

Research on Optimization of Post-Competition Training Methods for Competitive Sports Athletes

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Abstract

Athletes enter a competitive sport for various reasons and go on to compete for years without any significant modifications that may affect the success of their sporting career. However, there is a cost to this approach of no changes in training strategy. The purpose of this study was to identify successful post-competition training methods by studying both international and Olympic athletes compete in multiple endurance sports during the World Championships event. Results showed several factors including personal characteristics, coaching knowledge, skill level, competition phase and season can have a significant impact on the success rates of athletes following competition performance. In this study, five factors were employed, and the results were published. The information was gathered using a questionnaire from 50 kids who participated in sports. However, the gathered data was subjected to SEM PLS 3 analysis. The findings revealed a favorable relationship between the five variables that were studied.

Keywords: Physical Education, Sports Psychology, Social Life, Student's Health, Personality, Physical Activities, Sports-Playing Students, Participation.

Introduction

Variation in fatigue threshold is considered as an important factor influential in the progress and performance of athletes. Understanding of an athlete's fatigue threshold allows coaches to provide recovery strategies that promote accelerated healing, a better execution of training sessions, physical and psychological readiness for competitions, and thus competition performance. Coaches have been already utilizing different recovery strategies based on the individual fatigue threshold to help athletes achieve peak competency during competitions. An intense interval training can lead to muscle soreness and decreased physical performance. Athletes try to remain physically active after exhausting their muscles as much as possible in order to stay warm for other parts of the body. Muscle soreness has been associated with increased levels of pain perception following intense exercise (Di Battista et al., 2019). The pain signal from the exercised muscles may inhibit muscle function or limit the ability to activate muscles. This factor may explain the finding that a change in perception of pain intensity after exercise is not related to changes in muscle strength.

Research has shown that implementing a recovery strategy immediately after exhausting exercise can help athletes recover sooner and perform better at subsequent

competitions. More specifically, resting for one day following a day of strenuous training improves competition performance compared to resting for two days before competition. In addition, further studies have demonstrated that performing aerobic training during recovery days between strenuous training sessions can accelerate restoration and shorten recovery time. The purpose of this study is to help coaches and athletes to design the recovery strategy based on the observation of fatigue threshold after an exhaustive exercise. The aim of the study is to identify the effect of different rest periods on post-exercise recovery and performance in a subsequent exercise (Kaur et al., 2020; Kirsebom et al., 2019). Physical education is the most effective technique to teach people about the importance of physical exercise in our lives. People will have a better understanding of physical exercise through education (Hou, 2021). Sports are linked to physical activity in such a manner that sports are also a kind of physical exercise. Physical activity is required in sports such as cricket, hockey, and football. Sports not only increase a person's physical strength, but they also assist him develop his talents (Ribeiro et al., 2019). Students that participate in sports are also well-behaved and skillful because their teachers instill discipline and teamwork in them. Only a skilled physical education teacher can teach his students about the value of physical education in everyday life. Furthermore, the breadth of sports education

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is expanding every day, and many students participate in sports as a result of new and innovative techniques (Behzadnia et al., 2019). Physical education is intertwined with personal and social growth and development. The desire to study and acquire new abilities is growing by the day in our changing and evolving society. When a person learns a new ability in any field that skill stays with him for the rest of his life; similarly, when a person learns about physical education, he performs physical exercise for the rest of his life (Pengfei & Yin, 2021). Physical education expertise may also help a person improve his social conduct (Komar et al., 2019). Physical activity lowers stress and anxiety while also strengthening your mental and physical capabilities. Physical education is a new and rising profession in which people may excel not only physically, but also cognitively and socially, by learning knowledge about it (Shidong et al., 2021).

Physical education is also quite vital in a student's life. Physical education is a topic that is taught to kids in school and college, and it is a very essential subject for them. Physical education is a topic that the pupils appreciate since it is something they enjoy doing. Physical education has a significant influence on children's minds and bodies (Chen, 2017). Physical education may help kids with their mental health difficulties by relieving stress and anxieties. Nowadays, sports physical activity and exercise are taught in almost every school, college, and university (Durden-Myers, Green, & Whitehead, 2018). Students that regularly participate in sports and physical education are also more active and fit than their peers, according to several research. Physical education students are also more creative and original in their thinking due to their active and bright minds. On the one hand, physical education keeps pupils active and strong; on the other side, it makes them happy because most students enjoy the subject (Wang, 2018). Sports fields are developed in various institutes to allow students to play their favorite games and sports anytime they have free time (Zhang & Chen, 2021). Many sports and physical activity competitions are also organized at schools, colleges, and universities so that students may participate actively in sports and other activities. Students gained confidence as a result of these sports tournaments (Pieiro-Cossio et al., 2021).

