Ergonomics Modifications and Improving Well-Being as an Early Disease Prevention in School Going Children in Developing Countries During Pandemic

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ABSTRACT
Background Statement: *Early Ergonomics Intervention and Education from Childhood is Considered to be Critical as They Are Future of Our Country for the Global Economy and Individuals Alike. As The Healthcare Common Say "Prevention Is Better Than Cure" It Would Be Better Said "Early Prevention In Childhood Is Crucial To Our Survival Than Any Remedy".* ***Purpose****: This Study Raise Awareness of the Role of Ergonomics in Protecting and Enhancing Children's Physical and Mental Development. Children's Posture Correction, Ergonomics For Home Computing, Aerobic Exercise Training, Flexibility Training, Balance Training And Muscular Strengthening Exercises Are All Part Of The Intervention.* ***Methodology:*** *The Experimental Study Involved 300 High School Students (Ages 8 To 18) Over A Six-Month Period. We're Currently Conducting Awareness Campaign throughout the Schools in Multi-Centric Areas. In Our Study, We Used Snowball Sampling, Which Is a Good Way to Get a Large Sample Size.* ***Result: Conclusion:*** *This Study Concluded That Physical Training And Ergonomic Education In School Going Children Has Shown Significant Effectiveness To A Great Extent For Improving Quality Of Life, Modifying Lifestyle And Preventing Disease Of School Going Students.*

Keywords*:* Ergonomic Modification, Quality Of Life, Disease Prevention, Physical Therapy.

I INTRODUCTION

Childhood and adolescents are unique periods of everyone's life which involves dramatic changes in physical, psychological and social aspects due to unhealthy lifestyle changes and this is the stage where behavior formed. The impact of pandemic on students of school and college had led to serious implications on mental health, resulting in psychological problems including frustration, stress, and depression in students' lives.

Around 98% of schools own computers with multimedia involving keyboard and mouse and school technology integration plans typically do not address ergonomic workstation designs and the issues include environmental conditions like ventilation, lighting, furniture for computer work like works surface, monitor height, and impact of workstation designs on students wellbeing. Tomorrow's workers are in today's school and this is the right place to educate children and adolescents about the awareness of posture, the ill effects of prolonged sitting, engaging them in physical activity and healthy eating habits and lifestyle.(1,2)

Musculoskeletal and back Health of school aged children is a global health problem with evidence that the prevalence of these problems is increasing (Rajan & Koti, 2013; Yao, Mai, Luo, Ai, & Chen, 2011).(3) Recent studies have highlighted the high prevalence of back pain that exists among schoolchildren including (Burton et al., 1996; Grimmer and Williams, 2000; Wedderkopp et al., 2001; Watson et al., 2002)(4). Community based studies of back pain in childhood indicate that low back pain does have a relatively high prevalence during school years which varies from country to country: Finland, 20%; England, 26%; Canada, 33%; United States, 36%; and Switzerland, 51% (Burton et al., 1996) .(5,6)

Due to pandemic, the use technological devices has advanced where all curricular activities went online this increasing risks to injuries related to sedentarism, for instance children of school going age own or use electronic devices (laptops, phones, games etc.) currently than before, and have become sedentary enough to the extend someone eats their food ordered online from food delivery services, without leaving the Sofa. The pandemic has led to such unavoidable sedentary behaviours as children couldn't access their joyful playing activities which were worsened with the virus spread prevention measures including the lockdown. This is interpreted as a danger as it bears prolonged periods of sitting and unaccustomed posture leads to increased risk of musculoskeletal problems, childhood obesity, and various systematic diseases such as early onset of non-communicable diseases such as hypertension, heart disease, type 2 diabetes and cancer if no preventive measures are taken.(7)

Students are not currently protected by legislation in the same way that adults are, all over the world. Students crossing the streets carrying heavy bags even an adult cannot easily hold for five minutes, another instance for students wear glasses in their first decade of life but nobody is interested to explore contributing factors the same way it is done in adults. (8-9)

Early ergonomics intervention and education from childhood is considered to be critical as they are future of our country for the global economy and individuals alike.(10-11) The Special Interest Group hopes to play its part in helping young people to develop good habits and enter the workplace with less ill health and injuries and have a more positive approach and attitude towards wellbeing.(13-14)

The group aims to increase the knowledge of good ergonomics among those working with and designing for children in school and establish best ergonomics practice across a range of topic areas:

- Furniture & postural health education.
- Technology
- Environmental Factors
- Multiple Learning Styles/intelligences
- Special Education
- Education of benefits of good ergonomics (raising awareness)

As a preventative measure and to improve a child's quality of life, ergonomic changes, instructions, and awareness may be beneficial to school-aged children, who are the society's rising stars. The terms “quality of life” and, more specifically, “health-related quality of life” refer to the physical, psychological, and social domains of health, seen as distinct areas that are influenced by a person’s experiences, beliefs, expectations, and perceptions

As the healthcare common say “prevention is better than cure” It would be better said “Early prevention in childhood in crucial to our survival than any remedy”. Also Health promotion programs in students should be in place to address such new challenges associated with improved technologies and improvement of healthy lifestyle by modifying ergonomics. (15-21)

(a) Aim of the Study: Aim of the study will be to observe the effect of ergonomic modifications on school-going children in pandemic in developing countries.

(b) Need for the Study: Due to the current Digital age and advent of technology the ergonomics and Physical training of children's and adolescents have been severely hampered, which had resulted in lot of physical as well as mental problems like HTN, Obesity etc. Also there is a lack of awareness regarding the benefits of various training programs which could be extremely helpful to this age- group, with increasing digital penetration it seems unlikely that physical activities are going to increase unless the awareness and proper methodology is not conducted. This study will be helpful in highlighting those benefits which are needed for children’s and adolescents urgently. Raise awareness of the role of ergonomics in protecting and enhancing children’s physical and mental development. Contribute to the health, wellbeing and learning capacity of young people throughout their formal educational years through the application of ergonomics. Nurture and encourage the development of good habits into adulthood through improved behaviour, posture, movement, exercise, awareness of ergonomics, furniture and environment and responsible use of technology. Encourage parents, health practitioners and education leaders to think again about the lack of health and safety legislation, guidance and awareness protecting children during this essential part of their physical and mental development. With an ergonomics perspective from members and a positive recruitment/inclusion plan for practitioners from other disciplines – physiotherapy, paediatric occupational health, osteopathy, education, architects and designers – the Group aims to promote insightful, practical and well-rounded advice and literature on a range of child-related health topics.

