

Investigating The Effectiveness of Physical Exercises and Relaxation Technique: Occupational Stress and Health Problem Prevention Among Provincial Bus Drivers In Quezon City

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Abstract

Physical exercise and relaxation practices reduce job stress and health concerns. The current study's researchers designed an educational intervention to avoid these diseases in provincial bus drivers. The role of physical exercise and relaxation techniques in reducing occupational stress and health problems among provincial bus drivers, researchers conducted this study to assess the effectiveness of an educational physical activity intervention and the implementation in preventing occupational stress and work health related problems among provincial bus drivers in Araneta Bus Terminal, Quezon City. There are 60 respondents in this study which were randomly selected using randomized trials. This work aims to offer an updated systematic review and meta-analysis of all randomized controlled trials of physical techniques of relaxation and exercises in bus drivers to reduce occupational stress and treat health concerns. The 5-minutes stretching has a significant effectiveness towards occupational stress and health problems; the personal pain index indicates each significance. However, weak evidence was also found against the null hypothesis for the claim that section 4's reading had no effect on stretching exercise. The results indicated that the 5-minute physical activity intervention had a positive impact on the occupational stress and health problem prevention in provincial bus drivers.

Keywords

Physical Exercise, Relaxation Practices, Occupational Stress, Health Related Problems and Provincial Bus Drivers

1. Introduction

Workplace health and stress issues are often attributed to working conditions and weather (Rohany 2003). Thus, executives and entry-level workers alike are under pressure to perform well. The workplace and a worker's inability to meet rising demands can cause occupational stress. The task, company, laborer's role, career progression, employment conditions, core competencies, and atmosphere can all cause workplace stress. Long shifts, heavy workloads, time pressure, difficult or challenging tasks, a lack of rest periods, variety, and poor physical working environments (inadequate space, temperature, and lighting) are intrinsic stressors (Michie 2002). Bus drivers' demanding schedules also cause stress.

"Daily stress" improves bus drivers. Bus driving can be stressful, according to Durgamini and Sethuraman (2016). According to the authors, it is a moderate to severely difficult profession that can make workers mentally and physically apathetic, reducing employee and company output (Meenu and Mehta, 2022). Buses dominate public transportation. Healthy bus drivers are great. Ghasemi and Pirzadeh's (2020) study found workplace hazards endanger these workers' health. Professional drivers can develop musculoskeletal disorders (MSDs) from inactivity, bad posture, long periods of sitting, vehicle-road vibrations, and repeated bending and twisting while driving. City and provincial transit workers struggle to relax, focus, and sleep. Bus drivers take more vacations than other workers. Back, tendons, and joint diseases, mental illness, cardiovascular disease, and stress-related illnesses like indigestion

and anxiety account for most missed workdays (Priyanka and Tamilselvi, 2013). Lee et al. say bus drivers face vibration and vehicle emissions (2014). Road monitoring and emergency preparedness stress them. As with public transportation drivers, work-related stress and health issues are common in many populations and a leading cause of work-related injury and disability in the developed and industrialized world. Many studies show that drivers have MSDs (Sadri et al. 2015). Driver and workplace stress reduction suggestions have arisen from these concerns. Worker protection and mental health care are organizational strategies to improve working conditions and streamline processes. Ergonomic and corrective measures can reduce workplace stress and illness. Exercise-promoting education works best. Many studies show their value. Ergonomic exercise reduced back pain, though. Researchers found ergonomics-focused exercise reduced workplace stress and pain (Alexandre et al. 2011). In another Hasan and colleagues' study, corrective exercises reduced worker pain and MSDs (2015). Physical therapy can treat neck, shoulder, and upper limb MSDs, according to multiple studies. Workplace stress-reduction and physical activity are important. Since public health modeling emphasizes education's efficacy, the current study's researchers used one of the most widely prominent designs to specify and engage in disease-prevention behaviors when designing an academic prevention program to avoid these complications in carefully chosen provincial bus drivers. Health belief model guided this intervention.