Physical education is also intimately linked to psychology since it has a direct impact on the mind. People all throughout the world are anxious and agitated as their lives become more complete. Physical activity is the only option to alleviate stress and anxiety during a difficult period (Gobbi et al., 2020). People might forget their troubles by engaging in physical exercise or sports. Physical activity also helps people calm their brains. Yoga is a type of

physical activity that aids in the relaxation of the mind. Physical exercise education also teaches how to abandon harmful lives in favor of healthier alternatives (Fiorese et al., 2019). One of the key causes of many health issues is an unhealthy lifestyle. Many individuals throughout the world are obese and concerned about their weight as a result of bad lifestyles. Obese people can lower their anxiety by engaging in physical exercise. By doing so, they will not only get healthy, but their tensions will also begin to dissipate (Tortella et al., 2020). In our day, where we are fighting with the covid-19 virus, physical education is also very crucial. Many people were infected by Covid-19 when it first appeared in 2019, and they were confined; no one was permitted to leave the quarantine until 14 days had passed. People were anxious and apprehensive at the moment (Wang et al., 2017). No one was allowed to participate in outdoor sports or physical exercise, which increased public unrest, and many individuals gained weight and were fat during the lockdown (Sgrò et al., 2020). However, other individuals choose to exercise at home, which has allowed them to release their tensions and anxieties in a short period of time, implying that no matter what the scenario, we should engage in some form of physical activity in order to be active and clever. The World Health Organization's guidelines for covid-19 urge individuals to exercise at home since it is the only way to be emotionally and physically active (Greco et al., 2019). Physical education is now widely seen as a boon to individuals, since it instructs them on all aspects of physical activity, sports, and exercise (Liu et al., 2017). People should be required to learn physical education in order to fulfil the demands of an ever-growing planet (Vasconcellos et al., 2020). It is also the government's obligation to ensure that adequate sports and physical activities are conducted throughout the country to support physical education (Somasundaram et al., 2021).

Literature Review

A lot of research has been done on the effects of optimizing post-competition training methods for competitive sports athletes. Studies have shown that post-workout protein synthesis can be improved and muscle damage reduced after a strenuous workout, if subjects are given carbs shortly after exercise rather than protein. On the other hand, it was found that time to peak levels of muscle protein synthesis was significantly increased if subjects drank something with carbohydrates for 3 hours before exercise (Piñero-Cossio et al., 2021). The authors go on to discuss why timing is crucial in intervention strategies, as well as what interventional schedules could be implemented for optimal outcomes. They

conclude by stating that further exploration and research is needed to optimize this critical element of athletic training programs (Powell & Pratt, 1996). Athletes of all levels and backgrounds need to optimize their physical training strategies in order to help them better meet the demands of their profession. This post will highlight research that studies the impact of post-competition training methods on athletic performance. This research will be used to explain how athletes can make sure they are adequately preparing themselves for competitions (Cunningham & Ahn, 2019).. For many competitive athletes, the ultimate desire is to reach peak performance. The hope is to improve on their performances through training and engagement after competition. There has been a lot of research about how in-season athletes need more recovery time because of the increased stress placed on the body through training, but there hasn't been as much literature about how post-competition training can impact performance for these athletes (Çiçek et al., 2021). There are several theories that exist in this area, including decreasing muscle damage from exercise with active recovery methods, increasing blood flow and muscle growth from blood flow restriction techniques, and even enhancing motivation through exposure therapy techniques such as social media posts or other internet platforms. Recent research has demonstrated that, in order to increase sport performance, optimization of the post-competition training methods is crucial. It has been found that due to the rapid changes often faced by athletes during competition, it is difficult for them to maintain sufficient levels of performance in the immediate post-competition period. Consequently, they often fail to reach their potential. These findings have led many researchers and sports coaches alike to determine strategies aimed at optimizing this period for optimal performance outcomes.

Post-competition training strategies have been identified as having a critical role in the success of athletes and this is evidenced by the numerous studies that have examined various aspects related to this practice, including: how much training is needed, the type of exercise undertaken, and the intensity. Although it has long been known that intense training is beneficial for increasing performance levels immediately after competition, there is relatively little research examining whether "optimal" levels of training intensity are actually attained. Consequently, it has often been assumed that athletes are not able to perform at adequate intensities or at maximal lifts or distances post-competition and thus it would be advisable for them to engage in less intense post-training activities (Li, 2019).

Furthermore, some studies have also identified a relationship between the length of time since exercise

cessation, which directly affects the recovery of strength and power. For example, one study found that a 2-minute rest period was not sufficient for maximal strength to return after 5 seconds of maximal eccentric contractions (Roberts et al., 2019). This phenomenon has been attributed to changes in muscle tension and excitation-contraction coupling that occur after an intense effort and may depend on how much time has passed since exercise cessation. As such, it has been suggested that training intensity may be greater immediately after competition than several hours later (Casey & Quennerstedt, (2020).

