soccer career in five health domains: general, musculoskeletal, reproductive endocrinology, post-concussion, and mental. While Bahr et al. (2020) identified ten key health domains affecting female athletes' health. They are like menstrual and gynaecological health preconception, pregnancy, postpartum, menopause, breast health, pelvic floor health, breastfeeding, mental health, and sports environments.

Indian Experience of Khelo India Scheme in promoting women's health through sports participation

Sports programmes like the Khelo India Scheme play a crucial role in promoting women's health through sports participation by providing opportunities for female athletes to engage in physical activity, develop skills, and enhance their overall well-being. The Khelo India Scheme, as highlighted in the sources, aims to revive the sports culture in India and build a strong framework for all sports played in the country. By encouraging women's participation in sports through initiatives like the "Sports for Women" component, the scheme not only promotes physical fitness but also fosters leadership skills, teamwork, and strategic thinking among female athletes. Additionally, the programme focuses on identifying and developing talent, providing financial assistance, and creating a supportive ecosystem for women in sports. Through initiatives like the Khelo India Scheme, women are empowered to lead active and healthy lifestyles, contributing to their holistic development and well-being. The *Khelo India Scheme* aims to promote sports for women and has an annual budget of 82 million USD, The Indian government has made efforts to enhance women's participation in sports.

Conclusion

The relationship between sports participation and the health outcomes of women athletes is intricate and multifaceted, influenced by factors like the type of sport, competition level, individual traits, and socio-cultural context. Engaging in sports not only provides physical health benefits such as improved cardiovascular health, muscular strength, and weight management but it also enhances mental well-being by reducing the level of depression and stress and improves

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

the self-esteem of the female athletes. However, sports participation can impact bone health, menstrual health, and injury risk, necessitating proper injury prevention strategies and attention to hormonal balance. Long-term health benefits include lower chronic disease rates and improved quality of life, but addressing issues like burnout and disordered eating behaviours is crucial for sustained well-being. Sports also offer social and emotional benefits, fostering camaraderie, support, and personal growth among female athletes. Overall, managing risks and promoting healthy training practices are essential for maximising the positive impact of sports on women's health outcomes.

Promoting physical activity among women is crucial for their overall health and well-being. In countries like India, cultural values and traditions often create barriers to women's participation in sports and physical activities. These barriers include societal norms and a lack of safe spaces for physical activity which restricts women's engagement in sports. To address these challenges, several key strategies may be taken into account. First, it's important to emphasize the health benefits of physical activity for women by countering resistance and misconceptions and by creating safe and inclusive environments where women feel comfortable participating in sports which is very essential. Providing support and encouragement for women and girls to engage in physical activities can help break down cultural barriers and empower women to prioritize their health. Leading by example by actively participating in sports can challenge cultural norms and inspire others to support women's involvement. Advocating for equal opportunities for women in sports is vital to address systemic barriers and uphold their right to health. By implementing these strategies, communities can empower women to lead healthier lives and overcome cultural barriers to physical activity.

Reference:

Andersen, M. H., Ottesen, L., & Thing, L. F. (2019). The social and psychological health outcomes of team sport participation in adults: An integrative review of research. *Scandinavian Journal of Public Health, 47*(8), 832–850. https://doi.org/10.1177/1403494818791405

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Badola, S. (2021). Breaking Two Glass Ceilings: The Influence of Physical Activity Barriers on Racial and Gender Disparities for African American Women. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3940569

Bahr, R., Clarsen, B., Derman, W., Dvorak, J., Emery, C. A., Finch, C. F., Hägglund, M., Junge, A., Kemp, S., Khan, K. M., Marshall, S. W., Meeuwisse, W., Mountjoy, M., Orchard, J. W., Pluim, B., Quarrie, K. L., Reider, B., Schwellnus, M., Soligard, T., … Chamari, K. (2020). International Olympic Committee Consensus Statement: Methods for Recording and Reporting of Epidemiological Data on Injury and Illness in Sports 2020 (Including the STROBE Extension for Sports Injury and Illness Surveillance (STROBE-SIIS)). *Orthopaedic Journal of Sports Medicine*, *8*(2), 232596712090290. https://doi.org/10.1177/2325967120902908

Barrack, M. T., & Van Loan, M. D. (2011). Proper nutrition can prevent negative health outcomes in young female athletes. *California Agriculture*, *65*(3), 124–129. https://doi.org/10.3733/ca.v065n03p124

Bruinvels G, Burden R, Brown N, Richards T, Pedlar C. The Prevalence and Impact of Heavy Menstrual Bleeding (Menorrhagia) in Elite and Non-Elite Athletes. PLoS One. 2016 Feb 22;11(2):e0149881. doi: 10.1371/journal.pone.0149881. PMID: 26901873; PMCID: PMC4763330.