1.1 Problem Statement

The majority of the research has focused on commuters who use public transit, but what about provincial drivers who may also be experiencing stress. According to new top gear ph, Provincial Bus Operators' Association of the Philippines executive director Alex Yague (n.d.) indicates that there are approximately 10,000 provincial buses and around 8,000 of which travel back and forth to Metro Manila. A significant portion of the workforce, from executives to entry-level employees, is under pressure to perform well. Occupational stress may be caused by a worker's inability or lack of abilities to meet escalating expectations, as well as by the working environment. The task itself, the firm and the laborer's participation in it, career advancement, working circumstances, core competences, and the atmosphere can all contribute to workplace stress. Long hours, excessive workloads, time constraints, tough or demanding responsibilities, a lack of relaxation times, a lack of variation, and poor physical working conditions are examples of intrinsic stressors. The provincial bus drivers are experiencing occupational stress, due to long hours of travel, rotating shifts, issues with passengers, weather conditions and burnout (Michie, 2002). The researchers came up with an idea to apply the effectiveness of a five-minute exercise, such as stretching, to ease up the stresses that are encountered by the Drivers. The five minute exercise is done at intervals such as comfort room breaks or refueling.

1.2 Objectives of the study

1.2.1 General Objectives

This study aims to determine the effectiveness of physical exercise and relaxation techniques interventions that will apply among the selected provincial bus drivers to address the increased occupational stress and work-related health problems among themselves based on the given parameters.

1.2.2 Specific Objectives

- To assess the effectiveness of physical exercise and relaxation techniques in reducing occupational stress and addressing health problems among provincial bus drivers.
- To conduct a systematic and meta-analysis review of individual-level intervention among respondents based on individual-level interventions.
- To provide a detailed outlook on updated systematic review of all randomized trials on use of physical methods and relaxation techniques among bus drivers on occupational stress reduction.
- To determine the level of job stress among drivers using perceived stress scale before administration of physical and relaxation techniques (pre-test).
- To determine the level of job stress among drivers using perceived stress scale after administration of relaxation technique (post-test)

2. Literature Review

2.1 Physical Exercise to Occupational Stress

Work-related stress harms physical and mental health, according to Zhang et al. (2021). This systematic review and network meta-analysis examines how yoga, massage, progressive muscle relaxation, and stretching affect stress and performance. However, databases were searched for randomized controlled trials on physical relaxation to reduce occupational stress in healthcare workers. Meta-analysis initially compared relaxation therapy patients and nonintervention controls for standard mean stress measurements. Network meta-analysis found the best relaxation

method. Yoga is particularly useful for delivery, suggesting that physical relaxation may reduce occupational stress in healthcare workers. Workplace wellness programs should include these methods. David and Tenenbaum (2018) reviewed empirical research on exercise's stress-reduction benefits. First, a stress management model and definitions. Exercise and stress research on healthy populations follows. Second, exercise-tension psychophysiological mechanisms are discussed. Conclusion, limits, and implications follow. Strength training may benefit non-clinical populations. Bischoff et al. (2019) showed that yoga and qigong can promote healthcare worker health and reduce stress. More research with proper preparation and precise characterization is needed to determine the effects of vigorous exercise treatments on work-related stress in some of the population of interest (length, frequency, and severity).

