



## EFFECT OF RECREATIONAL ACTIVITIES VERSUS AEROBIC EXERCISES ON STRESS, ANXIETY, SLEEP, QUALITY OF LIFE AND NECK RANGE OF MOTION IN BANK EMPLOYEES POST COVID-19 LOCKDOWN: A COMPARATIVE STUDY

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**ABSTRACT** **Background:** Indian banking industry is the backbone of the country's economy. The nature of job of banking employees is very tiresome as it involves long working hours, inappropriate reward system, and lack of job autonomy and role conflict. It is one of the sector that is ignored because of its tedious workload. Banks are the only business that had been operating with almost its full capacity during post covid-19 lockdown. The stress level is high on bank employees which in turn cause psychological effect and cause anxiety and sleep deprivation; stress also leads to decrease in neck ROM and therefore may also reduce the quality of life. **Method:** In this study, stress, anxiety, sleep, work related quality of life and neck rom were assessed using respective scales. Bank employees from PCMC area banks were screened and 30 willing participants fulfilling the criteria within the age group of 25-35 years were allocated randomly into two groups, group A and group B. Recreational activities was given to group A and Aerobic exercises was given to group B. **Results:** The results were obtained using paired t-test for within group analysis and unpaired t-test for between group analysis. **Conclusion:** The study concludes that aerobics and recreational activities both are equally effective in reducing stress, improving quality of sleep, work related quality of life and improving neck range of motion. While recreational activities are more beneficial to relieve anxiety than aerobics.

**KEYWORDS :** recreational, aerobic, stress, anxiety, bank employees

### INTRODUCTION:

Stress has nowadays become a worldwide crisis, which is affecting the people working in almost every sector of the economy. It not only affects physical and mental health of employees, but also reduces the competitiveness and productivity of the organization. Banking Industry is one of the most stressful sector.<sup>[1]</sup> Undesirable response that people have to tremendous pressure or to the other types of demand placed on them is defined as Stress by Health Safety Executive UK, while an emotion characterized by feeling of tension, worried thoughts and physical changes like increase blood pressure is defined as Anxiety by American Psychology Association. The stress producing environment in workplace leads to anxiety and this anxiety is considered work related anxiety. Stress and anxiety may also lead to sleep deprivation. Frequently being in state of alertness can delay the onset of sleep and cause rapid, anxious thoughts to occur at night. Insufficient sleep can further lead to stress. 43% of people aged 13-64 complain of lying awake at night due to stress at least once a month. Lack of sleep is common in anxiety because anxiety leads to activation of area of brain that contributes to excessive worrying and it also fires the area related to emotion processing. Indian banking industry is the backbone of the country's economy. The nature of job of banking employees is very tiresome as it involves long working hours, inappropriate reward system, and lack of job autonomy and role conflict.<sup>[2]</sup> Stress Management is getting more and more consideration now-a-days, particularly in the financial sectors. There is no such thing like stress-free job. Everyone in their work is exposed to tension and anxiety as they get through the duties assigned to them. Banking industry is not an exceptional one.<sup>[3]</sup> The international labor organization stated that there were number of worrying issues for workers in financial services, these includes great pressure on time, problems with ergonomics, conflicting roles, work demand that were considered excessive relationship with customers and a rising number of cases of stress and violence.<sup>[4]</sup> The National Institute of Occupational Safety and Health [NIOSH] ranked 130 occupations according to the stress level. Banking was ranked 28<sup>th</sup>. All the stressful occupation had some common things like the employees had insufficient control over jobs and had a feeling that they were trapped in jobs where they were regarded as machine rather than as people.<sup>[5]</sup>