(c) Objectives: To assess the effect of ergonomic modifications for prevention of disease in school going children. And to prevent musculoskeletal complications in school going children.

II MATERIALS AND METHODS

- Study Design: Experimental Study
- Study Type: Pre -Post Type
- Sample Method: Snowball Sampling
- Sample Size: 308
- Study Duration: 6 Weeks (3 Times per Week)
- Study Setting: Multi-Centric Study.

India was represented by MGM School of physiotherapy by different schools (Government Vidya Niketan School, Dr A R Undre English School, Yashwantrao Maha vidhyala ,Government Shanti Niketan School)

Nepal was represented by monastic higher secondary boarding school.

Rwanda was represented by IOSHA Ltd a leading private company that provides OSH services and prevention of injury at workplace.

(a) Participants: This study involved children of school going age from Primary 4 to High school, their teachers and principals and parents. Each country conducted same study using same outcome measures translated in the local context.

(b) Materials Used: Informed Consent and Data collection sheet

(c) Inclusion:

- Age 6-18 years.
- Both Male and Female.
- Healthy individuals with no reported symptoms/disease as time of reporting.

(d) Exclusion:

- Any Past Medical conditions like asthma or respiratory condition
- Have any chronic disease.
- Recent fractural/Surgeries.
- Not willing to Participate.

(e) Outcome measures: Primary outcome measures: Children Physical Activity Questionnaire(C-PAQ) Secondary outcome measures**:** Kids Screen 52 Health Questionnaire for Children and Young People.

(f) Procedure: Children's are selected based on inclusion and exclusion criteria, then the test procedure was explained to the students. Then informed consent was taken from them. Before the intervention pre-test values are measured and post-test values after the intervention. Physical training was given for the students. We raised awareness in schools by presenting posters, banners, and fliers, educating teachers and parents. American College of Sports Medicine (ACSM'S) ex's guidelines for children and adolescents was followed which prescribe minimum of 30 min on five days per week, or vigorous intensity aerobic activity for a minimum of 20 min on three days per week. Awareness program include the ergonomic considerations for designing products for children to encourage their proper use, safety and fun. Imparting an awareness of the importance of position posture and comfort to children at an early age. Two groups were assigned that was group A and group B. Group A Controlled group with 154 students and Group B Experimental group with 154 students.

(g) Intervention:

- Group-A: Control Group (Awareness Program And Education)
- Group B: Experimental Group (Awareness Program With Physical Activity)

(h) Physical Training

- Aerobic exercise:-Frequency – thrice a week
- Intensity - moderate to vigorous
- Time – more than 60min
- Type- running, dancing, brisk walking
- Resistance training:- Frequency –thrice a week
- Intensity – mild to moderate
- Time – 20-40mins
- Type- playing on playground, climbing trees, tug of war, heavy weight lifting.
- Flexibility training- Frequency – thrice a week
- Intensity- 30sec hold for 3 reps
- Type – self stretching techniques.

(i) Fit Recommendations for Children and Adolescents: The ExR guidelines for children and adolescents establish the minimal mans of physical activity needed to achieve the laths/iess benefits associated with regular physical activity. Children and adolescents should be encouraged to participate in various physical activities that are enjoyable and age appropriate.

Three Recommendations for Children and Adolescents could be:

Aerobic Exercise

- Muscle Strengthening Exercise
- Bone Strengthening Exercise
- These Exercise could be Divided into various groups and programs which are time bound.

(j) Aerobic Exercise:

- Frequency: Daily.
- Intensity: Most should be moderate-to-vigorous intensity aerobic
- Time: >60 min •d-1.
- Type: Enjoyable and developmentally appropriate aerobic physical activities, including running, brisk walking, swimming, dancing, and bicycling.

(k) Strengthening Exercises: These are exercises which are designed to increase the strength of specific or groups of muscles. Strengthening exercises overload the muscle until the point of muscle fatigue. This force and overload of a muscle encourages the growth, increasing the strength.

- Frequency: >3 d. wk-1
- Time: As part of their 60 min. d- or more of exercise.
- Type: Muscle strengthening physical activities can be unstructured (e.g., playing on playground equipment, climbing trees, tug-of-war) or structured (e.g., lifting weights, working with resistance bands).

(l) Bone-Strengthening Exercise: activities produce an impact or tension force on the bones that promotes bone growth and strength. Some examples of bone-strengthening activities include: hopping, skipping, jumping rope, running, and gymnastics, lifting weights, volleyball, tennis and basketball.

- Frequency: 3 d week.
- Time: As part of 60 min. d' or more of exercise.
- Type: Bone strengthening activities include running, jumping rope, basketball, tennis, resistance training, and hopscotch.