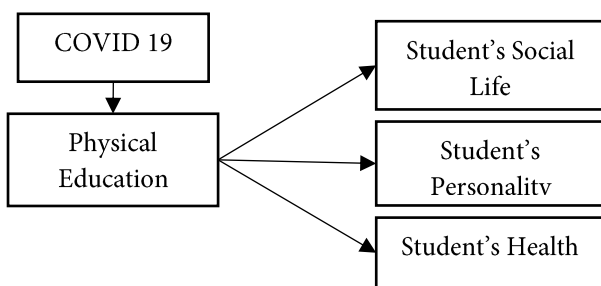
In addition, Sport education promotes motivational consequences in a fairly uniform manner across grade levels, genders, motivational profiles, and sports. Physical education has been needed to tackle major issues affecting the youth of America such as the growing social decay of schools and communities, as well as the rise in childhood sedentary related disorders and obesity. Opstoel et al., (2020) investigates answers to both the issue of enhancing students' social and moral development while also raising levels of physical activity in PE while teaching within the model of Sport Education (Opstoel et al., 2020) (Li, 2019). Apart from this, Knowles, Wallhead, & Readdy, (2018) highlighted that youngsters get the confidence, motivation, physical competence, awareness, and knowledge, to appreciate and accept responsibility for engaging in meaningful physical activities/ pursuits throughout their lives (Knowles et al., 2018). Physical education continues to be the major channel at colleges and schools for children to gain the knowledge, skills, and desire needed to be physically educated. Therefore, due to time constraints in the curriculum of physical education, students must be given an outlet to engage their increasing physical literacy. Furthermore, Casey & Quennerstedt, (2020) claimed that Physical education can assist people tend to make educated lifestyle decisions, improve movement abilities, and encourage lifetime engagement in physical exercise and sports. It was noted that there was substantial evidence that can lead towards ample of advantages for adolescents and children. But the level of physical activities at schools and colleges was not able to get all these advantages. Thus, there was a need to promote physical education system by promoting sports activities, extracurricular activities.

Methodology

Physical Education work in an extensive academic institution, and appears to be an important element for maintaining individual's health, social life, and personality, which has been now impacted by COVID 19(Haible et al., 2019). Physical Education is important for maintaining

and promoting sports playing student's health, the progression of core body functionality, and the requirements of a healthier life. This paper has used COVID 19 and Physical Education as Independent Variables. However, the dependent effect of Physical Education has also been analyzed on COVID 19(Trigueros et al., 2019). The Student's Social Life, Student's Personality, and Student's Health has been used as dependent variables. The data was collected from 50 sports playing students through questionnaires. The questionnaire was adopted from the study of(Chen, 2017), (Li, 2019), and (Shidong et al., 2021). The collected data was analyzed by using SEM PLS 3.

Research Framework



Discussion and Analysis

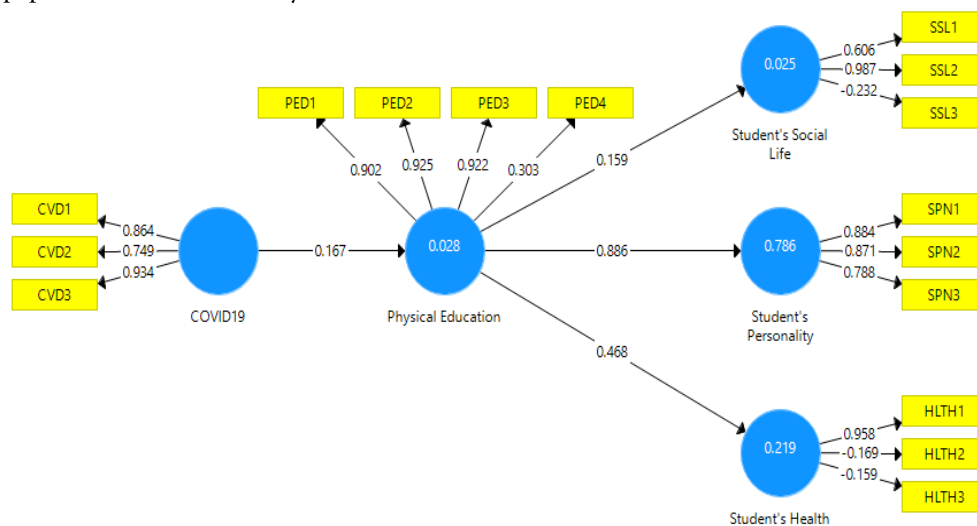
The collected data was analyzed by using SEM PLS 3. This section of the paper will discuss the analyzed outcome of

the data.

The figure underneath shows the research framework of the study;

PLS Algorithm

The PLS Algorithm used in our research is described in section of the paper. The model was created with the help of the SEM PLS 3 software. The fitness of the model is determined by the PLS algorithm. The impact of COVID19 (with 3 measuring items) and Physical Education (which 4 measuring items) on the Student's Social Life (with 3 measuring items), Student's Personality (with three measuring items), and Student's health (with three measuring items) is investigated using structural equation modelling (SEM). The research model included two IV (COVID 19, and Physical Education), and three DV's (Student's Social Life, Student's Personality, and Student's Health) for the purpose of analyzing these. According to the path analysis of the research model depicted in the figure above, the positive routes for COVID→Physical Education (0.167), Physical Education→ Student's Social Life (0.159), Physical Education→ Student's Personality (0.886), and Physical Education→ Student's Health (0.468). There were no negative paths for any of the variables in the research model.