Occupational stress in private bank is 49.71% and in public is 50.28%.<sup>[2]</sup> Stressors in bankers includes: Workload, lack of ambiguity, role conflict, lack of responsibility, lack of knowledge, long working hours [6hrs daily work shift], poor posture while sitting [slouch sitting], low level of social support, poor ergonomics at workstation, dissatisfaction of job. Stress increases if a person is married/ living with partner or being divorced/ widowed.<sup>[3]</sup> Studies show that 42.7% changes in workplaces stress level were due to alteration in posture and other health matters like blood pressure, diabetes, etc. Alteration in posture occurs due to poor ergonomics awareness which in turn affects the stress levels. Health also has a strong relationship with work stress due to the hours of input work demand in department.<sup>[3]</sup> Many studies state that comorbidities like Hypertension and Diabetes mellitus are also highly prevalent among banking professionals which may precipitate sleep deprivation.<sup>[4]</sup> It is said that workers should have max 48h of weekly working including overtime. 22% of working worldwide are still working >48h/week. Excessive weekly working time has a negative effect on workers' health including increasing risk of Hypertension, Cardiovascular disease, chronic infection, Diabetes Mellitus, metabolic syndrome, sleep disturbance, anxiety and depression. One of the risk factor is mental health problem in workplace which causes serious consequences not only for individual but also for productivity of organization. 69% of people with mental health problems report having difficulty with job performance, compared with 26% of those without mental health problems. Sleep disturbance is associated with quality of life. Many articles have said that overtime leads to disturbed or short sleep which reduces the sleep quality.<sup>[5]</sup> Stress and anxiety further will also affect the neck range of motion in bank employees. Neck tension refers to neck pain that develops when muscles in neck can't relax which lead to soreness, muscle spasm and headache. The study also determined that the prevalence rate of pain was 48.9% in neck region.<sup>[6]</sup> Approximately 76% of bankers from India reported musculoskeletal discomfort in various epidemiological studies. Long working hours, static posture, poor office ergonomics, and repetitive nature of work were identified as some of the risk factors leading to pain and discomfort.<sup>[6]</sup> Researchers stated 71% of adults around world will experience neck pain at some point in lifetime. Muscle tension occurs when a muscle

stays contracted, despite receiving signals from brain that tell it to relax. If muscle remains contracted for too long then it cause pain. Stress leads to release of hormone cortisol and epinephrine. These hormones increase the HR and BP as well as tightening the muscles. When a person experiences stress regularly, their muscles remain tense and contracted for longer time which can result in neck and shoulder tension. Hence as the stress level is high on bank employees which in turn cause psychological effect and cause anxiety and sleep deprivation; stress also leads to decrease in neck ROM and therefore may also reduce the quality of life. Occupational stress is becoming progressively more globalized and affects all countries, all professions and all categories of employees, as well as families and society in general. During the past decades the banking sector had gone under swift and striking amendments like policy changes due to globalization and liberalization, growing competition due to the entrance of more private banks, downsizing, introduction of new and innovative technologies, etc. Owing to these changes, the banking sector employees are experiencing a high level of pressure and stress. The advent of new technological revolution spread through all walks of life coupled with globalization, privatization policies has drastically changed the conventional patterns in all fields. The banking sector is of no exemption.<sup>[7]</sup> Novel Corona Virus Disease [COVID-19] originating from China has rapidly crossed borders, infecting people throughout the whole world. This phenomenon has led to a massive public reaction; the media has been reporting continuously across borders to keep all informed about the pandemic situation. All these things are creating a lot of concern for people leading to heightened levels of anxiety. Pandemic has led to heightened levels of stress; Anxiety is a common response to any stressful situation.<sup>[8]</sup> Job anxiety is another psychological component in an organization. Despite the increasing number of available facilities, people often show unnecessary apprehension and emotional tension. Their actions are marked by fear and insecurity. Such behavioral manifestations have psychological bases, in which a reference to the prevailing situational context of the person can hardly be overlooked. More often than not, their behavior demonstrates some kind of uncalled for fear and emotional tension, arising out of the person's imaginary involvement in his or her situational contexts. In psychological parlance, their behavioral patterns are referred to as job anxiety.<sup>[9]</sup> During the lockdown period, to avoid transmission of the virus, customers could conduct financial transactions through the Bank's electronic channels. Rapid technological developments began to have an impact in the banking sector. The Communication Network of the Banking Workers Union [Jarkom SP Banking] said that there were already 50,000 bank employees who were laid off or terminated due to being replaced by machines.<sup>[10]</sup> The fear of termination or pay cut offs has also added to stress and anxiety and hence sleep deprivation. Sleep and mental health are closely connected. Sleep is an indicator of positive mental health. Sleep deprivation affects your psychological state and mental health. The disruption of circadian biology might worsen in a fragile mental health state. Sleep disturbance is recognized as an important mechanism in the multi-factorial causation of the symptoms and functional disability associated with psychiatric disorders.

