Journal of Exercise Science & Physiotherapy Vol.19 No.2 (July - December) 2023
I2OR Impact Factor = 7.505 ISSN: 0973-2020 (Print) ISSN: 2454-6089 (Online)

JOURNAL OF EXERCISE SCIENCE AND PHYSIOTHERAPY
Indexed, Peer Reviewed, Referred

Comparative analysis of Fitness and Health Status among Boys of Government and Private Schools in North Bengal

Arindam Ghosh and Lokendrabahadur Kathayat

Abstract

Aim: The aim of the study was to compare the fitness status and health status of government and private school students in Alipurduar district during the post-pandemic period. **Materials and Methods**:200 school boys (aged 12 to 16 years old) were selected from various government and private schools in the said district during the academic year 2022-23. BMI with weight, height and age from personal profile; and performance profile from speed, explosive leg strength and agility have been selected as variables. Independent t-test for comparison between government and private schools using SPSS (version 20), and the significance level for hypothesis testing was two-tailed test (0.05).**Results**: According to the findings of the study, there was a statistical significant difference in all the selected variables between students attending government and private schools. **Conclusion**: it was concluded that government school boys were ahead in terms of performance but lagging behind in terms of health status compared to private school boys.

Arindam Ghosh
PhD Scholar
Department of Physical Education, RIMT University, Sirhind Side, Mandi Gobindgarh, (Punjab), India
E-mail: arindam.ruban@gmail.com

Lokendrabahadur Kathayat
Assistant Professor
Department of Physical Education, RIMT University, Sirhind Side, Mandi Gobindgarh, (Punjab), India
Email: lukskathayat@gmail.com

Key words: Body composition, Physical performance, School boys, Post pandemic

DOI: 10.18376/jesp/2023/v19/i2/223653

Introduction

Numerous studies worldwide have shown the significance of physical fitness across age groups from childhood to adolescence (Ishiko, 1978; Sloan, 1966; Pohndof and Campbell, 1961). School is the most important place to achieve physical fitness during childhood because a child's overall personality and behavioural tendencies are greatly shaped in school (Kulkarni, et al., 2002), ensured

that students who live under strict disciplinary conditions; those with regular physical activity and uniform eating habits were more physically fitter than those who stayed at home or in a quiet environment (Singh, et al., 2017). However, school physical education programs can play a key role in bringing about better early childhood physical fitness outcomes (Epstein, et al., 1992). The phenomenal nature of physical fitness is best understood in terms of its components, such as speed, strength, agility, body composition, etc. (Kumar and Singh, 2012). Measurement of which has emerged as an indicator of the health status of children and youth (Ruiz, et al., 2008). Because ongoing fitness assessment allows it to be monitored over time and identify trends in different population groups (Ferrar, et al., 2021; Niessner, et al., 2021; Hoffman, et al., 2020; Lang, et al., 2019; Rojer, et al., 2020; Zhou, et al., 2020; Tomkinson, et al., 2019; Van Oostrom, et al., 2019). The Covid-19 pandemic is caused by the SARS-CoV-2 virus and subsequent preventive actions (lockdowns, lockouts, social distancing, quarantines, etc.) to reduce the spread of infectious diseases have modified population habits, (Perez, et al., 2021; Rossi, et al., 2021; Zhang, et al., 2021; Fernandez-Rio, et al., 2020; Gutierrez-Santamaria, et al., 2020; Orellana-Pecino, et al., 2020) as well as causing various physical, psychological, physiological and social effects (Ezzatvar, et al., 2021; Hsu, et al., 2021; Martin, et al., 2021; Villafaina, et al., 2021; Wang, et al., 2021; Xiang, et al., 2021). In these circumstances, it is natural that physical activity levels may decrease and sedentary behaviour may change during childhood and adolescence (Moore, et al., 2021; Cardon, et al., 2020; Stevens, et al., 2020). Due to the transition from traditional face-to-face education to online education, the motor component activity developed especially in physical education classes decreases (Xiang, et al., 2017). In this regard, some extracurricular physical and sports activities were excluded during the first pandemic year, therefore reducing physical activity opportunities for children and adolescents (Rua-Alonso, et al., 2022). Furthermore, dietary habits have changed during this period, with increased consumption in general and higher consumption of ultra-processed products in particular (Zhang, et al., 2021; Orellana-Pecino, et al., 2020; Rolland, et al., 2020). Therefore, it can be expected that the population's physical fitness and health condition may be negatively affected by the pandemic restrictions, which in turn has a detrimental effect on health status.The primary aim of the study was to compare the fitness status and health status of students attending government and private schools.Second, this study examines the current status of selected sub-variables from the fitness profile and anthropometric profile between government and private schools in one of the most underdeveloped districts of North Bengal after the post-pandemic period. Based on the findings, the researcher hypothesizes- (i) There will be a significant difference in BMI and fitness variables between government and private schools in Alipurduar district of West Bengal. (ii) There will be no significant difference in anthropometric variables between government and private school going students in Alipurduar district of West Bengal. Many studies have been conducted in school students on anthropometric and fitness variables. However, the objective of the present study was to compare selected anthropometric and fitness components between government and private school going students of a particular district of West Bengal.