III REVIEW OF LITERATURE

- **Maj S Bakhtiar Choudhary (2020)** conducted a study on Impact of Ergonomics on Children Studying Online During COVID-19 Lockdown and This pilot exploratory study revealed that parents and students were not aware of ergonomics.
- **Ayed HB et al. (2019):** this study concluded that the need of proper designing of furniture and ergonomic assessment among school going children is very much required in current situation as the prevalence ratio of musculoskeletal system related pain (MSP) among school going children is alarmingly rising**.**
- **Ingrid V. Sellschop et al (2018)** conducted a study to establish the effect of a computer-related ergonomic intervention for adolescents in a school environment on posture and ergonomic behaviour.
- **Victor Cw.Hoc, Donna M et al. (2018):** concluded that inconsistent evidence that the use of an arm support or an alternative mouse may or may not reduce the incidence of neck or shoulder MSDs.
- **Corraya,et al (2018)** concluded that The school bag's weight influence on the physical status of school going children to explore the musculoskeletal symptoms due to carrying heavy school bag's of children.
- **Chandni Maria Jacob 1, Janis Baird 2,3, Mary Barker et al. (2016**): Concluded that The high disease burden in young people suggests that they are particularly affected by the persistent low global investment in NCDs and injury relative to the global disease burden.
- **Patricia m. kluding, et al. (2016**): Concluded that people with DPN should be monitored closely for co morbidities that may contribute to injury or skin break- down but also advocate a paradigm shift to maintain and even increase WB activities rather than avoid them.
- **Aleksandar Zunjic (2015)** concluded that results of ergonomic research in this area provide a good starting point that allows the creation of appropriate ergonomic designing solutions, aimed at solving the existing problems in this area.
- **Fahmy i. m., ramzy g. et al. (2014):** concluded that there is an effect of sensory disturbance on balance in patients with diabetic polyneuropathy, which could aggravate the risk of falls in such patients.
- **Nizarabdulmajeedkutty et al. (2013)**: concluded that the multisensory exercise training programmed can improve the balance of diabetic people with peripheral neuropathy.
- **Muellermj, et al. (2013)**: concluded that the results of this study indicate the ability of this population with chronic disease to increase 6MWD and daily step count with a WB exercise program compared with an NWB exercise program.
- **Fábiomarconal fieri, et al.(2012):** concluded that although the GM group presented better results, it is not possible to state that one exercise regimen proved more efficacious than the other in improving balance control.
- **PavithraRajanet.al (2011)** The study concluded that the presence of musculoskeletal aches and pains in underprivileged children had bad ergonomics and postures while performing activities in school.
- **Sam Murphy, David Stubbs et al. (2003):** concluded that, this study has implications for schools regarding the length and structure of lessons and for designers regarding the design of school furniture.
- **JK Whittfield, S J legg et al. (2001):** concluded that This study suggests that third form students may be at a higher risk of developing musculoskeletal symptoms than sixth form students.(22)

(a) Statical Analysis - The data obtained will be kept safely for a period in a safe locker for 5 years and after they will be completely destroyed to protect the privacy and confidentiality of the participants. The data needed for quantitative analysis, will be analyzed using SPSS 21.0 version and different statistical test will be used such as frequency distribution stats, measures of central tendency (mean, standard deviations), for intervention paired and independent t tests will be done too.

(b) Ethical Consideration - The letter requesting ethical clearance will be sent to the MGM Aurangabad. After ethical clearance, letters to institutions to be involved in the study will be sent for approval. Consent forms will be given to participants, and where under 18 years old participants are involved their guardians and parents will give consent. The participation in the study is purely voluntary and participants will have the rights to withdraw from the study any time and their withdraw will not affect them in one way or another.

Information will be kept confidentially and their personal details will not be used or reported anywhere and whenever identification is needed, the researchers will identify them using Codes instead of the names.

