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STRENGTHENING AND MIND BODY EXERCISE FOR ERGONOMIC AND STRESS RELATED CHANGES IN CORPORATE EMPLOYEE

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ABSTRACT

Background:

The ergonomics of employees differ as a function of workplace equipment and technologies. Ergonomic adjustments by corporate personnel are a common workplace issue. Ergonomic design avoids work-worker incompatibilities, resulting in a more productive working environment. Headaches, backaches, and upper-limb problems are common complaints among computer workers.

Employees suffer from discomfort as a result of long periods of sitting at computers and bad posture, and their work efficiency may suffer as a result of this pain. Employers should encourage their workers to exercise at their desks to reduce pain and increase productivity.

Strengthening activities might help you increase your flexibility. Strengthening training can boost daily physical performance as well as workplace productivity, resulting in a better sense of physical well-being.

Subject and Methods:

This survey included 30 corporate employees, both male and female, ranging in age from 25 to 45 years. They were divided into two groups based on their pain and muscle weakness: group 1 and group 2. For three weeks, group 1 was examined for ergonomic changes, and group 2 was tested for strengthening and mind-body exercise. Musculoskeletal Research at Cornell

Subjects' data was collected using the Comfort Measurement Questionnaire (CMDQ) and the Perceived Stress Scale (PSS) questionnaires before, after 1 week, after 2 weeks, and after 3 weeks.

Conclusion:

According to the findings, Ergonomic Changes are not considerably beneficial in reducing stress levels in corporate personnel, but they are significantly effective in reducing discomfort and interference levels. Strengthening and Mind-Body Exercises, on the other hand, are highly beneficial in lowering stress, discomfort, and interference in corporate employees.

Keywords:

Ergonomics; Mind-Body Strengthening; Posture; Stress; Corporate Employee; Discomfort; Interference

INTRODUCTION:

Workplace devices and technologies cause ergonomic changes in corporate employees. Ergonomic adjustments by corporate personnel are a common workplace issue. The surroundings are fantastic. Headaches, backaches, and upper-limb problems are common complaints among computer workers. Intercessions in work style are most commonly used to alleviate work-related neck and upper-limb complaints, but intercessions in everyday life physical activity can also help improve employee health and symptoms. The author of The Anytime, Anywhere Exercise Book, Joan Price, agrees. "We were made to move, not sit at a desk for 12 hours every day," says the author. On a daily basis, employees should engage in at least 30 minutes of adequate physical activity. Awkward positions, inactivity, and long periods of sitting, for example, induce neck, back, and limb pain, making employees less productive and listless [1]. Treatments for workplace health promotion address both the physical and psychological aspects of the individual employee as well as the workplace as a whole. [2] Workplace health promotion has been shown to increase employee productivity. Workplace ergonomics can help employees operate in a more symptom-

free environment, resulting in higher productivity. [3] Ergonomic treatments for pain-affected office workers, such as rest breaks or equipment adjustments, did not result in a significant increase in productivity. [4].

Similarly, there is mixed evidence for office workouts to enhance physical ability, with good evidence for lowering neck pain but limited evidence for enhancing productivity. However, a combination of interventions, such as educational campaigns and workplace modifications, can enable persons with neck pain stay at work. [5] As a result, more evidence of productivity impact is needed to help companies make decisions about introducing workplace health participation programmes for office workers. [6] Current industry best practise in Australia is to provide ergonomic solutions to control and prevent work-related health concerns. [7]. Employees feel pain as a result of long periods of sitting at computers and poor posture, and their work effectiveness may be hindered as a result of this pain. Employers should encourage workers to exercise at their workstations to relieve pain and increase productivity [8]. Some businesses have meditation rooms, while others provide guided sessions to help employees integrate mindfulness into their daily lives. Mindfulness meditation, which involves bringing awareness to one's body and breathing in order to increase focus and foster open cognizance of thoughts, is the most prevalent workplace practise [9].

Occupational pain is the leading cause of absenteeism among office workers. As a result of their prolonged uncomfortable posture and insufficient muscle endurance and strength, their working capacity was lowered, and they were unable to accomplish their work efficiently. [10].