Materials & Methods

A sample of 200 school boys (aged 12 to 16 years old) were selected from various government and private schools in the said district during the academic year 2022-23. BMI with weight, height and age from personal profile; and performance profile from speed, explosive leg strength and agility have been selected as variables. Independent t-test for comparison between government and private schools using SPSS (version 20), and the significance level for hypothesis testing was two-tailed test (0.05).

Results

Table 1 and 2 shows sub-variables of anthropometric profile as well as personal data such as (i) age, (ii) height, (iii) weight, (iv) BMI, and the sub-variables of fitness profile such as (a) speed, (b) agility, (c) explosive leg strength showing descriptive scores as mean, SD, MD, SEM, t-value etc. Therefore, Table 1 and 2 highlights for variables of fitness and health status between government and private school students. It observed that the t-test values for all the selected sub-variables (age, height, weight, BMI, speed, agility and explosive leg strength) were significant as the p value (age: 6.669, height: 4.681, weight: 2.697, BMI: 9.841, speed: 7.720, agility: 4.987, and explosive leg strength: 6.215) less than 0.05. According to the data analysis presented by Table 1 and 2, the p-value of all the sub-variables are less than 0.05, hence there is a significant difference between the two groups in selected sub-variables of their fitness and health status. Thus, all variables of population equality of the two groups rejected the null hypothesis, and it may be concluded that the selected variables of fitness and health status in both groups are significantly different. Furthermore, the results at the 0.05 level of test hypothesis indicated significant differences between government and private school students in selected sub-variables of fitness (speed, agility and explosive leg strength) and health status (age, height, weight, BMI).

Table 1. Descriptive statistics of body composition and selected fitness variables of boys between governments schools (GS) and private schools (PS)

Variable	Mean		SD		Mean Difference	Standard Error Mean	
	GS	PS	GS	PS		GS	PS
Age	176.47	167.04	9.95	10.05	9.43	0.995	1.005
Height	163.71	159.39	7.50	5.38	4.32	0.750	0.538
Weight	44.15	45.61	4.61	2.83	1.46	0.461	0.283
BMI	16.47	17.95	1.27	0.81	1.48	0.127	0.081
Speed	8.30	8.89	0.55	0.55	0.59	0.054	0.055
SR	10.32	10.74	0.62	0.56	0.42	0.062	0.056
SBJ	214.73	206.62	10.30	8.01	8.11	1.030	0.801

Table 2. Independent samples test results between government (GS) and private (PS) schools

Variable	Levene's test for equality of variances		t-test for equality of Mean				
	F	Sig.	t-test	df	Standard Error Difference	95% confidence interval of the difference	
						Lower	Upper
Age	0.167	0.683	6.669	198	1.414	12.218	6.642
Height	9.572	0.002	4.681	198	0.923	6.140	2.500
Weight	6.636	0.011	2.697	198	0.541	0.393	2.527
BMI	17.636	0.000	9.841	198	0.151	1.185	1.779
Speed	0.670	0.414	7.720	198	0.078	0.446	0.751
SR	0.224	0.637	4.987	198	0.084	0.253	0.583
SBJ	5.387	0.021	6.215	198	1.305	10.683	5.537

