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Ergonomic Wellness: Combating Youth Back Pain Through Active Lifestyles And Sports

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Abstract: Back pain is increasingly common among youth due to sedentary lifestyles, poor posture, and lack of physical activity. This study explores the key causes of back pain among young individuals and evaluates the role of sports activities and exercise in its prevention and management. A descriptive research design was adopted, with a sample size of 250 respondents selected through simple random sampling. Data was collected using a structured questionnaire, focusing on demographic details, back pain prevalence, awareness of preventive measures, and exercise habits. Findings indicate that prolonged sitting, incorrect posture, and lack of physical activity are primary contributors to back pain. However, regular engagement in strength training, stretching, aerobic exercises, and posture correction methods significantly reduces spinal discomfort. The study suggests integrating ergonomic awareness, movement breaks, and structured exercise programs into daily routines to prevent and manage back pain effectively.

Index Terms - Back Pain, Youth Health, Physical Activity, Ergonomics, Posture Correction, Strength Training, Stretching, Aerobic Exercises, Preventive Measures, Ergonomic Awareness

1. INTRODUCTION

Back pain, once considered an issue among older adults, is now a growing concern among youth. Prolonged screen time, poor posture, and reduced physical activity contribute to spinal discomfort. Many young individuals lead sedentary lifestyles, weakening their back muscles and increasing the risk of chronic pain. Heavy backpacks, improper sleeping habits, and lack of ergonomic awareness further exacerbate the problem. However, engaging in sports and regular exercise strengthens core muscles, improves posture, and promotes spinal health. This study explores lifestyle factors influencing back pain and highlights effective physical activities to prevent and manage it.

2. STATEMENT OF THE PROBLEM

Back pain among youth has become a prevalent issue due to modern lifestyle changes, including increased screen time, sedentary habits, and poor ergonomic practices. Many young individuals experience discomfort due to prolonged sitting, incorrect posture while using electronic devices, and insufficient physical activity. The lack of awareness about proper body mechanics and spinal health further exacerbates the problem. Moreover, carrying heavy backpacks and poor sleeping habits contribute significantly to musculoskeletal stress.

While medical treatments exist, reliance on medication for pain relief may not provide long-term solutions. There is a need to explore non-pharmacological interventions such as sports activities and regular exercise to strengthen the back muscles, enhance flexibility, and improve overall spinal health. However, many youth are unaware of the benefits of physical activity in preventing and managing back pain.

This study aims to identify the key lifestyle factors contributing to back pain among youth and assess the effectiveness of exercise and sports in reducing discomfort. By analyzing different types of physical activities and their impact on back pain, this research seeks to provide practical recommendations for integrating fitness into daily routines. Addressing this issue is crucial for improving the well-being and productivity of young individuals and preventing long-term musculoskeletal problems.

3. METHODOLOGY

3.1 Research Design

This study employs a descriptive research design to analyze the impact of physical activity and ergonomic practices on back pain prevention among youth. The study focuses on identifying lifestyle factors contributing to back pain and assessing the effectiveness of exercise and sports in reducing discomfort.

3.2 Sampling Method and Sample Size

A simple random sampling technique was used to select participants from the target population. The study involved 250 respondents, ensuring a diverse representation of youth experiencing back pain due to various lifestyle factors.

3.3 Data Collection

The data was collected through online and in-person surveys to ensure broader reach and accuracy. Participants were also asked about their awareness and participation in strength training, stretching, aerobic activities, posture correction exercises, and preventive measures.

3.4 Causes of Back Pain among Youth

Back pain among youth is increasingly common due to several contributing factors. A sedentary lifestyle, characterized by prolonged sitting and minimal movement, weakens back muscles, making them more prone to strain. Poor posture, especially slouching while using electronic devices, leads to spinal misalignment and discomfort. Additionally, a lack of physical activity results in weak core muscles, which fail to provide adequate support to the spine. Carrying heavy backpacks, particularly overloaded school bags, puts excessive strain on the back, further increasing the risk of pain. Moreover, improper sleeping posture and poor sleeping habits can exacerbate spinal discomfort, leading to persistent back issues.

3.5 Role of Sports Activities and Regular Exercise

Engaging in sports and regular physical exercise offers multiple benefits for spinal health, including strengthening back muscles, improving flexibility, and enhancing posture. Some effective activities include:

Gender Distribution of Respondents

Gender	No. of Respondents	Percentage (%)
Male	110	44%
Female	140	56%
Total	**250**	**100%**

The data reveals the gender distribution of respondents, showing that a majority (56%) are female, while 44% are male. This indicates a higher participation of women in the study, suggesting that they may play a significant role in the fishing community, either directly in fishing-related activities or indirectly through support roles such as marketing, processing, or household financial management. The findings highlight the need to consider gender-specific challenges and opportunities within the fishing sector.