Methodology

DATA COLLECTION:

All of the individuals (n=30) provided demographic information. In Appendix, the consent form and the data collection form were attested. On the basis of inclusion and exclusion criteria, a total of 30 participants were included in this study. All subjects signed a written consent form before to the trial.

MATERIAL USED

Questionnaire

Weighting Machine

Stadiometer

PROCEDURE:

30 patients were chosen at random based on inclusion and exclusion criteria. Before the trial, each subject signed a written consent form. Data was collected from subjects before, after one week, after two weeks, and after three weeks using the Cornell musculoskeletal discomfort questionnaire and the perceived stress scale questionnaire. The subjects were subsequently separated into two groups: GROUP 1 (n=15) for ergonomic modifications and GROUP 2 (n=15) for strength and mind-body activities. Ergonomic changes, strengthening exercises, and mind-body exercises were applied in three weeks. Before beginning the workouts, participants were given instructions to familiarise themselves with the exercises, their benefits, and ergonomic changes. Ergonomic modifications include correcting body posture while sitting, as well as strengthening and mind-body activities. Greetings, Yoga and Tia Chi postures.

PROTOCOL:

Intervention:

Two groups participated in the intervention. Those individuals were chosen at random. For three weeks, Group 1 did Ergonomic Changes while Group 2 did Strengthening and Mind-Body Exercise on a daily basis. The therapist briefed all of the subjects in their separate groups about the technique and exercise, and they were told not to change their usual activities during the study.

Group 1:

Participants were instructed to improve their sitting posture by placing their feet level on the ground or on a footrest, avoiding crossing ankles or knees, and maintaining a tiny gap between the back of their knees and the chair, among other things, Knees should be the same height or slightly lower than the hips, staring straight at the top third of the screen and straight at the bottom third of the screen, elbows and underarms should be straight on the armrest and table, and so on.

Group 2:

As strengthening and mind-body activities, the participants were offered meditation, breathing exercises (Pranayama), yoga and Tai Chi, Thera band, and neck and shoulder isometric exercises. For the first week, the exercises were done 10 times per day, 20 times per week for the second week, and 30 times per week for the third week.

RESULT

Table 1: Descriptive Analysis of Demographic Data for 2 Groups

Group Statistics					
Group		N	Mean	Std. Deviation	Std. Error Mean
Age	Ergonomic	15	32.8667	5.89027	1.52086
	Strengthening and Mind Body	15	35.0000	5.96418	1.53994
Weight	Ergonomic	15	64.0667	10.68689	2.75934
	Strengthening and Mind Body	15	64.2000	12.06648	3.11555

Table 2: Independent Sample Test of Demographic Data between Groups

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI	
									Lower	Upper
Age Yrs.	Difference between 2 groups	0.019	0.890	-0.986	28	0.333	-2.13333	2.16436	-6.56682	2.30015
Weight Kgs.	Difference between 2 groups	0.343	0.563	-0.032	28	0.975	-0.13333	4.16181	-8.65841	8.39174

Table 2 showed no significant difference between 2 groups regarding demographic data i.e. age and weight.

Table 3: Paired Sample Test for Group 1: Stress Level

Paired Samples Test Group 1									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Stress Level - Post Stress Level	0.20000	0.41404	0.10690	-0.02929	0.42929	1.871	14	0.082

Table 3 results showed that ergonomic changes is not associated with stress as its value is 0.082. Hence the study shows that stress is having no significance with ergonomic changes.