Thus, Jukic et al. (2020) use mental health solutions to target the workforce with an occupational stress intervention program and promote healthier lifestyles. Thus, active occupational stress management research should be updated. Nonetheless, 94.1% used the app. Job motivation, exhaustion, and wellbeing improved in the participant's subjective psychiatric evaluation. Some lost four kilograms and got fit. Bhatt and Seema's (2019) study on transportation and bus drivers in different regions examines how health and profession have always been linked. Workplace wellness has the greatest impact on employees and the community. Post-industrial countries have more occupational hazards. Asthma, heart attacks, high blood pressure, depression, and mental illnesses are examples. Occupation health impacts individuals, groups, and communities. This article examines State Road Transport Corporation bus drivers and conductors' health risks. This study examines driver and conductor micro-risk variables. It illustrates how health and work are linked and makes negative effects easier to assess. Golinko et al. (2020) noted that bus drivers' working conditions can cause occupational disorders, especially in Ukraine. The study seeks to identify passenger and bus driver occupational health risks. Thus, updated observations allow impartial assessment of hygiene risks on the driver's physical health and prediction of cardiovascular, musculoskeletal, and emotional fatigue-related vocational disorders and partial or total disability. Three popular Ukrainian passenger bus drivers deal with heat, movement, vibration, toxic fumes, and emotional stress. Thus, workplace conditions may harm many bus drivers' health. This study highlights how irregular shift scheduling, high job expectations, prolonged sitting, and vibration can cause bus drivers fatigue, aggravation, back pain, and poor diet. Bus drivers' job stress frequency and causes must be identified to manage it (Meenu & Mehta, 2022). Thus, Koohpaei and Khandan's (2020) research suggested bus drivers' mental and physical health affects road safety. A major quality drop could hurt sales and reputation. Thus, public transport driver mental health research is necessary to reduce road fatalities, passenger injuries, and unsafe operations. Seven days of consistent data collection also suggests addressing drivers' mental and physical health and implementing different methods for recurring perpetual monitoring of all these factors at specific times, along with ongoing training and assessment. This study stressed routine evaluations, recordkeeping, and driver mental health assessments.

Most bus drivers reported fatigue, back pain, coughing, and colds. This study suggests Kolhapur bus drivers need safety and health policies (Kulkarni et al. 2018). Joshi and Vaidya found bus drivers had higher PSS scores than office workers (2019). Thus, bus driving requires stress management. Difficult driving. Drivers constantly risk musculoskeletal disorders (MSDs). Education may aid disease management. Multistage sampling was used to enroll 60 urban bus drivers in Isfahan, Iran, to see if preventative education and physical activity would reduce MSDs. Reassessed three months after implementation. Ghasemi and Pirzadeh (2020) found that HBM-based interventions improved interstate urban bus drivers' perception of inactivity-related MSDs. MSD risks and sedentary lifestyles were covered. Physical activity affects all these human factors, but its role in car crashes is unknown. In an evidence-based framework, this paper first summarizes how each of these factors affects driving efficiency and job-related motor vehicle accidents, then considers how exercise (or the lack thereof) may monitor, control, and act immediately on these associations. Finally, the study's political implications for worksite remedies promote professional drivers' physical activity, stress management, relaxation, reduced fatigue, and increased attention to their physical and mental health (Taylor & Dorn, 2018). The brain predicts relieving with 80% accuracy, according to Meteier et al. (2022). Although machine learning algorithms could distinguish relaxed people with 70% accuracy, quantitative study showed that relaxing while driving had no physiological benefits. Passenger classification revealed many occupancy and calm-related physiological functions.

3.1 Research Design

The researchers used the quantitative research approach, which involves the collection of numerical data and the application of statistical, mathematical, and computational techniques, to conduct a systematic investigation into the phenomenon experienced by provincial bus drivers along Quezon City. There are other types of quantitative research

designs, however the researchers also used a network meta-analysis research methodology in this study. This approach is the best and most appropriate to find a significant relationship between the implementation of physical exercises and relaxation techniques on addressing the occupational stress and work-related health problems among selected provincial buses in Quezon City.

3.2 Participants and Sampling Technique

The primary participants of this research are provincial bus drivers in Araneta Bus Terminal, Quezon City. The sampling technique used in this study is a randomized controlled trials (RCTs) technique the researchers will select respondents randomly the respondents limit is 60 participants.

