



Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/13657
DOI URL: <http://dx.doi.org/10.21474/IJAR01/13657>



RESEARCH ARTICLE

The Role of Social Physique Anxiety on Exercise Participation Among the Nigerian Youth

Ejeh Veronica

Department of Physical and Health Education Kogi State College of Education, Ankpa.

Manuscript Info

Manuscript History

Received: 31 August 2021

Final Accepted: 30 September 2021

Published: October 2021

Key words:-

SPA, Exercise Participation, Youth, Sedentary Lifestyle

Abstract

Good health is an essential aspect of human well-being and overall lifestyle. Attention must be given to actions capable of maintaining good health and well-being. Thus, participating in regular exercise is an integral aspect of health-promoting behavior. However, it is observed that despite the health benefits associated with exercise participation, most individuals still live a sedentary lifestyle, especially the youth. The primary purpose of this study was to investigate the role of social physique anxiety (SPA) on exercise participation among Nigerian youth. One hundred and twenty-eight youths randomly selected from tertiary institutions in Kogi State, Nigeria, participated in the study. The participants completed a self-report measure assessing SPA and participation in exercise. A simple regression model was adopted to test the primary assumption of the study. The result of the investigation revealed a positive interaction between SPA and physical activity. Thus, the study concludes that social physique anxiety is an essential determinant of exercise participation among the youth.

Copy Right, IJAR, 2021, All rights reserved.

Introduction:-

Health is an essential component of general well-being and overall lifestyle (Meenapriya et al., 2018). Thus, health maintenance is a priority in the sustenance of well-being (Tariman et al., 2016). Perhaps, physical activity is a health maintenance strategy that contributes positively to a person's healthy lifestyle. The health benefits associated with consistent physical activity and aerobic exercise are undisputed and extensive in the literature (Elmagd, 2016; Fiuza-Luces et al., 2018; Gleeson, 2007; Grasdalsmoen et al., 2020; Herbert et al., 2020; Herting & Chu, 2017; Kamphuis et al., 2007; Ling & Rönn, 2014; Schobersberger, 2013; Wang et al., 2011; Yang & Kwon, 2020). For instance, research suggests that regular exercise is an essential intervention in chronic diseases and disabilities (Anderson & Durstine, 2019; Durstine et al., 2013). Relatedly, regular exercise has been widely found to decrease cardiovascular risks (Ali et al., 2015; Crane & Wallace, 2007; Newby et al., 2020; Oliveira et al., 2018; Sylvia et al., 2020). In the musculoskeletal system, regular exercise has been implicated in its increased functional capacity to withstand stress (Nawrocka et al., 2014; Topp et al., 2002) and quantified by the contraction of skeletal muscles increases energy consumption (Miko et al., 2020).

In addition, empirical evidence indicates a link between regular physical exercise and mental health in young people (Biddle & Asare, 2011; Camero et al., 2012; Dos Santos et al., 2021; Rodriguez-Ayllon et al., 2019), including self-esteem (Calfas & Taylor, 2016; Haugen et al., 2013; Schmalz et al., 2007; Uchôa et al., 2019; Zamani Sani et al., 2016), academic performance (Basnet & Basnet, 2017; Fritz et al., 2020; Kayani et al., 2018; Pandolfo et al., 2018; Sember et al., 2019), and social well-being (Li & Zizzi, 2018; Lubans et al., 2012; Papaioannou et al., 2020).

Corresponding Author:- Ejeh Veronica

Address:- Department of Physical and Health Education Kogi State College of Education, Ankpa.

Smedegaard et al., 2016). World Health Organization (WHO) contends that regular physical activities significantly contribute to the mitigation of certain non-communicable diseases, including hypertension, overweight, and obesity. It is linked to enhanced mental health, postpone the onset of dementia, and improved quality of life and well-being (WHO, 2018). Some researchers have highlighted the recommendations of WHO relating to the required guideline for adult participation in regular physical exercise (Bull et al., 2020; Okely et al., 2021).