Table 4: Paired Sample Test for Group 2: Stress Level

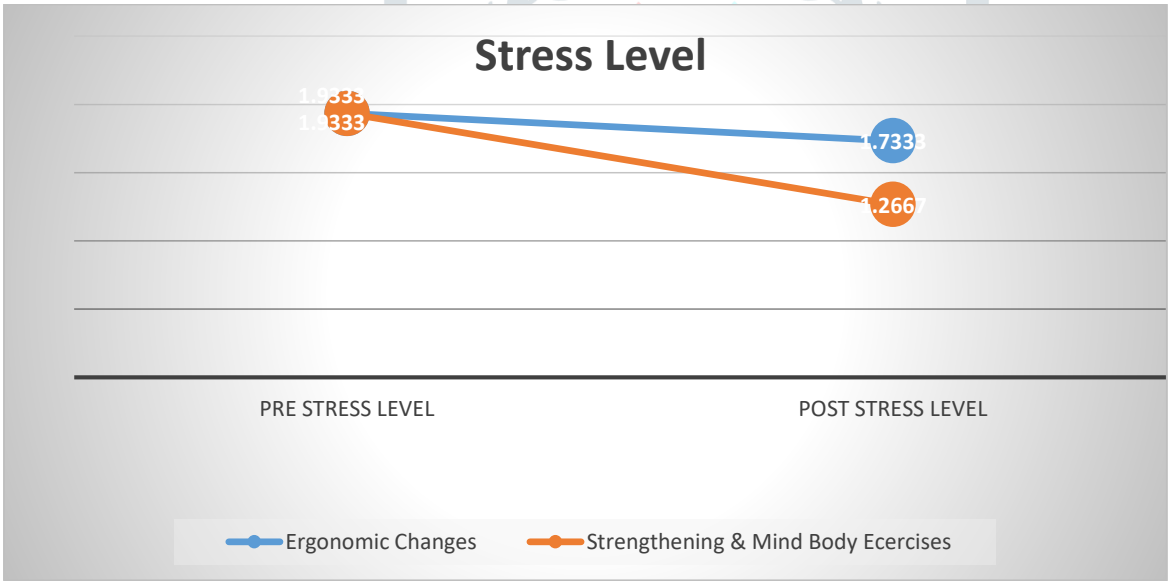
Paired Samples Test Group 2									
		Paired Differences					T	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Stress Level - Post Stress Level	0.66667	0.48795	0.12599	0.39645	0.93688	5.292	14	0.000

Table 4 results showed that Strengthening and Mind Body Exercise is associated with stress as its value is 0.000. Hence the study shows that stress is having significance with Strengthening and Mind Body Exercise.

Table 5: Paired Sample Statistics Group 1 and Group 2 (Pre and Post Mean difference score)

Paired Samples Statistics: Stress Level					
		Mean	N	Std. Deviation	Std. Error Mean
Group 1: Ergonomic Changes	Pre Stress Level	1.9333	15	0.45774	0.11819
	Post Stress Level	1.7333	15	0.45774	0.11819
Group 2: Strengthening & Mind Body Exercise	Pre Stress Level	1.9333	15	0.45774	0.11819
	Post Stress Level	1.2667	15	0.45774	0.11819

Graph 1: Paired Sample Statistics Group 1 and Group 2 (Pre and Post Mean difference score)