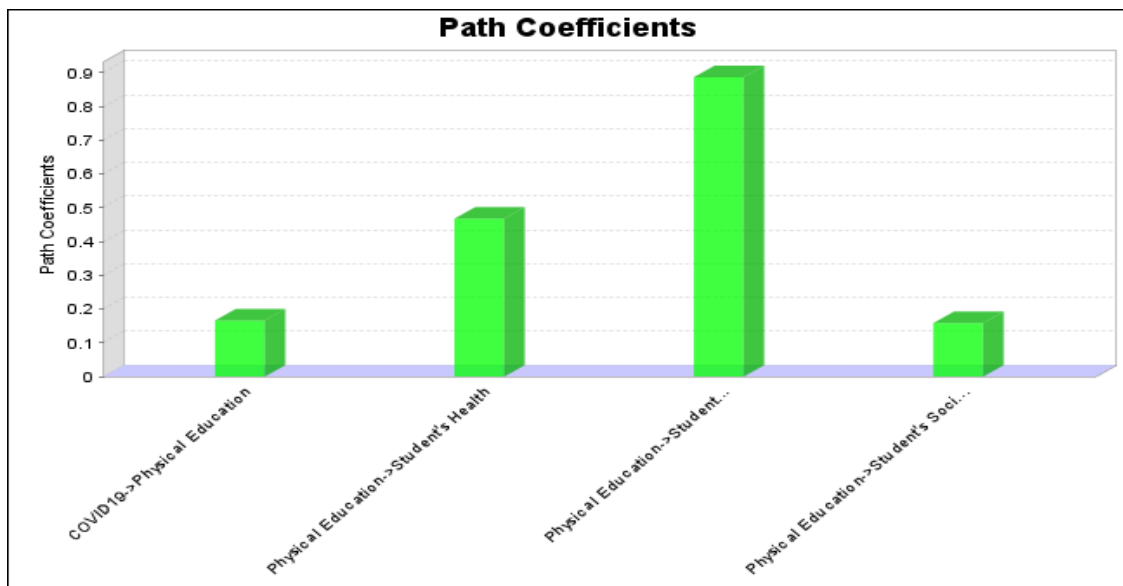
Path Coefficients

The variables' path coefficients are listed in the table below. COVID and Physical Education (0.167), Physical

Education and Student's Social Life (0.159), Physical Education and Student's Personality (0.886), and Physical Education and Student's Health (0.468) all had positive path coefficients, according to the findings.

	Physical Education	Student's Health	Student's Personality	Student's Social Life
COVID19	0.167			
Physical Education		0.468	0.886	0.159

The results shown in figure of PLS Algorithm and table are graphically represented in the figure below.



Specific Indirect Effects

The indirect impact of factors that influence the connection of COVID19 → Physical Education → Student's Social Life is 0.026, COVID19 → Physical Education → Student's Personality is 0.148, and COVID19 → Physical Education → Student's Health is 0.078.

Specific Indirect Effects	
COVID19 -> Physical Education -> Student's Social Life	0.026
COVID19 -> Physical Education -> Student's Personality	0.148
COVID19 -> Physical Education -> Student's Health	0.078

The table underneath displays the outer loadings of each item that was used to measure the variable in this section. For example, the results from the table below reveal that CVD1 (0.864), CVD2 (0.749), and CVD3 (0.934) loadings for evaluating the variable COVID19 were found to be significantly higher than the values from the table above. The positive and significant loadings for each variable were also visible in the items that were picked. The outer loading values of each item are greater than 0.80, indicating that each item is exceptionally trustworthy for the variable to which it is assigned. However, only HLTH2, HLTH3, and SSL3 showed negative outer loadings against variables.

Outer Loadings

	COVID19	Physical Education	Student's Health	Student's Personality	Student's Social Life
CVD1	0.864				
CVD2	0.749				
CVD3	0.934				
HLTH1			0.958		
HLTH2			-0.169		
HLTH3			-0.159		
PED1		0.902			
PED2		0.925			
PED3		0.922			
PED4		0.303			
SPN1				0.884	
SPN2				0.871	
SPN3				0.788	
SSL1					0.606
SSL2					0.987
SSL3					-0.232

Latent Variable Correlations

The correlation coefficient between the variables is shown in the table underneath. As a result, the findings indicated

that the components are in a positive relationship with one another. The statistics reveal a significant positive relationship between the factors. As an example, the data from Table show an COVID19→Physical Education of

0.167 (16.7%) correlation between the variables between the variables. The correlation coefficient between Physical Education→Student's Personality was determined to be 0.886 (88.6 percent), which is the smallest (but most

strongly positive) correlation coefficient reported between the variables. As illustrated in figure of research framework, the entire model revealed a significant positive correlation between the latent variables from the research model.

	COVID19	Physical Education	Student's Health	Student's Personality	Student's Social Life
COVID19	1.000	0.167	0.089	0.042	0.050
Physical Education	0.167	1.000	0.468	0.886	0.159
Student's Health	0.089	0.468	1.000	0.569	0.195
Student's Personality	0.042	0.886	0.569	1.000	0.211
Student's Social Life	0.050	0.159	0.195	0.211	1.000

LV Descriptives

The descriptive and latent variables are both significant in terms of their statistical value, as seen in the table below. The data show that the Descriptive Statistics Table; Min and Max values are between -2 and 5, indicating that the values are within acceptable limits of -2 and 5. The data also show that the Min and Max values are between -2 and

5, indicating that the values are within acceptable limits of -2 and 5. When the skewness value is between -1 and +1, the variables are moderately symmetric and acceptable; when the skewness value is negative, the variables are moderately symmetric and unsuitable. A negative skewness in the variables' values indicates that they were most likely tailed to the left, resulting in median and mean values that are smaller than the variables' mode.