Conversely, despite the benefits accredited to regular physical activity, it is observed that most people within the youth stage do not regularly engage in physical exercise, thereby leading to a much-reported decline in health and wellness. There is enough evidence that sedentary lifestyle is one of the significant health problems worldwide (Uchôa et al., 2019). The World Health Organization identified physical inactivity as the fourth leading risk factor for global mortality, accounting for 6% of all deaths globally in its report of 2010 (WHO, 2010). Sedentary behavior has been linked to many chronic diseases, including mental comorbidities, systemic hypertension, metabolic dysregulation, cancer, coronary heart disease, type 2 diabetes, breast and colon cancers, and shortened life expectancy (De Rezende et al., 2015; Kim, 2020; La Vecchia et al., 2012; Lee et al., 2012).

Several factors have been reported as predictor variables in regular exercise engagement in Nigeria. These include certain demographic variables and perceived personal, social, and environmental factors (Adegoke & Oyeyemi, 2011; Anjali & Sabharwal, 2018; Awotidebe et al., 2014). However, the present study is concerned with social physique anxiety as an antecedent of exercise participation among the youth.

Exercise is predominantly a domain that is inherently social and evaluative (Sabiston et al., 2014). Consequently, body physique and functionality are given greater attention. Thus, the domain of exercise engagement fosters a great deal of positive and negative emotional experiences. The concept of social physique anxiety (SPA) has been widely associated with exercise behavior (Crawford & Eklund, 2016; Eklund & Bianco, 2000; Ersoz, 2016; Haase et al., 2007; Sicilia et al., 2014). Social physique anxiety refers to the subjective affective state that reflects concern about how others are evaluating one's body. SPA may be an essential predictor of physical activity because it may affect exercise cognitions, attitudes, and behaviors (Hausenblas et al., 2004). Research indicates that people who strongly identify themselves as exercisers and endorse an increased SPA level may be at risk for developing exercise dependence (Cook et al., 2015).

Anxiety means worry, apprehension, or feeling uneasy. Social physique anxiety is a special kind of anxiety that reflects the uneasiness experienced when a person believes that others are evaluating and judging their body, especially in a social situation such as exercising. People experience social physique anxiety when working out at a fitness center, wearing a swimsuit on the beach, or even standing up in front of a group giving a presentation. Young people, including adolescents and even children, tend to be more anxious about their bodybuilding and appearance than older adults. Evidence abounds that suggest that people with SPA problems tend to have body shape and size dissatisfaction, problematic eating behavior, and a stronger desire to avoid exercising in public. Thus, this study aims to investigate the variation in regular exercise participation among Nigerian youth based on SPA. Accordingly, the study hypothesized that social physique anxiety would predict regular exercise among Nigerian youth

Method:-

The study was conducted in Kogi State, Nigeria, between July and September 2021. The participants included males and females within the age range of 20-40 years, considered the youth age. The participants were mainly recruited from public tertiary institutions in the Kogi state. The participants were approached with the assistant of departmental leaders and research assistants and asked to participate in the study. However, the purpose of the study was explained to them, and they were equally informed that participation in the survey is voluntary. In the end, only those who consented were given the study questionnaire. In all, 136 questionnaires were distributed, and in return, 128 was received. Thus, the remaining eight copies were wrongly filled. Consequently, the one hundred and twenty-eight (128) correctly filled questionnaires was used for the study

Measure:-

Exercise engagement was measured using a developed Personal Exercise Engagement Scale. The 10-item scale was designed to measure the overall attitudes of the youth toward regular exercise. The Likert-type scale was validated following a pilot study, and Cronbach alpha 0.78 reliability coefficient was obtained. A higher score indicates high exercise engagement.

SPA was assessed with the Social Physique Anxiety Scale (SPAS). The instrument consists of seven items (e.g., "I am sometimes annoyed because I think others are negatively judging my weight or physical fitness"). The scale is scored on a Likert scale ranging from 1 (never) to 5 (always). Higher scores are related to symptoms of social physique anxiety, except for Item 5, which is redacted inversely (e.g., "I feel comfortable about how others appraise my body"). Cronbach alpha 0.81 reliability coefficient was recorded for the scale. A higher score shows high social physique anxiety.

Result:-

A simple linear regression model was employed to test the central hypothesis of the study. The analysis conducted on the data established a positive correlation between the variables (SPA and exercise participation). Thus, SPA statistically predicted exercise participation among the youth at $F(1, 126) = 3.231$, $p > 0.00$. More so, the adjusted R^2 indicates that SPA accounted for the observed 63.2% of the variation in youth's exercise participation.