Sleep disturbance is etiologically linked to various forms of psychopathology through: its reciprocal relationship with emotion regulation. The stress induced due to roles performed by individuals as employees at workplace, has been one of the most persuasive organizational stressors, the outcomes of which have been found to be costly to the organization. The previous studies in this area of research indicate that the role stress as a phenomenon has hardly been understood in its entirety and comprehensively in case of commercial banks particularly in the Indian context<sup>[11]</sup> The highly competitive banking industry has levied varied role requirements on employees resulting into stress. It has been proven that physical activities can improve a person's mental health, help with depression, and relieve the side effects of stress like anxiety and sleep deprivation. It is vital that stress management techniques are implemented into our daily lives. Coping with stress is an individualized task and one method over another may not be superior. A person that is stressed takes so much away from his or her health and performance levels.<sup>[12]</sup> Banking sector is one of the sectors that is ignored because of the nature of its tedious work load. Individuals working in banks are irritated because of monotonous working lifestyle and boredom. Though there are many strategies available to cope up with stress and anxiety like meditation, biofeedback, massage, yoga, tai chi, relaxation techniques, exercising regularly etc. they are to be given for a longer duration and are boring to perform. So, there is a good chance that these individuals won't follow the exercise regime rigidly. The objective of our study was to find the

effect of Recreational activities versus Aerobic exercises on stress using Occupational stress index, anxiety using Hamilton anxiety rating scale, sleep using Pittsburgh sleep quality index, Quality of life using work related quality of life questionnaire and neck range of motion using universal goniometer in Bank employees post Covid 19 lockdown.

#### MATERIAL AND METHODS:

The study design was comparative. The inclusion criteria was bank employees who worked since the lockdown aged 25-35 years, both males and females with Score of >116 on Occupational Stress Scale, score of >18 on Hamilton anxiety scale, score of >5 on Pittsburgh sleep quality index, Score of <81 on Work related quality of life questionnaire, and decreased neck range of motion were included in the study. The sampling method was purposive with size of 30. Bank employees not willing to participate, diagnosed case of any cardiopulmonary disorders like asthma, hypertension, any known cardiac condition, recent surgery or any fractures of long bones or spine, and Shoulder pain like tendinopathy, periarthritis shoulder, impingements etc. were excluded. Materials used were Occupational Stress Scale, Hamilton anxiety scale, Pittsburgh sleep quality index, Work-related Quality of life Questionnaire, Universal Goniometer, 1 medium size ball [Plastic], 2 sticks, Bucket, Balloons, Any 4 objects available that could be used as obstacles.

#### Procedure:

Title was approved from ethical committee. Before commencing the study, individuals were screened using Occupational stress scale, Hamilton's anxiety rating scale, Pittsburgh sleep quality index, and Work-related quality of life scale. Individuals fulfilling the inclusion criteria were selected for the study. 30 willing participants were selected and randomly allocated in two groups A and B using chit method, i.e., 15 participants in each group. Informed and signed consent was taken prior from participants. Pre readings were taken along with neck range of motion using goniometer. Recreational activities were given to group A and aerobic exercises to group B. Each protocol consisted of 8 exercises which was given for 4 weeks for 5 days a week with duration of 45 minutes per session. Each session was supervised via zoom meeting. Post readings were taken and data was collected and entered in excel spreadsheet. Data was analyzed using appropriate statistical tests and conclusion were drawn according to the results obtained.

#### Warm up and cool down exercises was same for both the Groups A and B

**Warm up:** To increase the temperature and flexibility of the muscles and helps to more efficient and safer during workout/exercise.

- Time: 10 Min.
- Activities: shoulder rolls, stretching of biceps, triceps, hamstrings, quadriceps, tendoachilles.