	Median	Min	Max	Excess Kurtosis	Skewness
COVID19	0.249	-3.629	1.946	8.569	-2.707
Physical Education	-0.127	-1.745	2.094	-0.657	0.297
Student's Health	0.028	-1.824	2.063	-0.593	0.186
Student's Personality	-0.042	-1.766	1.806	-1.129	0.098
Student's Social Life	-0.029	-3.241	1.493	1.654	-0.782

Inner Model Residual Correlation

The table underneath shows that the residual correlation of the inner model revealed a weak negative correlation

between Student's Social Life and Physical Education, with the link between the variables changing with a degree of -0.004 (-0.4%). However, Student's Health and Personality has the strongest inner model residual correlation of 37.6%.

	Physical Education	Student's Health	Student's Personality	Student's Social Life
Physical Education	1.000	-0.002	0.038	-0.004
Student's Health	-0.002	1.000	0.376	0.138
Student's Personality	0.038	0.376	1.000	0.152
Student's Social Life	-0.004	0.138	0.152	1.000

Inner Model Residual Descriptives

The table underneath depicts the residual descriptive of the inner model as a function of time. The Physical Education, Student's Health, Student's Personality, and Student's Social Life measurements are presented in the table to have the minimum and maximum possible values of -2 and +2, respectively. A total of 50 people were asked for their

thoughts on the matter. Skewness and kurtosis values were near to zero and in the range of -1 to 1, which indicated that the data had not been altered or falsified. When it comes to Physical Education, the curve is positively skewed, which means that the longer side of the curve is located on the right side of the graph. Alternatively, because the Student's Personality is positively skewed, the length of the curve's longer side is on the right side of the symmetry equation.

	Median	Min	Max	Standard Deviation	Excess Kurtosis	Skewness
Physical Education	-0.148	-1.786	2.052	0.986	-0.530	0.270
Student's Health	0.151	-1.662	2.050	0.884	-0.688	0.037
Student's Personality	-0.065	-0.912	0.954	0.463	-0.570	0.320
Student's Social Life	-0.038	-3.310	1.672	0.987	1.891	-0.851

R Square

The table underneath displays the R-square value and adjusted R-square for a variety of scenarios. According to the findings, the variables Physical Education, Student's Health, Personality

and Social Life were significantly influenced by the variable COVID19 to a somewhat favourable extent. This study's R-square value is 0.786, and the adjusted R-square value of 0.781 for the current 78.6% square values is 78.1%, demonstrating that the COVID19 78.6 percent model fit is demonstrable.

	R Square	R Square Adjusted
Physical Education	0.028	0.008
Student's Health	0.219	0.203
Student's Personality	0.786	0.781
Student's Social Life	0.025	0.005

f Square

This is seen in the table below by the value of f-Square. In a research model containing an endogenous variable, the f-square represents the variability in R Square calculated from the data. This is illustrated in the table below. If an

endogenous variable changes, the relationship between COVID19 and Physical Education will decrease significantly with a very high correlation coefficient of 2.9%. However, as shown in the chart below, there will be a positive change of 28% and 36.66% in each of the three variables (this is a significant difference).

	Physical Education	Student's Health	Student's Personality	Student's Social Life
COVID19	0.029			
Physical Education		0.280	0.366	0.026

Construct Reliability and Validity

The construct reliability and validity of the study are depicted in the table underneath. When looking at this case, Cronbach Alpha is greater than 0.70. In this case, it demonstrates that the information gathered for the study was accurate. We were able to get a score of 0.785 of

Physical Education due to the minimal number of measuring items used. This is a satisfactory result considering the low number of measuring items used. The composite reliability rates are represented by the rho-A values, and the average variance of all variables gathered throughout the investigation is represented by the findings.

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
COVID19	0.821	0.945	0.888	0.726
Physical Education	0.785	0.898	0.870	0.653
Student's Health	0.859	-0.302	0.164	0.324
Student's Personality	0.806	0.817	0.885	0.721
Student's Social Life	0.884	2.485	0.536	0.465

Discriminant Validity

Fornell-Larcker Criterion

Fornell-Larcker Criteria (FLC) is displayed in the table below, and it was used to evaluate the participants in the study. It is used to determine the extent to which the COVID19, Physical Education, Student's Health, Student's Personality, Student's Social Life are influenced by one

another and by the environment. The results reveal that the variables have a positive degree of share variance when compared to one another in terms of their relative shares. If the degree of shared variance between the variables is 0.167 (Physical Education→COVID19), then the variance between the variables varies by 16.7 percent for every change in one unit of COVID19 (the coefficient of correlation) (which is an acceptable variation).

	COVID19	Physical Education	Student's Health	Student's Personality	Student's Social Life
COVID19	0.852				
Physical Education	0.167	0.808			
Student's Health	0.089	0.468	0.569		
Student's Personality	0.042	0.886	0.569	0.849	
Student's Social Life	0.050	0.159	0.195	0.211	0.682

Heterotrait-Monotrait Ratio (HTMT)

It is necessary to determine whether or not a variable is discriminately valid in order to calculate the Heterotrait-Monotrait Ratio (HTMT) (as shown in Table and Figure

