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THE INFLUENCE OF COMPOUND EXERCISE FORMS ON IMPROVING EMPLOYEE FITNESS

Muhammad Harliawan[1]*, Yudik Prasetyo[2], Ali Satia Graha[3] and Zainuddin[4]

[1]Doctoral Program Student (S3), Department of Sports Science,
Faculty of Sports Science and Health, Yogyakarta State University, Yogyakarta, Indonesia.
*Corresponding Author E-mail: muhammadharliawan.2022@student.uny.ac.id
[2,3]Department of Health Education and Recreation, Faculty of Sports and Health Sciences,
Yogyakarta State University, Yogyakarta Indonesia.
Email: [2]yudik@uny.ac.id, [3]ali_satiagraha@uny.ac.id
[4]Department of Nursing, Faculty of Sport and Health,
Universitas Negeri Gorontalo, Indonesia. Email: Zainuddin.rama@ung.ac.id

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Abstract

Introduction: Exercise is an important element of a healthy and active lifestyle, especially for employees. The current era of modernization is a change in diet and lifestyle that is increasingly complex and diverse which can cause health problems such as obesity, cardiovascular disease, and mental disorders. One effort to improve health and fitness can be done through exercise which has a significant role in maintaining and enhancing the quality of life, especially for employees. Compound exercise is a form of weight training that involves various muscle groups simultaneously. This exercise is done by involving two or more joints which aims to train the muscles, tendons, and ligaments that surround the joints. The purpose of this study was to measure the effectiveness of the form of compound exercise in improving employee fitness. **Methods:** This study used a pre-experimental method with a One-group pretest-post-test design, the subjects of the study were 26 employees of a company engaged in the Retail sector in Makassar City, the study was conducted for 5 weeks with each week given 3 times of Exercise intervention, measure the success of the results of the Exercise intervention using Strength-Based with the As Many Reps As Possible (AMPRAP) until Failure method. **Results:** the results of the statistical test showed that there was an effect of the Compound Exercise form before and after training on push-Ups ($p < 0.05$), Sit-Ups ($p < 0.05$), Squad ($p < 0.05$) and sumo squats ($p < 0.05$). Based on the results of the study, a significant increase was obtained. This shows that the compound exercise form program is very effective in increasing upper body muscle strength (push-ups), abdominal muscle strength (sit-ups), and leg and core muscle strength (squats and sumo squats). **Conclusion:** compound exercise has been proven effective in improving physical fitness, especially upper body, core, and leg muscle strength, this form of exercise can help reduce the risk of injury in employees and support sustainable physical endurance.

Keywords: Compound Exercise, Physical Fitness, Physical Endurance, Muscle Strength.

INTRODUCTION

Sport is an important element of a healthy and active lifestyle, especially for employees. In this modern era, changes in eating patterns and lifestyles are increasingly complex and diverse, which can cause health problems such as obesity, cardiovascular disease, and mental disorders, according to research results. (1). Current lifestyles and eating patterns are a serious threat to individual well-being and public health, which can result in a relationship with obesity, cardiovascular disease, metabolic diseases, and reproductive disorders that are influenced by the eating habits and lifestyles of modern society, according to research results. (2). Current lifestyles and eating patterns are a serious threat to individual well-being and public health, which can result in a relationship with obesity, cardiovascular disease, metabolic diseases, and reproductive disorders that are influenced by the eating habits and

lifestyles of modern society, according to research results.