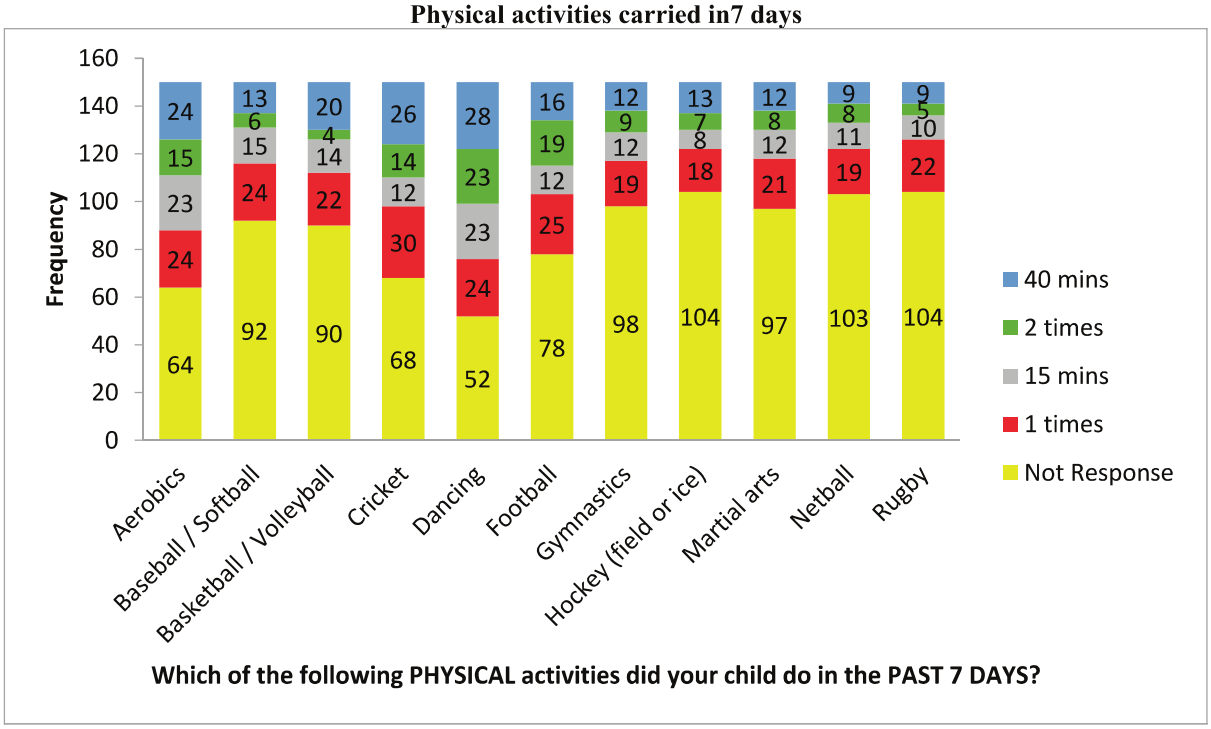
IV RESULTS

Table1
Statistics of the activities carried out by the children's in past 7 days

Control Group	Which of the following PHYSICAL activities did your child do in the PAST 7 DAYS?				
	Not Response (%)	1 times (%)	15 mins (%)	2 times (%)	40 mins (%)
Aerobics	64 (42.7)	24 (16.0)	23 (15.3)	15 (10.0)	24 (16.0)
Baseball / Softball	92 (61.3)	24 (16.0)	15 (10.0)	6 (4.0)	13 (8.7)
Basketball / Volleyball	90 (60.0)	22 (14.7)	14 (9.3)	4 (2.7)	20 (13.3)
Cricket	68 (45.3)	30 (20.0)	12 (8.0)	14 (9.3)	26 (17.3)
Dancing	52 (34.7)	24 (16.0)	23 (15.3)	23 (15.3)	28 (18.7)
Football	78 (52.0)	25 (16.7)	12 (8.0)	19 (12.7)	16 (10.7)
Gymnastics	98 (65.3)	19 (12.7)	12 (8.0)	9 (6.0)	12 (8.0)
Hockey (field or ice)	104 (69.3)	18 (12.0)	8 (5.3)	7 (4.7)	13 (8.7)
Martial arts	97 (64.7)	21 (14.0)	12 (8.0)	8 (5.3)	12 (8.0)
Netball	103 (68.7)	19 (12.7)	11 (7.3)	8 (5.3)	9 (6.0)
Rugby	104 (69.3)	22 (14.7)	10 (6.7)	5 (3.3)	9 (6.0)

The following table illustrates the physical activities carried by the Control group students in which the response for physical activities outdoor is significantly low.

Graph1
Physical activities carried in7 days



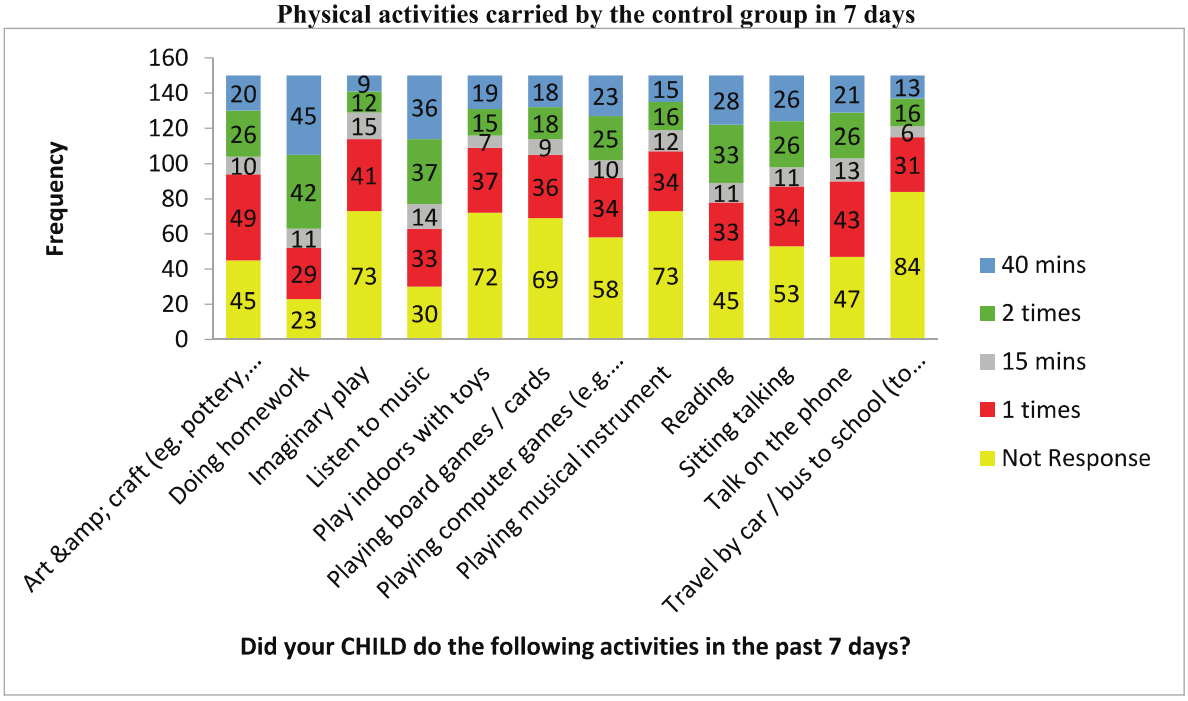
Graphical representation of the same

Table 2
Statistics of the activities carried by the students in 7 days

Control Group	Did your CHILD do the following activities in the past 7 days?				
	Not Response (%)	1 times (%)	15 mins (%)	2 times (%)	40 mins (%)
Art & craft (eg. pottery, sewing, drawing, painting)	45 (30.0)	49 (32.7)	10 (6.7)	26 (17.3)	20 (13.3)
Doing homework	23 (15.3)	29 (19.3)	11 (7.3)	42 (28.0)	45 (30.0)
Imaginary play	73 (48.7)	41 (27.3)	15 (10.0)	12 (8.0)	9 (6.0)
Listen to music	30 (20.0)	33 (22.0)	14 (9.3)	37 (24.7)	36 (24.0)
Play indoors with toys	72 (48.0)	37 (24.7)	7 (4.7)	15 (10.0)	19 (12.7)
Playing board games / cards	69 (46.0)	36 (24.0)	9 (6.0)	18 (12.0)	18 (12.0)
Playing computer games (e.g.playstation / gameboy)	58 (38.7)	34 (22.7)	10 (6.7)	25 (16.7)	23 (15.3)
Playing musical instrument	73 (48.7)	34 (22.7)	12 (8.0)	16 (10.7)	15 (10.0)
Reading	45 (30.0)	33 (22.0)	11 (7.3)	33 (22.0)	28 (18.7)
Sitting talking	53 (35.3)	34 (22.7)	11 (7.3)	26 (17.3)	26 (17.3)
Talk on the phone	47 (31.3)	43 (28.7)	13 (8.7)	26 (17.3)	21 (14.0)
Travel by car / bus to school (to and from school)	84 (56.0)	31 (20.7)	6 (4.0)	16 (10.7)	13 (8.7)

The following Table demonstrate the physical activities carried by the control group students in which the students performing indoor physical activities is notably with low responses.