3.3 Research Instrument

Bus drivers' stress risks will be monitored using Kompier P.'s (1996) checklist-style survey questionnaires. The questionnaire is valid and reliable and can be used to assess issue severity and provincial bus driver factors. Researchers tailored the questionnaires to the study. We must examine bus drivers' personal and professional histories to understand them. A standardized musculoskeletal research questionnaire measured participants' demographics and pain levels. Participants received a questionnaire, instructions, and time to complete it.

3.4 Data Analysis

With the use of Paired T-test, researchers will tally the collected data and determine the effectiveness of a 5-minute exercise and relaxation technique on the stress and health problems faced by provincial bus drivers in Quezon City, Philippines due to their profession. Hence, the gathered data were analyzed using the Paired T-test analysis. Additionally with the use of meta-analysis method of fixed generic inverse variance the study will be able to identify the comparisons between this study and other study regarding the effectiveness of physical exercise to health and stress problems of provincial bus drivers.

4. Data Collection

4.1 Data Presentation

In figure 1, among the 60 respondents who have participated in this study, 33(55%) of them have the level of 5 in occupational stress experienced in sitting duration, 22(36.7%) have the level 4 of occupational stress, 3(5%) have the level 2 of occupational stress, and 1(1.7%) respondent for levels 3 and 6 respectively. The occupational stress experienced varies with the level, lower levels have mild stress experienced and higher levels have worse stress experienced.

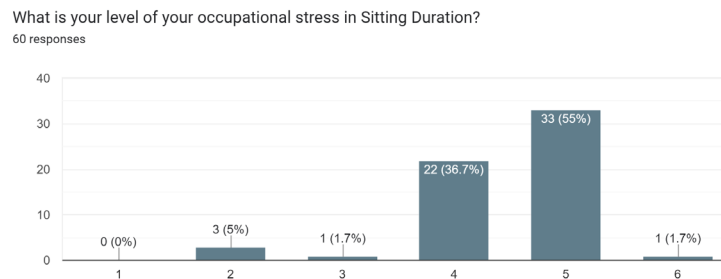


Figure 1. Respondents Level of occupation stress in sitting duration

In figure 2, among the 60 respondents who have participated in this study, 33(55%) of them have the level of 4 in occupational stress experienced in Traffic Congestions, 20(33.3%) have the level 5 of occupational stress, 4(6.7%) have the level 2 of occupational stress, and 1(1.7%) respondent for level 3. The occupational stress experienced varies with the level, lower levels have mild stress experienced and higher levels have worse stress experienced.

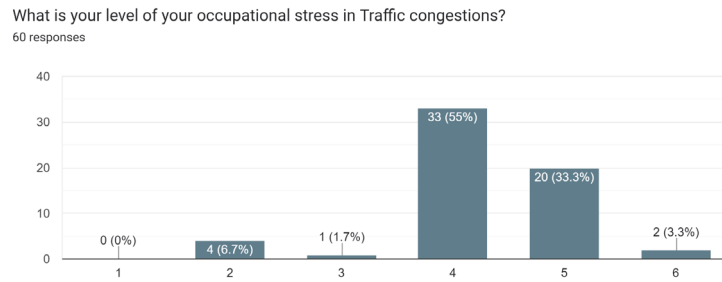


Figure 2. Respondents Level of occupation stress in Traffic Congestions

In figure 3, among the 60 respondents who have participated in this study, 28(46.7%) of them have the level of 4 in occupational stress experienced in Workload Schedule, 22(36.7%) have the level 5 of occupational stress, 4(6.7%) have the level 2 of occupational stress, 3(5%) have the level 3 of occupational stress, 2(3.3%) have the level 6 of occupational stress and 1(1.7%) respondent for level 1. The occupational stress experienced varies with the level, lower levels have mild stress experienced and higher levels have worse stress experienced.