Callison, K., & Lowen, A. (2022). The long-run effects of adolescent athletic participation on women's health. *Economics & Human Biology*, *44*, 101087. https://doi.org/10.1016/j.ehb.2021.101087

BMJ 2005; 330 doi: https://doi.org/10.1136/bmj.330.7485.244 (Published 27 January 2005) Cite this as: *BMJ* 2005;330:244

ISSN PRINT 2319 1775 Online 2320 7876
 Journal Volume 11, S.Iss 06, 2022

Collumbien, M., Das, M., Bankar, S., Cislaghi, B., Heise, L., & Verma, R. K. (2019). Practice-based insights in developing and implementing a sport-based programme for girls. *Development in Practice*, *29*(1), 53–64. https://doi.org/10.1080/09614524.2018.1520810

Cooper, D. J., Batt, M. E., O'Hanlon, M. S., & Palmer, D. (2021). A Cross-Sectional Study of Retired Great British Olympians (Berlin 1936–Sochi 2014): Olympic Career Injuries, Joint Health in Later Life, and Reasons for Retirement from Olympic Sport. *Sports Medicine - Open*, *7*(1), 54. https://doi.org/10.1186/s40798-021-00339-1

De Souza, N. L., Esopenko, C., Conway, F. N., Todaro, S. M., & Buckman, J. F. (2021). Patterns of health behaviors affecting mental health in collegiate athletes. *Journal of American College Health*, *69*(5), 495–502. https://doi.org/10.1080/07448481.2019.1682591

Dzhemlikhanova, L. Kh., Niauri, D. A., Safaryan, G. Kh., & Gzgzyan, A. M. (2019). Women's professional sports: Reproductive health, hormonal contraception, doping issues. *Journal of Obstetrics and Women's Diseases*, *68*(2), 87–94. https://doi.org/10.17816/JOWD68287-94

Flatz A, Pfeifer N, Radtke T, Kriemler S, Klerings I, Wolfenden L, von Elm E.Interventions implemented through sporting organisations for promoting healthy behaviour or improving health outcomes. Cochrane Database of Systematic Reviews 2016, Issue 5. Art. No.: CD012170. DOI: 10.1002/14651858.CD012170.

George, C. (2011). The female athlete triad: A current concepts review. *South African Journal of Sports Medicine*, *23*(2). https://doi.org/10.17159/2078-516X/2011/v23i2a543

Georgie Emma Kate, B. (2018). *Women's health in sport: The prevalence and impact of heavy menstrual bleeding and iron deficiency* [Doctoral thesis, UCL (University College London)]. UCL Discovery.

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Graupensperger, S., Sutcliffe, J., & Vella, S. A. (2021). Prospective Associations between Sport Participation and Indices of Mental Health across Adolescence. *Journal of Youth and Adolescence*, *50*(7), 1450–1463. https://doi.org/10.1007/s10964-021-01416-0

Heather, A. K., Thorpe, H., Ogilvie, M., Sims, S. T., Beable, S., Milsom, S., Schofield, K. L., Coleman, L., & Hamilton, B. (2021). Biological and Socio-Cultural Factors Have the Potential to Influence the Health and Performance of Elite Female Athletes: A Cross Sectional Survey of 219 Elite Female Athletes in Aotearoa New Zealand. *Frontiers in Sports and Active Living*, *3*, 601420. https://doi.org/10.3389/fspor.2021.601420

Herrero, C. P., Jejurikar, N., & Carter, C. W. (2021). The psychology of the female athlete: How mental health and wellness mediate sports performance, injury and recovery. *Annals of Joint*, *6*, 38–38. https://doi.org/10.21037/aoj-20-53

Holtzman, B., & Ackerman, K. E. (2021). Recommendations and Nutritional Considerations for Female Athletes: Health and Performance. *Sports Medicine*, *51*(S1), 43–57. https://doi.org/10.1007/s40279-021-01508-8

House, S., Loud, K., & Shubkin, C. (2013). Female athlete triad for the primary care pediatrician. *Current Opinion in Pediatrics*, *25*(6), 755–761. https://doi.org/10.1097/MOP.0000000000000033

Javed, A., Tebben, P. J., Fischer, P. R., & Lteif, A. N. (2013). Female Athlete Triad and Its Components: Toward Improved Screening and Management. *Mayo Clinic Proceedings*, *88*(9), 996–1009. https://doi.org/10.1016/j.mayocp.2013.07.001

Kwauk, C. T. (2022). Empowering Girls Through Sport: A Gender Transformative Approach to Life Skills? In J. DeJaeghere & E. Murphy-Graham (Eds.), *Life Skills Education for*

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Youth (Vol. 5, pp. 91–111). Springer International Publishing. https://doi.org/10.1007/978-3-030-85214-6_5

Malara, M., & Lutosławska, G. (2016). Female athletes and health. *Biomedical Human Kinetics*, *8*(1), 83–87. https://doi.org/10.1515/bhk-2016-0012

Matthew Hawkey, Jennifer L. Volberding, Tyler Tapps, & Christy Tapps. (2017). The Effectiveness of the Female Athlete Triad in Identifying Athletes' Potential Risk of Long Term Health Consequences. *Journal of Sports Science*, *5*(3). https://doi.org/10.17265/2332-7839/2017.03.001