Discussion

Health and fitness play an important role in achieving success in sports, and especially for school students. A large number of studies have directly addressed this issue but the number of such study in the post-pandemic period is few. Therefore, the aim of this study was to assess selected sub-variables from the variables of fitness and health status among government and private school boys located in a specific district of North Bengal state of West Bengal, India. Since the study is limited to a specific area, a broader perspective of the study involving a larger cross-sectional population may better assess the performance and health status of school-going children. Judging from the findings of the present study, a scenario may be observed that there are significant differences between government and private school going boys on selected fitness variables and body composition. In fitness profile as speed, explosive leg strength and agility; boys from private schools are relatively far behind compared to boys from government schools, this is reflected in this study. All these researchers agree with the findings of this study (Bamaniya and Nayak, 2017; Kaur, 2013; Kumar, 1998; Falls, 1979; Singh et al., 2017; Kumar and Ahlawat, 2018). Several researchers such as (Singh, et al., 2017; Pant and Valsaraj, 2013; Kamrul,et.al., 2013) found no significant results between government and private school students in their study, (Kumar and Singh, 2012) observed in their study that students from private schools performed better than government schools. Some recent studies, such as (Jagathesan and Ganeshkumar, 2013; and Marshall et al., 2005) have shown that regular physical activity is beneficial for the younger generation, especially in the post-pandemic period; apart from this, educational institutions and society should encourage and proactive about physical exertion.Again the mean of two independent samples, as per the personal profile review, showed a comparable difference where height and age except for weight and BMI were higher in government school boys than in private school boys. Similar to the current study, studies by other researchers (Kashyap, 2020; Lehman et al., 1975; Paul, 2007) found that government school boys were older. In terms of weight, the researchers of the present study agree with these researchers (Srihari, et al., 2007; Jadon, 2008) in judging the weight status, as the average weight of private school boys in their study was relatively higher than that of government school boys. A significant difference was observed between government and private schools in BMI scores where private school boys scored relatively higher than government school boys. With this result, the research findings of these researchers (Jadon, 2018; Dr.Khatri, 2015; Vishal, et al., 2014) are the same. However, these researchers' study (Namjoshi, 2021; Kharra, 2021) found no significant results between the two different schools. In the present study, the average weight of the students is lower than the normal weight, which is considered to be one of the reasons for nutrition, the researchers (Hota, et al., 2015; Ashok, et al., 2014) agreed in their study; but these researchers (Ranjani, et al., 2016; Agbozo, et al., 2016) have expressed concern in their study that the rate of obesity is increasing among private school students which is much higher compared to government schools which is inconsistent with the findings of the present study. Although some researchers (Marwaha, et al., 2006) attributed it to socio-economic conditions. However, researchers (Endris, et al., 2017; Pal, et al., 2017) consider parental educational qualification, living environment, and wealth status as the most recent risk factors. However, it is clear that physical health and physical fitness as well as nutritional requirements are important for a long and quality life as evidenced by the study of researchers (Vural, et al., 2010).

Conclusion

It was concluded that government school boys were ahead in terms of performance but lagging behind in terms of health status compared to private school boys. The body weight and BMI except for height were higher in private school boys. The speed, agility and leg explosiveness were significantly higher among government school boys than private school. The mean weight of all school students in the region was below normal weight according to body weight to height ratio.

References

Agbozo, F., Atito, P., and Abubakari, A., (2016). Malnutrition and associated factors in children: a comparative study between public and private schools in Hohoe Municipality, Ghana. BMC Nutrition 2, Article No. 32.

Ashok, N.C., Kavitha, H.S., and Kulkarni, P.A., (2014).Comparative study of nutritional status between government and private primary school children of Mysore city.Int J Health Allied Sci., Vol. 3, Pp-164-169.

Bamaniya, B., and Nayak, S., (2017). Comparison of selected physical fitness variables between C.B.S.E. and M.P. board students of Mandsaurdistrict.International Journal of Physiology, Nutrition and Physical Education, Vol. 2, No. 2, Pp- 459-461.