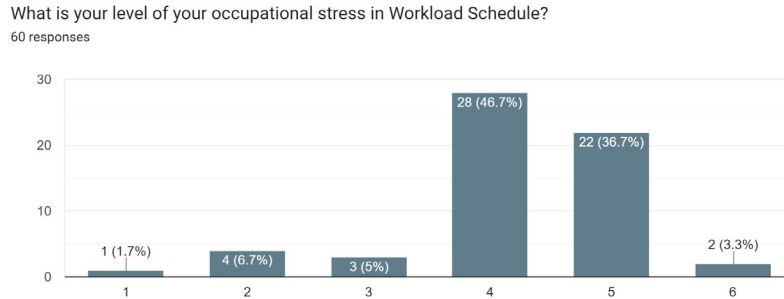


Figure 3. Respondents Level of occupational stress in workload schedule

4.2 Meta-Analysis

The VAS, OLBPD, RMQ, and PPS measured outcomes (Perceived Stress Scale). The Hamilton depression and anxiety rating scales assessed participants' mental and physical health (HAM-A). One meta-analysis study used HBM-based, Likert-scale instruction. Long-distance bus drivers were the most represented occupation, with 467 participants in 4 studies (Table 1 and Figure 4). Stress decreases as SMD decreases. Due to self-reported results, all studies had performance bias and failed to clearly specify allocation techniques. These therapies cannot blind clinicians or participants. Four studies had major bias, two moderate, and one minor.

Table 1. Meta-Analysis

Study	Design	Population (n intervention/n control)	Control	Intervention	Outcome measures	Longest follow-up after beginning treatment	Results
Ghasemi, M., et al. (2018)	RCT	Bus Drivers (30/30)	No intervention	In 10 hrs 2 to 3 breaks interval in 6 to 12 weeks	VAS, <u>OLBPDQ</u> , and RMQ	12 Weeks	(VAS) pain score (p = 0.049), <u>OLBPDQ</u> score (p = 0.024) and RMQ (p = 0.011) Exercise helps to Reduce Lower Back Pain
Joshi, A. & Vaidya, S. (2019)	RCT	Bus Drivers and Volunteers from office staff of general population (130/130)	Intervention made available to controls after study end	Walking exercise 3-4 times a week	PSS	1 Week	Significant stress reduction in IG vs CG (p < 0.001)
Rankhambe, H. & Pande, S. (2020)	RCT	Bus Drivers (42/45)	No intervention	Group practiced Om chanting x 4 weeks	Hamilton anxiety rating scale (HAM-A)	4 Weeks	Significant stress reduction in IG vs CG (p < 0.001)
Ghasemi, S. & Pirzadeh, A. (2020)	RCT	Bus Drivers (30/30)	No intervention	13 Weeks Educational intervention with 90 Minute sessions	Likert scale, HBM-based educational	13 Weeks	Significant stress reduction in IG vs CG (p < .001)

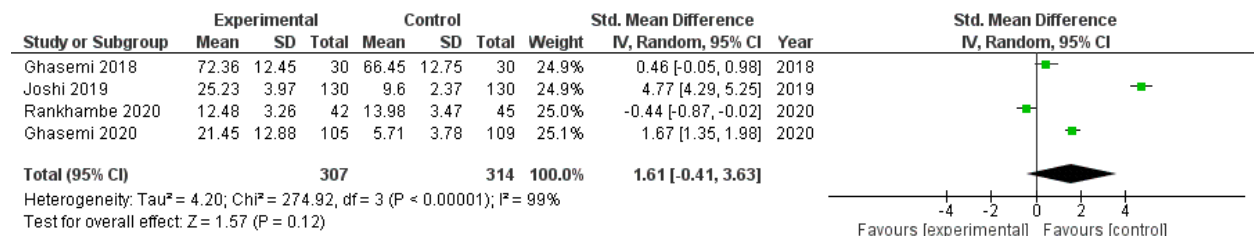


Figure 4. Meta-Analysis of all physical relaxation methods vs no intervention on occupational stress reduction at the longest duration of follow-up from baseline.