#### Cool down:

- Activities: pelvic bridging, cobra position, child's pose, head to knee forward bend, latissimus stretch.
- These start the recovery process, increases flexibility and promotes relaxation.
- Time: 5min
- Hold: 30 sec
- Repetitions: 3 times

#### Group A:

This group was given Recreational activities.<sup>[13-22]</sup>

Activities:

1. Zombie run
2. Dance party
3. Catch and kick
4. Water balloon battle
5. Boxercise
6. Cardio drumming
7. Obstacle jumping
8. Jumping jacks

**1. Zombies run:** Instructions were given to the participants which include sprinting on place in four directions [left, right, back, and front] with progression of speed. Squat and kick in four directions [left, right, back, front]. Side shuffle with jab in left and right directions. Diagonal wood chopping in right and left directions. These all activities were given by combining the songs and activities simultaneously.

**2. Dance party:** With musical beats and songs the various steps and dance moves were given to the participants.

**3. Catch and kick:** Instructions were given to the participants that he/she was supposed to stand in front of the wall with playing the ball in his or her hands. Participant was supposed to catch and kick the ball.

**4. Water balloon battle:** Participants were supposed to throw water filled balloons on the bathroom wall with both hands alternatively.

**5. Boxercise:** It's an exercise based on the training concepts boxers use to keep fit. It involves shadow boxing, hopping, hitting pads, press ups, side lunges with various hand movements and music. Boxercise is the great way to feel calm because all the aggression is very channeled and controlled.

**6. Cardio drumming:** It takes a simple movement-drumming and turns it into full body workout. Cardio drumming brings together drumsticks and ball. Using the ball and the floor as your drum and mixing in fun moves with rhythm.

**7. Obstacle jumping:** In this participant had to take small jumps to overcome the obstacle. Obstacles used were towel roll, pillows, boxes etc.

**8. Jumping jacks:** In these participants had to jump [low thrust] with different variations like jumping with a clap, jumping with hands in circular motion, jumping with two claps. This covered the full body movement.

**Group B:**

This group was given the conventional exercise in the form of dance aerobic exercise.<sup>[23-24]</sup>

**Aerobics:**

1. Basic Step
2. V Step
3. Side Squat
4. Grapevine

**1. Basic Step:** This move can be performed on the floor. Start with your feet side by side about hip distance apart. Step about two feet forward with your lead leg. Bring the back leg forward to meet it. Step back two feet with your lead leg and draw the other foot back to meet it. Hands: forwards and backwards followed with steps and beats.

**2. V- Step:** Stand with your feet parallel and hip distance apart. Step your lead foot 2 to 3 feet forward to the corresponding corner of the floor. Step the opposite foot wide to its corner. Step back to the original position with your lead leg. Bring the opposite back to meet it. You may alternate lead legs or repeat the step on the same leg several times before switching.

Hands: Upwards and downwards followed with steps and beats.

**3. Side Squat:** Instructions were given to the participants that stand straight with your feet shoulder width apart. Press your hips back and side squat. Stand up take a small step to the side and squat to the other side. Return to the initial position and repeat this side to side squat steps with music beats.

Hands: Upwards and downwards followed with the steps and beats.

**4. Grapevine:** Stand with your feet hip distance apart. To move to right step your right foot to the side. Cross your left foot behind the right. Step the right foot again to the right and tap your left foot next to it to switch the directions.

Hands: Upwards and downwards followed with the steps and beats.

All exercises of aerobics were given with 32 counts with songs.

**RESULTS:**

**Table 1a:** Within group analysis of Group A and B for Occupational Stress Index

Stress	Group A	Group B
Pre	144.6±27.9	149.8±25.9
Post	132±23.9	143.7±23.7
P	0.0002	<0.001
T	5.19	7.803

Interpretation: Table 1a shows comparison of Occupational stress index pre and post intervention of group A and group B where paired t test for within group analysis; where the value of p<0.05 in both the groups which is considered to be significant. This suggests that both interventions were effective in reducing stress.

**Table 1b:** Between group analysis of Group A and B for Occupational Stress Index

Stress	Group A	Group B
Mean	1.6±0.98	1.13±0.99
p	0.2	
t	1.29	
DOF	28	

Interpretation: Table 1b shows comparison of between group analysis of occupational stress index. Means of differences were compared using unpaired t test. P >0.05 which is considered to be not significant which suggests that both the interventions were equally effective in reducing stress.