Cardon, G., Biddle, S., Bull, F.C., Chastin, S., Borodulin, K., et al. (2020).World Health Organization 2020 guidelines on physical activity and sedentary behaviour. Br. J. Sports Med. 54:1451–1462. doi: 10.1136/bjsports-2020-102955. [PMC free article][PubMed][CrossRef] [Google Scholar]

Dr.Khatri, H., (2015). Comparative Study of Physical Growth Pattern Among School Boys of Delhi, Amity International Journal of Teacher Education, Vol. 1, No.1.

Endris, N., Asefa, H., and Dube, L., (2017).Prevalence of Malnutrition and Associated Factors among Children in Rural Ethiopia.Biomed Res Int. 2017; 6587853. doi:10.1155/2017/6587853.

Epstein, L.H., Sallis, J.F., Stone, E.J., Faucette, N., Corbin, C.B., Simons-Mortan, B.G., et al.,(1992).Determinants of physical activity and interventions in youth. Med. Sci. Sports Exercise, 24(6):248-257.

Ezzatvar, Y., Calatayud, J., Smith, L., Andersen, L.L., Lopez-Bueno, R., et al., (2021).Cardiorespiratory fitness in adolescents before and after the COVID-19 confinement: A prospective cohort study. Eur. J. Pediatr. 180:2287–2293. doi: 10.1007/s00431-021-04029-8. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Falls, H.B., (1979).AAHPERD Implements New Health/Fitness Test. Physician and Sports Medicine, Vol. 8, No. 6, P-27.

Fernandez-Rio, J., Cecchini, J.A., and Carriedo, A., (2020). COVID-19, Psychological Well-being and Physical Activity Levels in Older Adults During the Nationwide Lockdown in Spain. Am. J. Geriatr. Psychiatry. 28:1146–1155. doi: 10.1016/j.jagp.2020.08.007. [PMC free article][PubMed] [CrossRef] [Google Scholar]

Hota, S., Pangrahi, R.K., Mohapatro, N.M.S., Kumar, S.V., Mohanty, S., (2015). Dietary Pattern amongst Overweight and Obese Children, 9-15 years from Government School in Bhubaneswar City. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) Vol. 14, Issue. 4, Pp-32-36.

Ferrar, K., Dooley, F.L., Kaster, T., Fitzgerald, J.S., Smith, J.J., (2021). Temporal Trends in the Standing Broad Jump Performance of 10,940,801 Children and Adolescents Between 1960 and 2017. Sports Med. ;51:531–548. doi: 10.1007/s40279-020-01394-6. [PubMed][CrossRef] [Google Scholar]

Gutierrez-Santamaria, B., Coca, A., and Castaneda-Babarro, A., (2020). Physical Activity Change During COVID-19 Confinement. Int. J. Environ. Res. PublicHealth.17:6878. doi: 10.3390/ijerph17186878. [PMC free article] [PubMed][CrossRef][Google Scholar]

Hoffman, A.R., Parimi, N., Stone, K.L., Laddu, D.R., Lapidus, J., et al., (2020). Physical Activity Trajectories and Associated Changes in Physical Performance in Older Men: The MrOS Study. J. Gerontol. A Biol. Sci. Med. Sci.; 75:1967–1973. doi: 10.1093/gerona/glaa073. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Hsu, W.Y., Chang, Y.H., Chang, T.H., Chou, Y., Chen, Y.C., et al., (2021). Weight gain associated with COVID-19 lockdown in children and adolescents: A systematic review and meta-analysis. Nutrients. 13:3668. doi: 10.3390/nu13103668. [PMC free article][PubMed][CrossRef] [Google Scholar]

Ishiko, T., (1978). Merits of various standard test protocols-a comparison between ICPER, WHO and IBP and other groups. In: Physical Fitness Principles, Practice and Application. Ed: R.J. Shephard and H. Lavallee Charles C. Thomas Publisher, Springfield. Pp-7-17.

Jadon, J.S., (2018).“A comparative study ofhealth related physical fitness among students of dissimilar schools”, Doctoral dissertation,Banasthali University: Department of Physical Education,BanasthaliVidyapith,Rajasthan, India, Pp-44-45-50-82-83.

Jagathesan, R., and Ganesh, M.K., (2013).Construction of Norms for Skill Test in Kabaddi.International Journal of Movement Education and Sports Sciences. Annual Refereed & Peer Reviewed Journal, Vol. I, No. 1, Pp-1-7.