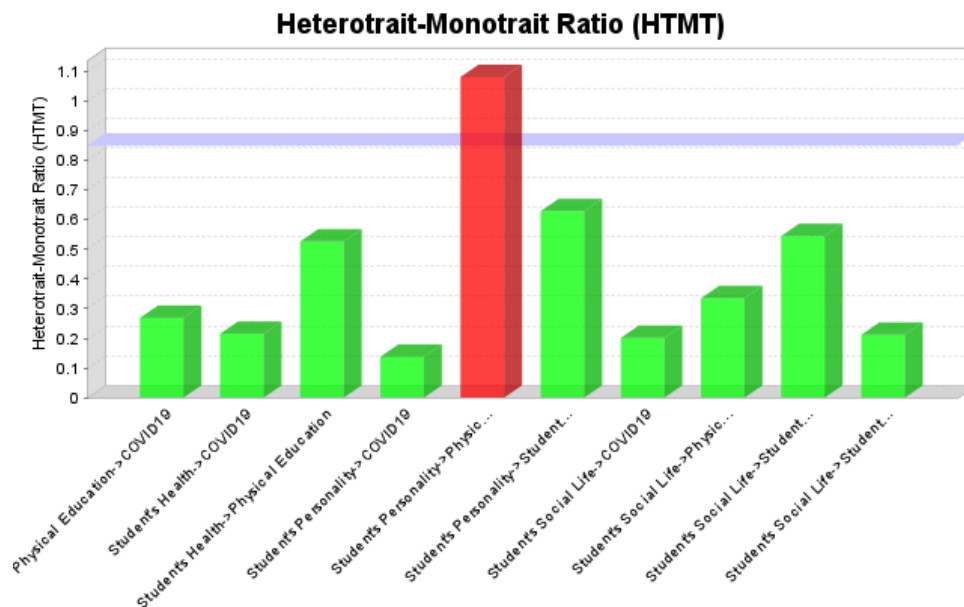
below). It reflects the degree to which the latent variables are comparable to one another. Following the findings, the link will have equal validity if Physical Education and COVID19 are equivalent, with 0.269 (26.9%) the same validity as the link.

	COVID19	Physical Education	Student's Health	Student's Personality	Student's Social Life
COVID19					
Physical Education	0.269				
Student's Health	0.215	0.526			
Student's Personality	0.138	1.081	0.629		
Student's Social Life	0.202	0.335	0.545	0.212	

Several other latent variables, the values of which are correlated with those in the table, are depicted in the picture to the right. The variables' validity scores were all positive, indicating that the linkages between them were recognized and appreciated. It was discovered that the

association between all variables had statistically significant validity.

Therefore, the figure underneath shows that shows the Heterotrait-Monotrait Ratio (HTMT) of Student's Personality and Physical Education is beyond limit.



Collinearity Statistics (VIF)

Outer VIF Values

Listed below are the values for the outer VIF of the questionnaire items that were used to measure variables, as indicated by the outer VIF values in the table below. The outer VIF numbers statistically represent collinearity between all of the items used to test the variables; the outer VIF values represent the collinearity between all of the

items used to measure the variables in this study. Statistics demonstrate that the VIF exhibit rate values ranging from one to ten on a scale of one to ten as a result of these findings. Take a look at the following examples of probable outcomes: The CVD1 (1st Question of COVID19) has an outside VIF value of 1.851, whilst the CVD3 (3rd Question of COVID19) has an outside VIF value of 2.285. The correlation between the items and the variables is represented by the outer VIF values.

	VIF	PED4	1.076
CVD1	1.851	SPN1	2.018
CVD2	1.713	SPN2	1.919
CVD3	2.285	SPN3	1.529
HLTH1	1.012	SSL1	1.431
HLTH2	1.325	SSL2	1.326
HLTH3	1.335	SSL3	1.094
PED1	2.768		
PED2	3.888		
PED3	3.322		

Inner VIF Values

Detailed results on the inner VIF values, as well as the loading of Independent Variables against Dependent

Variables, is provided in the table below. Examples include COVID19 loading of 1.000 and Physical Education is 1.000 against Physical Education, Student's Health, Student's Personality, and Student's Social Life.

	Physical Education	Student's Health	Student's Personality	Student's Social Life
COVID19	1.000			
Physical Education		1.000	1.000	1.000

Model Fitness

Fit Summary

Following is a table that displays results of model fitness analysis performed with the assistance of the saturated model and the estimated model. Following is a table that displays results of model fitness analysis performed with the help of the saturated model and the estimated model. SRMR for the saturated model is 0.117, indicating that it

is acceptable for analysis in 11.7 percent of cases (moderate-valid fitness). The rate in the estimated model is 0.121, showing that the variables have a comparable fitness analysis as in the original model. If you calculate the rate using the d-ULS data, you will find that it is 1.869. This rate reflects the beneficial impacts of Physical Education, Student’s Social Life, Personality, and Health, as well as the beneficial effected by COVID19, and Physical Education.

	Saturated Model	Estimated Model
SRMR	0.117	0.121
d_ ULS	1.869	1.977
d_ G	0.737	0.811
Chi-Square	179.199	189.733
NFI	0.614	0.591

rms Theta

The rms Theta is depicted in the following table. This table displays the root mean squared residual covariance of the variable's outer model residuals as a function of the variable's outer model residuals. RMS Theta, which is equal to 0.251, is calculated to fit 25.1 percent of the outer model, according to the calculations.

rms Theta	0.251
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Conclusion

Physical education is regarded as a tremendous blessing since it guides on all matters about physical activity, sports, and exercise. An unhealthy way of living is also one of the most significant contributors to many health problems. Many people worldwide are overweight or obese as a result of their unhealthy habits, and they are concerned about their appearance. Indulging in physical activity can help obese people lower their anxiety since it will help them get fit and help them start feeling better about themselves. Physical education is vital in this day and age, especially in light of the covid-19 virus outbreak. When covid-19 first appeared in 2019, many people became infected and were confined; no one was allowed to leave the quarantine until 14 days had passed.