5. Results and Discussion

5.1 Demographic Analysis

This part analyzes and determines the respondents' demographic profile. This section's data was gathered from a total of sixty respondents, bus drivers who are eligible for significantly longer journeys at the Araneta Bus Center.

Table 2. Descriptive Analysis of Bus Drivers' Demographics

	Frequency	Percentage
Gender		
Male	60	100
Female	0	0
Total	60	100
Age Generation		
Generation Z (15-25 years old)	1	1.66
Generation Y (26-41 years old)	36	60
Generation X (42-56 years old)	23	38.33
Total	60	100
Educational Attainment		
College Graduate	31	51.66
Middle School Graduate	25	41.66
Elementary Graduate	4	6.66
Total	60	100
Years of Driving Experience		
3-5 Years	19	31.66
6-8 Years	22	36.66
9 years above	19	31.66

The demographic descriptive data for this study are represented in the Table 2. Given the frequency and percentage of it, this includes the respondents' gender, age generation, educational attainment, years of driving experience, and routes. The researcher obtained 60 respondents from Araneta Bus Terminal with pure male bus drivers. In terms of the age generation of the bus drivers, generation Y is the highest value (36), while generation Z is the lowest with 1 respondent only. In terms of years of experience in the field of their job, 6-8 years' experience has the highest total bus drivers with 22 respondents.

5.2 Occupational stress and work-related health problems Descriptive Analysis

The Table 3 shows the summary findings of Occupational stress and work-related health problems. The researchers were able to calculate the confidence level of occupational stress to sitting duration, traffic congestion, and workload schedule. The data shows that the level of occupational stress and work-related health problem is significant to provisional bus drivers the confidence interval of the Level of occupational stress in sitting duration is 4.466667 ± 0.20 , the Level of occupational stress in traffic congestion is 4.250000 ± 0.21 , and the Level of stress in workload schedule is 4.200000 ± 0.25 . Hence the result concludes that in 1 to 5 rating of stress in this factor there is a 4.3 level of stress regarding to the work-related health problems.

Table 3. Occupational stress and work-related health problems Descriptive Analysis

	Frequency	Confidence Level (95%)	Confidence Interval
Level of occupational stress in sitting	60	0.2043872	4.466667 ± 0.20

duration

Level of occupational stress in traffic congestion	60	0.2160013263	4.250000 ± 0.21
Level of stress in workload schedule	60	0.250773613	4.200000 ± 0.25

5.4 T-test Analysis of effectiveness of conducive physical exercise and relaxation techniques as preventative intervention towards occupational stress and work health problem

In order to determine if there was any correlation between the means of two measurements taken from the same person, the researchers performed a paired t-test (Table 4). The researchers do a before and after test and note that the P-values for each outcome are statistically significant. There was a significant effect of the 5-step stretching exercise on occupational stress and job-related health performance, as indicated by the t-summary test's result: a p-value of 0.000 for the 9 sections of the work and personal pain index. Weak evidence against the null hypothesis was also found for the claim that section 4's reading had no influence on stretching exercise (p = 0.410).

Table 4. T-test Analysis

Source	BEFORE		AFTER		Mean Differences	t-value	P value
	Mean	Standard Error	Mean	Standard Error			
Section 1: Pain Intensity	2.25	0.06	1.33	0.51	0.91	9.86	(0.000)**
Section 2: Personal Care	1.86	0.0556	1.18	0.0504	0.68	9.33	(0.000)**
Section 3: Lifting	2.25	0.0909	1.41	0.0867	0.83	6.61	(0.000)**
Section 4: Reading	1.18	0.0504	1.23	0.0600	-0.05	-0.83	0.410
Section 5: Headaches	2.91	0.115	1.35	0.075	1.56	10.78	(0.000)**
Section 6: Concentration	1.95	0.0500	1.21	0.0587	0.73	9.36	(0.000)**
Section 7: Work	2.11	0.0755	1.28	0.0633	0.83	8.46	(0.000)**
Section 8: Driving	2.25	0.0698	1.33	0.0658	0.91	10.20	(0.000)**
Section 9: Sleeping	2.26	0.121	1.25	0.061	1.017	7.50	(0.000)**
Section 10: Recreation	2.11	0.0536	1.30	0.0960	0.817	7.24	(0.000)**