Kamrul, H., Ghosh, M., Ghosh, A., (2013).“Comparative analysis of selected physical components among Government, residential and non-residential school boys”, International journal on 'Latest innovations in fitness, yoga & rehabilitation in the modern era ', Department of health science & fitness, Gwalior, 2013 (18 to 20 Feb.), Pp-9-10-11.

Kashyap, J., (2020). “Mode of travelling and health related physical fitness among school students of union territory of Chandigarh”, Doctoral dissertation, Panjab University: Department of Physical Education, Chandigarh, Panjab, India, Pp-75-76-88-217-221-222.

Kaur, N., (2003).Reliability and Validity of Motor ability Test and Volleyball Skill Test. Indian Journal of Sports Sciences & PhysicalEducation, Vol.12, Pp-53-58.

Kharra, B., (2021). “A study of health related physical fitness and anthropometric measurement status of school students”,Doctoral dissertation, Poornima University, Ramchandrapura, Jaipur, Rajasthan, Pp-84-85.

Kulkarni, V.A., Choudhuri, D., and Choudhuri, S., (2002). Physical fitness: a comparative study between students of residential (sainik) and non-residential schools (aged 12-14 years). Indian J PhysiolPharmacol. 46(3):328-32.

Kumar, A., and Singh, N., (2012).Comparative Study of Physical Fitness of Government and Non-Government School Boys. International Journal of Behavioural Social And Movement Sciences, 1(04).

Kumar, D., (1998).A Normative Study of Physical Fitness of Himachal Pradesh High and Higher Secondary School Boys.Ph.D. Thesis, Punjab University, Chandigarh Punjab.Pp-159-165.

Kumar S., and Ahlawat, R.P., (2018).Comparative study among physical fitness variables between the Government school boys and private school boys, International Journal of Physiology, Nutrition and Physical Education, Vol. 3, No. 2, Pp-1094-1095.

Lang, J.J., Tomkinson, G.R., and Tremblay, M.S. (2019). Temporal trends in the cardiorespiratory fitness of children and adolescents representing 19 high-income and upper middle-income countries between 1981 and 2014. Br.J.Sports Med.; 53:478–486. doi: 10.1136 bjsports-2017-097982. [PubMed] [CrossRef] [Google Scholar]

Lehman, T.G., Boileau, R. A., and Cureton, K.J., (1975). A comparison of densitometric, potassium-40 and skinfold estimates of body composition of prepubescent boys, Human Biology, Vol. 47, No. 3, Pp-321-336 (b).

Magaz-Gonzalez, A.M., Sahelices-Pinto, C., Garcia-Tascon, M., and Mendana-Cuervo, C., (2020). The impact of the COVID-19 confinement on the habits of pa practice according to gender(Male/female): Spanish case. Int. J. Environ. Res. Public Health.17:6961.doi: 10.3390/ijerph17196961. [PMC free article] [PubMed][CrossRef] [Google Scholar]

Marshall, A.L., Smith, B.J., Bauman, A.E., and Kaur, S., (2005).Reliability and Validity of a Brief Physical Activity Assessment for use of Family Doctors.British Journal of Sports Medicine, Vol.39, Issue.5, Pp-294-297.

Martin, C.K., Altazan, A.D., Beyl, R.A., Flanagan, E.W., Redman, L.M., et al., (2021).The Impact of COVID-19 Stay-At-Home Orders on Health Behaviors in Adults. Obesity. 29:438–445. doi: 10.1002/oby.23066. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Marwaha, R.K., Tandon, N., Singh, Y., Aggarwal, R., Grewal, K., et al., (2006). A study of growth parameters and prevalence of overweight and obesity in school children from delhi. Indian Pediatr, Vol. 43, Pp-943-952.

Moore, S.A., Tremblay, M.S., Faulkner, G., Paterson, D.C., Ramage, K., et al., (2021).Exploring the impact of COVID-19 on the movement behaviors of children and youth: A scoping review of evidence after the first year. J. Sport Health Sci. 10:675–689. doi: 10.1016/j.jshs.2021.07.001. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Namjoshi, D.V., (2021). “Comparative study of anthropometric and physical fitness variables between CBSE and GSHSEB students of Gujarat state”, Doctoral dissertation, Gujarat University: Faculty of Education, Ahmedabad, Gujarat, India, Pp-15-57-99-100.