Table 1:- Table showing the linear regression result on the effect of SPA on exercise participation among the youth.

	B	95% CI for B		SEB	βR^2	t	Sig
		LL	UL				
.632							
Constant	1.571.53	1.68	.056	35.34	.000		
SPA	-.176	-.375	.019	.098-.174	-5.97.000		

Note. SPA= Social Physique Anxiety; B = Unstandardized regression coefficient; CI = Confident Interval; LL = Lower Limit; UL = Upper Limit; SEB = Standardized error of the coefficient; β = Standardized coefficient; R^2 = Coefficient of determination, $\Delta R = Adjusted R^2$. * $P > 0.000$

Discussion:-

The current study aimed to determine the influence of social physique anxiety on exercise participation among a sample of Nigerian youth. The study was guided by a single assumption that SPA would significantly predict exercise participation among the youth. Based on this assumption, a simple linear regression analysis was performed on the data. Consequently, the outcome of the investigation revealed that the independent variable significantly predicted exercise participation among the samples. Based on the result, the central hypothesis of the study was affirmed. In other words, the study successfully provided a research direction implicating SPA as an essential determinant of exercise engagement. The study's finding is aligned with the previous results (Alpkaya, 2019; Cook et al., 2015), which correlated SPA with physical activities. SPA is a powerful psychological phenomenon that could significantly influence a person's motivation, attitude, interest, and behavior. Thus, this understanding explains to a large extent the study's outcome, in that the perception of a youth relating to the thought of others evaluation and assessment might be prohibiting most youth from participating in an exercise in the social context.

Meanwhile, SPA, on the other hand, might motivate some youth to engage in exercise. In this case, either to maintain physique or to show off. However, the central knowledge in this regard is that SPA is an essential variable in physical exercise.

Conclusion:-

The present study aimed to examine exercise participation based on social physique anxiety. Data for the study was collected from individuals within the youth stage of development who were assembled from public tertiary institutions in Kogi State, Nigeria. It was assumed that SPA would determine exercise participation among the samples. Hence, the result of the regression model deployed to test the hypothesis linked exercise participation with SPA. Thus, the study concludes that SPA is a positive predictor of exercise participation. Although the data collection was primarily self-reported, and the samples may not reflect a reliable criterion for generalization. The present study contributed to the exercise literature by identifying SPA as an essential variable in youth participation in exercise. The study recommends that future researchers endeavor to explore the mediating and moderating variables in the SPA-exercise participation relationship.