**Table 2a:** Within group analysis of Group A and B for Hamilton Anxiety Scale

Anxiety	Group A	Group B
Pre	21.13±3.7	23.4±4.6
Post	18.06±3.4	21.4±4.1
P	<0.001	<0.001
T	8.9	9.057

Interpretation: Table 2a shows comparison of Hamilton anxiety rating scale pre and post intervention of group A and group B where paired t test for within group analysis; where the value of p<0.05 in both the groups which is considered to be significant. This suggests that both interventions were effective in reducing anxiety.

**Table 2b:** between group analysis of group A and group B for Hamilton anxiety scale

Anxiety	Group A	Group B
Mean±SD	6.06±3.01	2.06±0.88
p	0	
t	4.93	
DOF	28	

Interpretation: Table 3b shows comparison of between group analysis of Hamilton Anxiety Scale. Means of differences were compared using unpaired t test. P<0.05 which is considered to be significant which suggests that recreational activities was more effective than aerobics in reducing anxiety.

**Table 3a:** Within group analysis of Group A and B for Pittsburgh sleep quality Questionnaire

Sleep	Group A	Group B
Pre	6.6±1.1	7.53±1.8
Post	5.8±1.3	6.86±1.4
p	0.0012	0.0069
t	4.036	3.162

Interpretation: Table 3a shows comparison of Pittsburgh sleep quality scale pre and post intervention of group A and group B where paired t test for within group analysis; where the value of p<0.05 in both the groups which is considered to be significant. This suggests that both interventions were effective in improving quality of sleep.

**Table 3b:** between group analysis of Group A and B for Pittsburgh sleep quality scale

Sleep	Group A	Group B
Mean±SD	0.733±0.70	0.66±0.81
p	0.81	
t	0.24	
DOF	28	

Interpretation: Table 3b shows comparison of between group analysis of Pittsburgh sleep quality index. Means of differences were compared using unpaired t test. P>0.05 which is considered to be not significant which suggests that both the interventions were equally effective in improving quality of sleep.

**Table 4a:** Within group analysis of Group A and B for Work related quality of life

WRQOL	Group A	Group B
Pre	70.93±10.91	70.7±10.8

Post	78.2±10.42	78.13±9.4
p	<0.001	<0.001
t	11.784	10.338

Interpretation: Table 4a shows comparison of Work related quality of life scale pre and post intervention of group A and group B where paired t test for within group analysis; where the value of  $p < 0.05$  in both the groups which is considered to be significant. This which suggests that both the interventions were effective in improving WRQOL.

**Table 4b:** between group analysis of Group A and B for Work related quality of life

WRQOL	Group A	Group B
Mean±SD	7.33±2.41	7.4±2.77
p	0.94	
t	-0.07	
DOF	28	

Interpretation: Table 4b shows comparison of between group analysis of Work related quality of life. Means of differences were compared using unpaired t test.  $P > 0.05$  which is considered to be not significant which suggests that both the interventions were equally effective in improving work related quality of life.

**Table 5a:** Within group analysis of Group A and B for Neck Range of motion

Neck ROM	Flexion		Extension		Side flexion RT		Side flexion LT		Rotation RT		Rotation LT	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
Pre	43±1.9	41.1±3.4	51.7±6.07	50±5.5	41.8±2.85	41.6±3.3	41.2±3.5	40.5±4.79	77.2±1.1	77.2±1.6	77.8±1.3	77.8±1.9
Post	44.4±0.9	43.2±2.9	53.2±5.36	51.4±5	43.5±2.03	42.7±3.03	43±2.2	42±4.24	79.2±0.8	78.7±1.4	79.4±0.6	79±1.3
P	0.006	<0.001	<0.001	<0.001	0.0001	<0.001	0.0006	0.0001	<0.001	<0.001	<0.001	0.0006
T	4.39	5.87	5.99	6.81	5.24	5.261	4.4	5.35	8.473	6.813	6.28	4.432

Interpretation: Table 5a shows comparison of Neck ROM pre and post intervention of group A and group B where paired t test for within group analysis; where the value of  $p < 0.05$  in both the groups which is considered to be significant. This suggests that both interventions were effective in improving the Neck ROM.