6. Conclusion and Recommendations

6.1. Conclusions

60 male bus drivers from Araneta Bus Terminal were surveyed. The frequency and percentage include gender, age, educational attainment, years of driving experience, and routes. Most bus drivers (22 respondents) have 6-8 years of experience. The route from Araneta center to Batangas has the most bus drivers (27), while the route to Naga has the fewest (2). Provincial bus drivers' tight schedules cause stress. Long shifts, heavy workloads, and time constraints are intrinsic stressors. Bus driving is a stressful job that can harm your health. Bus drivers are at risk from job hazards. Drivers face musculoskeletal disorders. Sitting time, traffic, and workload schedule were used to calculate occupational stress confidence. Work-related health problems cause 4.3 stress on a scale of 1 to 5. The confidence intervals for occupational stress in sitting duration, traffic congestion, and workload scheduling are 4.466667 0.20, 4.250000 0.21, and 4.200000 0.25, respectively.

Data analysis used paired T-tests. The collected data showed that a 5-minute exercise and relaxation technique reduced stress and health issues in provincial bus drivers in Quezon City, Philippines. The 5-minute exercise, t-test analysis, reduces stress and health issues. The work and personal pain index shows that stretching improves physical and mental health. The 5-step stretching exercise reduced job-related stress and health. The nine work and personal pain index sections had 0.000 p-values. Weak evidence also contradicted the null hypothesis that section 4's reading had no effect on stretching exercise. T-test analysis showed a significant difference before and after the 5-minute stretching exercise. The before-after data mean difference is positive. Thus, the 5-minute stretching exercise helps provincial bus drivers with occupational stress and WRH. The T-test showed a significant difference between baseline measurements and those taken immediately after a 5-minute stretching exercise, supporting the researchers' hypothesis of an immediate effect. Before and after data sets have statistically significant mean value increases. Thus, a 5-minute stretching exercise can reduce occupational stress and WRH issues for provincial bus drivers.

Network meta-analysis allowed researchers to compare different exercise and relaxation methods to each other and to the control group (no intervention). The meta-analysis found that the average P-value for the four studies that used physical relaxation techniques, walking exercises, om chant, and other exercises was ($p = 0.12$). Researchers found that meta-analysis studies and 5-minute stretching exercises were equally effective at reducing stress and other work-related health issues.

6.2. Recommendations

The following recommendations are made by the researchers after careful consideration of the collected, interpreted, and discussed data about Investigating the Effectiveness of Physical Exercises and Relaxation Technique: Occupational Stress and Health Problem Prevention Among Provincial Bus Drivers in Quezon City:

- The Research study revealed that the 5-step stretching exercise can prevent occupational stress and health problems among provincial bus drivers. Future research should consider different work or industry to help them to prevent occupational stress and health problems.
- The Research Study recommends future researchers to investigate a wider scope of respondents since this research solely focuses on provincial bus drivers in Araneta Bus Terminal, Quezon City.
- The Research Study can be further improved through utilizing other statistical tools to analyze and examine the data, if possible, to innovate the study.
- Implementation of 5-Step stretching exercise in provincial bus drivers should be encouraged by the bus companies to continually prevent occupational stress and health problems in the workplace.
- Since the effectiveness of 5-step stretching exercise has been proven significant, provincial bus drivers should incorporate it into their workplace at least once a day to prevent occupational stress and health problems.

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