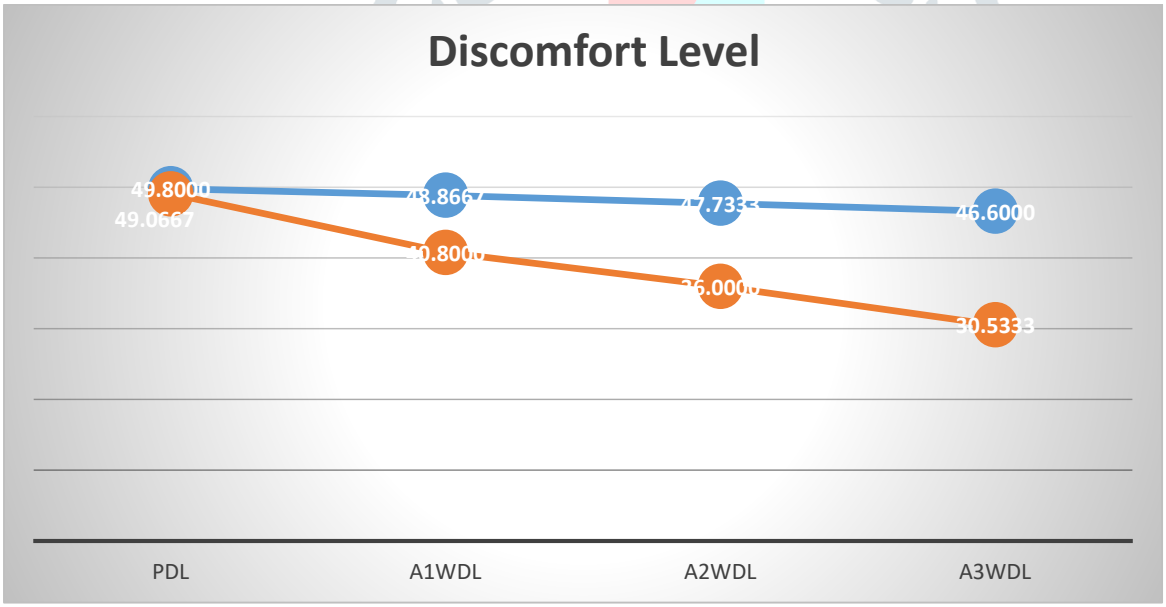


Graph 1 showing that Stress levels are reduced as a result of ergonomic modifications, as well as strengthening and mind-body training. Furthermore, the following graph clearly shows that stress reduction due to strengthening and mind-body training is greater than stress reduction due to ergonomic modifications.

Table 6: Paired Sample Statistics Group 1 and Group 2 (Pre, after 1 week, after 2 week & after 3 week Mean difference score)

Paired Samples Statistics: Discomfort Level					
		Mean	N	Std. Deviation	Std. Error Mean
Group 1: Ergonomic Changes	PDL	49.8000	15	10.56409	2.72764
	A1WDL	48.8667	15	10.66949	2.75485
	A2WDL	47.7333	15	10.60638	2.73855
	A3WDL	46.6000	15	10.53430	2.71994
Group 2: Strengthening & Mind Body Exercise	PDL	49.0667	15	7.49730	1.93579
	A1WDL	40.8000	15	6.06159	1.56510
	A2WDL	36.0000	15	7.62515	1.96880
	A3WDL	30.5333	15	5.51448	1.42383

Graph 2: Paired Sample Statistics Group 1 and Group 2 (Pre, after 1 week, after 2 week & after 3 week Mean difference score)



Graph 2 showing that Ergonomic improvements, as well as strengthening and mind-body activity, have reduced the amount of discomfort. Furthermore, as seen in the graph above, discomfort reduction due to strengthening and mind-body activity is greater than discomfort reduction owing to ergonomic modifications after one week, two weeks, and three weeks from pre-discomfort levels.

Table 7: Paired Sample Test for Group 1: Discomfort Level

Paired Samples Test Group 1									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Discomfort Level - After 1 Week Discomfort Level	0.93333	0.70373	0.18170	0.54362	1.32305	5.137	14	0.000
Pair 2	Pre Discomfort Level - After 2 Week Discomfort Level	2.06667	0.79881	0.20625	1.62430	2.50903	10.020	14	0.000
Pair 3	Pre Discomfort Level - After 3 Week Discomfort Level	3.20000	0.94112	0.24300	2.67882	3.72118	13.169	14	0.000

Table 8: Paired Sample Test for Group 2: Discomfort Level

Paired Samples Test Group 2									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Discomfort Level - After 1 Week Discomfort Level	8.26667	3.28344	0.84778	6.44836	10.08497	9.751	14	0.000