Bad lifestyle and eating habits such as smoking, drug abuse, alcohol, and unhealthy eating patterns, will continue to hurt employee health and productivity. Therefore, efforts to improve health and fitness can be made through sports that have a significant role in maintaining and enhancing the quality of life, especially for employees, research results. (3) Quality of life and health can be maintained and improved by doing sports activities, where the main element is doing consistent exercise in the long term, which will have an impact on improving physical and mental health which makes a positive contribution to personality development and reduces the risk of physical and psychological conditions related to a modern lifestyle, research results. (4) revealed that exercise intervention can improve cardiorespiratory fitness, muscle strength, body composition, and quality of life, research results (5) Shows that higher participation in sports impacts work performance and productivity, employees who are more physically active will have an impact on aspects of quality of life and better well-being. in research (6) Revealed that physical activity and exercise have a significant positive effect in preventing or alleviating mental illness, including symptoms of depression and anxiety-related or stress-related illnesses. Consistency in exercising also has a major influence on reducing work fatigue in employees, the research results show. (7) These findings show that exercise, yoga, and walking interventions improve well-being measured across work environments compared to no intervention.

The increasingly competitive work environment has an impact on employee health and fitness, which is an important indicator for improving work performance. Healthy and fit employees from several studies (8) Revealing that the implementation of sports in the workplace can improve the quality of health and fitness in employees which has an impact on reducing fatigue, and work stress, thus it can be concluded that the implementation of exercise programs in the workplace has significant value, providing positive benefits for both worker welfare and Company efficiency. In the study (9) Employees who have a fit body can increase work productivity because they do not get tired quickly, good physical fitness is supported by good endurance. Having good endurance is indeed beneficial and is a must for individuals who do activities or work that takes a long time,

Compound exercise is a form of weight training that involves various muscle groups simultaneously. This exercise is done by involving two or more joints which aims to train the muscles, tendons, and ligaments that surround the joints. (10)

METHOD

This study uses a pre-experimental method, which is a type of research that does not have a control group with a One-group pretest-post-test design. (11). The selection of this research method is in line with the research objectives, The Pre-Experimental Research Method (One-group Pretest-Post-test Design) is one of the Effective methods for Measuring Changes Before and After Treatment, One-group pretest-post-test design method is a suitable method for measuring changes that occur due to compound exercise treatment in one group of research subjects. By conducting pretests and post-tests, researchers can evaluate changes in employee physical fitness, this method also avoids the influence of complex external variables because there is only one group of subjects without a control group, this method is easier to use in situations where it is difficult to control external variables that may affect the

results of the study, such as environmental conditions or individual variations between groups, Overall, the One-group pretest-post-test design method provides a practical and efficient framework for evaluating the direct impact of compound exercise training, the subjects of this study were 26 employees taken from one of the retail companies in the city of Makassar with an employee age range of 20-35 years.

The selection of research subjects with Inclusion Criteria, namely Employees who are Willing to actively participate in following a 5-week compound exercise training program and exclusion criteria for Employees who are not in another fitness program to avoid bias in the research results so that fitness is purely from the compound exercise program provided. Demographic Information on research subjects Types of work and levels of employee workload in retail companies, such as cashiers, warehouse staff, and sales assistants, generally do a lot of physical activities such as walking long distances in the store, standing for long periods of time, and lifting goods, so high fitness is needed.

This research was conducted in the city of Makassar, South Sulawesi province, the research process regarding the Effect of Compound Exercise Training Forms on Improving Employee Fitness Impacts Work Productivity, with a training frequency of 3 times a week for 6 weeks, with a pre-test and post-test design

Stages of research implementation

Pre-Test Initial Fitness Measurement with Strength-Based Test (Push-up, Sit-Up, Squad and Sumo Squad)

Implementation of Compound Exercise Training Program The frequency of training is 3 times a week for 6 weeks. Each training session lasts approximately 45-60 minutes.

Compound Exercise form given to the subject

Table 1: Compound Exercise

Form of Exercise	Muscle Targets
Squat	involving the thigh, hip, and lower back muscles
Deadlift	**trains the back, leg and hip muscles**
Push-up	**trains chest, shoulder, and arm muscles**
Pull-up	**involving the back, arm, and shoulder muscles**
Lunges	**train leg muscles, and balance**
Plank	core muscle training

Post-Test Final Fitness Measurement after being given treatment for 5 weeks with Strength-Based Test (Push-ups, Sit-Up, Squats, and Sumo Squats)

RESULTS

Normality Test Results

Before conducting the statistical test used to see the Effect of Compound Exercise training forms on improving employee fitness, a normality test is first carried out. The results of the normality test can be seen in table 2.