Moeijes, J., Van Busschbach, J. T., Bosscher, R. J., & Twisk, J. W. R. (2019). Sports participation and health-related quality of life: A longitudinal observational study in children. *Quality of Life Research*, *28*(9), 2453–2469. https://doi.org/10.1007/s11136-019-02219-4

Mohsen, S., Azade, J., & Sadati. (2013). *Relationship between participation in public sports and quality of life among northeast Tehran women.*

Mountjoy, M., Thomas, A., & Levesque, J. (2020). The Female Triathlete. In S. Migliorini (Ed.), *Triathlon Medicine* (pp. 207–223). Springer International Publishing. https://doi.org/10.1007/978-3-030-22357-1_15

Nair, U. S., & Eapen, N. R. (2021). Women and sport in India. In *Women and sport in Asia*. Routledge.

Nose-Ogura, S. (2021). Advancement in female sports medicine and preventive medicine. *Journal of Obstetrics and Gynaecology Research*, *47*(2), 476–485. https://doi.org/10.1111/jog.14523

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Pascoe, M., Pankowiak, A., Woessner, M., Brockett, C. L., Hanlon, C., Spaaij, R., Robertson, S., McLachlan, F., & Parker, A. (2022). Gender-specific psychosocial stressors influencing mental health among women elite and semielite athletes: A narrative review. *British Journal of Sports Medicine*, *56*(23), 1381–1387. https://doi.org/10.1136/bjsports-2022-105540

Petrović, I. (2020). Does the female athlete triad really exist? *Facta Universitatis, Series: Physical Education and Sport*, *1*, 037. https://doi.org/10.22190/FUPES191019005P

Pugh, J. N., Lydon, K. M., O'Donovan, C. M., O'Sullivan, O., & Madigan, S. M. (2022). More than a gut feeling: What is the role of the gastrointestinal tract in female athlete health? *European Journal of Sport Science*, *22*(5), 755–764. https://doi.org/10.1080/17461391.2021.1921853

Randell, R. K., Clifford, T., Drust, B., Moss, S. L., Unnithan, V. B., De Ste Croix, M. B. A., Datson, N., Martin, D., Mayho, H., Carter, J. M., & Rollo, I. (2021). Physiological Characteristics of Female Soccer Players and Health and Performance Considerations: A Narrative Review. *Sports Medicine*, *51*(7), 1377–1399. https://doi.org/10.1007/s40279-021-01458-1

Reid, C., Dyck, L., McKay, H., & Frisby, W. (2000). *The health benefits of physical activity for girls and women: Literature review and recommendations for future research and policy*. British Columbia Centre of Excellence for Women's Health.

Samira, O., & Hilmi, J. (2017). The Role of Physical Activities in Women Well Being. *Creative Education*, *08*(14), 2325–2331. https://doi.org/10.4236/ce.2017.814159

ISSN PRINT 2319 1775 Online 2320 7876
, Journal Volume 11, S.Iss 06, 2022

Sattar, S., Khan, Dr. S., & Iqbal, S. (2020). Impact of Self-Esteem and Body Image on Sports Participation of Female Athletes. *THE SKY-International Journal of Physical Education and Sports Sciences (IJPESS)*, *1*, 65–80. https://doi.org/10.51846/the-sky.v4i1.816

Stracciolini, A., Amar-Dolan, L., Howell, D. R., Alex, T., Berkner, P., Sandstrom, N. J., Peluso, M., Kurtz, M., Mannix, R., & Meehan, W. P. (2020). Female Sport Participation Effect on Long-Term Health-Related Quality of Life. *Clinical Journal of Sport Medicine*, *30*(6), 526–532. https://doi.org/10.1097/JSM.0000000000000645

Tenforde, A. S., Barrack, M. T., Nattiv, A., & Fredericson, M. (2016). Parallels with the Female Athlete Triad in Male Athletes. *Sports Medicine*, *46*(2), 171–182. https://doi.org/10.1007/s40279-015-0411-y

Tsyhanenko, O. I., Pershehuba, Y. V., Bohdanovych, L. V., & Skliarova, N. A. (2022). Potential danger of the negative impact of professional women's sports on the reproductive function of sportswomen: Literature review. *REPRODUCTIVE ENDOCRINOLOGY*, *65*, 122–127. https://doi.org/10.18370/2309-4117.2022.65.122-127

Weiss Kelly, A. K., Hecht, S., COUNCIL ON SPORTS MEDICINE AND FITNESS, Brenner, J. S., LaBella, C. R., Brooks, M. A., Diamond, A., Hennrikus, W., LaBotz, M., Logan, K., Loud, K. J., Moffatt, K. A., Nemeth, B., & Pengel, B. (2016). The Female Athlete Triad. *Pediatrics*, *138*(2), e20160922. https://doi.org/10.1542/peds.2016-0922