People were quite concerned and tense at the time of the event. Because no one was allowed to participate in outside

sports or physical activity, there was increased unrest among the general public. Many people gained weight and were obese as a result of the lockdown. Because of their active and bright minds, students in physical education are more creative and original in their thinking than their peers in other subjects. On the one hand, physical education makes students more active and robust; on the other hand, it makes them happier because it is a subject that most students like learning about and participating in physical activities. Sports fields are being constructed at various institutions to allow students to participate in their favorite games and sports whenever they have time. COVID 19 and Physical Education were employed as Independent Variables in this research report. COVID 19 has also been subjected to an investigation into the dependent effect of Physical Education. The dependent variables in this study were the student's social life, the student's personality, and the student's physical health.

Recommendations

This study lacked the discussion and analysis regarding negative impact of covid-19 on health and fitness of sport’s students. The future studies can discuss and recommend solution to those problems. Furthermore, the sample size could be expanded, and a comparison between student’s and coaches can be made.

References

Behzadnia, B., Mohammadzadeh, H., & Ahmadi, M. (2019). Autonomy-supportive behaviors promote autonomous motivation, knowledge structures, motor skills learning and performance in physical education. *Current Psychology*, 38, 1692-1705. <https://doi.org/10.1007/s12144-017-9727-0>

- Chen, P. (2017). Physical activity, physical fitness, and body mass index in the Chinese child and adolescent populations: An update from the 2016 Physical Activity and Fitness in China—The Youth Study. *Journal of Sport and Health Science*, 6(4), 381. <https://doi.org/10.1016/j.jshs.2017.09.011>
- Çiçek, E., Avşar, D., Yeldan, H., & Manaşırılı, M. (2021). Otoliths atlas of 77 fish species from the Iskenderun Bay, Northeastern Mediterranean Sea. *FishTaxa*, 19, 9-55.
- Cunningham, G. B., & Ahn, N. Y. (2019). Moderation in sport management research: Room for growth. *Measurement in Physical Education and Exercise Science*, 23(4), 301-313. <https://doi.org/10.1080/1091367X.2018.1472095>
- Di Battista, R., Robazza, C., Ruiz, M. C., Bertollo, M., Vitali, F., & Bortoli, L. (2019). Student intention to engage in leisure-time physical activity: The interplay of task-involving climate, competence need satisfaction and psychobiosocial states in physical education. *European Physical Education Review*, 25(3), 761-777. <https://doi.org/10.1177/1356336X18770665>
- Fiorese, L., Rodacki, A. L. F., Caruzzo, N. M., Moreira, C. R., Contreira, A. R., De Lima, A. M., Fortes, L. d. S., Vissoci, J. R. N., & Stefanello, J. M. F. (2019). Sport and exercise psychology studies in Brazil: Performance or health? *Frontiers in psychology*, 10, 2154. <https://doi.org/10.3389/fpsyg.2019.02154>
- Gobbi, E., Maltagliati, S., Sarrazin, P., Di Fronso, S., Colangelo, A., Cheval, B., Escrivá-Boulley, G., Tessier, D., Demirhan, G., & Erturan, G. (2020). Promoting physical activity during school closures imposed by the first wave of the COVID-19 pandemic: Physical education teachers' behaviors in France, Italy and Turkey. *International journal of environmental research and public health*, 17(24), 9431. <https://doi.org/10.3390/ijerph17249431>
- Greco, G., Cataldi, S., & Fischetti, F. (2019). Effectiveness of a short after-school intervention on physical fitness in school-aged children. *Ricerche di Pedagogia e Didattica. Journal of Theories and Research in Education*, 14(1), 143-164. <https://doi.org/10.6092/issn.1970-2221/9217>
- Haible, S., Volk, C., Demetriou, Y., Höner, O., Thiel, A., Trautwein, U., & Sudeck, G. (2019). Promotion of physical activity-related health competence in physical education: study protocol for the GEKOS cluster randomized controlled trial. *BMC Public Health*, 19(1), 1-15. <https://doi.org/10.1186/s12889-019-6686-4>
- Hou, S. (2021). Research on the Application of Data Mining Technology in the Analysis of College Students' Sports Psychology. *Mobile Information Systems*, 2021, 1-7. <https://doi.org/10.1155/2021/6529174>
- Kaur, H., Singh, T., Arya, Y. K., & Mittal, S. (2020). Physical fitness and exercise during the COVID-19 pandemic: A qualitative enquiry. *Frontiers in psychology*, 2943. <https://doi.org/10.3389/fpsyg.2020.590172>
- Kirsebom, O., Jones, S., Strömberg, D., Martínez-Pinedo, G., Langanke, K., Röpke, F., Brown, B., Eronen, T., Fynbo, H., & Hukkanen, M. (2019). This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details. *PHYSICAL REVIEW LETTERS Phys Rev Lett*, 123, 262701. <https://doi.org/10.1103/PhysRevLett.123.262701>
- Knowles, A., Wallhead, T. L., & Readdy, T. (2018). Exploring the synergy between sport education and in-school sport participation. *Journal of Teaching in Physical Education*, 37(2), 113-122. <https://doi.org/10.1123/jtpe.2017-0123>
- Komar, J., Potdevin, F., Chollet, D., & Seifert, L. (2019). Between exploitation and exploration of motor behaviours: unpacking the constraints-led approach to foster nonlinear learning in physical education. *Physical Education and Sport Pedagogy*, 24(2), 133-145. <https://doi.org/10.1080/17408989.2018.1557133>
- Li, L. (2019). Research on Evaluation Index and Index System of Athletes' Physical Fitness Training Based on Data Mining.
- Liu, Y., Zhang, Y., Chen, S., Zhang, J., Guo, Z., & Chen, P. (2017). Associations between parental support for physical activity and moderate-to-vigorous physical activity among Chinese school children: a cross-sectional study. *Journal of Sport and Health Science*, 6(4), 410-415. <https://doi.org/10.1016/j.jshs.2017.09.008>
- Opstoel, K., Chapelle, L., Prins, F. J., De Meester, A., Haerens, L., van Tartwijk, J., & De Martelaer, K. (2020). Personal and social development in physical education and sports: A review study. *European Physical Education Review*, 26(4), 797-813. <https://doi.org/10.1177/1356336X19882054>
- Pengfei, H., & Yin, F. (2021). Mapping Knowledge Analysis on Research of Sports Psychology in China Based on the 2010-2020 CSSCI Literature. 2021 International Conference on Information Technology and Contemporary Sports (TCS),
- Piñeiro-Cossio, J., Fernández-Martínez, A., Nuviala, A., & Pérez-Ordás, R. (2021). Psychological wellbeing in physical education and school sports: A systematic review. *International journal of environmental research and public health*, 18(3), 864. <https://doi.org/10.3390/ijerph18030864>
- Powell, K. E., & Pratt, M. (1996). Physical activity and health. In (Vol. 313, pp. 126-127): British Medical Journal Publishing Group.
- Ribeiro, J., Davids, K., Araújo, D., Guilherme, J., Silva, P., & Garganta, J. (2019). Exploiting bi-directional self-organizing tendencies in team sports: the role of the game model and tactical principles of play. *Frontiers in psychology*, 10, 2213. <https://doi.org/10.3389/fpsyg.2019.02213>