Graph2
Physical activities carried by the control group in 7 days



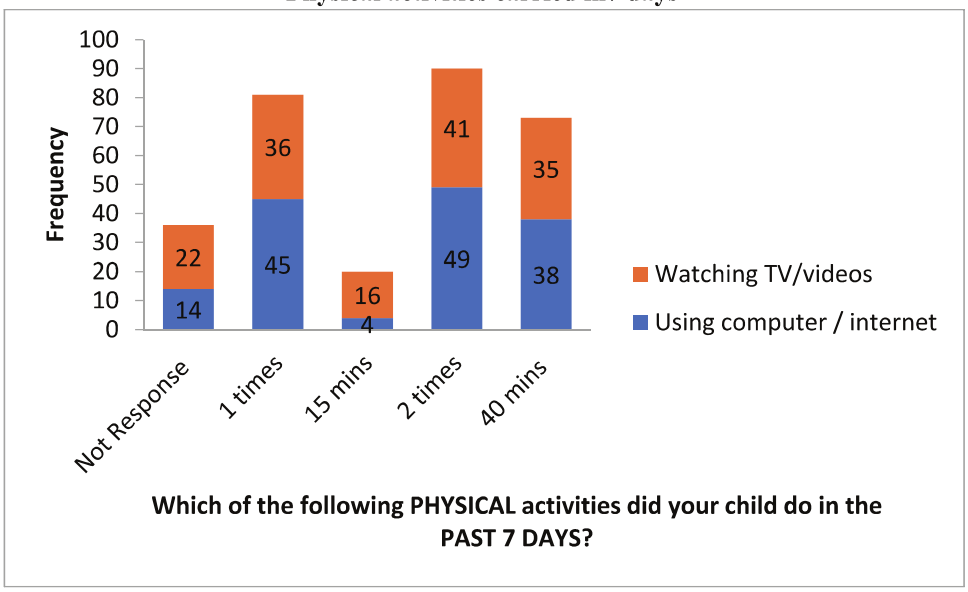
Graphical representation of the same

Table 3
Statistics of activity carried by the students in 7 days

Control Group	Which of the following PHYSICAL activities did your child do in the PAST 7 DAYS?				
	Not Response (%)	1 times (%)	15 mins (%)	2 times (%)	40 mins (%)
Using computer / internet	14 (9.3)	45 (30.0)	4 (2.7)	49 (32.7)	38 (25.3)
Watching TV/videos	22 (14.7)	36 (24.0)	16 (10.7)	41 (27.3)	35 (23.3)

The Given table shows use of the technologies in day to day lives by the control group students.