References:-

1. Adegoke, B. O. A., & Oyeyemi, A. L. (2011). Physical inactivity in young Nigerian adults: Prevalence and socio-demographic correlates. *Journal of Physical Activity and Health*, 8(8). <https://doi.org/10.1123/jpah.8.8.1135>
2. Ali, M., Yusuf, H. I., Stahmer, J., & Rahlenbeck, S. I. (2015). Cardiovascular Risk Factors and Physical Activity Among University Students in Somaliland. *Journal of Community Health*, 40(2). <https://doi.org/10.1007/s10900-014-9938-3>
3. Alpkaya, U. (2019). The effect of physical activity on social physique anxiety and academic achievement in the 8th-grade secondary school students. *Universal Journal of Educational Research*, 7(3). <https://doi.org/10.13189/ujer.2019.070309>
4. Anderson, E., & Durstine, J. L. (2019). Physical activity, exercise, and chronic diseases: A brief review. In *Sports Medicine and Health Science* (Vol. 1, Issue 1). <https://doi.org/10.1016/j.smhs.2019.08.006>
5. Anjali, & Sabharwal, M. (2018). Perceived barriers of young adults for participation in physical activity. *Current Research in Nutrition and Food Science*, 6(2). <https://doi.org/10.12944/CRNFSJ.6.2.18>
6. Awotidebe, T. O., Adeboyin, R. A., Adegbesan, O. A., Babalola, J. F., Olukaju, I. O., Mbada, Chidozie, E., Chirwa, E., & Bisiriyu, L. A. (2014). Psychosocial Correlates of Physical Activity Participation among Nigerian University Students. *International Journal of Sports Science*, 4(6).
7. Basnet, R. M., & Basnet, L. M. (2017). Association of physical activity and academic performance in schoolchildren of Nepal. *Baltic Journal of Sport and Health Sciences*, 3(106). <https://doi.org/10.33607/bjshs.v3i106.29>
8. Biddle, S. J. H., & Asare, M. (2011). Physical activity and mental health in children and adolescents: A review of reviews. In *British Journal of Sports Medicine* (Vol. 45, Issue 11). <https://doi.org/10.1136/bjsports-2011-090185>
9. Bull, F. C., Al-Ansari, S. S., Biddle, S., Borodulin, K., Buman, M. P., Cardon, G., Carty, C., Chaput, J. P., Chastin, S., Chou, R., Dempsey, P. C., Dipietro, L., Ekelund, U., Firth, J., Friedenreich, C. M., Garcia, L., Gichu, M., Jago, R., Katzmarzyk, P. T., ... Willumsen, J. F. (2020). World Health Organization 2020 guidelines on physical activity and sedentary behavior. In *British Journal of Sports Medicine* (Vol. 54, Issue 24). <https://doi.org/10.1136/bjsports-2020-102955>
10. Calfas, K. J., & Taylor, W. C. (2016). Effects of Physical Activity on Psychological Variables in Adolescents. *Pediatric Exercise Science*, 6(4). <https://doi.org/10.1123/pes.6.4.406>
11. Camero, M., Hobbs, C., Stringer, M., Branscum, P., & Taylor, E. L. (2012). A review of physical activity interventions on determinants of mental health in children and adolescents. *International Journal of Mental Health Promotion*, 14(4). <https://doi.org/10.1080/14623730.2012.752901>
12. Cook, B., Karr, T. M., Zunker, C., Mitchell, J. E., Thompson, R., Sherman, R., Erickson, A., Cao, L., & Crosby, R. D. (2015). The influence of exercise identity and social physique anxiety on exercise dependence. *Journal of Behavioral Addictions*, 4(3). <https://doi.org/10.1556/2006.4.2015.020>
13. Crane, P. B., & Wallace, D. C. (2007). Cardiovascular risks and physical activity in middle-aged and elderly African American women. *Journal of Cardiovascular Nursing*, 22(4). <https://doi.org/10.1097/01.JCN.0000278960.82877.91>
14. Crawford, S., & Eklund, R. C. (2016). Social Physique Anxiety, Reasons for Exercise, and Attitudes toward Exercise Settings. *Journal of Sport and Exercise Psychology*, 16(1). <https://doi.org/10.1123/jsep.16.1.70>
15. De Rezende, L. F. M., Rabacow, F. M., Viscondi, J. Y. K., Luiz, O. D. C., Matsudo, V. K. R., & Lee, I. M. (2015). Effect of physical inactivity on major non-communicable diseases and life expectancy in Brazil. *Journal of Physical Activity and Health*, 12(3). <https://doi.org/10.1123/jpah.2013-0241>
16. Dos Santos, I. K., de Medeiros, R. C. da S. C., de Medeiros, J. A., de Almeida-Neto, P. F., de Sena, D. C. S., Cobucci, R. N., Oliveira, R. S., Cabral, B. G. de A. T., & Dantas, P. M. S. (2021). Active video games for improving mental health and physical fitness—an alternative for children and adolescents during social isolation: An overview. In *International Journal of Environmental Research and Public Health* (Vol. 18, Issue 4). <https://doi.org/10.3390/ijerph18041641>
17. Durstine, J. L., Gordon, B., Wang, Z., & Luo, X. (2013). Chronic disease and the link to physical activity. In *Journal of Sport and Health Science* (Vol. 2, Issue 1). <https://doi.org/10.1016/j.jshs.2012.07.009>
18. Eklund, R. C., & Bianco, T. (2000). Social Physique Anxiety and Physical Activity among Adolescents. *Reclaiming Children and Youth*, 9(3).
19. Elmagd, M. A. (2016). Benefits need and importance of daily exercise. ~ 22 ~ *International Journal of Physical Education, Sports, and Health*, 3(5).