Niessner, C., Eberhardt, T., and Bos, K., (2021). A Best Practice Example for Monitoring Motor Performance With Pooled Data Collected From Practitioners. Front. Public Health.; 9:720589. doi: 10.3389/fpubh.2021.720589. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Orellana-Pecino, J.I., Ramirez-Vargas, G., Avellaneda-Lopez, Y., Garcia-Marin E., Diaz-Jimenez, J., et al., (2020).Eating Habits and Physical Activity of the Spanish Population during the COVID-19 Pandemic Period. Nutrients. 12:2826. doi: 10.3390/nu12092826. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Pal, A., Pari, A.K., Sinha, A., Dhara, P.C., (2017). Prevalence of undernutrition and associated factors: A cross sectional study among rural adolescents in West Bengal, India. International Journal of Pediatrics and Adolescent Medicine, Vol. 4, Pp-9-18.

Pant, M., and Valsaraj, K.M., (2013). "Comparative study on selected motor fitness among boys of Uttarakhand state", International journal of physical education foundation of India, (March, 2013), Vol:02, Issue:1, Pp-32-33-34.

Paul, A., (2007). "Status of health-related physical fitness and its relation to some selected anthropometric measures of school going boys of age 11 and 12 years", Doctoral dissertation, Kalyani University: Department of Physical Education, Kalyani, West Bengal, India,Pp-35-56.

Perez, C.A., Martinez-de-Quel, O., Lopez-Flores, M., and Suarez-Iglesias, D., (2021). Physical activity, dietary habits and sleep quality before and during COVID-19 lockdown: A longitudinal study. Appetite. 158:105019. doi: 10.1016/j.appet.2020.105019. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Pohndof, R.H., and Campbell, W.R., (1961). Physical fitness of British and American children. In: Health & Fitness in the modern world. Athletic Institute, Chicago.

Ranjani, H., Mehreen, T.S., Pradeepa, R., Anjana, R.M., Garg, R., et al., (2016). Epidemiology of childhood overweight & obesity in India: A systematic review. Indian J Med Res. Vol. 143, Issue. 2, Pp-160-74.doi: 10.4103/0971-5916.180203

Rojer, A.G.M., Maier, A.B., Van Schoor, N.M., Hoekstra, T., Pijnappels, M., (2020). Distinct Trajectories of Individual Physical Performance Measures Across 9 Years in 60- to 70-Year-Old Adults. J. Gerontol. A Biol. Sci. Med. Sci. ;75:1951–1959. doi: 10.1093/gerona/glaa045. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Rolland, B., Haesebaert, F., Zante, E., Benyamina, A., Franck, N., et al., (2020). Global Changes and Factors of Increase in Caloric/Salty Food Intake, Screen Use, and Substance Use During the Early COVID-19 Containment Phase in the General Population in France: Survey Study. JMIR Public Health Surveill. 6:e19630. doi: 10.2196/19630. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Rossi, L., Catucci, A., and Scognamiglio, U., (2021). Lifestyle Changes Related to Eating Habits, Physical Activity, and Weight Status During COVID-19 Quarantine in Italy and Some European Countries. Front. Nutr.; 8:718877. doi: 10.3389/fnut.2021.718877. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Rua-Alonso, M., Rial-Vazquez, J., Clavel, I., Iglesias-Soler, E., Lete-Lasa, J.R., et al., (2022). Comparison of Physical Fitness Profiles Obtained before and during COVID-19 Pandemic in Two Independent Large Samples of Children and Adolescents: DAFIS Project, Int J Environ Res Public Health. 19(7): 3963. doi: 10.3390/ijerph19073963

Ruiz, J.R., Ortega, F.B., Sjostrom, M., Castillo, M.J., (2008). Physical fitness in childhood and adolescence: A powerful marker of health. Int. J. Obes. ;32:1–11. doi: 10.1038/sj.ijo.0803774.