Table 2: Normality Test Results

Test Form	n	Uji Normalitas *Shapirowilk* (Sig.)		Statistical Test
		Pre-Test	Post Test	
Push Up	26	0.004*	0.155	*Wilcoxon*
Sit Up	26	0.153	0.686	*Paired t-test*
Squat	26	0.344	0.543	*Paired t-test*
Sumo Squat	26	0.008*	0.049*	*Wilcoxon*

Note: *sig (<0.05) data is not normally distributed

Based on the results of the Shapiro-Wilk Normality Test (Sig.) for the push-up and sumo squad variables, some groups are not normally distributed ($p < 0.05$), so the statistical test used is the Wilcoxon test. In contrast, for the sit-up and squad variables, all measurement groups are normally distributed ($p > 0.05$), so the statistical test used is the Paired t-test.

Statistical Test Results

Table 3: Effect of Compound Exercise Form

Test Form	n	Compound Exercise Results		Average Difference	p-value
		Pre-Test Mean ± SD	Post-Test Mean ± SD		
Push Up	26	23.31 ± 6.76	25.80 ± 6.71	2.49	0.000[b*]
Sit Up	26	28.53 ± 7.36	30.23 ± 7.27	1.7	0.000[a*]
Squat	26	32.88 ± 5.65	34.57 ± 4.85	3.25	0.000[a*]
Sumo Squat	26	36.88 ± 5.95	38.46 ± 5.02	1.58	0.001[b*]

Ket: * sig (<0,05); [a]*Paired t-test*; [b]uji *Wilcoxon*

Based on the results of statistical tests, it was found that there was an effect of the form of Compound Exercise before and after training on push-ups ($p<0.05$), sit-ups ($p<0.05$), squads ($p<0.05$) and sumo squats ($p<0.05$). Based on the results of the study, an increase was found. This means that the compound exercise training program is effective in increasing upper body muscle strength (push-ups), abdominal muscle strength (sit-ups), and leg and core muscle strength (squats and sumo squats). These results also support the idea that this exercise can contribute to improving overall physical fitness, especially in the context of employees who require high physical endurance.

DISCUSSION

Based on the results of statistical tests that show a significant influence of the form of compound exercise on employee physical abilities such as (Push-Up, Sit-Up, Squat, and Sumo Squat), there are several main benefits that can be felt by employees by implementing the form of compound exercise.

Improved Physical Fitness

Compound exercises have been shown to improve core, upper body, and lower body muscle strength. This is important for employees who spend long periods standing, lifting, or performing tasks that require physical strength. This improved fitness will help them work more efficiently with a lower fatigue risk. Supervised, progressive strength training over 12 weeks can improve muscle strength and quality of life (12).

Based on the results of the study conducted (13) Shows that High-Intensity Functional Training (HIFT) programs also provide a variety of impressive health benefits such as improved metabolic condition and muscle strength, less systemic inflammation or oxidative damage compared to continuous aerobic activity, and increased general physical readiness (GPP) for the unpredictable physical demands of combat..

Reducing Injury Risk

Retail workers often experience muscle and joint injuries from repetitive physical activity. Resistance training may be effective in reducing low back pain and discomfort associated with arthritis and fibromyalgia and has been shown to reverse certain aging factors in skeletal muscle.(14) By increasing muscle strength through exercises such as push-ups, sit-ups, squats, and sumo squats, joint stability and posture can be improved, thereby reducing the risk of injury.