**Table 5b:** Between group analysis of Group A and B for Neck Range of motion

Neck ROM	Flexion		Extension		Side flexion RT		Side flexion LT		Rotation RT		Rotation LT	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
Mean±SD	1.33±1.175	2.13±1.407	1.533±0.990	1.533±0.990	1.733±1.28	1.733±1.28	1.733±1.28	1.733±1.28	1.933±0.83	1.46±0.833	1.6±0.98	1.13±0.99
P	0.1		1		1		1		0.14		0.2	
T	-1.69		0		0		0		1.48		1.29	
DOF	28											

Interpretation: Table 5b shows comparison of between group analysis of neck range of motion. Means of differences were compared using unpaired t test.  $P > 0.05$  which is considered to be not significant which suggests that both the interventions were equally effective in improving neck range of motion.

## DISCUSSION STRESS

According to table 1a-b, both the groups were found to be effective in reducing stress. A clinical guide to the treatment of the human stress response states that exercise training of aerobics nature increases maximum ventilatory O<sub>2</sub> uptake by increasing both maximum cardiac output which determines the amount of blood delivered to the exercising muscles to extract and use O<sub>2</sub> from blood which might be the reason for reducing stress. Another study that was done in 2010 by MAJA MESKO et.al says that people who regularly participate in sports activities and thereby maintain their physical fitness are less exposed to negative consequences of stress are engaged in physical activity. One can learn how to be relaxed naturally but muscle tightness or stiffness is related to a feeling of unpleasant inner tension. The result showed that the lowest degree of stress was experienced by managers who practiced recreational activities or sports at least 3 times weekly. This might be the reason for reducing the stress.<sup>[27][28]</sup>

## ANXIETY

Table 2a show that within group both the interventions were effective. Guirong Ning [2019] conducted a study on 'Influence of aerobics on modulation of depression and anxiety among college students' which concluded that compared with students who have never participated in physical exercises, students with appropriate aerobics exercise could more effectively relieve their depression and anxiety and improve physical self-esteem, fitness, internal confidence and improves interpersonal relationships. The rationale for this might be it does not only get the body exercised but also one's will is tempered so that in the face of difficulties one will rise to them and not be anxious. The learning process of aerobics is also a process of self-satisfaction in which self-confidence can be improved. Also it distracts ones from the things because they may usually focus pondering problems and cerebral cortex is extra suppressed during exercise to put unpleasant things behind.<sup>[29]</sup> According to table 2b between group analysis showed that recreational activities were more effective than aerobic exercise. This can be supported by Anxiety and Depression Association of America which says that physical activity produces endorphins that act as natural painkillers and also improves ability to sleep which in turn reduces stress. Study shows the importance of recreational activities, sports and participation, exercise in sociocultural activities in coping with anxiety. Regular physical activity are supportive in positive orientation of feelings ad behavior and reduce the level of anxiety. Especially recreational activities performed are stated to encourage regular participation as they are entertaining and increase interest.

They are effective to cope up with negative feeling and to increase self-esteem. Participants developed self-confidence, they relaxed with the activities they perform, their in-group interaction increased and they experienced positive change in their thought pattern. This provided a kind of relaxation therefore their anxiety level decreased.<sup>[30]</sup>

## SLEEP

According to table 3a-b, both the groups were found to be effective in improving quality of sleep. According to John Hopkins Medicine aerobic exercises causes the body to release endorphins so these chemicals create a level of activity in the brain that keeps people awake. Exercising for 30 mins everyday gives endorphins levels time to washout and the brain tissue to wind down. It is reported that regular exercise results in increased total sleep time and slow wave of sleep. Researchers believe that physical activity improves quality of sleep through elongating the sleep stage and shortening the latent phase time between onset and 1<sup>st</sup> stage of sleep. Because of good sleep during the night people have lower level of stress during the day.<sup>[31]</sup> Various pathways have been proposed to explain the relationship between physical activities and sleep yet the underline mechanisms are still uncertain. Proposed mechanisms include body temperature changes, cytokine concentration changes, increased energy consumption/ metabolic ratings fatigue, changes in mood/anxiety symptoms, changes in heart rate and heart rate variability, growth hormone secretion, brain derived neurotrophic factor secretion, improve fitness level and body composition change.<sup>[32]</sup> When an individual performs exercise or gets indulged in an intense physical training, there occurs vasodilation leading to increase in blood flow to skin and rise in body temperature that promotes sleep. Recreational activities, such as physical and social activities and spending time outdoors, influence the timing of sleep and the robustness of the sleep-wake rhythm. Associations between physical and/or social activities and sleep have been investigated previously in several studies although the findings are inconclusive regarding the establishment of statistically significant improvements in sleep.<sup>[33]</sup>