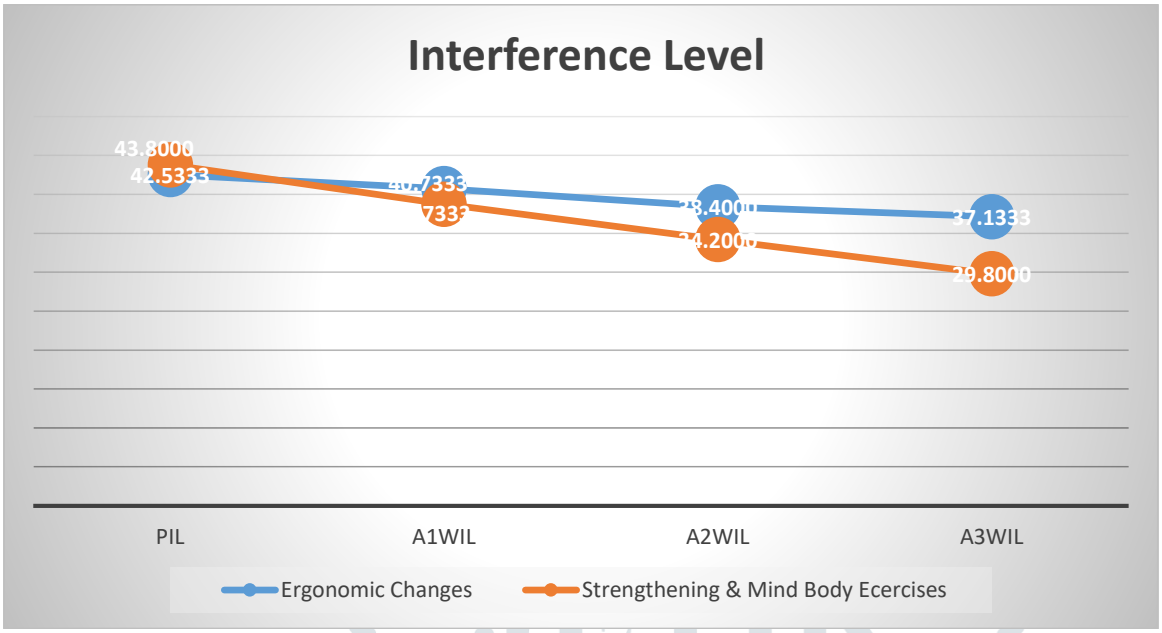
Pair 2	Pre Discomfort Level - After 2 Week Discomfort Level	13.06667	6.38600	1.64886	9.53022	16.60311	7.925	14	0.000
Pair 3	Pre Discomfort Level - After 3 Week Discomfort Level	18.53333	6.95770	1.79647	14.68029	22.38638	10.317	14	0.000

Table 7 and Table 8 results showed that Discomfort Level has a significant value of 0.000 and is linked to Ergonomic Changes, Strengthening, and Mind-Body Exercise. As a result of the research, it was discovered that Ergonomic Changes, Strengthening, and Mind-Body Exercise had a significant association with Discomfort Level.

Table 9:Paired Sample Statistics Group 1 and Group 2 (Pre, after 1 week, after 2 week & after 3 week Mean difference score)

Paired Samples Statistics: Interference Level					
		Mean	N	Std. Deviation	Std. Error Mean
Group 1: Ergonomic Changes	PIL	42.5333	15	10.44623	2.69721
	A1WIL	40.7333	15	9.62487	2.48513
	A2WIL	38.4000	15	8.82205	2.27784
	A3WIL	37.1333	15	8.95917	2.31325
Group 2: Strengthening & Mind Body Exercise	PIL	43.8000	15	7.15342	1.84701
	A1WIL	38.7333	15	5.57375	1.43914
	A2WIL	34.2000	15	4.37852	1.13053
	A3WIL	29.8000	15	4.81367	1.24288

Graph 3:Paired Sample Statistics Group 1 and Group 2 (Pre, after 1 week, after 2 week & after 3 week Mean difference score)



Graph 3 showing that Ergonomic improvements, as well as strengthening and mind-body activity, have reduced the level of interference. Furthermore, the reduction in interference level due to strengthening and mind-body exercise is greater than the reduction in interference level owing to ergonomic improvements after one week, two weeks, and three weeks from pre-interference level, as seen in the graph above.

Table 10: Paired Sample Test for Group 1: Interference Level

Paired Samples Test Group 1									
		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Interference Level - After 1 Week Interference Level	1.80000	1.14642	0.29601	1.16513	2.43487	6.081	14	0.000
Pair 2	Pre Interference Level - After 2 Week Interference Level	4.13333	2.06559	0.53333	2.98945	5.27722	7.750	14	0.000

Pair 3	Pre Interference Level - After 3 Week Interference Level	5.40000	2.52982	0.65320	3.99903	6.80097	8.267	14	0.000