- Roberts, W. M., Newcombe, D. J., & Davids, K. (2019). Application of a constraints-led approach to pedagogy in schools: Embarking on a journey to nurture physical literacy in primary physical education. *Physical Education and Sport Pedagogy*, 24(2), 162-175. <https://doi.org/10.1080/17408989.2018.1552675>
- Sgró, F., Barca, M., Schembri, R., & Lipoma, M. (2020). Assessing the effect of different teaching strategies on students' affective learning outcomes during volleyball lessons. *Journal of Physical Education and Sport*, 20, 2136-2142. <https://doi.org/10.7752/jpes.2020.s3287>
- Shidong, L., Kuo, T.-H., ul Islam, M., Talha, M., Lone, S. A., & Wei, S.-Y. (2021). The impact of sports activities on economic survival, social life of women, and what do big data analysis reveals about social life of sports women. *Revista de Psicología del Deporte (Journal of Sport Psychology)*, 30(3), 229-241. <https://mail.rpd-online.com/index.php/rpd/article/view/489>
- Somasundaram, V., Soukas, P., Patel, J., & Ferguson, S. (2021). Considerations for Potential Global Expansion of Serum Institute of India. *Journal of Commercial Biotechnology*, 26(4).
- Tortella, P., Schembri, R., Ceciliani, A., & Fumagalli, G. F. (2020). Dual role of scaffolding on motor-cognitive development in early childhood education. *Journal of Human Sport and Exercise*, 15(4), 1259-1269. <https://doi.org/10.14198/jhse.2020.15.Proc4.37>
- Trigueros, R., Mínguez, L. A., González-Bernal, J. J., Jahouh, M., Soto-Camara, R., & Aguilar-Parra, J. M. (2019). Influence of teaching style on physical education adolescents' motivation and health-related lifestyle. *Nutrients*, 11(11), 2594. <https://doi.org/10.3390/nu11112594>
- Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., & Ryan, R. M. (2020). Self-determination theory applied to physical education: A systematic review and meta-analysis. *Journal of educational psychology*, 112(7), 1444. <https://doi.org/10.1037/edu0000420>
- Wang, L., Tang, Y., & Luo, J. (2017). School and community physical activity characteristics and moderate-to-vigorous physical activity among Chinese school-aged children: a multilevel path model analysis. *Journal of Sport and Health Science*, 6(4), 416-422. <https://doi.org/10.1016/j.jshs.2017.09.001>
- Wang, Z. (2018). Fuzzy comprehensive evaluation of physical education based on high dimensional data mining. *Journal of Intelligent & Fuzzy Systems*, 35(3), 3065-3076. <https://doi.org/10.3233/JIFS-169661>
- Zhang, G., & Chen, S. (2021). Problem-oriented Teaching Mode based on Data Mining Technology in the Sports Psychology Classroom. *International Journal of Emerging Technologies in Learning (iJET)*, 16(20), 84-100. <https://www.learntechlib.org/p/220552/>