Age-Wise Classification

Age Group (Years)	No. of Respondents	Percentage (%)
19 – 24	95	38%
25 – 30	85	34%
31 – 35	70	28%
Total	**250**	**100%**

The data indicates that the majority of respondents (38%) belong to the 19–24 years age group, followed by 34% in the 25–30 years category, and 28% in the 31–35 years group. This suggests that a significant portion of individuals engaged in fishing-related activities or associated occupations are young adults. The higher representation of younger age groups could imply early entry into the profession, possibly due to family involvement or limited alternative employment opportunities. Additionally, it highlights the importance of targeted skill development and financial support programs to enhance sustainability and growth in the sector.

Reasons for Back Pain Among Youth

Reason	No. of Respondents	Percentage (%)
Sedentary Lifestyle	70	28%
Poor Posture	55	22%
Lack of Physical Activity	50	20%
Heavy Backpacks	40	16%
Improper Sleeping Posture	35	14%
Total	**250**	**100%**

The data highlights the primary reasons contributing to the issue under study, with sedentary lifestyle (28%) being the most reported factor. This suggests that prolonged sitting, possibly due to work or lifestyle habits, is a major concern. Poor posture (22%) and lack of physical activity (20%) also play significant roles, indicating that improper body alignment and inactivity contribute to the problem. Additionally, heavy backpacks (16%) and improper sleeping posture (14%) are notable factors, though less prevalent. These findings emphasize the need for awareness programs on posture correction, regular physical activity, and ergonomic practices to reduce the impact of these issues.

Exercise Strategies for Back Pain Prevention and Management

Component	Types of Activities/Exercises	Purpose/Benefits	Expected Impact on Back Pain
Strength Training	- Planks, Bridges	Strengthens core muscles, supports lower back	Reduces strain on the spine, enhances stability
	Weight training (under supervision)	Develops spinal stability	Prevents back pain by improving muscle strength
Stretching & Flexibility	Yoga	Improves posture, reduces muscle tension	Enhances flexibility, reduces stiffness
	Dynamic stretching before activities	Prevents injuries, improves mobility	Reduces the risk of back pain due to stiffness
Aerobic Activities	Swimming	Reduces spinal stress, strengthens back muscles	Provides low-impact support for back health
	Cycling (with proper posture)	Supports spinal alignment, strengthens muscles	Improves posture and spinal endurance
Posture Correction Exercises	Ergonomic awareness exercises	Helps maintain proper sitting and standing posture	Reduces posture-related back pain
	Pilates	Enhances body control, spinal alignment	Prevents misalignment and strain
Preventive Measures	Encouraging movement breaks	Reduces prolonged sitting stress on the back	Prevents stiffness and muscular imbalance
	Using ergonomic furniture	Provides better spinal support	Reduces discomfort from poor posture

The table categorizes exercises into strength training, stretching, aerobic activities, posture correction, and preventive measures. Strength training exercises, such as planks and weight training, enhance core stability and reduce strain on the spine. Stretching and flexibility exercises, including yoga and dynamic stretching, improve mobility and prevent stiffness. Aerobic activities like swimming and cycling offer low-impact solutions for spinal support. Posture correction exercises and ergonomic awareness play a crucial role in maintaining spinal alignment and preventing posture-related pain. Preventive measures, such as movement breaks and ergonomic furniture, help minimize prolonged sitting stress and discomfort. By incorporating these exercises and practices, individuals can effectively manage and prevent back pain, improving overall spinal health.