Table 11: Paired Sample Test for Group 2: Interference Level

Paired Samples Test Group 2									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre Interference Level - After 1 Week Interference Level	5.06667	2.57645	0.66524	3.63988	6.49346	7.616	14	0.000
Pair 2	Pre Interference Level - After 2 Week Interference Level	9.60000	5.17963	1.33737	6.73162	12.46838	7.178	14	0.000
Pair 3	Pre Interference Level - After 3 Week Interference Level	14.00000	6.40312	1.65328	10.45407	17.54593	8.468	14	0.000

Table 10 and Table 11 results showed that Interference Level is associated with Ergonomic Changes and Strengthening and Mind Body Exercise as its significant value is 0.000. Hence the study shows that Ergonomic Changes and Strengthening and Mind Body Exercise are having significance relationship with Interference Level.

Conclusion:

Stress level is not connected with ergonomic changes, as its value is 0.082 (p>0.05), but stress level is associated with strengthening and mind body activities, as its value is 0.000 (p0.05), according to a paired sample t-test of group 1 and group 2. As a result, the study concludes that stress has an impact on strengthening and mind-body workouts, but not on ergonomic modifications. Furthermore, paired sample statistics for groups 1 and 2 demonstrate that there is a pre and post mean difference in stress levels in corporate personnel as a result of ergonomic changes and SMBE. Group 1's mean difference score at pre- and post-stress levels was 1.933 and 1.733, respectively. Group 2's mean difference score at pre-stress and post-stress levels was 1.9333 and 1.2667, respectively. According to the findings, group 2 has a higher mean difference score between pre and post stress levels than group 1. As a result of the paired sample t – test, the level of pain and interference is linked to ergonomic modifications and SMBE, both of which have a value of 0.000 (p0.05). Furthermore, the mean difference score of discomfort level for group 1 at PDL (49.8000), A1WDL (48.8667), A2WDL (47.7333), and A3WDL (46.6000) and for group 2 at PDL (49.0667), A1WDL (40.8000), A2WDL (36.0000), and A3WDL (46.6000) was compared to the mean difference score of discomfort level for group 2 at PDL (49.0667 (30.5333). The mean difference score of interference level for groups 1 and 2 at PIL (42.5333), A1WIL (40.7333), A2WIL (33.4000), and A3WIL (37.1333), and at PIL (43.8000), A1WIL (38.7333), A2WIL (34.2000), and A3WIL (37.1333). (29.8000). As a result, the reduction in stress, discomfort, and interference caused by SMBE outweighs the decrease in ergonomic change.

Discussion:

The purpose of this study is to show that while ergonomic changes are not effective in lowering stress, they are effective in reducing discomfort and interference in corporate personnel. Strengthening and Mind-Body Exercises, on the other hand, are highly beneficial in lowering stress, discomfort, and interference in corporate employees.

Cakit et al. conducted a cross-sectional investigation on ten people in 2019. Cornell Musculoskeletal Discomfort Questionnaire is the questionnaire used to collect data on felt pain (CMDQ). They came to the conclusion that their findings can be used to provide recommendations for improving work ergonomics in the form of a guideline or general statements that present risk mitigation recommendations.

In 2017, Shahnaz et al, Reza et al, Amir et al, and Maryam et al conducted a study on 350 of Bank of Tehran's 2700 workers. Data was collected using the Nordic questionnaire and the ergonomic workstations checklist. They discovered that the most common Musculoskeletal Disorders were Lumbar (67.9%), Neck (67%), and Shoulder (50.10). It was discovered that having an ergonomic workspace affects the occurrence of musculoskeletal illnesses as well as job stress.

In 2017, Saeterbakken et al, Nordengen et al, and Andersen et al studied the effects of Nordic walking and strength training on 34 female office employees suffering from neck and shoulder pain. They were split into training and non-training groups at random. Pre, post, and 10 weeks after the intervention, pain severity was measured using the (Visual Analogue Scale), isometric abduction strength, and a six-minute test. Neck and shoulder pain were alleviated by Nordic walking and Strength Training.

In 2017, TherapStephens et al determined that yoga can have a good impact on the body in a variety of ways, including blood pressure regulation, blood glucose regulation, and the improvement of musculoskeletal diseases. It also boosts mental acuity and boosts happy sentiments while lowering melancholy and anxiety.

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