20. Ersoz, G. (2016). An examination of motivational regulations, dispositional flow and social physique anxiety among college students for exercise: a self-determination theory approach. *College Student Journal*.
21. Fiuza-Luces, C., Santos-Lozano, A., Joyner, M., Carrera-Bastos, P., Picazo, O., Zugaza, J. L., Izquierdo, M., Ruilope, L. M., & Lucia, A. (2018). Exercise benefits in cardiovascular disease: beyond attenuation of traditional risk factors. In *Nature Reviews Cardiology* (Vol. 15, Issue 12). <https://doi.org/10.1038/s41569-018-0065-1>
22. Fritz, J., Cöster, M. E., Rosengren, B. E., Karlsson, C., & Karlsson, M. K. (2020). Daily school physical activity improves academic performance. *Sports*, 8(6). <https://doi.org/10.3390/sports8060083>
23. Gleeson, M. (2007). Immune function in sport and exercise. In *Journal of Applied Physiology* (Vol. 103, Issue 2). <https://doi.org/10.1152/jappphysiol.00008.2007>
24. Grasdalsmoen, M., Engdahl, B., Fjeld, M. K., Steingrimsdóttir, Ó. A., Nielsen, C. S., Nielsen, C. S., Eriksen, H. R., Lønning, K. J., Lønning, K. J., & Sivertsen, B. (2020). Physical exercise and chronic pain in university students. *PLoS ONE*, 15(6). <https://doi.org/10.1371/journal.pone.0235419>
25. Haase, A. M., Mountford, V., & Waller, G. (2007). Understanding the link between body checking cognitions and behaviors: The role of social physique anxiety. *International Journal of Eating Disorders*, 40(3). <https://doi.org/10.1002/eat.20356>
26. Haugen, T., Ommundsen, Y., & Seiler, S. (2013). The relationship between physical activity and physical self-esteem in adolescents: The role of physical fitness indices. In *Pediatric Exercise Science* (Vol. 25, Issue 1). <https://doi.org/10.1123/pes.25.1.138>
27. Hausenblas, H. A., Brewer, B. W., & Van Raalte, J. L. (2004). Self-Presentation and Exercise. In *Journal of Applied Sport Psychology* (Vol. 16, Issue 1). <https://doi.org/10.1080/10413200490260026>
28. Herbert, C., Meixner, F., Wiebking, C., & Gilg, V. (2020). Regular Physical Activity, Short-Term Exercise, Mental Health, and Well-Being Among University Students: The Results of an Online and a Laboratory Study. *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.00509>
29. Herting, M. M., & Chu, X. (2017). Exercise, cognition, and the adolescent brain. In *Birth Defects Research* (Vol. 109, Issue 20). <https://doi.org/10.1002/bdr2.1178>
30. Kamphuis, M. H., Geerlings, M. I., Tijhuis, M. A. R., Giampaoli, S., Nissinen, A., Grobbee, D. E., & Kromhout, D. (2007). Physical inactivity, depression, and risk of cardiovascular mortality. *Medicine and Science in Sports and Exercise*, 39(10). <https://doi.org/10.1249/mss.0b013e3180f6109f>
31. Kayani, S., Kiyani, T., Wang, J., Sánchez, M. L. Z., Kayani, S., & Qurban, H. (2018). Physical activity and academic performance: The mediating effect of self-esteem and depression. *Sustainability (Switzerland)*, 10(10). <https://doi.org/10.3390/su10103633>
32. Kim, Y. (2020). The effects of a physical inactivity-related health risk message intervention on changes in risk perceptions and physical activity in middle-aged women. *Journal of Women and Aging*, 32(5). <https://doi.org/10.1080/08952841.2019.1607678>
33. La Vecchia, C., Gallus, S., & Garattini, S. (2012). Effects of physical inactivity on non-communicable diseases. In *The Lancet* (Vol. 380, Issue 9853). [https://doi.org/10.1016/S0140-6736\(12\)61872-8](https://doi.org/10.1016/S0140-6736(12)61872-8)
34. Lee, I. M., Shiroma, E. J., Lobelo, F., Puska, P., Blair, S. N., Katzmarzyk, P. T., Alkandari, J. R., Andersen, L. B., Bauman, A. E., Brownson, R. C., Bull, F. C., Craig, C. L., Ekelund, U., Goenka, S., Guthold, R., Hallal, P. C., Haskell, W. L., Heath, G. W., Inoue, S., ... Wells, J. C. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of disease burden and life expectancy. *The Lancet*, 380(9838). [https://doi.org/10.1016/S0140-6736\(12\)61031-9](https://doi.org/10.1016/S0140-6736(12)61031-9)
35. Li, S., & Zizzi, S. (2018). A case study of international students' social adjustment, friendship development, and physical activity. *Journal of International Students*, 8(1). <https://doi.org/10.5281/zenodo.1134317>
36. Ling, C., & Rönn, T. (2014). Epigenetic adaptation to regular exercise in humans. In *Drug Discovery Today* (Vol. 19, Issue 7). <https://doi.org/10.1016/j.drudis.2014.03.006>
37. Lubans, D. R., Plotnikoff, R. C., & Lubans, N. J. (2012). Review: A systematic review of the impact of physical activity programs on social and emotional well-being in at-risk youth. In *Child and Adolescent Mental Health* (Vol. 17, Issue 1). <https://doi.org/10.1111/j.1475-3588.2011.00623.x>
38. Meenapriya, M., Gayathri, R., & Priya, V. (2018). Effect of regular exercises and health benefits among college students. *Drug Invention Today*, 10(7).
39. Miko, H. C., Zillmann, N., Ring-Dimitriou, S., Dorner, T. E., Titze, S., & Bauer, R. (2020). Effects of physical activity on health. *Gesundheitswesen, Supplement*, 82. <https://doi.org/10.1055/a-1217-0549>
40. Nawrocka, A., Mynarski, W., Powerska, A., Grabara, M., Groffik, D., & Borek, Z. (2014). Health-oriented physical activity in the prevention of musculoskeletal disorders among young Polish musicians. *International Journal of Occupational Medicine and Environmental Health*, 27(1). <https://doi.org/10.2478/s13382-014-0224-5>