## WORK RELATED QUALITY OF LIFE:

People who practice group fitness classes feel that they are like an authentic group, which increases social and cohesive feelings and considerable effect on exerting enjoyment and affective perception during the participation in group fitness classes. The larger the group, there is greater exertion, enjoyment and affective perception have been reported in participants of group fitness classes. This fact could guarantee adherence to physical activity and could explain the

perceived improvement related to vitality showed in our study. The scientific evidence supports that musical group activities with synchronized exercise movements like in dance group fitness classes have effects on mood and exertion causing affiliated sentiments and behavior which generates the positive effects on social bonding and wellbeing. These phenomena are all strongly associated with the release of endorphins when listening to music which is enhanced when the movement is involved even more when the movement is synchronized in a group.<sup>[34][35]</sup> Physical exercises have a positive effect in decreasing anxiety, stress and depression. It's thought that the application and rhythm of recreational activities will make considerable contributions to the improvement of sedentary individuals physical and mental health and thereby play an important role in increasing the percentage of healthy individuals with increase in participation time, quality of life and job satisfaction of state personnel can increase even more. It can be said that this can certainly help to prevent emotional exhaustion, as well as prevent the development of negative attitudes towards others, thereby increasing levels of job satisfaction in the workplace and quality of life.<sup>[36]</sup>

### NECK RANGE OF MOTION

According to table 5a-b, both the groups were found to be equally effective in increasing neck range of motion. Aerobic exercises increase blood flow of the muscles and soft tissue of neck and upper back which can help loosen the muscles and increase range of motion.<sup>[37]</sup> In addition, 30 minutes or more of aerobic exercise, the body's natural painkillers i.e., endorphins are released which reduces neck pain and in turn increases range of motion.<sup>[38][39]</sup> Aerobic exercises gets your breathing and heart rate elevated for duration of activity along with increased blood supply which relaxes the muscle and improves mobility thereby increasing range of motion.<sup>[40]</sup> When the muscle is stretched so is the muscle spindle. The muscle spindle records the change in length of the muscle and how fast this change occurs. It then sends the signal through spine to the brain. This information triggers the stretch reflex, which attempts to resist the change in muscle length by causing the stretch muscle to contract. The more sudden the change in muscle length, the stronger the muscle contraction will be. If the force and suddenness of the stretch exceeds the muscle's ability to safely contract for protection, another neural component i.e., Golgi tendon organ goes into action and takes power over muscle spindle. The Golgi tendon organ records the change in tension and the rate of change of tension and sends signal to the spine to convey this information. When this tension exceeds the certain threshold, it triggers the lengthening reaction which inhibits the muscle's contraction and instead causes it to relax and lengthen. The lengthening reaction is only possible because the signaling of Golgi tendon organ to the spinal cord is powerful enough to overcome the signaling of the muscle spindles telling the muscle to contract.<sup>[41]</sup> A study conducted by Seong-il cho et. al in 2014 conducted a study on 'Effects of recreational exercise on strength, flexibility and balance of old-old elderly individuals' who concluded that recreational exercises improves physical ability, muscle strength, flexibility and balance. This might be the reason for improvement in neck range of motion in our study because of increased flexibility. Another reason might be recreational exercises aroused interest and motivation in individuals and alleviates anxiety and stress by releasing endorphins which ultimately reduces muscle tension, thereby increasing flexibility and hence range of motion.<sup>[41][42]</sup>

### CONCLUSION:

The study concludes that aerobics and recreational activities both are equally effective in reducing stress, improving quality of sleep, work related quality of life and improving neck range of motion. While recreational activities are more beneficial to relieve anxiety than aerobics. The limitations of our study was small sample size and since the session was supervised online, intensity of both groups couldn't be monitored whereas type, frequency and time was monitored. The future scope of our study is that long term effects can be analysed and other psychological outcome measures can be used.

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