Increased Work Productivity

Employees who are more physically fit tend to have better stamina, so they can complete tasks faster and with more focus. Compound exercises that train various muscle groups simultaneously also help improve movement efficiency, which has the potential to increase productivity in daily work and keep employees away from sarcopenia, which is the progressive loss of muscle mass and strength due to aging and can have a significant impact on employees. Strength training is currently one of the most effective methods to combat sarcopenia by stimulating hypertrophy and increasing strength.(15)

Mental and Physical Well-Being

Strength training in general can improve mood and reduce stress levels. In retail jobs that are often physically and mentally demanding, compound exercises can help employees feel more energetic and well-being, both physically and mentally. Resistance training also improves muscle strength and enhanced strength training can be an effective adjunct to maintenance therapy for excess weight control.(16)

Increased Muscle Endurance

Increased physical ability through compound exercise, especially in terms of muscle endurance, can help employees persist longer in physically demanding jobs. Thus, they are better able to maintain work performance throughout the day. Bodyweight-based strength training is a very effective training method to avoid sarcopenia to minimize age-related side effects on muscle function and quality. (17), Weight training increases VO2max and muscle strength in adults (18) in research (19) Showed that the high-intensity functional training (HIIT-F) group showed significant improvements in muscle performance (sit-ups, 16.5% ± 3.1%, standing long jump 5.1% ± 2.2%, $p < 0.05$).

Body fat percentage decreased (17.1% ± 7.4% and 12.6% ± 5.1%, respectively, $p < 0.05$) in both High-intensity interval running (HIIT-R) and high-intensity functional training (HIIT-F) without differences between groups. We concluded that HIFT was equally effective in improving body composition and aerobic fitness compared to HIIT-R. HIFT resulted in improvements in muscle performance, whereas the HIIT-R protocol did not show any improvements. In the study(20) showed Results of both HIIT-F and HIIT-R training forms significantly improved body composition and cardiorespiratory fitness, with HIIT-F training forms showing greater increases in

muscle mass (+1,623 vs. -1,034 kg, $p < 0.001$), back strength (+6,007 vs. +3,333 kg, $p < 0.01$), and push-ups (+5,692 vs. 1,923 repetitions, $p < 0.001$) compared to HIIT-R

Overall, the benefits of compound exercise training for retail employees include improved fitness, reduced risk of injury, and higher productivity, all of which contribute to better well-being and work performance.

CONCLUSION

Compound exercise is effective in improving physical fitness, especially upper body, core, and leg muscle strength. This form of exercise can help reduce the risk of injury and support ongoing physical endurance.

Based on the results of research on the effect of Compound Exercise on improving physical fitness, several recommendations can be given:

1. Program Implementation: Companies should adopt a regular compound exercise program for employees involved in heavy physical work. This exercise can be held periodically, for example, 2-3 times per week, to maintain and improve employee fitness, especially in areas that require high physical stamina. Resistance training is more effective in increasing muscle mass and strength, while endurance training is superior in maintaining and increasing maximal aerobic power. Based on this evidence, recommendations for frail adults and elderly should include a balanced resistance and strength training program, which is carried out regularly (at least 3 days per week)
2. Adjusting the Volume and Intensity of Exercise Based on Individual Ability (21)
3. Periodic Monitoring and Evaluation: monitoring is carried out periodically on the development of employee physical fitness by measuring parameters such as muscle strength, endurance, and cardiovascular fitness.
4. Supporting Facilities: The company can provide adequate fitness facilities or special areas for employees to exercise. This can motivate employees to actively participate in fitness programs, both during and after work hours. Education about the importance of physical exercise, especially compound exercises, needs to be provided to employees so that they understand the long-term benefits of the program, not only for work performance but also for personal health and well-being.
5. These recommendations are expected to help optimize the benefits of compound exercise and encourage employees to be healthier, more productive, and contribute optimally to their work.

Conflict of interest statement

"No conflict of interest is declared by the authors."

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Author Contributions

Contributions	Author Initials
Study conception and design	MH,YP
Data collection	ASG, ZD
Data analysis and interpretation	MH,YP,ASG
Drafting of the article	MH,YP
Critical revision of the article	ASG, ZD

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