41. Newby, K., Varnes, L., Yorke, E., Meisel, S. F., & Fisher, A. (2020). Illness Risk Representation beliefs underlying adolescents' cardiovascular disease risk appraisals and the preventative role of physical activity. *British Journal of Health Psychology*, 25(1). <https://doi.org/10.1111/bjhp.12400>
42. Okely, A. D., Kontsevaya, A., Ng, J., & Abdeta, C. (2021). 2020 WHO guidelines on physical activity and sedentary behavior. In *Sports Medicine and Health Science*. <https://doi.org/10.1016/j.smhs.2021.05.001>
43. Oliveira, R. S., Barker, A. R., & Williams, C. A. (2018). Cardiac Autonomic Function, Cardiovascular Risk and Physical Activity in Adolescents. *International Journal of Sports Medicine*, 39(2). <https://doi.org/10.1055/s-0043-118850>
44. Pandolfo, K., Minuzzi, T., Azambuja, C., & Dos Santos, D. (2018). Physical activity and academic performance in high school students. *Revista Brasileira de Atividade Física & Saúde*, 22(5). <https://doi.org/10.12820/rbafs.v.22n5p486-492>
45. Papaioannou, A. G., Schinke, R. J., Chang, Y. K., Kim, Y. H., & Duda, J. L. (2020). Physical activity, health, and well-being in an imposed social distanced world. In *International Journal of Sport and Exercise Psychology* (Vol. 18, Issue 4). <https://doi.org/10.1080/1612197X.2020.1773195>
46. Rodriguez-Ayllon, M., Cadenas-Sánchez, C., Estévez-López, F., Muñoz, N. E., Mora-Gonzalez, J., Migueles, J. H., Molina-García, P., Henriksson, H., Mena-Molina, A., Martínez-Vizcaíno, V., Catena, A., Löf, M., Erickson, K. I., Lubans, D. R., Ortega, F. B., & Esteban-Cornejo, I. (2019). Role of Physical Activity and Sedentary Behavior in the Mental Health of Preschoolers, Children and Adolescents: A Systematic Review and Meta-Analysis. In *Sports Medicine* (Vol. 49, Issue 9). <https://doi.org/10.1007/s40279-019-01099-5>
47. Sabiston, C. M., Pila, E., Pinsonnault-Bilodeau, G., & Cox, A. E. (2014). Social physique anxiety experiences in physical activity: a comprehensive synthesis of research studies focused on measurement, theory, and predictors and outcomes. *International Review of Sport and Exercise Psychology*, 7(1). <https://doi.org/10.1080/1750984X.2014.904392>
48. Schmalz, D. L., Deane, G. D., Birch, L. L., & Davison, K. K. (2007). A Longitudinal Assessment of the Links Between Physical Activity and Self-Esteem in Early Adolescent Non-Hispanic Females. *Journal of Adolescent Health*, 41(6). <https://doi.org/10.1016/j.jadohealth.2007.07.001>
49. Schobersberger, W. (2013). Regular physical exercise: Evidence for health benefits in OSA patients? In *Sleep and Breathing* (Vol. 17, Issue 3). <https://doi.org/10.1007/s11325-013-0808-5>