Singh, G., Dr.Singh, S., and Singh, H., (2017). Physical fitness differentials between boys of government and private schools, Int. Journal of Phy.Edu., Sp. and Health, Vol. 4, No.3, Pp-468-471. Singh, G., Singh, S., and Singh, H., (2017).Physical fitness differentials between boys of government and private schools.International Journal of Physical Education, Sports and Health, Vol. 4, No. 3, Pp-468-471.

Sloan, A.W., (1966). Physical fitness of South African compared with British and American high school children. South African Medical Journal, 40:688-690.

Srihari, G., Seshadri, S., Kurpad, A.V., Muthayya, S., and Eilander, A., (2007). Nutritional Status of Affluent Indian School Children: What and How Much Do We Know? Journal of Indian Pediatrics; 44:199-203.

Stevens, G.A., Bull, F.C., Riley, L.M., Guthold, R., (2020). Global trends in insufficient physical activity among adolescents: A pooled analysis of 298 population-based surveys with 1·6 million participants. Lancet Child.Adolesc.Health. 4:23–35. doi: 10.1016/S2352-4642(19)30323-2. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Tomkinson, G.R., Norton, K.I., Sabato, T., Lamoureux, N.R., Tremblay, M.S., et al., (2019). Temporal Trends in the Cardiorespiratory Fitness of 2,525,827 Adults Between 1967 and 2016: A Systematic Review. Sports Med.; 49: 41–55. doi: 10.1007/s40279-018-1017-y. [PubMed] [CrossRef] [Google Scholar]

Van Oostrom, S.H., Schaap, L.A., Nooyens, A.C.J., Visser, M., Verschuren, W.M.M., et al., (2019). Sex differences in physical performance by age, educational level, ethnic groups and birth cohort: The Longitudinal Aging Study Amsterdam. PLoS ONE; 14:e0226342. doi: 10.1371/journal.pone.0226342. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Villafaina, S., Fashi, M., Nobari, H., Eskandari, A., Murillo-Garcia, A., et al., (2021). Effect of COVID-19 on health-related quality of life in adolescents and children: A systematic review. Int. J. Environ. Res. Public Health. 18:4563. doi: 10.3390/ijerph18094563. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Vural, O., Eler, S., and AtalayGuzel, N., (2010).The relation of physical activity level and life quality at sedentary profession.Spormetre Journal of Physical Education and Sport Science, Vol. VIII, No. 2, Pp-69-75.

Wang, C., Pan, R., Choo, F., Xu, L., Lopez-Nunez, M.I., et al., (2021). The Impact of the COVID-19 Pandemic on Physical and Mental Health in China and Spain: Cross-sectional Study. JMIR Form. Res. 5:e27818. doi: 10.2196/27818. [PMC free article][PubMed] [CrossRef] [Google Scholar]

Xiang, P., Huang, C.C., Chen, S., Gao, Z., Stodden, D.F., (2017).Investigating elementary school children's daily physical activity and sedentary behaviours during weekdays. J. Sports Sci. 35:99–104. doi: 10.1080/02640414.2016.1157261. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Xiang, Y.T., Cheung, T., Tang, S., and Xiang, M., (2021). Mental health and its correlates among children and adolescents during COVID-19 school closure: The importance of parent-child discussion.J. Affect. Disord. 279:353–360. doi: 10.1016 j.jad.2020.10.016. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Zhang, D., Chen, L., Li, J., Tseng, T.S., Xia, T., et al., (2021).Changes of exercise, screen time, fast food consumption, alcohol, and cigarette smoking during the COVID-19 pandemic among adults in the United States. Nutrients.13:3359.doi: 10.3390/nu13103359. [PMC free article] [PubMed] [CrossRef] [Google Scholar]

Zhou, B., Rodriguez-Martinez, A., Bentham, J., Sophiea, M.K., Iurilli, M.L., Paciorek, C.J., Bennett, J.E., (2020). Height and body-mass index trajectories of school-aged children and adolescents from 1985 to 2019 in 200 countries and territories: A pooled analysis of 2181 population-based studies with 65 million participants. Lancet. 396:1511–1524.doi: 10.1016/S0140-6736(20)31859-6. [PMC free article] [PubMed][CrossRef] [Google Scholar]

Conflict of Interest: None declared