Graph 3
Physical activities carried in7 days



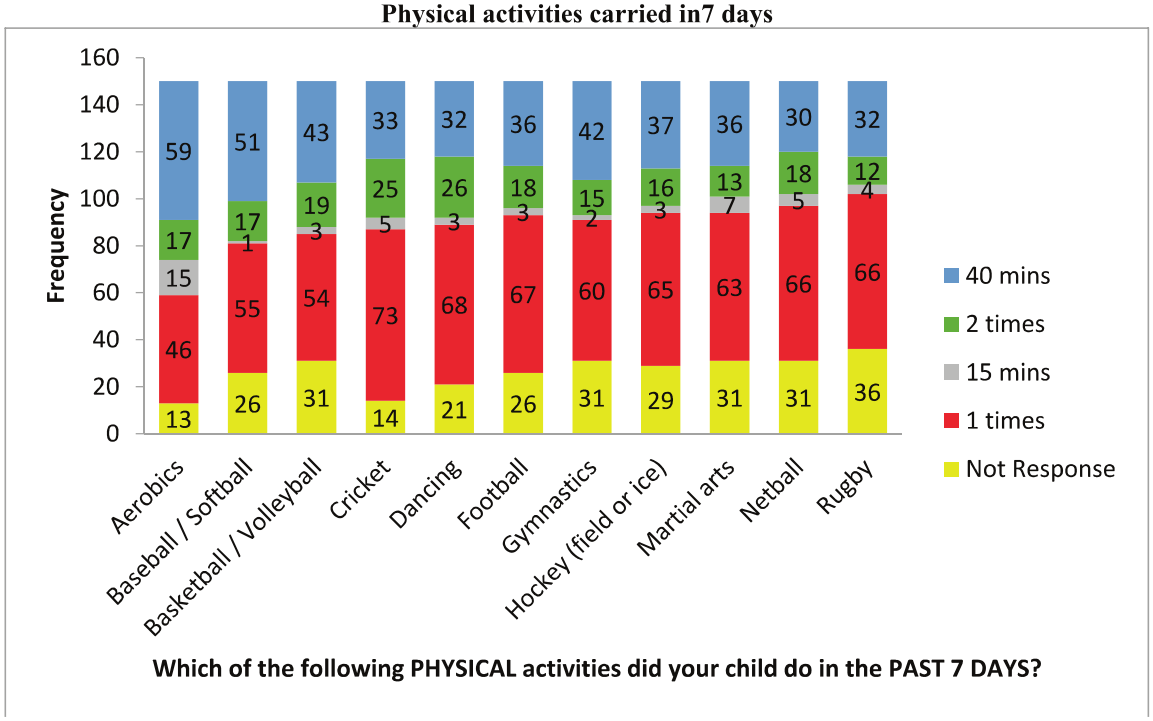
Graphical representation of the same

Table 4
Statistics of activity carried by the students in 7 days

Experimental Group	Which of the following PHYSICAL activities did your child do in the PAST 7 DAYS?				
	Not Response (%)	1 times (%)	15 mins (%)	2 times (%)	40 mins (%)
Aerobics	13 (8.7)	46 (30.7)	15 (10.0)	17 (11.3)	59 (39.3)
Baseball / Softball	26 (17.3)	55 (36.7)	1 (0.7)	17 (11.3)	51 (34.0)
Basketball / Volleyball	31(20.7)	54(36.0)	3(2.0)	19(12.7)	43(28.7)
Cricket	14 (9.3)	73 (48.7)	5 (3.7)	25 (16.7)	33 (22.0)
Dancing	21 (14.0)	68 (45.3)	3 (2.0)	26 (17.3)	32 (21.3)
Football	26 (17.3)	67 (4.7)	3 (2.0)	18 (12.0)	36 (24.0)
Gymnastics	31 (2.7)	60 (40.0)	2 (1.3)	15 (10.0)	42 (28.0)
Hockey (field or ice)	29 (19.3)	65 (43.3)	3 (2.0)	16 (10.7)	37 (24.7)
Martial arts	31 (20.7)	63 (42.0)	7 (4.7)	13 (8.7)	36 (24.0)
Netball	31 (20.7)	66 (44.0)	5 (3.3)	18 (12.0)	30 (20.0)
Rugby	36 (24.0)	66 (44.0)	4 (2.7)	12 (8.0)	32 (21.3)

The following table shows that the physical activities carried by experimental group students in which the students performing outdoor physical activities is with more responses.

Graph 4
Physical activities carried in7 days



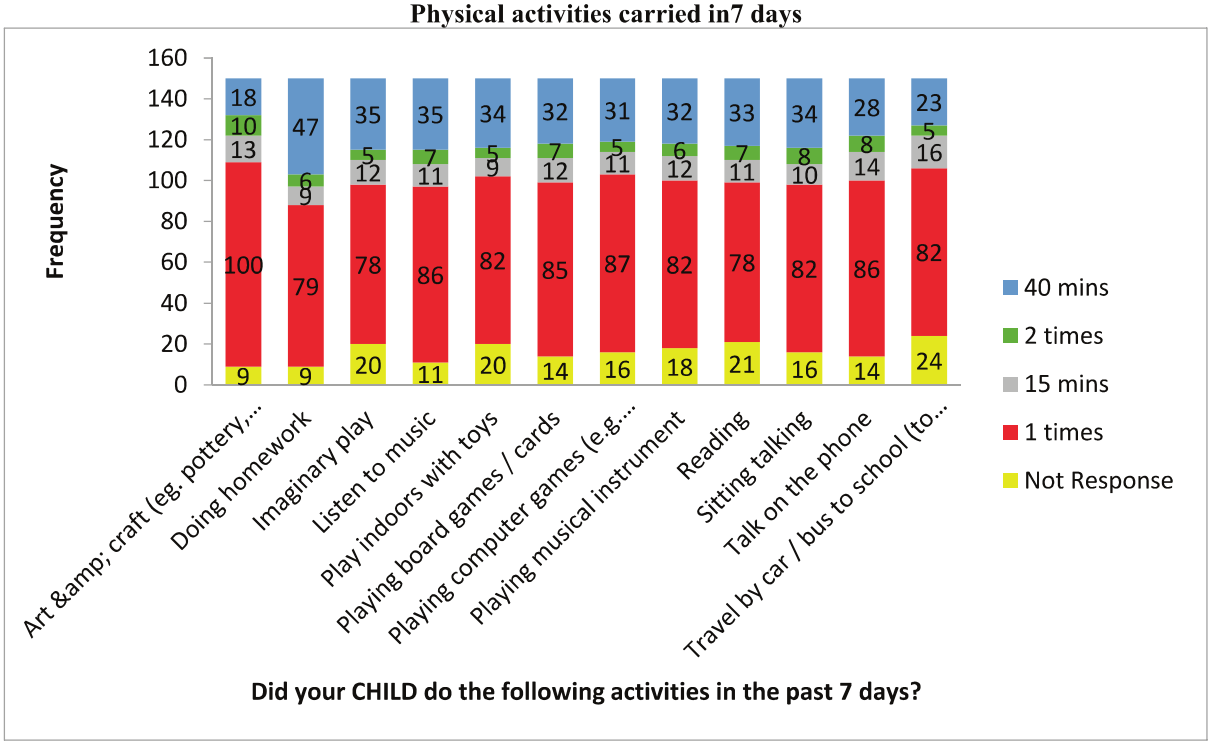
Graphical representation of the same

Table 5
Statistics of activity carried by the students in 7 days

Experimental Group	Did your CHILD do the following activities in the past 7 days?				
	Not Response (%)	1 times (%)	15 mins (%)	2 times (%)	40 mins (%)
Art & craft (eg. pottery, sewing, drawing, painting)	9 (6.0)	100 (66.7)	13 (8.7)	10 (6.7)	18 (12.0)
Doing homework	9 (6.0)	79 (52.7)	9 (6.0)	6 (4.0)	47 (31.3)
Imaginary play	20 (13.3)	78 (52.0)	12 (8.0)	5 (3.3)	35 (23.3)
Listen to music	11 (7.3)	86 (57.3)	11 (7.3)	7 (4.7)	35 (23.3)
Play indoors with toys	20 (13.3)	82 (54.7)	9 (6.0)	5 (3.3)	34 (22.7)
Playing board games / cards	14 (9.3)	85 (56.7)	12 (8.0)	7 (4.7)	32 (21.3)
Playing computer games (e.g.playstation / gameboy)	16 (10.7)	87 (58.0)	11 (7.3)	5 (3.3)	31 (20.7)
Playing musical instrument	18 (12.0)	82 (54.7)	12 (8.0)	6 (4.0)	32 (21.3)
Reading	21 (14.0)	78 (52.0)	11 (7.3)	7 (4.7)	33 (22.0)
Sitting talking	16 (10.7)	82 (54.7)	10 (6.7)	8 (5.3)	34 (22.7)
Talk on the phone	14 (9.3)	86 (57.3)	14 (9.3)	8 (5.3)	28 (18.7)
Travel by car / bus to school (to and from school)	24 (16.0)	82 (54.7)	16 (10.7)	5 (3.3)	23 (15.3)

The following table illustrate the physical activities carried by the experimental group students in which the response for physical activities outdoor is significantly high.