50. Sember, V., Kovač, M., Starc, G., & Jurak, G. (2019). Physical activity and academic performance in Slovenian schoolchildren. *Didactica Slovenica - Pedagogoska Obzorja*, 34(3).
51. Sicilia, A., Sáenz-Alvarez, P., González-Cutre, D., & Ferriz, R. (2014). Exercise motivation and social physique anxiety in adolescents. *Psychologica Belgica*, 54(1). <https://doi.org/10.5334/pb.ai>
52. Smedegaard, S., Christiansen, L. B., Lund-Cramer, P., Bredahl, T., & Skovgaard, T. (2016). Improving the well-being of children and youths: a randomized multicomponent, school-based, physical activity intervention. *BMC Public Health*, 16(1). <https://doi.org/10.1186/s12889-016-3794-2>
53. Sylvia, L., Kuperberg, M., Amado, S., Rakhilin, M., & Nierenberg, A. (2020). Cardiovascular risk and physical activity in bipolar disorder. *Bipolar Disorders*, 22.
54. Tariman, J. D., Gleason, C., Faiman, B., Doss, D., Catamero, D., Bishop-Royse, J., Katz, M., Kurtin, S., Moran, D., & Lonial, S. (2016). Lack of health maintenance examinations and risk in myeloma patients. *Cancer Medicine*, 5(7). <https://doi.org/10.1002/cam4.716>
55. Topp, R., Ditmyer, M., King, K., Doherty, K., & Hornyak, J. (2002). The effect of bed rest and potential of prehabilitation on patients in the intensive care unit. In *AACN clinical issues* (Vol. 13, Issue 2). <https://doi.org/10.1097/00044067-200205000-00011>
56. Uchôa, F. N., Lustosa, R. P., Andrade, J. C., Daniele, T. da C., Deana, N. F., Aranha, Á. M., & Alves, N. (2019). Impact of physical activity on the body mass index and self-esteem of adolescents. *Motricidade*, 15(2-3). <https://doi.org/10.6063/motricidade.19472>
57. Wang, C. Y., Yeh, C. J., Wang, C. W., Wang, C. F., & Lin, Y. L. (2011). The health benefits following regular ongoing exercise lifestyle in independent community-dwelling older Taiwanese adults. *Australasian Journal on Ageing*, 30(1). <https://doi.org/10.1111/j.1741-6612.2010.00441.x>
58. WHO. (2018). Global action plan on physical activity 2018–2030: more active people for a healthier world. Geneva: World Health Organization; 2018. License: CC BY-NC-SA 3.0 IG. In Who.
59. World Health Organization. Global recommendations on physical activity for health. Geneva: World Health Organization, 2010.
60. Yang, Y. R., & Kwon, K. S. (2020). Potential Roles of Exercise-Induced Plasma Metabolites Linking Exercise to Health Benefits. In *Frontiers in Physiology* (Vol. 11). <https://doi.org/10.3389/fphys.2020.602748>
61. Zamani Sani, S. H., Fathirezai, Z., Brand, S., Pühse, U., Holsboer-Trachsler, E., Gerber, M., & Talepasand, S. (2016). Physical activity and self-esteem: Testing direct and indirect relationships associated with psychological and physical mechanisms. *Neuropsychiatric Disease and Treatment*, 12. <https://doi.org/10.2147/NDT.S116811>