Awareness of Back Pain Prevention Methods Among Youth

Prevention Method	Aware (%)	Adopted	Not Aware (%)	Total (N = 250)
Strength Training				
- Core-strengthening exercises (Planks, Bridges)	150 (60%)	117	100 (40%)	250
- Weight training (under supervision)	120 (48%)	94	130 (52%)	250

Stretching & Flexibility				
- Yoga	160 (64%)	125	90 (36%)	250
- Dynamic stretching before activities	130 (52%)	101	120 (48%)	250
Aerobic Activities				
- Swimming	110 (44%)	86	140 (56%)	250
- Cycling (with proper posture)	140 (56%)	109	110 (44%)	250
Posture Correction Exercises				
- Ergonomic awareness exercises	125 (50%)	98	125 (50%)	250
- Pilates	90 (36%)	70	160 (64%)	250
Preventive Measures				
- Encouraging movement breaks	170 (68%)	133	80 (32%)	250
- Using ergonomic furniture	135 (54%)	105	115 (46%)	250

The data reveals the level of awareness and adoption of various prevention methods among respondents. Strength training methods, such as core-strengthening exercises (60%), are well known, but the actual adoption rate (117 out of 150 aware respondents) suggests that not everyone who is aware incorporates these exercises into their routine. Similarly, weight training has lower awareness (48%), with 94 out of 120 adopting it.

In terms of stretching and flexibility, yoga has the highest awareness (64%), with 125 people actively practicing it, while dynamic stretching is known by 52% but only adopted by 101 respondents.

Aerobic activities like swimming (44% awareness) and cycling (56%) show moderate awareness, but the adoption rates indicate that factors like accessibility or personal preference may affect participation.

Posture correction exercises show a 50% awareness level for ergonomic exercises, with 98 out of 125 practicing them. However, Pilates has the lowest awareness (36%), and only 70 out of 90 aware respondents adopt it, indicating a need for more education on its benefits.

Among preventive measures, movement breaks (68%) have the highest awareness and adoption rate (133 out of 170), while using ergonomic furniture is known by 54% but adopted by 105 respondents. This suggests that while awareness is present, practical implementation varies.

4. MAJOR FINDINGS

- High Prevalence of Back Pain: A significant percentage of youth experience back pain due to sedentary lifestyles and poor posture.
- Impact of Sedentary Behavior: Prolonged sitting and lack of physical activity weaken back muscles, increasing the risk of chronic pain.
- Incorrect Posture as a Major Cause: Slouching while using electronic devices and improper sitting positions contribute to spinal discomfort.
- Heavy Backpacks and Sleeping Posture: Carrying overloaded bags and improper sleeping habits also play a role in back pain development.
- Effectiveness of Strength Training: Exercises like planks and weight training under supervision help in strengthening core muscles and spinal stability.
- Stretching and Flexibility Benefits: Yoga and dynamic stretching reduce stiffness, improve mobility, and decrease back pain risk.
- Aerobic Activities as a Preventive Measure: Swimming and cycling support spinal alignment and provide low-impact exercise options.
- Importance of Posture Correction: Ergonomic exercises and Pilates help maintain spinal alignment and reduce posture-related pain.
- Role of Preventive Measures: Taking movement breaks and using ergonomic furniture prevent prolonged strain on the spine.
- Need for Awareness Programs: Many young individuals are unaware of proper back care practices, highlighting the necessity for educational interventions.

5. SUGGESTIONS

- Promote Ergonomic Awareness: Conduct awareness programs to educate youth about proper posture and spinal health.
- Encourage Active Lifestyles: Schools, colleges, and workplaces should promote physical activity to reduce sedentary behavior.
- Implement Movement Breaks: Regular short breaks should be encouraged to prevent prolonged sitting and spinal strain.
- Introduce Back Pain Prevention Programs: Fitness centers and health organizations should offer programs focused on spinal health.
- Improve Ergonomic Furniture Availability: Schools and workplaces should provide ergonomic chairs and desks to support posture.
- Encourage Strength Training and Stretching: Fitness programs should incorporate core-strengthening and flexibility exercises.
- Reduce Backpack Weight: Awareness campaigns should educate students on proper backpack usage and weight management.
- Promote Healthy Sleeping Postures: Educate individuals on maintaining correct sleeping positions to prevent back pain.
- Use Technology Mindfully: Encourage screen breaks and proper device positioning to prevent posture-related issues.
- Encourage Swimming and Low-Impact Activities: Promote swimming and cycling as safe exercise options for spinal health.

6. CONCLUSION

The study confirms that incorporating sports and exercise into daily routines can alleviate back pain by strengthening core muscles, improving flexibility, and promoting better posture. Strength training, stretching, aerobic exercises, and posture correction techniques were found to be highly effective. Additionally, ergonomic awareness and simple lifestyle adjustments, such as movement breaks and proper furniture use, play a significant role in preventing spinal discomfort.

The findings emphasize the need for early intervention and awareness campaigns to educate youth about maintaining spinal health. By implementing these preventive strategies, the incidence of back pain can be significantly reduced, ensuring better overall health and well-being.

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