Graph 5
Physical activities carried in7 days



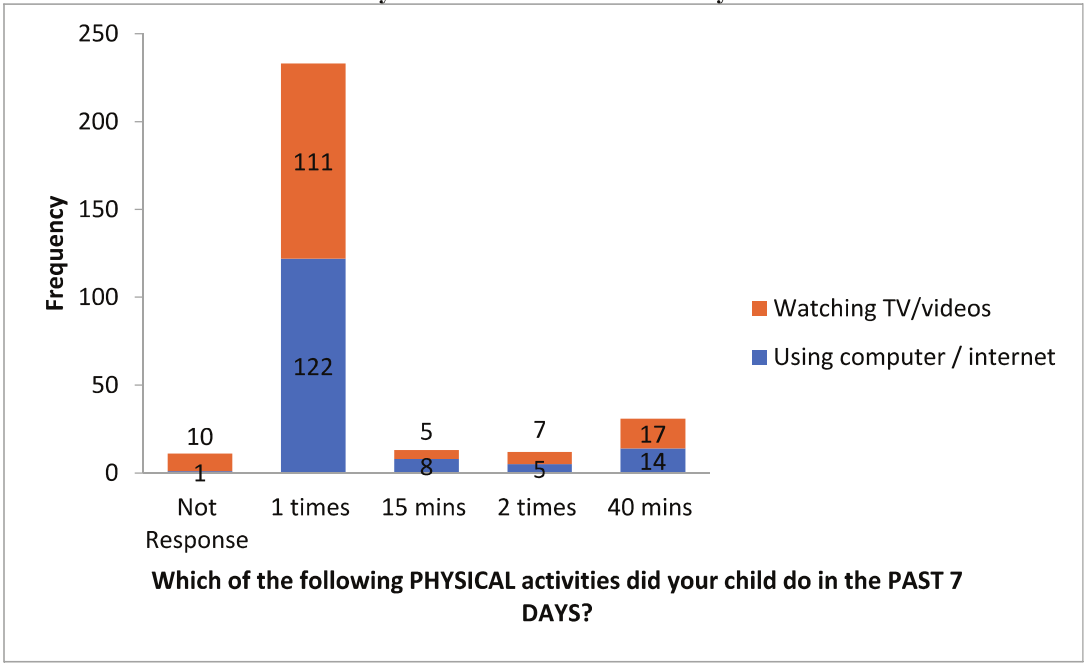
Graphical representation of the same

Table 6
Statistics of activity carried by the students in 7 days.

Experimental Group	Which of the following PHYSICAL activities did your child do in the PAST 7 DAYS?				
	Not Response (%)	1 times (%)	15 mins (%)	2 times (%)	40 mins (%)
Using computer / internet	1 (0.7)	122 (81.3)	8 (5.3)	5 (3.3)	14 (9.3)
Watching TV/videos	10 (6.7)	111 (74.0)	5 (3.3)	7 (4.7)	17 (11.3)

The following table shows that the physical activities carried by experimental group students in which the students performing outdoor physical activities is with low responses.

Graph 5
Physical activities carried in7 days



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V DISCUSSION

Our study is intended to enhance the sedentary lifestyle of school-aged children by implementing awareness programs at various educational institutions and teaching physical activities. According to recent research, the frequency of acquired musculoskeletal deformities has grown, thus as an early preventative strategy, the goal is to prevent more disorders and consequences in the future.

According to our findings, school-aged children between the ages of 15 and 18 engage in moderate physical exercise on a daily basis. The age group of 8-12 years participates in a minimum amount of physical exercise.42.8 percent of school-aged children fits in the "GOOD" category of health and physical activity. FAIR health and physical exercise is adopted by 19.3% of school-aged children. The frequency of aerobics is fewer in school-aged children's daily lives, but the duration of aerobics is higher. However, physical activity has a limited influence on psychological components.

(INGRID AND ASSOCIATES*)* concluded that ergonomic intervention program in a school environment can be effective in improving posture and the effect can be sustained over a period of 6 months)

According to studies, keeping a correct posture early in childhood and adolescence, as well as being aware of the impacts of sedentary sitting behaviour whether sitting in schools or doing homework at home, has a significant advantage.

Dockrell et al. (2010), Syazwan et al. (2011), and Ismail et al. (2010) all used a similar type of educational ergonomic interventional programme in their ergonomic intervention studies. They also incorporated visual and graphic aids, as well as problem-solving methodologies for workstation adjustments and stretching exercises. In a classroom setting, the outcomes were relatively effective.

Regular physical exercise, according to our review of the literature, helps to avoid a various diseases and problems. There were no improvements in the students' lifestyles when simply an awareness program was used, but when physical exercise was integrated with an awareness program, there was a significant shift in the children's behavior and lifestyle.

Developing an active lifestyle is crucial, and it can only be accomplished via education. While perusing education it is very important to maintain better posture as well as indulge in Physical activities as much as possible to improve quality of life. With good fitness our mind and body synchronize and this helps in concentration and focus on the studies. Thus, contributing into achieving better academics advancements in all aspects.

Nowadays students tends to focus more on the studying and less on physical activities which hampers their overall growth both mentally and physically. Due to ipsilateral focus on studying students are very much in stress and various other physiological distress. But with the help of physical activity most of the stress can be relives which will enhance their potential and increase this performance as well.

Ingrid V. Sellschop and Hellen Myezwa et al suggested that early detection and management of bad ergonomics in a school environment can have a positive impact on minimizing poor postural behavior among students, according to our healthcare system.

The school should include the ergonomic education as a part of curriculum by delivering ergonomic principles both practically and theoretically. .Physical activity should also carried out and should be taken seriously by the school authorities and should give equal importance as it is given to any other subjects taught in the school.

In consonance with various articles and studies, the primary goal of the ergonomics is to eliminate the stress and reduce the risk of injuries and other musculoskeletal related disorders. Hence, our main focus with aid primary goal should be how we can prevent these traits as an early strategy for our future generations to achieve their maximum and significantly contribute in the advancement of the developing nations.

VI CONCLUSION

This study concluded that physical training and ergonomic education in school going children has shown significant effectiveness to a great extent for improving quality of life, modifying lifestyle and preventing disease of school going students.

VII LIMITATIONS AND RECOMMENDATIONS

(a) Limitations - The present study was carried out on a relatively smaller sample size as compared to school going children population. The present study can be carried out in NGOs, Primary Rural areas.

(b) Recommendations - This research should be carried out on a wider scale. There should be Funding sponsors for spreading ergonomic Awareness program at National level.

(c) Conflict of Interest - There is no conflict of interest

(d) Source of Funding - There is no fund by any agencies for the study. This study is self-funded project.

(e) Ethical Clearance - The study was approved by Ethical committee for Research on Human Subjects by MGM-ECRHS.

REFERENCES

[1] Khan KS, Mamun MA, Griffiths MD, Ullah I. The mental health impact of the COVID-19 pandemic across different cohorts. International journal of mental health and addiction. 2020 Jul 9:1-7.

[2] Franchi T. The impact of the Covid_19 pandemic on current anatomy education and future careers: A student's perspective. Anatomical Sciences Education. 2020 May;13(3):312-5.

[3] The Natural History of Low Back Pain in Adolescents : Spine [Internet]. [cited 2022 Jan 3]. Available from: https://journals.lww.com/spinejournal/Abstract/1996/10150/The_Natural_History_of_Low_Back_Pain_in.4.aspx

[4] Deolankar A, Toshniwal P, Chitapure T, Malani R. A Long-Term Impact of Oscillatory Mobilization and Mckenzie Retraction Exercises in Cervical Radiculopathy Management: A Case Report. Journal of Pharmaceutical Research International. 2021 Apr 9:100-5.

[5] Fatema N, Dass B, Hotwani R. Impact of Movement with Mobilization and Triceps Eccentric Strengthening in Tennis Elbow: Case Report. Journal of Pharmaceutical Research International. 2021 Apr 15:10-4.

[6] Bhatnagar A, Dass B, Hotwani R. Effectiveness of Self-Administered Proprioceptive Neuromuscular Facilitation with Self-Neural Mobilization Technique in TrapeziusMyalgia: Single Subject Research. Journal of Pharmaceutical Research International. 2021 Apr 7:36-40.

[7] Dass, Rinkle M. Interventions of proprioceptive training in lateral ankle sprain-A case report. Medical Science. 2021;25(108):272-8.

[8] Impact of COVID-19 Pandemic lockdown on Mental and Physical health of students: A cross-sectional study Int. J. Res. Pharm. Sci., 2020, 11 (SPL)(1), 1710-1714.

[9] Ambhore S, Dass B, Hotwani R. Effectiveness of Strengthening and Proprioceptive Training in Preventing Anterior Cruciate Ligament Injury and Rehabilitation: A case report. Annals of the Romanian Society for Cell Biology. 2021 Apr 27:11651-4.

[10] Murphy S, Buckle P, Stubbs D. A cross-sectional study of self-reported back and neck pain among English schoolchildren and associated physical and psychological risk factors. Applied Ergonomics. 2007 Nov 1;38(6):797–804.

[11] *Theoretical Issues in Ergonomics Science*. In: Wikipedia [Internet]. 2019 [cited 2022 Jan 3]. Available from: https://en.wikipedia.org/w/index.php?title=Theoretical_Issues_in_Ergonomics_Science&oldid=883808307

[12] Wayback Machine [Internet]. 2018 [cited 2022 Jan 3]. Available from: https://web.archive.org/web/20180619090847/http://opac.vimaru.edu.vn:80/edata/EBook/An%20intruduction%20to%20human%20factors%20engineering.pdf

[13] Jena PK. Impact of pandemic COVID-19 on education in India. International Journal of Current Research (IJCR). 2020 Jul 30;12

[14] Dul J, Karwowski W. An assessment system for rating scientific journals in the field of ergonomics and human factors. Applied Ergonomics. 2004 May 1;35(3):301-10.

[15] Wickens CD, Gordon SE, Liu Y, Lee J. An introduction to human factors engineering

[16] Stahl DL. Health and Safety in Emergency Management and Response. John Wiley & Sons; 2020 Nov 5.

[17] Stahl DL. Health and Safety in Emergency Management and Response. John Wiley & Sons; 2020 Nov 5.

[18] Heyman E, Dekel H. Ergonomics for children: an educational program for elementary school. Work. 2009 Jan 1;32(3):261-5.

[19] Jayaratne IL, Fernando DN. Ergonomics related to seating arrangements in the classroom: worst in South East Asia? The situation in Sri Lankan school children. Work. 2009 Jan 1;34(4):409-20.

[20] The role of the Physical Educator in disseminating ergonomic principles in the school.

[21] Geldhof E, De Clercq D, De Bourdeaudhuij I, Cardon G. Classroom postures of 8–12 year old children. Ergonomics. 2007 Oct 1;50(10):1571-81.